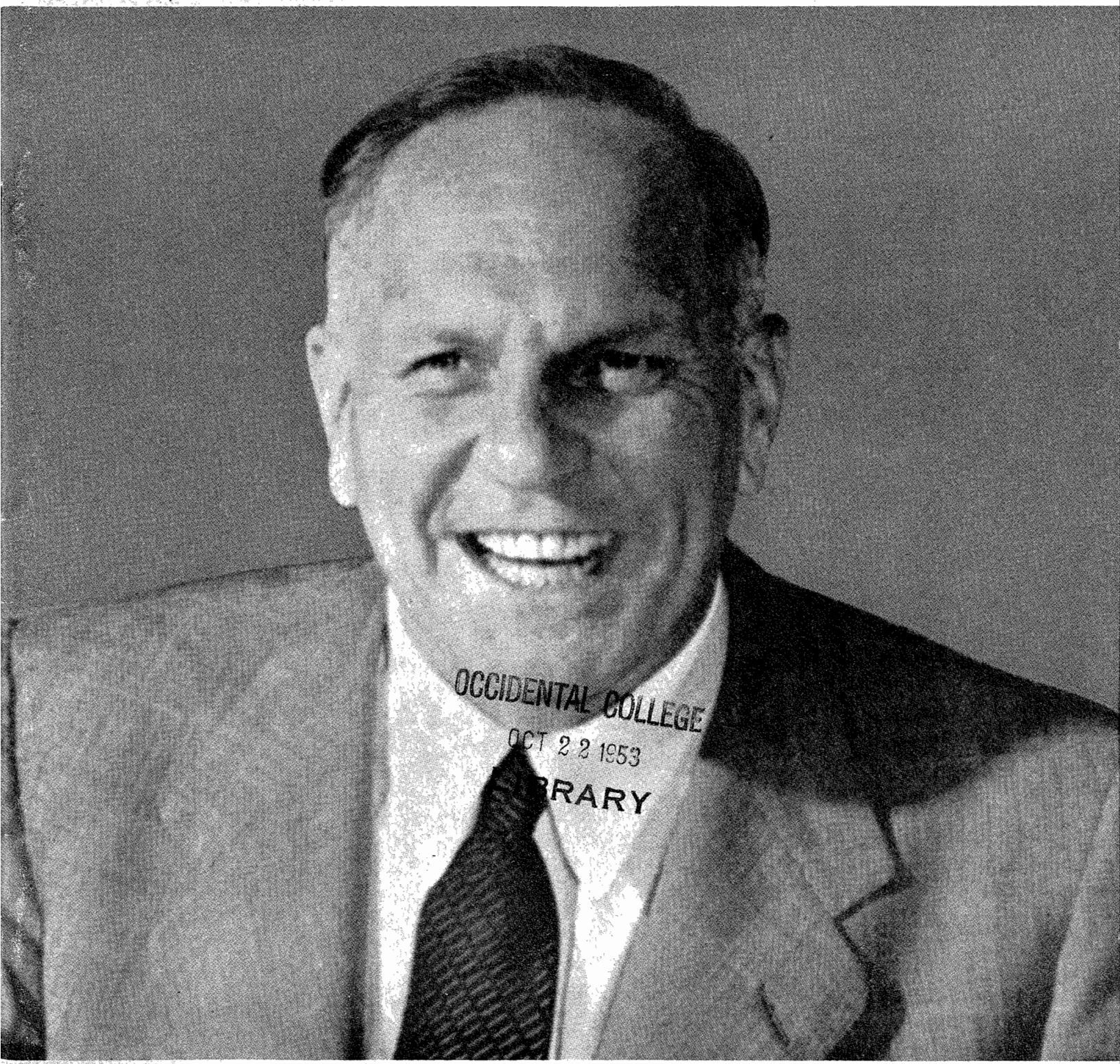
CALIFORNIA
HIGHWAYS AND PUBLIC WORKS



GOODWIN J. KNIGHT, *Governor of California*

SEPTEMBER-OCTOBER, 1953

California Highways and Public Works

Official Journal of the Division of Highways, Department of Public Works, State of California

KENNETH C. ADAMS, *Editor*
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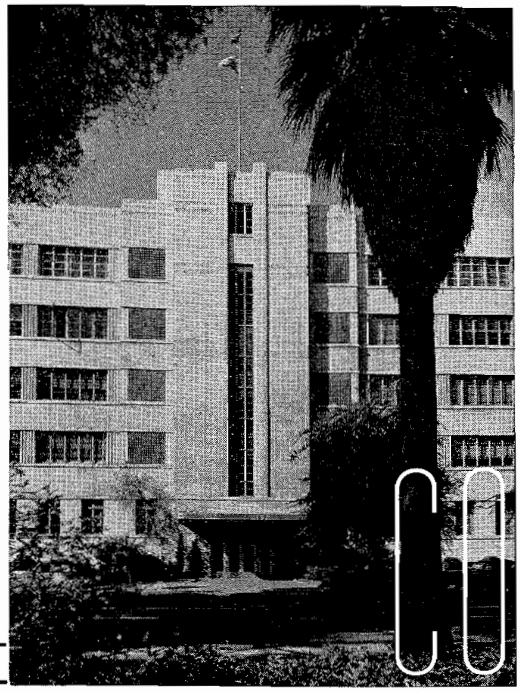

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KENNETH C. ADAMS, *Editor*
P. O. Box 1499
Sacramento, California

Burns Freeway

First Unit of Arcata Bypass Now Is Under Construction

By H. W. BENEDICT, Resident Engineer

ONE HUNDRED years ago the village of Union Town, now the City of Arcata, had special reason to celebrate. The honor of being named the first county seat of the newly formed Humboldt County had been bestowed upon this frontier town, and in its hands was placed the task of molding the form and substance of a new political body.

Gold was the cry on everyone's lips in that decade, and the back country teemed with men in search of the elusive yellow metal. Enterprising merchants soon learned that these men, though hardy, required food, shelter, and clothing. Arcata, on Humboldt Bay, became a logical focal point where ships from eastern ports could transload their cargoes to mule pack trains bound for the mines. Yet little did the miners realize that this gold boom was transitory and that beneath their feet, in the rich bottom land of the Arcata Delta and in the vast redwood and fir forests through which they trod, lay wealth that only needed development.

Wealth of Natural Resources

Such wealth could not go long unexploited and soon the miner's gold pan was traded for the farmer's plow, and the pick and shovel for the woodsman's axe. A more lasting economy was in the making, an economy that has expanded throughout the years. So sound was this economy that it has insured for Arcata and for Humboldt County an important role in the recent phenomenal growth of California.

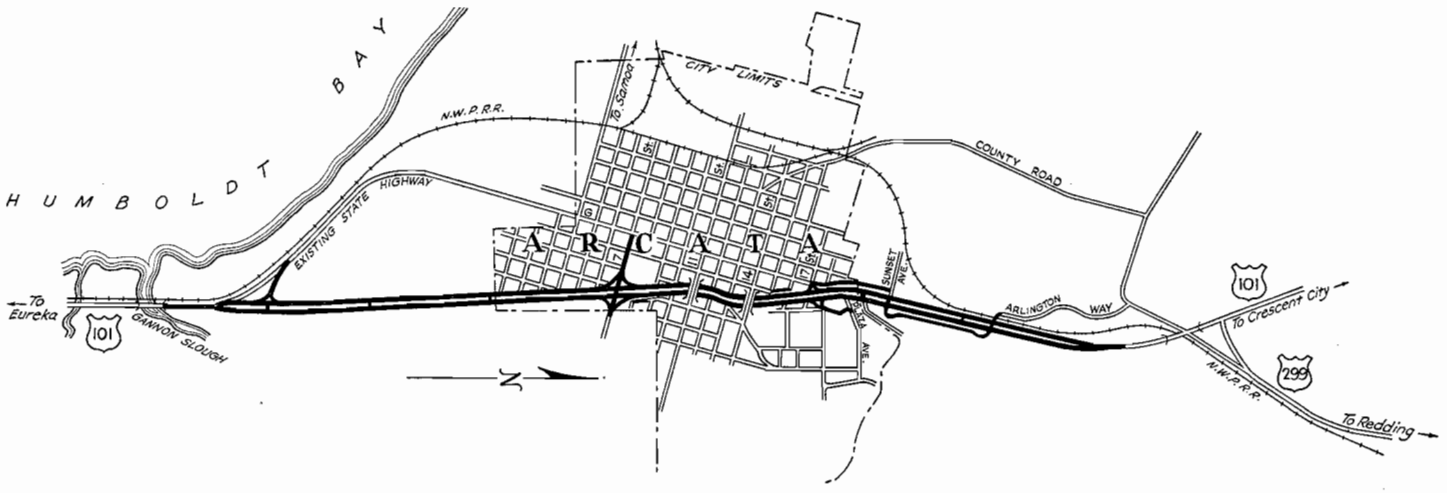
However, as in the rest of the State, such unprecedented growth has brought with it many problems, especially the acute problem of transportation. Oldtimers easily remember roads which were traversable only on horseback during the winter season and can trace the development of the transportation network in the county from these inadequate trails to the present-day hard-surfaced highways.

Yet even these all-weather roads, which would have amazed the early miner and logger, are entirely inadequate for the current mixed traffic of automobiles and trucks that flows in a constant stream over Humboldt's roads each day. Recent traffic counts emphasized this inadequacy by revealing that the portion of the Redwood Highway, Route 101, between Eureka and Arcata was one of the most congested two-lane highways in the State of California.

Senator Burns Honored

Engineers of District I have long recognized the deficiency of this portion of Route 101, particularly the highly congested condition between Eureka and North Arcata, where heavily loaded trucks from U. S. 299 enter the Redwood Highway traffic stream. With the passing of the Collier-Burns Highway Bill in 1947, plans were immediately initiated to supplant this narrow two-lane highway with a modern four-lane expressway. The recent increase in highway user taxes voted by the 1953 California State Legislature gave additional impetus to the planning and insured a much earlier completion of this vital link of Humboldt's transportation network. It is with no little local pride that this link is referred to as the "Burns Freeway," so dedicated by the Legislature in memory of the late revered Michael J. Burns, co-author of the renowned Collier-Burns Highway Bill, and Humboldt County's beloved senator.

It was immediately apparent to the designers that an undertaking of this magnitude would have to be developed in portions. A close review indicated that the project should be logi-



This traffic on U. S. 101 through Arcata will be eliminated by new bypass

cally subdivided into three units and, after study of traffic counts, points of congestion, accident frequency, and financing, they were arranged in order of their importance.

Priority of Projects

First priority was assigned to that portion extending northerly from the Gannon Slough Bridge to 0.90 mile northerly from Plaza Avenue in Arcata; second priority from the north city limits of Eureka to the Gannon Slough Bridge; and third priority to the remaining section from 0.90 mile north from Plaza Avenue to one mile south of the Mad River Bridge. This latter project is to include an overhead structure at a new intersection for the junction of U. S. 101 and U. S. 299.

With this preparatory study out of the way, detailed design was immediately started on the first unit. Surveys, traffic counts, and right of way appraisals began to funnel into the district office, and the dreams of the engineers of District I, as well as thousands of Humboldters, began to find concrete expression.

The location for this particular unit could not economically be justified by widening the present highway, or Main Street of the City of Arcata, as such widening would necessitate obliteration of both a business and a residential district. Fortunately, a gulch or ancient tidal slough extended northerly from the southerly portion of the city nearly to Plaza Avenue, leading to Humboldt State College. The properties in this gulch were largely unimproved and construction of a freeway therein would, in effect, by-pass the city and permit construction of overhead structures crossing the freeway at major street intersections.

Route of Freeway

With this assistance from natural topography, it was logical for the new freeway to depart from the present highway at Gannon Slough, cross agricultural land, enter the gulch on an easy grade, connect with the present highway at Plaza Avenue, and then salvage the existing facility as the westerly two lanes of the freeway to its northerly terminus. An inspection of the accompanying sketch map clearly illustrates the desirability and economy of the location as adopted.

A geometric typical section was selected to provide a four-lane divided highway consisting of four 12-foot traffic lanes, 10-foot outer shoulders and variable inner shoulders. The median will be 22 feet throughout. On the rural portion the inside shoulders will be five feet without curbs. On the urban portion the median will be curbed, with the curbs offset two feet from the inside edges of the pavement.

A structural typical section designed from laboratory tests of basement soils provides for 9 inches of imported subbase material, 8 inches of cement treated base, 2½ inches of dense graded plant-mixed surfacing, and ½ inch of open grade plant-mixed surfacing.

Two Overpass Structures

At this stage in design, it was considered desirable to further subdivide this unit of the freeway into three

contracts for reasons of expediency, orderly construction and for financing. The first of these contracts provided for the construction of two overpass structures to carry local Arcata traffic over the freeway proper. The second contract included grading, drainage, and some surfacing, while the third provides primarily for the surfacing of the new freeway.

Contract 52-1TC7-F for the two overpass structures was awarded to Mercer, Fraser Company, Inc., Eureka, on June 20, 1951. These reinforced girder type concrete structures at 11th and 14th Streets in Arcata were constructed under the direction of the Bridge Department, Division of Highways, represented in the field by Alton F. Kay, resident engineer. On February 25, 1953, all work was completed on these structures at a total cost of $285,769, and local traffic was insured uninterrupted movement while the freeway was being constructed.

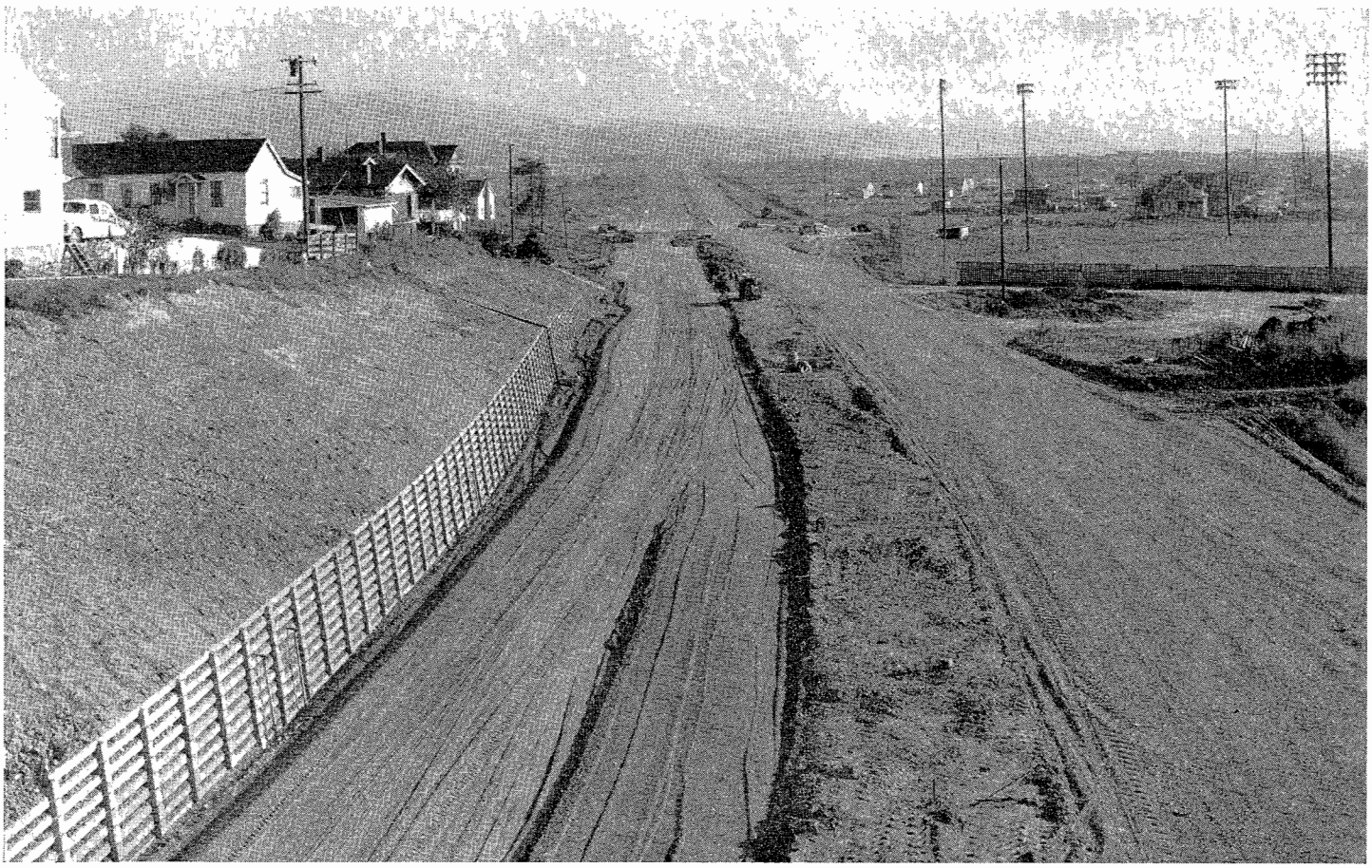
On August 5, 1952, work was started on the second and the major grading contract. This was also awarded to Mercer, Fraser Company, Inc., of Eureka, and provides for all grading except that portion of the templet within the existing traveled way; all drainage installation, including storm drain system ranging in size up to 42 inches in diameter; construction and surfacing of two major feeder streets to the grade intersections at 7th and 17th Streets; construction of a frontage road; as well as the myriad of minor contract items such as fencing, guard railing, curbs and sidewalks, monuments, etc.

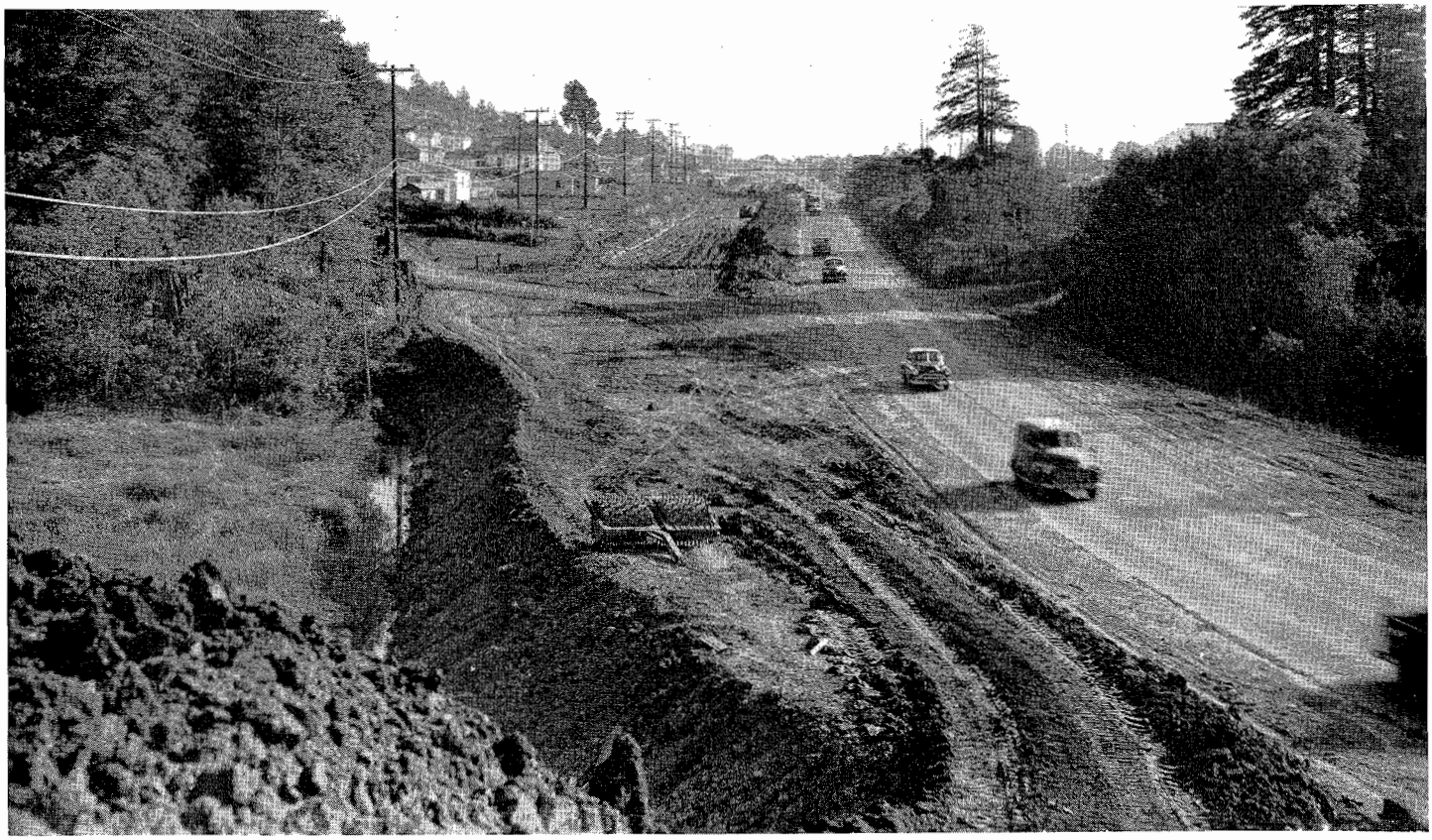
Interesting Problem

An interesting problem was presented on the southerly 0.9 mile of this contract. The planned alignment in this area crosses, in part, a reclaimed portion of Humboldt Bay, which is actually below high tide elevation and is protected from daily flooding by extensive dikes and floodgates. Several tidal sloughs remained, however, in this reclaimed land which were crossed by the new construction. It was apparent that these sloughs, filled with bay mud as they were, would require extensive preparation to provide a suitable foundation for the new road. To provide this foundation, it was decided to strip the sloughs of unsuitable material, wasting the excavation in a disposal area, and backfilling the holes with imported river gravel. This work, completed during 1952, indicates that such construction is a satisfactory solution to obtaining a stable roadbed.

Work on the contract was carried through the winter season of 1952-53, the contractor utilizing the wet months to install the bulk of the planned drainage system. With the resumption of grading this spring, the bugaboo of District I, subsurface water and unstable slopes, became

Looking south from 11th Street crossing showing cribbing on left. Highway lighting will be installed at intersection in middle distance





Construction on north end of project

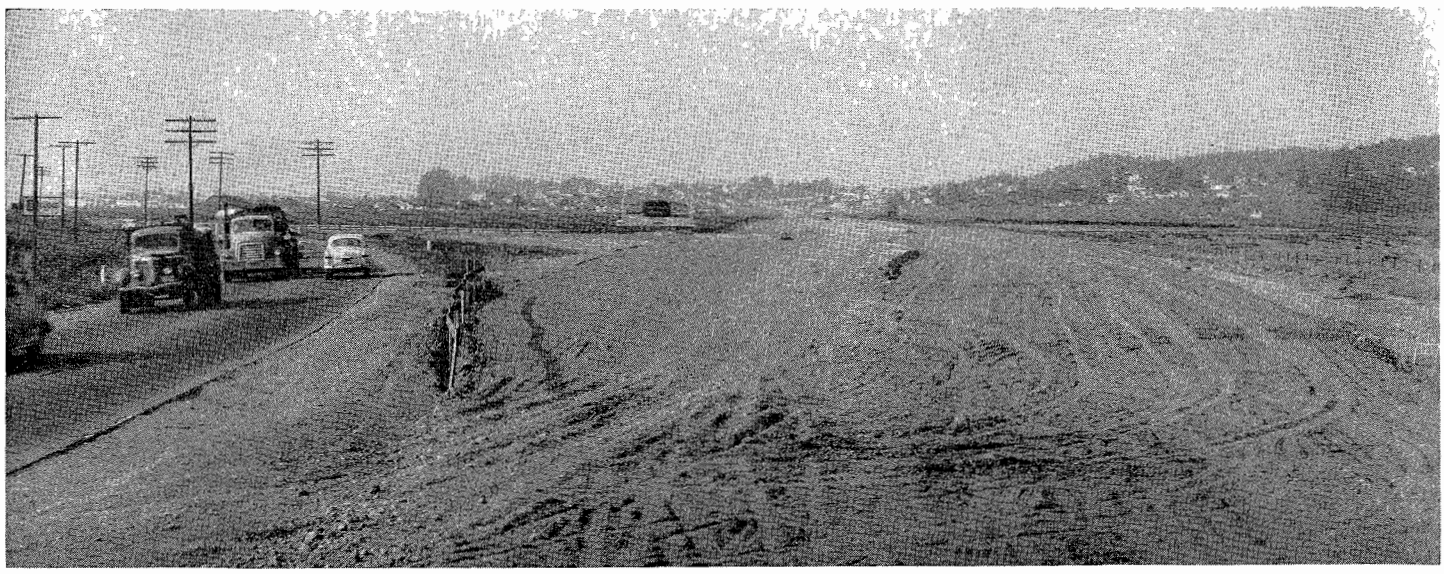
evident. The extensive correction work necessary to insure a stable roadway has served to delay the orderly completion of this contract. However, work is rapidly being completed on corrective measures of underdrain systems; concrete crib slope protection; slope flattening; and the removal of unsuitable basement soils.

December Completion Date

It is estimated that, weather permitting, all work on the grading contract will be completed during December, 1953. Latest estimates indicate that the final cost of this contract will be $702,500, exclusive of engineering charges.

On June 18, 1953, the third contract of this unit was awarded to

Start of construction on south end of project



Mercer, Fraser Company, Inc., of Eureka. This contract provides primarily for surfacing the roadbed completed under the grading contract. Also included in the contract is the excavation of portions of the existing traveled way left undisturbed in the previous contract, as well as the usual items of guide posts, curbs, sidewalks, and planting.

Work was started on this contract on July 20, 1953, with the contractor placing imported subbase material on all prepared subgrade. Present plans provide that all work up to the seal coat stage be completed on the southerly 46 percent of the contract mileage this fall. Concurrent with surfacing will be the graveling of all subgrade as rapidly as it is prepared under the grading contract, the intention being to complete an all-weather road to permit construction of curbs during the winter months.

Subgrade Correction

An extensive plan of subgrade correction was also provided for in this contract for that area between 13th and 15th Streets in Arcata, which work, for various reasons, was not provided for under the grading contract. It is in this zone that deep cuts intersected a Franciscan shoreline of rather unusual formation, consisting mainly of gray ocean sands, interspersed with blue clay. Buried in the depths of the excavation were large drift logs and stumps attesting to the age of the formation and to the present gulch once having been a bay slough.

To stabilize this area, an extensive underdrain system will be installed along with extensive stripping of unsuitable basement soil. This stripping will also include the sub-excavation of "honey-pots," so-called local pockets of quicksand ranging in size from a few square feet to several square yards in area.

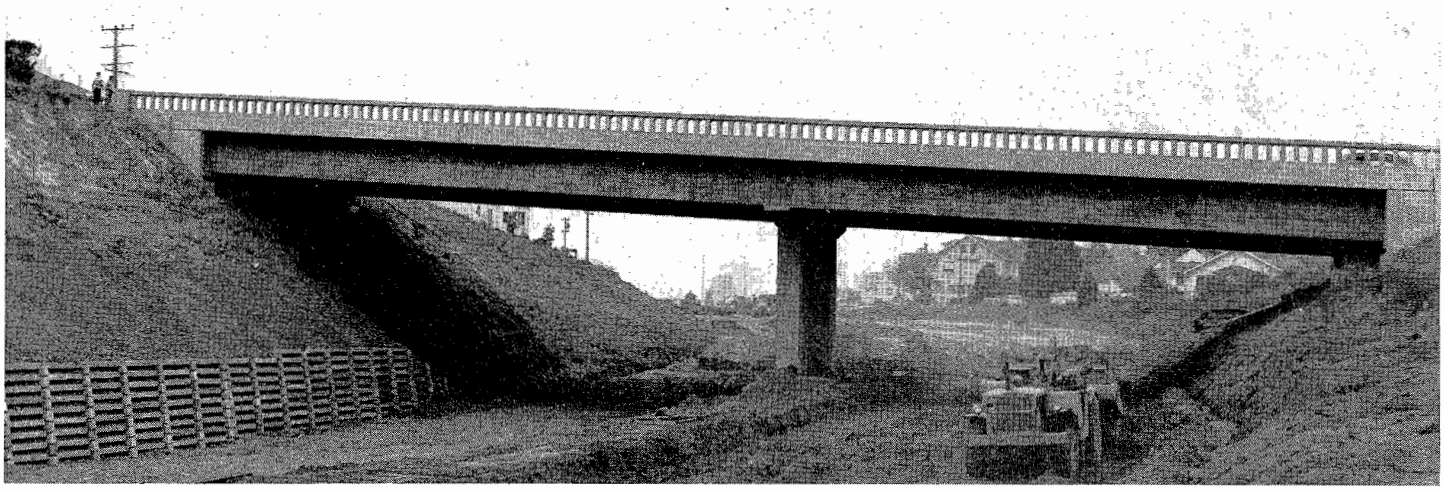
It is estimated that all work will be completed on this contract in early August, 1954. Current estimates are that the completed contract will involve the expenditure of approximately $546,000.

Public Utilities Involved

Concurrent with the work on the three major contracts has been the difficult reconstruction by the owners of the various public utilities usually necessitated on all urban highway construction. The Pacific Gas and Electric Company and the Pacific Telephone and Telegraph Company have completed the extensive relocation of their respective utilities. The City of Arcata has directed and accomplished the major relocation of water lines and sanitary sewer installations. Presently, only minor adjustments will remain to complete this important phase of the project. Work will soon be started on the signal and lighting contract for control of traffic and illumination of the grade intersections at 7th and 17th Streets.

Work on this portion of the Burns Freeway was initiated under District Engineer A. M. Nash, since transferred to District III, and carried on under the direction of District Engineer C. V. Kane and District I's present District Engineer, Alan S. Hart. District Operations Engineer C. P. Sweet, and E. L. Blomquist, District Construction Engineer, have lent their valuable assistance in solving the various problems of construction. The author is the resident engineer on both the grading and surfacing contracts.

In conclusion, it is pertinent to mention that plans and right of way acquisition are being rushed on the remaining units of the Burns Freeway, with the intent of letting major contracts as funds become available. With this assurance for a rapid completion of a modern four-lane highway northerly from Eureka to beyond a new intersection for U. S. 299, the City of Arcata can celebrate her centennial anniversary this year with the knowledge that the social and economic growth in her second century of life will be given great impetus by the completion of the Burns Freeway.



Bulldozer removing unstable material under bridge on bypass

Scotia Bypass

It Eliminates Point of Traffic Congestion on Redwood Highway

By CHARLES P. SWEET, Assistant District Engineer

Tourists and other motorists traveling the Redwood Highway in Humboldt County in years past have encountered a section of highway through the town of Scotia which was narrow, winding, and, at certain hours of the day, badly conjested by the vehicles of mill workers traveling to and from their work or by trucks hauling logs to the mills and manufactured forest products to market. This condition has now been alleviated through completion on September 15, last, of about one and one-half miles of modern four-lane divided expressway bypassing the town.

In planning the bypass, consideration was given to Scotia being the fourth largest town in Humboldt County and the site of the largest redwood manufacturing concern in the world which makes the town and its mills a well known and advertised tourist attraction for Humboldt County and the Redwood Empire.

Thousands of Tourists

Company records show that each year about 12,000 visitors take advantage of the Pacific Lumber Company's offer of a conducted tour through their plants where, from catwalks installed for their convenience and safety, they can view a modern mill cutting logs and manufacturing lumber. Since publication of Frank J. Taylor's article "Paradise with a Waiting List" in the February 24, 1951, *Saturday Evening Post*, the town of Scotia and the manufacture of lumber from giant *Sequoia sempervirens* have attracted national as well as international attention and company officials feel that in future years the number of tourists viewing their operations will show a marked increase.

To provide for this anticipated influx of additional tourists, the company has widened the centrally located street connecting the town with the bypass expressway and rehabilitated the main thoroughfare of the town. This thoroughfare is the abandoned highway that has so well served the public since it was first paved in 1922 with a portland cement concrete pavement 18 feet in width.

Difficult Clearing Job

The bypass constructed directly back of the town traverses a gently sloping hillside, heavily covered with second growth redwood trees sprouted from stumps of trees that had been cut and logged during the year of 1889. In the area cleared for the expressway, there were over 600 stumps and trees with the stumps varying in diameter up to a maximum of 19 feet. These trees and stumps were removed in cutting and blasting with the resulting debris hauled to disposal sites. Such clearing is difficult and expensive with the cost of this item of work amounting to over $80,000 for the 33½ acres involved.

An unanticipated item of clearing involved the removal of redwood logs and stumps from some 40 feet below the ground surface. It is believed that in years B. C., a major landslide occurred in the hillside now traversed by the new highway and that those redwood trees in the path of the landslide were felled, broken, then covered under tons of earth. These broken boles of trees and upright stumps were uncovered while excavating the major cut on the project with one stump measuring about nine feet in diameter. Considering that stumps of trees 15 feet in diameter had been encountered on the ground surface above the nine-foot stump, one can conjecture that the first-growth of the destroyed portion of the redwood forest started many centuries ago.

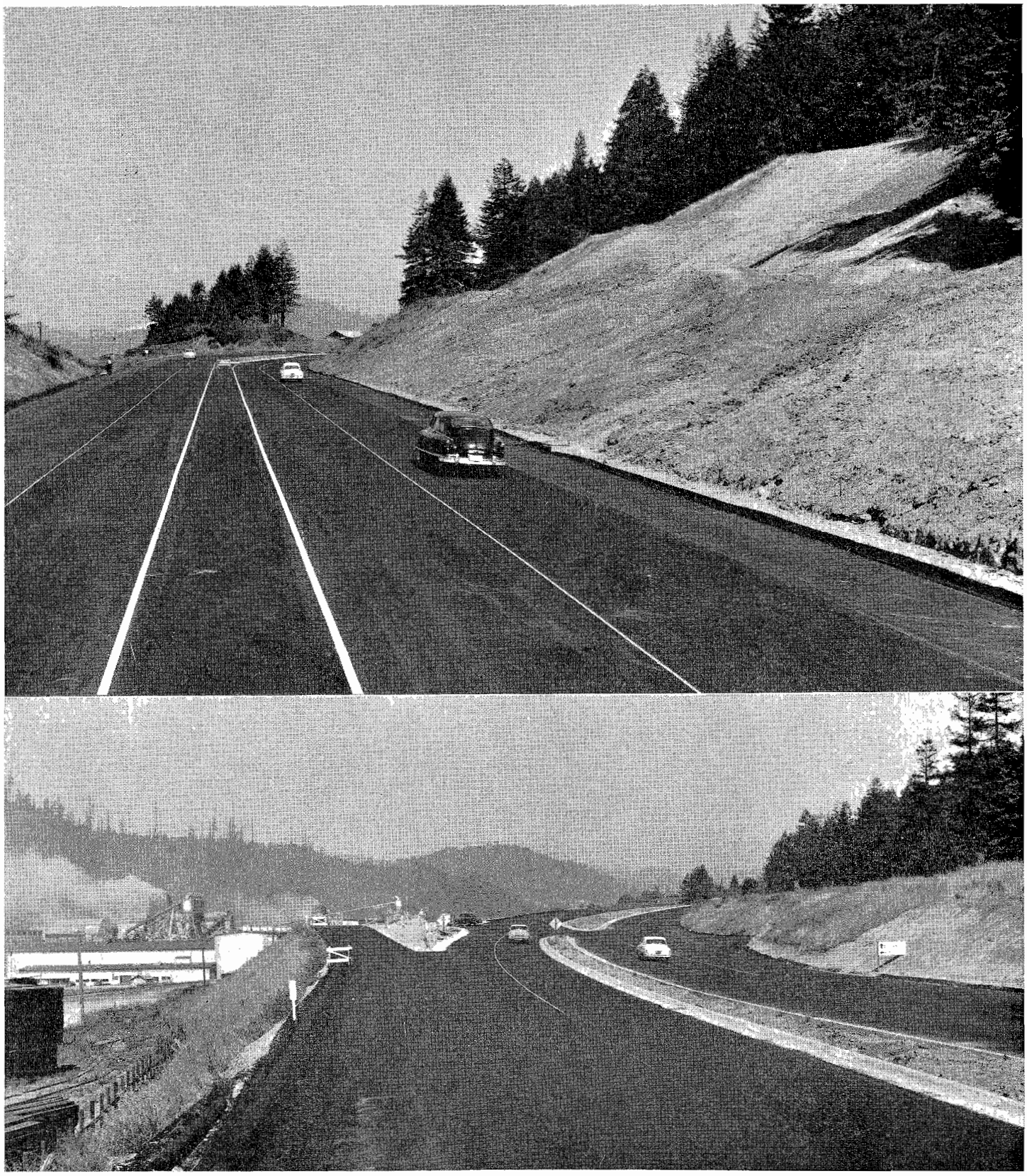
It was also interesting to note that the wood in the shattered tree trunks was in a well-preserved condition though the distinctive color of red had been altered by being buried for such a length of time in a wet blue clay.

Roadway excavation, amounting to about 340,000 cubic yards, was removed with either tractor-pulled carryalls or carryalls pulled by rubber-tired equipment with about 177,000 cubic yards being disposed of along the banks of the Eel River. Such a large percentage of excess excavation permitted the utilization of only the driest and most suitable material in the construction of embankments. River gravel, obtained from readily accessible bars in Eel River, was used for subbase material with a designed depth varying from 12 to 18 inches, which depth was increased to a maximum of 24 inches when wet plastic soils were encountered in cut section.

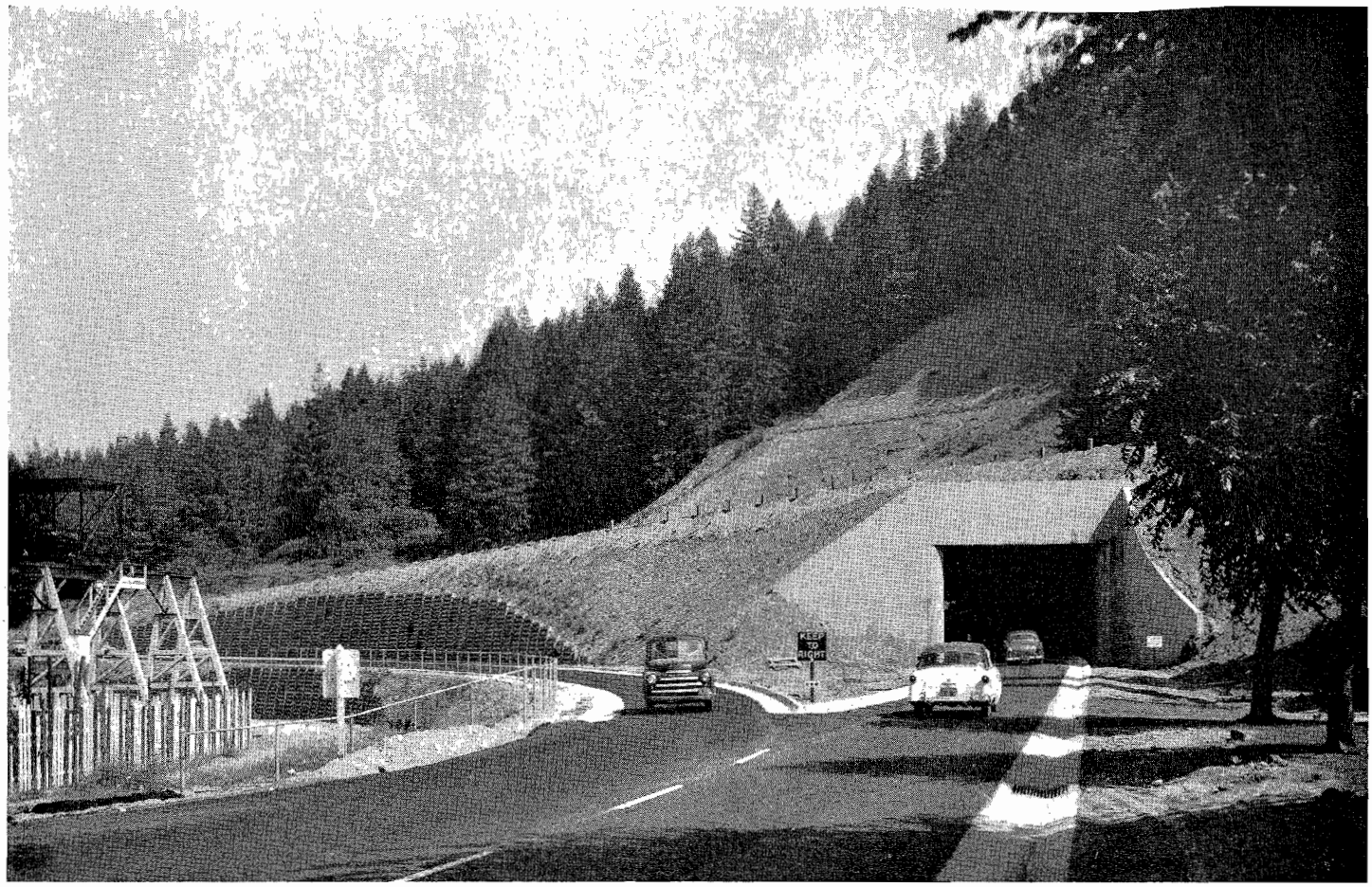
Experience has shown that in this section of California where rains of varying intensity may be anticipated during the period from October to May, the resulting saturated condition of the ground necessitates adequate drainage of embankment foundations to insure immediate as well as future stability of the highway. This desirable condition is attempted and usually obtained by removing the top soil within the foundation area and placing a blanket of gravel over the exposed underlying soil. As such foundation treatment is difficult to estimate during the planning of a project, an increase in the items of work involved may be anticipated during the progress of the work, with this project being no exception. Additional embankment stabilization, backfill of unsuitable subgrade excavation and increased depths of subbase over poor subgrade required an increase of nearly 28,000 tons to the estimated quantity of 85,000 tons of river gravel subbase material.

Hillside Stability Problem

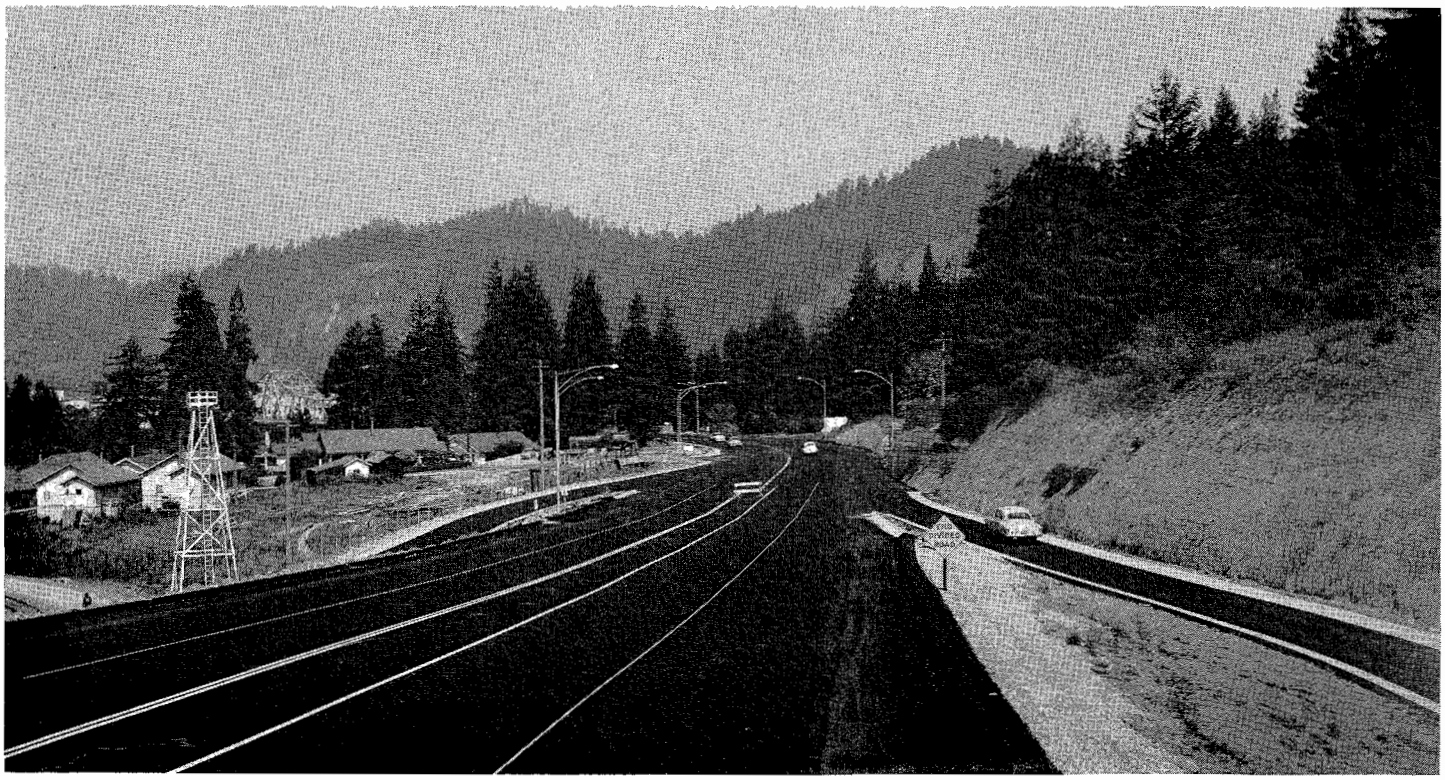
Prior to the severe storm period of the 1952-1953 winter season, the stability of the hillside within the ancient slide area above the town caused considerable concern as a heavy sur-



UPPER—Slide area on Scotia Bypass which has been stabilized. LOWER—South end of project looking north showing connection to old highway south of Scotia.



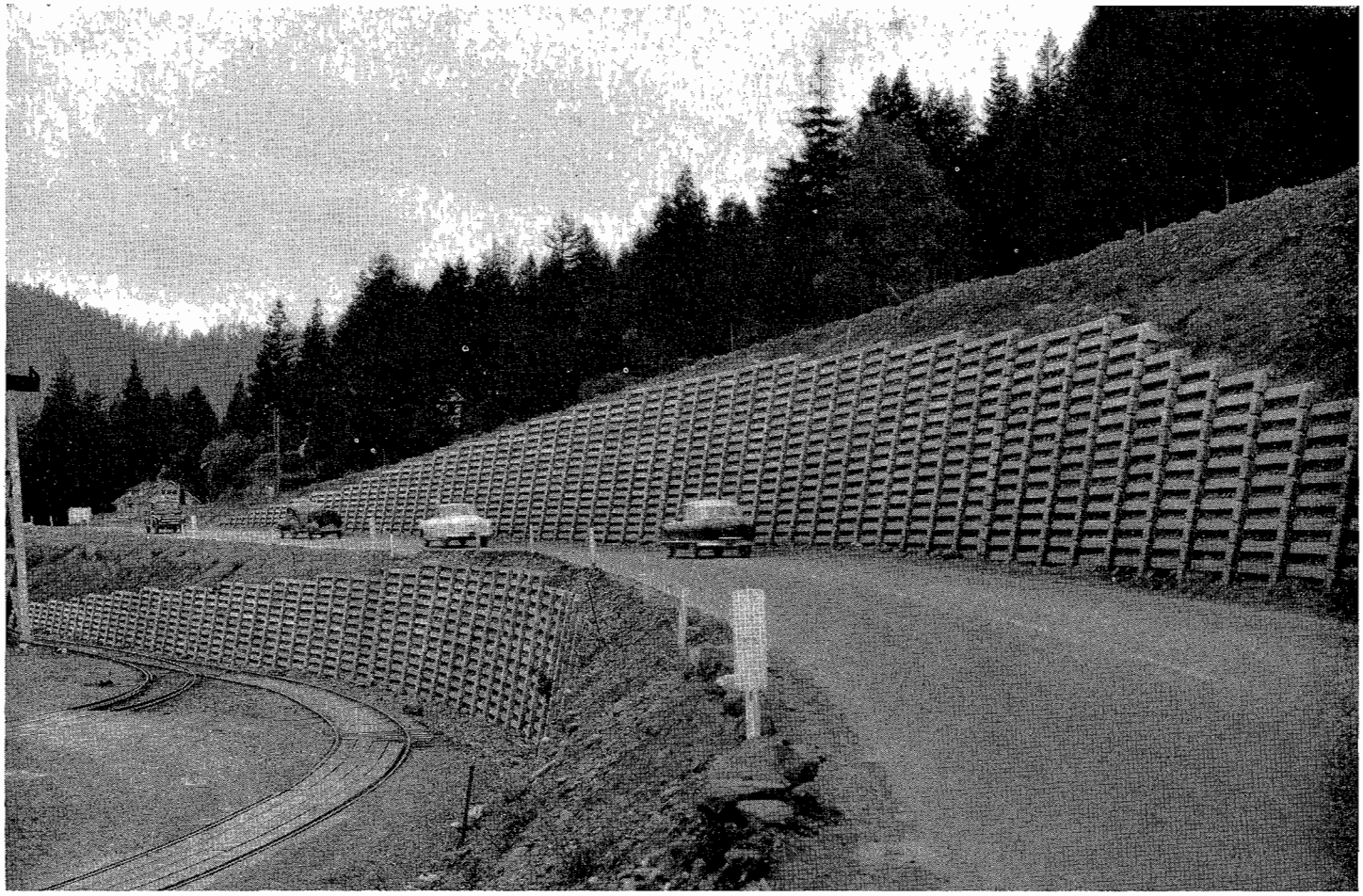
UPPER—Bypass undercrossing showing on-ramp underpass and off-ramp at north end of project. LOWER—Freeway looking north—Scotia Bridge in distance.



charge consisting of two 250,000-gallon water tanks was located about 200 feet from the centerline. These water tanks are a part of the Scotia water supply system and obviously any damage to these tanks from either settlement or sliding would become a serious problem and constitute a costly repair project. In collaboration with the Materials and Research Department, 23 horizontal drains were drilled into the hillside below and under the water tanks with a McCarthy rock-boring machine equipped with a continuous flight auger. A maximum initial flow of 18,000 gallons per day was obtained in one drain with about 5,800 gallons per day flowing from all drains during a relatively dry period during the winter season. It was estimated that this flow increased from three to four times during periods of heavy rainfall. Though slides have occurred in the hillside above the new highway in the vicinity of the water tanks, the horizontal drains placed at a nominal expenditure of $4,950 have prevented any slides occurring in the area drained by the installation.

Extensive Crib Structure

A company-owned railroad, hotel and other improvement at the northerly end of the town imposed horizontal restrictions on the location and design of a suitable intersection for traffic entering or leaving Scotia, and a transition from a four- to a two-lane pavement to fit the two-lane north Scotia Bridge. It was therefore necessary to resort to construction of an extensive structure of reinforced concrete crib members to restrain the freeway embankment and permit the construction of an off-ramp embankment without encroaching onto the bed of the adjacent railroad. A reinforced concrete underpass was constructed below the freeway for the on-ramp. The completed transition and grade intersection, to be lighted under a separate contract, provides a pleasing and attractive appearance within a restricted area and should show a minimum of accidents over the years because of its advanced design.



Reinforced concrete cribs north of Scotia

Superintendent William J. Rowland ably represented Contractor Fredrickson and Brothers in prosecuting the work which was supervised for the State by District Engineer Alan S. Hart and Resident Engineer H. M. Hansen during 1951 and 1952 and Resident Engineer E. J. Reed, Jr., during 1953.

San Rafael Freeway

San Quentin Wye Structure Eliminates Traffic Hazards

By E. J. CARTER, Resident Engineer

SINCE ITS INITIAL construction in 1929, the section of state highway Route U. S. 101, between the San Rafael Viaduct and the California Park Overhead in Marin County has been the scene of rapid growth. Constant increase in traffic has required almost continual expansion of the highway facilities.

In 1941 this section was widened to four lanes with a four-foot dividing strip and the construction of frontage roads. Continued increase in daily traffic (31,600 ADT, March, 52) and the increased congestion at the San Quentin Wye intersection near the California Park Overhead warranted reconstruction to full freeway standards.

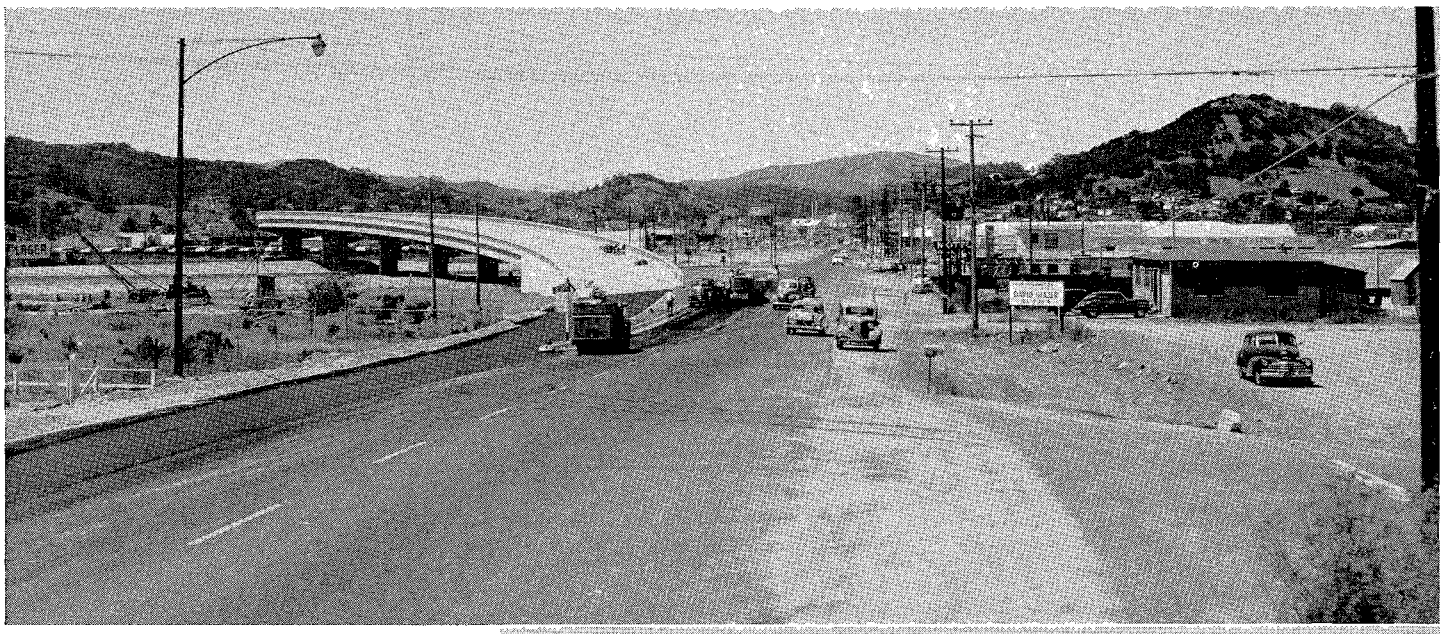
This section being located over swampy lands adjacent to an arm of San Francisco Bay had continually settled and required restoration of grade to maintain a profile above high tides.

Alter Frontage Roads

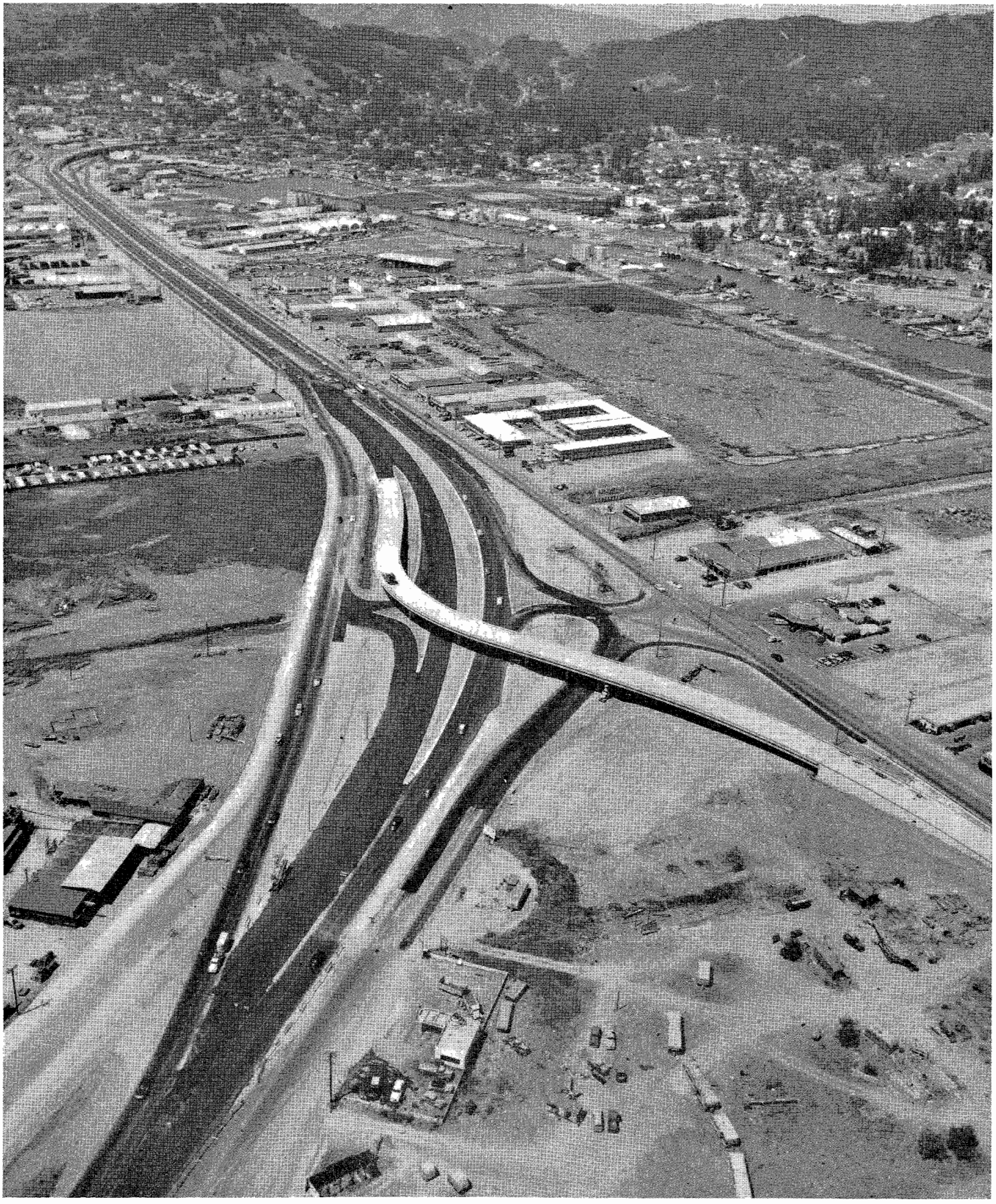
During periods of high tides and heavy runoff from winter rains the frontage roads were frequently inundated making travel thereon slow and hazardous and the cause of many complaints.

On this project the existing frontage roads are being raised and moved outward from the highway to pro-

Construction of overcrossing looking northwest toward San Rafael



Looking south on U. S. 101 toward new overcrossing at San Quentin Wye



Aerial view of San Quentin Wye separation structure

vide standard two-lane two-way roads for service to business properties, and the freeway is being reconstructed to six lanes with a 12-foot raised bar median strip and physically separated from the frontage roads by a four-foot chain link fence. The frontage roads are looped together under the existing railroad overhead at California Park. This provision, together with the already existing local road undercrossing at the San Rafael Viaduct, permits complete freedom and interchange of traffic between the business sections on either side of the freeway for the one-mile length of the business district.

Separation Structure

The existing grade intersection at the San Quentin Wye will be eliminated by construction of an 1,100-foot reinforced concrete box girder separation structure which will carry Richmond-bound traffic to the left over opposing northbound traffic.

The overcrossing consists of two 190-foot abutment sections and 11 box girder spans supported on rectangular single column bents. The structure sweeping gracefully in gentle reversing curves as it carries Richmond-bound traffic above all surface interference bringing it down onto the almost parallel route to the left, presents a very pleasing appearance. The grace and simplicity afforded by the long spans and the slender single column piers does not screen off the roadside establishments.

Completion of this project, scheduled for late in October, will provide the primary traffic interchange between the Richmond-San Rafael bridge, which is now under construction, and the Redwood Highway. Freeway construction on the Redwood Highway now totals approximately 19+ miles between the California Park Overhead south of San Rafael and Petaluma.

The project is being financed from state highway gas tax funds and federal aid funds and is under the general supervision of Assistant State Highway Engineer, B. W. Booker; E. J. Carter is the resident Engineer.

The work of reconstructing the Waldo Grade to freeway standards is scheduled for completion in 1955. Plans are being developed which will provide modern traffic interchanges to replace the three remaining signalized intersections beween San Rafael and the Golden Gate Bridge. The ultimate completed program will render the highest type of automotive traffic service to the North Bay communities and will provide excellent through traffic facilities for Redwood Empire commerce.

Bids were opened in Sacramento on September 12, 1951, for a freeway project between Myrtle Avenue and the California Park Overhead in Marin County, a distance of approximately two miles.

The contract was awarded to the low bidder, a joint venture combination of A. G. Raisch Co. of San Rafael and the Lew Jones Construction Co. of San Jose on September 21, 1951.

VETERAN STATE EMPLOYEES GET SERVICE PINS

Anson Boyd, State Architect, on September 11, presented Twenty Five Years of Service Certificates and lapel pins to the following members of the Division of Architecture:

Merle A. Ewing, Principal Structural Engineer;
Clifford L. Iverson, Chief Architectural Draftsman;
O. E. Anderson, Supervising Mechanical and Electrical Engineer;
Albert Keating, Supervising Architectural Draftsman;
Frank J. Chan, Structural Engineering Associate;
Mrs. Katherine E. Zarzana, Intermediate Typist-clerk.

Ewing, Principal Structural Engineer, is in charge of the Sacramento office of the Schoolhouse Section of the Division of Architecture, responsible directly to the Chief Construction Engineer, and through him, to the State Architect. The Schoolhouse Section is responsible for the structural checking of all public school building plans in the Central Valley area of the State, extending from Porterville on the south to the Oregon border on the north.

Iverson, Chief Architectural Draftsman, has been with the State of California over 25 years, and during that period of time has seen the drafting room of the division grow from only a very few people to an organization now in excess of 300 draftsmen. He is responsible for all architectural drafting, and the coordination of architectural drawings in their final stages with the work of the specialist sections such as mechanical engineering, electrical engineering, structural, etc.

Anderson, Supervising Mechanical and Electrical Engineer, is in charge of the mechanical engineering function of the division in Northern California, which embodies that portion of the State lying north of the line of the Tehachapi Mountains. He is a Principal Assistant under Carl Henderlong, Principal Mechanical and Electrical Engineer.

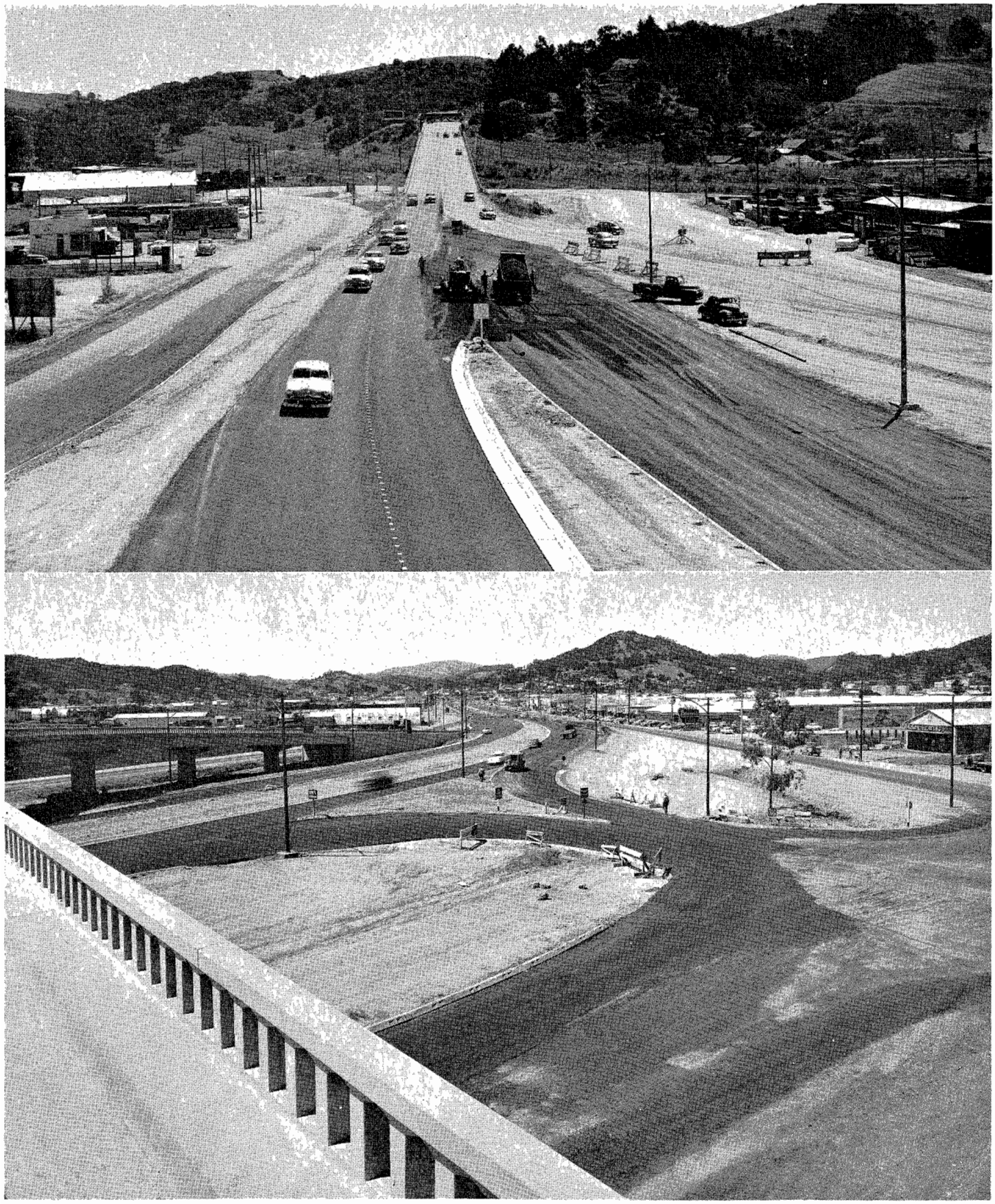
Keating, Supervising Architectural Draftsman, is Iverson's Principal Assistant, and is in direct supervision of the approximately 250 architectural draftsmen located in the Sacramento office.

Chan, Structural Engineering Associate, is employed in the Structural Engineering Section of the Division of Architecture's Sacramento office.

Mrs. Katherine E. Zarzana is employed in the Contract Section of the division, and her entire state career has been in the same position. Through her long service with the State she is responsible for the actual preparation of construction contracts for all projects throughout the State of California, and is Carleton Pierson's confidential assistant. Pierson heads up the Contracts Section for the State Architect.

CAREFUL DRIVERS

You may be a careful driver, but are you careful enough to allow for the possible carelessness of the other driver? By keeping speed down to such levels as to allow complete control of your car in any emergency, you can help save a life, possibly your own.



UPPER—Looking south from overcrossing toward San Francisco. LOWER—Construction looking north from separation structure toward San Rafael.

Ground Breaking

Largest Single Highway Contract Undertaken on Waldo Approach

START of construction on the Golden Gate Freeway approach in Marin County, a seven-million-dollar project, was observed with ground-breaking ceremonies near the south entrance of the Waldo Tunnel on September 22d.

Led by Director of Public Works Frank B. Durkee, engineers on the staff of State Highway Engineer George T. McCoy, and Highway Commissioner Walter Sandelin of Ukiah, joined with officials of the U. S. Bureau of Public Roads, the U. S. Forest Service, supervisors and state legislators of Redwood Empire counties, ranking officers of the Army and Navy, officials of San Francisco and Sausalito, representatives of the Sausalito Chamber of Commerce, the Redwood Empire Association and the Golden Gate Bridge and Highway District in celebrating the occasion. The official ground breaking and a luncheon at the Alta Mira Hotel in Sausalito was staged under the direction of Clyde Edmondson, general manager of the association.

Biggest Highway Contract

The Golden Gate Bridge and Highway District was responsible for negotiating a five-million-dollar loan of state funds for the project. The initial contract in the amount of $4,122,382, which got under way on September 22d, is the largest ever let on the California State Highway System. The contractor is Guy F. Atkinson Company, South San Francisco.

Clifford Bartlett, Marin County, vice president for the Redwood Empire Association, served as master of ceremonies after Lee H. McLeod, president of the association, officially welcomed guests.

Joseph Diviny, president of the Golden Gate Bridge and Highway District, had a seat of honor on the bulldozer which turned over the first earth.

Speakers at the official ground breaking included State Highway Engineer McCoy, Congressman William S. Mailliard, San Francisco; Highway Commissioner Sandelin, E. E. Safford, Willits, president of the Redwood Empire supervisors unit; Arthur J. Schilder, Ukiah, association executive board member and past president; Sylvester J. McAtee, mayor of Sausalito; and Shirley Morgan, president of the Sausalito Chamber of Commerce.

HIGHWAY COMMISSIONER WALTER SANDELIN

Durkee Principal Speaker

Public Works Director Durkee and George P. Anderson, of the Golden Gate Bridge and Highway District, were the principal speakers at the luncheon at which the guest list included Dan Gallagher, sheriff of San Francisco, representing Mayor Elmer E. Robinson; William D. Fusselman, chairman of the Marin County Board of Supervisors; Rear Admiral John R. Redman, representing Vice Admiral F. S. Low, deputy commander for the Western Sea Frontier and Pacific Reserve Fleet; Lt. Col. Edward Maguire, representing Lt. General James Swing, commanding general of the Sixth Army.

State Highway Engineer McCoy took pleasure in attending the ceremonies for more than one reason. His son, George T. McCoy, Jr., 33, is general superintendent for the contractor on the $4,122,382 job.

Record Contract

The Atkinson bid established an all-time high for a single highway project in the State. Previous record-holder was the five-mile extension of the Bayshore Freeway from San Mateo to San Carlos, for which a $3,749,142 contract was awarded recently.

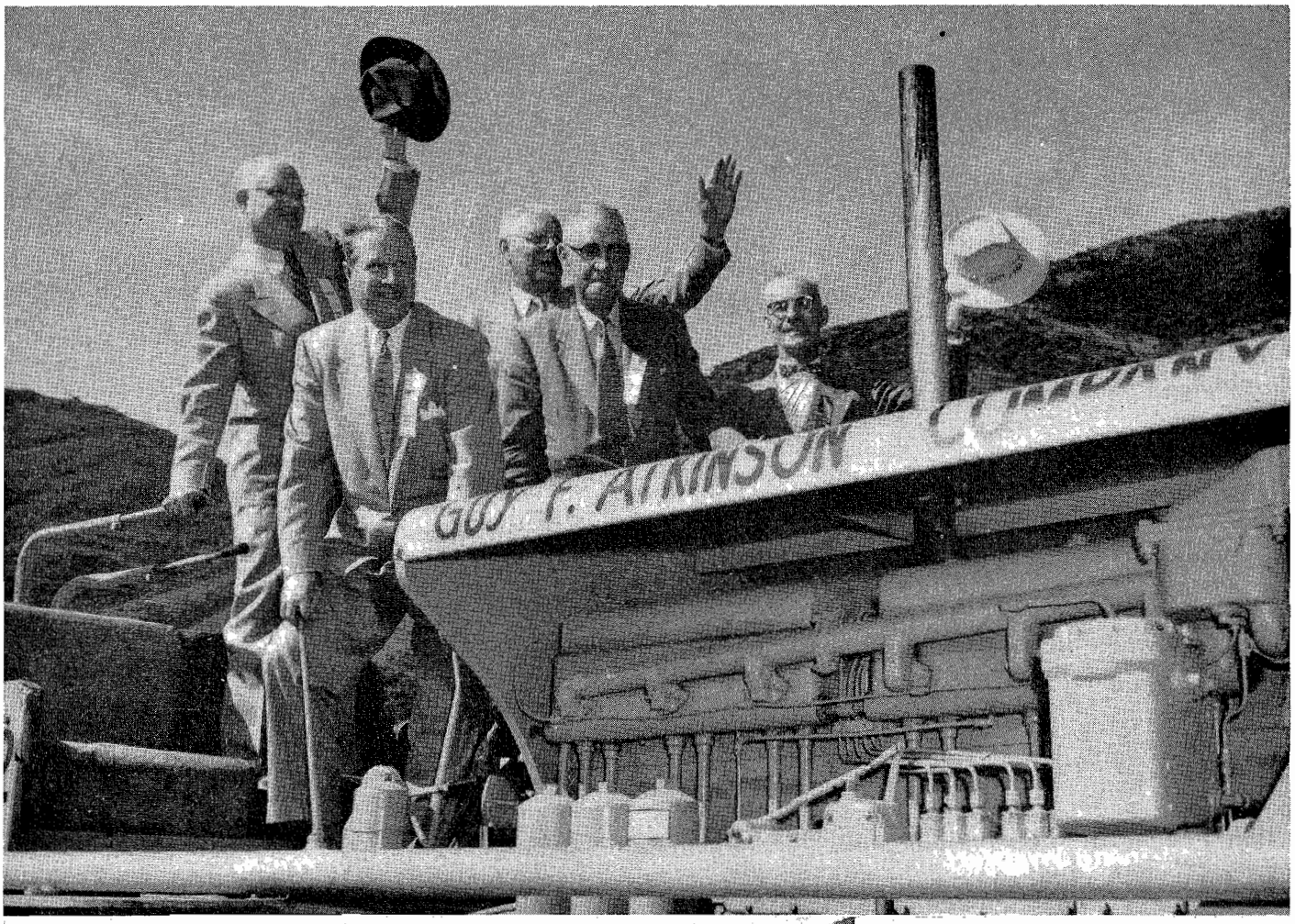
Eight firms submitted bids to the Division of Highways on the Waldo job, which also claims another record for the highest number of construction items ever contained in a state highway contract. The bid form for the Waldo project lists 142 separate items to be performed by the contractor.

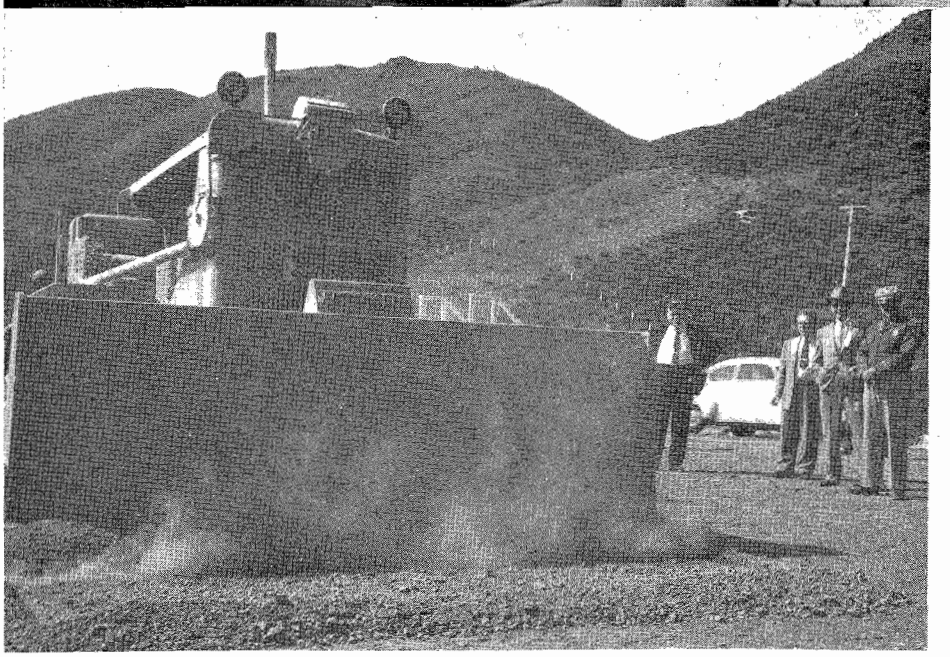
In addition to reconstructing the existing four-lane highway as a divided, six-lane freeway, the project also includes the construction of a 1,000-foot-long highway tunnel, two side-hill viaducts each approximately 300 feet long, an overcrossing, an undercrossing, extension of two existing undercrossings and extension of the military tunnel that passes under the freeway in the Fort Baker area just north of the Golden Gate Bridge.

Two Roadways

The existing highway will be converted to a three-lane roadway for southbound traffic. An additional three lanes will be constructed for northbound traffic along the east side of the present road except for a half mile section just north of Monte Mar Drive in Sausalito where the new roadway will lie along the west side of the existing highway. The two roadways will be divided throughout by a curbed median strip.

The new highway tunnel will be 1,000 feet long and lined with rein-





UPPER—On deck of groundbreaking bulldozer. LEFT TO RIGHT—Director of Public Works Frank B. Durkee, Joseph Diviny, President, Golden Gate Bridge and Highway District; Highway Commissioner, Walter Sandelin, State Highway Engineer, George T. McCoy, Lee H. McLeod. LOWER—Bulldozer breaks ground.

forced concrete. It will provide a clear roadway width of 40 feet and will be located parallel to and east of the existing Waldo Tunnel to accommodate northbound traffic.

The two sidehill viaducts will be situated just north of the new tunnel. They will be reinforced concrete girder structures and each will provide a clear roadway width of 40 feet.

Traffic Interchange

A traffic interchange will be constructed near the summit of the Waldo Grade to serve traffic to and from Sausalito. Because of the steepness of the terrain this interchange will require a 314-foot bridge to carry traffic over the freeway at Spencer Avenue, as well as an undercrossing about midway between Spencer Avenue and Monte Mar Drive.

The long military tunnel passing under the highway in the Fort Baker

area will be extended 108 feet to the east.

In addition, the existing interchanges at the Sausalito lateral and at Marin City will be extended to handle the roadway for northbound traffic.

Execution of the work is planned in two stages. The contract to be awarded on the basis of the bids just opened will take care of the grading and structures, including the tunnel, and those portions of the base and surfacing required for the convenience of traffic, and is expected to be completed by the end of 1954.

Second Contract Planned

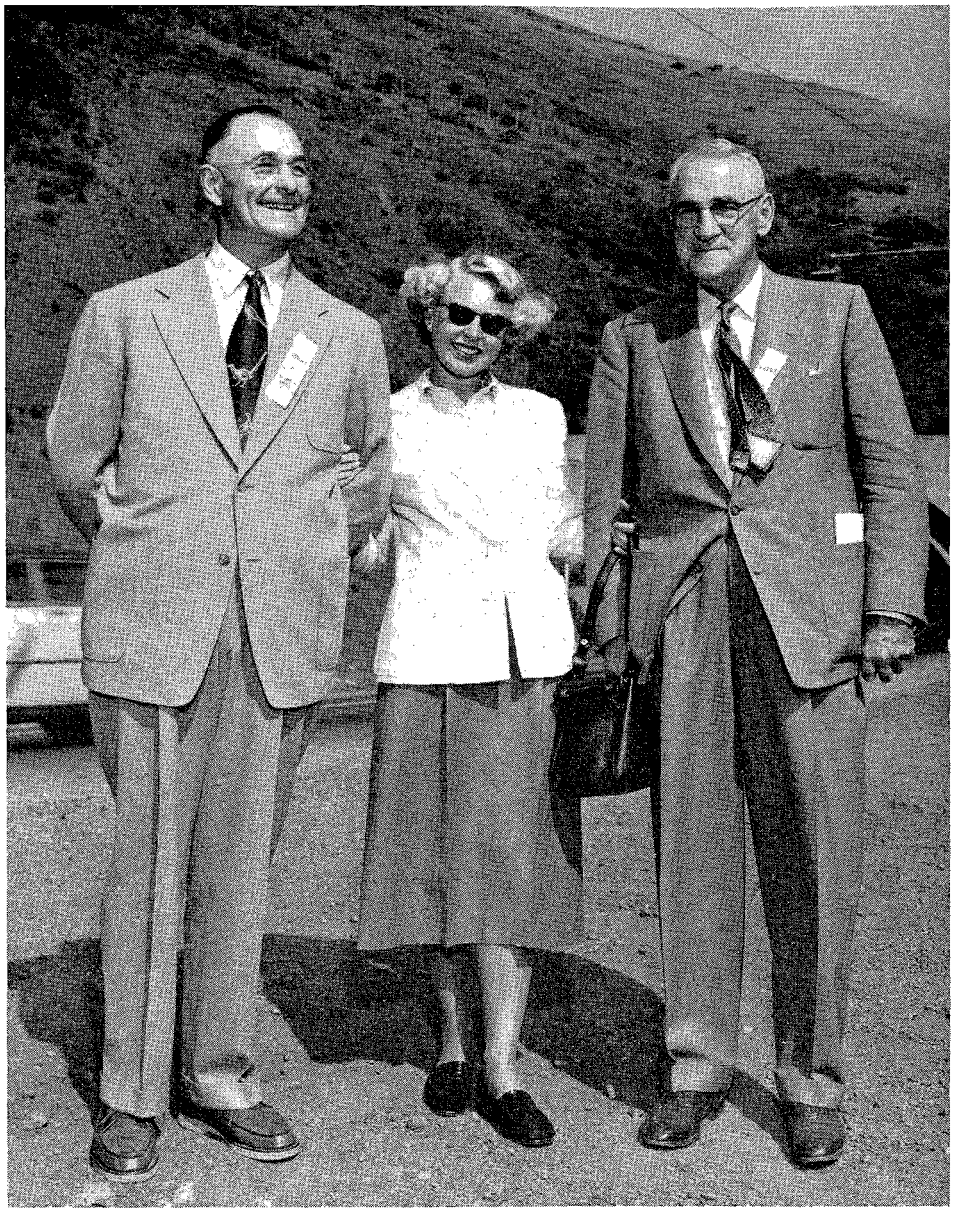
When the first contract is completed, a second contract will be let to take care of the remaining base and surfacing, the median strip between the two roadways and other incidental installations.

The project will be financed largely from Golden Gate Bridge toll funds. A recent legislative act authorized the Golden Gate Bridge and Highway District to advance approximately $5,000,000 against future bridge toll revenues. The remaining funds will be provided from state highway revenue.

This section of U. S. 101 was declared a freeway by the California Highway Commission in May, 1947. Freeway agreements were executed with Marin County and the City of Sausalito in April of this year.

Right of way is being acquired on a full freeway basis throughout. This will result in only four vehicular entrances within the limits of the project, all by means of traffic interchanges.

Recent traffic counts show that this section of U. S. 101 is presently carrying more than 25,000 vehicles a day.



Attractive Mrs. Ann Jackson of San Rafael, Junior Engineer in office of Assistant State Highway Engineer B. W. Booker, poses with Earl Withcombe, Assistant State Highway Engineer (Construction), left, and State Highway Engineer George T. McCoy. Mrs. Jackson, honor graduate in engineering, University of Utah, '51, is in the field office, Division of Highways, on the Waldo project.

"LITTERBUG"

"Litterbug" is the term now being applied to motorists who leave trash at picnic spots, dispose of cans or waste by tossing it along the side of the road, and otherwise deface the countryside. The California State Automobile Association is urging motorists to carry a paper bag in the car for accumulated trash. Then it can be disposed of properly during or at the end of the trip, instead of being littered along the roadsides.

SCHOOL USES MAGAZINE

RANCHITO SCHOOL DISTRICT

MR. KENNETH ADAMS, *Editor*

DEAR MR. ADAMS: Although the children I teach are only fourth graders, we get much information from your magazine that we can use in our study of California.

Each time the magazine comes I feel fortunate to be able to have such a fine, well written, publication.

MRS. DOROTHY POMEROY
(Fourth Grade Teacher)

"FOLLOW THE LEADER"

Don't play "follow the leader" in traffic, advises the National Automobile Club. Just because the other fellow slipped through that stop sign or cut in on that other car is no indication that you can do so safely. When you indulge in such tricks, you are taking those long chances that lead to a short life.

Tough Survey

Old Bridgeport Wagon Road Will Finally Be Made Highway

By J. H. CREED, District Design Engineer

EIGHTY-ODD years ago, the residents of Bridgeport Valley in Mono County constructed a wagon road of sorts down the East Walker River to Smith Valley in Nevada. It followed the line of least resistance, hugging the narrow benches along the river and meandering across the flats according to the whim of the roadbuilder. Some thought was given to keeping it with a south exposure on account of snow conditions, and this condition, together with the avoidance of heavy grading, dictated two crossings of the river.

At that time, the river varied from a brawling torrent running several thousand second-feet in the late spring, to a medium-sized creek in the late summer, fall and winter. Bridging it must have presented some problems, but the early settlers of the area were a hardy lot.

Relocated in 1923

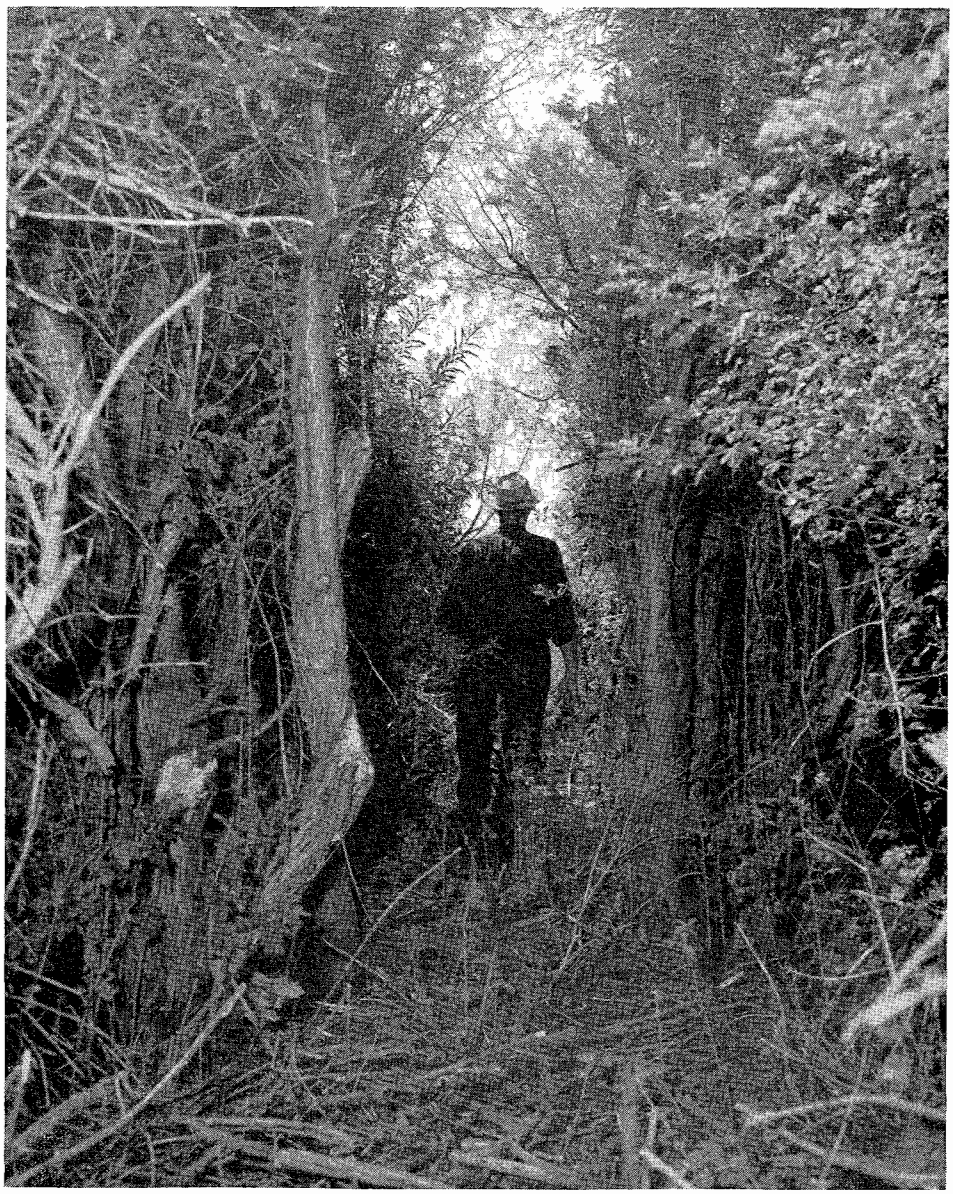
Small changes in the road were made from time to time, and in 1923, the first five miles out of Bridgeport were relocated to get above the flood line of the East Walker River Reservoir, the dam for which was completed that year. With the exception of this change, the location of the road seems to have been stabilized at its present position by 1880. Government land survey notes of that date show it to be practically in the same place as it is today.

In 1933, the road was taken into the State Highway System, and all 13 miles of it began to have a face lifting of sorts.

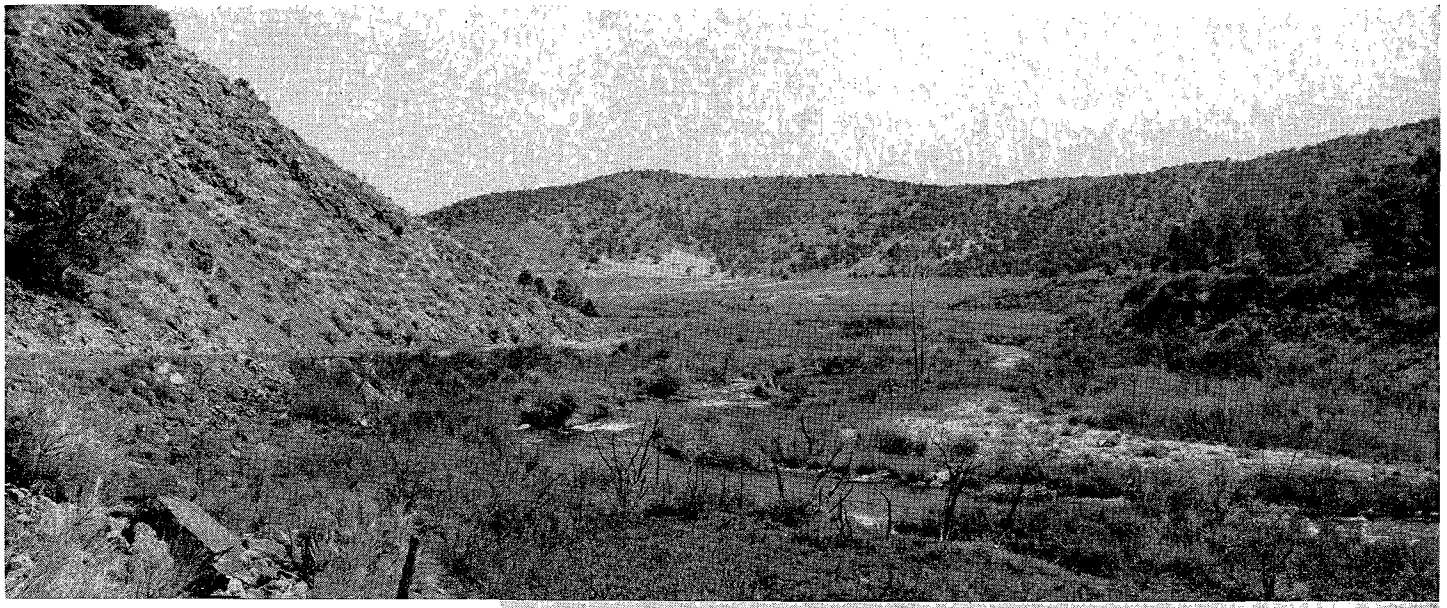
Maintenance Costs High

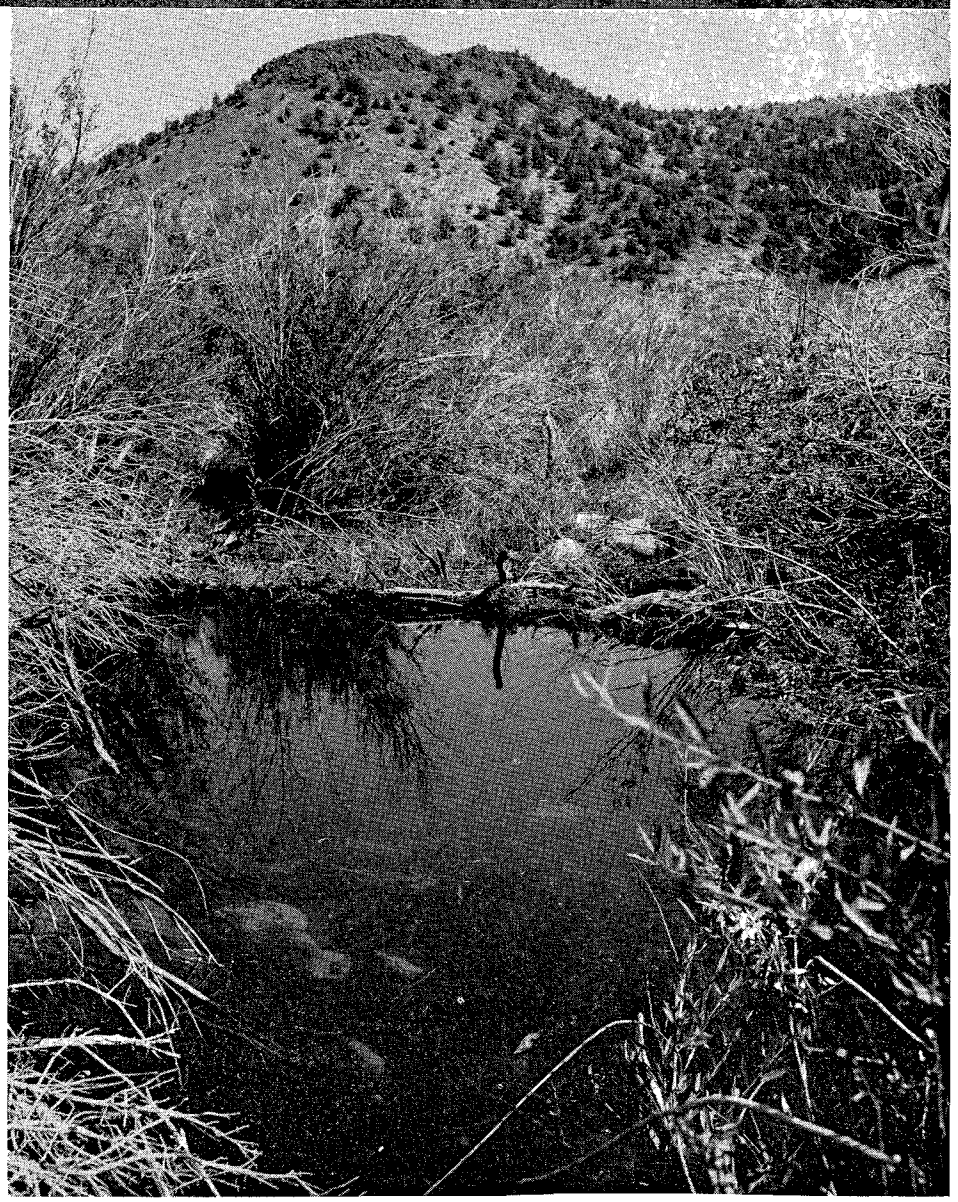
The first five miles from Bridgeport to the dam is in rather easy rolling country, and was rebuilt to reasonable standards. The next eight miles is through more rugged country, and the cost of rebuilding could not be financed. A very minor improvement project was done to get a two-way roadway, and the local material was oiled. Due to low grade line, poor drainage and lack of good base or surfacing, the maintenance cost is prohibitive, involving annual reworking of the surfacing and extensive shoulder repair and other operations.

In Nevada, a modern highway has been constructed right up to the state line, and the contrast between it and the California road is unfavorable. An average speed from the Nevada line



Section of cleared line. This is typical of terrain through which survey was made.





UPPER—East Walker River. LOWER—Beaver dams flood survey line.

to the dam of over 25 miles per hour involves considerable reckless driving.

New Highway Design

With all these factors in mind, a project to rebuild this portion was included in the 1952 planning program and surveys were started. Due to the regulation of the river, it is now possible to take advantage of the old overflow flats, and a design is being worked up which will make a safe over-all driving speed of 50 miles per hour possible. This will halve the present driving time and make a vast improvement in the comfort and safety of the trip.

At present, the travel on this route is rather light but it is by far the most direct connection between Yerington, Nevada, and Southern California, and when improved will undoubtedly attract a greatly increased volume of traffic.

Survey Problems

Surveying the line has presented many difficulties. Much of the work has involved cutting through brush so thick that even the snakes are reputed to go around it. At one location, the beavers have persisted in building dams in the overflow channels, and flooding the line. The river generally carries around 600 second-feet of water in a steep, boulder-

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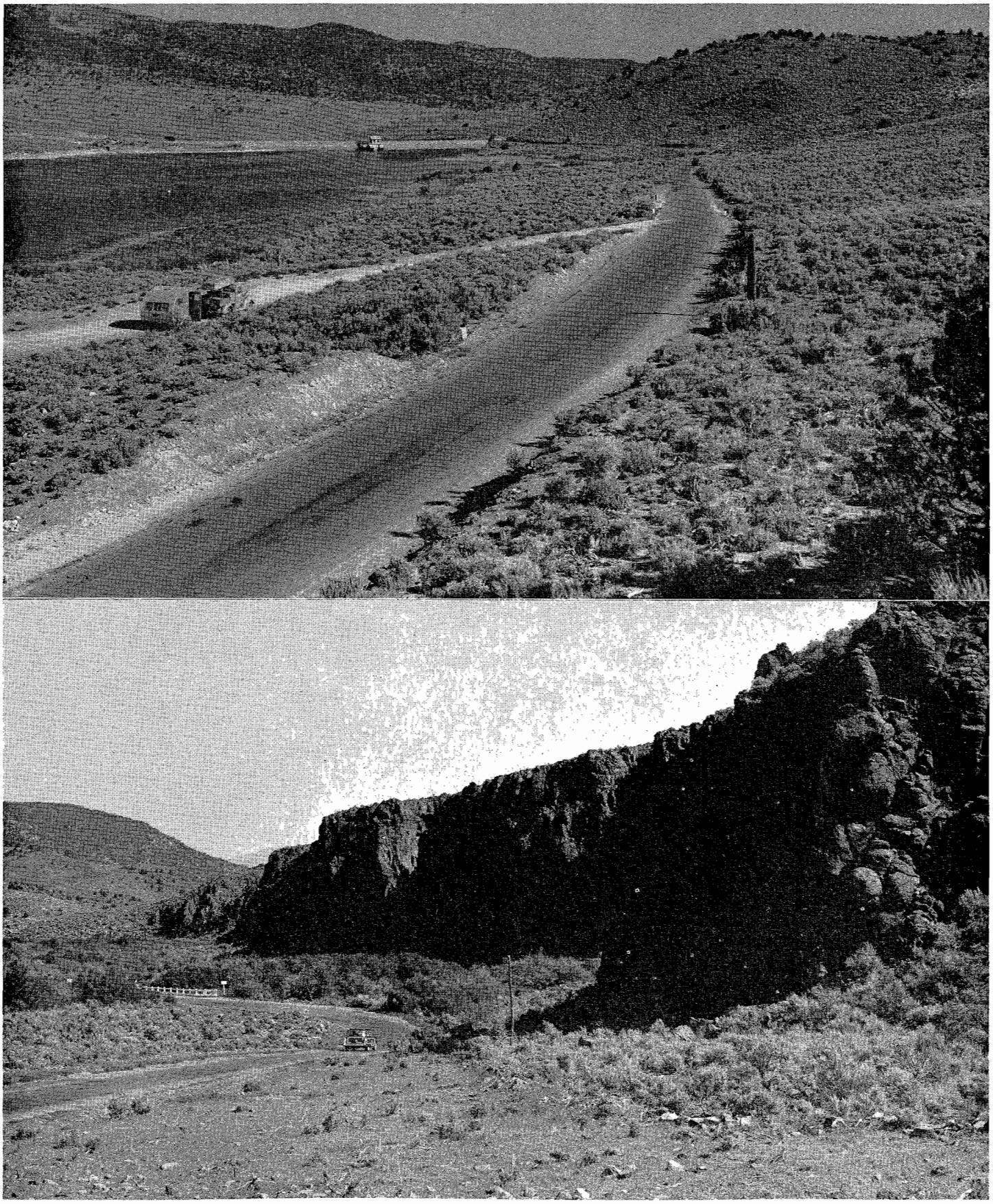


UPPER—This was the beginning of the survey. LOWER—Section of existing pioneer road.

Beckwourth Pass

Story of Old Road Told in Discoverer's Own Words

By H. CLYDE AMESBURY, District Traffic Engineer

THIS YEAR the Division of Highways completed an improvement on U. S. Route 24 extending from the Susanville-Reno Highway about 4¼ miles to the west. This includes most of the section through Beckwourth Pass.

With this completed improvement of Beckwourth Pass, one of the worst bottlenecks on the Feather River Highway, especially for truck traffic, will be removed.

The original highway, which is replaced, was never built to planned standards. It had a surface of about 20 feet in width. There was one grade crossing of the Western Pacific Railroad and several abrupt short radius curves. Grades were up to 12 percent. It was on the north slope of the hill near the bottom of the pass. In the winter storms, snow blew in and lodged. It was very difficult for the maintenance department to keep the road open during snow storms when accompanied by high winds. There was no place to buck the snow.

The new location is on the same side of the pass but higher on the slope. In place of the numerous curves there are only two. These are of long radius. The roadbed is 32 feet wide. The railroad is crossed by an overpass. The steepest grade is 6 percent.

Due to the wider roadbed and the improved alignment, the trouble with snow removal will be greatly reduced. There are both storage space for snow and a chance to shove it over the side.

This contract was performed for the Division of Highways by Eaton and Smith. J. W. Trask is district engineer at Redding, in which district the work is located. Ray Huck was resident engineer.

The Beckwourth Pass project has long been desired by all the towns in the Feather River area, including Oroville. It will unquestionably make the Feather River Route safer and easier to travel for trans-Sierra traffic.

Beckwourth Pass! What a name that was to conjure with in the 1850 to 1860 era. It was the northern route by which the hardy and trail-worn immigrants could reach the Feather River gold mines and the upper Sacramento River Valley.

When they reached this point, after the long dry trip through Nevada, they knew that in some ways at least there were better times ahead. There would be water, horse feed and game. They were on the Pacific Slope. It wasn't an accident that the place where they turned west off the Reno-Susanville road was called Hallelujah Junction.

"The Smiling Pioneer"

The pass got its name from its discoverer, James P. Beckwourth. From his own story, "The Smiling Pioneer," he tells of its discovery.

He landed in San Francisco in 1848. He was about 50 years old and had crammed more adventures in trading, living with and sometimes fighting Indians, than would fill the lives of a score of ordinary men. He had been in the Northwest when he was adopted by the Crows and became a chief. He had been in the Spanish Southwest. Always, he tried to keep his relations with the Indians on a friendly basis. His success was phenomenal.

Beckwourth's Story

But now listen to Jim:

"The next spring (1849) I engaged in mining and prospecting in various parts of the gold region. I advanced as far as the American Valley (Quincy) having one man in my company, and proceeded north into the Pitt River country, where we had slight difficulty with the Indians.

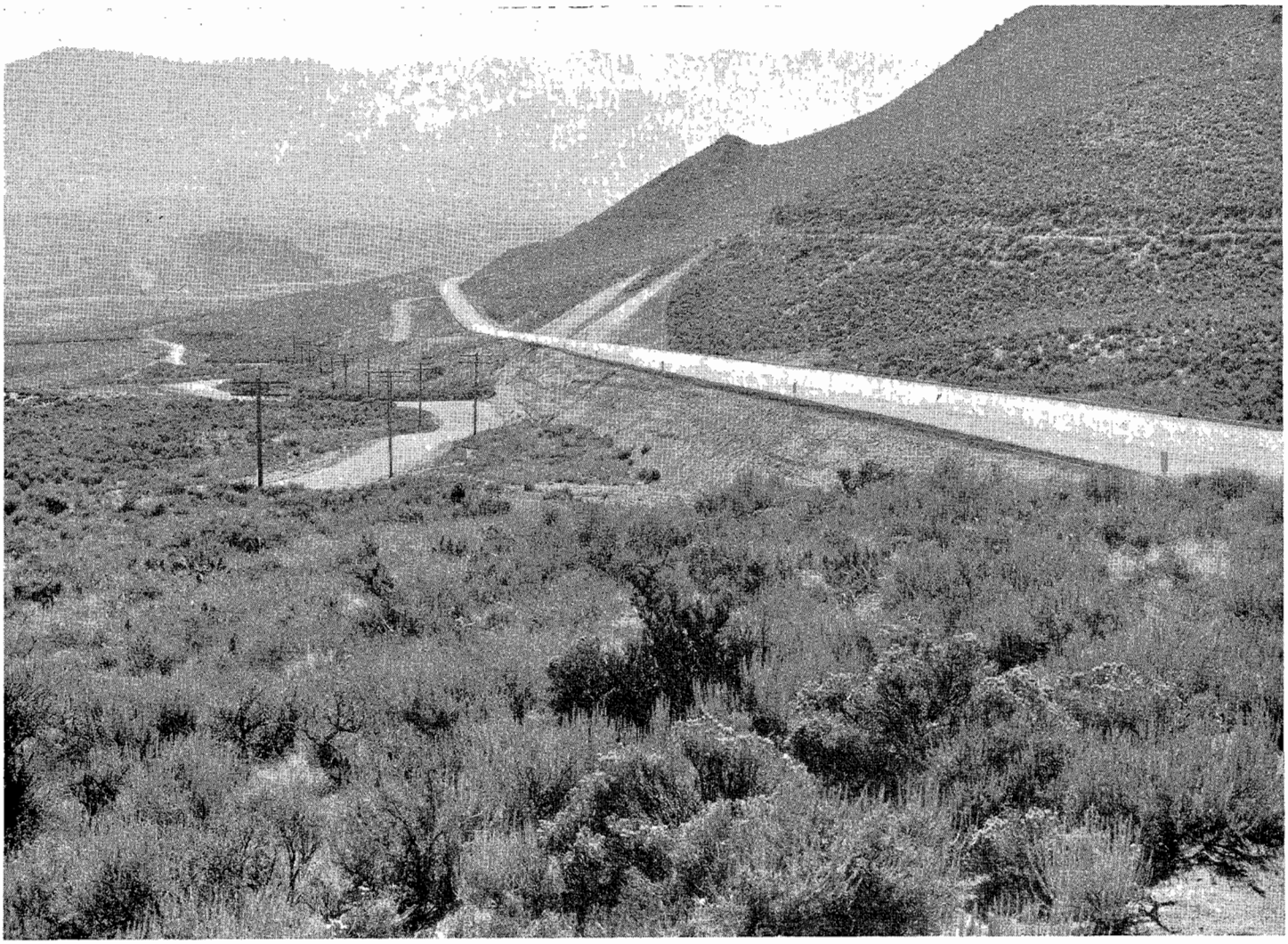
"While on this excursion, I discovered what is now know as Beckwourth Pass in the Sierra Nevada. From some of the elevations over which we passed, I remarked a place far away to the southward that seemed lower than any other. I made no mention to my companion but thought at some future time, I would examine it further. I continued onto Shasta with my fellow traveler, and returned after a fruitless journey of 18 days."

The Shasta referred to is the town situated some seven miles west of Redding. At that time it was one of the three largest towns in the State. We do not know what route he took but the round trip must have covered between five and six hundred miles through the mountains.

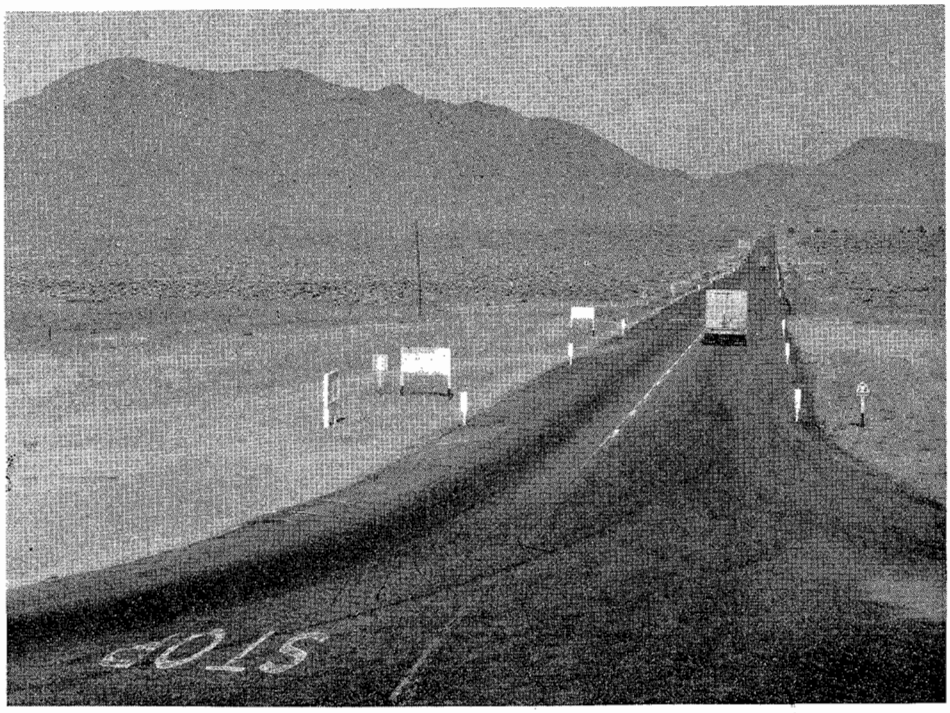
Returned in 1850

Next spring (1850) he came back and made further exploration, approaching the pass from the west side.

"It was the latter part of April when we entered upon an extensive valley on the northwest extremity of the Sierra range. The valley was already robed in freshest verdure contrasting most delightfully with the huge snow-clad masses of rocks we had just left. Flowers of every variety and hue spread their variegated charms before us; magpies were chattering, and gorgeously plumaged birds were caroling in the delights of unmolested solitude. Swarms of wild geese and ducks were swimming on the surface of the cool crystal stream, which was the central fork of the Rio de las Plumas (Feather River), or sailed in the air in clouds over our heads. Deer and antelope filled the plains, and their boldness was conclusive that the hunter's rifle was unknown. Nowhere visible were any traces of the white man's approach, and it is probable that our steps were the first ever marked the spot. We struck across this beautiful valley to the headwaters of the Trucky (Truckee) which flowed in an easterly direction, telling us we were on



Beckwourth Pass—Looking east from near west end of project. New highway on right; old one on left. LOWER—Looking west from Hallelujah Junction.



the eastern slope of the mountain range.

Plan Road Into Valley

"This I at once saw would afford the best wagon road into the American Valley approaching from the eastward, and I imparted my news to three of my companions in whose judgment I placed the most confidence. They thought highly of the discovery and even proposed to associate with me in opening the road. We also found gold but not in sufficient quantities to warrant our working it; and furthermore, the ground was too wet to admit of our prospecting to any advantage.

"On my return to American Valley, I made know my discovery to

. . . Continued on page 55

Camarillo Expressway

Grade Separated From S. P. Line

By RAY A. COLLINS, Associate Highway Engineer, and
F. B. DONOVAN, Associate Bridge Engineer

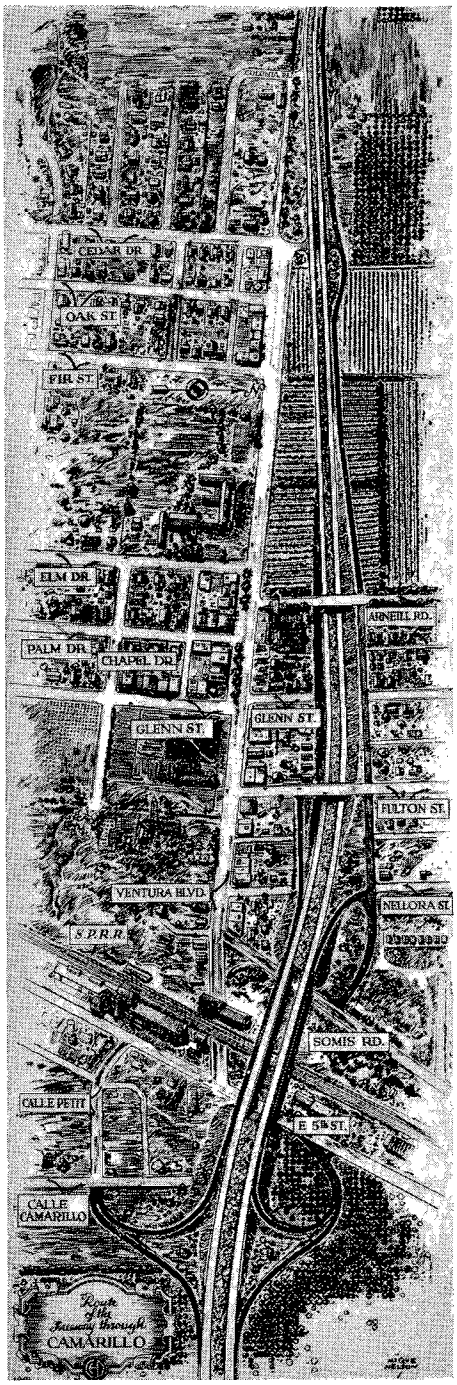
(Editor's Note: With two contracts running simultaneously, one for the railroad grade separation bridge structure and the other for highway construction both sides thereof over a length of 5.7 miles, Mr. Donovan as resident engineer for bridge structures and Mr. Collins as resident engineer on the highway construction have been asked to collaborate in reporting this freeway project.)

WHEN THE freeway at Camarillo, a $3,000,000 project, is completed next spring and opened to public traffic, the last remaining main line railroad grade crossing on U. S. 101 between San Diego and San Francisco will have been eliminated. Finding the satisfactory solution to the problem at Camarillo of doing away with the conflict between highway traffic and railroad trains required detailed studies of many alternatives.

Problem of Railroad Facilities

The problem was complicated by extensive railroad facilities and the fact that any widening improvement carried out upon the existing state highway alignment would have resulted in destroying practically the entire business district of the town of Camarillo. Various possible locations were investigated, some involving highway subways under the railroad as well as highway bridges over the railroad. The solution finally adopted was for a by-pass of the business district on the northerly side of the existing state highway. The adopted relocation was the most economical in money expenditure and also caused the least possible disturbance to the town.

The clearing of the right of way for the Camarillo Freeway construction involved the moving or demolition of 51 homes and other buildings. The most important moving job was in connection with the reconstruction of the facilities of the Southern Pacific Railroad. The railroad station building had to be moved in two stages, it being impossible to move it immediately to the final location. This building was first moved just sufficiently to clear the grade separation bridge structure where it will remain for several months longer.



Sketch of project by Mique Nelson

Right of Way Costs

After the new freeway is entirely completed and opened to public traffic, the old highway right of way and pavement can then be abandoned and the Southern Pacific station building will be moved to its permanent location on the old highway right of way. This situation is portrayed on the accompanying bird's-eye sketch map prepared by Mique Nelson of the District VII staff. The total cost of right of way acquisition on this project was $1,000,000.

The highway contract is being carried out by the Griffith Company of Los Angeles. Construction was started on May 13, 1953. Joe Porcher is project manager, Kinny Kinnamon is project superintendent, and Carl McCracken is structures superintendent for the Griffith Company. The construction provides for a four-lane divided expressway to replace existing Ventura Boulevard, known locally as the Old Conejo Road, from Calleguas Road through the town of Camarillo to a point 0.4 mile west of Central Avenue, a distance of 5.7 miles. It includes the construction of a reinforced concrete bridge across Calleguas Creek, and reinforced concrete bridges carrying Fulton Street and Arneill Road in Camarillo across the freeway.

The Arroyo Calleguas Bridge, to carry two lanes of eastbound traffic, will consist of two 35-foot end spans and a central span of 60 feet. The Fulton Street Overcrossing and the Arneill Road Overcrossing will both consist of two spans each of 60.75 feet. The Arroyo Calleguas Bridge is

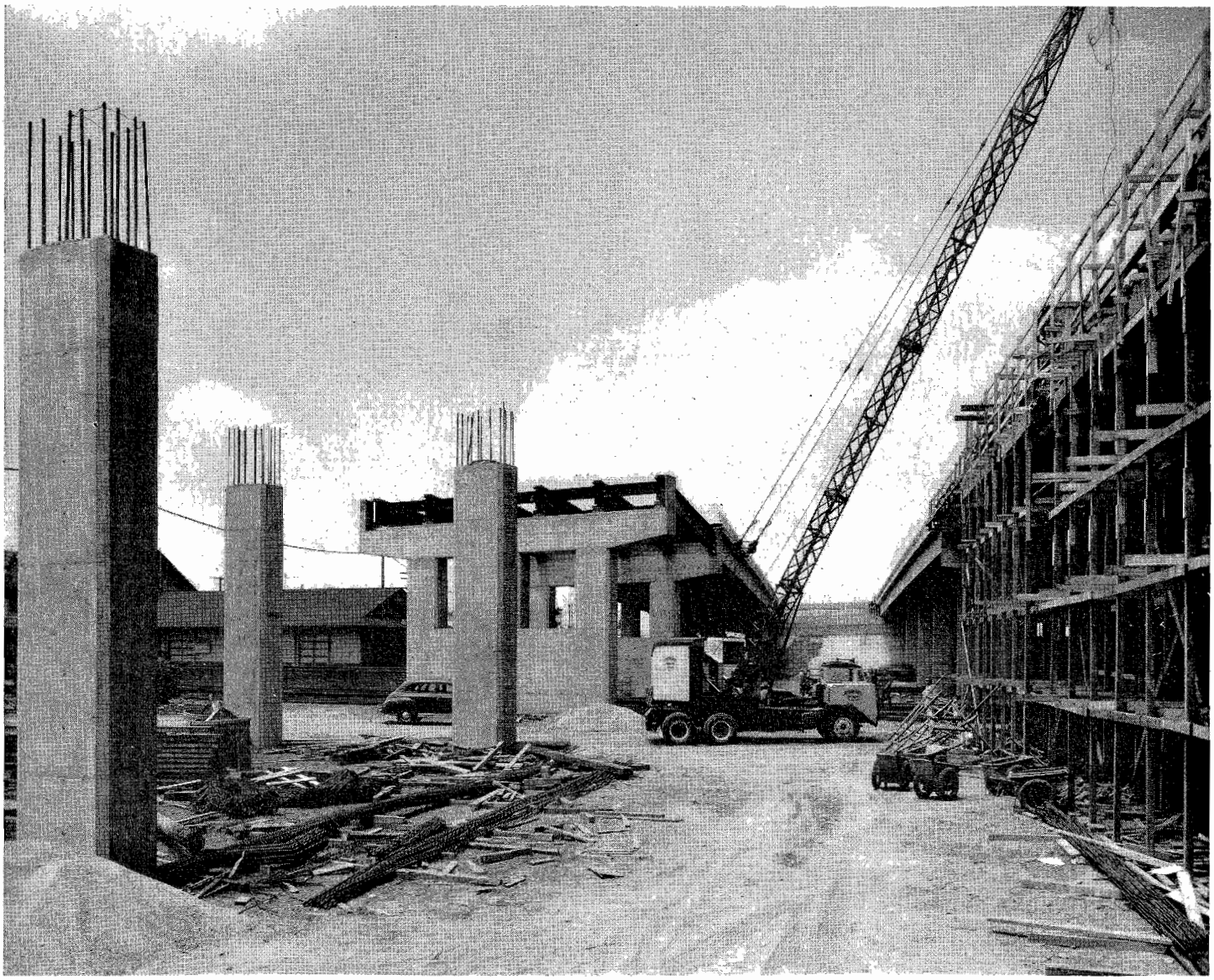
supported on cast-in-drilled-hole concrete piling and the two overcrossings are supported on spread footings. There are among the contract items 1,600 lineal feet of reinforced concrete box culverts, 5,500 feet of reinforced concrete pipe storm drains and 2,000 feet of corrugated metal pipe. The total of the contract allotment is $1,243,600.

Roadway Design

The main roadway is a four-inch plant-mixed asphalt surface laid on six inches of cement-treated select material which in turn is supported by six inches of select material on the subgrade. There are north and south frontage roads 24 feet wide for a large part of the job. On these a two-inch plant-mixed asphalt surface is laid on six inches of select material. A large portion of the westbound roadway is formed by resurfacing and widening the existing pavement.

The 300,000 cubic yards of roadway excavation and the 155,000 cubic yards of imported borrow were excavated and placed by three 15-yard Carryalls, three 15-yard Tournapulls and three 18-yard DW21 Caterpillar scrapers. On some days this equipment moved 8,000 cubic yards. Progress in general is very good. By the end of the third month the job has recovered from a late start and is now running ahead of schedule.

Except at the approaches to the Southern Pacific overhead and separation the fills were less than three feet to subgrade. Since a large part of the new location was through fields that had been cultivated and irrigated for several generations, it was necessary to compact the original ground. Relative compactions of 65 to 75 were increased to over 90 by watering and rolling with a sheepsfoot roller. One unusual feature was



Looking westerly along freeway location where crossing is made with main line Southern Pacific Railroad showing construction in progress on Camarillo Overhead. At extreme left will be seen the Southern Pacific Railroad station building in its temporary location.

UPPER—View looking easterly along Camarillo Freeway from near Fulton Street showing grading operations in progress. In background is Camarillo Overhead.
LOWER—View looking southeasterly toward Camarillo Overhead structure showing contractor's batching plant in center left of photograph.

that the roadway excavation of the deep cut through Camarillo supplied very nearly all of the select material. This was of exceptionally good quality.

Camarillo Overhead

The Camarillo Overhead and Separation structure is being constructed under a contract awarded to Peterson and Baker of Los Angeles. Jack Baker is project manager and Fred Falk is structures superintendent. The total contract allotment is $565,000.

The Camarillo Overhead and Separation will consist of two parallel bridges, each 578 feet in length and each providing a clear roadway of 40 feet. This 40 feet will provide two lanes of unidirectional traffic plus provision for acceleration and deceleration lanes for the on and off ramps. Bent footings are supported by 468 cast-in-drilled-hole concrete piling and abutments are on 10BP42 steel piling.

The erection of this structure will remove another railroad grade crossing from the state highway system and also facilitate cross traffic along Route 153 from Somis Valley to coastal points. The existing railroad grade crossing has long been a thorn

Looking easterly along U. S. 101 showing congestion while traffic is held up by the Southern Pacific Railroad

in the side of the local citizenry and the travelers on U. S. 101. Route 153 northerly to Somis is on the west side of the Southern Pacific Railroad tracks and Route 153 southerly to Oxnard is on the east side of the tracks. Therefore under existing conditions it is necessary for Route 153 traffic to blend with U. S. 101 traffic while crossing the railroad tracks. In addition to this difficult highway traffic situation, the Camarillo switch track of the Southern Pacific Railroad is used frequently to by-pass freight trains on the main line and also to clear local and through passenger

View looking westerly along Camarillo Freeway from near Arneill Road showing grading operations in progress. Existing state highway shown on left with frontage road and housing development operations on right.

trains. Traffic on both U. S. 101 and Route 153 is thus frequently stopped completely for considerable periods throughout the day and night. It is not at all unusual to see upward of 100 cars and trucks tied up on each side of the tracks. This crossing has also been the scene of several fatal auto-train collisions despite the presence of automatic warning signals and gates.

Benefits of Freeway

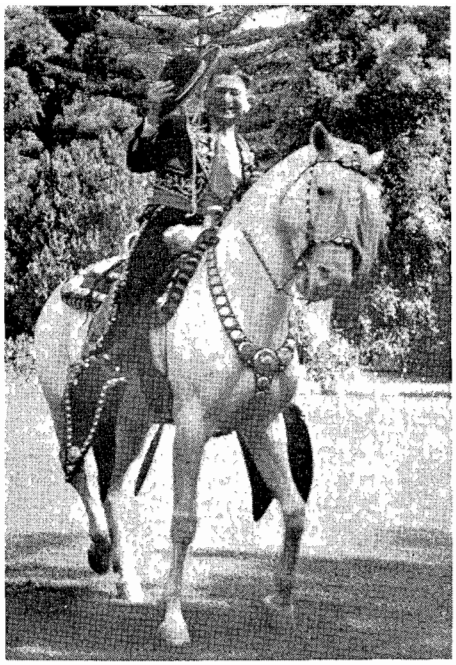
The elimination of this railroad grade crossing, the unsnarling of the cross-traffic situation, the removal of heavy congestion from the town's main street, the resulting improved appearance of the town due to the routing of the freeway having removed portions of the more undesirable buildings, the attendant construction of new businesses along the frontage roads, and the inevitable growth of this community, all due largely to the new highway, add up to sizeable benefits.

A contract was awarded on July 15, 1953, to the Electric and Machinery Service, Inc. of South Gate for installation of lighting facilities and signs. The contract allotment is for $35,300. Work was started under this contract on August 3, 1953, with R. E. DeGroff as resident engineer.

While there is little out of the ordinary in the construction procedure on this project, the site and climatic conditions compel "the bard to twang his lyre in ecstasy." Topping the old Conejo grade westbound, there bursts upon the traveler a panorama of rich, level, cultivated fields and orchards surrounded by the green slopes of the hills. The clear air, free from any trace of fog or smog, brings forth the glories of nature in sharp detail at great distances. And the sweltering heat in other areas passed through by the traveler is quickly forgotten, for seldom does the temperature in the Camarillo Valley rise above 78 degrees.

Distinguished Sidewalk Super

This story of the Camarillo Freeway would not be complete without mention of the distinguished sidewalk superintendent who visits the job frequently. This is none other than Don Adolfo Camarillo. This sprightly gentleman is 89 years young. He makes his business calls in person and actively manages his vast interests. Don Adolfo was born in nearby Ventura. At the age of 17 he became manager of the estates of his father. These comprised vast acreage in the vicinities of Ojai, Ventura and Oxnard.



DON ADOLFO CAMARILLO

Adolfo Camarillo will always be remembered by the State Division of Highways for his generous donations of land for badly needed highway improvements and particularly for the time he played host to some 500 people attending the ribbon-cutting ceremonies on May 1, 1937, of completed state highway construction on the Conejo grade, a short distance southeasterly of the town of Camarillo. Don Adolfo arranged for a barbecue in a setting that was typical of the hospitality in early Spanish days of California, with Spanish musicians and dancers in costume. This universally loved pioner of Ventura County acted as Grand Marshal leading an imposing calvacade of riders mounted on Arabian white horses. Brown-robed Franciscan friars followed, with prospectors, trappers, oxen, Mexican correta, covered wagons, pony express riders, stagecoaches, buckboards, surreys and automobiles ranging from the earliest models to the then modern 1937 car of streamlined elegance.

Don Adolfo and his brother Juan in 1914 built the large, beautiful church in Camarillo as a family chapel. On his brother's death in 1936 he deeded the church to the local Catholic diocese. Adolfo Camarillo has on many occasions proved himself a broad-minded, public-spirited and generous citizen. One can feel honored to say to him, "Su seguro servidor, que beso su mano."

In Memoriam

CHARLES T. HARBEY

Funeral services were conducted for Charles Thornton Harbey, retired maintenance superintendent, on September 10, 1953, at Forest Lawn in Glendale at the Little Church of the Flowers. Mr. Harbey died September 6th while on a visit in San Diego. His home was at 915 Newton Street, San Fernando, where he lived for many years while State Highway Maintenance Superintendent for the northerly portion of Los Angeles County, including the Ridge Route. He will be remembered by many motorists and the trucking industry for his devotion to duty and long hours spent keeping the Ridge Route open to traffic during heavy storms.

Mr. Harbey was born June 1, 1889, in Kingston, New Mexico, and at an early age moved to Texas. He first went to work for the California State Division of Highways as a maintenance foreman on June 19, 1924. On January 1, 1933, he was promoted to maintenance superintendent, which position he held until his retirement on July 1, 1953.

He is survived by his wife, Myrtle A. Harbey; his brother, George Harbey, who is employed by the State Division of Highways in the Fresno district; two sisters, Mrs. Rose Jones and Mrs. Maude McLindon, and a granddaughter, Patricia Price.

Mr. Harbey was a member of San Fernando Lodge 343, F. & A. M., Royal and Select Masters, San Fernando Valley Council No. 40, and Royal Arch Masons, Chapter 136.

Progress

Next to Last Section of Hollywood Freeway Is Opened to Traffic

By C. J. WOODBRIDGE, Resident Engineer

On August 17, 1953, the next to the last link for a direct high speed route from Los Angeles Civic Center to the San Fernando Valley was completed and opened to traffic. This section of the Hollywood Freeway extends from Cahuenga Boulevard to Gower Street, a distance of 0.6 mile. It includes a network of five bridges, six ramps and several retaining walls. Three additional bridges, Cahuenga Boulevard Undercrossing, Holly Drive Undercrossing and Gower Street Undercrossing, were built previously under separate contracts. One of the most striking features is a "three-level" separation at Franklin Circle.

A welcome change in the area is the wide, new, six-lane Franklin Avenue open cut roadway, on easy grades, as compared with the old two-lane roadway over the hill on very steep grades. The freeway itself is elevated and affords a striking view, especially at night, of Hollywood and the City of Los Angeles, from the beaches to Civic Center.

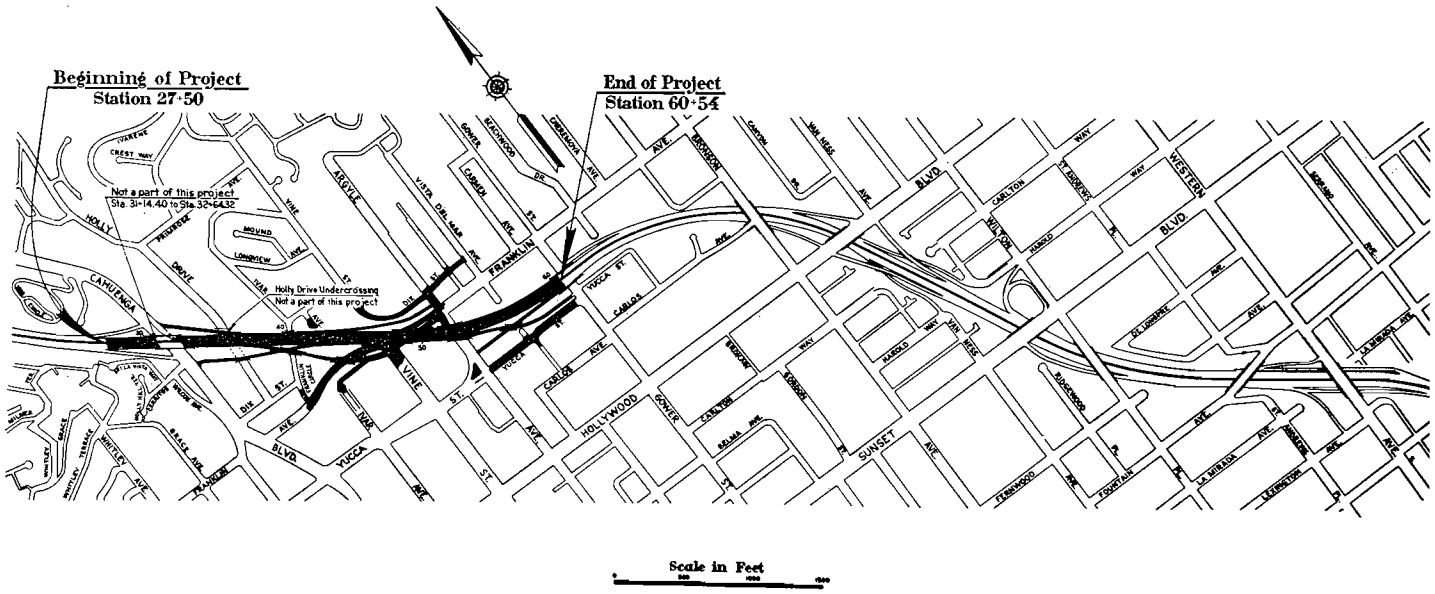
The largest and most involved structure is the Argyle Avenue-Franklin Avenue Undercrossing. This structure is a reinforced concrete, box girder type bridge over 600 feet in length. More than 8,400 cubic yards of concrete were used in the structure, and one pour of 765 cubic yards for the bottom slab and girder stems is believed to be the largest single continuous pour ever made of this type.

The importance of this section of the freeway is well understood by the general public. During the morning and evening rush hours the local area of Hollywood has been a congested "bottleneck" for traffic.

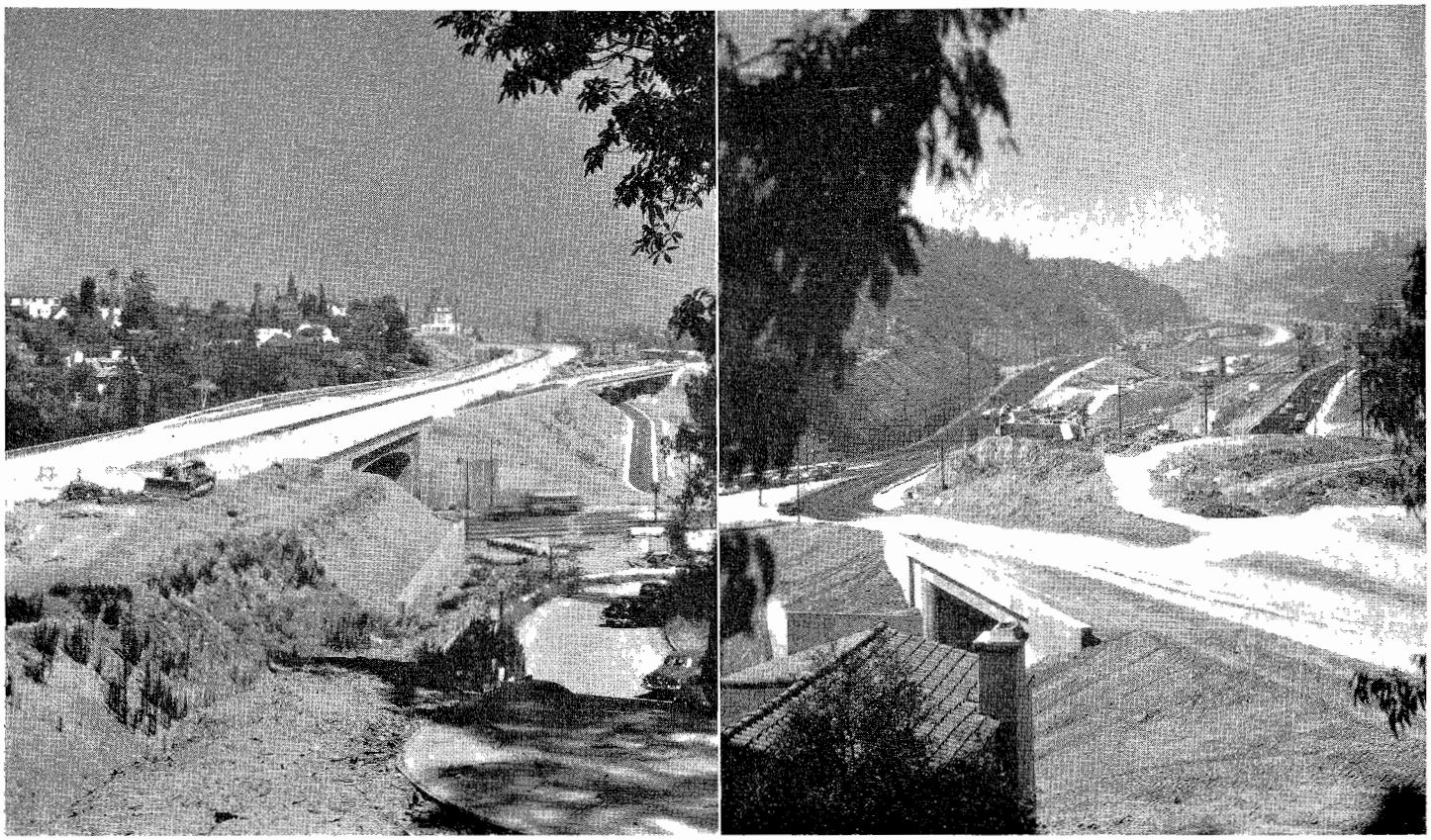
About April of next year it is expected that the one remaining contract on the Hollywood Freeway at Highland Avenue will be completed and then well in excess of 100,000 cars per day will move between the Civic Center of Los Angeles and San Fernando Valley without interruption by construction work. At the present time an estimated 25,000 cars per day are using this newly completed section.

The contract work for construction on this 0.6 mile of freeway amounted to $1,674,000. The cost

In the City of Los Angeles, Hollywood Freeway between Cahuenga Blvd. and Gower St.



Net Length of Project 3304 feet = 0.63 mile



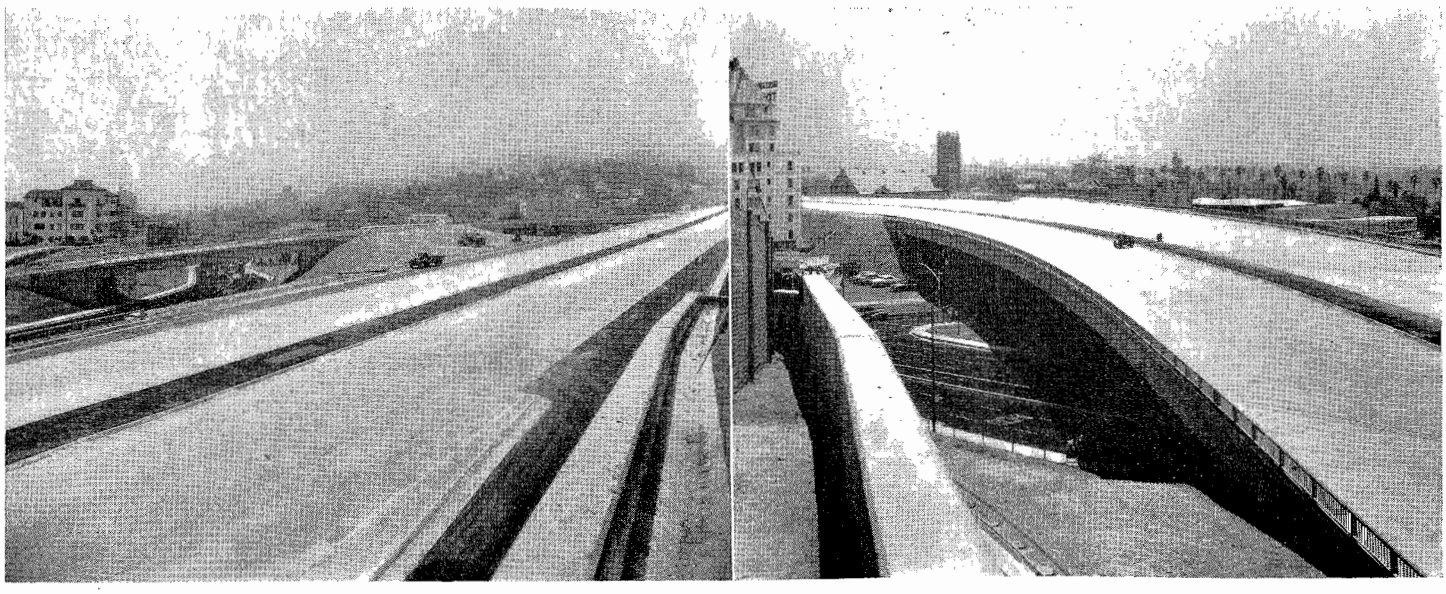
LEFT—Looking east on completed section of Hollywood Freeway. It is estimated that this section will carry well in excess of 100,000 cars per day. Bridge in foreground is Cahuenga Boulevard Undercrossing. Bridge at right center is one of two bridges of the Vine Street off-ramp. RIGHT—Looking west on remaining section of Hollywood Freeway to be completed. This section should be completed about next April.

of the bridges and retaining walls amounted to 70 percent of the entire project, the remaining 30 percent being roadwork.

Winston Bros. Company was the contractor for the project, with Jack Yount, R. K. Harris, and Hugh Thompson as successive project managers, and Jim Redpath as structure superintendent.

The State was represented by the writer as Resident Engineer, with C. C. French and B. A. Gentry as successive District VII representatives in charge of road work.

Looking southeast at Argyle Avenue—Franklin Avenue Undercrossing. Bridge is over 600 feet in length.



Roadside Planting

This Phase of Highway Construction Is for Safety

THE PLANTING of shrubs, trees and ground cover along California highways is primarily a matter of safety and economy. The often-used term "landscaping" is in most cases a misnomer.

Actual landscaping, in the sense of roadside planting for improved community appearance, is rare. It represents only a minute portion of state highway construction costs. In view of California's vast highway needs, funds for landscaping are rigidly restricted as a matter of policy.

Criticism of the Division of Highways for expenditures on so-called landscaping, has overlooked the fact that most of the roadside planting is an essential element of practical highway design, necessary to protect the public's investment in safety and ease of travel. A more truly descriptive term for this necessary function is "roadside development."

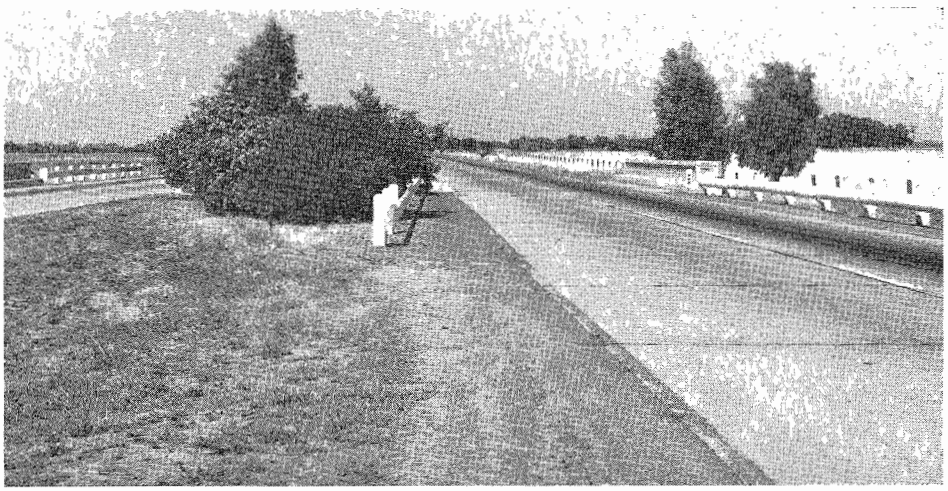
Essential Requirements

Expenditures for roadside development on state highways are approved only if they will do one or more of the following:

1. Improve traffic safety.
2. Control weeds and reduce fire hazards.
3. Prevent erosion, thus keeping down future costs of upkeep and repair.

In the past two years, the total cost of construction on state highways has totaled some $183,000,000. The outlay for roadside development was about $1,176,000, or about 64 cents out of every hundred dollars of construction. For landscaping, included in the total for roadside development, the amount expended was only $86,-441.

Even some of the projects included under the heading of landscaping, serve practical as well as aesthetic purposes. For example, one "landscaping" item in recent years is the shrubbery along the Eastshore Freeway which masks the busy waterfront industrial area of Oakland. Others are the sections of lawn along the Hollywood and Santa Ana Freeways which have proved easier and cheaper to keep clear of wind-blown papers and trash than other types of planting. Another is the high thick screen of Japanese privet which absorbs traffic sounds along portions of the freeways in the Los Angeles area.



Trees and shrubs on a straight and level section of U. S. 40 (between Davis and Dixon) call the attention of motorists to the fact that they are approaching a bridge

Headlight Screening

An example of roadside development to augment traffic safety on multi-lane divided highways is the planting of high-growing shrubs in the median or dividing strip. The foliage reduces the tiring impact of oncoming headlights. At the same time it provides a barrier against illegal and dangerous random crossings of the dividing strip.

Some of the level stretches of the U. S. 99 expressway through the San Joaquin Valley lend themselves readily to this type of natural safety treatment. Careful selection of plants which flourish in the particular region, such as oleanders, helps hold down maintenance and replacement costs.

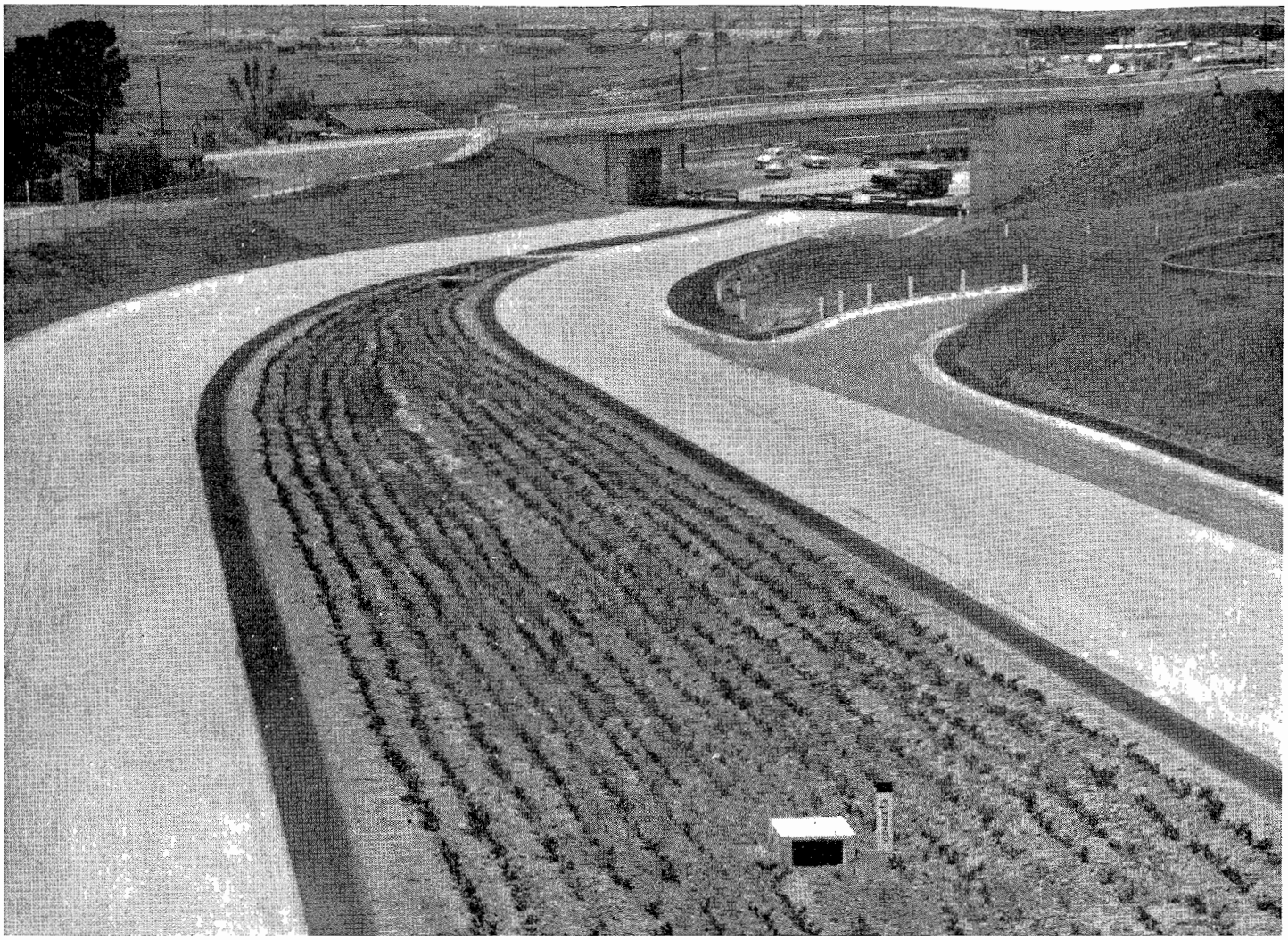
Another type of planting for the purpose of headlight screening consists of vines planted along fences between the roadways. Portions of the Arroyo Seco Freeway between Los Angeles and Pasadena and of the North Sacramento Freeway offer examples of this type of screening.

Less apparent to the motorist, but likewise important to his safety, is the use of planting for what highway engineers call "traffic delineation."

Danger Signals

Groups of trees or shrubs, strategically placed and visible for long distances, are being used to alert drivers to the imminence of some change in the driving conditions ahead, such as a bridge, an off-ramp, or a curve. Tall-growing and disease resistant varieties of palm and eucalyptus trees are often used for this purpose.

Off-ramps on the Hollywood Freeway are marked by distinctive plantings. On U. S. 40, between Davis and Dixon, several bridges on a long straight stretch of highway are heralded thousands of feet ahead by the presence of a carefully-placed clump of trees and bushes. In urban areas, where city streets dead-end abruptly at freeways, a row of trees straight ahead in his path tends to make the motorist ease up on the throttle long



On this new section of freeway the soil will be kept in place by means of ice plant and natural grasses on the adjoining hillsides and the sloping shallow ditch which separates the northbound and southbound roadways. This is an example of planting which the Division of Highways has found necessary in enhancing traffic safety and keeping down future maintenance costs. The freeway shown here is U. S. 101 in Oceanside.

before he can read the "Not a Through Street" sign.

The most widespread use of planting is to keep the roadside soil in place wherever it slopes up or down from the highway. It is much safer and cheaper to plant a little vegetation than to keep scraping off the roadway the dirt washed down from a cut slope or to keep shoring up an embankment undermined by gullies.

Maintenance Costs Reduced

The Arroyo Seco Parkway is one of the best examples of multiple-purpose planting. The thick green English ivy which covers the cut slopes along this famous freeway, while appreciated for its ornamental value, was actually planted for erosion, weed and fire control.

Similarly, the colorful ice plant on the slopes of the Atlantic Boulevard interchange on the Santa Ana Freeway is there because it will save thousands of dollars in maintenance costs. The "landscaping" effect, is purely a by-product. This is also true of the startling springtime beauty of the ice plant bordering U. S. 101 in Solomon Canyon, south of Santa Maria.

Where true landscaping is undertaken for the sake of attractiveness, it is a matter of preserving and enhancing the appearance of the community rather than of the highway. It is done only where there is general agreement as to the desirability and necessity of the work. Also, in accordance with California Highway Commission policy, no landscaping along state highways is authorized unless proper local ordinances are in effect to protect the investment against detractive sign installations.

All highway expenditures, including those for roadside development along state highways, are rigidly scrutinized.

No such expenditures are recommended to the Highway Commission unless it is certain that they will more than pay their way in terms of greater traffic safety, control of weeds and fire hazards, and keeping down the costs of highway maintenance.

Traffic Studies

Need for Network of Freeways in Los Angeles Area Clearly Evident

By C. G. BEER, Assistant District Traffic Engineer

CONTINUOUS traffic studies of the Hollywood Freeway as its construction has progressed show the wisdom of the local planning agencies in anticipating a complete network of freeways to adequately serve the tremendous desire for motor vehicle travel in the Los Angeles metropolitan area. This gigantic transportation facility from Vineland Avenue in the San Fernando Valley to the Los Angeles Civic Center is already carrying its full designed capacity volume of traffic and the final link will not be open to traffic until next spring.

Operating Characteristics

Operation of the Hollywood Freeway is emphasizing the importance of certain factors in planning and design which were previously noted on the Arroyo Seco Freeway and on similar roads in other parts of the State. Chief among these factors is the great increase in space required to safely handle weaving movements and speed transitions. If the freeway is to serve the purpose for which it is being constructed, the average operating speed will be almost double that of the conventional city arterial. The transition from the high speed of the freeway to the lower speed of the arterials must be made safely at each connection. This can be done by proper design of the on and off ramps, and interchange lanes.

Design of such transitions must provide for the individual 55 m.p.h. freeway traveler during hours of low traffic volume as well as the great volumes of 35 m.p.h. travelers when the freeway carries its full capacity in the peak hours. The accompanying charts and tables indicate traffic volumes encountered on the Hollywood Freeway and its connecting ramps.

125,000 Vehicles Per Day

In *Figure 1* (*See pages 32-35*) is shown the history of traffic counts made on the Hollywood Freeway since its first opening on December 27, 1950. In addition to all inlet and outlet ramps, the traffic volumes at four representative locations on the freeway itself are shown for each stage of development. These points are at the Vermont Avenue Overcrossing, the Rosemont Avenue Overcrossing, the Beaudry Avenue Overcrossing, and the Grand Avenue Overcrossing. It can be seen that the 24-hour weekday volume passing under the Rosemont Avenue structure had reached approximately 125,000 by May 1953.

The annual statewide count of July 12-13, 1953, verified the volume of 121,000 shown in *Figure 1* at the Beaudry Avenue structure.

TABLE 1. TRAFFIC COUNT ON HOLLYWOOD FREEWAY

500 Ft. E. of Glendale Blvd. Off-ramp. Friday, July 24, 1953. Westbound (outbound) only.

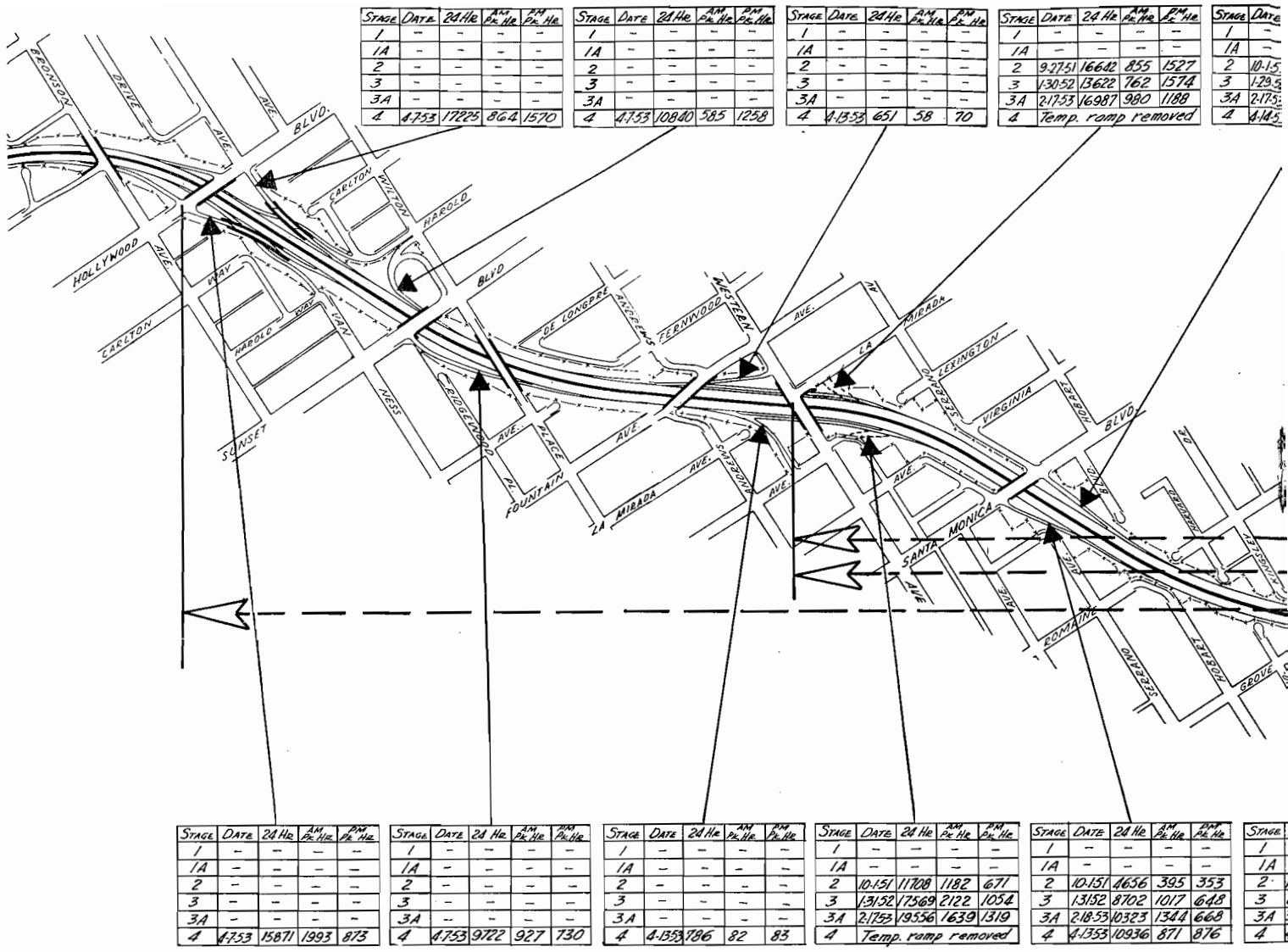
	LANE	Inside (left)	Inside (middle)	Outside (middle)	Outside (right)	Total 4 lanes
A.M.	12- 1	219	660	311	203	1,393
	1- 2	82	354	144	86	666
	2- 3	52	194	158	66	470
	3- 4	26	122	82	35	265
	4- 5	35	106	100	48	289
	5- 6	51	180	141	115	487
	6- 7	437	254	544	442	1,677
	7- 8	967	757	857	744	3,325
	8- 9	867	1,049	790	680	3,386
	9-10	587	937	704	551	2,779
	10-11	559	891	723	570	2,743
	11-12	652	827 †	750	622	2,851
P.M.	12- 1	677	786 †	825	611	2,899
	1- 2	593	933	746	527	2,799
	2- 3	880	666	898	683	3,127
	3- 4	1,087	651	961	815	3,514
	4- 5	1,620	1,052	1,294	1,272	5,238
	5- 6	1,844	1,384	1,357	1,297	5,882
	6- 7	1,233	1,185	967	881	4,266
	7- 8	819	951	804 †	674	3,248
	8- 9	718	931	504 †	560	2,713
	9-10	567	767	475 †	515	2,324
	10-11	428	681	553 †	375	2,037
	11-12	432	618	446 †	380	1,876
	Total	15,432	16,936	15,134	12,752	60,254

† Counter trouble. Used counts of Thursday, July 23d.

Temporary "End Freeway"

One item of interest in *Figure 1* is the peak hour volume carried by the terminal ramp connection in each stage of operation. It can be seen that the westbound off-ramp at Silver Lake Boulevard reached an evening peak hour volume of 1,862 at the time it was the terminal ramp (Stage 1A). After opening to Western Avenue, the Silver Lake ramp dropped to 659 and has since stabilized at about 900.

On opening to Western Avenue (Stage 2), the temporary westbound off-ramp there immediately carried an evening peak of 1,527. This later rose slightly, coupled with a very great rise in the adjacent off-ramp at Santa Monica Boulevard. Prior to



Stage	Date	24 Hr	AM Pk Hr	PM Pk Hr
1	–	–	–	–
1A	–	–	–	–
2	–	–	–	–
3	–	–	–	–
3A	–	–	–	–
4	4-7-53	17225	864	1570

Stage	Date	24 Hr	AM Pk Hr	PM Pk Hr
1	–	–	–	–
1A	–	–	–	–
2	–	–	–	–
3	–	–	–	–
3A	–	–	–	–
4	4-7-53	10880	585	1258

Stage	Date	24 Hr	AM Pk Hr	PM Pk Hr
1	–	–	–	–
1A	–	–	–	–
2	–	–	–	–
3	–	–	–	–
3A	–	–	–	–
4	4-13-53	651	58	70

Stage	Date	24 Hr	AM Pk Hr	PM Pk Hr
1	–	–	–	–
1A	–	–	–	–
2	9-27-51	16682	855	1527
3	1-30-52	13622	762	1574
3A	2-17-53	16987	980	1188
4	Temp. ramp removed			

Stage	Date
1	–
1A	–
2	10-15-
3	1-29-5
3A	2-17-5
4	4-14-5

Stage	Date	24 Hr	AM Pk Hr	PM Pk Hr
1	–	–	–	–
1A	–	–	–	–
2	–	–	–	–
3	–	–	–	–
3A	–	–	–	–
4	4-7-53	15871	1993	873

Stage	Date	24 Hr	AM Pk Hr	PM Pk Hr
1	–	–	–	–
1A	–	–	–	–
2	–	–	–	–
3	–	–	–	–
3A	–	–	–	–
4	4-7-53	9722	927	730

Stage	Date	24 Hr	AM Pk Hr	PM Pk Hr
1	–	–	–	–
1A	–	–	–	–
2	–	–	–	–
3	–	–	–	–
3A	–	–	–	–
4	4-13-53	786	82	83

Stage	Date	24 Hr	AM Pk Hr	PM Pk Hr
1	–	–	–	–
1A	–	–	–	–
2	10-15-51	11708	1182	671
3	1-31-52	17569	2122	1054
3A	2-17-53	19556	1639	1319
4	Temp. ramp removed			

Stage	Date	24 Hr	AM Pk Hr	PM Pk Hr
1	–	–	–	–
1A	–	–	–	–
2	10-15-51	4656	395	353
3	1-31-52	8702	1017	648
3A	2-18-53	10323	1344	668
4	4-13-53	10936	871	876

Stage
1
1A
2
3
3A
4

Stage 3A, the Western Avenue ramp was narrowed to one lane and the Santa Monica Boulevard ramp was widened to two lanes. This was immediately reflected in a drop to 1,188 at Western Avenue and a rise to 1,703 at Santa Monica. It is commonly observed that the two ramps at the temporary end of a freeway facility act in combination in handling peak hour loads, and in this case the ramp next to the terminal ramp was made to take the greater volume.

With opening to Hollywood Boulevard in Stage 4, a terminal peak hour of 1,570 was observed at the Hollywood Boulevard ramp, while Santa Monica Boulevard dropped to 1,030. At this time the temporary ramp at Western Avenue had been removed entirely.

Lane Volumes

Table 1 shows the hourly westbound traffic volume in each lane of the freeway at a point about one-quarter mile west of the Beaudry Avenue Overcrossing, as recorded on Friday, July 24, 1953.

The peak hours were somewhat lower than usual on this day, possibly because intensive police patrol of the freeway had been initiated a few days before. Also, the automatic counters may have counted about 5 percent low on each of the two middle lanes due to simultaneous crossing of two vehicles over the counter hose. It will be noted that the left lane carried more volume than any other lane each hour from 3 p.m. to 7 p.m. The design capacity of 1,500 per lane was exceeded for two hours in this lane, and the peak hour total for four lanes is close to the design capacity of 6,000.

A total westbound volume of 6,274 was counted manually between 5 and 6 p.m. in the annual count of Monday, July 13, 1953, and 6,666 in the same count in 1952. Each of these counts shows a flow averaging well over 1,500 per lane.

Supplemental traffic counts made at the time of the annual July census indicate that most of the metropolitan freeways carry their maximum daily volumes on weekdays, with less on Saturdays, and still less on Sundays (*see Table 3*).

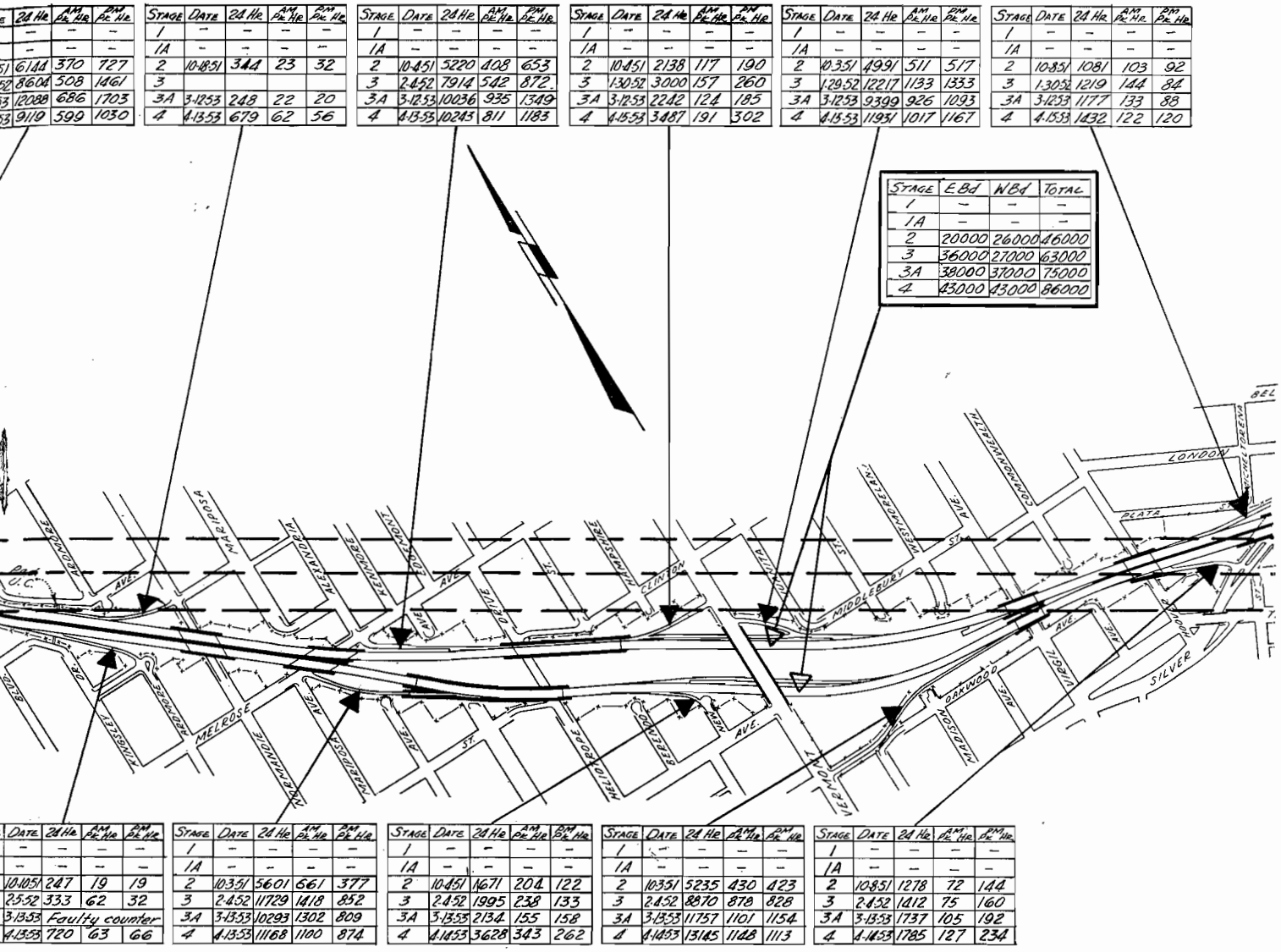
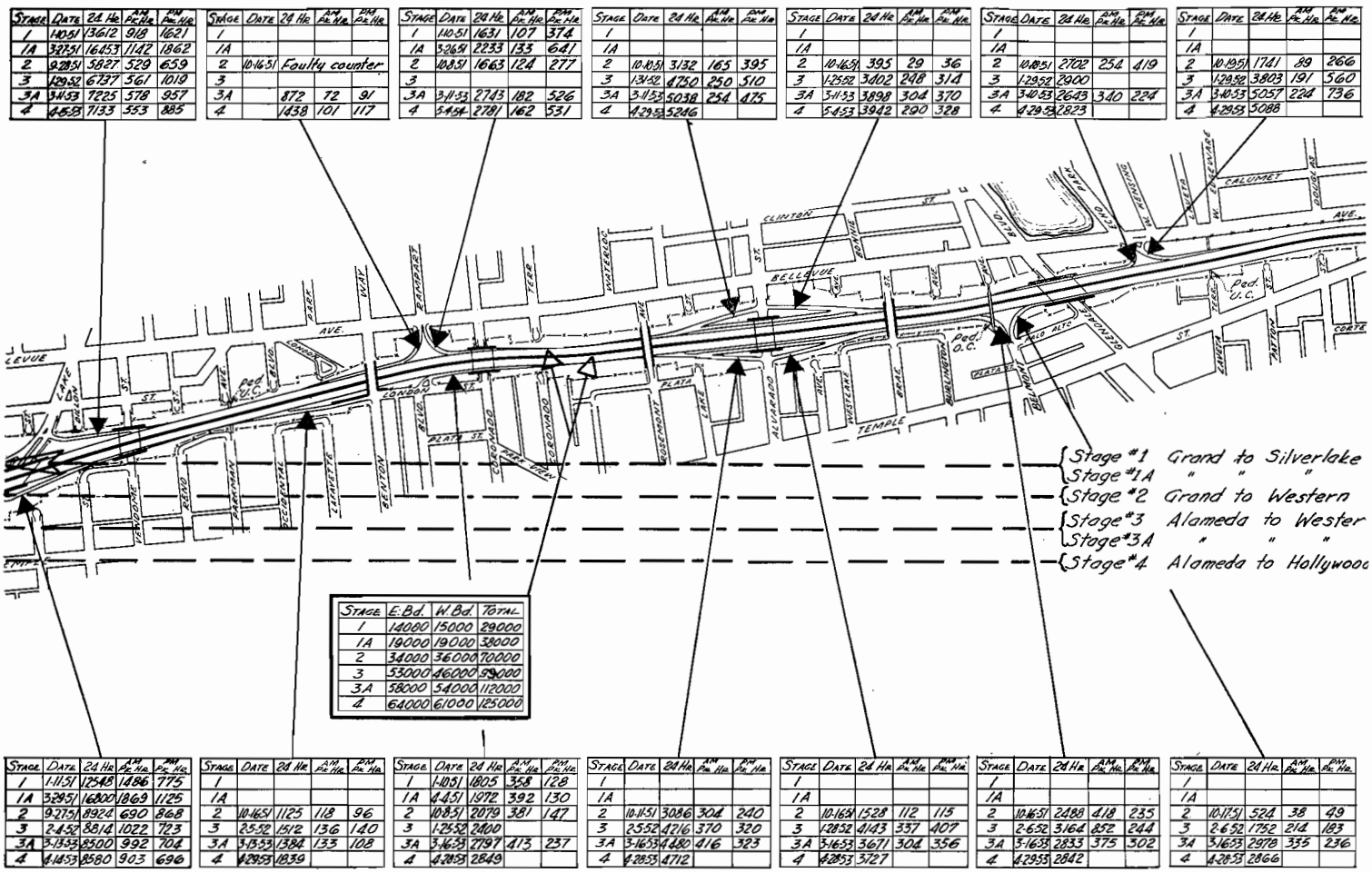


TABLE 2. DISTANT ROUTES SHOWING EFFECT OF HOLLYWOOD FREEWAY

(16-hour July Monday Counts)

Distance from freeway, miles	On Santa Monica Blvd. W. of Sunset 1.1	On Sunset Blvd. (Rt. 2) W. of Sta. Mon. 1.1	On Sunset Blvd. (Rt. 2) E. of Sta. Mon. 1.1	On Olympic (Rt. 173) W. of Figueroa 1.5	On San Fernando (Rt. 4) N.W. of Ave. 26 2.1	On Slauson Ave. W. of Figueroa 6.1	On Slauson Ave. E. of Figueroa 6.1	On Manchester Ave. (Rt. 174) W. of Figueroa 8.1	On Manchester Ave. (Rt. 174) E. of Figueroa 8.1
1947	9,204	22,086	30,555	No count	No count	No count	No count	30,859	30,044
1948	9,414	21,464	31,155	33,025	No count	25,807	25,471	31,675	31,727
1949	9,263	21,768	30,314	34,163	29,677	26,728	27,481	29,196	30,846
1950	9,662	21,877	31,515	37,265	32,077	29,085	29,790	30,220	32,786
Hollywood Freeway opened								Stage 1	
1951	7,563	19,973	27,579	36,742	32,409	26,533	28,015	28,349	29,483
								Stages 2 and 3	
1952	5,634	12,119	16,661	34,087	31,902	27,552	27,807	28,636	29,506
1953	5,690	10,316	15,299	31,713	32,463	27,779	27,683	28,489	30,052



Stage	Date	24 Hr.	AM Per Hr.	PM Per Hr.
1	1-10-51	13612	918	1621
1A	3-27-51	16453	1142	1862
2	9-28-51	58271	529	659
3	1-29-52	67371	561	1019
3A	3-11-53	79251	578	957
4	4-6-53	71331	553	885

Stage	Date	24 Hr.	AM Per Hr.	PM Per Hr.
1				
1A				
2	10-16-51	Faulty counter		
3				
3A		872	72	91
4		1438	101	117

Stage	Date	24 Hr.	AM Per Hr.	PM Per Hr.
1	1-10-51	16311	107	374
1A	3-26-51	22331	133	641
2	10-8-51	16631	124	277
3				
3A	3-11-53	27431	182	526
4	5-14-53	27811	162	531

Stage	Date	24 Hr.	AM Per Hr.	PM Per Hr.
1				
1A				
2	10-10-51	31321	165	395
3	1-31-52	47501	250	510
3A	3-11-53	50381	254	475
4	4-29-53	52461		

Stage	Date	24 Hr.	AM Per Hr.	PM Per Hr.
1				
1A				
2	10-16-51	3951	29	36
3	1-25-52	34021	248	314
3A	3-11-53	38981	304	370
4	5-4-53	39421	290	328

Stage	Date	24 Hr.	AM Per Hr.	PM Per Hr.
1				
1A				
2	10-18-51	27021	254	419
3	1-29-52	29001		
3A	3-10-53	26431	340	224
4	4-29-53	28231		

Stage	Date	24 Hr.	AM Per Hr.	PM Per Hr.
1				
1A				
2	10-19-51	17411	89	266
3	1-29-52	38031	191	560
3A	3-10-53	50571	224	736
4	4-29-53	50881		

Stage	E. Bd.	W. Bd.	Total
1	14000	15000	29000
1A	19000	19000	38000
2	34000	36000	70000
3	53000	46000	99000
3A	58000	54000	112000
4	64000	61000	125000

Stage	Date	24 Hr.	AM Per Hr.	PM Per Hr.
1	1-11-51	12548	1486	775
1A	3-29-51	16800	1869	1125
2	9-27-51	89241	690	868
3	2-4-52	88141	1022	723
3A	3-13-53	85001	992	704
4	4-14-53	85801	903	696

Stage	Date	24 Hr.	AM Per Hr.	PM Per Hr.
1				
1A				
2	10-16-51	1125	118	96
3	2-5-52	1512	136	140
3A	3-13-53	1384	133	108
4	4-29-53	1839		

Stage	Date	24 Hr.	AM Per Hr.	PM Per Hr.
1	1-10-51	1805	358	128
1A	4-4-51	1972	392	130
2	10-8-51	2079	381	147
3	1-25-52	2400		
3A	3-16-53	2797	413	237
4	4-28-53	2849		

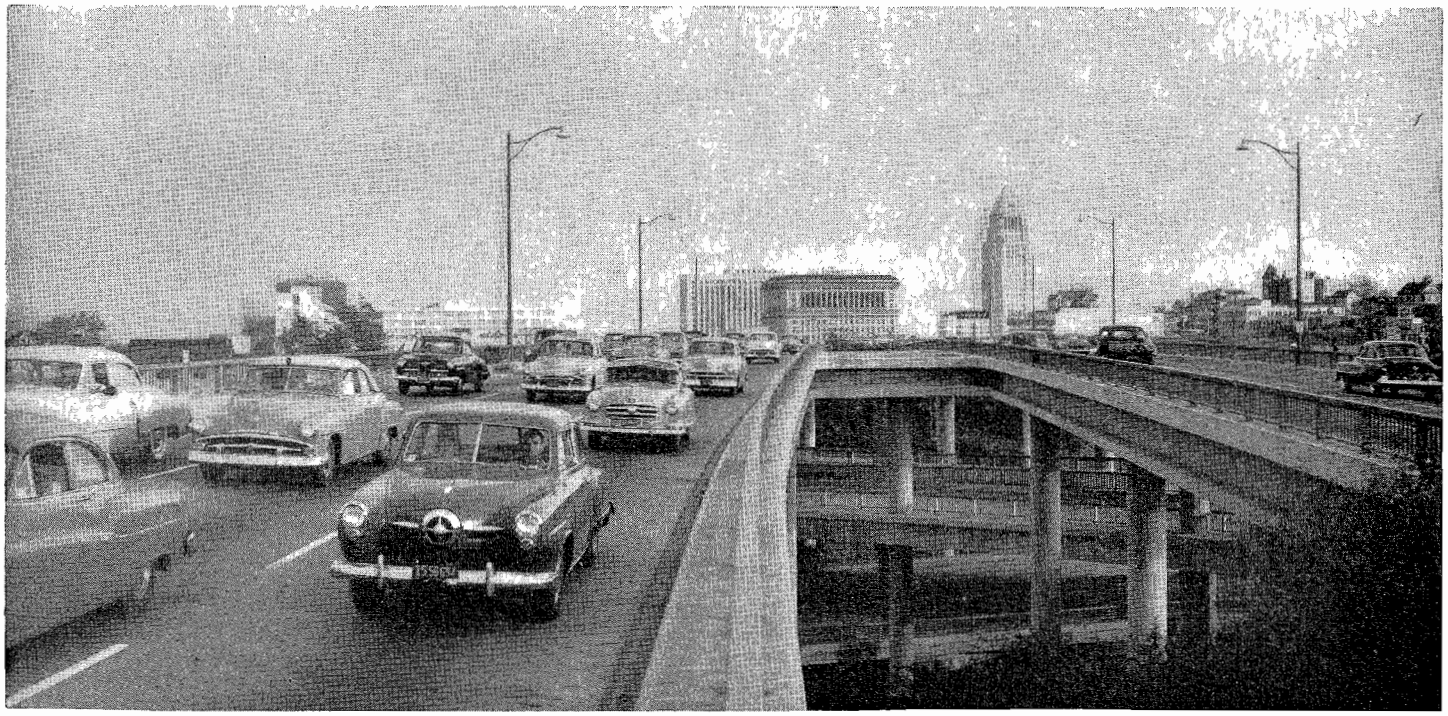
Stage	Date	24 Hr.	AM Per Hr.	PM Per Hr.
1				
1A				
2	10-11-51	3086	304	240
3	2-5-52	4216	370	320
3A	3-16-53	4480	416	323
4	4-28-53	4712		

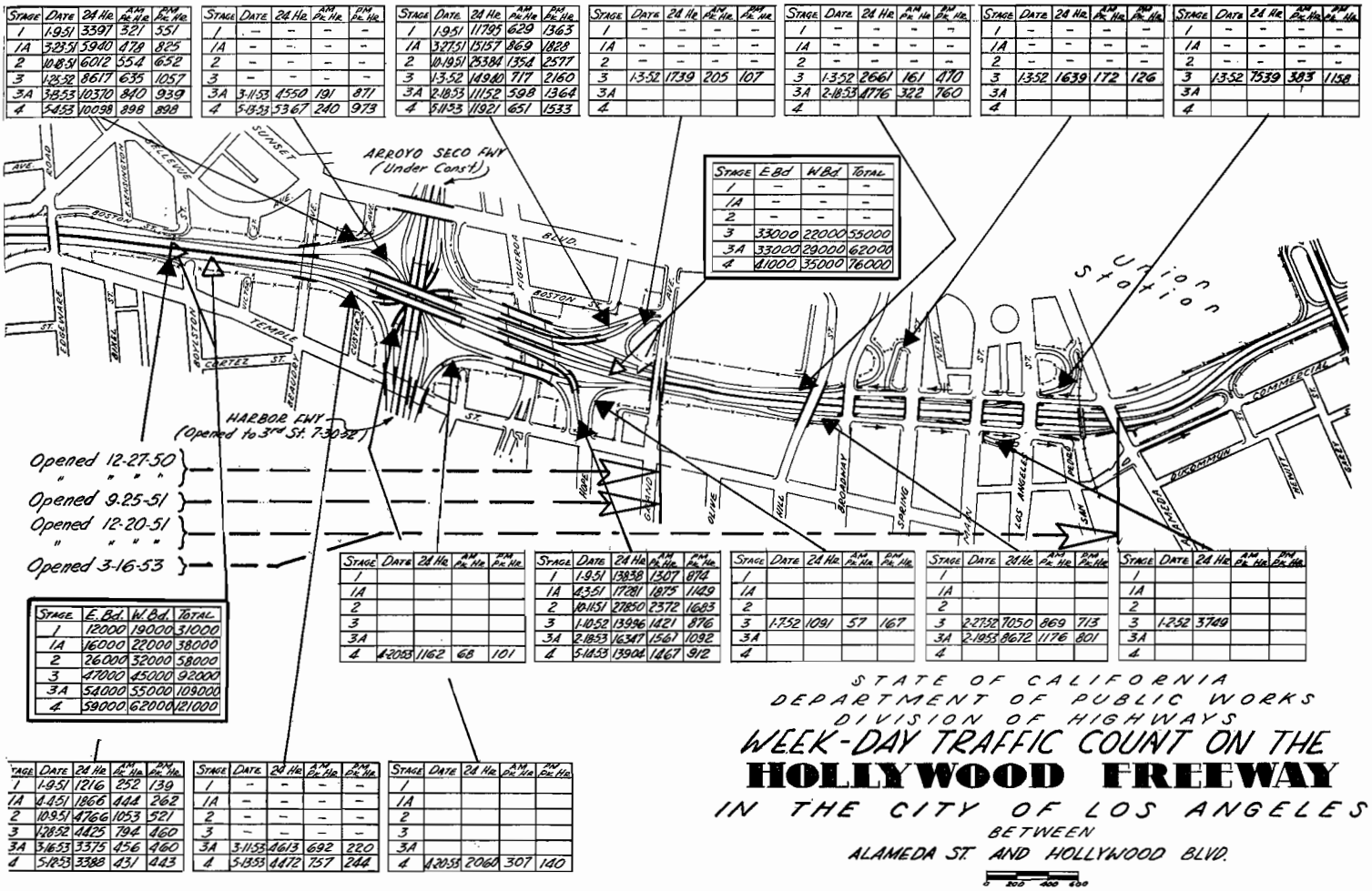
Stage	Date	24 Hr.	AM Per Hr.	PM Per Hr.
1				
1A				
2	10-16-51	1528	112	115
3	1-28-52	4143	337	407
3A	3-16-53	3671	304	356
4	4-28-53	3727		

Stage	Date	24 Hr.	AM Per Hr.	PM Per Hr.
1				
1A				
2	10-16-51	2488	418	235
3	2-6-52	3164	852	244
3A	3-16-53	2833	375	302
4	4-29-53	2842		

Stage	Date	24 Hr.	AM Per Hr.	PM Per Hr.
1				
1A				
2	10-17-51	524	38	49
3	2-6-52	1752	214	183
3A	3-16-53	2979	335	236
4	4-28-53	2866		

Looking easterly along Hollywood Freeway, showing traffic over the four-level grade separation structure, with Los Angeles civic center buildings in background





Diversion From Distant Streets

Coupled with the growing traffic on the Hollywood Freeway, there has been a reduction of volumes on many of the parallel city streets. Some of this diversion was shown in the article by Mr. Harding in the March-April, 1953, issue of the magazine. The paralleling arterials then become more attractive for local traffic desiring to do business in the area.

As additional evidence of the wide zone of influence of the freeway, a clearly defined break in the general rising trend of traffic volumes on important parallel streets at a considerable distance from the freeway is shown in *Table 2*. In looking at these figures it should be remembered that there is a strong general upward trend in the counts for the metropolitan area. Even a slight drop in the count from one year to the next means that the general trend has been offset. Only strong influences such as reach-

TABLE 3. 24-HOUR FREEWAY TRAFFIC COUNTS ON VARIOUS DAYS OF WEEK

Hollywood Freeway, at Beaudry Avenue Bridge

		Eastbound (4 lanes)	Westbound (4 lanes)
Saturday	(7-11-53)	51,900	----
Sunday	(7-12-53)	39,900 *	46,345 *
Monday	(7-13-53)	55,400 *	61,705 *
*	* * * * * *	*	*
Friday	(7-24-53)	----	60,254

Santa Ana Freeway, at Indiana Street Bridge

		Eastbound only (3 lanes)	
Sunday	(7-12-53)	24,022	----
Monday	(7-13-53)	32,069	----
*	* * * * * *	*	*
Friday	(7-17-53)	33,952	----
Saturday	(7-18-53)	28,685	----
Sunday	(7-19-53)	27,193	----

Arroyo Seco Freeway, at Cypress Avenue Pedestrian Bridge

		Eastbound only (3 lanes)		
Friday	(7-10-53)	31,414	(7-17-53)	31,977
Saturday	(7-11-53)	25,129	(7-18-53)	25,402
Sunday	(7-12-53)	22,642	(7-19-53)	22,280

* Unbalance in two directions due to effect of Boylston Street and Custer Avenue Ramps.

UPPER—Looking easterly along Hollywood Freeway from Rosemond Bridge toward Alvarado Street grade separation, with Bonnie Brae Avenue overcrossing in background. This view shows a typical condition of dense traffic in both directions on this freeway. LOWER—Looking westerly along Hollywood Freeway from Belmont Avenue pedestrian bridge, showing dense traffic.

ing capacity of the street or opening a new parallel street will cause such a break in the general trend.

New Concept

Table 2 and similar studies on freeways in other parts of the United States suggest a new concept of the extent of influence of such a highway on other arteries in a metropolitan street network. In capacity to move large traffic volumes and in the speed with which persons and goods can be transported (and most definitely in the safety of this transport), the freeway is in a class far above conventional arterial streets. A freeway, with its ramp connections, affects the traffic flow pattern and serves the needs of users in a very wide band along its route.

Grand National

New Freeways and Improved Highways Benefit Cow Palace

NEW FREEWAYS and other improved highway conditions will make travel to this year's Grand National Livestock Exposition, Horse Show and Rodeo safer and more pleasant than ever before for the scores of thousands of motorists who annually attend this mighty combination animal show.

This was disclosed by Nye Wilson, Secretary-Manager of the Cow Palace, on the basis of a report from R. P. Duffy, Assistant District Engineer, District IV, Division of Highways, comprising the nine bay counties.

The Grand National, mighty combination of national livestock exposition, full division national horse show, world's championship rodeo finals, national Cutting Horse Association championship finals and spectacular arena acts, will be held Oct. 30 to Nov. 8.

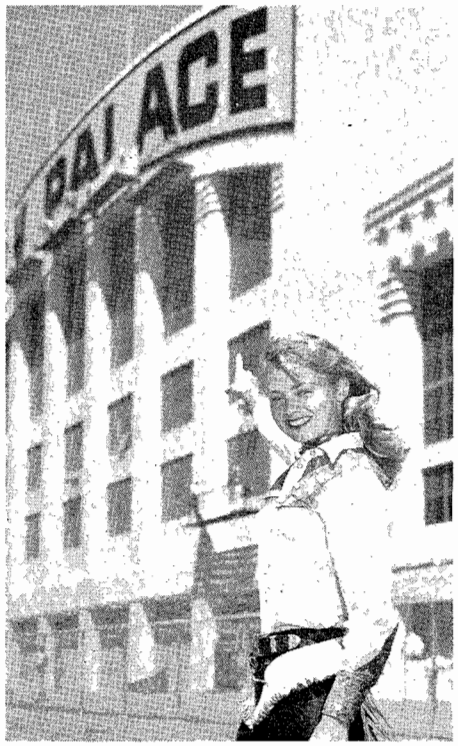
By that time, Duffy's report indicated, it is virtually certain that the new section of freeway in the vicinity of Third Street in San Mateo, including the new approach to the San Mateo Bridge, will be in traffic service eliminating all surface turns.

Better Highway Facilities

Also scheduled to be completed by that time is the new section of four-lane divided freeway from a mile and a half west of Dublin easterly to Camp Parks speeding up travel from the rich agricultural areas of the San Joaquin Valley.

Exhibitors and visitors from the Redwood Empire will find the freeway construction on Highway 101 from the Forbes Overhead north of San Rafael to Ignacio completed since last year and much progress made on the section through San Rafael.

While work will be in progress on the Waldo grade, on the Altamont Pass into Hayward and on the Bayshore Highway between San Mateo and Redwood City adjacent to the existing roadway there will be little impediment to the free flow of traffic, Duffy's report said.



Coraleen Jurian, a former queen of the Grand National Livestock Exposition, Horse Show and Rodeo, points with pride to the huge "Cow Palace" lettering which is part of the remodeling.

Cow Palace Improved

Meanwhile considerable construction work has been completed at the Cow Palace which is now ready to take its place as one of the world's finest arenas. A new floor of 10-inch concrete has been laid in the arena over a network of conduits and cables for telephone lines, telegraph circuits and power mains, and special setups to handle any type of show.

In addition the main arena building and the adjacent horse barns have been painted on the outside for the first time and a new roof has been installed.

The spectacular arena performances this year will be headed by the Wild Stallion Stampede, most exciting and dangerous of all buckaroo events.

New attractions this year will include the Western Trail Riders, a nationally famous group of mounted square dancers from Denver, Colorado, performing in colorful costume under "black lights," and Arthur Allen's Border Collies in a brand new act working with Golden Geese.

Rehearsing for their first appearance at the Grand National Livestock Exposition, Horse Show and Rodeo are these members of the Western Trail Riders, nationally known group of mounted square dancers who perform in colorful costume under "black lights."

Jamboree

Governmental Agencies Cooperate To Make Boy Scout Event a Success

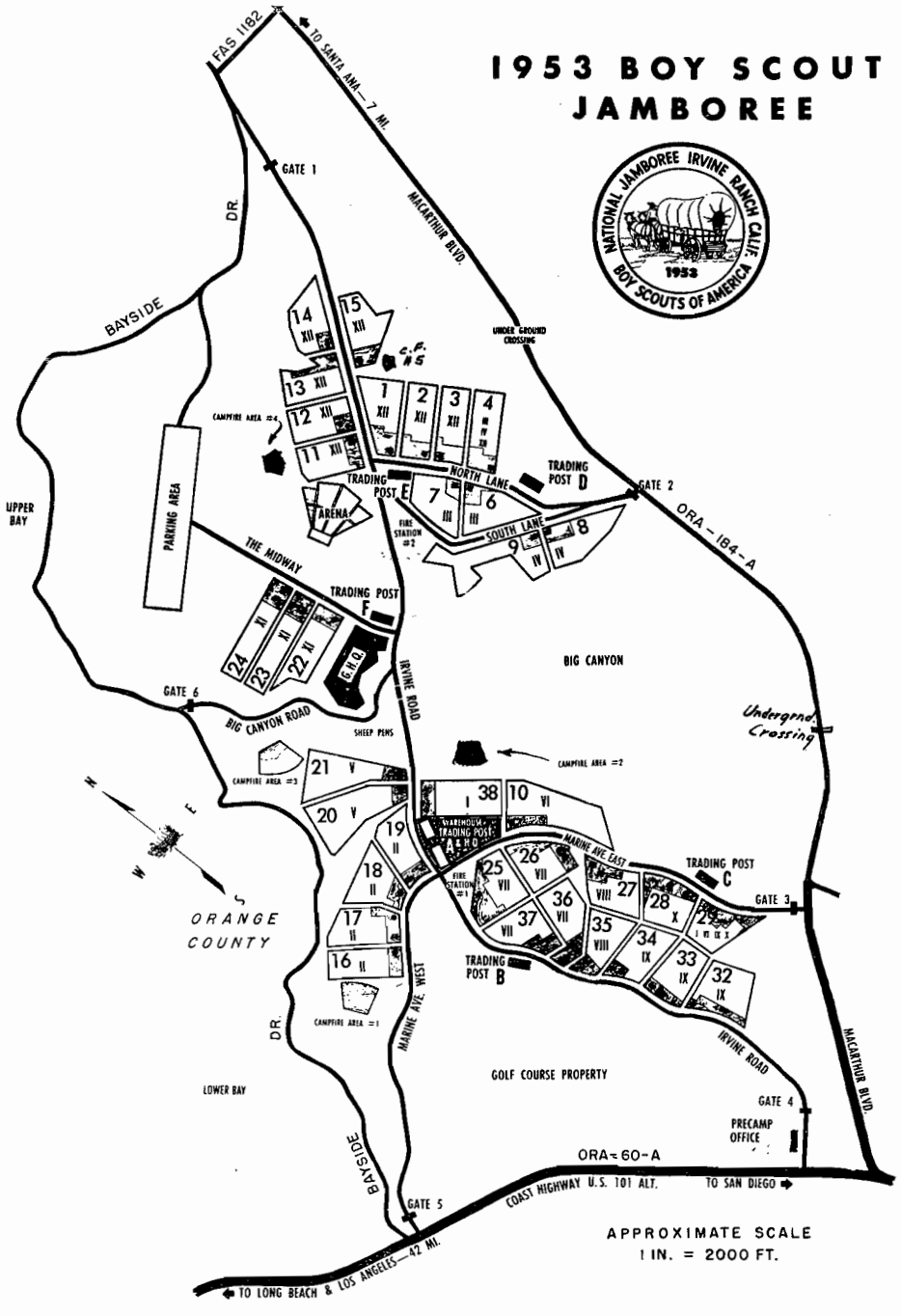
By ROBERT W. ANDERSON, Associate Highway Engineer

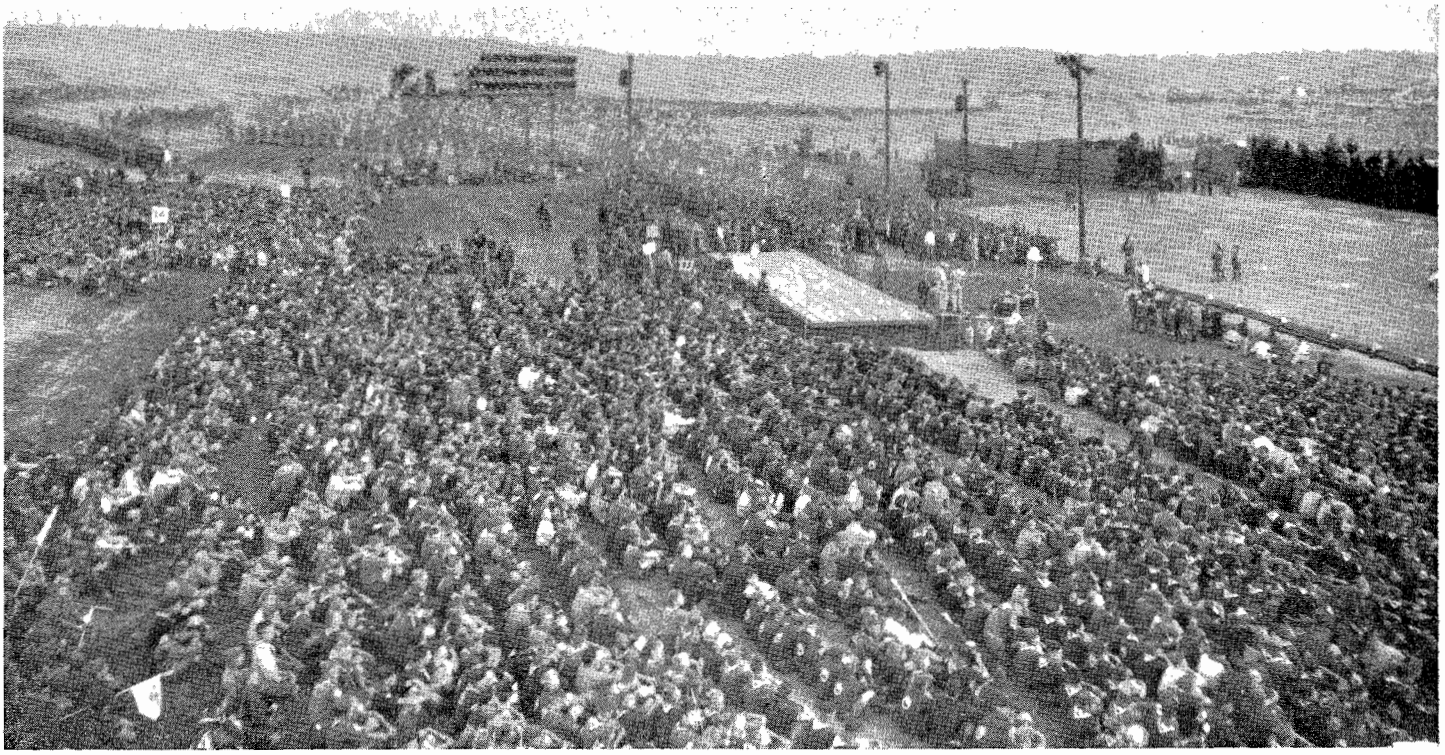
(Editor's Note: California was host this summer to the third National Boy Scout Jamboree on the Irvine Ranch in Orange County at a location bounded by three major state highways. Cooperation by various governmental agencies including the State Division of Highways contributed in no small measure towards the success of this event. The author, a deputy scout commissioner, was the chief equipment quartermaster of the Boy Scout Jamboree. He took one month's vacation from his regular duties to get his quartermaster department organized for the encampment.)

On May 1, 1952, a conference was held in P. O. Harding's office in Los Angeles with Ray H. Bryan, Director of Physical Arrangements for the 1953 Jamboree, Boy Scouts of America; W. L. Fahey, District Engineer; John B. Davidson, Highway Superintendent for Orange County, and the author present. Mr. Bryan outlined the type of camp and size of the event contemplated for the 1953 Jamboree. He stated that some 22 sites throughout the United States had been considered and the location on the Irvine Ranch seemed to be the most acceptable. The factors considered in locating a site for a jamboree were first, an area large enough for 50,000 men and boys to camp; secondly, proximity to a metropolitan area from which to obtain food; and thirdly, reasonable closeness to rail transportation.

Site Selected

On May 6, 1952, it was decided to hold the 1953 Jamboree on the Irvine Ranch. The site selected was 3,000 acres located northerly from the junction of McArthur Boulevard and the Coast Highway, both state routes, and was bounded on the west by Bayside Drive (Orange County Road) and Palisades Road (FAS 1182). The Irvine Company had made studies for the area south of Big Canyon on which they had designated possible future roads and they now made a layout of roads for the area north of Big Canyon. By using roads designated for future developments as the basic road system for the jamboree camp, it would be possible to utilize the road construction work in future ranch developments. The earth moving, grading, and shaping to construct 8.5 miles of road on the jam-





Boy Scouts assembling for arena show. This view shows some of the boys waiting for the show and marching columns of boys in the background as far as the eye can see all coming to the arena. Photo by George Bergstrom.

boree site were done gratis by the Irvine Company.

As planning progressed, John B. Davidson, the Division of Highways' superintendent in Orange County, was asked for advice as to the type of surfacing and the cost of the construction of the roads on the site. The Scout organization stated that the roads were to have a 100-foot graded roadway with a 24-foot center portion having a surfacing heavy enough to avoid dust or undue roughness under the jamboree traffic. Mr. Davidson's recommendation for the road surfacing was to roadmix about 670 tons of SC-2 road oil at the rate of one gallon a square yard.

Agencies Cooperate

The problems involved in planning a city for 50,000 people, even though only a tent city of two weeks' duration, are of major proportions, therefore at subsequent conferences it was agreed to contact various governmental agencies. The result was that the California Highway Patrol assigned special squads to handle the jamboree traffic on state highways and adjacent county roads and the Orange County sheriff's department handled policing and traffic control on the grounds; the State Division of Forestry furnished men and equipment for two fire stations; the Orange County Road Department applied to the 8.5 miles of roads on the grounds road oil furnished free by various oil companies; the United States Marine Corps installed a single-span Bailey bridge to supplement an existing two-lane county bridge on Bayshore Drive and furnished water buckets and folding cots for the encampment, while the Army loaned to the Boy Scouts automotive equipment of various types and sizes.

The official registration for the jamboree was 45,401 leaders and boys; approximately 7,000 were leaders, or one adult leader for every seven boys. The camp was divided into 35 sections, each consisting of 34 troops. Each troop was composed of three adult leaders and 35 boys. There were also delegations representing 20 foreign countries. The first boys arrived on July 13th and on July 27th the last ones left the site. About 80 percent came by rail, requiring 83 special trains. They were convoyed in busses from the railhead to the jamboree.

Jamboree Self-supporting

This was the Third National Jamboree and was officially in session from July 17 to July 23, 1953. The First National Jamboree had been scheduled for Washington, D. C., in 1935 but just prior to its opening was canceled and was held in Washington in 1937; the Second National Jamboree was held at Valley Forge in 1950, and the fourth will be held in 1957, thus establishing a pattern of a national jamboree every four years.

The National Jamboree is organized as a nonprofit, self-supporting operation of the Boy Scouts of America. Each person attending the jamboree paid a registration fee of $48. This provided over $2,100,000 with which to construct and operate the camp and feed those who attended. The intensive planning, training, and promotional work that is the necessary preliminary to a national jamboree tremendously strengthens the scouting program.

The troops attending the jamboree are made up of men and boys selected from the top people of their organizations. These groups are formed into

. . . Continued on page 53

Floor Wax

Its Importance as Safety Factor in Division of Highways Offices

By NEIL T. AUSTIN, Associate Chemical Testing Engineer

WHAT DOES floor wax have to do with construction and maintenance of state highways?

Nothing directly, but indirectly floor wax is a necessity to the well being, safety and efficiency of most of the 9,600 employees of the Division of Highways. In providing dustless and bright surroundings in the many offices of the division, at headquarters, in the 11 districts, in the laboratories and shops, good floor wax is essential and the department is concerned with securing the best and most satisfactory wax obtainable.

Someday, there may be a low cost flooring material which will require no maintenance other than sweeping. Even then, as long as we have hardwood, linoleum, and asphalt tile floors, there will exist the problem of maintenance. And this problem consists largely of the search for a satisfactory floor wax.

What is a satisfactory floor wax? From the standpoint of the building maintenance man, the hardest, glossiest wax is the best. Such a wax is easiest to keep clean, and has the longest replacement time. It also presents the most satisfactory appearance.

Safety Is Important

Unfortunately, as hardness and gloss are increased, the tendency toward slipperiness is also increased. With this conflict of properties in mind, the designer of a floor wax attempts to strike a balance, so that adequate safety is obtained without too great a sacrifice in protection, appearance and cost of upkeep.

Floor waxes are usually sold in two types, solvent and emulsion. The solvent type, which may be in either paste or liquid form, usually has a petroleum solvent as a vehicle. This type is used for hardwood floors, but is not satisfactory for linoleum or asphalt tile, as the solvent tends to soften the flooring material. In the emulsion type, the wax is emulsified in water to the extent of 12 to 18 percent solids. This type is easy to apply, but is not used on hardwood floors, due to the harmful effect of the water on the wood. This type is commonly used in office buildings, where the flooring materials are predominantly linoleum or asphalt tile.

Waxes Vary Greatly

Floor waxes vary greatly in the degree of hardness and slip resistance. All manufacturers produce a range of products which vary from very hard to very slip resistant. As previously stated, the preferred wax is the hardest possible that will give the required slip resistance. Even office buildings differ in their requirements, depending upon layout and type of personnel. For example, a building made up of small offices, with little travel in the halls, and with predominantly male employees, can use a harder wax than one having large offices, well-traveled halls, and a high percentage of women wearing high heeled shoes.

The base of most high grade floor waxes is Carnauba wax. So far, at least, it has held its place in the industry against the inroads of the synthetic materials, in spite of being a higher priced product.

The term "wax" has lost much of its original significance. Many substances having wax-like properties, such as paraffin, ceresin, etc., are now classified as waxes. The true waxes are esters of high molecular weight monohydric alcohols. They thus differ from the fats which are esters of the trihydric alcohol, glycerol. True waxes are usually of animal or vegetable origin.

Carnauba Wax Hardest

Carnauba wax is the hardest, and most expensive, of the common waxes. It is primarily the ester of myricul alcohol and cerotic acid, but contains both the free alcohol and free acid. The chemical formula of the ester is $C_{25}H_{51}COOC_{31}H_{63}$.

The wax occurs as a secretion on the leaves of the Carnauba palm in Brazil. Although the Carnauba palm grows in other South American countries, and has been introduced in other tropical countries, it is only the Brazilian palm which produces wax. The regularity of the rainy and dry seasons in Brazil is given as the reason. The wax seems to serve the purpose of protection against rotting action during the wet period, and of prevention against excessive evaporation during the following hot, dry season.

It is estimated that there are 50 million Carnauba palms in Brazil, from which are collected an average of 20 leaves per tree. Each leaf supplies about one-sixth ounce of wax. Thus it takes about five trees to produce one pound of wax per year.

Manufacturing Process

The leaves are cut from the trees, dried for three or four days, and beaten to dislodge the wax. The gathered wax is then placed in boiling water, where it melts and rises to the surface. On cooling, it hardens to a cake on the surface, where it is collected and broken into chunks.

Carnauba wax is marketed in nine grades, determined, for the most part, by color. The wax from the older leaves is darkened by time, and also contains more of the palm's own coloring matter. Normally, the grading is accomplished by classifying the leaves according to color at the time of collection. The more common grades are Nos. 1, 2 and 3 Yellow, 2 and 3 North Country, and 3 Chalky. Yellow is considered the refined grade, and North Country the crude, while Chalky is powdered and contains some dirt. Usually No. 3 North Country is used in the manufacture of floor wax, as the wax is automatically refined in processing.

The Ingredients

The Carnauba Wax is combined with resins and emulsifying agents in order to prepare a stable emulsion in water. Sometimes resins are used to produce the nonslip characteristics, but more commonly a suspension of colloidal silica is incorporated in the batch for this purpose. This has the effect of producing a rough texture on the surface without softening the coating as is the case with resins.

A typical wax formulation would be:

Carnauba wax	30% min.
Colloidal silica	30% min.
Resins and emulsifying agents	Remainder

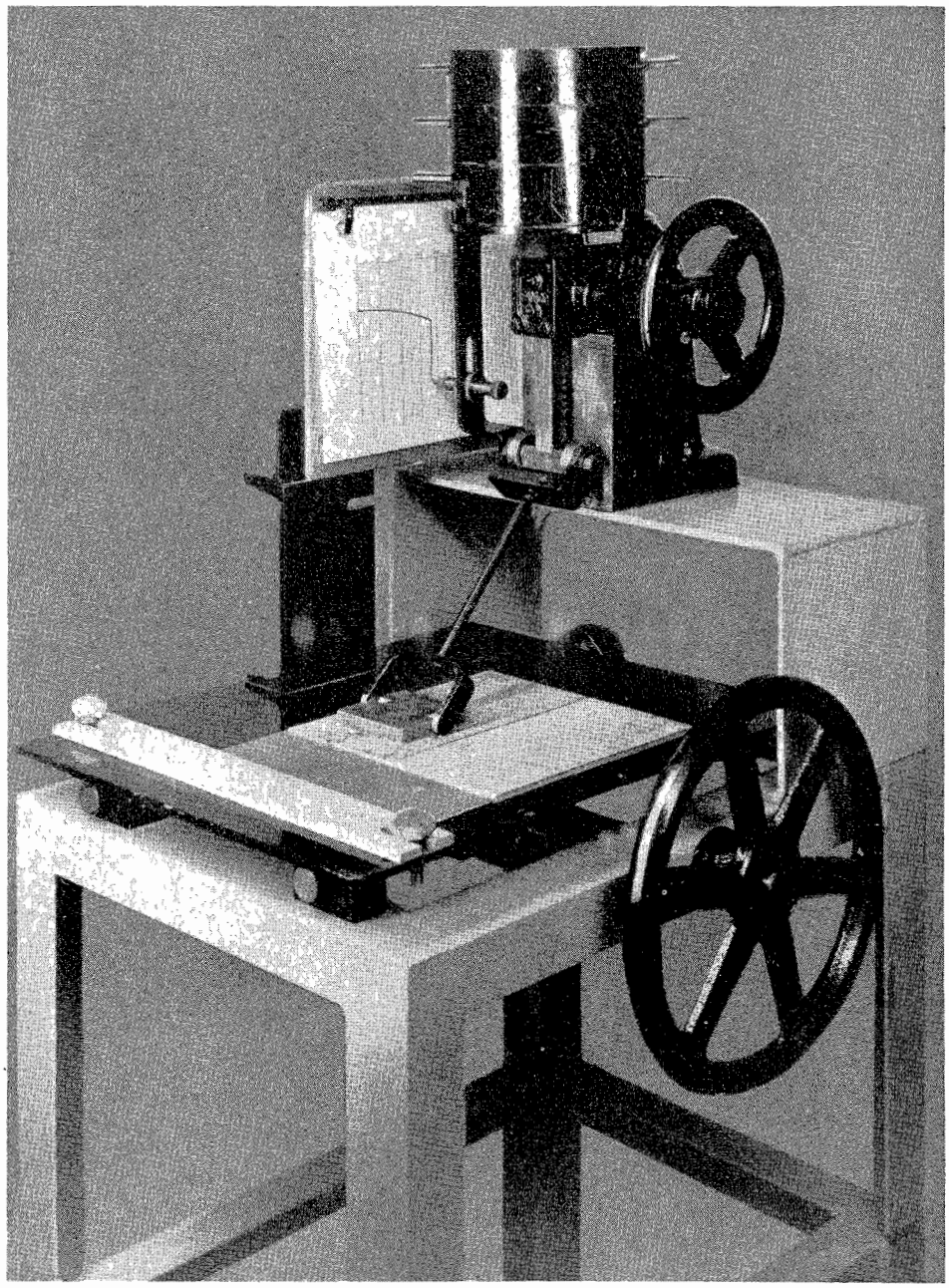
The above percentages relate to the 12 to 18 percent solid content of the liquid emulsion.

Some mention should be made of the wax free floor coatings. These are usually resin-based, and are generally used when slip resistance is the paramount consideration. In the past, the drawback has been that they are difficult to maintain, but they have found their uses in installations such as hospitals. However, the possibilities arising from the field of synthetic resins are almost limitless, and it is probably only a matter of time before resins especially applicable to floor wax will be developed. Even now certain resins give indications of being more satisfactory for this purpose than even Carnauba wax.

Laboratory Tests

Laboratory tests on floor wax are mainly concerned with film characteristics and nonslip properties. Unfortunately, chemical tests for composition are of little value. Colloidal silica may be accurately determined, but there is no satisfactory method for determining Carnauba wax, or for identifying resins once they are incorporated in the batch. Film characteristics such as gloss, waterspotting, removability, etc., are easily determined, but the film is best evaluated when applied on a large area of floor. Other tests usually performed are for stability, sediment, and alkalinity.

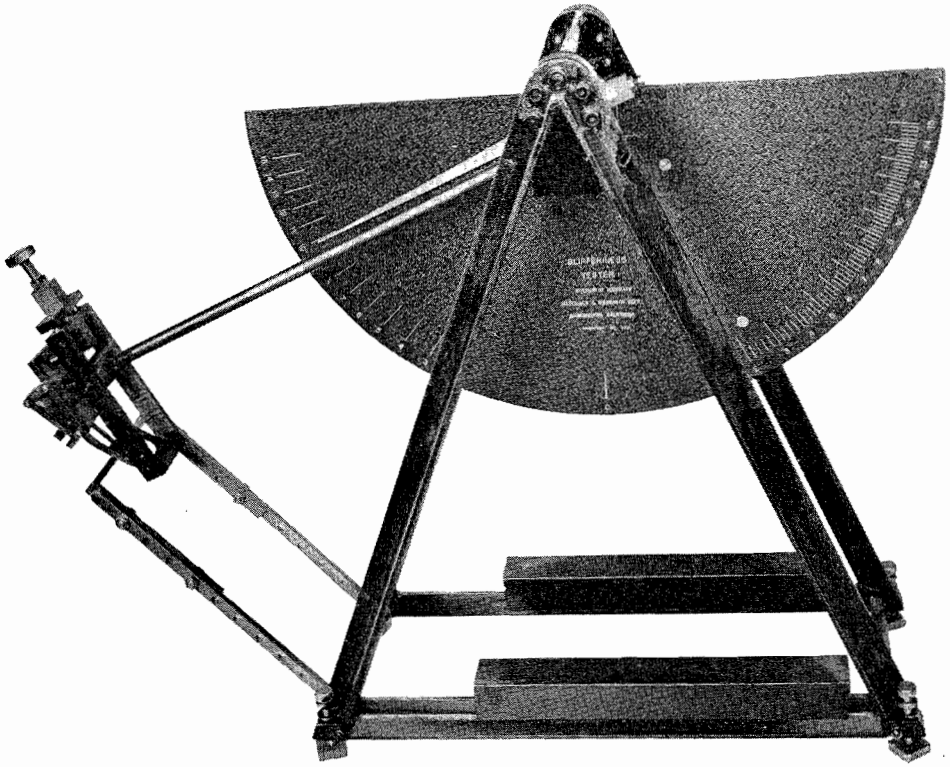
Attempts to evaluate slip resistance in the laboratory have proven fairly successful. Slip resistance tests are based on the measurement of either static or dynamic friction. The evidence is not conclusive as to which type of test will best evaluate a wax. Essentially, a static test measures the tendency to start slipping, while the dynamic test measures the tendency to continue slipping. The James machine used by the Underwriters Laboratory measures static friction. The coefficient of friction is determined from the angle at which slipping occurs. The tangent of this angle of friction is the coefficient of friction.



James Machine. Used by the Underwriters' Laboratory to measure coefficient of static friction of floor surfaces.

Impact Pendulum Tester

The National Bureau of Standards uses the Impact Pendulum Tester, designed by Percy A. Sigler. This is a dynamic test, measures the decrease in length of arc of a pendulum as the floor offers resistance to its swing. The coefficient of friction is calculated from the ratio between the decrease in potential energy and the work done on the floor. In these tests a static coefficient of 0.5 and a dynamic coefficient of 0.4 are considered necessary for a safe floor. The High-



National Bureau of Standards Impact Pendulum Tester for measuring coefficient of dynamic friction of floor surfaces

way Materials and Research Department has one of these machines which is used to determine the slip resistance of waxes used by the Division of Highways.

Another method, which has not yet achieved scientific recognition, is that of measuring the force necessary to pull a 10-pound bag of shot along the floor. This method is useful as a practical field test. It gives somewhat lower results than the other methods, a friction coefficient of 0.3 being regarded as safe.

The State of California purchases about 15,000 gallons of floor wax annually. Of this, about 1,000 gallons is used by the Division of Highways. The State Standards Committee on Janitorial Supplies has enlisted the cooperation of several West Coast manufacturers in the search for a wax that will be satisfactory to all concerned. The Service and Supply Department and the Materials and Research Department of the Division of Highways are cooperating in this study.

In Memoriam

ROWE S. HOLMAN

Rowe S. Holman's death while at work on August 5th was a shock to all of his fellow employees in District VII, who will always remember him as an extremely capable engineer and a dependable, willing worker with a wonderful personality, always ready to help others.

He was born February 27, 1890, at Rolla, Missouri. He graduated cum laude in civil engineering from the University of Idaho. After finishing college he worked for the Montana State Highway Commission for four years on various office and field assignments. When he left Montana he moved with his family to Huntington Park where he owned and operated a stationery and gift shop.

Mr. Holman wanted to get back into highway engineering and started with the State Division of Highways in June, 1936, in the Maintenance Department of District VII, where he worked until a short time before his death.

He handled in a highly commendable manner bridge repairs, design and construction of minor structure projects and repairs and additions to the maintenance stations. The huge freeway program interested him and he recently transferred to the Design Department to have a part in designing freeways.

He is survived by his wife, a son, two daughters and six grandchildren, to whom his fellow employees extend their sincere sympathy.

EXPERIENCE A HARD TEACHER

Experience teaches fools, says a Latin proverb, but foolish driving often makes the experience very costly. Take it easy, urges the California State Automobile Association, so you won't have to learn the hard way.

HITCH-HIKER DANGER

The FBI says the number of crimes involving hitch-hikers who have been picked up by the unwary motorist is increasing. You should avoid inviting anyone into your automobile unless you know the individual personally.

PRAISE FROM NEW YORK

State of New York
DEPARTMENT OF PUBLIC WORKS

Poughkeepsie, N. Y.

MR. KENNETH C. ADAMS, *Editor*

DEAR MR. ADAMS: I do not think that I should return the attached post card without a word of appreciation for your magazine which I have been receiving ever since 1948. At that time I detoured from Salt Lake City to California to examine the Johnson finishing at the suggestion of the State Superintendent of Public Works, and through the courtesy of your department saw quite a lot of work in both the San Francisco and Los Angeles areas.

Your magazine could be interesting to anyone, but more interesting to me, having traveled through the areas of some of the improvements. The New York State Department of Public Works is a proud department, but we do not have a magazine, and it seems that your magazine is the leading departmental publication in this Country, or anywhere else for that matter. A little applause never hurts, they say, if it is sincerely offered.

Yours very truly,

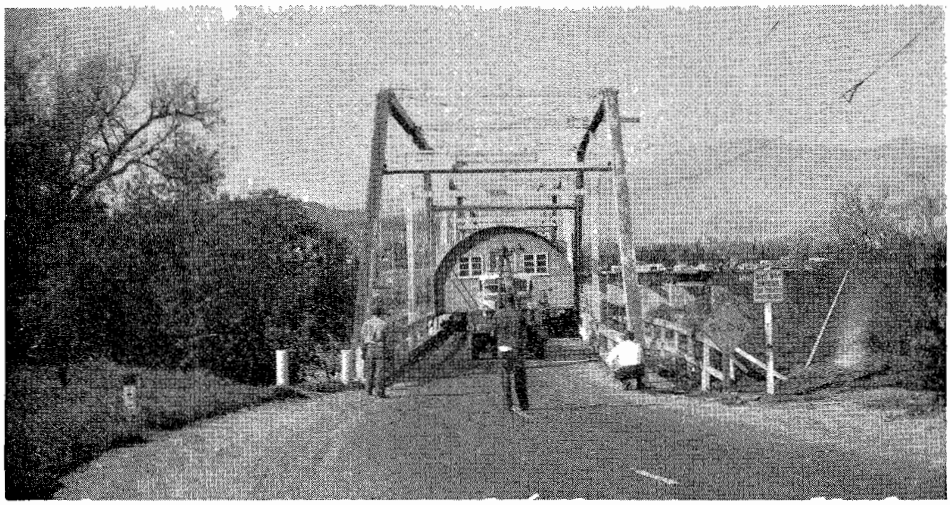
J. S. BIXBY
District Engineer

New Willard Bridge

A Federal Aid Secondary County Project in Ventura

By JACK SYLVESTER, Resident Engineer

THE CENTRAL feature of the Independence Day celebration at Santa Paula in Ventura County on July 5, 1920, was the opening of a bridge across the Santa Clara River. Completion of the structure was an accomplishment for several reasons. An opinion had been widely held that construction of a bridge across the river was a physical impossibility, as the nature of the river bed was such that winter floods would carry away any bridge constructed. In those days, where were construction funds to be obtained? It was a community route of travel, but it was not a county road. The City of Santa Paula was not endowed with resources sufficient to provide such a project. Oil fields were being developed in the mountains along the south bank of the river, but this development had not become an industry of such magnitude as would foster such an improvement. Obstacles deriving from financial paucity and nonresponsibility of ownership were overcome by the determination of those who would benefit from construction of the bridge.



Engineer's office being moved across old Willard Bridge over Santa Clara River at Santa Paula. Note width did not permit trucks and busses to pass. Like Ventura County, many other counties have taken advantage of the Federal Aid Secondary Highway Program to remove such traffic bottlenecks.

Public Subscription Started

A drive for public subscription of funds was conducted. Farmers whose lands lay on the south bank contributed—one of them for instance gave $400—many of the oil field workmen gave $10 each. During 1919, the sponsors of the drive reported that the required sum would be complete if there were $7,500 more subscribed. That sum was then subscribed by Mrs. Harriett A. Willard, widow of Charles A. Willard, a local pioneer who had grown wealthy from oil-bearing lands. The bridge, at its dedication on that Independence Day in 1920, was named Willard Bridge in grateful recognition of Mrs. Willard's decisive contribution. The community was justly proud of its accomplishment in constructing the bridge, and oldtimers to this day who still live around Santa Paula believe their contributions to the original construction fund were well invested.

The original Willard Bridge was a series of combination Pratt trusses on reinforced concrete piers supported by reinforced concrete piles. A local newspaper said at the time of the dedication that the bridge was permanent, with its "abutments and piers sunk to eternal rock" and "its viaduct high above any record high water level." During construction, some of the problems affecting present-day jobs manifested themselves. Pile driving was difficult, as ledge rock lies near the surface of portions of the river bed. Steel was in short supply, and the newspaper reported delays to construction pending arrival of steel by railroad shipment. The bridge consisted of 10 spans, with a total length of 918 feet. It was constructed by William Ledbetter and Company at a contract price of $49,040. About a year after its completion, the bridge became the property of Ventura County and thus a part of the county road system.

In winter floods, Nature several times destroyed the north approach to Willard Bridge, as the north bank of the river was for a long time not well protected by levees, and the area is bottom land under high water, but a flood caused by the failure of St. Francis Dam on the night of March 13, 1928, carried away seven spans and thoroughly destroyed most of the piers, even breaking the piles deep in the river bed. The superstructure of the seven spans was beached along the river banks, and it has been said that one span was landed on the back porch at the home of the chief of police of Santa Paula.

The structure was promptly reconstructed at the expense of the City of Los Angeles, owner of the dam which failed. Portions of the structure which remained standing were repaired, and those lost were replaced by new construction. A good job was done on reconstruction of foundations, and creosote-treated deck planking was laid on the new truss spans. Reconstruction cost $34,140, and the Contractor was Oberg Bros., of Inglewood.

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Bayshore Freeway

New Section Between Army and Bryant Opened to Traffic

A NEW TWO-MILE section of the Bayshore Freeway between Army Street and Bryant Street in San Francisco was opened to traffic on October 1st.

The completed project, representing two separate contracts, has taken two years to construct.

The first contract, awarded in August of 1951, covered the construction of seven-tenths of a mile of six-lane divided freeway between 18th and Bryant Street. All of this section of the Bayshore is elevated some 20 feet above ground level.

The second contract, on which work began in March, 1952, covered the 1.3 miles between Army Street and 17th Street. In addition to construction of the freeway itself, this project also involved the construction of pedestrian overcrossings at 25th, 22d and 18th Streets and a 122-foot bridge to carry cross traffic and pedestrians over the freeway at 23d Street.

Right of Way Costs

Nearly half of the over-all $9,312,000 cost of the two projects was for the purchase of right of way, involving the extensive removal or relocation of major public utilities facilities such as railroad tracks, sewer lines, water mains and power and telephone installations.

One of the most difficult problems was the relocation of certain City of San Francisco high pressure water lines which are used exclusively for fire protection. The work involved careful planning, because the water could be shut off for short periods only on account of the fire hazard.

Opening of the Army-Bryant section will mean an unbroken stretch of freeway between Alemany Boulevard and Bryant Street, a distance of three miles. It will liberate thousands of motorists from the congestion which has prevailed on Potrero Avenue.

Three Other Contracts

The 1.7-mile section from Alemany Boulevard south to Third Street is now under construction and is slated to be completed sometime early in 1955.

Three other contracts, now in progress, will extend the freeway viaduct north to Seventh Street and west along 13th Street to Mission Street.

In addition, bids will be opened on September 30th for construction of most of the remaining portion of the

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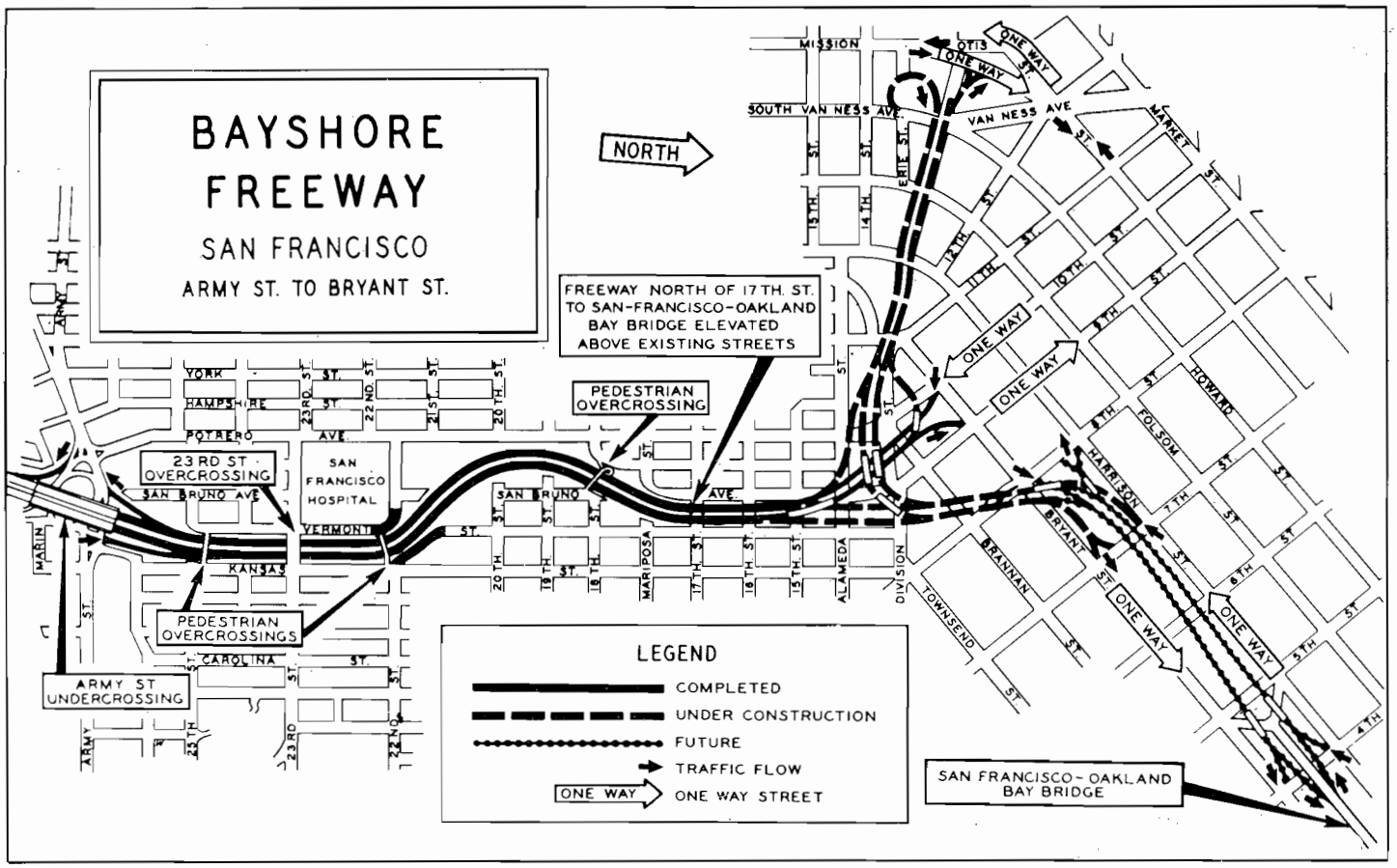


Recommendations

San Francisco and Alameda Counties Submit Projects to Highway Commission

HIGHWAY projects recommended for inclusion in the 1954-55 budget were submitted to the California Highway Commission at its September meeting in Sacramento by the San Francisco Chamber of Commerce and by the Alameda County Highway Advisory Committee. In addition to projects eligible for construction and right of way allocation, San Francisco presented three major projects for plans and surveys.

The San Francisco jobs recommended for early construction are:

Route 68—Bayshore Freeway: Third Street to Fifth Street, 0.2 mile, $1,200,000; South City Line to Salinas Street, 1.0 mile, $1,300,000.

This financing will permit completion of the Bayshore Freeway in San Francisco.

Route 68—Bayshore Freeway: South City limits to connection with existing Bayshore Freeway near South San Francisco, 3.5 miles, $6,000,000.

Open water section, though located in San Mateo County, is of urgent need to San Francisco as the principal link to the Peninsula working areas and residential areas as far as San Jose. Traffic count: 45,000 to 50,000 per day.

Route 224—Embarcadero Freeway: San Francisco-Oakland Bay Bridge via Embarcadero to Broadway (portion), 1.3 miles, $23,100,000.

This route will promote distribution of traffic to and from the financial district and the waterfront industrial areas, and to a Southern Bay Crossing.

Route 2 and 223—Central and Panhandle Freeways: Connection from Bayshore Freeway, near 13th and Mission Streets, across Market Street to Panhandle Freeway in vicinity of Fell, Oak, and Turk Streets, 0.9 mile, $12,500,000.

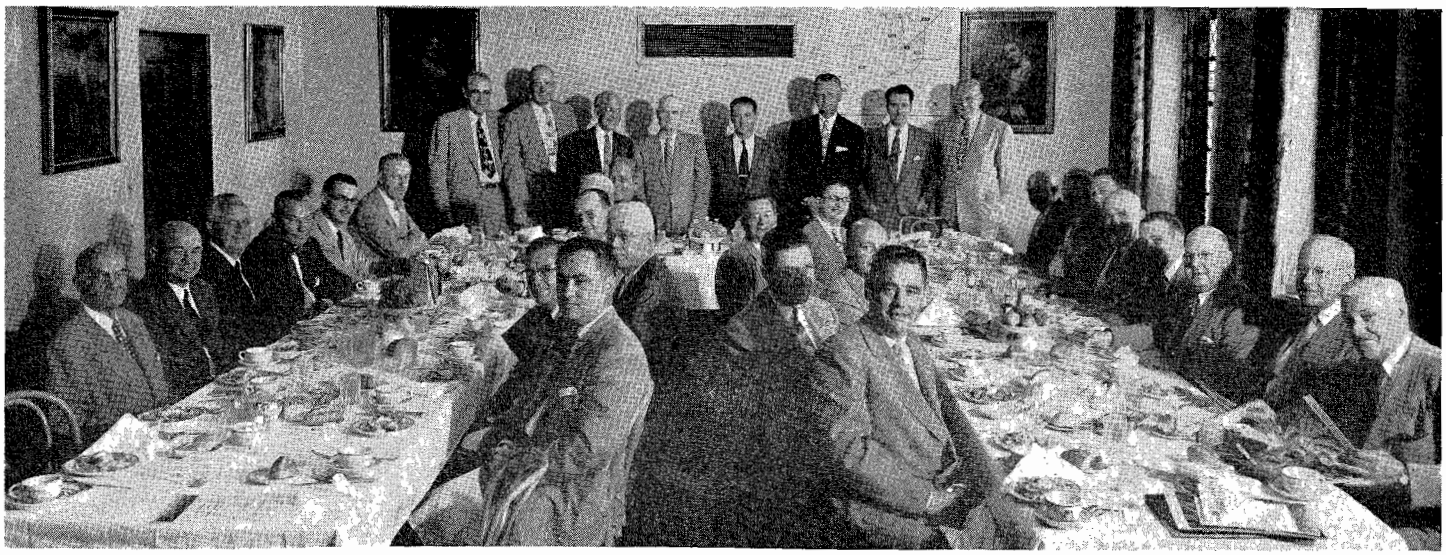
This will permit concentrated traffic volumes, generated by the western community areas of the city, to connect with the Bayshore and thence to the downtown metropolitan district, to the San Francisco-Oakland Bay Bridge, and the Southern Crossing.

Recommended for plans and surveys are the following projects:

Route 224—Embarcadero Freeway: From Broadway to Van Ness, 1.7 miles.

The Embarcadero Freeway is in part the eastern side of the central distributor loop, and in part a radial

Guests at luncheon given by San Francisco Chamber of Commerce under direction of Robert M. Shillito, Assistant General Manager of Chamber. STANDING—George T. McCoy, State Highway Engineer; Chester H. Warlow, State Highway Commissioner, Fresno; G. L. Fox, General Manager, San Francisco Chamber of Commerce; Frank B. Durkee, Chairman, State Highway Commission, and Director of Public Works; Leonard S. Mosias, Chairman, Traffic and Highway Section, San Francisco Chamber of Commerce; H. Stephen Chase, State Highway Commissioner, Sacramento; Carroll Newburgh, Chairman, Freeways Subcommittee, Traffic and Highway Section, San Francisco Chamber of Commerce; F. Walter Sandelin, State Highway Commissioner, Ukiah. SEATED—Left Table, Left Side—R. C. Kennedy, Secretary, California Highway Commission; J. C. Womack, Planning Engineer; Fred Bagshaw, Special Assistant to Director of Public Works; J. E. Jellick, Member Traffic and Highway Section, San Francisco Chamber of Commerce; Russell S. Munro, Deputy Director of Public Works; Sherman P. Duckel, Director, Department of Public Works, City and County of San Francisco. SEATED—Left Table, Right Side—Rodney C. Richardson, Assistant to Director of Public Works; G. N. Cook, Assistant Secretary, California Highway Commission; F. W. Panhorst, Assistant State Highway Engineer; Loran C. Vanderlip, Director, Transportation and Highway Department, California State Chamber of Commerce; B. W. Booker, Assistant State Highway Engineer, District IV; J. H. Sembower, member, Traffic and Highway Section, San Francisco Chamber of Commerce. SEATED—Right Table, Left Side—Max Gillis, Special Representative to Director of Public Works; William Clayton, Manager, Sacramento Valley District, California State Chamber of Commerce; J. P. Murphy, Principal Highway Engineer; Richard H. Wilson, Assistant State Highway Engineer; Assemblyman Charles W. Meyers, 19th District, San Francisco. SEATED—Right Table, Right Side—Kenneth C. Adams, Editor, California Highway and Public Works; C. E. Bovey, Engineer of City and Cooperative Projects; George S. Pingry, Assistant Chief, Right of Way Department, District IV, San Francisco; H. V. Starr, Secretary, Traffic and Highway Section—Manager, Civic Development Department, San Francisco Chamber of Commerce; F. C. Balfour, Chief, Right of Way Agent; Frank Lombardi, City Planning Department, San Francisco; R. M. Gillis, Deputy State Highway Engineer; Ralph Wadsworth, City Engineer, San Francisco.



bypass route serving traffic. Plans and surveys are requested for that portion from Broadway to Van Ness to and from the Golden Gate Bridge.

Route 223 – Panhandle Freeway: From Route 2 to Route 56, 2.3 miles.

The Panhandle Freeway is a radial route to the west and a most important element in the traffic circulation plan. Passing between and serving the Western Addition and Buena Vista community areas, it extends from the Civic Center westward as the principal artery to the Park Presidio, Richmond and Sunset community areas, as well as a bypass route to the Golden Gate Bridge.

Route 56 – Junipero Serra, Park Presidio: From South City limits to Golden Gate Park Junction with Route 223 Panhandle Freeway and to Golden Gate Bridge, 6.5 miles.

This route is in part a direct bypass connection between the northern and southwestern gateways to the city, and in part a radial extension of the Panhandle Freeway. Designed as a freeway to serve the crosstown function of 19th Avenue after its capacity is reached, this route, by utilizing the 200 foot right of way of Junipero Serra Boulevard, will also divert traffic around the San Miguel Range, of which Twin Peaks is a major feature, via the Panhandle Freeway to the downtown metropolitan district, and via the Park Presidio Freeway to the Golden Gate Bridge.

The recommendations were presented by Leonard S. Mosias, Chairman, Traffic and Highway Section, San Francisco Chamber of Commerce. Following its annual practice, the San Francisco chamber tendered to the members of the Highway Commission and engineers of the Division of Highways a luncheon at the Sutter Club in Sacramento on September 16th and on the following day made its official presentation.

Headed by Supervisor Harry Bartell, a delegation representing the Alameda County Highway Advisory Committee submitted the following projects for inclusion in the next highway budget.

State Route 69–East Shore Freeway: (1) Accelerate stage construction between Fallon Street and the Bay Bridge Distribution Structure. (2) Accelerate stage construction to provide more adequate facilities northerly of the Bay Bridge Distribution Structure to the Alameda-Contra Costa County boundary. (3) Initiate construction from Jackson Street southerly.

State Route 226: (1) *Estuary Crossing.* If construction is not started in the fiscal year 1953-1954 out of Toll Bridge Authority Funds that construction be started utilizing State Highway Funds, and that any highway funds used for this estuary construction be returned to Alameda County highway allocations from Bay Bridge bond funds. (2) *In Alameda.* Initiate construction from northerly end of Bay Farm Island Bridge to Fernside Boulevard in Alameda.

State Route 227–Mountain Boulevard Freeway: Continue program of allocation in conjunction with Joint Highway District No. 26. It is recommended that the annual allocations be materially increased.

State Route 5: (1) *Foothill Boulevard.* Complete rights of way acquisition and design and construction from Castro Valley Junction to Hayward. (2) *Between Castro Valley and Dublin.* Construction of freeway from western end of present construction about two miles west of Dublin to Castro Valley.

State Route 228: Initiate construction.

Projects upon which expenditures should be made for planning, surveys, designs, acquisitions, and protection of rights of way during the fiscal year 1954-55, Bartell said, are:

State Route 69–East Shore Freeway: Rights of way purchases should be continued on sections not programmed for construction.

State Route 226 and 75–in Oakland, Alameda and San Leandro: (1) Definite location of these routes in Oakland should be made giving full consideration to the proposed Richmond Boulevard route. Planning and surveys should be initiated and a program formulated for correcting spot deficiencies. (2) Surveys and plans for widening, improving and grade separations from Bay Farm Island Bridge to Route 105 in San Leandro.

State Route 105–in Oakland, San Leandro and Hayward: (1) Surveys and plans for correcting spot deficiencies from High Street southeasterly involving consideration of rerouting making use of San Leandro Street and Boulevard and extending San Leandro Boulevard to connect with East 14th Street (State Route 105) in the vicinity of 136th Avenue. (2) Surveys and plans from Route 5 to Route 69 and a program formulated for correcting spot deficiencies.

State Route 5–MacArthur Boulevard and Foothill Boulevard: (1) Complete purchases of rights of way for the initial section of the MacArthur Boulevard Freeway preparatory to construction in the 1955-1956 fiscal year. (2) Complete surveys and commence protection of rights of way for the remainder of MacArthur Boulevard through Oakland and San Leandro. (3) Make surveys and commence protection of rights of way in San Leandro to Route 228.

State Route 206–in Berkeley: Funds be provided to complete study of route locations.

State Route 233–in Oakland: (1) *High Street.* Surveys and plans and purchase of rights of way from Route 69 to Route 5. (2) *Park Boulevard Extension.* Surveys and plans and purchase of rights of way from Route 227 to county line with corresponding action in Contra Costa County.

THANK YOU

JACK AMMANN
PHOTOGRAMMETRIC ENGINEERS

California Highways and Public Works

GENTLEMEN: I would like to take this occasion to thank you for your cooperation in sending three of your recent journals that included articles on photogrammetric mapping or the use of such maps.

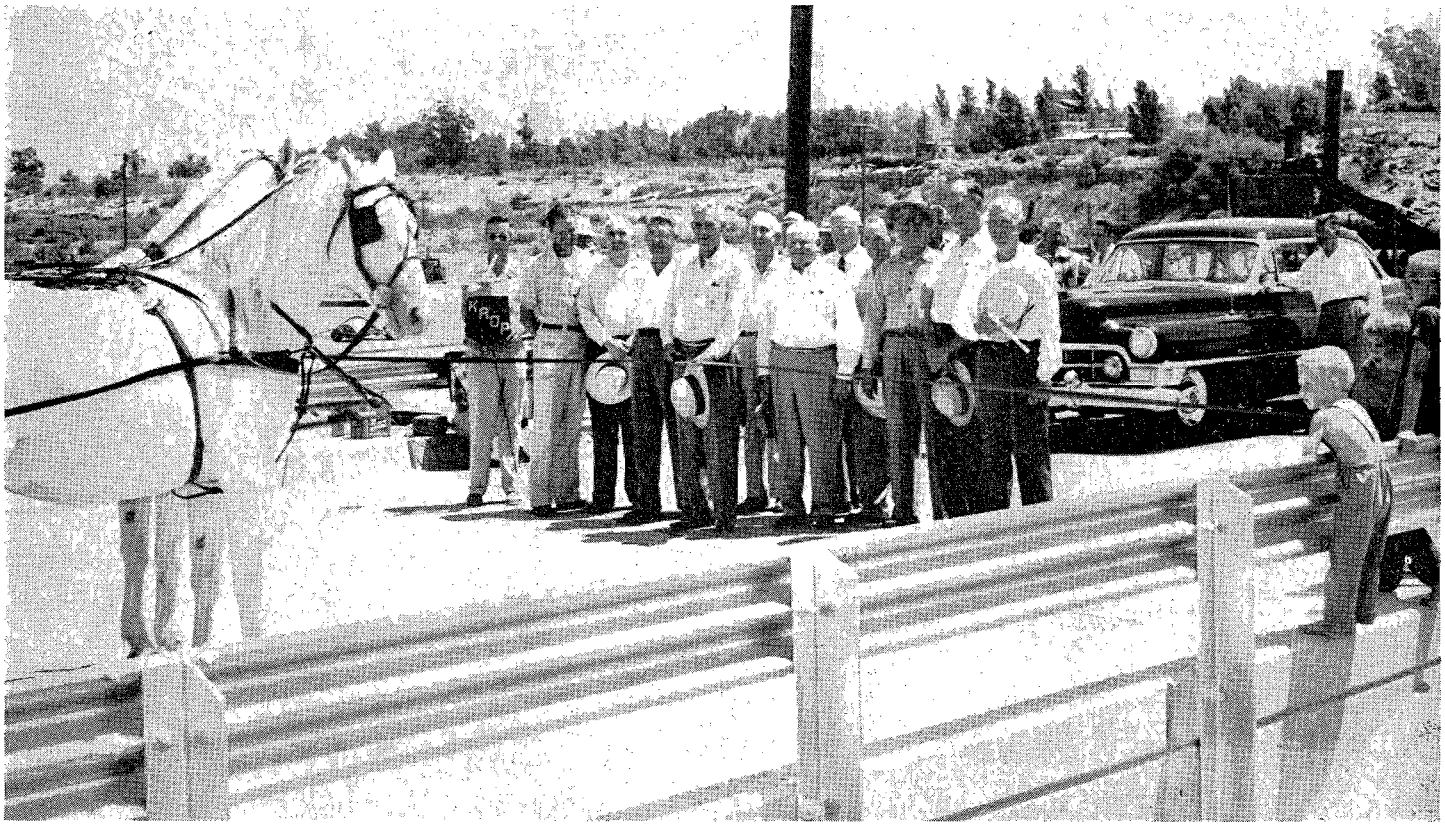
Your publication is most interesting and the best medium of highway information that is published by a state highway department that I have seen. Congratulations on producing such a worthwhile magazine.

Very truly yours,

JACK AMMANN PHOTOGRAMMETRIC ENGINEERS
WM. H. MEYER
Eastern Manager

NEW BRIDGE AND HIGHWAY OPENED AT BRAWLEY

By E. E. WALLACE, District Engineer



On July 17, 1953, citizens of Brawley and Imperial County assembled on the new bridge across New River north of Brawley and officially opened the structure on U. S. 99.

The ribbon was cut by Senator Ben Hulse and he was assisted by Assemblyman J. Ward Casey, Mayor Victor McClain of Brawley, Supervisors Osborne and Cavanah, together with representatives from the Brawley Chamber of Commerce, the State Division of Highways and others.

Following the cutting of the ribbon, the new bridge was crossed first by a beautiful team of white horses driven by Ben Martin, pioneer of Imperial Valley, who forded the New River before the existence of bridges in this area, and next, by a modern automobile occupied by several of the officials.

The project provided for the construction of two parallel reinforced concrete bridges 198 feet in length and each structure 28 feet in width, which provided a four-lane divided highway across the river, together with the four lanes of paved highway on the approaches and a divided highway through Brawley to the south city limits, covering a total length of one and three-fourths mile.

Replace Old Span

The bridges replaced an old narrow two-lane timber structure which was severely damaged in the 1940 earthquake. At that time, several spans of the old bridge were shifted one and one-half feet and one of the caps was moved completely off of the pile supports. The approaches shifted and settled several feet and it was necessary to detour traffic for a week while repairs were being made.

The completed project provides a much needed improvement and will result in a reduction in accidents as well as a more convenient and less congested highway to and through the City of Brawley.

The accompanying photograph shows the ribbon-cutting ceremony. Those in the foreground reading from left to right are: Bob Scott, Radio Station KROP, Brawley; Williams A. Dillard, President of the Brawley Chamber of Commerce; Rev. Father Henry Keen; Victor McClain, Mayor of Brawley; State Senator Ben Hulse; Supervisor Hugh Osborne; Assemblyman J. Ward Casey; E. E. Wallace, District Engineer, State Division of Highways; Supervisor Neil Fiefield; Supervisor Earl E. Cavanah; Frank Jorgensen, Assistant District Engineer, State Division of Highways; and Carl Jacobson, Brawley Chamber of Commerce.

Design Standards For County Roads

ADOPTION of a set of recommended design standards for county highways was one of the principal actions taken by the County Engineers Association of California at its 38th annual meeting, held September 10th-12th at Lake Tahoe.

Besides the election of officers for the coming year, other important business included the appointment of a committee to continue the study of standards for county highways and for subdivision streets as well.

The following officers were elected: Joseph H. Mack, San Diego County, president; Oliver C. Wyllie, Calaveras County, vice president; Harold Sprenger, Orange County, secretary; E. R. Hanna, San Benito County, and A. C. Keith, Riverside County, directors.

The opening day's session was spent in a joint meeting with the County Supervisors Association of California, during which problems common to both organizations were discussed.

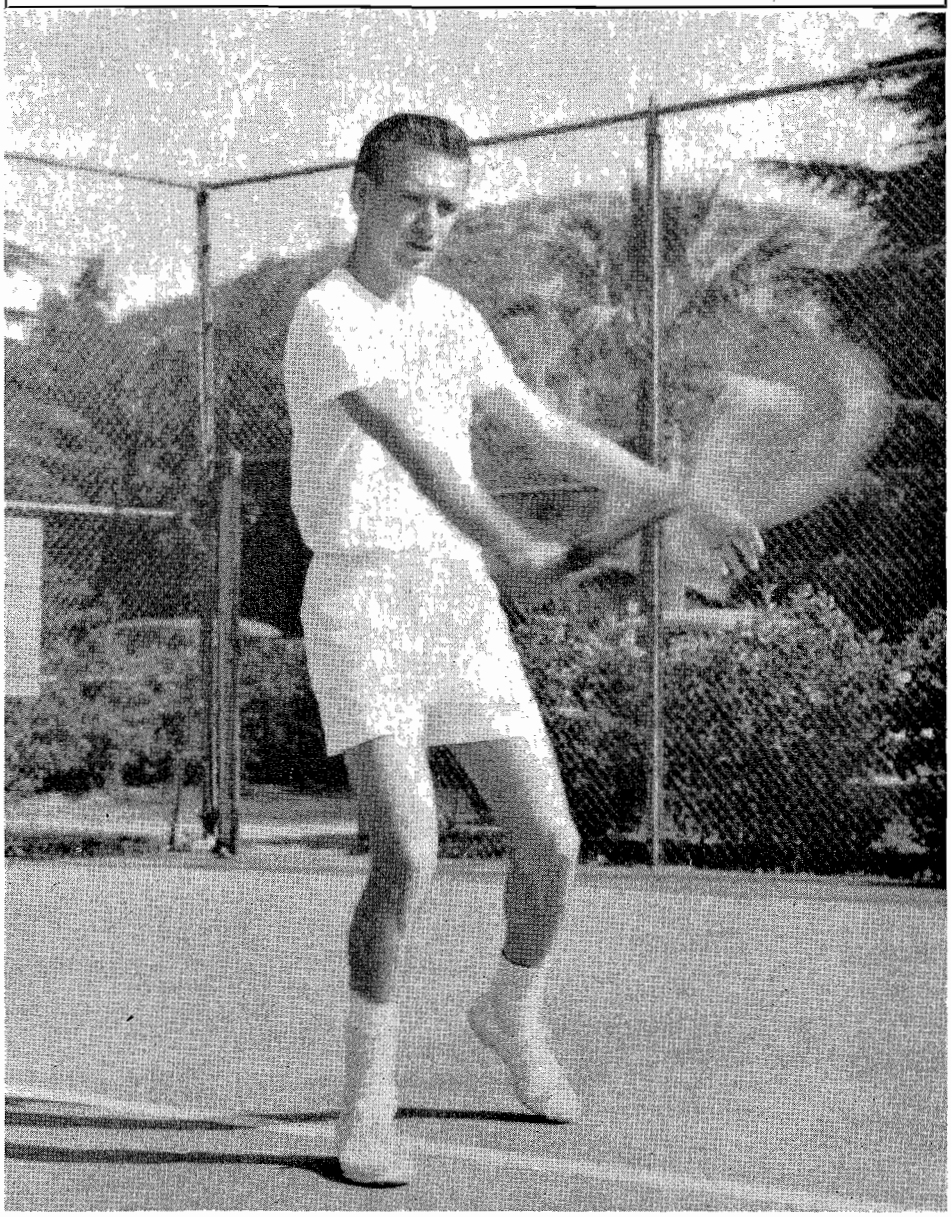
Retiring President A. L. Kiefer, Sacramento County, presided at the opening session of the engineers' meeting on September 11th. Prof. Harmer E. Davis, director of the Institute of Transportation and Traffic Engineering of the University of California, addressed the group at the closing session. His subject was "Highlights of the Past Year at the Institute."

Other matters taken up included panel discussions on federal-aid secondary highway projects, geometric design, structural design, testing of materials, the land surveyor's act and the two-way radio as it is being used for highway maintenance and administration.

PATRICKS POINT STATE PARK

Patricks Point State Park, located on the Redwood Highway in the Humboldt County area, is reported by the National Automobile Club to have a rugged coast line, agate beach, and a variety of wild flowers, including azaleas and tiger lilies.

Highway Engineer Wins Tennis Championship



Clyde Hippenstiel in action on tennis court

CLYDE HIPPENSTIEL, a member of the Division of Highways staff in the San Bernardino District Office, recently spread the fame of California highways into the field of sports by winning the National Public Parks Tennis Championships held at Minneapolis, Minnesota, August 16 to 23.

In recapturing the national title he had held in 1950, Hippenstiel didn't drop a single set in sweeping through five opponents. Employing a strong service and aggressive net rushing tactics, he thumped both the 1951 and 1952 champions on his way to the title.

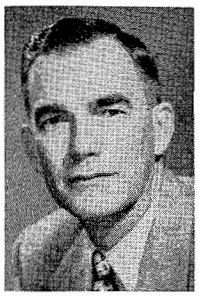
In a rugged two and one-half hour semifinal match, the Californian dumped Wade Herrin of Birmingham, Alabama, winner in 1951, by scores of 6-4, 9-7, 11-9, and then proceeded to swamp Defending Champion Linn Rockwood of Provo, Utah, in the final round 7-5, 6-2, 6-0. Hippenstiel's other victims were

. . . Continued on page 49

PROMOTIONS FOR BRIDGE ENGINEERS

STATE HIGHWAY ENGINEER George T. McCoy announced the following promotions and assignments in the Bridge Department of the Division of Highways effective August 1st.

A. L. Elliott, Assistant Operations Engineer—Bridges, promoted to Bridge Engineer—Planning.
J. E. McMahon, Supervision Bridge Engineer, promoted to Bridge Engineer—Southern Area, with headquarters in Los Angeles.
Stewart Mitchell, Bridge Engineer—Planning, assigned to the position of Bridge Engineer—Special Studies.
I. O. Jahlstrom to continue in his present assignment as Bridge Engineer—Operations.



A. L. ELLIOTT

Elliott, who has been with the Bridge Department of the Division of Highways since 1936, was born in Seattle, Washington, and attended the University of Washington, graduating in 1933 with a degree in civil engineering. After several years with the U. S. Bureau of Public Roads on various Pacific Coast projects, he served as construction engineer on the San Francisco-Oakland Bay Bridge prior to entering state service. He is a member of the American Society of Civil Engineers.

Elliott, who resides at 3010 10th Avenue in Sacramento, is married and has two children.

Worked on Bay Bridge

McMahon was born at Chebanse, Illinois, and attended Marquette University and the University of California, graduating from the latter school in 1931 with a B.S. degree in civil engineering.

J. E. McMAHON

He has been with the Division of Highways since 1931. He was an engineer on the San Francisco-Oakland Bay Bridge from 1933 to 1936, after which he joined Bridge Department. He was appointed construction engineer for the southern section in 1951.

During World War II, he served as a commander with the Civil Engineering Corps of the U. S. Navy.

McMahon, who lives at 279 Santa Ana Avenue in Long Beach, is married and has a daughter.

He is a member of the American Society of Civil Engineers.

New Assignment for Mitchell

Mitchell came to work for the Bridge Department in 1924 and was appointed Bridge Engineer—Planning, in 1947.

STEWART MITCHELL

He was born in Belfast, Ireland, and came to the United States as a young boy of four. He attended Purdue University, graduating in 1908 with a B.S. degree in engineering. During World War I he served in France as a captain in the 306th Engineers.

Mitchell's new assignment actually is the expansion of a function with which he has been identified for many years. The accelerated program of state highway improvement requires special studies and reports on many bridges and other major structures.

Mitchell, who lives at 2625 Rochon Way in Sacramento, is married and has two sons. He is a past president of the Sacramento Section of the American Society of Civil Engineers, and Past National Chairman of the Structural Division of the Society's Executive Committee.

ONE OF OLDEST TOWNS

San Miguel Del Bado is one of the oldest towns in New Mexico, according to the National Automobile Club. Its church was constructed by the Indians of the parish under direction of the priests in 1806.

Jahlstrom's Job

Jahlstrom was born at Astoria, Oregon, and holds a B.S. degree in engineering from Washington State College, and an M.S. degree from the University of Illinois.

I. O. JAHLSTROM

He came to work for the Bridge Department in 1928 and was appointed Bridge Engineer—Operations, in 1947. He is responsible for both construction and maintenance of state highway bridges.

He served in the U. S. Navy during World War I.

Jahlstrom, who resides at 2783 Harkness Way in Sacramento, is married and has two children. He is a member of the American Society of Civil Engineers.

Tennis Champion

Continued from page 48 . . .

George Johnston of Flora, Illinois; John Holden from San Francisco; and Jerry Glade of Salt Lake City.

To add to his singles title, Hippenstiel teamed with Mary Prentiss, also from San Bernardino, to capture the mixed doubles championships.

Hippenstiel, Assistant Engineer of City and County Cooperative Projects in the District VIII office, has been with the Division of Highways seven years, all in the San Bernardino area. During the Minneapolis tournament, his connection with the State Highway Department was widely publicized throughout the country by the various news wire services.

Retirements *from* Service

J. M. Harlan

On October 1, Jacob Melick Harlan, head of the San Diego office of the Division of Architecture, wound up 27 years of State service by retiring. This record is an enviable one.

J. M. HARLAN

Born in Rincon, New Mexico, on October 17, 1888, he attended the public schools of New Mexico and the New Mexico Military Institute, graduating in 1907 with a major in engineering and a minor in Spanish. He is the son of James A. Harlan and Lulu (Melick) Harlan. The elder Harlan was a construction engineer for the Santa Fe railroad and afterwards was in business as a general contractor. Upon graduating, Harlan went into partnership with his father in the general contracting business of J. A. Harlan & Son. This firm was in business from 1907 to 1916. It engaged in the building of practically everything from house construction, through commercial building, construction work for the Santa Fe railroad, powerhouse stacks, and chimneys to bridges.

Goes to Central America

In March, 1916, Harlan went to Central America as engineer in charge of the location and construction of a mining railroad for the Eden Mining Company, Bluefields, Nicaragua, on the Mosquito Coast of Nicaragua. He was with this company until July, 1918, returning to the United States for war duty. He was appointed Captain of Engineers, but the armistice was signed before he took up service. After spending some time in San Francisco, he went to the Imperial Valley and was from December, 1918, to May, 1919, a pile driver foreman for the Imperial Irrigation District. Returning to San Francisco in 1919, he went to work as chief estimator at the Shaw-Badger Shipyard of Western Pipe and Steel Company. He served there until June, 1921. After a few months of unemployment, he went to the High Sierras in October, 1921, where he built a mill and several mining buildings for a mine company headed by the automobile dealer, Don Lee.

Superintendent of Construction

Harlan served as superintendent of construction for the Davidson Construction Company in Los Angeles from early 1922 to late 1923, and from December, 1923, until June, 1925, was employed in the same capacity for R. E. McKee. While a superintendent for McKee, he constructed the buildings for the Naval Hospital in Balboa Park in San Diego and the Santa Fe railroad shops in San Bernardino. From June, 1925, to May, 1927, he was in charge of the reconstruction of 15 buildings destroyed by the earthquake in Santa Barbara for the Mattock & Feasey Contractors of San Francisco.

Some time during the year 1925 Harlan had taken a state civil service examination for Estimator of Building Construction, Grade IV, which was the equivalent of our present Senior Estimator. In those days the Division of Architecture was a small organization employing less than 75 individuals and two years elapsed before a vacancy occurred. In September, 1927, he joined the division. He was assigned to the San Diego office in September, 1929, and has headed the San Diego District under various titles (Superintendent of Building Construction from 1929 to 1931; Senior Engineer of General Construction from 1931 to 1941; Senior Construction Inspector from 1941 to 1948; Senior Construction Supervisor from 1948 to 1950; and District Construction Supervisor since 1950, except for the period of February, 1943, to December, 1944, when, due to wartime curtailment of work, the division closed the San Diego office). During this period, Harlan did engineering and construction work for several contractors in the San Diego area on various war construction jobs.

Erected San Diego College

The jobs that Harlan has done for the State while heading the San Diego District include the erection of the entire San Diego State College. He moved into the new site after the first survey crew and has seen the plant through from the chasing off of rattlesnakes so that the contractors could begin excavation to the completion in 1953 of the 12 latest buildings, which include among others the industrial arts and arts and crafts building; science building addition which contains one of the three planetariums attached to a state college in the United States; a complete training school, library and science, physical education, and academic buildings.

This campus now consists of buildings valued at nearly $4,000,000 with $1,100,000 of additional construction currently under way. Harlan has also built everything from border inspection stations at Winterhaven, Blythe, and Vidal Junction; fairs at Imperial and Del Mar; highway office buildings (having built both the old and new highway buildings in San Diego), to armories in San Diego, National City, El Cajon, El Centro, Calexico, Hemet, Vista and Coronado; and many other buildings. During those years he has been in charge of construction, the grand aggregate amounts to slightly in excess of $10,061,657. Of this, $2,064,625 is currently under construction. In the course of the years Harlan has supervised more than 400 individuals on state forces.

Most Motorists Ignore Speed Limit Signs

SPEED LIMIT signs alone are not the answer to slowing down traffic on California highways.

This is the conclusion of the State Division of Highways after experimenting with the posting of 55-mile speed limit signs at eight locations on the Bayshore Freeway and U. S. 99. The test was part of a continuing cooperative effort by the Division of Highways and the California Highway Patrol to increase highway safety.

"The signs appeared to have no appreciable permanent effect upon the speed of motorists," says George T. McCoy, State Highway Engineer.

He added that in a few instances the signs had slowed down traffic a fraction of a mile an hour just after they were posted, but that in a year or so the prevailing speeds had climbed right back up to where they were before and then some.

For example, on U. S. 99 between Madera and Fresno, where a large proportion of motorists go a little faster than the 55-mile an hour state prima facie speed limit, the following trends were observed.

Fresno and Madera Examples

Near the south city limits of Madera the speed remained approximately the same just after the posting of the signs, but in a year's time had increased more than one mile an hour.

Near the north city limits of Fresno motorists slowed down by nearly one mile an hour just after the signs were posted, but one year later had speeded up again to a point nearly a mile an hour faster than before the signs were placed.

And apparently large, reflectorized signs are no more effective in slowing down traffic than the standard signs.

On Bayshore Highway

On the Bayshore Highway, where congestion is greater than on U. S. 99 and speeds tend to be closer to the 55-mile an hour limit, the posting of additional over-sized reflectorized signs showed the following:

At East Willow Road south of Menlo Park the speed actually increased one-half mile an hour just after the posting of the signs and in two years' time had increased another two and one-half miles an hour.

Near Brokaw Road just north of San Jose the speed also increased over one mile an hour immediately after the posting of the signs. Two years later speeds had decreased about two miles an hour, but engineers point out any drop in speed is more probably due to the growing congestion along this section of the Bayshore rather than a belated observance of the signs.

The Division of Highways engineers concluded that, on the basis of their survey, there seems to be little justification for the contention that more frequent posting of 55-mile speed limit signs would reduce speeding on our highways.

Tough Survey

Continued from page 18 . . .

strewn channel, and is fordable only with extreme difficulty. The velocity precludes taking soundings, and cross-sections have been taken by a rodman in swimming trunks, hanging onto a rope with one hand, a rod with the other, and with a tape in his teeth.

In spite of these and other difficulties, including two feet of snow, the survey has been completed, and the design is being pushed so that right of way may be purchased. As soon as funds are available, the construction will be done, and an ancient relic of the horse and buggy, or more probably horse and sled, days will have been eliminated.

The work has been carried on under the direction of District Engineer Alan S. Hart and his successor in District IX, Milton Harris. Immediate supervision has been by District Design Engineer J. H. Creed. Several different field parties have worked on the project.

In Memoriam

JOSEPH M. CURRY

Joseph M. Curry, watchman with the Division of Highways in District VII, Los Angeles, passed away on August 3, 1953, as a result of coronary thrombosis.

Mr. Curry was born June 4, 1908, in Elizabeth, Pennsylvania. He was a veteran of World War II. He started to work with the Division of Highways on July 9, 1950, as a night watchman and parking lot attendant.

Those who park in the Second and Spring Street lot will miss Joe Curry's affable and pleasant greeting. He had no immediate family in California, but is survived by his mother who resides in Cleveland, Ohio.

In Memoriam

GEORGE E. BROMM

Masonic funeral services were conducted for George E. Bromm at the Emerson-White Funeral Chapel in Whittier on August 15, 1953. Interment took place at Rose Hills Memorial Park.

Mr. Bromm was born in Topeka, Kansas, June 14, 1886. He came to California in 1912. Entering civil service in 1920, he worked for El Dorado County at Placerville for 10 years. In 1930 he accepted employment with the State Division of Highways at Sacramento Headquarters, working in the capacity of Heavy Equipment Mechanic. Later he transferred to District V, District II and District I. In 1946 he took over the maintenance of traffic signals for District VII, where he was Supervising Highway Traffic Signal Technician until his retirement in June of 1953.

His loss is deeply felt by the Division of Highways where he was well known, sincerely liked and a friend to all. Mr. Bromm is survived by his wife, Martha.

Leucadia Highway Improvement Is Now Completed

By J. FRANK JORGENSEN
Assistant District Engineer

Showing steel guard railings and trees left standing on highway through Leucadia

A STATE HIGHWAY contract was completed in September through Leucadia on U. S. 101 in San Diego County. This 2.2 mile improvement, costing $86,700, consisted of constructing turning lanes at public road connections, and placing steel guard railing along the center division strip and at various locations along the east side of the highway. Trees which interfered with this construction, obstructed visibility or were located too close to the pavement for safety, were removed.

The State Division of Highways has been concerned for several years at the increasing accident rate in the Leucadia area. Records show that, over a five-year period ending in 1951, a total of 164 auto accidents occurred. In the past year alone, seven traffic deaths occurred. It was also noted from the records that 50 percent of the accidents involved trees, and that another 16 percent involved rear end accidents due to left turns. The study showed that three-fourths of the accidents involved northbound vehicles.

Several attempts in the past have been made to improve the safety of this road. Double stripes were painted, reflectorized guide posts were installed, a 45-mile speed zone was established, and a few of the more hazardous trees were removed. All of these improvements were of value, but it was necessary to provide more extensive protection to traffic.

The Highway Commission appropriated the necessary funds for this project and a contract was awarded to J. E. Roberts, of San Bernardino, on May 20th of this year. In addition to the construction of turning lanes, some 10,000 feet of steel guard

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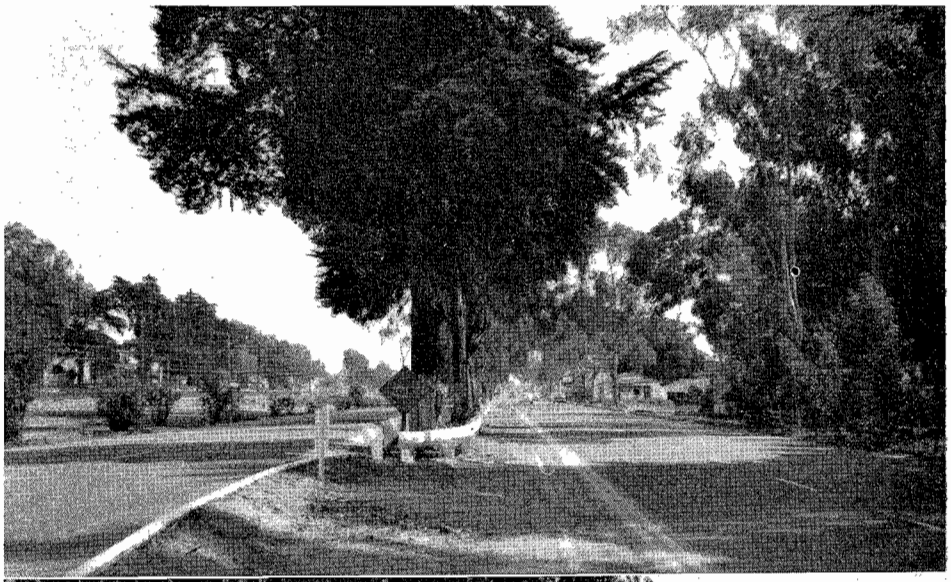

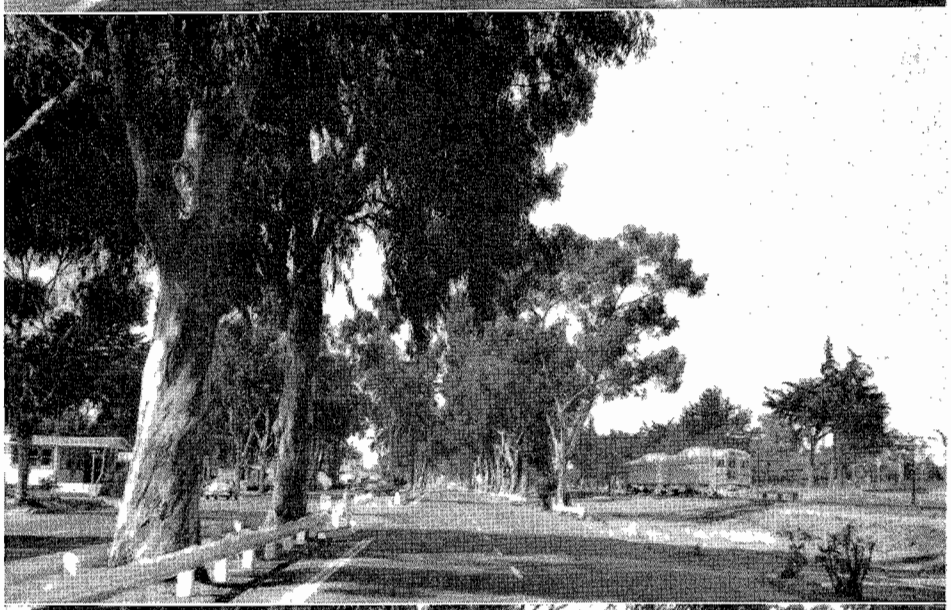

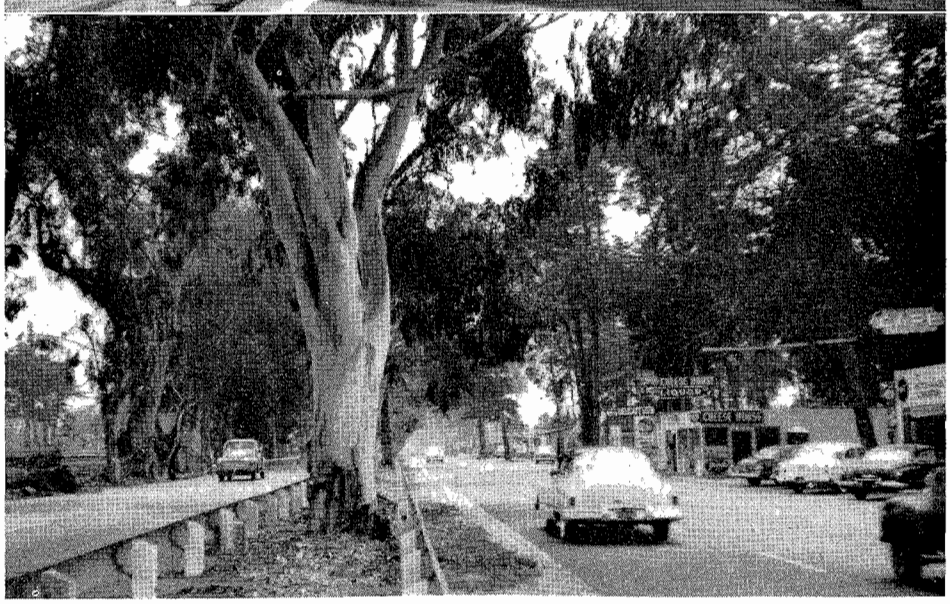

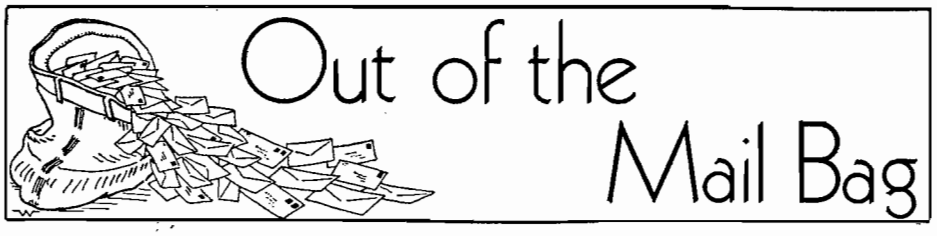

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Victoria, Australia

The Editor,
California Highways and
Public Works

DEAR SIR: It is just a shade over 26 years since I called at the Office of the State Highway Commission, as it then was, and saw the then Chief Engineer, Mr. Morton, and others. Mr. Morton was good enough to put me on the mailing list for "California Highways" and I have received copies regularly ever since, and for some years two copies—one for my own personal file and one for the library.

The publication is one of the best of its kind in the world, and is always eagerly sought after by our construction and other engineers who make full use of the technical articles. The descriptions of limited access highways and the very practical articles dealing with methods of assessing compensation to be paid adjacent land owners are most valuable and when public opinion in this country has been educated to the need for limited access highways, this wealth of information will be of great assistance, firstly in drafting the necessary legislation and subsequently in administering it. Unfortunately, that time has not yet arrived but we still live in hope.

With kind regards and wishing you and your Commission continued success,

Yours sincerely,

J. MATHIESON
Deputy Chief Engineer

THANK YOU, WALT FRATES

PORT OF OAKLAND
General Offices: Grove Street Pier
Oakland 7, California

MR. KENNETH C. ADAMS, *Editor*

DEAR MR. ADAMS: I have been a faithful reader of *California Highways and Public Works* for some time now, and I cannot resist writing you and congratulating you on what an excellent job you are doing with the publication in keeping the general public abreast of the manifold outstanding activities of the Division of Highways. We find the magazine a valuable addition to our files here at the Port of Oakland.

Also please convey our congratulations to our old friend R. C. (Cass) Kennedy, Secretary of the Highway Commission on his very interesting articles on the early days of the Highway Commission.

Kindest personal regards.

Sincerely,

J. WALTER FRATES
Public Relations Director

FINDS MAGAZINE USEFUL

CALIFORNIA STATE AUTOMOBILE ASSOCIATION
General Offices
150 Van Ness Avenue
San Francisco 2, California

MR. KENNETH C. ADAMS, *Editor*

DEAR MR. ADAMS: Attached is the post card authorizing you to continue our name on your mailing list to receive your very excellent magazine *California Highways and Public Works.*

We find the magazine to be not only interesting and informative, but exceedingly valuable to us as a reference work.

Yours sincerely,

CALIFORNIA STATE
AUTOMOBILE ASSN.
C. H. A. DUKE, Manager
Touring Bureau

Leucadia Highway

Continued from page 52 . . .

railing was constructed and guide posts installed. Many trees which did not require removal were trimmed, and 219 oleander bushes were planted for beautification as well as providing a headlight screen.

Highway officials believe that this improvement will substantially reduce the number of serious accidents, since the danger of crashing into trees has been reduced and the hazard of rear end collisions resulting from left turns has been lessened by the turning lanes. At least one serious injury or death has already been averted by the protective railing at the trees, and there is no record of any rear end collisions since the completion of the work. The highway thus remains a beautiful tree and shrub-lined road with important safety features added.

Jamboree

Continued from page 39 . . .

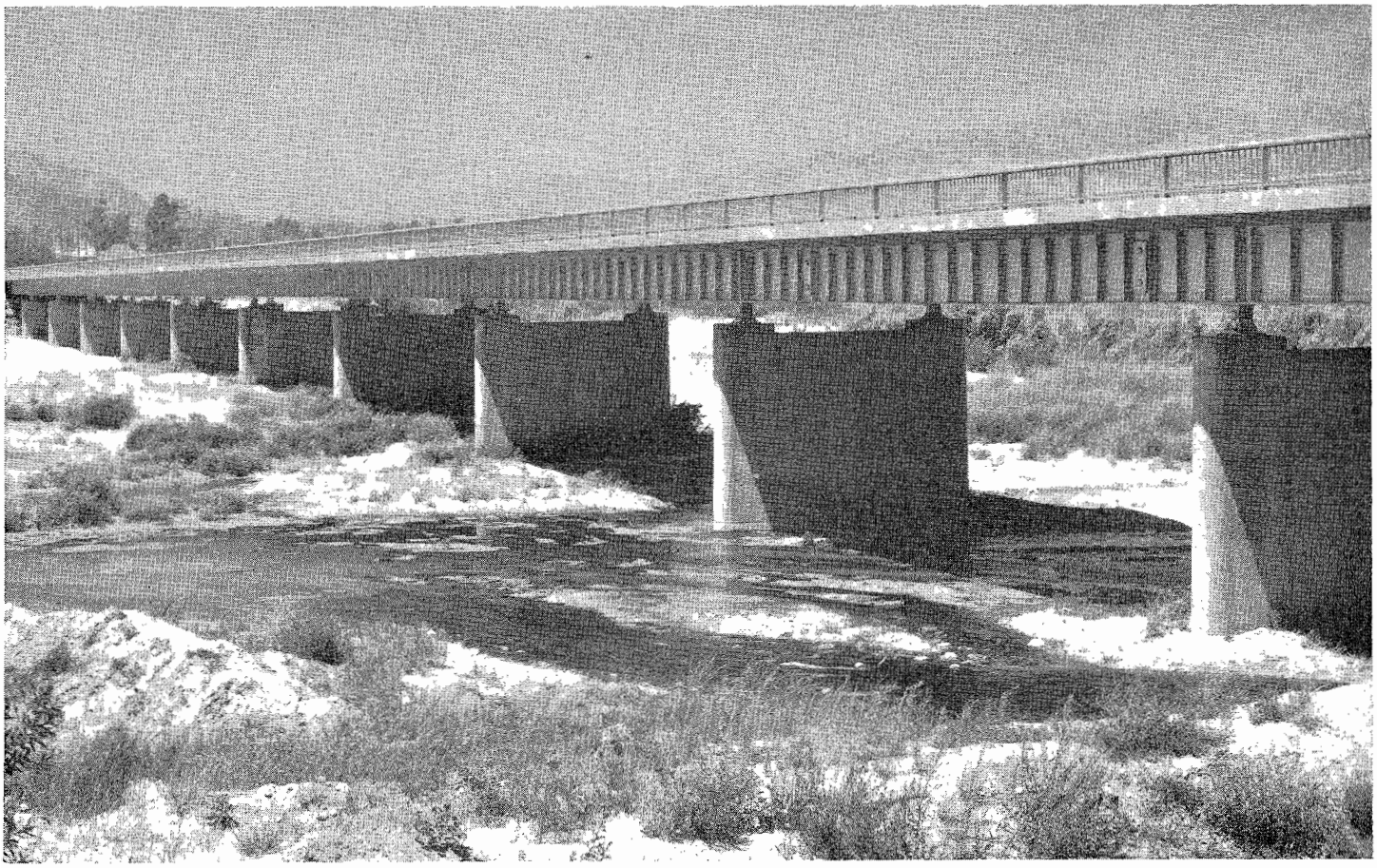
provisional troops that receive intensive training to improve camping techniques, learn more about cooking, and, in general, to make better campers of themselves. This training prepares them to be more self-reliant and better citizens.

The 1953 Jamboree was the largest exposition of the scouting program ever held on the West Coast. It was attended by a large number of visitors. A total of 44,000 cars were parked in the parking lot on the grounds between July 17th and July 23d. The largest number parked in one day was about 10,000 vehicles on Sunday, July 19th.

Everyone who had a part in the various activities and construction projects that were necessary to make this camp a success should feel proud of this association.

STAY ALERT AND STAY ALIVE

A moment's relaxation from watching the road while driving may result in an accident, warns the National Automobile Club. Stay alert and you will stay alive.



New Willard Bridge at Santa Paula over Santa Clara River. A fine example of county, state, and federal cooperation under the Federal Aid Secondary Highway Program.

New Willard Bridge

Continued from page 43 . . .

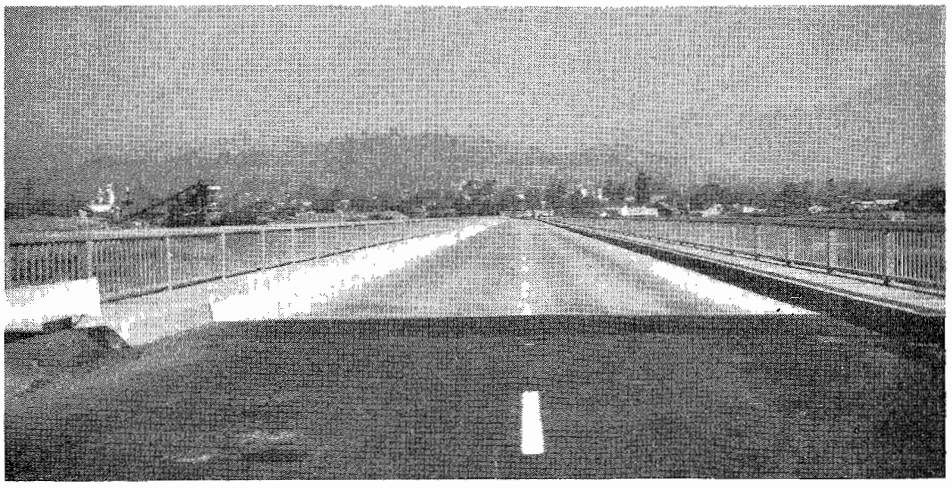
Reconstructed Span Inadequate

Over its years of service, Willard Bridge became inadequate. The clear width of deck was a little over seventeen feet; deterioration, especially in the timber floor system, reduced the load-carrying capacity. Increasing sizes and weights of trucks, increasing numbers of which sought to use the bridge in service in the expanded oil fields south of the river, necessitated imposition of load weight limits. Collisions sometimes occurred between vehicles on the deck or between vehicles and truss members, endangering traffic, the bridge itself as a river crossing, and use of connecting roads. Bridge maintenance expenses increased at a rate which indicated necessity for replacement of the structure. The highway net to the south and east of the bridge was improved and extended, affording an alternate route to State Highway 79 (Sign Route 126), which passes along the north side of the Santa Clara Valley, also a connection to Route 155, which crosses the mountains to the south. Lack of any nearby alternate crossing of the Santa Clara River, and the expanding oil fields, with other conditions mentioned, gave rise to a demand for reconstruction to modern standards.

Ventura County, through its road department and board of supervisors,

. . . Continued on page 55

New Santa Clara River Bridge at Santa Paula affords adequate roadway for largest vehicles plus sidewalks for pedestrians. Replacement of old Willard Bridge was accomplished by Ventura County under a State Department of Public Works contract financed with county, state, and Federal Aid Secondary Highway Funds.



Beckwourth Pass

Continued from page 21 . . .

Mr. Turner, proprietor of the American Ranch, who entered enthusiastically into my news; it was a thing, he said, he had never dreamed of before. If I could but carry out my plan, and divert travel into that road, he thought I should be a made man for life. Thereupon he drew up a subscription list, setting forth the merits of the project, showing how the road could be made practicable to Bidwell's Bar (about seven miles from Oroville), and thence to Marysville, which latter place would derive peculiar advantages from the discovery. He headed the subscription list with $200.

Bidwell's Bar Excited

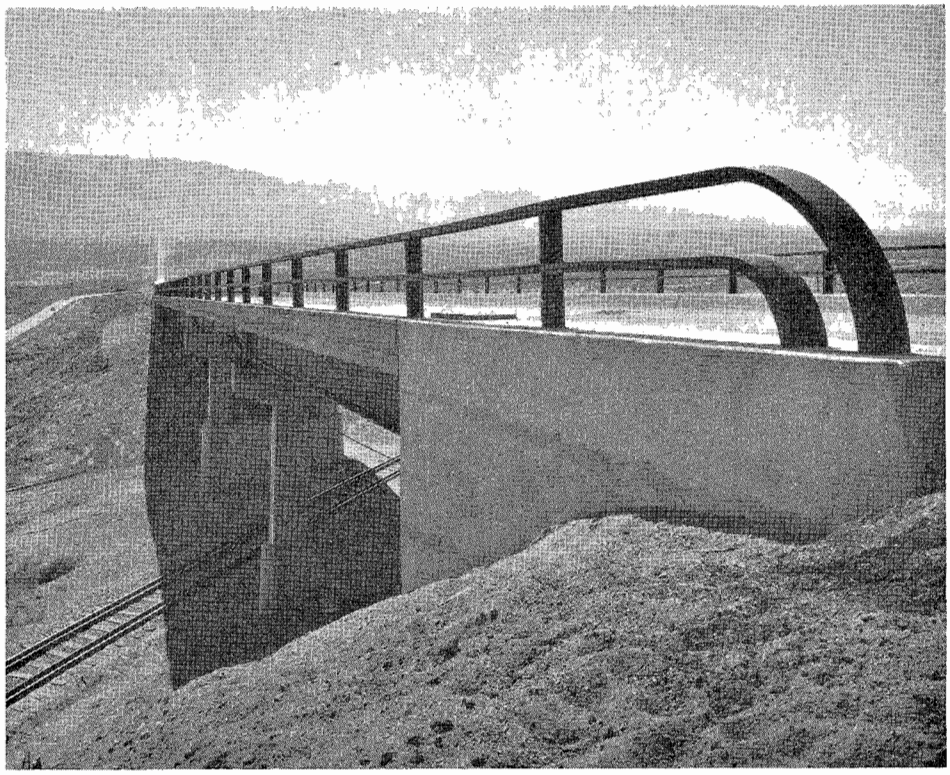
"When I reached Bidwell's Bar and unfolded my project, the town was seized with a perfect mania for the opening of the route. The subscription toward the fund amounted to $500. I then proceeded to Marysville, a place which would unquestionably derive greater benefit from the newly discovered route than any other place on the way, since it must be the entrepot or principal starting point for immigrants. I communicated with several of the most influential residents on the subject in hand. They also spoke very encouragingly of my undertaking and referred me, before all others, to the mayor of the city. Accordingly, I waited on that gentleman, Mr. Miles. The mayor entered warmly into my views. As the benefits accruing to the city would be incalculable, he would insure my expenses while I was engaged upon it.

Leads First Train

"I, therefore, left the whole proceeding in his hands, and immediately setting men upon the road, went out to the Trucky (Truckee) to turn immigration into my newly discovered route. I soon led the first train, consisting of 17 wagons through 'Beckwourth Pass.' A northern route had been discovered, and the city had received an impetus that would advance her beyond all her sisters on the Pacific shore. I felt proud of my achievement, and was foolish enough to promise myself a substantial recognition of my labors.

"I was destined to disappointment, for that same night Marysville was laid in ashes. The mayor of the ruined town congratulated me on bringing the train through. He expressed delight at my good fortune, but regretted that their recent calamity had placed it entirely beyond his power to obtain for me any substantial reward. Sixteen hundred dollars I expended upon the road is gone forever, but those who derive advantage from this outlay and loss of time devote no thought to the discoverer."

So we leave poor old Jim among the ashes of Marysville and the ashes of his hopes.



Looking east toward Hallelujah Junction. Western Pacific Railroad overpass in foreground.

New Willard Bridge

Continued from page 54 . . .

applied for federal aid secondary funds, and the Bridge Department of the Division of Highways at the county's request performed a preliminary survey and designed a new bridge. The county designed approaching roadways and acquired new right of way, affording realignment and elimination of a sharp curve with a bad accident record near the south end. The new designs raised the grades of the bridge deck and the north approach, allowing construction of a deck plate girder structure without reducing waterway area. A deck width of 26 feet was provided in the design, plus two four-foot sidewalks and galvanized tubular steel railing.

Pile Driving Problems

Substructure of the new bridge consists of reinforced concrete piers and footings on reinforced concrete piles. This was one of the earlier jobs to employ the new "Spunpiles" manufactured by the Pacific Union Metal Co. Severe pile-driving conditions prevailed, and a special jet was improvised from oil well drill steel. The steel was driven by the pile hammer during jet pumping; on some piles, jetting required over an hour, following which a pile might be driven in fifteen minutes. There were also instances where pile driving was difficult despite the jetting; the piles then sustained exceptionally severe driving stresses, for great efforts were exerted

to drive all piles to at least the planned penetrations.

The deck of the new bridge is carried by two lines of riveted steel plate girders, five feet deep, spaced 20 feet center-to-center. There are 12 spans: the abutment spans are 67 feet long and interior spans 80 feet. The girder support system is one of overhanging spans alternating with suspended spans simply supported on hinges by the overhangs.

Besides highway traffic, Willard Bridge carries many utility conduits including local gas, water, telephone services, crude oil and natural gas long range transmission lines. These all had to be transferred to the new structure by their owners during construction operations of the bridge contractor. Heavy rock riprap protection of the riverbanks was incorporated into the bridge contract.

Cost of Span

The total cost of the contract work exclusive of engineering was $435,-887.13, the bridge itself costing $371,-675.67. To finance the project Ventura County drew on federal aid secondary funds totaling $269,550 plus state matching funds from the County Highway Aid Act of 1945 in the amount of $68,120.65. The balance of the matching funds was furnished by the county. The contract was administered by the Bridge Department of the Division of Highways, of which F. W. Panhorst, Assistant State Highway Engineer, is Chief. W. B. Piper served as Resident Engineer during construction of the foundations and piers, the writer on the superstructure and the major portion of the approach work. Survey parties and most of the assistant resident engineers came from the Ventura County surveyor's office. Robert L. Ryan is county surveyor. Walter K. Loban was assigned to the job for the entire construction period.

O. B. Pierson of Bellflower was general contractor, represented on the job by L. P. Cortner, superintendent. Several subcontractors were employed, notably the Union Steel Company of Los Angeles, in whose shops the girders were fabricated and whose forces erected and riveted the steel on the job.

1953 Highway Dodgettes Girls' Softball

Here are members of 1953 Highway Dodgettes girls' softball team. TOP ROW—Ann Pratt, manager; Velora Meredith, pitcher; Dick Stedmen, assistant manager; Carmen Nordgreen, catcher. MIDDLE ROW—Merry Lou Johnson, shortstop; Georgia Ann Stedmen, right field; Wilma Butz, center field; Virginia Emick, third base; Bertha Fuller, catcher. FRONT ROW—Ann Puccinelli, second base; Margaret Peugh, first base; Hazel Blair, left field; Marjorie Boland, shortstop. Sarah Durrill, right field, and Camille Brown, second base, are not in photo.

Bayshore Freeway

Continued from page 44 . . .

freeway between Seventh Street and the San Francisco - Oakland Bay Bridge.

This project, which covers construction of a viaduct and ramps between Eighth Street and Fourth Street, will be the next to last step in closing the gap between the Bayshore and the bridge. The job will be financed by a $4,500,000 allocation added to the State Highway Budget for the 1953-54 Fiscal Year when the budget was revised in July by the California Highway Commission following enactment of legislation increasing highway user taxes.

Final Construction

One more contract, covering the Fourth to Third Street section and the connecting structures with the Bay Bridge and the proposed Embarcadero Freeway, will complete the connection.

The final construction to be done on the Bayshore Freeway in San Francisco will consist of a one-mile section from Third Street to the south city limits, which will connect with a fill, a portion of which is presently under construction, extending from Candlestick Point across open water of the bay, to a junction with completed freeway in South San Francisco.

The San Francisco Chamber of Commerce held opening ceremonies for the Army-Bryant Street section on October 1st.

First portion of the Bayshore within the City of San Francisco was officially opened to traffic on June 1, 1951. This was the unit extending from Alemany Boulevard to Army Street.

HIGHWAY BIDS AND AWARDS

May, 1953—(Continued)

SAN LUIS OBISPO COUNTY—Between Paso Robles and San Miguel, about 6.4 miles in length, to be graded and imported subbase material placed thereon, and a bridge to be constructed across San Marcos Creek. District V, Route 2, Sections Ps Rs, A. M. J. B. Construction Co., Stockton, $639,932.20; Fredericksen & Kasler, Sacramento, $656,411.60; Mittry Constructors, Los Angeles, $688,736; J. A. Thompson & Son, Inglewood, $697,442.25; Basich Bros. Construction Co., N. L. Basich & R. L. Basich, South San Gabriel, $699,220.35; Fredrickson & Watson Construction Co., Oakland, $713,792.21; Guy F. Atkinson Co., South San Francisco, $732,012.10; Dan Caputo & Edward Keeble, San Jose, $734,226.50; McCammon and Wonderlich Co., Palo Alto, $734,574.75; Flickinger & Welker, Inc., Los Angeles, $738,251; Kirst Construction Co., & Silva & Hill Construction Co., Altadena, $745,965.60; Fredrickson Bros., Emeryville, $760,847.60; Parish Bros., Benicia, $761,454.25; L. A. & R. S. Crow, El Monte, $764,071.10; Piombo Construction Co., San Francisco, $772,007.45; Dimmitt & Taylor, Monrovia, $772,066.50; E. T. Haas Co., Belmont, $772,985.50; Charles MacClosky Co., San Francisco, $783,743; Granite Construction Co., Watsonville, $819,554; Rexroth & Rexroth, Bakersfield, $893,923.05. Contract awarded to Madonna Construction Co., San Luis Obispo, $633,897.50.

SAN MATEO COUNTY—Across San Francisco Bay, between San Mateo and Hayward, a portion of a bridge to be repaired. District IV, Route 105, Section B. Ben C. Gerwick Inc., San Francisco, $106,480; Cement Gun Construction Co., Sausalito, $110,410; Emsco of San Francisco, $142,183.95; Chas. L. Harney Inc., San Francisco, $198,235. Contract awarded to Johnson Western Constructors, Oakland, $99,685.75.

SHASTA COUNTY—Between Lamoine and Castle Crags Park (portions), a net length of about 1.1 miles of existing roadway to be widened at 5 locations and the portions surfaced with plant-mixed surfacing on untreated rock base. District II, Route 3, Section D. Contract awarded to Morgan Construction Co., Redding, $33,506.50.

SHASTA COUNTY—At Churn Creek, Dry Creek, and Salt Creek between 3 and 12 miles northeast of Redding, existing bridges to be repaired and road approaches to be constructed. District II, Route 28, Section A. R. E. Hertel, Sacramento, $43,870; Anson-Smith Construction Co., Marysville, $49,800; Minton Co., Oakland, $53,686.50; Bos Construction Co., Berkeley, $55,888.60; B. S. McElderry, Berkeley, $59,580; Fredrickson & Watson Construction Co., Oakland, $60,946; Charles MacClosky Co., San Francisco, $63,535; Friant Construction Co., Fresno, $64,953; O'Connor Bros., Red Bluff, $65,227.50. Contract awarded to R. G. Clifford & C. O. Bodenhamer, Berkeley, $42,438.

TRINITY COUNTY—Between 4.0 miles south of Weaverville and Douglas City, about 2.3 miles in length to be graded and surfaced with plant-mixed surfacing on cement treated base and a reinforced concrete bridge to be constructed. District II, Route 20, Section A. Harms Bros., Sacramento, $417,710.80; Transocean Engineering Corporation, Hayward, $450,000; Gordon Ball & San Ramon Valley Land Co., & Bell & Simpson, Berkeley, $479,980. Contract awarded to M. W. Brown & R. E. Hertel, Redding, $391,628.90.

VENTURA AND SANTA BARBARA COUNTIES—Between 9.6 miles southeasterly and 7.1 miles northwesterly of Ventura-Santa Barbara county line, five reinforced concrete slab bridges to be constructed and about 0.5 mile of approaches to be graded and surfaced with road mixed surfacing. District VII, Route 138, Sections E, A. W. F. Maxwell, Los Angeles, $148,462.50; E. G. Perham, Los Angeles, $157,259.50; E. S. & N. S. Johnson, Fullerton, $158,357; Norman I. Fadel, North Hollywood, $164,351.20; Chas. MacClosky Co., San Francisco, $165,145.50; Chaney Construction Co., Los Angeles, $169,622; O. B. Pierson, Bellflower, $171,174.50; Tumblin Co., Bakersfield, $181,159; Byerts & Sons & George K. Thatcher, Los Angeles, $226,980.45. Contract awarded to Thomas Construction Co., Fresno, $141,037.10.

F. A. S. County Roads

LOS ANGELES COUNTY—On Valley Boulevard, between Puente Avenue and Hudson Avenue, about 2.1 miles in length to be widened and surfaced with plant-mixed surfacing on Portland cement concrete base and existing pavement. District VIII, Route 852. Warren Southwest, Inc., Torrance, $140,777.05; Basich Bros., Construction Co., & N. L. Basich and R. L. Basich, South San Gabriel, $149,770.75; Service Construction Co. of Southern California, Sun Valley, $151,829.60; Griffith Co., Los Angeles, $152,150.25; Vido Kovacevich Co., Rosemead, $153,037.70; McAmis & Baker, Gardena, $154,982.30; Osborn Co., Pasadena, $165,795.80; George Herz & Co., San Bernardino, $170,460.40; Dimmitt & Taylor, Monrovia, $194,475.65. Contract awarded to J. E. Haddock, Ltd., Pasadena, $138,809.

MONTEREY COUNTY—On Alisal-Old Stage Road, between Bardin School and 1.6 miles south of Iverson Road, about 12.2 miles in length, a class "B" double seal coat to be placed on imported base material, District V, Route 657. Browne & Krull, Hayward, $190,305.80; Hermrack & Easter, Santa Maria, $193,539; Granite Construction Co., Watsonville, $199,808.13; Close Building Supply, Inc., Hayward, $203,417; Edward Keeble, San Jose, $219,859; Valley Paving Co., Pismo Beach, $238,900.50. Contract awarded to Baun Construction Co., Fresno, $162,423.

PLUMAS COUNTY—Across Middle Fork Feather River and over the Western Pacific Railroad tracks, in the city of Portola, 2 steel girder bridges and approaches to be constructed. District II, Route 1061. Tumblin Co., Bakersfield, $256,526; Chaney Construction Co., Los Angeles, $263,839.90; John C. Gist Co., Sacramento, $273,131; Trewhitt Shields & Fisher, Fresno, $273,498.39; C. B. Tuttle, Long Beach, $279,425; Fredrickson Bros.-Le Boeuf-Dougherty Construction Co.-Erickson and Pierson, Emeryville, $304,752.55; Charles MacClosky Co., San Francisco, $327,620.20. Contract awarded to Walsh Construction Co., San Francisco, $235,806.

SHASTA COUNTY—Between 0.3 mile west of Cow Creek and 0.7 mile west of Whitmore, about 4.0 miles in length, to be graded, imported base material to be placed, seal coat to be applied and a reinforced concrete bridge across Cow Creek to be constructed. District II, Route 1075. M. W. Brown, Redding, $240,898.80; Fredrickson & Watson Construction Co., Oakland, $244,076.28; Close Building Supply Inc., Hayward, $252,752.20; Harms Bros., Sacramento, $257,236.50; J. H. Trisdale Inc., Redding, $280,563.11. Contract awarded to Transocean Engineering Corporation, Hayward, $207,675.

June, 1953

ALAMEDA COUNTY—Between Crow Canyon Road and 0.1 mile east of Foothill Boulevard about 2.2 miles in length, to be graded and paved with portland cement concrete on cement-treated subgrade and four reinforced concrete bridges and a pedestrian undercrossing to be constructed. District IV, Route 5, Section G. Fredrickson & Watson Construction Co. and M & K Corporation, Oakland, $1,195,555.75; Gordon H. Ball and San Ramon Valley Land Co., Berkeley, $1,230,660.90; Charles MacClosky Co. and Piombo Construction Co., San Francisco, $1,291,806.65; Dan Caputo & Edward Keeble, San Jose, $1,347,312.25; Chas. L. Harney Inc., San Francisco, $1,376,372.95. Contract awarded to Fredrickson Bros., Emeryville, $1,176,448.35.

ALAMEDA COUNTY—Between 0.4 mile westerly of Hesperian Boulevard and 0.3 mile northerly of Harder Road, about 1.4 miles in length to be graded, plant-mixed surfacing to be placed on cement-treated base and crusher-run base and a traffic signal system and highway lighting to be furnished and installed. District IV, Route 105, Section A. Fredrickson Bros., Emeryville, $244,794.35; Lee J. Immel, San Pablo, $246,176.50; Gordon Ball and San Ramon Valley Land Co., Berkeley, $290,008.50. Contract awarded to Fredrickson and Watson Construction Co., and M & K Corporation, Oakland, $239,922.60.

ALAMEDA AND CONTRA COSTA COUNTIES—In the Broadway Low Level Tunnel in and near Oakland, additional fire protection facilities to be furnished and installed. District IV, Route 75, Sections Oak, A. C. Norman Peterson, Berkeley, $28,940. Contract awarded to Associated Engineers, Inc., Palo Alto, $28,813.

AMADOR, CALAVERAS, MERCED AND SAN JOAQUIN COUNTIES—At various locations, about 32.3 miles in net length, Class "C—Fine" seal-coat to be applied to existing surfacing. District X, Route-Var. Granite Construction Co., Watsonville, $38,706; Claude C. Wood Co., Lodi, $41,314.11; J. Henry Harris, Berkeley, $45,054.45; Floyd O. Bailey, Madera, $46,948. Contract awarded to J. P. Breen Co., Sacramento, $37,829.40.

CONTRA COSTA COUNTY—At the intersections of San Pablo Avenue with Central Avenue in the City of El Cerrito, and Parker Avenue with Fourth Street in the Town of Rodeo, traffic signal systems and highway lighting to be furnished and installed. District IV, Route 14, Sections ECr, B. L. H. Leonardi Electric Construction Co., San Rafael, $14,880; R. Goold & Son, Stockton, $15,196; Abbett Electric Corp., San Francisco, $19,915; Sacramento Electric Works, Sacramento, $20,822.80. Contract awarded to Howard Electric Co., Gilroy, $14,329.

DEL NORTE COUNTY—Between 0.5 mile and 2.3 miles east of Klamath, about 1.8 miles to be graded and surfaced with road-mixed surfacing on imported base material. District I, Route 46, Section A. Paul E. McCollum, Richmond, $198,495; Harms Bros., Sacramento, $222,794. Contract awarded to Humboldt Constructors, Inc., Eureka, $179,985.50.

DEL NORTE COUNTY—Across Gilbert Creek about 1 mile south of California-Oregon State Line, a reinforced concrete girder bridge to be constructed. District I, Route 71, Section B. Anson-Smith Construction Co., Marysville, $81,388; James B. Allen, San Carlos, $85,264; Mercer Fraser Co., and Mercer Fraser Gas Co., Inc., Eureka, $86,468; R. G. Clifford and C. O. Bodenhamer, Berkeley, $87,748; F. Fredenburg, Temple City, $87,937; Humboldt Constructors, Inc., Eureka, $89,034; Bos Construction Co., Berkeley, $97,605.50; D. W. Scott and Osborne-Wheelon Construction Co., Crescent City, $127,381.90. Contract awarded to G. M. Carr Co. and Batti Rocca, Santa Rosa, $70,133.

FRESNO COUNTY—In the City of Fresno, between Cherry Avenue and Santa Clara Street, 0.7 mile to be graded and paved with portland cement concrete pavement on cement-treated subgrade. District VI, Route 4. M. J. B. Construction Co., Stockton, $189,635; Gordon Ball and San Ramon Valley Land Co., Berkeley, $191,480; Gene Richards, Inc., Fresno, $172,946.90. Contract awarded to Thomas Construction Co., Fresno, $168,996.

HUMBOLDT COUNTY—Between Stephens Grove and Weott (portions) about 9.9 miles in net length to be surfaced with plant-mixed surfacing on imported base. District I, Route 1, Section C. Gordon Ball and San Ramon Valley Land Co., Berkeley, $155,592; Mercer, Fraser Co. and Mercer, Fraser Gas Co., Inc., Eureka, $175,065. Contract awarded to Fredrickson Bros., Emeryville, $152,732.50.

HUMBOLDT COUNTY—In the Town of Scotia at north Scotia transition highway lighting system to be furnished and installed. District I, Route 1, Section E. L. H. Leonardi Electric Construction Co., San Rafael, $6,792; Underground Electric Construction Co., Oakland, $7,272; Roy P. Hayes, Sacramento, $7,598; Karl F. Stolting, Santa Rosa, $7,812; Roy E. Caffey, Sacramento, $8,419.70; Brizard Construction Co., Eureka, $9,893. Contract awarded to Flash Electric, Eureka, $5,849.

HUMBOLDT COUNTY—Across Bluff Creek, about 10.5 miles southwest of Orleans, an existing timber trestle and steel truss bridge to be reconstructed. District I, Route 46, Section D. Stanley H. Koller, Construction, Crockett, $15,512.50; D. M. Sandling, San Pablo, $19,282.13. Contract awarded to James H. McFarland, San Francisco, $10,975.

HUMBOLDT COUNTY—Between Gannon Slough and 0.9 mile north of Plaza Avenue, about 2.9 miles in length, imported sub-base material, cement-treated base and plant-mixed surfacing to be constructed. District I, Route 1, Section H, Arc, 1. Gordon Ball & San Ramon Valley Land Co., Berkeley, $564,084.50; Munn & Perkins and Paul E. McCollum, Modesto, $578,160. Contract awarded to Mercer, Fraser Co. and Mercer, Fraser Gas Co., Inc., Eureka, $539,393.80.

KERN COUNTY—Between Sand Cut near Sivert and Cable, about 7.8 miles in length to be surfaced with plant-mixed surfacing over cement-treated base. District VI, Route 58, Sections D,E. Dicco Inc., Bakersfield, $200,936.25; R. R. Hensler, Sun Valley, $206,211.25; Valley Paving Co., Pismo Beach, $231,-853.75. Contract awarded to Griffith Co., Los Angeles, $183,864.

KERN COUNTY—Between Snow Road and Cawelo, about 7.4 miles in length, cross-overs, road connections, and frontage roads to be graded, untreated rock base and plant-mixed surfacing to be placed, and a right of way fence to be constructed. District VI, Route 4, Sections D,E. Dicco Inc., Bakersfield, $169,-789.70; Valley Paving Co., Pismo Beach, $153,-920.50; Griffith Co., Los Angeles, $154,793. Contract awarded to Hermreck and Easter Contractors, Santa Maria, $148,576.

LOS ANGELES COUNTY — Between Flower Street northbound on ramp and Olympic Boulevard in the City of Los Angeles about 1.1 miles in length to be graded and paved with portland cement concrete pavement on cement-treated subgrade and with asphalt concrete on untreated rock base and 10 retaining walls and 3 bridges to be constructed. District VII, Route 165. J. E. Haddock, Ltd., Pasadena, $1,712,775.75; Griffith Co., Los Angeles, $1,747,-907.75; Webb & White, Los Angeles, $1,811,424.15; Charles MacClosky Co., Clyde W. Wood & Sons, Inc., and C. G. Willis and Sons, Inc., J. V., San Francisco, $1,863,102.15; Guy F. Atkinson Co., Long Beach, $1,895,000. Contract awarded to Oberg Bros., Construction Co., Inglewood, $1,655,337.25.

LOS ANGELES COUNTY—On freeway between Leonis Street and Dunham Street, over the tracks of the Union Pacific Railroad, a structural steel and reinforced concrete overhead to be constructed and approaches thereto to be graded. District VII, Route 167, Section B. Peter Kiewit Sons' Co., Arcadia, $1,143,634.50; O. B. Pierson and Fontana Steel, Paramount, $1,146,551; B. J. Ukropina, T. P. Polich, Steve Kral, John R. Ukropina, San Gabriel, $1,157,-932.50; Griffith Co., Los Angeles, $1,159,351; Webb & White, Los Angeles, $1,172,095; Charles MacClosky Co., San Francisco, $1,181,284; W. F. Maxwell, Los Angeles, $1,185,744; J. E. Haddock, Ltd., Pasadena, $1,191,826; R. M. Price Co., Altadena, $1,201,815; Oberg Bros. Construction Co., Inglewood, $1,204,556; Byerts & Sons, and Geo. K. Thatcher, Los Angeles, $1,213,570; Fredericksen & Kasler, Sacramento, $1,213,769.90; Tumblin Co., Bakersfield, $1,225,370; Guy F. Atkinson Co., Long Beach, $1,228,639; Bongiovanni Construction Co., Hollywood, $1,360,000. Contract awarded to J. A. Thompson & Son, Inglewood, $1,140,221.50.

LOS ANGELES COUNTY—At the intersection of Lakewood Boulevard with South Street, intersection to be graded and paved with asphalt concrete surfacing on untreated rock base. District VII, Route 168, Section A. Vido Kovacevich Co., Rosemead, $13,646; C. O. Sparks, Inc., and Nundo Engineering Co., Los Angeles, $15,335.30; Jesse S. Smith, Glendale, $15,705; Warren Southwest Inc., Torrance, $17,115.70. Contract awarded to Griffith Co., Los Angeles, $12,597.20.

LOS ANGELES AND ORANGE COUNTIES—Across San Gabriel River about 2 miles easterly of Long Beach, extend the existing reinforced concrete bridge and reconstruct approaches thereto. District VII, Route 179, Sections A,A. W. F. Maxwell, Los Angeles, $96,788; E. G. Perham, Los Angeles, $100,-652; O. B. Pierson, Bellflower, $103,707.50; Vido Kovacevich Co., Rosemead, $112,148.50; Norman I. Fadel, North Hollywood, $112,156; Charles MacClosky Co., San Francisco, $113,955; Cox Bros. Construction Co., Stanton, $114,740.30; Byerts & Sons and Geo. K. Thatcher, Los Angeles, $117,857.50. Contract awarded to Owl Truck & Construction Co., Compton, $96,590.

MADERA COUNTY—Between Merced County line and Califa (portions); a net length of about eight and two-tenths (8.2) miles to be widened with imported subbase material and surfaced with plant-mixed surfacing on untreated rock base. District VI, Route 32, Section A. Valley Paving Co., Pismo Beach, $274,705; Stewart & Nuss, Inc., Fresno, $275,-966.50; Fredrickson & Watson Construction Co., Oakland, $276,587.70; Granite Construction Co., Watsonville, $300,757; Gene Richards, Inc., Fresno, $314,000. Contract awarded to Volpa Bros., Fresno, $251,553.

MARIN COUNTY—On Mt. Tamalpais State Park Highway between Pan Toll Junction and West Peak, about 2.7 miles in length, to be graded, selected material to be placed and bituminous surface treatment to be applied. District IV, Route-Tamalpais Park Highway. Ghilotti Bros., Inc., San Rafael, $85,995; Eaton and Smith, San Francisco, $89,888; J. Henry Harris, Berkeley, $90,036.05. Contract awarded to Brown-Ely Co., Contractors, Corte Madera, $77,-148.75.

MARIPOSA COUNTY—For cleaning and painting five bridges, in Mariposa County, across Mariposa Creek, Bear Creek, Merced River, Maxwell Creek, and Black Creek, between Mariposa and 1.2 miles west of Coulterville. District X, Routes 18, 65, 110, Sections J; C, B, A; B. J. S. Morris Co., Berkeley, $8,472; R. W. Reade & Co., $8,810; Deemer & Deemer, San Francisco, $9,250; Orrell-Keefe Co., Oakland, $9,830; H. C. McKern, San Jose, $11,590. Contract awarded to John P. McGuire, San Jose, $7,869.

MARIN COUNTY—Between 2 miles east of Alto Intersection and 0.1 mile west of Belvedere, about 1.3 miles in length, to be graded and imported subbase material, untreated rock base, and plant-mixed surfacing to be placed. District IV, Route 52, Section A. E. A. Forde Co., San Anselmo, $103,546.05; A. G. Raisch Co., San Rafael, $107,345.50. Contract awarded to Brown-Ely Co., Contractors, Corte Madera, $90,549.50.

MENDOCINO COUNTY—Between 4.1 miles north of Forsythe Creek and Ridgewood Summit about 4.9 miles to be graded and drainage facilities to be constructed. District I, Route 1, Sections D, E. Guy F. Atkinson Co., South San Francisco, $996,-870.70; Arthur B. Siri, Inc., Santa Rosa, $1,067.-224.96; McNutt Brothers, Eugene, Oregon, $1,067,-654; Fredrickson & Watson Construction Co., & M & K Corporation, Oakland, $1,120,643.70; Harms Bros., Sacramento, $1,134,927.10; Gordon H. Ball & San Ramon Valley Land Co., Berkeley, $1,175,-265.20. Contract awarded to McCammon-Wonderlich Co., Palo Alto, $985,452.99.

MENDOCINO COUNTY—Between 0.6 mile south of Outlet Creek and Reeves Creek, about 6 miles north of Willits, about 4.8 miles in length to be surfaced with plant-mixed surfacing on cement-treated base. District I. Route 1, Section F. Harms Bros., Sacramento, $183,494; Clements Construction Co., Hayward, $185,158. Contract awarded to Antioch Paving Co., Inc., Antioch, $181,089.35.

MENDOCINO COUNTY—At Manchester Maintenance Station, truck shelter, gas and oil house, pump house, grease rack and loading platform, sewer system and chain link fence to be constructed. District I, Route 56, Section B. Contract awarded to Baldwin Contracting Co., Inc., San Rafael, $34,945.

MONTEREY COUNTY—About 3 miles south of Soledad, highway curve to be reconstructed. District V, Route 2, Section D. Edward Keeble, San Jose, $7,405; Valley Paving Co., Pismo Beach, $8,705; Granite Construction Co., Watsonville, $9,743. Contract awarded to Baun Construction Co., Fresno, $7,245.

MONTEREY COUNTY—City of Salinas, at and adjacent to the intersection of U. S. 101 with Laurel Drive and with Curtis Street, traffic signal systems to be furnished and installed and channelization to be constructed. District V, Route 2. Edward Keeble, San Jose, $56,850; Louis Electric Co., Salinas, $57,-569.41. Contract awarded to Howard Electric Co., Gilroy, $53,862.

ORANGE COUNTY—On Imperial Highway between La Mirada Avenue and Fullerton Road, about 2.0 miles in length to be graded and paved with asphalt concrete on untreated rock base. District VII, Route 176, Sections A, LHbr. Warren Southwest, Inc., Torrance, $169,642.50; Cox Bros. Construction Co., Stanton, $170,498.70; Baker and Pollock, Ventura, $171,093.60; Sully-Miller Contracting Co., Long Beach, $171,627.88; R. J. Noble Co., Corporation, and R. J. Noble, Orange, $172,407; Dimmitt & Taylor, Monrovia, $174,060.80; Roland T. Reynolds & Arthur H. Famularo, Anaheim, $177,694.50; Webb & White, Los Angeles, $180,823; Matich Bros., Colton, $189,716; M. S. Mecham & Sons, South Gate, $192,331. Contract awarded to Griffith Co., Los Angeles, $168,647.

PLACER COUNTY—Between 1.0 mile south of Roseville and 0.5 mile east of Roseville, 3.5 miles in length of roadbed for a four-lane divided highway to be graded and six bridges to be constructed. District III, Routes 3, 17, Sections A, Rsv, A. Gordon Ball & San Ramon Valley Land Co. & Harms Bros., Sacramento, $1,283,193.30; McCammon-Wunderlich Co., Palo Alto, $1,284,333.80; Fredericksen & Kasler, Sacramento, $1,349,277.45; Guy F. Atkinson Co., South San Francisco, $1,366,171.25; Charles MacClosky Co., San Francisco, $1,374,729.80; A. Teichert & Son, Inc., Sacramento, $1,556,647.50. Contract awarded to Ukropina, Polich, Kral, San Gabriel, $1,277,501.30.

PLUMAS COUNTY—At Graeagle Creek, about 1.6 miles south of Blairsden, a bridge to be constructed and about 0.1 mile in length of bridge approaches to be graded and a detour to be constructed. District II, Route 83, Section A. Walsh Construction Co., San Francisco, $60,531; R. G. Clifford and C. O. Bodenhamer, Berkeley, $60,712; Ruby Construction Co., Inc., Sacramento, $65,100.25; James B. Allen, San Carlos, $66,957; Friant Construction Co., Fresno, $68,339.40; Bos Construction Co., Berkeley, $76,259.50; James H. McFarland, San Francisco, $76,551; Stanley H. Koller Construction, Crockett, $85,984. Contract awarded to Minton Co., Contractors, Oakland, $59,463.

RIVERSIDE COUNTY—Between 1.2 miles east of Whitewater and 2.3 miles west of Garnet, about 2.3 miles in length to be graded and surfaced with plant-mixed surfacing on cement-treated base. District VIII, Route 26, Section D. Matich Bros., Colton, $354,472; E. L. Yeager Co., Riverside, $356,992; Granite Construction Co., Watsonville, $361,002; Fredericksen & Kasler, Sacramento, $422,815. Contract awarded to Basich Bros. Construction Co., R. L. Basich & N. L. Basich, South San Gabriel, $346,749.

RIVERSIDE COUNTY—Between 0.1 mile west of Arabia Street and 0.1 mile east of California Street in the City of Indio, about 0.9 mile in length, to be widened with cement-treated base and road-mixed surfacing; and seal coats to be applied to entire roadbed. District XI, Route 64. E. L. Yeager Co., Riverside, $51,208; Rankin & Booth, Playa Del Rey, $51-416.75; E. S. & N. S. Johnson, Fullerton, $52,375.75; James E. Roberts, San Bernardino, $54,199; Flickinger-Welker, Inc., Los Angeles, $58,046; Marks Bros. Construction Co., El Centro, $58,086.50. Contract awarded to Matich Brothers, Colton, $49,-587.50.

RIVERSIDE COUNTY—At the intersection of Route 78 with Alessandro Boulevard; District VIII, Route 78, Section D. Contract awarded to Fischbach and Moore, Inc., Los Angeles, $2,804.

RIVERSIDE COUNTY—Portions between Desert Center and the Colorado River, about 22.3 miles in net length, plant-mixed surfacing to be placed over portions of existing roadbed; and seal coat to be applied to portions of existing surfacing. District XI, Route 64, Sections C, D, E, Bly, F. Granite Construction Co., Watsonville, $118,396.75; R. R. Hensler, Sun Valley, $123,287.50; G. W. Ellis Construction Co., North Hollywood, $129,039; Valley Paving Co., Pismo Beach, $139,300. Contract awarded to John J. Swiggart Co., Orange, $113,287.50.

SAN BERNARDINO COUNTY—In the City of San Bernardino on Mt. Vernon Avenue between Fourth and Seventh Streets, drainage facilities to be constructed and installed. District VIII, Route 31. George Herz & Co., San Bernardino, $52,150.10; James E. Roberts, San Bernardino, $58,362; Hubbs Equipment Co., Colton, $60,882.50; Norman I. Fadel, North Hollywood, $61,690; Matich Bros.,

Colton, $67,505.20; E. C. Young, San Fernando, $68,925. Contract awarded to Lloyd R. Johnson, Rialto, $46,259.50.

SAN BERNARDINO COUNTY—In the City of Colton on I Street between west city limits and east city limits, about 1.5 miles to be surfaced wih plant-mixed surfacing. District VIII, Route 26. Matich Bros., Colton, $40,154.75; Vernon Paving Co., Los Angeles, $41,495. Contract awarded to R. A. Erwin, Colton, $37,438.

SANTA CLARA COUNTY—Between Route 2 (El Camino Real) and Route 68 (Bayshore Highway), about 2.5 miles in net length, to be widened by grading and placing plant-mixed surfacing on existing pavement and cement-treated base and an existing bridge to be widened by constructing a reinforced concrete bridge extension surfaced with plant-mixed surfacing and cement-treated base. District IV, Route 113, Section A. McCammon-Wunderlich Co., Palo Alto, $161,393.58; Leo F. Piazza Paving Co., San Jose, $162,644; L. C. Smith Co., San Mateo, $163,813.30; S. A. E. Co., Redwood City, $169,843.30; A. J. Raisch Paving Co., San Jose, $178,562. Contract awarded to Granite Construction Co., Watsonville, $160,414.

SANTA CLARA COUNTY—At Bolsa Road intersection and Carnadero Creek Bridge, channelization, highway lighting, bin-type retaining walls and bridge railing to be constructed. District IV, Route 2, Section C. Edward Keeble, San Jose, $37,685; Granite Construction Co., Watsonville, $38,854.10; James B. Allen, San Carlos, $38,939; Joe W. Douglass, San Jose, $49,449. Contract awarded to Wm. Radtke & Son, Gilroy, $35,417.25.

SANTA CRUZ COUNTY—Between one mile southeast and 0.6 mile northwest of Laguna Creek, about 1.6 miles in length, to be graded and surfaced with plant-mixed surfacing on untreated rock base and construct a 13 foot by 13 foot reinforced concrete culvert. District IV, Route 56, Section B. Granite Construction Co., Watsonville, $345,630.95; Gordon Ball and San Ramon Valley Land Co., Berkeley, $387,354.80; Fredericksen & Kasler, Sacramento, $424,900.20; McCammon-Wunderlich Co., Palo Alto, $470,235.15. Contract awarded to Edward Keeble, San Jose, $316,057.30.

SAN DIEGO COUNTY—Between 0.3 mile north of Escondido and 3.4 miles south of Riverside County line, about 19.5 miles in net length, seal coats to be applied. District XI, Route 77, Sections F, G. E. S. & N. S. Johnson, Fullerton, $33,915; G. J. Payne Co., Inc., Los Angeles, $34,258.50; Cox Bros. Construction Co., Stanton, $35,907.90; George Herz & Co., San Bernardino, $37,464. Contract awarded to Einer Bros., Inc., Escondido, $30,991.50.

SAN FRANCISCO COUNTY—Wye Viaduct and connecting ramps, Route 2 to Route 68, a portion of a bridge and miscellaneous road work to be constructed. District IV, Routes 2, 68. Erickson, Phillips & Weisberg, Concord, $775,896; Dan Caputo, San Jose, $786,548.25; Peter Kiewit Sons' Co., San Francisco, $792,951; Rothschild, Roffin & Weirick, San Francisco, $814,823.20; Charles MacClosky Co., San Francisco, $816,487.20; Guy F. Atkinson Co., South San Francisco, $824,930.10; Fredrickson & Watson Construction Co., & M & K Corporation, Oakland, $851,555.30; S. J. Amoroso Construction Co., San Francisco, $877,359.95. Contract awarded to Chas. L. Harney, Inc., San Francisco, $769,853.80.

SAN FRANCISCO COUNTY—At San Francisco-Oakland Bay Bridge, a timber fender at Pier W-3 to be repaired. District IV, Route 68. The Duncanson-Harrelson Co., Richmond, $31,700; Smith-Rice Co., San Francisco, $34,648; Healy-Tibbitts Construction Co., San Francisco, $34,730. Contract awarded to Hart & Hynding Inc., San Francisco, $23,886.

SAN FRANCISCO COUNTY—In Yerba Buena Island Tunnel of San Francisco-Oakland Bay Bridge, tile lining to be repaired. District IV, Route 68. Duffy Tile Co., San Francisco, $4,232.50; National Tile & Terrazzo Co., Inc., San Francisco, $4,462.50; Rigney Tile Co., Oakland, $4,575. Contract awarded to Superior Tile Co., Oakland, $4,195.

SAN LUIS OBISPO AND MONTEREY COUNTIES—Across San Simeon Creek and Mud Creek, about 3.8 miles and 33.9 miles north of Cambria, two existing steel bridges to be cleaned and painted. District V, Route 56, Sections B, A. A. O. Miller Waterproofing and Painting Co., Los Angeles, $15,130; Deemer & Deemer, San Francisco, $16,400; Klaas Bros., Los Angeles, $16,562; J. S. Morris Co., Berkeley, $21,060; R. W. Reade and Co., Berkeley, $21,094. Contract awarded to John P. McGuire, San Jose, $14,273.

SAN LUIS OBISPO COUNTY—Morro Bay State Park, about 0.2 mile of 12-foot roadway and parking area to be graded and surfaced with plant-mixed surfacing on untreated rock base. District V. Hermreck & Easter, Contractors, Santa Maria, $6,325; Granite Construction Co., Watsonville, $7,076.60. Contract awarded to Valley Paving Co., Pismo Beach, $5,236.50.

SAN MATEO COUNTY—Between 0.1 mile north of 16th Avenue and 0.2 mile south of Bransten Road, about 5 miles in length, to be graded and surfaced with plant-mixed surfacing on cement-treated base and six bridges to be constructed and one bridge to be widened. District IV, Route 68, Sections S, M, C, Bmt, SCar. L. C. Smith Co., San Mateo, $3,749,629.54; Peter Kiewit Sons' Co., San Francisco, $3,839,392; Fredrickson & Watson Construction Co., & M & K Corporation, Oakland, $3,876,596.71; Chas. L. Harney, Inc., San Francisco, $4,276,900; Macco Corporation & Morrison-Knudsen Co., Inc., Paramount, $4,536,756; Guy F. Atkinson Co., South San Francisco, $4,624,243.60. Contract awarded to Piombo Construction Co., San Francisco, $3,749,132.60.

SAN MATEO COUNTY—Between 0.3 mile and 1.3 miles south of the San Francisco County line, about 1 mile in length to be graded. District IV, Route 68, Section E. Chas. L. Harney Inc., San Francisco, $868,827.70; McCammon-Wunderlich Co., Palo Alto, $889,832.35; Peter Kiewit Sons' Co., San Francisco, $933,666; Eaton & Smith, San Francisco, $1,012,437; Macco Corporation & Morrison-Knudsen Co., Paramount, $1,062,364; Fredrickson & Watson Construction Co., & M & K Corporation, Oakland, $1,068,292.55; Piombo Construction Co. & Parish Bros., San Francisco, $1,099,057.50; Gordon Ball & San Ramon Valley Land Co., Berkeley, $1,154,334; L. C. Smith Co., San Mateo, $1,295,794. Contract awarded to Guy F. Atkinson Co., South San Francisco, $856,704.10.

SONOMA COUNTY—Between 7.5 miles north of Stewarts Point and Gualala, 3.0 miles, portions to be widened with imported borrow and excavated material and surfaced with road-mixed surfacing on untreated rock base, and seal coat to be applied to entire project. District IV, Route 56, Section E. Claude C. Wood Co., Lodi, $85,729.75; Huntington Bros., Napa, $85,900; J. R. Armstrong, El Cerrito, $86,095.01; Harms Bros., Sacramento, $91,699. Contract awarded to Arthur B. Siri, Inc., Santa Rosa, $69,872.85.

SONOMA COUNTY—Between 1.0 mile northwest of Monte Rio and Monte Rio (portions), a net length of 0.5 mile to be graded and surfaced with plant-mixed surfacing on imported base material. District IV, Route 104, Section A. Brown-Ely Co. Contractors, Corte Madera, $78,683.50; Arthur B. Siri, Inc., Santa Rosa, $82,401.80; J. Henry Harris, Berkeley, $93,452.50; Helwig Construction Co., Sebastopol, $94,463. Contract awarded to Eaton & Smith, San Francisco, $76,990.75.

STANISLAUS COUNTY—In Turlock State Park, about 8 miles west of La Grange, parking areas, boat ramps and road to be graded and either surfaced with plant-mixed surfacing or penetration treatment applied. District X. M. J. Ruddy & Son, Modesto, $29,908.50; Donald Graves, San Jose, $31,005; George Reed, Modesto, $31,465; Wm. S. & Bruce F. Rogers Co., Madera, $31,962.50; Munn & Perkings, Modesto, $34,710; John A. Carstensen, Castro Valley, $35,010; J. Henry Harris, Berkeley, $36,627.50. Contract awarded to Standard Materials Inc., Modesto, $28,125.

TULARE COUNTY—In and adjacent to the City of Tulare, between Tulare Airport and Tagus, highway lighting and illuminated sign systems to be furnished and installed. District VI, Route 4, Sections B, Tul, F. Sacramento Electric Works, Sacramento, $46,377.90; A-C Electric Co., Bakersfield, $54,665; R. Goold & Son, Stockton, $55,310; Dale Electric, Fresno, $60,000; Robinson Electric, Fresno, $60,891; A. S. Schulman Electric Co., Los Angeles, $71,966. Contract awarded to Howard Electric Co., Gilroy, $45,515.

VENTURA COUNTY—At Haun Creek, approximately one mile east of the City of Santa Paula, a reinforced concrete bridge to be constructed and the approaches and drainage facilities are to be reconstructed. District VII, Route 79, Section B. W. F. Maxwell, Los Angeles, $59,854.50; Hermreck & Easter, Santa Maria, $59,913.50; Friant Construction Co., Fresno, $61,883.50; O. B. Pierson, Bellflower, $64,875.50; Jesse S. Smith, Glendale, $65,093.75; E. G. Perham, Los Angeles, $65,422; Barringer & Botke, Santa Paula, $65,937.50; Wonderly Construction Co., Long Beach, $66,869.25; E. S. & N. S. Johnson, Fullerton, $70,851. Contract awarded to Norman I. Fadel, North Hollywood, $55,804.50.

F. A. S. County Roads

COLUSA COUNTY—Between 4 miles east of Arbuckle and State Route 88, about six and one-tenth (6.1) miles in length, to be graded and surfaced with imported base material and seal coat applied. District III, Route 1032. W. H. O'Hair Co., Colusa, $99,157.50; Stephens Trucking Co., French Camp, $101,428; Rice Bros., Inc., Marysville, $102,457.50; P. J. Moore & Son, West Sacramento, $103,120; A. Teichert & Son, Inc., Sacramento, $104,865; Harms Bros., Sacramento, $106,695; W. C. Railing, Woodland, $111,509.30; Eugene G. Alves, Pittsburg, $111,885; Clements Construction Co., Hayward, $116,287.75; Claude C. Wood Co., Lodi, $118,710; John M. Ferry, Glendale, $145,999.50. Contract awarded to Browne and Krull, Hayward, $97,872.

LASSEN COUNTY—Between north city limits of Susanville and north side of Willow Creek Valley (portions), about 13.3 miles in net length; to be surfaced with plant-mixed surfacing. District II, Route 988. Clements & Co., Hayward, $146,320; Granite Construction Co., Watsonville, $148,080; Harms Bros., Sacramento, $152,881; Donald Graves, San Jose, $157,733; W. C. Railing, Woodland, $167,784; Floyd O. Bailey & William S. & Bruce F. Rogers Co., Madera, $181,466; A. Teichert & Son, Inc., Sacramento, $189,692; Munn & Perkins, Modesto, $192,500. Contract awarded to Peter Kiewit Sons' Co., San Francisco, $141,348.

MENDOCINO COUNTY—Between 9.9 miles and 5.4 miles easterly of Dos Rios about 4.5 miles in length to be graded and drainage facilities constructed. District I, Route 505. M. Malfitano & Son, Inc., Pittsburg, $164,877; Stanley H. Koller Construction and Paul E. McCollum, Crockett, $173,241; W. H. O'Hair Co., Colusa, $181,986.80; Humboldt Construction, Inc., Eureka, $183,572; Authur B. Siri, Inc., Santa Rosa, $195,090; Harms Bros., Sacramento, $202,354.80; C. V. Kenworthy, Stockton, $228,647.50; Transocean Engineering Corporation, Hayward, $232,974. Contract awarded to Cecil L. Moore, San Leandro, $133,484.20.

SISKIYOU COUNTY—Between 7.2 miles east of Grenada and State Route 72, a total length of about 10.9 miles of existing roadway to be surfaced with plant-mixed surfacing. District II, Route 1166. A. Teichert & Son, Inc., Sacramento, $146,488; Harms Bros., Sacramento, $147,357.60. Contract awarded to Clements Construction Co., Hayward, $145,245.

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ALAMEDA COUNTY—Between 0.6 mile north of Southern Pacific Railroad Overhead and 0.2 mile south of Western Pacific Railroad Overhead near Niles about 1.7 miles in length, to be surfaced with plant-mixed surfacing over existing pavement and existing shoulders to be reconstructed. District IV, Route 5, Section C. Browne & Krull, Hayward, $44,885; Independent Construction Co., Oakland, $47,575. Contract awarded to Clements Construction Co., Hayward, $43,636.

ALAMEDA COUNTY—At the intersection of Davis Street with Douglas Drive-Pierce Avenue in the City of San Leandro, furnish and install a traffic signal system. District IV, Route 226. R. Flatland, San Francisco, $10,950; Hall Sloat Electric Co., Inc., Oakland, $10,952; Manny & Whitaker Inc., San Francisco, $10,960; Howard Electric Co., Gilroy, $11,306; Underground Electric Construction Co., Oakland, $11,307; L. H. Leonardi Electric Construction Co., San Rafael, $11,399; Abbett Electric Corp., San Francisco, $12,259. Contract awarded to Scott-Buttner Electric Co., Inc., Oakland, $10,880.

CONTRA COSTA COUNTY—Between 0.25 mile south of Monument and Martinez, a net length of about 5.3 miles; existing roadbed and reinforced concrete bridge to be widened; and plant-mixed surfacing to be placed on cement treated base and existing surfacing. District IV, Route 75, Sections B,H. Lee J. Immel, San Pablo, $279,715.90; Charles L. Harney Inc., San Francisco, $288,787.40; J. R. Armstrong, El Cerrito, $290,414.58; M.J.B. Construction Co., Stockton, $320,580; Peter Kiewit Sons' Co., San Francisco, $368,421. Contract awarded to Gallagher & Burk, Inc., Oakland, $278,314.73.

CONTRA COSTA COUNTY—In the City of Richmond at the intersection of Standard Avenue and Castro Street; construct a reinforced concrete box culvert and revise existing curb, sidewalk, etc. District IV, Route 69. Stanley H. Koller Construction, Crockett, $11,184.20; J. Henry Harris, Berkeley, $12,420.40; Lee J. Immel, San Pablo, $14,-154.10. Contract awarded to J. R. Armstrong, El Cerrito, $11,062.50.

DEL NORTE COUNTY—Portions along the Smith River, between 22.0 miles and 23.6 miles northeast of Crescent City a net length of about 0.3 mile, embankments to be reconstructed and concrete selected rock slope protection to be placed. District I, Route 1, Section D. Ted Schwartz, Grass Valley, $169,539; John Burman & Sons, Eureka, $188,648; J. Henry Harris, Berkeley, $193,842; Mercer Fraser Co., & Mercer Fraser Gas Co., Inc., Eureka, $198,662; Harms Bros., Sacramento, $212,-230; Norman I. Fadel, North Hollywood, $235,921. Contract awarded to Macco Corporation & Morrison-Knudsen Co., Inc., Paramount, $161,478.

HUMBOLDT COUNTY—City of Eureka, at the intersections of Fourth Street with A Street, F Street, H Street and J Street and Broadway with Seventh Street; traffic signal systems to be furnished and installed. District I, Route 1. Howard Electric Co., Gilroy, $29,104; Underground Electric Construction Co., Oakland, $34,753. Contract awarded to L. H. Leonardi Electric Construction Co., San Rafael, $27,-619.

HUMBOLDT COUNTY—Between Alton and Bridgeville, at Yager Creek, Grizzly Creek and Grizzly Creek State Park, two bridges and portion of roadway to be reconstructed. District I, Route 35, Section A,B. James H. McFarland, San Francisco, $52,466. Contract awarded to Humboldt Constructors Inc., Eureka, $40,056.

HUMBOLDT COUNTY—Furnishing and installing traffic signal systems in the City of Arcata, at the intersections of G Street with Seventh and 11th Streets. District I, Route 1. Howard Electric Co., Gilroy, $8,497; Underground Electric Construction Co., Oakland, $9,896; Roy P. Hayes, Sacramento, $10,880; Engineering Design Co., Burlingame, $10,-919. Contract awarded to L. H. Leonardi Electric Construction Co., San Rafael, $7,901.

KERN COUNTY—Between north city limits of Bakersfield and north of Kern River Bridge, about 0.6 mile of highway to be graded and surfaced with plant-mixed surfacing on cement treated base and three steel beam span bridges to be widened. District VI, Route 4, Section G. Griffith Co., Los Angeles, $468,774; Tumblin Co., Bakersfield, $477,262; Charles MacClosky Co., Los Angeles, $578,680.50; Stanley H. Koller Construction, Crockett, $666,427. Contract awarded to W. F. Maxwell, Los Angeles, $467,224.30.

LASSEN COUNTY—City of Susanville, on Main Street between Pine Street and Pacific Street, curbs and gutters to be reconstructed. District II, Route 29. Bill Katsaros Cement Contractor, Millbrae, $35,-080. Contract awarded to W. S. & Bruce F. Rogers Co., Madera, $24,438.

LOS ANGELES COUNTY—Between one mile west of Aqua Dulce Canyon Road and Palmdale, about 4.8 miles in length, roadway to be graded and surfaced with plant-mixed surfacing on untreated rock base. District VII, Route 23, Sections D,E. F. W. Case Corporation, Newhall, $507,275; Fredericksen & Kasler, Sacramento, $515,058.45; Cox Bros. Construction Co., Stanton, $525,259.80; L. A. and R. S. Crowe, El Monte, $541,540; Clyde W. Wood & Sons, Inc., North Hollywood, $542,-569.90; Dimmitt & Taylor, Monrovia, $546,843.13; Matich Brothers, Colton, $547,904.75; Clifford C. Bong & Co., Arcadia, $550,677.50; Griffith Co., Los Angeles, $567,765; J. A. Thompson & Son, Contractors, Inglewood, $581,976.60; R. R. Hensler, Sun Valley, $586,904.50; Schroeder & Co., Sun Valley, $611,326.20. Contract awarded to Munn and Perkins & Paul E. McCallum, Modesto, $455,037.

LOS ANGELES COUNTY—Between Whitaker Ridge and 2.6 miles south of Route 59 (portions), a net length of about 10.0 miles, to be resurfaced with plant-mixed surfacing. District VII, Route 4, Sections H,J. Schroeder & Co., Sun Valley, $286,-779; Griffith Co., Los Angeles, $295,440; Valley Paving Co., Pismo Beach, $308,385; G. W. Ellis Construction Co., North Hollywood, $309,900; Granite Construction Co., Watsonville, $313,865; R. R. Hensler, Sun Valley, $332,664; Cox Bros., Construction Co., Stanton, $385,115. Contract awarded to Gordon H. Ball and San Ramon Valley Land Co. & John M. Ferry, Berkeley, $286,443.

LOS ANGELES COUNTY—Between 0.6 mile south Route 158 and 0.4 mile north of north city limits of Los Angeles, about three miles in length, to be graded and surfaced with Portland cement concrete pavement on cement treated subgrade and seven bridges to be constructed. District VII, Routes 4,23,157,158, Sections Los Angeles, F. Guy F. Atkinson, Co., Long Beach, $3,222,646.25; Webb & White & W. J. Disteli, Los Angeles, $3,243,-075.80; Fredericksen & Kasler, Sacramento, $3,261,-910.85; Frederickson & Watson Construction Co. & M & K Corp., Oakland, $3,349,790.95; J. E. Haddock, Ltd., Pasadena, $3,420,768.40; A. Teichert & Son, Inc., Baldwin Park, $3,446,907; Charles MacClosky Co., L. A. & R. S. Crow and Matich Bros., Los Angeles, $3,449,820.30; Gordon H. Ball & San Ramon Valley Land Co., & Harms Bros., Berkeley, $3,460,317.42; Peter Kiewit Sons' Co., Arcadia, $3,533,685; Winston Bros., Co., Monrovia, $3,605,888.25; J. A. Thompson and Son, Inglewood, $3,623,369.55; B. J. Ukropina, T. P. Polich, Steve Kral & John R. Ukropina, San Gabrial, $3,-694,521; Stolte Inc., Oakland, $3,761,941. Contract awarded to Griffith Co., Los Angeles, $3,060,396.35.

LOS ANGELES COUNTY—On Harbor Freeway between Jefferson Boulevard and 21st Street sanitary sewers, storm drains and bridge abutment and retaining wall to be constructed. District VII, Route 165. Flickinger-Welker Inc., Los Angeles, $324,-194.25; Matt J. Zaich, North Hollywood, $327,-101.50; Radich & Fergusson, Inc., Burbank, $335,-188.50; E. A. Irish, Contractor, Los Angeles, $362,-282.20; Charles MacClosky Co., Los Angeles, $368,995. Contract awarded to Oberg Bros. Construction Co., Inglewood, $319,856.

LOS ANGELES COUNTY—Between east 26th Street and Washington Boulevard over the tracks of the Atchinson, Topeka, and Santa Fe Railway and the Union Pacific Railroad, respectively, a reinforced concrete and structural steel overhead and a reinforced concrete overhead to be constructed and approaches thereto to be graded. District VII, Route 167, Section B, Ver. Griffith Co., Los Angeles, $1,192,666.89; Webb & White, Los Angeles, $1,-195,063.30; R. M. Price Co., Altadena, $1,196,-831.53; J. A. Thompson & Son, Inglewood, $1,-197,407.66; Charles MacClosky Co., Los Angeles, $1,205,722.45; Peter Kiewit Sons' Co., Arcadia, $1,215,901.64; W. E. Maxwell and C. G. Willis & Sons Inc., Los Angeles, $1,229,529.95; Guy F. Atkinson Co., Long Beach, $1,253,866.30; J. E. Haddock, Ltd., Pasadena, $1,257,043.80; Gerstenberger and Pierson, and W. J. Disteli, Los Angeles, $1,257,719.73; Winston Bros., Co., Monrovia, $1,-266,630.30; Bongiovanni Construction Co., North Hollywood, $1,350,541.58. Contract awarded to B. J. Ukropina, T. P. Polick, Steve Kral & John R. Ukropina, San Gabriel, $1,174,577.10.

LOS ANGELES COUNTY—Between Inglewood Avenue and Normandie Avenue about 3.6 miles in length, to be graded and paved with asphalt concrete pavement and a steel girder bridge to be constructed. District VII, Route 175, Sections Rdo B, Tor, Gar, A. J. A. Thompson & Son, Inglewood, $782,420.70; Griffith Co., Los Angeles, $803,910.55; Tomei Construction Co., Van Nuys, $813,443; Warren Southwest Inc., Torrance, $873,808. Contract awarded to J. E. Haddock, Ltd., Pasadena, $772,-539.70.

MERCED COUNTY—Between Bear Creek and Buhach Road, about 4.2 miles in length to be widened and resurfaced with plant-mixed surfacing on untreated rock base. District X, Route 4, Section C. Granite Construction Co., Watsonville, $185,-412.70; Valley Paving Co., Pismo Beach, $190,691; Frederickson & Watson Construction Co., Oakland, $207,605.60; M. J. Ruddy & Son, Modesto, $211,-481.40; M.J.B. Construction Co., Stockton, $219,-965; Chas. L. Harney Inc., San Francisco, $270,075. Contract awarded to Standard Materials Inc., Modesto, $174,994.

LOS ANGELES COUNTY—In and adjacent to the Cities of Pomona and Claremont, between San Dimas Avenue and Alexander Avenue highway lighting and illuminated sign system to be furnished and installed. District VII, Route 26, Section C, Pom, Cla. C. D. Draucker Inc., Los Angeles, $170,530; Paul R. Gardner, Ontario, $171,349; Electric and Machinery Service, Inc., South Gate, $173,162; Fischbach and Moore Inc., Los Angeles, $177,346; A. S. Schulman Electric Co., Los Angeles, $179,267; Westates Electrical Construction Co., Los Angeles, $182,438. Contract awarded to Ets-Hokin & Galvan, Wilmington, $168,479.

LOS ANGELES COUNTY—In and near the Cities of Los Angeles and Inglewood on Manchester Boulevard, between Osage Avenue and Freeman Avenue about 0.6 mile in length; existing shoulders to be excavated and reinforced with imported subbase material and untreated rock base, and the entire roadbed to be surfaced with plant-mixed surface. District VII, Route 174, Section A, LA, Ing. Jesse S. Smith, Glendale, $94,221; George Savala Paving Co., Los Angeles, $95,302.50; McAmis & Baker, Gardena, $99,760; C. O. Sparks Inc. & Mundo Engineering Co., Los Angeles, $101,-079.25; J. A. Thompson & Son, Contractors, Inglewood, $106,837.50; Vernon Paving Co., Los Angeles, $107,700; Flickinger-Welker Inc., Los Angeles, $112,287.50. Contract awarded to Warren Southwest Inc., Torrance, $90,971.75.

MARIPOSA COUNTY—Between Mariposa and two miles northerly, about two miles in length to be graded and surfaced with plant-mixed surfacing on untreated rock base. District X, Route 65, Section C. Granite Construction Co., Watsonville, $197,-433; Eaton and Smith, San Francisco, $198,877.10; Karl C. Harmeling, Stockton, $202,613. Contract awarded to Close Building Supply Inc., Hayward, $186,628.70.

MONTEREY AND SANTA BARBARA COUNTIES—Between Chualar and Spence Underpass and in the City of Santa Maria; between Railroad Avenue and the west city limits of Santa Maria, seal coats to be applied. District V, Route 2, 148, Sections B, SMra. Baun Construction Co., Fresno, $11,-682; Granite Construction Co., Watsonville, $11,-880; Madonna Construction Co., San Luis Obispo, $12,359. Contract awarded to Valley Paving Co., Pismo Beach, $10,760.

NEVADA COUNTY—Between near new Route 15 and 0.1 mile west of west city limits of Nevada City, about 1.0 mile in length, to be graded and road-mixed cement treated base and armor coat to be placed. District III, Route 25, Sections Nev, C,A. W. H. Darrough & Sons, Yuba City, $158,946.80; Ted Schwartz, Grass Valley, $161,712.50; Close Building Supply Inc., Hayward, $168,973.50; Paul E. McCollum, Richmond, $171,836.16; Huntington Bros., Napa, $176,500; Harms Bros., Sacramento, $177,022.70; M. Malfitano & Son Inc. & Vega Engineering & Grading Co., Pittsburg, $178,721.90; H. Earl Parker, Inc., Marysville, $189,589.50; J. Henry Harris, Berkeley, $215,705.40; M.J.B. Construction Co., Stockton, $235,342. Contract awarded to John G. Mehren, Sacramento, $144,-965.95.

ORANGE COUNTY—Across the Santa Ana River approximately 1.5 miles north of Olive, a reinforced concrete bridge to be constructed and approaches to be graded and surfaced with plant-mixed surfacing on untreated rock base. District VII, Route 175, Section B. Charles MacClosky, Co., San Francisco, $450,773; O. B. Pierson, Bellflower, $451,-285.50; W. F. Maxwell, Los Angeles, $456,868.50; John Strona, Pomona, $466,457.20; Webb & White, Los Angeles, $490,770; J. A. Thompson & Son, Inglewood, $499,492; Byerts & Sons and Geo. K. Thatcher, Los Angeles, $507,074.50; Fredericksen & Kasler, Sacramento, $520,974.40; Guy F. Atkinson Co., Long Beach, $556,084. Contract awarded to R. M. Price Co., Altadena, $416,222.

ORANGE COUNTY—On Huntington Beach Boulevard between Garfield Avenue and Smeltzer Avenue, about 3.2 miles in length, to be graded and surfaced with plant-mixed surfacing on untreated rock base. District VII, Route 171, Section A. Sully-Miller Contracting Co., Long Beach, $384,484.90;

Baker and Pollock, Ventura, $413,101.50; M. S. Mecham & Sons, South Gate, $420,063; Cox Bros. Construction Co., Stanton, $421,176.50. Contract awarded to R. J. Noble Co., Orange, $352,287.

PLUMAS COUNTY—At Willow Creek, 4.3 miles west of the west city limits of Portola, an existing bridge to be removed, a reinforced concrete culvert to be constructed and approaches to be graded and surfaced with imported base material cement treated, and plant-mixed surfacing. District II, Route 21, Section F. Friant Construction Co., Fresno, $27,-658.50; Ted Schwartz, Grass Valley, $28,359.50. Contract awarded to Paul E. McCollum, Richmond, $25,533.75.

SAN BERNARDINO COUNTY—On Euclid Avenue between 0.2 mile north of Pine Avenue and Eucalyptus Avenue about 2.3 miles in length, cement treated base borders to be constructed, plant-mixed surfacing to be placed and seal coats to be applied. District VIII, Route 192, Section A. Matich Bros. and Matich Bros. Paving Co., Colton, $43,-692.50; Ralph J. Laird, La Verne, $44,453; E. S. & N. S. Johnson, Fullerton, $46,255.80; George Herz & Co., San Bernardino, $46,992; Robert E. L. Parker Co., Claremont, $47,779.50; Vernon Paving Co., Los Angeles, $48,362.90; E. L. Yeager Co., Riverside, $50,861.90; James E. Roberts, San Bernardino, $54,920. Contract awarded to Corona Asphalt Paving Co., Corona, $42,035.

SAN DIEGO COUNTY—Between 3.3 miles northwest of Warner's and San Luis Rey River, a distance of about 1.2 miles in length, to be graded and bituminous surface treatment applied. District XI, Route 78, Section D. Lowe & Watson, San Bernardino, $51,836.95; Dimmitt & Taylor, Monrovia, $51,842.06; Einer Bros, Inc., Escondido, $54,-912; Matich Bros., and Matich Bros. Paving Co., Colton, $57,989; James E. Roberts, San Bernardino, $58,443.50; Clifford C. Bong & Co., Arcadia, $59,-180; E. C. Young, San Fernando, $62,356.90; Robert E. L. Parker Co., Claremont, $62,562.60; Cox Bros. Construction Co., Stanton, $64,886.75; E. S. & N. S. Johnson, Fullerton, $65,512.50; Morris Van Meter, Bonita, $66,761.70; Elco Construction, Bell, $68,841.65; Ralph B. Slaughter, Julian, $69,718.50; E. L. Yeager Co., Riverside, $70,646.50; Walter H. Barber, La Mesa, $72,674.20. Contract awarded to Arthur A. Johnson, Laguna Beach, $50,-655.

SAN DIEGO COUNTY—In the City of San Diego between Torrey Pines Mesa and Penasquitos Creek, about 2.3 mile of roadway to be graded, widened, and resurfaced. District XI, Route 2. Clifford C. Bong & Co., Arcadia, $282,805; R. E. Hazard Contracting Co., San Diego, $299,292.10; Daley Corp., San Diego, $299,927.25; Cox Bros. Construction Co., Stanton, $304,849.60. Contract awarded to Griffith Co., Los Angeles, $282,067.50.

SAN JOAQUIN AND CALAVERAS COUNTIES—Between 0.1 mile west of San Joaquin County line and Valley Springs, about 5.2 miles in net length, to be widened and surfaced with plant-mixed surfacing on untreated rock base. District X, Route 24, Sections A; A,B. M. J. Ruddy & Son, Modesto, $262,603.20; Granite Construction Co., Watsonville, $307,381; Harms Bros., Sacramento, $315,567; E. A. Forde Co., San Anselmo, $320,450.60; Gordon H. Ball & San Ramon Valley Land Co., Berkeley, $320,030.30. Contract awarded to Claude C. Wood Co., Lodi, $258,921.

SAN JOAQUIN COUNTY—Between Ripon and 0.7 mile west of Austin Road 4.3 miles in length, two additional lanes, to be graded and surfaced with Portland cement concrete on cement treated subgrade; resurface the existing pavement with plant-mixed surfacing; and construct two reinforced concrete overcrossings; to provide a four-lane divided highway. District X, Route 4, Sections Rip, A. Gordon H. Ball and San Ramon Valley Land Co., Berkeley, $1,128,457.65; Fredrickson & Watson Construction Co., Oakland, $1,137,890.25; B. J. Ukropina, T. P. Polich, Steve Kral & John R. Ukropina, San Gabriel, $1,156,078.75; Stolte Inc. & Stephens Trucking Co., Oakland, $1,230,-993; Guy F. Atkinson Co., South San Francisco, $1,242,314.95; A Teichert & Son, Inc., Sacramento, $1,297,134.50. Contract awarded to Lord & Bishop and M.J.B. Construction Co., Stockton, $1,081,-046.60.

SAN JOAQUIN COUNTY—About 2.5 miles east of Tracy between Banta Road and Grant Line Road about 1.9 miles in length, border trenches to be excavated and backfilled with cement treated base material and plant-mixed surfacing placed on traveled way and shoulders. District X, Route 5, Section B. Claude C. Wood Co., Lodi, $80,211; S. M. McGaw Co. Inc., Stockton, $80,312.41; Clements Construction Co., Hayward, $80,876; M. J. Ruddy & Son, Modesto, $82,098.50; Stephens Trucking Co., French Camp, $83,899.20; Stanfield & Moody, Tracy, $87,012.50; Chas. L. Harney, Inc., San Francisco, $91,755. Contract awarded to A. Teichert & Son, Inc., Sacramento, $79,460.

SAN MATEO COUNTY—Between Route 68 and Southern Pacific Railroad Crossing about 0.8 mile in length to be graded and surfaced with plant-mixed surfacing over existing pavement and on cement treated base. District IV, Route 107. Piombo Construction Co., San Francisco, $84,372.80; J. Henry Harris, Berkeley, $85,344.40; Chas. L. Harney, Inc., San Francisco, $86,602; Leo F. Piazza Paving Co., San Jose, $93,207.38; S.A.E. Co., Redwood City, $93,761. Contract awarded to L. C. Smith Co., San Mateo, $71,260.20.

SHASTA COUNTY—On Eureka Way, between 11th Street and Court Street in Redding, about 0.2 mile in length to be widened and untreated rock base and plant-mixed surfacing to be placed. District II, Route 20. Frederickson & Watson Construction Co., Oakland, $23,675; Morgan Construction Co., Redding, $25,426. Contract awarded to M. W. Brown, Redding, $21,709.

SISKIYOU COUNTY—At Seiad Creek, about 62.4 miles northeast of Humboldt County line, a reinforced concrete bridge and approaches to the constructed. District II, Route 46, Section B. Underground Construction Co., Oakland, $88,950; R. G. Clifford & C. O. Bodenhamer, Berkeley, $93,182; A. A. Edmondson, Butte City, $107,919; Stanley H. Koller Construction, Crockett, $109,477; Ted Schwartz, Grass Valley, $119,477.50 Contract awarded to James B. Allen, San Carlos, $76,509.

SISKIYOU COUNTY—Between Spring Street and First Street, near Dunsmuir, a bridge to be widened and approaches about 0.5 mile in length to be graded and surfaced with plant-mixed surfacing on cement treated base. District II, Route 3, Sections, Dmr, A. John C. Gist, Sacramento, $679,-399; A Teichert & Son, Inc., Sacramento, $801,897. Contract awarded to Charles MacClosky Co., San Francisco, $651,648.

SOLANO AND YOLO COUNTIES—Between Route 6 and 0.5 mile north of Woodland Wye, about 2.5 miles in length to be graded and paved with Portland cement concrete and two reinforced concrete bridges to be constructed. District III, Route 7, Sections E,A. B. J. Ukropina, T. P. Polich, Steve Kral & John R. Ukropina, San Gabriel, $626,-704.10; Frederickson & Watson Construction Co., Oakland, $651,554.39; A. Teichert & Sons, Inc., Sacramento, $655,185.50; Guy F. Atkinson Co., South San Francisco, $663,465.95; Frederickson Bros., Emeryville, $669,742.55; George Pollock Co., Sacramento, $682,926.25; Harms Bros., Sacramento, $684,223.85. Contract awarded to Gordon H. Ball & San Ramon Valley Land Co., Berkeley, $620,-917.48.

SONOMA COUNTY—Across Petaluma Creek and over North-Western Pacific Railroad Company tracks, about one mile east of Petaluma, a reinforced concrete girder bridge to be constructed. District IV, Route 1, Section F. Charles MacClosky Co., Los Angeles, $932,436; Tumblin Co., Bakersfield, $939,-574; Williams & Burrows Inc., & Carl N. Swenson Co., Inc., South San Francisco, $954,352; Chas. L. Harney, Inc., San Francisco, $954,698.50; Dan Caputo, San Jose, $960,524; Fredrickson & Watson Construction Co. & M & K Corporation, Oakland, $977,735.70; Lew Jones Construction Co., San Jose, $995,245.60; Stolte Inc., Oakland, $1,004,938.50; Ben C. Gerwick Inc., & Peter Kiewit Sons' Co., San Francisco, $1,020,555; Rothschild, Raffin & Weirick & Pacific Bridge Co., San Francisco, $1,036,356; The Duncanson-Harrelson Co., Richmond, $1,043,-822. Contract awarded to Erickson-Phillips & Weisberg, Concord, $850,063.75.

TEHAMA COUNTY—Betweent 2.9 miles south of Los Molinos and 4.3 miles north of Dairyville, a net length of about 1.0 mile of bridge approaches to be widened and surfaced with plant-mixed surfacing. District II, Route 3, Sections A,D. Butte Creek Rock Co. Chico, $45,772; Fredrickson & Watson Construction Co., Oakland, $47,945.25. Contract awarded to Clements Construction Co., Hayward, $38,070.85.

VENTURA COUNTY—On Ventura Boulevard between Calleguas Road and Central Avenue highway lighting and illuminated sign system to be furnished and installed. District VII, Route 2, Section B. Fischbach and Moore, Inc., Los Angeles, $34,622; C. D. Draucher, Inc., Los Angeles, $35,253; Westates Electrical Construction Co., Los Angeles, $35,508; Ets-Hokin & Galvan, Wilmington, $35,912; Ed Seymour, Long Beach, $35,925; A. S. Schulman Electric Co., Los Angeles, $36,769. Contract awarded to Electric and Machinery Service, Inc., South Gate, $33,548.

VENTURA COUNTY—Between Alvarado Avenue and Meiners Oaks and Matilija Hot Springs Road, about 2.7 miles in length, to be graded and surfaced with plant-mixed surfacing on untreated rock base, and construct two bridges. District VII, Route 138, Section B. Dimmitt & Taylor, Monrovia, $359,848.25; Roland T. Reynolds & Thomas Construction Co., Anaheim, $369,695.05; Valley Paving Co., Pismo Beach, $379,924.40; Frederickson & Kasler, Sacramento, $399,747.60. Contract awarded to W. F. Maxwell & Hermreck & Easter, Los Angeles, $293,067.80.

YOLO COUNTY—Between Winters & Madison, about 10.8 miles in length, to be surfaced with plant-mixed surfacing and four bridges are to be widened. District III, Route 90, Sections Win, A. W. C. Railing, Woodland, $109,767.25; Harms Bros., Sacramento, $113,160.75; E. A. Forde Co., San Anselmo, $121,342.50; Fredrickson Bros., Emeryville, $132,334.90. Contract awarded to A. Teichert & Son, Inc., Sacramento, $102,141.25.

YOLO COUNTY—Near Monument School about 5.8 miles northwesterly of Sacramento on the Sacramento-Woodland River Road, about 0.4 mile in length to be graded and plant-mixed surfacing to be placed on cement treated base. District III, Route 50, Section F. A. Teichert & Son, Inc., Sacramento, $34,965; Brighton Sand & Gravel Co., Sacramento, $36,241. Contract awarded to W. C. Railing, Woodland, $26,155.50.

F. A. S. County Roads

FRESNO COUNTY—Across Cole Slough, about nine miles south of Selma a reinforced concrete slab bridge to be constructed. District VI, Route 568. Friant Construction Co., Fresno, $24,043; Gene Richards, Inc., Fresno, $24,362.62; E. G. Perham, Los Angeles, $25,703.50; Kaweah Construction Co., Visalia, $27,754.10; Stanley H. Koller Construction, Crockett, $35,135. Contract awarded to F. Fredenburg, Temple City, $23,988.

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DEL NORTE COUNTY—At Wilson Creek about seven miles north of Klamath and at Jordan Creek about 3.7 miles north of Crescent City existing bridge to be repaired and reinforced concrete bridge to be constructed and approaches to be graded and surfaced with road-mixed surfacing. District I, Route 1, 71, Sections A,A. G. M. Carr Co. & Bati Rocca, Santa Rosa, $34,127.50. Contract awarded to James H. McFarland, San Francisco, $29,312.

EL DORADO COUNTY—Echo Summit maintenance buildings to be painted. District III, Route 11, Section I. Bill Reid Painting Service, Sacramento, $3,497; R. A. Luther, Hayward, $4,138; Earl G. Corliss & Sons, Los Angeles, $4,479; Edgar E. Wilson, Yuba City, $5,965; Claude F. McMillin, Chico, $6,434. Contract awarded to Robinson Paint Co., Marysville, $2,882.

FRESNO COUNTY—City of Fresno, between Cherry Avenue and Santa Clara Street. District VI, Route 4. Robinson Electric, Fresno, $5,568; Dale

Electric, Fresno, $5,900; L. H. Leonardi Electric Construction Co., San Rafael, $5,998; McCrory Electric Co., Fresno, $6,412. Contract awarded to A-C Electric Co., Bakersfield, $5,565.

FRESNO COUNTY—At the interesections of Broadway with Ventura Avenue, Elm Avenue, C Street with California Avenue and C Street with Tulare Street, traffic signal systems and highway lighting to be furnished and installed and modified. District VI, Route 4,41,125. Dale Electric, Fresno, $21,200. Contract awarded to A-C Electric Co., Bakersfield, $19,395.

HUMBOLDT COUNTY—Between Arcata & Del Norte county line and at Buckhorn Washout about four miles east of Blue Lake embankments, base and surfacing to be restored, slope protection to be constructed and two timber bridges to be repaired. District I, Route 1, 20. Sections I, J, K, B. Contract awarded to Mercer, Fraser Co., & Mercer, Fraser Gas Co., Inc., Eureka, $289,653.

HUMBOLDT COUNTY—Between Pepperwood and Paradise Park, about 1.7 miles in length to be surfaced with plant-mixed surfacing on cement treated base. District I, Route 1, Section D. Mercer, Fraser Co., & Mercer, Fraser Gas Co., Inc., Eureka, $121,205. Contract awarded to Fredrickson Bros., Emeryville, $115,298.50.

HUMBOLDT COUNTY—Between Fields Landing and 0.5 mile south of south city limits of Eureka, about 3.4 miles in length to be surfaced with plant-mixed surfacing on cement treated base. District I, Route 1, Section G. Fredrickson Bros., Emeryville, $222,745.50. Contract awarded to Mercer, Fraser Co., & Mercer, Fraser Gas Co., Inc., Eureka, $213,765.

IMPERIAL COUNTY—Between Standard Canal and Main Street of Calipatria, about 3.3 miles in length the existing road to be widened and surfaced with road-mixed surfacing on imported base material. District XI, Route 201, Section C. Clifford C. Bong, & Co., Arcadia, $93,631; Rankin & Booth, Playa del Rey, $98,591; Marks Bros. Construction Co., El Centro, $104,976; R. R. Hensler, Sun Valley, $110,864; E. C. Young, San Fernando, $113,-253; Clyde W. Wood & Sons, Inc., North Hollywood, $114,004; James E. Roberts, San Bernardino, $118,-560; Basich Bros., Construction Co., N. L. Basich & R. L. Basich, South San Gabriel, $121,302; Dimitt & Taylor, Monrovia, $122,491; Geiser Construction Co., Buena Park, $126,665.30; G. W. Ellis Construction Co., North Hollywood, $131,776; Webb & White, Los Angeles, $143,923. Contract awarded to Cox Bros., Construction Co., Stanton, $92,044.

INYO COUNTY—Across Los Angeles Aqueduct about three miles south of Olancha, an existing steel beam span bridge to be widened. District IX, Route 23, Section I. Friant Construction Co., Fresno, $28,591.25; Norman I. Fadel, North Hollywood, $30,270. Contract awarded to Owl Truck & Construction Co., Compton, $20,717.

KERN COUNTY—About one mile west of junction of Route 58 with Route 140 existing cattlepass to be reconstructed. District VI, Route 58, Section D. Irving Guinn, Contractor, Bakersfield, $6,556; Oilfields Trucking Co., Bakersfield, $7,032; Paul E. Woof, Fresno, $7,938; Friant Construction Co., Fresno, $8,778.75; Vic Martin, Pasadena, $9,650.80; E. S. & N. S. Johnson, Fullerton, $9,475. Contract awarded to D. E. Higday, Temple City, $6,502.

KERN COUNTY—On Route 4, between Snow Road and Cawelo. District VI, Route 4, Sections D,E. Howard Electric, Gilroy, $10,711. Contract awarded to A-C Electric Co., Bakersfield, $7,715.

KINGS COUNTY—Between Kansas Avenue and one mile north of Corcoran, about 7.2 miles in length, to be graded and a reinforced concrete bridge to be constructed. District VI, Route 135, Section B. Gordon H. Ball & San Ramon Valley Land Co., Berkeley, $257,137.40; Gene Richards, Inc., Fresno, $261,208.70; Baun Construction Co., Fresno, $261,-649.70; R. R. Hensler, Sun Valley, $266,921.50; Valley Paving Co., Pismo Beach, $269,883; Huntington Bros., Napa, $270,206; Fredericksen & Kasler, Sacramento, $280,304.50; Stephens Trucking Co., French Camp, $280,476.90; Clyde W. Wood & Sons, Inc., North Hollywood, $283,702.40; Madonna Construction Co., San Luis Obispo, $283,924; W. H. Darrough & Sons, Yuba City, $287,189; Griffith Co., Los Angeles, $290,000.40; Claude C. Wood Co., Lodi, $311,409.30; J. E. Haddock, Ltd., Pasadena, $314,352.90. Contract awarded to Oilfields Trucking Co., Bakersfield, $250,217.20.

LOS ANGELES COUNTY—At the intersections of Manchester Boulevard with Florence Avenue and with Hindry Avenue in and adjacent to the City of Inglewood, traffic signal systems to be modified. District VII, Route 174, Section A. Westates Electrical Construction Co., Los Angeles, $8,030; Fischbach and Moore, Inc., Los Angeles, $8,428; Electrical and Machinery Service, Inc., South Gate, $8,566. Contract awarded to C. D. Draucker, Inc., Los Angeles, $7,725.

LOS ANGELES COUNTY—City of Pasadena between the Orange Grove Avenue on Ramp and Holly Street, about 0.2 mile of roadside areas to be prepared and planted with ground cover installation of slope stabilization and a sprinkler system. District VII, Route 161. F. A. Tetley & Son, Corona, $16,764.15; K.E.C. Co., Inc., Long Beach, $17,164.32. Contract awarded to Jannoch Nurseries, Altadena, $14,869.20.

LOS ANGELES COUNTY—On Lakewood Boulevard, between Center Street and Gardendale Street a distance of about 1.6 miles in length, to be widened and asphalt concrete to be placed on untreated rock base and on existing pavement. District VII, Route 168, Section A. C. O. Sparks, Inc., & Mundo Engineering Co., Los Angeles, $189,604; Vido Kovacevich Co., Rosemead, $191,270; George Savalo Paving Co., Los Angeles, $193,035; Boddum Construction Co., Long Beach, $193,294.50; Jesse S. Smith, Glendale, $193,920; M. S. Mecham & Sons, South Gate, $194,314; Webb & White, Los Angeles, $194,-363; McAmis & Baker, Gardena, $196,971; Baker and Pollock, Ventura, $197,726.50; Eric L. Peterson, Long Beach, $204,412; Warren Southwest, Inc., Torrance, $207,676.30; H & H Construction Co., Long Beach, $208,568.50; Sully-Miller Contracting Co., Long Beach, $219,299; Cox Bros. Construction Co., Stanton, $220,842; Griffith Company, Los Angeles, $223,416; Osborn Company, Pasadena, $235,886. Contract awarded to Sheets Construction Co., Gardena, $184,059.

LOS ANGELES COUNTY—At the intersections of Foothill Boulevard with Virginia Avenue, Orange Avenue, Azusa Avenue and Pasadena Avenue in the City of Azusa, traffic signal systems and highway lighting to be furnished and installed or modified. District VII, Route 9. Electric and Machinery Service, Inc., South Gate, $20,220; Fischbach and Moore, Inc., Los Angeles, $21,655; Drury Electric Co., San Bernardino, $24,062. Contract awarded to Westates Electrical Construction Co., Los Angeles, $19,-157.

LOS ANGELES COUNTY—Between Hollywood Boulevard and Santa Monica Boulevard, about 1.0 mile of roadside areas to be prepared and planted with ground cover trees and shrubs, installation of slope stabilization, and pave a portion of the median areas with plant-mixed surfacing. District VII, Route 2. K.E.C. Co., Inc., Long Beach, $66,595.11; Justice-Dunn Co., Oakland, $70,718.19; James E. Boothe, Compton, $72,483.14; Stephen L. Vistica, San Mateo, $82,591. Contract awarded to Jannoch Nurseries, Altadena, $55,133.20.

LOS ANGELES COUNTY—At the intersection of Verdugo Boulevard with Desanco Drive-Alta Canyada Road, traffic signal system and highway lighting to be furnished and installed. District VII, Route 61, Section E. Westates Electrical Construction Co., Los Angeles, $7,721; Electric & Machinery Service Inc., South Gate, $7,893; Fischbach and Moore, Inc., Los Angeles, $7,942. Contract awarded to C. D. Draucker, Inc., Los Angeles, $7,695.

LOS ANGELES COUNTY—City of San Fernando, at the intersection of Maclay Avenue with San Fernando Road drainage facilities to be modified. District VII, Route 4,9. Service Construction Co. of Southern California, Sun Valley, $20,650; Norman I. Fadel, North Hollywood, $24,457. Contract awarded to D. E. Higday, Temple City, $12,722.

LOS ANGELES COUNTY—In and adjacent to the City of Pasadena, at the intersection of Foothill Boulevard with Michillinda Avenue traffic signals and highway lighting to be furnished and installed and channelization to be constructed. District VII, Route 9, Section E. Fischbach and Moore, Inc., Los Angeles, $24,584.50; Westates Electrical Construction Co., Los Angeles, $24,681; C. D. Draucker, Inc., Los Angeles, $24,924.50. Contract awarded to Electric & Machinery Service, Inc., South Gate, $23,580.

LOS ANGELES COUNTY—Between Southern Pacific Railroad Overhead and Castaic Junction, roadside development to be performed. District VII, Route 4, Section A. F. A. Tetley & Son, Corona, $2,504.75; K.E.C. Co., Inc., Long Beach, $2,667.30. Contract awarded to Jannoch Nurseries, Altadena, $2,262.

MENDOCINO COUNTY—Across Russian River about 0.9 mile east of Ukiah a reinforced concrete slab and welded steel girder bridge to be constructed and about 0.9 mile of approaches to be graded and surfaced with plant-mixed surfacing on cement treated base. District I, Route 70, Section A. F. S. Rolandi, Jr., Inc., Le Baeuf & Dougherty Construction Co., and Erickson & Pierson, Richmond, $328,731.50; C. K. Moseman, Redwood City, $329,268.70; Bishop, Younger, Bradley Co., San Francisco, $336,817; Gordon H. Ball & San Ramon Valley Land Co., Berkeley, $343,283.24; Stanley H. Koller Construction, Crockett, $347,125.90; Ace Excavators & Bos Construction Co., Berkeley, $354,878.55; Chas. MacClosky Co., San Francisco, $368,419.30; Ted Schwartz, Grass Valley, $382,592. Contract awarded to L. Neilson, Orinda, $303,867.75.

PLUMAS COUNTY—At Indian Creek near Junction of State Routes 21 and 83 a steel plate girder bridge and about 0.3 mile of bridge approaches to be constructed and existing truck scales to be removed and reset. District II, Route 21, Section B. Ace Excavators & Bos Construction Co., Berkeley, $206,-692.60; Chaney Construction Co., Los Angeles, $223,017.60; Ted Schwartz, Grass Valley, $224,-902.30; Victor Weidmer, Penryn, $248,184. Contract awarded to M. W. Brown & R. E. Hertel, Redding, $194,810.

PLUMAS AND BUTTE COUNTIES—At various locations across North Fork Feather River between Howells and Pulga 5 existing steel bridges to be cleaned and painted. District II, Route 21, Sections B, A, C. J. S. Morris Co., Berkeley, $37,765; Robert A. Thompson, San Francisco, $42,740; Deemer & Deemer, San Francisco, $44,900; R. W. Reade & Co., Berkeley, $51,607; Klaas Bros., Los Angeles, $54,743; Orrell-Keefe Co., Oakland, $58,697; Stanley H. Koller Construction, Crockett, $98,700. Contract awarded to D. Zelinsky & Sons, San Francisco, $22,230.

SACRAMENTO COUNTY—Between Ben Ali and Placer County line seven reinforced concrete bridges and miscellaneous road work to be constructed. District III, Route 3, Section B. Charles MacClosky Co., San Francisco, $645,818; D & H Construction Co. & Stolte Inc., Sacramento, $663,676; Gordon Ball & San Ramon Valley Land Co., Berkeley, $694,-273.60; Tumblin Co., Bakersfield, $697,374; Trewhitt-Shields & Fisher, Fresno, $707,413.75; Dan Caputo, San Jose, $729,619.50; A. Teichert & Son, Inc., Sacramento, $734,346.50; Fredrickson & Watson Construction Co., & M & K Corporation, Oakland, $741,136.10; Stanley H. Koller Construction, Crockett, $743,601; Nomellini Construction Co., Stockton, $809,764.50; Lew Jones Construction Co., San Jose, $812,152.75. Contract awarded to B. J. Ukropina, U. P. Polich, Steve Kral & John R. Ukropina, San Gabriel, $596,879.75.

SACRAMENTO COUNTY—At Alder Creek about 13.8 miles northeast of Sacramento, about 0.4 mile in net length, additional two-lane roadbed to be graded and protective embankment and riprap to be constructed. District III, Route II, Section B. Ruby Construction Co., Inc., Sacramento, $72,242.-50; Brighton Sand & Gravel Co., Sacramento, $79,-897.50; Ted Schwartz, Grass Valley, $82,042; George Pollock Co., Sacramento, $84,483.75; Lord & Bishop, Sacramento, $85,500.50; Condick Co., Berkeley, $88,870; Thomas Construction Co., Fresno, $92,718; Ace Excavators & Bos Construction Co., Berkeley, $93,664.50; Huntington Brothers, Napa, $98,745.50. Contract awarded to Teichert & Son, Inc., Sacramento, $69,716.50.

SAN BERNARDINO COUNTY—At the intersection of State Hikhway Routes 31 and 59. District VIII, Route 31,59, Sections B,A. Electric and Machinery Service, Inc., South Gate, $5,397; Ed Seymour, Long Beach, $5,400; Harry F. Brewer, Long Beach, $5,853; Paul R. Gardner, Ontario, $5,-980; Fischbach & Moore, Inc., Los Angeles, $7,092. Contract awarded to Drury Electric Co., San Bernardino, $4,879.

SAN BERNARDINO COUNTY—On Route 31 between Palmdale Road and Forest Avenue. District VIII, Route 31, Section C. Gardner Construction Co., Redlands, $8,566; George Herz & Co., San Bernardino, $8,884; Robert E. L. Parker Co., Claremont, $11,260; R. A. Erwin, Colton, $12,930; E. L. Yeager Co., Riverside, $13,526; D. E. Higday, Temple City, $13,621; Lowe & Watson, San Bernardino, $14,506. Contract awarded to James E. Roberts, San Bernardino, $8,540.

SANTA CLARA COUNTY—At the intersections of El Camino Real with Arastradero Road-Charleston Road and Bayshore Highway with Stierlin Road, traffic signal systems to be furnished and installed, highway lighting to be modified and channelization to be constructed. District IV, Route 2, 68, Sections A,A. L. C. Smith Co., San Mateo, $39,912; J. Henry Harris, Berkeley, $46,954.50; R. Flatland, San Francisco, $48,088; S.A.E. Co., Redwood City, $49,367.65. Contract awarded to Howard Electric Co., Gilroy, $38,719.75.

SANTA CRUZ COUNTY—In Seacliff Beach State Park, about eight miles east of Santa Cruz, an existing timber trestle pier to be repaired. District IV, Route Seacliff Beach State Park. E. G. Perham, Los Angeles, $20,410; Payne Construction Co., Oakland, $20,420; G. W. Davis, Watsonville, $20,575; Stanley H. Koller Construction, Crockett, $22,500; Stolte Inc., Oakland, $22,792; H. H. Anderson, Hayward, $23,400; C. B. Tuttle, Long Beach, $23,916; Granite Construction Co., Watsonville, $24,740; Hart & Hynding, Inc., San Francisco, $24,900; Lew Jones Construction Co., San Jose, $25,500; Al Erickson & Son., Napa, $25,600; Geo. C. Renz Construction Co., Inc., Gilroy, $25,960; Condick Co., Berkeley, $26,970; Dan Caputo, San Jose, $28,025; Bos Construction Co., Berkeley, $29,550. Contract awarded to Barton Construction Co., Oakland, $20,-238.40.

SAN DIEGO COUNTY—City of San Diego, at the intersections of Pacific Highway with Rosecrans Street-Congress Street and with Laurel Street, Harbor Drive with 28th Street and Lytton Street with Rosecrans Street modification of traffic signal systems and highway lighting to be furnished and installed and channelization to be constructed. District XI, Route 2, 12. California Electric Works, San Diego, $51,757.60; Drury Electric Co., San Bernardino, $52,895.92. Contract awarded to Ets-Hokin & Galvan, San Diego, $45,318.10.

SAN MATEO COUNTY—City of San Mateo, at the intersection of El Camino Real with Hillsdale Boulevard, traffic signal system and highway lighting to be revised and channelization to be constructed. District IV, Route 2. J. Henry Harris, Berkeley, $50,-911.25; R. Flatland, San Francisco, $52,775.50. Contract awarded to L. C. Smith Co., San Mateo, $43,439.80.

SAN MATEO COUNTY—On Skyline Boulevard between Edgemar Road and Alemany Boulevard in Daly City, about 2.3 miles in length to be graded and surfaced with plant-mixed surfacing on untreated rock base; and install highway lighting. District IV, Route 55, Section A, D1C. J. A. Thompson & Son, Inglewood, $585,992.40; Fredrickson & Watson Construction Co., & M & K Corporation, Oakland, $599,599; L. C. Smith Co., San Mateo, $622,-434.40; Peter Kiewit Sons' Co., San Francisco, $651,922; McCammon-Wonderlich Co., Palo Alto, $652,786.60; Granite Construction Co., Watsonville, $655,395.50; Chas. L. Harney, Inc., San Francisco, $655,924.20; S.A.E. Co., Redwood City, $661,096; The Fay Improvement Co., San Francisco, $668,-516.15; Piombo Construction Co., & Parish Bros., San Francisco, $674,623; Fredericksen & Kasler, Sacramento, $687,719.10; Eaton & Smith, San Francisco, $707,577; L. A. & R. S. Crow, El Monte, $714,601.30; Guy F. Atkinson Co., South San Francisco, $1,301,054.80. Contract awarded to Edward Keeble, San Jose, $585,164.50.

TEHAMA COUNTY—Between 1.4 miles east of junction with Route 3 and Ellenwood Creek about 7.0 miles in length to be surfaced with plant-mixed surfacing on cement treated base. District II, Route 29, Section A. Clements Construction Co., & Clements & Co., Hayward, $182,845; M. J. Ruddy & Son, Modesto, $182,929; Harms Bros., Sacramento, $190,304.50; Ransome Co., Emeryville, $203,090; Granite Construction Co., Watsonville, $208,480; Claude C. Wood Co., Lodi, $210,077.50; Peter Kiewit Son's Co., San Francisco, $221,015. Contract awarded to Fredrickson & Watson Construction Co., Oakland, $158,091.20.

TULARE COUNTY—At the Visalia Airport Interchange, about 3.2 miles of roadway to be graded, portions surfaced with plant-mixed surfacing on untreated rock base and three steel beam bridges to be constructed. District VI, Route 4, 10, Sections, F; A,B. Guy F. Atkinson Co., South San Francisco, $636,899.30; Trewhitt-Shields & Fisher, Fresno, $641,055.55; Gordon Ball & San Ramon Valley Land Co., Berkeley, $649,674.14; Fredrickson & Watson Construction Co., Oakland, $656,-186.10; Charles MacClosky Co., Clyde W. Wood & Sons, Inc., Los Angeles, $723,815.65. Contract awarded to Fredrickson & Kasler, Sacramento, $593,-954.80.

YOLO COUNTY—Between 9.3 miles south of Rumsey and 7.8 miles west of Esparto, bridges are to be widened and constructed, and approaches are to be graded and surfaced with plant-mixed surfacing on untreated rock base. District III, Route 50, Sections B,C. Stanley H. Koller Construction, Crockett, $107,271.75; A. A. Edmondson, Butte City, $116,790.69; R. G. Clifford & C. O. Bodenhamer, Berkeley, $117,566.35. Contract awarded to W. C. Railing, Woodland, $102,508.10.

F. A. S. County Routes

DEL NORTE COUNTY—On Elk Valley Road near Crescent City between State Route 1 and Howland Hill Road, about 1.1 mile in length to be graded, imported base material placed and Class "B-Double" seal coat. District I, Route 1190. J. Henry Harris, Berkeley, $58,927. Contract awarded to John Burman & Sons, Eureka, $50,521.

HUMBOLDT COUNTY—On Bull Creek-Honey Dew Road between 7.3 miles and 10.1 miles westerly of Bull Creek Flat State Park, about 2.9 miles in length, road to be graded. District I, Route 976. Huntington Bros., Napa, $59,825; J. L. Conner, Jr., Eureka, $65,504; Vega Engineering & Grading Co., Berkeley, $105,940. Contract awarded to John Burman & Sons, Eureka, $53,710.

MARIN COUNTY—Portions between Fairfax and Tocaloma about 1.1 miles in net length to be graded and surfaced with plant-mixed surfacing. District IV, Route 608. Brown-Ely Co., Contractors, Corte Madera, $150,287.50; J. Henry Harris, Berkeley, $154,024. Contract awarded to A. G. Raisch Co., San Rafael, $144,866.60

SAN LUIS OBISPO COUNTY—On Los Osos Road between Perfumo Canyon Road and 2.2 miles west, about 2.2 miles in length, to be graded and surfaced with plant-mixed surfacing on cement treated imported base material. District V, Route 678. Valley Paving Co., Pismo Beach, $106,082; Granite Construction Co., Watsonville, $108,938.25; Thomas Construction Co., Fresno, $112,219.50; Dimmitt & Taylor, Monrovia, $119,301.35; Clyde W. Wood & Sons, Inc., North Hollywood, $121,757.50; J. Henry Harris, Berkeley, $141,191.50. Contract awarded to Madonna Construction Co., San Luis Obispo, $97,852.50.

SOLANO COUNTY—Between Travis Air Force Base Access Road and Vacaville about five miles in length, to be graded and surfaced with plant-mixed surfacing on untreated rock base. District X, Route 1107. Parish Bros. & Harms Bros., Benicia, $241,-747.30; Browne & Krull, Hayward, $259,319.50; Nomellini Construction Co., Stockton, $264,991.20. Contract awarded to Frederickson Bros., Emeryville, $241,496.70.

SONOMA COUNTY—Across Sonoma Creek on Caliente Drive, about five miles north of Sonoma, a structural steel and reinforced concrete bridge to be constructed. District IV, Route 1189. S & Q Construction Co. & Rayor Construction Co., San Francisco, $51,923.20; Stolte Inc., Oakland, $52,453.80; Robert R. Murdoch, Oakland, $53,133; Payne Construction Co., Oakland, $54,249; Stanley H. Koller Construction, Crockett, $54,290.50; W. J. Kubon, San Rafael, $54,829.30; James H. McFarland, San Francisco, $54,882; Al Erickson & Co., Napa, $55,-130.50; R. G. Clifford & C. O. Bodenhamer, Berkeley, $56,907.70; Bos Construction Co., Berkeley, $62,081.90; Wheeler Construction Co., Oakland, $64,800. Contract awarded to Barton Construction Co. & B & B Steel Erectors, Oakland, $51,178.60.

STANISLAUS COUNTY—On Grayson Road between Crows Landing Road and Jennings Road, about 4.0 miles in length to be surfaced with plant-mixed surfacing on untreated rock base and existing surfacing. District X, Route 1194. Stephens Trucking Co., French Camp, $68,500; Munn & Perkins, Modesto, $74,040; M. J. Ruddy & Son, Modesto, $79,395; Stanfield & Moody, Stockton, $81,958; Wm. S. & Bruce F. Rogers Co., Madera, $85,905. Contract awarded to Ukropina-Polich-Kral, San Gabriel, $64,603.

September, 1953

ALAMEDA AND CONTRA COSTA COUNTIES —In the cities of Albany and Richmond, at Cerrito Creek, two reinforced concrete box structures to be constructed. District IV, Route 69. O. C. Jones & Sons, Berkeley, $53,219; Stanley H. Koller Construction, Crockett, $55,760; McGuire & Hester, Oakland, $58,268; Wheeler Construction Co., Oakland, $60,116; J. Henry Harris, Berkeley, $69.471; Lee J. Immel, San Pablo, $73,918. Contract awarded to Morison Construction Co. & Ted Schwartz, Grass Valley, $48,849.

ALAMEDA COUNTY—On East 14th Street between 173d Avenue and Medford Avenue, traffic signal system and channelization to be constructed. District IV, Route 105, Section B. O. C. Jones & Sons, Berkeley, $30,601; Fredrickson Bros., Emeryville, $31,968; J. Henry Harris, Berkeley, $33,400. Contract awarded to Clements Construction Co., Hayward, $30,475.

CONTRA COSTA COUNTY—Between 0.5 mile west and 0.7 mile east of Orinda Junction, about 1.2 miles, to be graded and paved with Portland cement concrete pavement on cement treated subgrade and a reinforced concrete box girder bridge to be constructed. District IV, Route 75, Section A. Dan Caputo & Edward Keeble, San Jose, $1,527,357; Stolte, Inc.-Gallagher & Burk, Inc., Oakland, $1,-588,278; Ball & Simpson & Erickson, Phillips & Weisberg, Berkeley, $1,712,492; Parish Bros. & MacDonald, Yound & Nelson, Inc., Benicia, $1,730,-355; Chas. L. Harney, Inc., San Francisco, $1,833,-897; Ukropina, Polich, Kral & John R. Ukropina, San Gabriel, $1,854.536; John Delphia, Patterson, $1,934,432; Guy F. Atkinson Co., South San Francisco, $1,963,631. Contract awarded to Fredrickson & Watson Construction Co., M & K Corp., Oakland, $1,451,980.

INYO COUNTY—Between 3.9 and 6.1 miles east of Stovepipe Wells, about 2.2 miles, the existing roadway to be reconstructed with bituminous surface treatment on imported base material. District IX, Route 127, Section I. Bishop Engineering & Construction Co., Bishop, $25,438; Clyde W. Wood & Sons, Inc., North Hollywood, $26,149; Browne & Krull, Hayward, $31,040; Norman I. Fadel, North Hollywood, $33.887; Wm. S. & Bruce F. Rogers Co., Madera, $34,060; F. W. Case Corp., Newhall, $35,534; G. W. Ellis Construction Co., North Hollywood, $37,290; Gardner Construction Co., Redlands, $37,862; Chas. J. Rounds Co., Los Angeles, $38,503. Contract awarded to James E. Roberts, San Bernardino, $21,868.

LOS ANGELES COUNTY—At the intersection of Atlantic Blvd. with Washington Blvd. and Pioneer Blvd. with Alondra Blvd., traffic signal system and highway lighting to be furnished and installed and modified. District VII, Routes 167, 170, Sections A, A. C. D. Draucker, Inc., Los Angeles, $23,560; Drury Electric Co., San Bernardino, $23,888; Westates Electrical Construction Co., Los Angeles, $24,709; Electric & Machinery Service, Inc., South Gate, $25,036. Contract awarded to Fischbach and Moore, Inc., Los Angeles, $21,440.

LOS ANGELES COUNTY—At the intersections of Lakewood Blvd. with Center Street, Compton Blvd., Rosecrans Avenue and Gardendale Street,

traffic signal systems and highway lighting to be modified. District VIII, Route 168, Section A. Fischbach & Moore, Inc., Los Angeles, $28,715; Electric & Machinery Service, Inc., South Gate, $29,098. Contract awarded to Westates Electrical Construction Co., Los Angeles, $27,769.

MARIN COUNTY—Between Manzanita and Golden Gate Bridge, about 4 miles to be graded and a concrete lined vehicular tunnel and miscellaneous reinforced concrete structures to be constructed. District IV, Route 1, Sections C, D, Saus. Chas. L. Harney, Inc., San Francisco, $4,442,415; McCammon-Wunderlich Co., T. E. Connolly, Inc., & Charles MacClosky Co., San Francisco, $4,711,490; Fredrickson & Watson Construction Co. & M. & K Corp., Oakland, $4,977,735; A. Teichert & Son, Inc., & John C. Gist, Sacramento, $5,211,512; Macco Corp., Morrison-Knudsen Co., Inc., & River Construction Corp., Los Angeles, $52,262,738; Walsh Construction Co. & Eaton & Smith, San Francisco, $5,517,612; Utah, Bates-Rogers, Pomeroy, San Francisco, $6,207,417. Contract awarded to Guy F. Atkinson Co., South San Francisco, $4,122,382.

MONO COUNTY—Applying seal coat on portions between Conway Summit and Sonora Junction Road. District IX, Route 23, Sections I, J. G. W. Ellis Construction Co., North Hollywood, $8,060. Contract awarded to Oilfields Trucking Co., Bakersfield, $5,330.

ORANGE COUNTY—On Imperial Highway, about 0.3 mile east of east city limits of Brea, existing culvert to be replaced. District VII, Route 176, Section A. R. E. Crane, Bellflower, $4,425; E. S. & N. S. Johnson, Fullerton, $4,751; Albert S. Pratt, Jr., Pasadena, $6,764; N. M. Saliba Co., Los Angeles, $9,185. Contract awarded to A. H. Famularo, Santa Ana, $3,970.

SAN BERNARDINO COUNTY—At the intersection of Foothill Boulevard with Archibald Avenue and in the City of Ontario at the intersection of Mission Boulevard with Euclid Avenue, traffic signal systems and highway lighting to be furnished and installed and modified and channelization to be constructed. District VIII, Routes 9, 19, 192. Paul R. Gardner, Ontario, $52,076; Electric and Machinery Service, Inc., South Gate, $52,595; Fischbach and Moore, Inc., Los Angeles, $56,646. Contract awarded to Drury Electric Co., San Bernardino, $51,867.

SAN BERNARDINO COUNTY—Between Baker and one-half mile east of Valley Wells, 10 timber trestle bridges to be redecked with reinforced concrete slabs. District VIII, Route 31, Sections L, M. C. B. Tuttle, Long Beach, $53,664; Norman I. Fadel, North Hollywood, $55,782; Young & Smith Construction Co., Salt Lake City, $56,772; Dimmitt & Taylor, Monrovia, $57,849; E. S. & N. S. Johnson, Fullerton, $58,080; Concrete Construction Service, Inc., Gardena, $59,591; F. W. Case Corp., Newhall, $59,682; J. L. McCay, Santa Barbara, $64,351; Thomas Construction Co., Fresno, $67,329; Ruane Corp., San Gabriel, $69,670. Contract awarded to Fred O. Kyle, Pasadena, $44,079.

SAN BERNARDINO COUNTY—Between Barstow and Essex, 39 timber bridges to be redecked with reinforced concrete slabs. District VIII, Route 58, Sections F, J, K, L. Concrete Construction Service, Inc., Gardena, $146,568; Fred D. Kyle, Pasadena, $147,484; C. B. Tuttle, Long Beach, $159,044; F. W. Case Corp., Newhall, $160,048; Dimmitt & Taylor, Monrovia, $167,815; Ruane Corp., San Gabriel, $171,757; Sooy & Jackson & Marks Bros. Construction Co., Redlands, $171,777; E. S. & N. S. Johnson, Fullerton, $174,346; George Herz & Co., San Bernardino, $177,382; Jesse S. Smith and Service Construction Co. of Southern California, Sun Valley, $181,444; Chaney Construction Co., Los Angeles, $184,793; Tumblin Co., Bakersfield, $185,880; Norman I. Fadel, North Hollywood, $189,040; Young & Smith Construction Co., Salt Lake City, $205,076; Thomas Construction Co., Fresno, $210,610. Contract awarded to John Strona, Pomona, $136,914.

SAN DIEGO COUNTY—At Basilone Road, about 3 miles south of San Clemente, about 0.4 mile to be graded, plant-mixed surfacing to be placed on cement treated base, and a structural steel and reinforced concrete bridge to be constructed. District XI, Route 2, Section D. Clifford C. Bong & Co., Arcadia, $185,405; Dimmitt & Taylor, Monrovia, $186,971; Cox Bros. Construction Co., Stanton, $190,977; E. F. Grandy, Laguna Beach, $196,546; Owl Truck & Construction Co., Compton, $215,780; James E. Roberts, San Bernardino, $229,680; Griffith Company, Los Angeles, $229,827; George Herz & Co., San Bernardino, $236,637. Contract awarded to Webb & White, Los Angeles, $184,038.

SAN JOAQUIN COUNTY—At the intersection of Route 4 with Mariposa Road, Fremont Street, and Waterloo Road, near Stockton, traffic signal system and highway lighting to be revised and channelization to be constructed. District XV, Route 4, Sections E. C. R. Goold & Son, Stockton, $23,234. Contract awarded to Collins Electric Co., Inc., Stockton, $22,222.

SAN MATEO COUNTY—Between 0.1 mile north of Country Club Drive and Roosevelt Avenue in the City of South San Francisco, about 0.3 mile in length to be graded and surfaced with plant mixed surfacing on cement treated base. District IV, Route 2, Section SSF, A. The Lowrie Paving Co., Inc., San Francisco, $52,699; Chas. L. Harney, Inc., San Francisco, $62,396; J. Henry Harris, Berkeley, $71,733. Contract awarded to L. C. Smith Co., San Mateo, $52,440.

SAN MATEO COUNTY—Between Correas Street and Montara Creek (portions) about 5.9 miles in net length, plant-mixed surfacing to be placed over existing pavement. District IV, Route 56, Sections C, D. L. C. Smith Co., San Mateo, $29,912; The Fay Improvement Co., San Francisco, $34,490; J. Henry Harris, Berkeley, $35,474. Contract awarded to Douglas & Woodhouse, Redwood City, $28,492.

SANTA CLARA COUNTY—In the City of Alviso, between south city limits and 0.3 mile north, about 0.3 mile in length to be surfaced with plant-mixed surfacing on cement treated base. District IV, Route 113. Granite Construction Co., Watsonville, $20,583; Clements Construction Co., Hayward, $22,297; S. A. E. Co., Redwood City, $23,356; L. C. Smith Co., San Mateo, $23,650; John A. Carstensen, Castro Valley, $23,847; J. Henry Harris, Berkeley, $24,645; A. J. Raisch Paving Co., San Jose, $26,698; Leo F. Piazza Paving Co., San Jose, $28,366. Contract awarded to Donald Graves, San Jose, $19,256.

SANTA CLARA COUNTY—On Mathilda Avenue between Southern Pacific Railroad crossing and Bayshore Highway about 1.3 miles in length to be surfaced with plant-mixed surfacing. District IV, Route 114, Sections Sunv, A. A. J. Raisch Paving Co., San Jose, $20,937; Granite Construction Co., Watsonville, $24,022; L. C. Smith Co., San Mateo, $23,980; George C. Renz Construction Co., Inc., Gilroy, $26,278; Leo F. Piazza Paving Co., San Jose, $26,724; John A. Carstensen, Castro Valley, $26,821; J. Henry Harris, Berkeley, $31,865. Contract awarded to S. A. E. Co., Redwood City, $20,325.

SONOMA COUNTY—At the intersection of Redwood Highway and Gravenstein Highway near Cotati, highway lighting to be modified and channelization to be constructed. District IV, Route 1, 104, Sections C, C. Arthur B. Siri, Inc., Santa Rosa, $16,990; A. G. Raisch Co., San Rafael, $17,923; O. C. Jones & Sons, Berkeley, $18,288; J. Henry Harris, Berkeley, $19,529. Contract awarded to I. J. Ely Co., Larkspur, $16,738.

SONOMA COUNTY—At Stockoff Creek, about 4.5 miles north of Fort Ross, a reinforced concrete box structure to be constructed. District IV, Route 56, Section D. Nomellini Construction Co., Stockton, $22,613; R. G. Clifford & C. O. Bodenhamer, Berkeley, $22,732; Morison Construction Co. & Ted Schwartz, Grass Valley, $23,434; Wheeler Construction Co., Oakland, $35,016. Contract awarded to James H. McFarland, San Francisco, $21,940.

SONOMA COUNTY—Reconstruct shoulders and drainage between 0.4 mile north of Alexander Valley Store and 2.9 miles north of Maacama Creek. District IV, Route 103, Section A. O. C. Jones & Sons, Berkeley, $15,272; J. Henry Harris, Berkeley, $20,012. Contract awarded to Arthur B. Siri, Inc., Santa Rosa, $14,805.

SAN MATEO COUNTY—Across San Francisco Bay between San Mateo and Hayward, the lift span counterweight ropes of the existing bridge to be replaced and inspection platforms to be constructed. District IV, Route 105, Section B. Moore Drydock Co., Oakland, $50,685; Judson Pacific-Murphy Corp., Emeryville, $55,014; Herrick Iron Works, Oakland, $64,760; William B. Willett Co., Sacramento, $66,555; J. R. Cantrall Co., El Monte, $66,907; Hart & Hynding Co., San Francisco, $67,653; Kyle Steel Construction Co., Vernon, $73,812; James H. McFarland, San Francisco, $89,898; American Bridge Division U. S. Steel Corp., San Francisco, $92,500. Contract awarded to Payne Construction Co., Oakland, $50,641.

TEHAMA COUNTY—Between Hickory Street in Red Bluff and 0.8 mile northerly, about 0.8 mile in length to be surfaced with plant-mixed surfacing on cement treated base. District II, Route 3, Sections RB1, C. Contract awarded to Fredrickson & Watson Construction Co., Oakland, $47,290.

F. A. S. County Routes

EL DORADO COUNTY—Between Webber Creek Bridge and U. S. Highway 50 in Shingle Springs, a net length of about 5.5 miles to be graded and drainage facilities installed. District III, Route 1187. John G. Mehren, Sacramento, $105,666; Joe Vicini, Placerville, $107,959; M. Malfitano & Son, Inc., Pittsburg, $112,519; W. H. O'Hair Co., Colusa, $112,941; Claude L. Young, Sacramento, $116,957; Karl C. Harmeling, Stockton, $120,510; W. H. Darrough & Son, Yuba City, $123,660; S. A. E. Co., Redwood City, $129,198; M. W. Brown, Redding, $129,550; Harms Bros., Sacramento, $147,197; Ted Schwartz, Grass Valley, $179,616. Contract awarded to Hunting Bros., Napa, $99,999.

MERCED COUNTY—On Santa Fe Drive between Cressey and Buhach Road about 5.9 miles in length, to be graded and surfaced with plant-mixed surfacing. District X, Route 912. Nomellini Construction Co., Stockton, $89,270; M. J. Ruddy & Son, Modesto, $89,521; Thomas Construction Co., Fresno, $92,990; Granite Construction Co., Watsonville, $95,681; Standard Materials, Inc., Modesto, $97,507; W. H. O'Hair Co., Colusa, $99,671; Claude C. Wood Co., Lodi, $100,364; Harms Bros., Sacramento, $107,396; Karl C. Harmeling, Stockton, $117,656; L. D. Folsom, Inc., Coalinga, $149,577. Contract awarded to Stephens Trucking Co., French Camp, $87,089.

SANTA CLARA COUNTY—On Grant Road between Fremont Avenue and El Camino Real about 2 miles in length to be graded and surfaced with plant-mixed surfacing on untreated rock base. District IV, Route 999. A. J. Raisch Paving Co., San Jose, $111,711; S. A. E. Co., Redwood City, $115,049; Granite Construction Co., Watsonville, $115,162; L. C. Smith Co., San Mateo, $115,759; Don Graves Paving, San Jose, $119,157; J. Henry Harris, Berkeley, $178,210. Contract awarded to Leo F. Piazza Paving Co., San Jose, $108,383.

SANTA CRUZ COUNTY—On Bear Creek Road at junction with State Highway Route 116 near Boulder Creek, a steel and concrete bridge to be constructed across San Lorenzo River and about 0.07 mile of approaches to be graded and surfaced with untreated rock base and seal coat. District IV, Route 1172. James H. McFarland, San Francisco, $57,436; Granite Construction Co., Watsonville, $58,620; S & Q Construction Co., and Rayor Construction Co., Inc., South San Francisco, $61,149; Dan Caputo, San Jose, $61,268; Charles S. Moore, San Jose, $61,535; A. A. Edmondson, La Crescenta, $62,149; Geo. C. Renz Construction Co., Inc., Gilroy, $62,376; Stanley H. Koller Construction, Crockett, $64,465; Payne Construction Co., Oakland, $64,899; Lew Jones Construction Co., San Jose, $64,986; E. G. Perham, Los Angeles, $66,934; Al Erickson & Co., Napa, $67,203; Bos Construction Co., Berkeley, $67,446; Friant Construction Co., Fresno, $68,250; Condick Co., Berkeley, $76,421; Wheeler Construction Co., Oakland, $77,991. Contract awarded to Stolte, Inc., Oakland, $56,835.

TULARE COUNTY—On Alta Avenue between F. A. S. Route 1141 and Tulare-Fresno County Line near the City of Dinuba, about 5.0 miles in net length, improved base material to be placed and plant-mixed surfacing to be placed on cement treated base. District VI, Route 579. Baun Construction Co., Fresno, $159,274; M. J. Ruddy & Son, Modesto, $160,260; G. W. Ellis Construction Co., North Hollywood, $168,355; Clements & Co., Hayward, $170,810; Claude C. Wood Co., Lodi, $175,774; Valley Paving Co., Pismo Beach, $177,832; Stewart & Nuss, Inc., Fresno, $184,732; R. R. Hensler, Sun Valley, $186,003; A. Teichert & Son, Inc., Sacramento, $187,504; Fredericksen and Kasler, Sacramento, $241,159. Contract awarded to Gene Richards, Inc., Fresno, $138,179.

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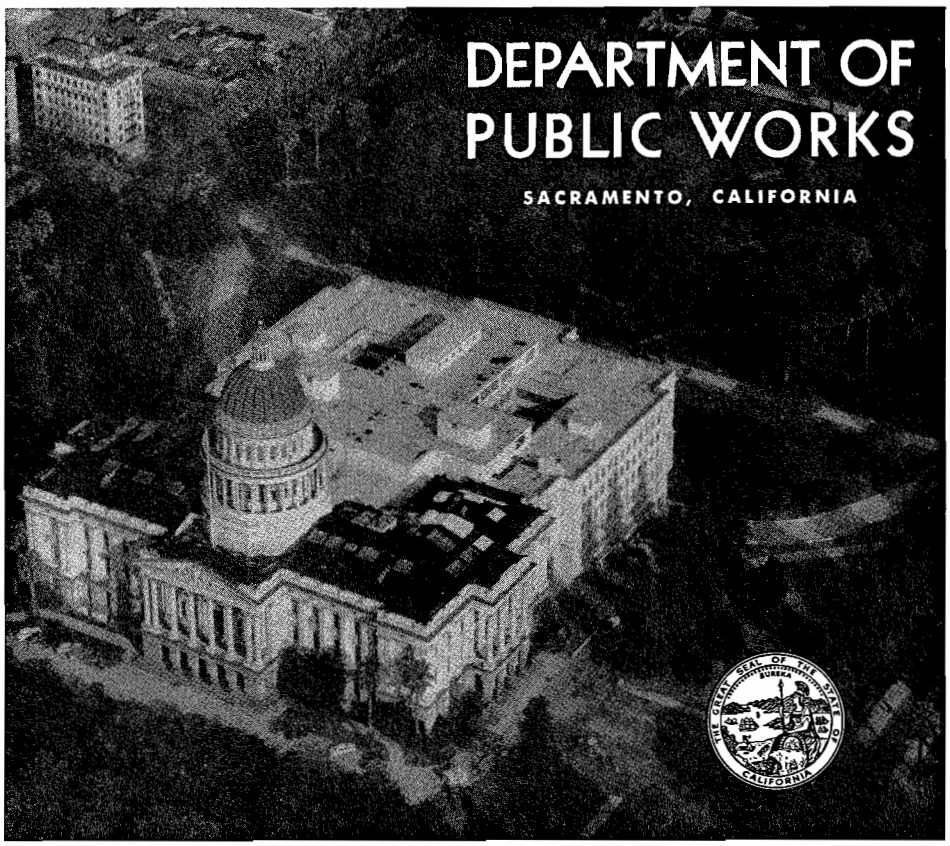

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San Quentin Wye separation located 0.4 mile south of San Rafael in Marin County
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