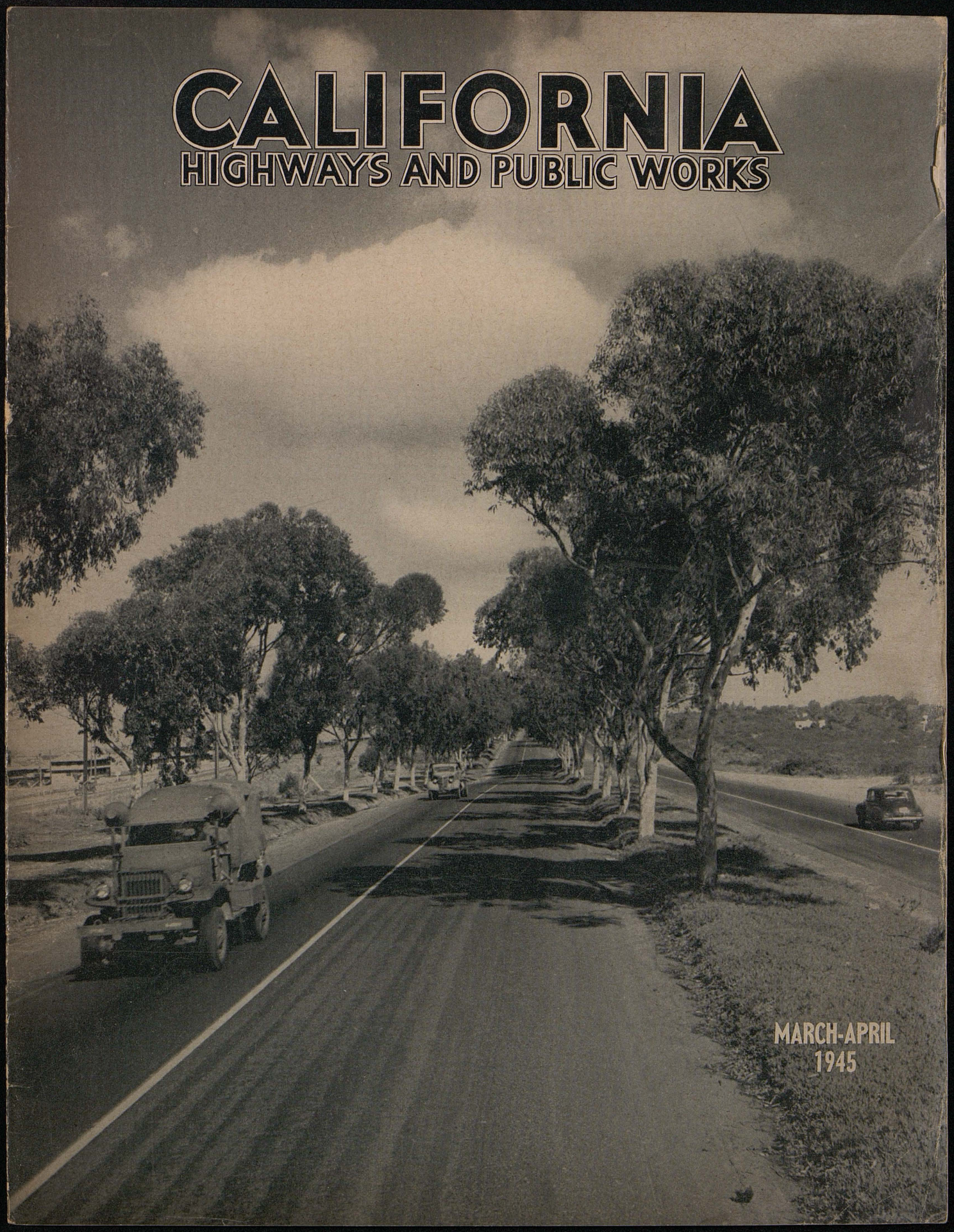
CALIFORNIA
HIGHWAYS AND PUBLIC WORKS



MARCH-APRIL
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CALIFORNIA HIGHWAYS AND PUBLIC WORKS

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Right of Way Problems on Freeways

By FRANK C. BALFOUR, Chief Right of Way Agent

FOR many years, the only available means of controlling the use and development of lands abutting State highways in California, was through the enactment of zoning and set-back ordinances by the city and county officials within whose respective territories the State highway was located.

However, as the volume of traffic using the State highways has continued to increase year by year, it has become more evident to the State Highway Engineer and his staff that to protect the huge past investment in right of way acquisition and construction and to also guarantee future contemplated investments, a satisfactory means of legal control of right of way for the purpose of regulating the traffic must be found.

As a result of exhaustive studies and research, the Legislature in 1939 passed the Freeway Law. A freeway in this State means, "a highway in respect to which the owners of abutting lands have no right of easement of access to or from their abutting lands or in respect to which such owners have only limited or restricted right or easement of access."

In the succeeding statements the terms "full freeway" and "limited freeway" are used. A "full freeway" is one on which all access rights are acquired. Usually a full freeway is located in urban areas where a maximum of congestion, conflicting movements and hazard are encountered. Such a highway, in addition to securing all access rights, is usually developed as a divided road with no opening in the median strip, thus preventing left turns, with grade separations at intersecting roads or streets, and with prohibition against pedestrian traffic.

A "limited freeway" is one on which only limited access rights are acquired from the abutting properties.

FREEWAYS TOTAL 420 MILES

During the several years since this enactment, the California Highway Commission has passed resolutions declaring 420 miles of the State Highway System as freeways. Of this total, 263 miles have been declared full freeways and 156 miles limited freeways.

Of the 124 projects in the present postwar program, 52 have been declared freeways. Of the total of 220.9 miles, 99.8 miles represent full freeways and 121.1 miles, limited freeways.

Approximately 25 miles of full freeway have been constructed in California—the most important being the Arroyo Seco Parkway between the metropolitan business sections of Los Angeles and Pasadena.

The present plan of the California Division of Highways is to convert the two main north and south State arterials (Federal Routes 99 and 101) and the two main east and west arterials (Federal Routes 40 and 60) into freeways, with portions of a third east and west arterial (Federal Route 50) also to be included in this program, thus ultimately making the main arterials in locations where heavy traffic congestion is found, full freeway, with the balance of the alignment limited freeway.

This ambitious program can of course be carried forward to ultimate completion only as rapidly as gasoline tax funds become available for expenditure on these routes.

MANY PROBLEMS

This new type of highway development created many problems in connection with right of way acquisition. Some of the most important questions requiring careful study, were:

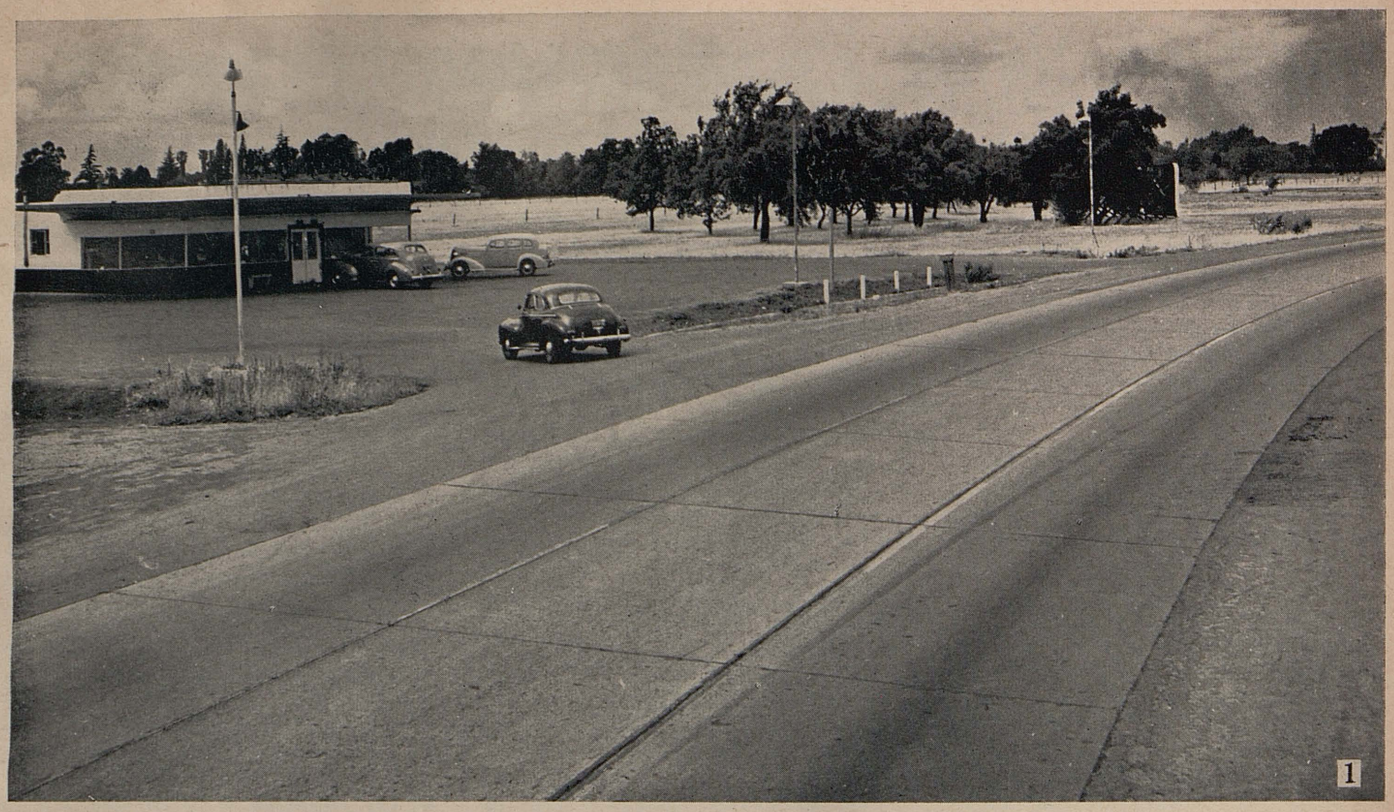
1. What is the resulting effect upon properties abutting the State highway when access rights are acquired on a limited basis?
2. What is the effect upon abutting and contiguous properties when right of way is acquired for full freeway construction?
3. What is the effect upon the abutting property when it at present fronts upon the State highway and, as a result of converting the State highway into a full freeway the property will abut upon an outer highway upon completion of the construction program, which outer highway connects with the main through lanes of traffic only at points designated by public authority?
4. What is the effect upon abutting property located at an intersecting cross street when full access rights are taken along the State highway right of way line, leaving access to the property only through means of the county road?
5. What is the effect when a freeway is constructed along new alignment severing existing ownerships which will abut upon the new alignment, into two parcels?
6. What is the effect upon properties fronting upon intersecting cross streets, which cross streets are, because of their minor importance, closed at the freeway right of way line, creating what are familiarly referred to as cul-de-sac streets?

COMPREHENSIVE STUDY

As soon as the importance of these problems became apparent, and because of the vital importance of the answers to both the Division of Highways and the affected property owners, the State Highway Engineer instructed the Right of Way Department to institute a complete and comprehensive study to determine as nearly as possible the facts.

The study has been one in which we have attempted to reach every possible source of information. Invaluable data have been obtained from a number of State Highway Departments and county and city officials, also from Parkway Authorities created for the construction and control of freeways, and numerous other sources in various States including Illinois, Kansas, New York, Massachusetts, Pennsylvania, New Jersey and Kansas; from Westchester County, New York, and from the cities of Detroit, Chicago, Boston, Kansas City, and others.

Information has also been provided by a number of very progressive city and county planning commissions throughout California and other States. An untold number of individuals and firms specializing in modern subdivisions have given us the benefit of their experiences in the creation of the modern type of subdivision where access from main through arterials to their large subdivisions have been limited; where the subdividers in connection with the improvements have constructed outer highways immediately adjacent to the main arterial to serve the subdivisions, with only one or two points of access to the through highway, and where, in numerous modern subdivisions, the first tier of lots back up to the main arterial and front on



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the first street next to and paralleling the main highway.

CUL-DE-SAC STREETS

In our contacts with these subdividers, we have been fortunate in many cases in securing the reason subdividers have created numerous cul-de-sacs (dead-end streets) within the subdivision, together with the relative value of lots fronting on these cul-de-sac streets as compared with the value of comparable lots fronting on through streets.

In connection with our study of the value and utilization of lots fronting on cul-de-sac streets as compared to comparable lots fronting on through streets, we have employed real estate valuation experts to assist us and to enable us to secure entirely unbiased opinions in determining the effect upon the reduction in value, if any, of the lots formerly fronting on through streets which, because of the construction of the freeway will upon completion, front upon cul-de-sac streets.

STUDY WILL CONTINUE

We do not feel that our study and research work necessarily at this time give us the final and thoroughly accurate answers, but we propose to continue the study until every shred of factual data has been thoroughly explored. However, we feel that at the present time we have accumulated sufficient information to furnish fairly accurate information and, so far as space will permit, we will outline our present opinions.

It has been difficult to determine the effect of construction of the Arroyo Seco Parkway upon abutting and contiguous properties, for the reason that the parkway was opened to traffic since the inauguration of the National Defense program which was followed by the tremendous war effort, resulting in the most erratic real estate market and possibly the wildest inflationary trend in real estate values in the history of California. As a result our studies on this feature have been on freeways previously constructed in eastern States and cities, principally in and around New York City, Westchester County, New York, Detroit, Michigan, and along the Pennsylvania Turnpike.

HARVARD UNIVERSITY STUDY

In our opinion the most complete and exhaustive study available on this subject was made by the Harvard University, Department of Economics, by John Nolen and Henry V. Hubbard, and published under the title "Parkways and Land Values," by Harvard University Press, Cambridge, Massachusetts.

The acquisition of right of way for limited freeways through rural areas affecting large agricultural properties, roadside business establishments, the rural resident owning a small acreage or perhaps a commercial acre on which he resides and at odd times works his small farm—his principal income being from working in the city, and other rural properties, is of far greater benefit than any damage that is suffered because of the acquisition of access rights on a limited basis.

Some of the reasons are as follows:

In the event of the remote possibility of future subdivision for residential or industrial use, the modern subdivision is so planned that limited access from the subdivision to the main arterial has more advantages than disadvantages, and does not affect the net return to the subdivider.

BENEFITS DERIVED

We live in an age when time is the all-important factor. It follows that in developing a limited freeway through the rural area, stepping up to a full freeway through the urban area and into the metropolitan district of the city, we naturally decrease the traveling time and tremendously increase the safety of the highway, with resulting financial benefit to the farmer and other rural residents.

The already established roadside business enterprise, as will be noted from **Photograph No. 1** showing a drive-in restaurant, is permitted to retain reasonable ingress and egress to the establishment. The taking of limited access along the undeveloped area abutting and contiguous to such establishment minimizes possible future competition, with resulting increase in land and improvement value to the owner.

BENEFICIAL EFFECT

Our studies, and information secured on parkways in numerous other locations, have satisfied us that a freeway properly landscaped, because of its utility and many advantages over the conventional type of surface highway, has a very beneficial effect upon abutting and contiguous properties, with a resulting upward trend in land values.

When an existing highway is converted into a full freeway, with the result that the abutting property now fronting on the through lanes of traffic will of necessity upon completion of construction abut upon an outer highway, with the outer highway connected with the main through lanes of traffic only at points designated by public authority, the economic result upon already established business and industrial properties presents a highly debatable subject. However, it must be kept in mind that there will be no business establishments of any kind abutting upon the through lanes of traffic on the freeway and that practically all freeways are a number of miles in length.

It follows that any motorist desiring to patronize any type of mercantile establishment, whether it be service station, restaurant or other business, must leave the freeway proper; and as freeways become more and more common, the traveling public will adjust itself to this condition and the motorist will probably be more inclined to turn off the freeway into an outer highway at locations where there are several mercantile establishments grouped together.

It is also reasonable to assume that the motorist will leave the freeway and enter the outer highway where and when he needs gas, is hungry, sleepy, or desires to purchase some article.

SOME ADVANTAGES

It follows, generally speaking, from a competitive standpoint that when all business establishments along the freeway front on the outer highway, they are more or less in the same position to each other as they were previous to construction of the freeway.

There is no question but that residential properties fronting on an outer highway immediately adjacent to and parallel with the freeway, rather than fronting on the through lanes of traffic, enjoy many advantages in comfort, safety, and freedom from the annoyance of traffic, especially when the freeway is properly landscaped resulting in the shielding of through lanes of traffic from the outer highway.

Many modern subdividers recognize these advantages and plan their subdivisions so that the first row of lots along the highway either back up to the main arterial and fronts upon the next paralleling street of the subdivision, or the subdivider as a part of the development creates an outer highway. A typical example of this type of outer highway is shown in **Photograph No. 2** which is a portion of the Lakewood Development along State Highway 168 northeasterly of Long Beach, in the vicinity of the Douglass Long Beach airplane factory.

There are many advantages in an industrial subdivision when the industrial property fronts upon an outer highway, or upon the local street immediately adjacent to the through arterial or freeway. There is freedom from the annoyance and confusion of fast moving traffic, loiterers and the danger to employees either as pedestrians or operators of vehicles, and yet the main arterial is immediately adjacent to the plant, permitting fast movement of employees, equipment and produce to and from the factory.

The questions of effect upon abutting property located at an intersecting cross street when full access rights are taken along the State highway right

of way line are to a great extent answered by the preceding discussion of individual problems; and if the intersecting cross street should be converted into a cul-de-sac, the result of our study will be given in the next topic of discussion.

CERTAIN DISADVANTAGES

If by chance the improvement is a limited freeway and the intersecting street will enter the freeway at grade, it would naturally be disadvantageous, if the property were used for roadside business purposes as a service station or drive-in restaurant. If the enterprise is a retail mercantile establishment such as grocery or hardware, there would be little or no disadvantage. The result would depend entirely upon the merchandizing ability of the operator of the establishment. If he is not a progressive merchant he may suffer some damage. If, on the other hand, he is an alert, progressive merchandiser, he will supply off-highway parking facilities for his customers and capitalize on the advantages of the safety feature to his customers in being able to reach his establishment quickly and safely through the use of the limited freeway, with the further safety and convenience of leaving the highway and entering the merchant's private parking lot to transact business.

If the property is used for residential or agricultural purposes, the benefits of the limited freeway will far more than offset the loss of access along the freeway side of the property; and if the property is used for industrial purposes, the same statement would hold true.

QUESTION OF DAMAGES

The question of the effect when a new freeway alignment severs an existing ownership into two parcels, in the case of a limited freeway, has already been answered. In our opinion, the property owner is entitled to the damage, if any, he suffers because of his property being severed into two parcels. Generally speaking, if the affected property is a large ownership, it is reasonable to assume there will be one or more cross-overs in the center division strip within the boundaries of the property, and the limited access openings on each side of the highway are permitted opposite such cross-overs.

If the improvement is a full freeway, and the two severed parcels have access along existing county roads, the property owner might have to follow a circuitous route to get from one portion of his property to the other, as he would obviously not be permitted to travel across the freeway. He enjoys the numerous benefits that accrue to his property because of the location of the freeway, but it requires study of each individual ownership to determine what damage, if any, he suffers over and above the usual severance damage.

DEAD-ENDS

Perhaps the most difficult question to answer is the case where the existing through street is, because of construction of the freeway, dead-ended at the freeway right of way line, creating a cul-de-sac. Our studies on this topic, although exhaustive, are not completed.

Before the final determination is is made that an existing through street will be converted into a dead-end street, at the freeway right of way line, careful study is jointly made by our Design, Traffic and Safety, and Right of Way departments. Full information is secured as to traffic flow, origin and destination, etc., to determine whether a grade separation structure should be built to carry the intersecting street across the freeway or whether the intersecting street should be dead-ended at the freeway; and after the determination of these two questions, whether there is justification for constructing an outer highway to tie the proposed cul-de-sac street into the next paralleling street to permit circuity of travel.

In this phase of the study, careful consideration is given to the convenience and economy of various public agencies in rendering service to the lots abutting upon the street in question, such as garbage disposal, mail delivery, fire protection, public utilities, etc. Consideration is also given to the possible volume of traffic, the convenience of the property owners fronting on the potential cul-de-sac street, and the convenience of the general public.

DIFFERENCE OF OPINION

Furthermore, consideration is given to the cost of construction and maintenance of the tie-in street to permit circuity of travel, so that the cost may be balanced against all other factors for the purpose of determining in the final analysis whether possible damage to the abutting properties because of the creation of a cul-de-sac justifies the cost of construction and maintenance of an outer highway or tie-in street.

In determining the damage, if any, to the abutting property because of the creation of a cul-de-sac, our study and investigation have developed many conflicting and misleading facts and opinions. For example, one large subdivider with a national reputation almost had us convinced that the conversion of a through street into a cul-de-sac would have a very detrimental effect upon abutting residential property and would materially depreciate the market value. However, further investigation developed the fact that this same subdivider, in a new and large subdivision, was intentionally creating numerous cul-de-sac streets and his sales organization and publicity featured the many advantages and safety factors of a residence located on a cul-de-sac as compared to a comparable location on one of the through streets in the subdivision. The lots fronting on the cul-de-sac were priced identically the same as lots of comparable size and located on the through streets.

STUDY OF CUL-DE-SACS

Our study of the effect of cul-de-sac streets upon the market value of properties abutting thereon, has been an extensive one taking us into every one of the larger counties in the State of California, and through numerous eastern states including Nebraska, Illinois, Ohio, New York, Pennsylvania, Missouri, Michigan, New Jersey, Massachusetts, and any other localities where cul-de-sacs could be found. Particular emphasis and careful study were given to large developments such as the Springwells Park Development at Dearborn, Michigan, sponsored by the Ford Foundation; the cul-de-sac street development at Hill, New Hampshire, planned by the State Planning and Development Commission; the development in a section of Radburn, New Jersey; residential development as planned and recommended by the Chicago Plan Commission, and others right here in California, particularly in the metropolitan area of the City of Los Angeles where there are numerous new subdivisions containing many intentionally created cul-de-sac streets.

However, accurate deductions from a market value standpoint have been difficult to make because of the erratic real estate market during the past several years.

MANY CASES CHECKED

Some 75 subdivisions which contained intentionally created cul-de-sac

(Continued on page 28)

Bridge Maintenance Practice In California

By JOHN L. BEATON, Structural Engineering Associate

THERE are 4,636 bridges on the California State Highway System omitting culverts. Of this number 3,142 are built of steel and concrete, 1,394 of timber or steel with timber approaches and 100 are steel bridges with timber deck systems. The estimated value of these bridges exclusive of State-owned toll bridges is $125,000,000.

The protection of this investment and the maintenance of the bridges in such condition that they will best serve the traveling public is a duty of the Bridge Department of the Division of Highways. Within the Bridge Department, maintenance work is handled directly by the Maintenance and Research Section. Methods of repair and maintenance as developed and field tested by this section over a number of years have included several practices that are worthy of note and should be of interest to the engineers and construction men engaged in this work throughout the Country.

There will be no attempt made to enumerate all maintenance problems encountered, but the more important features of the work, with illustrations, will be covered in a series of articles, of which this is the third. It deals with Piling Maintenance.

A VERY vulnerable element of a bridge is its support. Here the designer must consider loads, deterioration due to air borne elements and also the erosive action of the stream, the corrosive action of the earth and attack by various organisms. This article will cover the maintenance problems which arise when any one of the above forces is not sufficiently resisted in the piling type of support to a structure. Abutments, bulkheads and columns will be covered in other issues on Bridge Maintenance Practice.

The piles used in supporting a bridge are of one of the four major types of building materials; steel, concrete, treated timber or untreated timber. Each of these materials has a different maintenance record in the various climatic areas of California. Materials which deteriorate rapidly along the seacoast or in the mountainous regions have, in some cases, a very excellent

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record in the large valley or desert regions. The critical section of a pile, no matter what its location, is from two to five feet below the ground up to the bottom of the bearing.

STEEL PILES

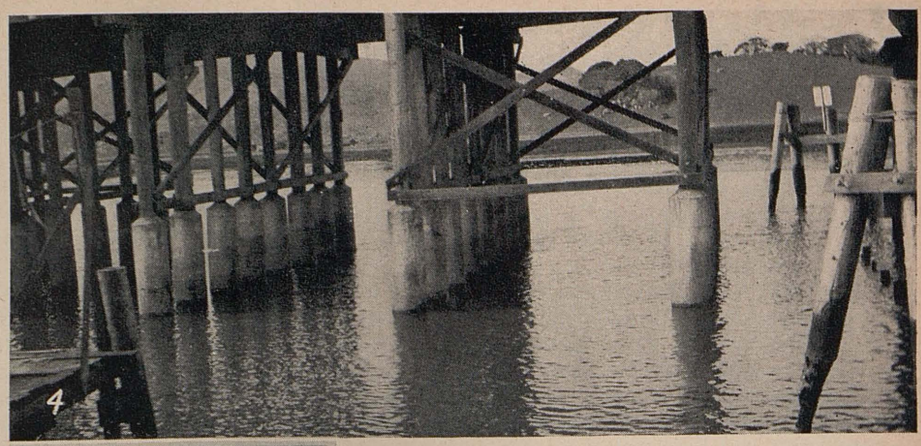
Steel piles have been used in State highway bridges for only 14 years and their maintenance has been limited in general to surface painting and to correction of damage caused by floating or moving objects or, in a few cases, corrosion at the ground line. The atmosphere along the coastal regions of California causes rapid deterioration of exposed steel and such action requires frequent inspection and painting if repairs are to be held within reasonable bounds.

A steel H section pile damaged by drift to an extent requiring repair usually is reinforced to resist future impact by placing a reinforced concrete collar around the straightened section. An alternate method might require straightening and reinforcing the section with additional metal. Protection against corrosion at the ground line due to alkali bearing soil has been provided for steel piles by encasing them in reinforced concrete collars. This protection, which covers the portion from four feet below the ground surface to three feet above **(Picture 1)**, has been found to be effective.

CONCRETE PILES

Maintenance and repair of concrete columns offer many diverse and interesting problems, especially in our older concrete bridges built in the early days before the development of more rigid specifications and inspection. One of the results of the lack of uniformity in early day concrete construction is shown in **Picture 2.** This pile was made of poor quality concrete and when first driven, undoubtedly, it was very porous, full of shrinkage cracks and probably had cracked from handling and driving. The structure in which this pile is located is on the seacoast and within 10 years the reinforcing steel was rusting and swelling, causing the concrete to break off. Patching was first attempted but progressive failure has become so serious and extensive throughout the entire structure that after only 28 years of service replacement now is considered necessary.

Impact from external objects also has caused a large amount of the damage to concrete piles. The normal procedure in repairing such damage is to shore up the structure, remove the defective concrete, straighten and perhaps supplement the reinforcing steel, then recast the column to its original line, using concrete having a minimum shrinkage. Concrete piles, if used in streams carrying very heavy boulders, often may be badly shattered or eroded. This is usually repaired by casting the concrete back to its original lines and armoring the danger zone. The armor may be either an additional thickness of dense concrete or may be steel plates or shapes, depending on the post detail.



Typical ground line decay in untreated piles. The removed pile stub was rotted completely about two feet below the ground line as shown in Photo No. 5

TREATED PILING

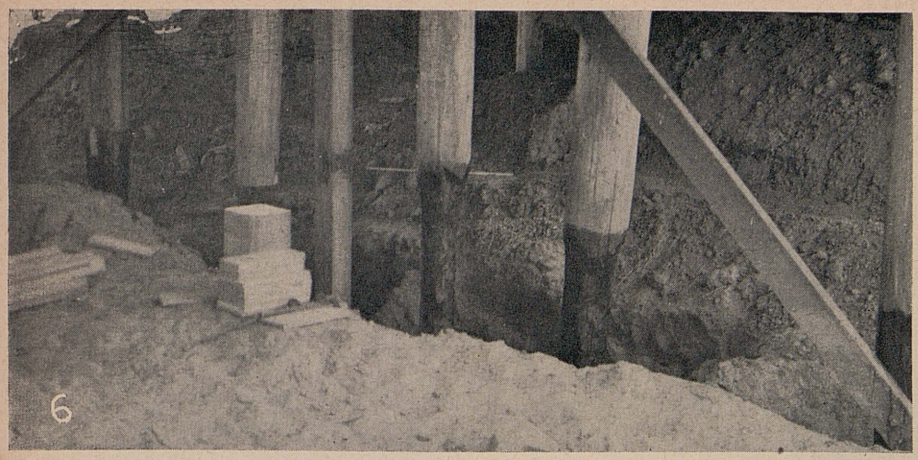
The maintenance of timber piling offers the engineer an opportunity to show not only his ingenuity in developing details of the repair but also to display his judgment in selection of type, the latter depending primarily on the service life remaining in the superstructure.

Treated piling has in general given very good service in State highway structures. Such deterioration as has occurred in treated piles, before reasonable service was obtained, usually can be attributed directly to faulty construction detail or poor material. Faulty detail includes holes bored or cuts made after treating and improper capping of pile tops. Decay usually will enter the timber at one of the weak points and spread through to the heart. A pile of substandard material will check or split during driving and such checks and splits are the opening wedges for the development of rot. Spraying of these openings with wood preservative has been found to retard or prevent this decay.

The pile shown in **Picture 3** shows the results of decay developing from the top because the end was not capped after cutting. This condition usually is corrected by stubbing a new section onto the sound remaining portion of the pile. If there is no necessity in developing the full moment resistance of the pile, the new stub may be placed with a bolted half lap joint. When conditions are such as to make it necessary to restore the original resistance of the pile, a fish plate joint is used or the joint may be encased in a reinforced concrete collar.

TIMBER PILES

In most locations untreated timber piles have a relatively short life, except where they are permanently below water or are in an ideally dry location. Their deterioration is likely to be most rapid in salt water locations where



they are exposed to marine borer action and in any location where the moisture content is held within the range favorable to the growth of decay fungi (somewhat above and near 20 per cent). Decay in timber is inhibited where the moisture content is below 20 per cent, and somewhat retarded between 20 per cent to 30 per cent. Untreated timber used in dry localities with good ventilation and isolated from contact with the earth generally will yield a good service life. If a structure is well proportioned otherwise but placed on untreated posts or piles which are in contact with the ground, usually it will require a major repair job at the ground line in from three to 10 years. The type of repair, of course, depends on the remaining economic service life in the superstructure and may vary from more permanent types of construction to replacement in kind. Immediate temporary shoring, to sustain the structure until more permanent repairs can be made, is often necessary.

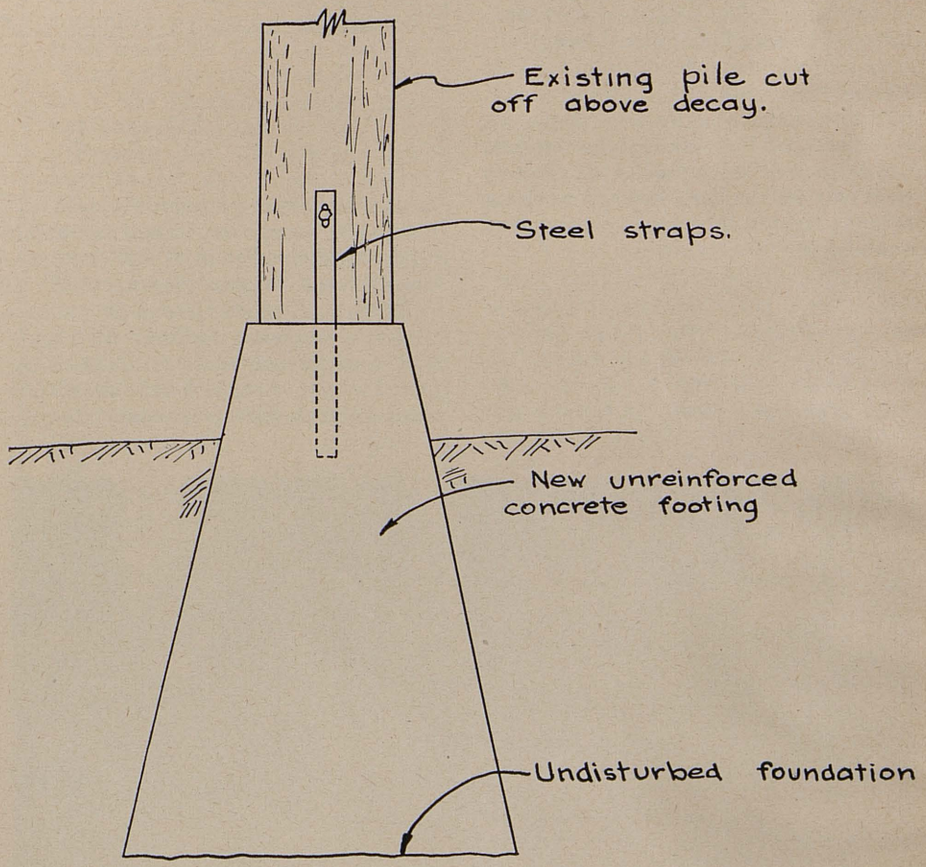
MARINE BORERS

Untreated timber placed in brackish water is subject to attack by marine borers, and may serve less than a year after construction. **Picture 4** shows the reduction in area of a dolphin pile at tide line as a result of marine borer action. The bearing piles were attacked also but repaired. The repair and correction of piling attacked by marine borer action has been accomplished by cleaning the piles and encasing them in concrete. The section so treated is from three feet below the mud line to one foot above high water. The shell usually has a thickness of about six inches and such a repair, shown in **photo 4**, has been in service for about 10 years and the piles are still in good condition. They were infested about four years after original construction.

Picture 5 shows typical ground line decay in untreated piles. The removed pile stub was rotted completely about two feet below the ground line. In some cases the decay starts from an exterior hole below the ground line then penetrates upward through the heart of the pile, resulting in concealed rot instead of the more commonly observed exterior disintegration. The porosity of the soil has a very definite bearing on the position of ground line decay. In a heavy soil the first deterioration is usually at or slightly below the ground line. In a very porous soil, such as deep sand, the rot is at the point of ideal moisture content which may be considerably below the ground line. Since, in sandy soils, enough fresh air can penetrate to reasonable depths where it can sufficiently promote the growth of the decay fungi, the condition of untreated timber must occasionally be examined to depths of as much as 10 feet.

DECAYED POSTS

Typical pedestals for stubbing decayed posts and piles are shown in **Types A and B** and in **pictures 6 and 7**. **Picture 6** shows repairs under way on untreated timber piles after seven years of service (the superstructure was in excellent condition). The general procedure is to remove the decayed sapwood and, if there is enough sound



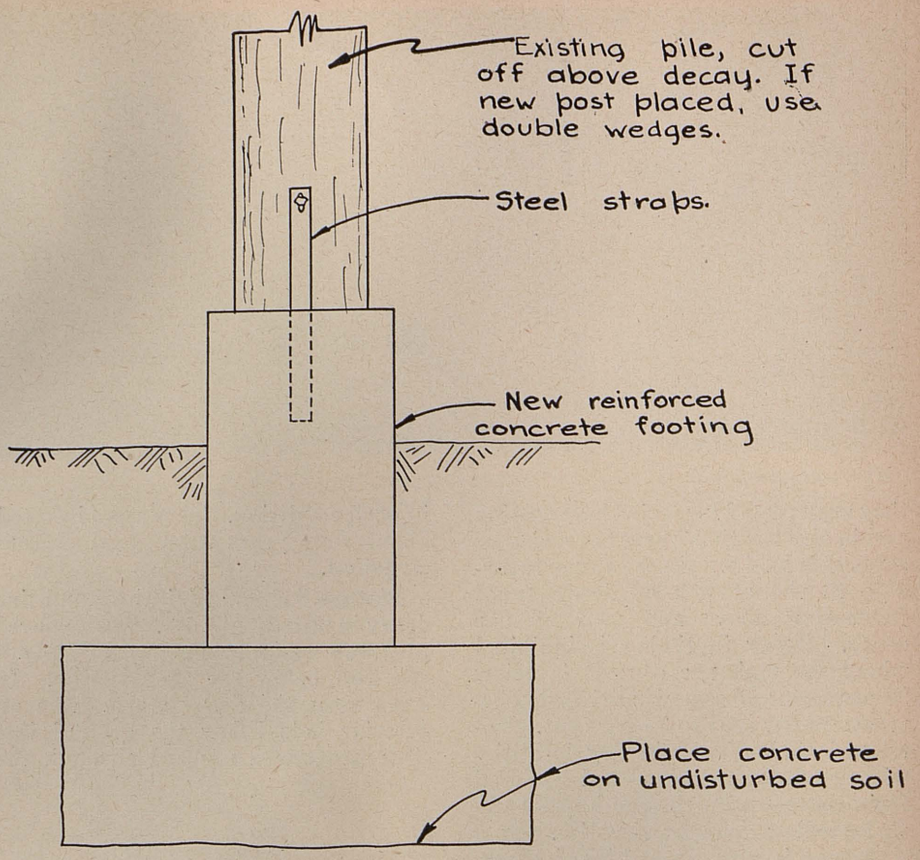
TYPE A

wood remaining, paint the surface with two coats of a wood preservative. The third pile from the left side of the picture had insufficient bearing area, and was stubbed with a **Type B** concrete post and footing. When the repairs, as shown in **photo 6**, were made, it was necessary to stub about 6 per cent of the piles. In the seven years since doing this work, it has been necessary to stub an additional 10 per cent and to completely replace the bulkheads.

AMERICAN RIVER BRIDGE

The American River Bridge on the Fair Oaks Highway is a bridge of similar construction to those noted above, but in a sandy channel. Four years after original placement, the piles were given the ground line treatment described above, while about 3 per cent were stubbed. Eleven years after original construction, it was necessary to repair all of the piles in the bridge. A continuous concrete footing, which supported concrete columns extending about 18 inches above the ground line, was constructed below expected scour. Stub piles of salvaged timber were then used to complete the supports up to the caps. The original piles were left in place as falsework during construction of the concrete bent. This concrete bent had its columns alongside of the existing piles, and by placing new posts on the columns, in the first two bents and salvaged cut-off piles on each succeeding bent, always working toward the shallow end, a very economical job was obtained.

Two new ground line surface treatments have been introduced recently on State bridges. To date no definite conclusions can be drawn relative to these treatments due to lack of sufficient experience data. In both treatments the pile is prepared by excavating to the proper depth and removing all decayed wood then, if sufficient section remains, the surface is treated.



TYPE B

Picture 7 shows the first process wherein the post is daubed with a toxic salt wood preservative and then protected by paper or cloth bandages. The bandage protection is necessary to prevent the toxic salt from washing off the pile. The bandage also holds moisture against the surface so that the salts in solution will penetrate the timber. The second process has been developed and used extensively by one of the major telephone companies and consists of surrounding the pole with earth saturated with a mixture of sodium fluoride, coal tar creosote and other coal tar products.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The conclusion to be drawn from the experience of maintaining piling of bridges throughout the California State Highway System is that preventive maintenance built into the structure in the original design will save many dollars in the way of physical maintenance in the later life of the bridge. An important point which it is hoped this article will bring out is that untreated timber should never be used in contact with the ground, except in short life construction. Like any other engineered structure, the choice of pile type depends on use, locality and economy.

CALIFORNIA MISSIONS

By KENNETH C. ADAMS, Editor

Mission San Buenaventura March 31, 1782

PLANNING the conquest of Upper California, Inspector-General Don Joseph de Galvez, from his Mexican headquarters near La Paz, as early as September 15, 1768, wrote to Father Junipero Serra that the third of the Franciscan stations to be established in the new territory should be named San Buenaventura. The first, Galvez said, would be at San Diego, the second at Monterey and between those two points there should be "the intermediate mission which shall be called San Buenaventura."

However, through no fault of either Galvez or Father Serra, Mission San Buenaventura was the ninth instead of the third mission founded in California. Its creation was delayed 12 years, according to Fr. Engelhardt, because of clashes between the military and the Indians at Mission San Gabriel arising out of mistreatment of the natives by the soldiers there.

San Buenaventura was founded by Father Serra on Easter Sunday March 31, 1782, on a site which had been discovered and claimed for Spain by the great navigator, Juan Rodriguez Cabrillo, on October 10, 1542, 50 years, almost to a day, after the landing of Christopher Columbus.

Cabrillo was hospitably received by the Indians, treated them kindly and then sailed away. Sixty years later, another Spanish explorer, Sebastian Vizcaino, dropped anchor there and later recorded the friendliness of the natives. Vizcaino continued on northward and found Monterey Bay. For 167 years after his departure this section of the future California remained unvisited by white men. And then in the spring of 1769, Gaspar de Portola set out with an expedition from San Diego to relocate Monterey Bay accompanied, as we know, by Fathers Juan Crespi and Francisco Gomez. Once again the white man came to the land that was to become known as San Buenaventura and the discerning Crespi marked it down as a suitable site for a missionary station.

Mission Meccas

California's famous old missions with their historical and romantic background annually attract thousands of visitors. Twenty-one Franciscan missions were founded by the Reverend Fray Junipero Serra and his colleagues, extending from San Diego to Sonoma. On his way north from San Diego, Father Serra and the mission padres who came after him followed a course which became known as El Camino Real, "The King's Highway." El Camino Real retains to this day its original name and is designated U. S. 101. Along this highway and short distances from it, the founding padres established their missions. U. S. 101, the old "King's Highway," now extends from the Mexican border into northern Washington.

Present day State highways lead to all the mission sites. When the war is ended and California again welcomes tourists from all over the world and there are no longer restrictions on automobile travel, it is believed that the missions will be popular meccas for visitors to the Golden State.

Anticipating this traffic, the Division of Highways will publish in California Highways and Public Works brief histories of the missions with directions on how to reach them over State highways. For the purpose of this series, the missions will be taken up in the order of their locations from south to north, rather than in the sequence of their founding.

This is the fourth of the series.

MISSION IS NAMED

"I named this pueblo Asuncion de Neustra Senora," Father Crespi wrote at the time in his diary, "and I hope that such a good site to which nothing is lacking will be a good Mission through the intercession of this Grand Lady." Father Crespi was impressed by the number of Indians living there and the opportunity offered to win converts to Christianity.

At the feast of Corpus Christi, celebrated for the first time at Mission San Carlos de Monterey on Sunday, May 30, 1771, Junipero Serra, Fr. Presidente of the Missions, appointed Fathers Antonio Paterna and Antonio Cruzado to proceed to Asuncion de Neustra Senora and establish Mission San Buenaventura. The two sailed to San Diego and then set out with Captain Pedro Fages and soldiers for their new field. As we have seen, they arrived at Mission San Gabriel during the Indian revolt against the military and Fages refused to go on, strengthening the garrison of San Gabriel with the troops intended for San Buenaventura.

It was not until March, 1782, that Father Serra, at a conference with Governor Neve at Mission San Gabriel, obtained permission to found San Buenaventura. He marched north with Neve, but before the expedition reached its destination, the Governor was recalled for a campaign against the Yuma Indians and Father Serra went on with Fr. Pedro Cambon and a small bodyguard. On March 31st, Father Serra raised and blessed the Cross on the chosen site, celebrated High Mass in a brushwood shelter with the aid of Fr. Cambon, who constituted the choir, and Mission San Buenaventura came into existence.

FATHER SERRA VISITS

Father Serra remained at San Buenaventura for three weeks and then returned to Monterey from where he dispatched Fathers Francisco Dumetz and Vicente de Santa Maria to the new mission to relieve Father Cambon, who, meantime, had administered the first baptism to the new-born son of Eugenio Valdez, soldier, and Sebastiana Josepha Quintexa, his wife. This was on April 27, 1782.

The old mission register shows that by the end of 1785 there had been 133 baptisms; that in 1786 there were 112 converts during that year, and that in 1796, some thirteen years after the

Mission San Buenaventura, restoration of which extended over a long period of years and which was completed by the Society of Ventura Pioneers and Native Daughters of the Golden West

founding of the mission, the number of baptisms had reached 1,100.

Visiting San Buenaventura in November, 1793, Captain George Vancouver, English navigator and historian, noted in his diary the prosperity of the mission and added that the first church of the station had been destroyed by fire. He gave no date. Fr. Englehardt reached the conclusion from study of the baptismal register that if such a disaster occurred it took place between December 9, 1791, and June 21, 1792.

Fr. Presidente Lasuen reported to the government on March 11, 1795, that the church of San Buenaventura, constructed of masonry, was about half completed and from that date on to September 10, 1809, the mission fathers made frequent reports on progress in the building of the church, granaries, adobe houses for the neophytes, a tannery and other structures, including a chapel for the Indian community near Casita. Solemn High Mass was celebrated for the first time in the new church on September 10, 1809. The first baptism in the new edifice took place on September 30th.

EARTHQUAKE DAMAGE

San Buenaventura was badly damaged by the earthquake of December, 1812, and it was not until July 14, 1815, that restoration work was finished.

In July, the year of the earthquake, Father Jose Senan, senior missionary at San Buenaventura, was appointed Presidente of the Franciscans in California. His labors of love brought remarkable progress to the mission and enrichment of the church and vestry with various church goods, paintings and interior beautification in spite of the fact that from 1811 to the end of the missionary period, San Buenaventura was compelled to pay heavy tribute to the support of the military, which had ceased to receive pay, clothing or food from Mexico as a result of the revolt against Spain.

Already overburdened with worries created by the constant demands of the Santa Barbara presidio, as revealed by the preserved correspondence between him and Captain Jose de la Guerra of the presidio, wherein the priest repeatedly protested against the injustice of throwing support of the soldiers and their families upon the mission Indians, Father Senan was given additional grief by a tragic incident occurring on May 31, 1819.

MOJAVE INDIANS COME

On this day a band of Mojave Indians came from the Sierras of the Colorado River to pay a visit to Father Senan. Doubting the sincerity of the natives, Corporal Rufino Leiva had them incarcerated in the guardhouse. He refused the priest's pleas for their release. The following morning, the corporal punished one of the Mojaves in the stocks and his comrades, in great anger, forced their way out of their prison, killed Leiva and in an ensuing

battle between them and the neophytes and soldiers nine lives were sacrificed. This affair aroused the Indians of the Colorado to fury and for several years they exacted revenge by attacking settlers.

Although a friend of the missionaries, Captain de la Guerra several times sought to obtain mission lands for the government and old records reveal Father Senan's fight to save Rancho de Piru for his charges. An impassioned protest to Governor Sola in February, 1822, evidently won a victory for the missionary for we find the Governor refusing to take Piru from the Indians. Father Senan died on August 24, 1823.

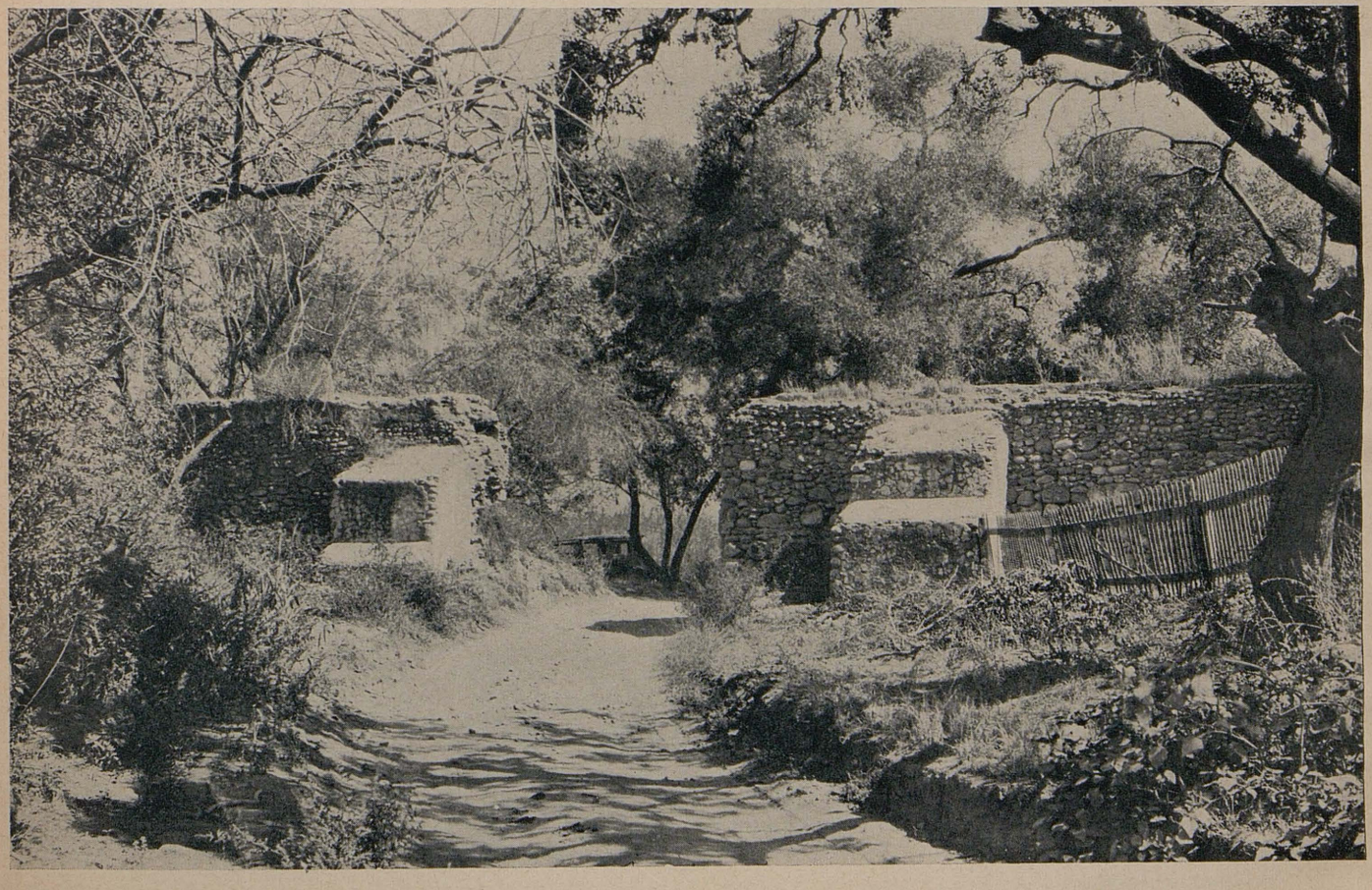
The story of San Buenaventura during the hectic years of Mexican political misrule under successive territorial administrations, which brought about destruction of the California missions and seizure of their lands, is similar to that of the missions dealt with in preceding installments of this little history of the Franciscans. San Buenaventura suffered at the hands of Governor J. M. Echeandia and his successors as did the other missions. However, it appears that this mission was more fortunate than the others in having Rafael Gonzales as civil administrator. Gonzales took over the station in June, 1836, and when William Hartnell, Inspector General of Missions, arrived there in June, 1839, he found the temporal affairs of San Buenaventura in good shape and his inventory showed 2,208 head of cattle, 1,670 sheep, 799 horses, 35 mules, 65 goats and 15 cows.

MISSION RUINED BY PICO

Governor Pio Pico completed the ruin of San Buenaventura. He appointed his brother, Don Andres Pico, and Don Juan Manso as commissioners to "lease the missions." San Buenaventura was leased to Narciso Botello and Jose Arnaz on December 5, 1845, for an annual rental of $1,630, and on June 8, 1846, was sold to Arnaz for $12,000, no part of which Pico paid to the Indians or the mission fathers. The United States Government, following American occupation, declared this and other mission sales illegal and on May 23, 1862, President Lincoln signed the proclamation returning San Buenaventura to the Catholic Church.

First steps toward restoration of the old mission were taken by Fr. John Comopla, who was resident missionary at San Buenaventura from 1861 to 1877. With the advent of the Southern Pacific Railroad in 1887, Fr. Ciprian Rubio started extensive improvements and planned to erect a parish school. The school was not completed until August, 1922, when the Sisters of the Holy Cross took charge. For the preservation of old treasures and relics the Mission Museum adjoining the mission was erected in 1929. Here are the only two wooden mission bells known to have reached California in the days of the early padres. The Society of Ventura Pioneers and the Native Daughters of the Golden West have done much to make San Buenaventura and the Mission Museum the attractions they are today. Back of the mission is the famous Cross on the

Needing water, the Padres who founded Mission San Buenaventura had built with Indian labor a five-mile aqueduct. This photograph shows the ruins of this ancient project. Photo by Byron Dome



View of entrance to San Buenaventura Mission which was founded in 1782

Hill, erected by the Ventura Chamber of Commerce in 1913 to replace the one blown down in 1875, which was the successor to the original cross raised there at an uncertain date. Many believe the first cross was erected by Father Serra, but this Fr. Engelhardt, mission historian, doubts because no mention of it ever was made by Palou, faithful chronicler of Junipero.

Motorists following the "Trail of the Padres" from south to north have the choice of three delightful routes out of Los Angeles to Mission San Buenaventura. One leads through Hollywood and historic Cahuenga Pass over the Coast Highway, U. S. 101, passing Calabasas, then over Conejo Grade and past Camarillo to El Rio, junction of the Coast Highway and Roosevelt Highway, just north of Oxnard, thence about six miles to Ventura and Mission San Buenaventura, which is on Main Street, at Figueroa, close to the business section of the city.

Or, the visitor may leave Los Angeles by way of Wilshire Boulevard to Santa Monica and follow the shoreline along Roosevelt Highway through Oxnard to El Rio, connecting with the Coast Highway to Ventura.

Mission visitors motoring from Los Angeles to Mission San Buenaventura by way of Mission San Fernando follow Broadway to San Fernando Road, thence through Glendale and Burbank to San Fernando where the route is west through Moorpark and Saticoy over State Sign Route 118 to its junction with the Coast Highway just south of Ventura.

Motoring from the north to San Buenaventura, visitors may come down the San Joaquin Valley over the Inland Route, U. S. 99, to Bakersfield, proceed southwest through Taft to Maricopa and follow the new Ventura-Maricopa State Highway, U. S. 399, to Ventura, or they may follow the Coast Highway, U. S. 101, from San Francisco County to Ventura.

Mission Santa Barbara December 4, 1786

SAILING north on his explorations from San Buenaventura, which he had claimed for Spain on October 10, 1542, Juan Rodriguez Cabrillo, brave old navigator, coursed what now is Santa Barbara channel, anchoring at Rincon, Carpinteria, Point Goleta, Canada del Refugio, Gaviota Pass and finally off Cape Galera or Point Concepcion on October 18th. Taking possession of these new lands and San Miguel Island for the Spanish king, Cabrillo could not know that he had discovered the site of the future presidio and Franciscan mission of Santa Barbara.

Sixty years later, Sebastian Vizcaino came by sea to the same locality and on December 3, 1602, gave to the place the name of Santa Barbara in honor of the saint and martyr of that name. And then in 1769, Gaspar de Portola and his expedition arrived there overland from San Diego and Father Juan Crespi wrote to Father Junipero Serra describing in glowing terms the country and its large Indian population. Here, as Father Crespi saw it, was an ideal field for missionary labor.

It was not until September 6, 1772, that Fr. Serra, en route from Monterey to Mission San Gabriel, visited Santa Barbara for the first time. From the moment of his arrival, Junipero had his heart set on establishing there a mission and presidio. It was given to him to found the presidio, but he died before his dream of a great Franciscan station there was realized. According to Fr. Zephyrin Engelhardt, noted mission historian, Fr. Serra's death was hastened by heartbreaking obstacles raised by Governor Neve and the military which delayed the founding of Mission Santa Barbara for four years.

Upper—Mission Santa Barbara, founded by Franciscan Padres on lands claimed by Sebastian Vizcaino on December 3, 1602, more than 180 years before the mission was established

Lower—View of enchanting gardens of Mission Santa Barbara. Byron Dome photo.

Keyed up to a high pitch of zealous enthusiasm by the successful establishment of Mission San Buenaventura, which he founded on March 21, 1782, Fr. Serra in April had joyfully accompanied Governor Neve and a force of 60 soldiers to Santa Barbara. The Fr. Presidente of the Missions was led to believe that the mission and presidio were to be undertaken simultaneously.

FOUNDING POSTPONED

But Governor Neve, an enemy of the missionaries, had other plans. When Fr. Serra, on April 21, 1782, erected a cross at Santa Barbara, built a temporary chapel and altar and blessed the site, he was informed by Neve that his mission must wait until the pre-

(Continued on page 30)

Roadside Business Development Traffic Hazard in District VI

By E. T. SCOTT, District Engineer

ACCIDENT frequency is high along stretches of State highway in District VI where roadside business development is found. Most of the ribbon development lines the highways at approaches to cities, but few of such places of business add to the beauty of the entrance to a city. In almost every case the roadside development constitutes an eyesore and at the same time restricts traffic flow and is the cause of many accidents.

The "traffic profile" shown here depicts graphically conditions along highway U. S. 99 through this district. It extends from the Los Angeles-Kern County line on the south to the Madera-Merced County line on the north, a distance of 189 miles. It covers conditions as of November, 1941, when traffic volumes and behavior were normal.

At the top of the "traffic profile" the number of pavement lanes extending between the various local points is shown. Traffic volumes counted in July, 1940 and 1941 are recorded graphically. The figures indicate total traffic of which from 20 per cent to 25 per cent along this section of highway are trucks.

HEAVIER NEAR CITIES

As would be expected, traffic increased in the vicinity of urban areas. Approaching the City of Fresno where urban development is the greatest, the traffic volume is the highest. The second greatest urban development is at Bakersfield, where also is found the second largest traffic volume.

The total number of accidents for the three-year period 1939, 1940 and 1941 is shown for each mile along the 189 miles covered by the "traffic profile," except those accidents occurring within the limits of the various cities. The "traffic profile" shows where fatal accidents have occurred and the number of such accidents, also where pedestrian accidents have occurred most frequently.

In Kern County between Fort Tejon and a point about one mile northerly of Grapevine the "profile" shows a large number of accidents and fatalities. Along this 5-mile section of highway there is a sustained 6 per cent grade. The great differential in speed between fast moving autos and slow moving trucks on this comparatively steep grade accounted for most of the accidents. Many head-on accidents occurred on this three-lane section of highway.

ACCIDENT RATE CUT

The "traffic profile" indicated the necessity of improving Grapevine grade, from a standpoint of safety if for no other reason. The three-lane pavement on the 6 per cent grade was widened to a four-lane divided highway, with a center barrier railing to keep opposing lanes of traffic apart. The reduction in accidents on this short stretch of highway has more than justified the improvement made.

Many and varied conditions contribute to a high accident frequency. The long Grapevine grade with the slow moving trucks and high speed autos is an example. While no attempt will be made to describe the various conditions which cause traffic accidents, it may be pointed out that in this portion of the San Joaquin Valley at least, roadside business development is responsible for a tremendous increase in the number of traffic accidents.

Between Greenfield and Bakersfield numerous places of business line U. S. 99 Highway. This roadside development becomes very dense close to the city with the resulting high accident frequency for both vehicles and pedestrians. Northerly from Bakersfield where the Kern River bridge and its approaches prevent roadside development, places of business are fewer and more scattered. The number of accidents along this section of highway is correspondingly lower.

Roadside development on the highway approaches to Delano, a city of about 5,000 population, is to be found entirely within the city limits. The "traffic profile" does not show accidents within the limits of incorporated cities.

EXAMPLE AT TULARE

A striking example of the effect of roadside development on a major highway is found on U. S. 99 immediately south of the City of Tulare, which has a population of nearly 10,000. The "ribbon development" lines both sides of the highway, but is confined to the first mile south of the city limits.

This mile long sliver community lying entirely outside of Tulare, is locally known as "Tuggleville." From the standpoint of the motorists, this community and all such major highway "ribbon" communities might well be named "Struggleville." The traffic has to struggle to get through such bottlenecks and the engineers sooner or later have to struggle to find an alternate route into the city in order to eliminate such restricted and hazardous stretches along main highway routes.

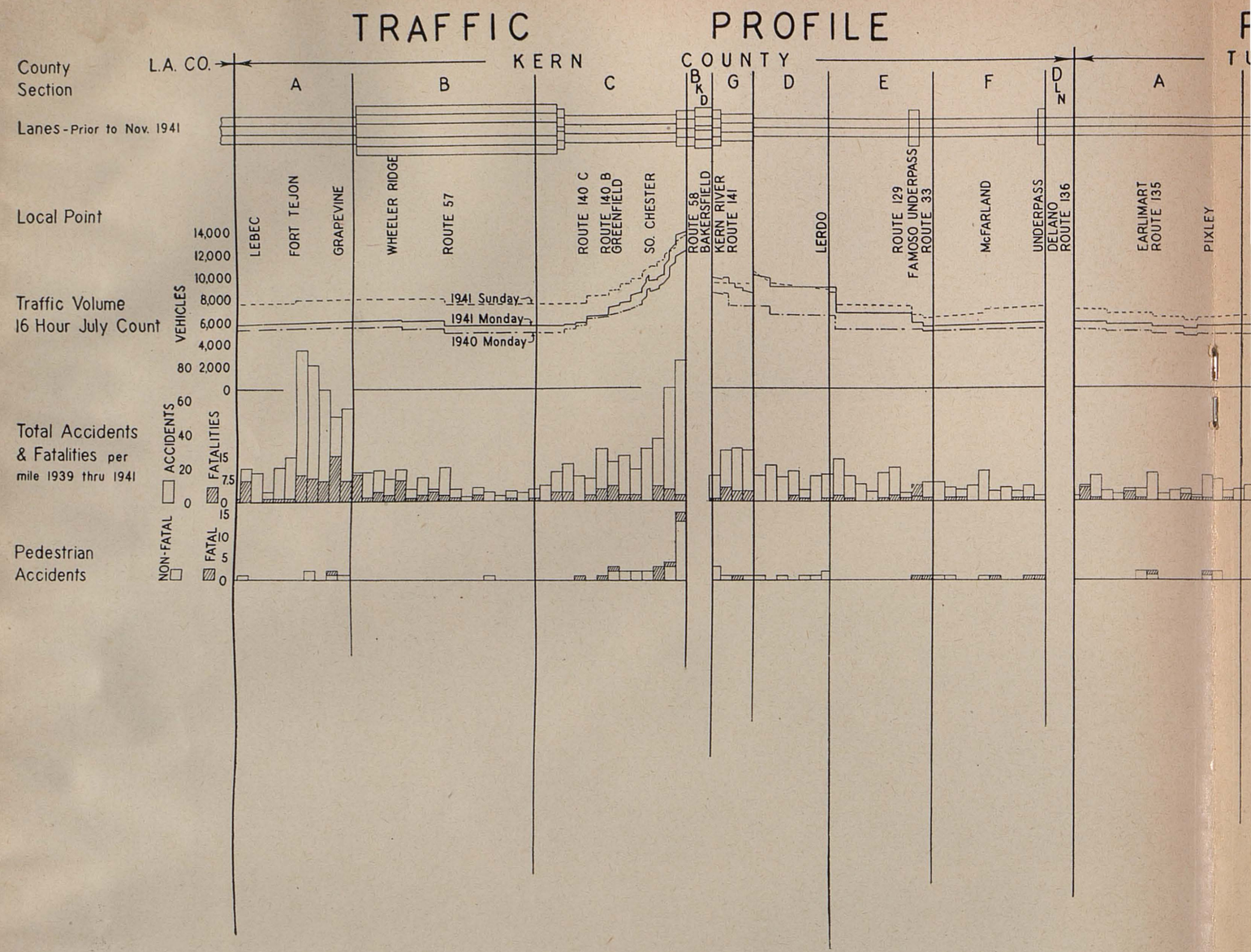
Referring to our accident records and to the "traffic profile" it is found that along the mile of highway through Tuggleville, where a dense and unsightly roadside development is found, there were during the three-year period, 1939, 1940 and 1941, 44 traffic accidents. Of the 44 accidents eight were fatal. During the same period, but along the next mile immediately south of Tuggleville, and with practically the same traffic volume, there were only 12 accidents with no fatalities. The motorist and the pedestrian surely pay dearly because of such improperly located business districts.

FRESNO CONGESTION

Highway U. S. 99 in the vicinity of Fresno, the largest city in this district, is lined with roadside development both northerly and southerly of the city. Along both approaches to the city the highway is adjacent to and parallels the Southern Pacific railroad and thus roadside business development is limited to the westerly side of the highway only. In spite of this fact, as indicated by the "traffic profile," the number of accidents both vehicular and pedestrian, is very high.

While some of the accidents occurred at county road intersections, still there

Upper—U. S. Highway through Tuggleville, southerly approach to city of Tulare, where uncontrolled vehicle movements cause many accidents. Center—Unsightly business development along major traffic artery south of Tulare, where accidents frequently occur. Lower—Looking westerly from west city limits of Visalia. This entrance to Visalia is almost entirely free of roadside developments.



is every indication that the roadside business development contributes greatly to the accident toll along the main entrances to Fresno. In many of the accidents trucks are involved. Trucks, many of which are bringing farm commodities to market, are required to run the gauntlet while attempting to enter the city.

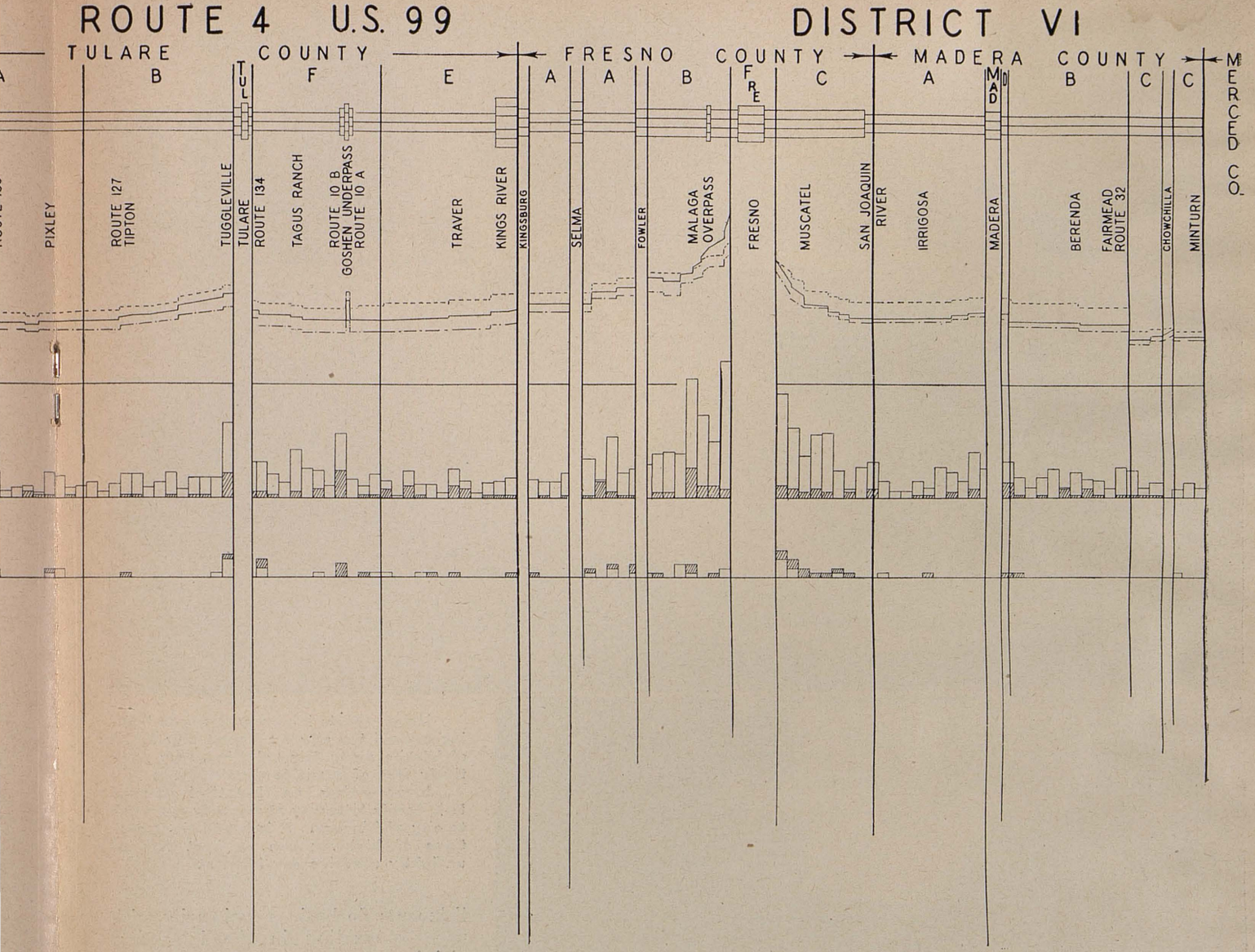
The section of State highway between Fowler and Fresno, compared with all other sections of State highway in the entire State, held second place in 1940 and third place in 1941, for number of truck accidents. For the same years the greatest number of truck accidents on any given section of highway occurred on the Grapevine Grade already referred to in this article. Fortunately this latter situation was corrected early in 1943 by the widening of the three-lane pavement to a four-lane divided highway.

RELOCATION PLANNED

Because of the heavy traffic and the high accident frequency resulting largely from roadside business development, the existing southerly approach of U. S. 99 into Fresno will be relocated. To attempt to widen the existing highway and convert it into a freeway would not be feasible because of the dense roadside business development.

The proposed improvement, set up as a postwar project, contemplates the construction of a freeway paralleling the existing highway but located several hundred feet westerly thereof. No business establishments will be permitted along the new location and it is planned to landscape the proposed four-lane divided highway. Fresno will be provided with a new approach highway that will be free of unsightly roadside development and the hazard which now exists on the present highway will be eliminated. Motorists will be able to drive safely into Fresno along a landscaped freeway.

Northerly from Fresno along U. S. 99 there are many roadside inns or motels and other establishments. These places are subjected to the constant roar of heavy trucks which make up a considerable percentage of the traffic total. That the guests and patrons of these various roadside establishments are subjected to the risk of collision with through traffic is manifested by the great number of accidents occurring along this stretch of highway.



A glance at the "traffic profile" will show the number of fatalities resulting from such accidents. With the existence of the present unlimited access to the highway from the large number of roadside establishments, many accidents will continue to occur along this section of highway.

SPEED CHECKS INEFFECTIVE

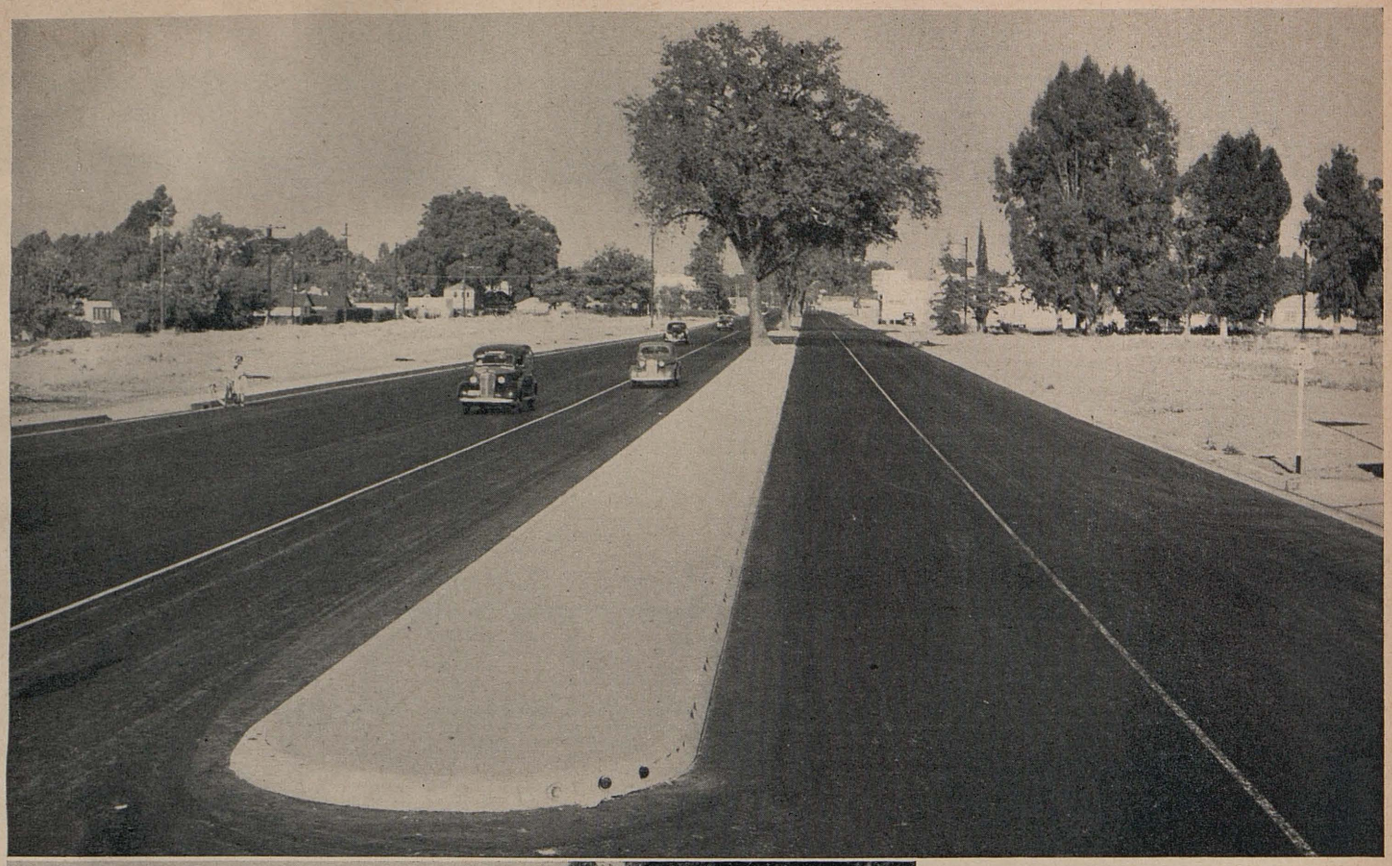
The restricted speed zones which have been established by law and which are to be found along most of the sections of highway described in this article, apparently have but little, if any effect on the number of accidents. Such slow speed zones greatly reduce the efficiency of the highway as a transportation route at a considerable cost to the motorists. (In this district at least they are not accomplishing to any great extent that for which they were designed.) Traffic accidents continue to occur where business development lines the highways in spite of the restricted speed zones.

While many of the State highways in this district approaching cities are relatively free of roadside development and free of the accompanying toll of accidents, we wonder just how long such favorable conditions will prevail.

BEAUTY AT ROADSIDES

A striking example of such a highway is the beautiful entrance to an important city over a section of the State artery known as the Sierra-to-the-Sea Highway. Along this section of highway west of the City of Visalia are many fine oak trees of various sizes. The roadsides for several miles are practically free of any business establishments. The view afforded motorists entering or leaving the city is most pleasing. It is to be hoped that something can be done to prevent this beautiful highway from becoming cluttered with unsightly roadside business development and slipping into the category of a hazardous stretch of State highway.

There may be cases where outlying business development is required to serve the needs of the community. A few of the roadside improvements draw business from motorists on the highway. However, in this district there are a great many places of business on main highways that cater to local residents rather than the motorists traveling the highways. Food markets, lumber yards, restaurants and other estab-



Upper—State Highway Route 10 looking toward the city from west city limits of Visalia along Mineral Kind, now relatively free of roadside developments

Lower—View on beautiful Orange Belt Scenic Highway at westerly approach to city of Lindsay. It is hoped these sections of highway can be kept free of unsightly roadside development

lishments do business primarily with persons residing in the immediate vicinity.

While the assessed valuation of the property along the highways just outside the city is lower than that within the city boundaries and the corresponding taxes are much lower, still this saving by owners of roadside development is more than offset by the loss to many thousands of motorists due to the interference with the traffic flow and resulting from traffic accidents.

The question of equity may well be considered here. Is it proper for the motorists to pay for the improvement and maintenance of highways while property owners along such routes profit without contributing to the development?

Proper planning by county planning commissions will help to relieve the conditions so prevalent in District VI of the State Division of Highways.

Vallejo-Napa Highway Underpass Christened

By P. O. HARDING, District Engineer

WHEN the Navy in the spring of 1942 requested, through the Mare Island Yard, a naval access project for constructing two additional lanes of concrete pavement between Vallejo and Napa, the Basalt Rock Company of Napa immediately proposed a change in the grade of the highway which would permit clearance for an underpass to be used solely by their company for truck transport from its quarry east of the highway to the Napa River to the west. The company proposed to pay for the entire difference in cost of constructing the two new lanes at existing grade and the cost of constructing to the revised grade, including the cost of raising the existing two lanes, plus the full cost of the underpass.

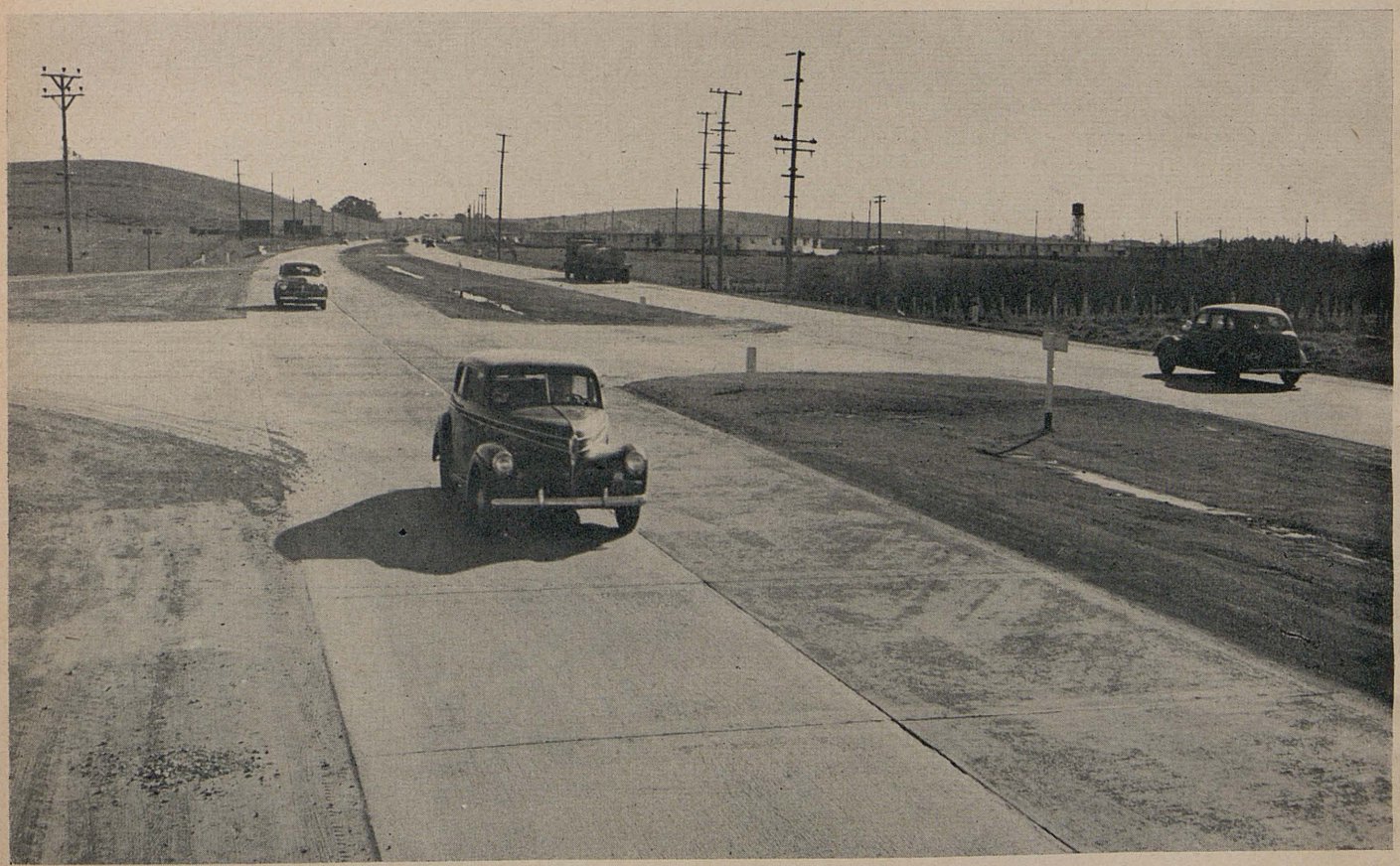
It was in June, 1924, that the rock company, through its president, Al G. Streblow, applied to District Engineer John H. Skeggs of District IV for and was granted a permit to construct an overhead bucket cableway from the quarry east of the highway to rail and water shipment facilities on the Napa River. The conveyor has for many years been inadequate to handle a constantly expanding rock movement, particularly the large volume of riprap presently required by the Navy in its many facilities in the San Francisco Bay area. Many heavily loaded trucks had to supplement this movement and in doing so entered the highway at a point about one-fourth mile from the point of exit to the south. The possibility of eliminating the conveyor and improving the traffic situation at this point of congestion on the important Vallejo-Napa State Highway has been discussed for several years.

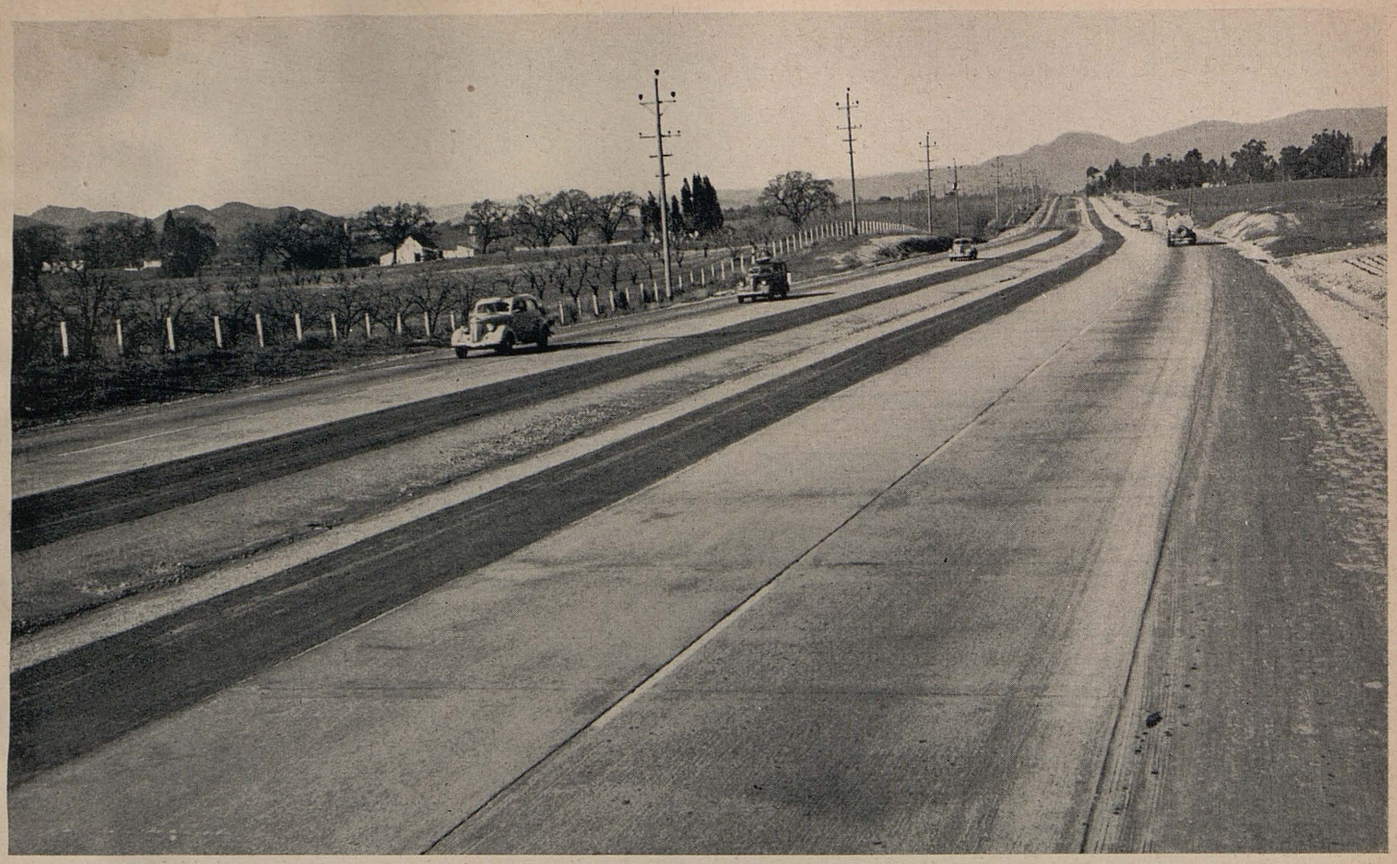
District X was requested to handle this project with other access projects of this area, as explained in an article in the September-October 1944 issue of CALIFORNIA HIGHWAYS AND PUBLIC WORKS. An agreement was executed between the company and the State in which the State was to design and supervise construction and the company was to actually construct the underpass and grade a contiguous section of the highway approximately one-half mile in length. On completion, the underpass was to be deeded to the State.

SUBWAY DEDICATED

Dedication ceremonies to commemorate the fulfillment of obligations by both parties were held on Saturday, January 27th, in connection with the launching by the Basalt Rock Company of its eighty-fifth hull, the thirty-fifth self-propelled ship constructed for the war effort. In attendance were

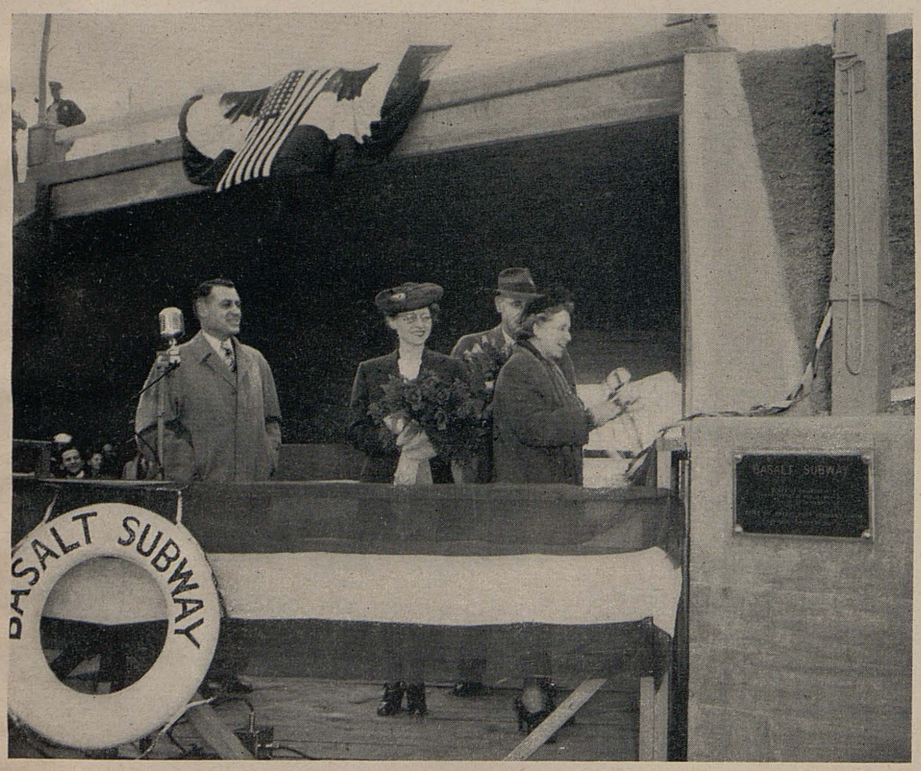
Looking south on new Vallejo-Napa highway at point where Basalt Company subway crosses beneath highway





This view of the Vallejo-Napa highway is looking north from Basalt Company Plant

Mrs. George T. McCoy, wife of State Highway Engineer, christens Basalt subway



Director of Public Works C. H. Purcell, State Highway Engineer George T. McCoy and members of his staff, District Engineer Skeggs, and several high ranking naval officers. Mrs. George T. McCoy, wife of the State Highway Engineer, christened the new subway with the traditional bottle of champagne. Mr. Ed. Brovelli, a charter member of the Rock Company's organization, acted as master of ceremonies.

The Mare Island Navy Yard, with its large number of employees and its extensive system of bus transportation throughout the several counties adjacent to the Vallejo area, has been the predominant factor requiring the highway improvement, and the Basalt shipyards, two miles south of Napa on State Route 8, which employs about 4,000 men and women working in three shifts extending around the clock, contributed to the traffic congestion on the north end of this important highway. Numerous other Army and Navy installations in the area have also complicated the traffic problem. The railroads have no passenger service between Vallejo and Napa.

Highway Commission and City of San Diego Open New Access Highway Project

ON February 15, 1945, the California Highway Commission met in San Diego in a joint session and conference with the Arizona Highway Commission, to consider various highway problems of common interest to both States.

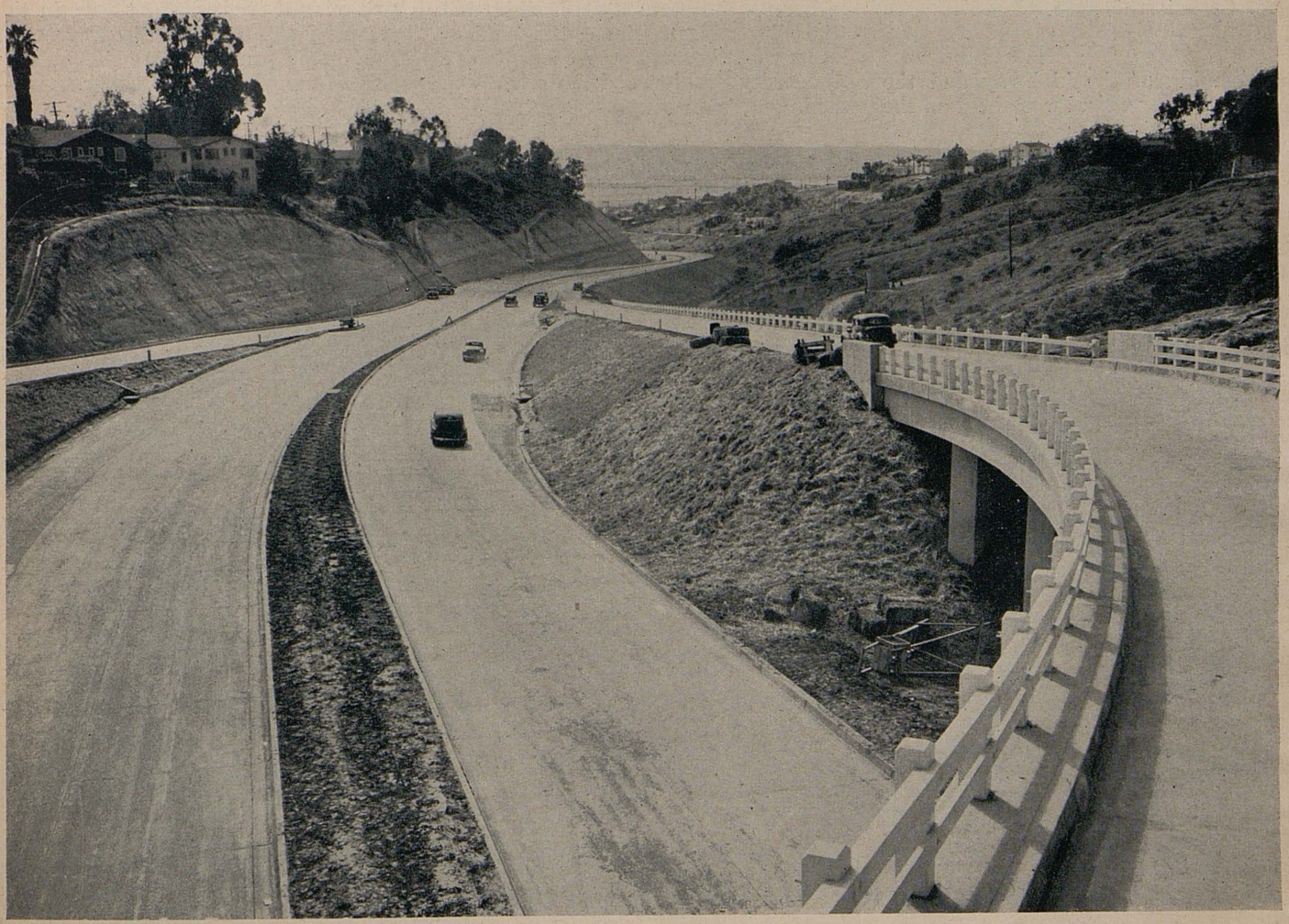
At that time an important access highway which had been certified by the Commandant of the Eleventh Naval District as being essential to the war effort, was practically completed and ready to open to traffic. This highway was constructed to furnish better access to military, naval and defense activities along the harbor frontage from the residential sections in Mission Hills and East San Diego. It connects with Washington Street, extending to the east in Mission Hills, thence to a connection with US Highway 101, designated as Pacific Highway, at Harasthy Street.

The project was certified by the Commandant of the Eleventh Naval District on September 3, 1943, following which surveys and plans were made by District XI of the State Division of Highways, and the project was advertised for bids on March 21, 1944, with a time limit extending to March 20, 1945. The contractor on the project was Ralph O. Dixson of Alhambra, and the Resident Engineer supervising the construction work was Frank Jorgensen.

The project provided for the grading of a 68-foot roadbed, on which was constructed a four-lane, divided highway with channelized and traffic actuated signalized intersections, and with most of the location on less than 5 per cent gradient.

Because of the narrow width of the streets with which the project connects at its easterly end, it was necessary to furnish adequate connections to both Washington Street and Douglass Street. The on-ramp from Douglass Street includes a highway grade separation, crossing over Washington Street by means of a reinforced

Douglass Street overcrossing of the Washington Street connection of new access road constructed for the Navy in San Diego



concrete structure 22 feet wide and 270 feet in length, on curved alignment.

The project involved reconstruction of a considerable portion of a major sewer system through the canyon, together with a rather elaborate storm drain system.

COST OF PROJECT

Ninety-nine parcels of rights of way were acquired at a cost of approximately $175,000, and the total cost of the project, including rights of way and all other expenses, amounted to some $561,600.

The City of San Diego contributed $196,000 toward the total cost of the project, and the balance of the funds was provided by the Federal Government under the Access Defense Highway Act of 1941.

The completion of this project provides a highway connection to the harbor front on easy grades which can be negotiated by buses and heavy truck traffic, and will greatly reduce travel mileage to and from defense activities in this area.

DEDICATION EXERCISES

Opening of the highway and the dedication exercises were held on the overpass on the afternoon of February 15th and were participated in by city officials, members of the Highway Commission, the San Diego Chamber of Commerce, and representatives from the Eleventh Naval District. Music was supplied by the Marine Corps Band.

The ribbon was cut by Mayor Harley E. Knox, who was assisted by Director of Public Works C. H. Purcell and State Highway Commissioner C. Arnholt Smith, after which the project was opened to traffic, and guests were taken by bus over the "Freeway" and on a tour of the naval establishments in the San Diego area.

COMMISSIONER SMITH'S REMARKS

Speaking as Highway Commissioner from San Diego, Mr. Smith said:

"It is gratifying to me, as a member of the State Highway Commission, to witness the dedication of this new improvement in my home town. This should serve as an example of teamwork between the Federal Government, the State of California, and the City of San Diego; the kind of teamwork that will be needed to solve the many problems of the expansion of industry on the west coast.

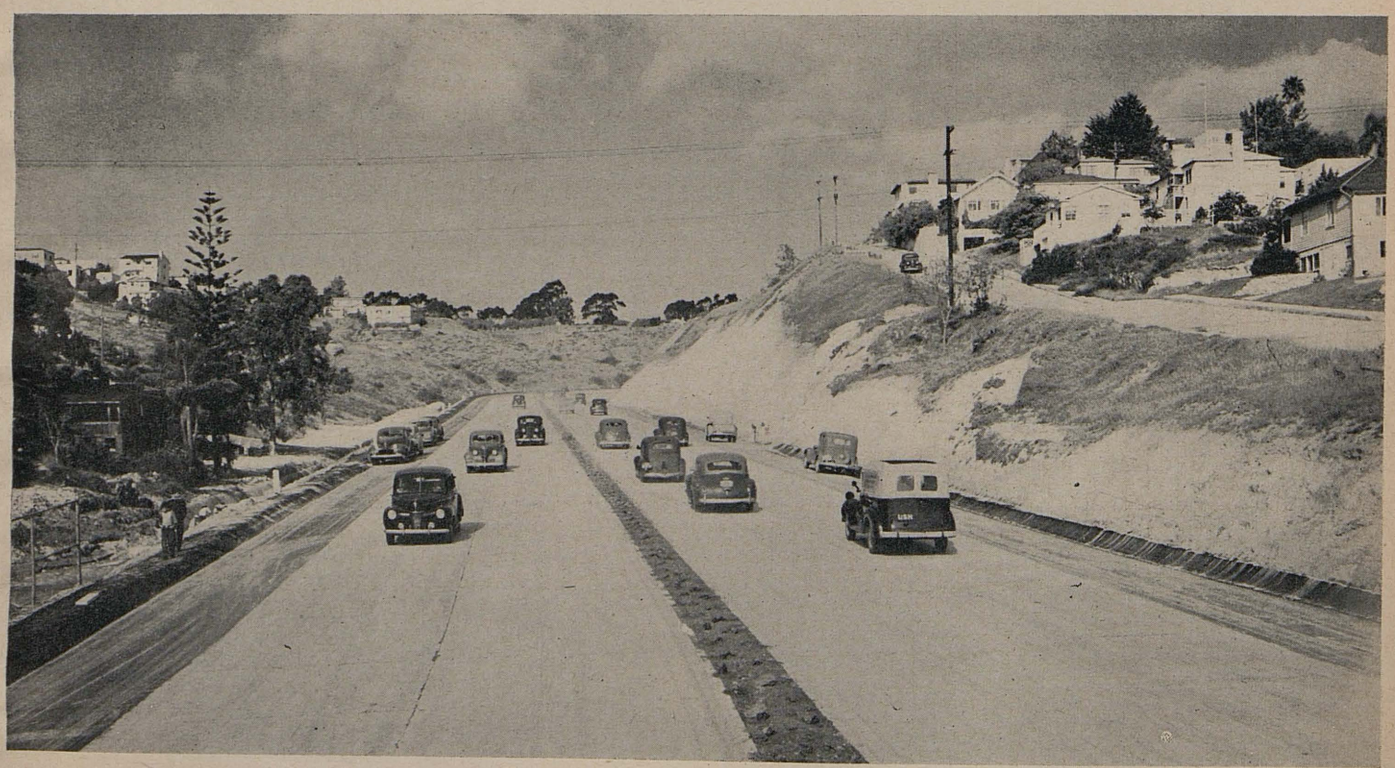
"War is rapidly changing the face of our community, and from the highway point of view it is a change for the better. We need only to look about us to realize the improvements that have been made in our network of roads. These are improvements that will not be lost after the war activity subsides but will remain to serve the increasing load of commerce and traffic.

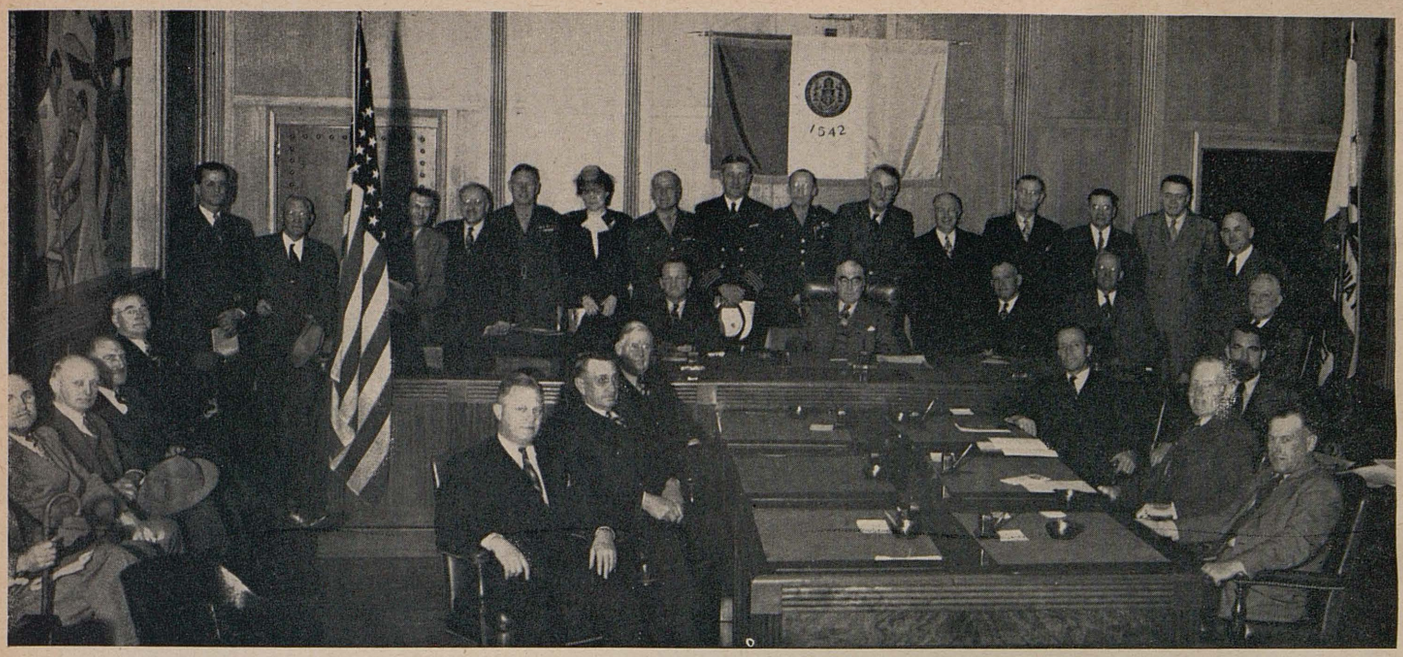
"These projects are a part of the greater San Diego of tomorrow, a city which will retain a good part of its industrial expansion by more of the kind of planning that went into the construction of this freeway.

"Despite the complexities of this undertaking, it has been rapidly carried through to completion by cooperative spirit to ease the strain placed on our inadequate roads leading from the aviation and naval expansion along the water front of the city.

"For this performance, I should like to congratulate Mr. Ralph O. Dixson, every official of the city, the State and the Federal Government who played an important part in the completion of this major improvement. Particular praise is due to our late City Manager Walter Cooper, to District Engineer E. E. Wallace, to the

This is another view of Douglass Street extension from near India Street, indicating method of utilizing an unimproved canyon for major highway location





California and Arizona State Highway Commissions in joint session in San Diego. From left to right, seated: District Highway Engineer E. E. Wallace; A. P. Dean, U. S. Forestry; Fred Rhodes, San Diego City Manager. Standing: Dean Howell, Assemblyman Charles Stream, Robert Apitz, San Diego Chamber of Commerce, Mayor Harley Knox, Col. Norman E. True, U. S. M. C., Assemblywoman Kathryn T. Niehouse, Col. P. H. Ottosen, U. S. A., Capt. Alden K. Fogg, U. S. N., Col. Joseph E. Campbell, U. S. A., California State Highway Engineer George T. McCoy, Arizona State Highway Engineer Bernard Touhey; Assistant State Highway Engineer of California Fred J. Grumm, Richard H. Wilson, Office Engineer, Division of Highways; Ridgeway M. Gillis, Construction Engineer, Division of Highways; Frank C. Balfour, Chief Right of Way Agent. Seated at rostrum, left to right: H. O. Pace, Chairman, Arizona Highway Commission; Charles H. Purcell, Director California Department of Public Works and Chairman State Highway Commission; Arizona Highway Commissioner J. M. Smith; State Senator Ed J. Fletcher; C. C. Carleton, Chief Attorney, Division of Highways. Foreground, left to right: California Highway Commissioners Harrison R. Baker, Homer P. Brown, James Guthrie; Arizona Highway Commissioner D. Farr, California Highway Commissioners C. Arnholt Smith and Chester H. Warlow, and Arizona Highway Commissioner M. Foreman

present City Manager, Fred Rhodes, to George T. McCoy, State Highway Engineer of California, and many other Government, State and city officials for their untiring devotion to duty in the planning and the completion of this work.

"This great freeway stands as a monument to their efforts, performed quietly and often under great handicaps. Public service such as this is making San Diego an outstanding city and California one of the leading States in the Nation.

"I am confident that no one will question the part that Walter Cooper played in bringing this project into reality, and in recognition of the spirit of cooperation which he symbolized, I hope that further consideration will be given to the designation of this magnificent roadway as the 'Walter Cooper Freeway' in honor and in memory of one of our most beloved and outstanding citizens."

"Just think of it; steak only 20 cents a pound, eggs 15 cents a dozen, chicken 10 cents a pound and milk five cents a quart."

"Where?"

"Oh, nowhere, but just think of it."

National System of Interstate Routes Planned

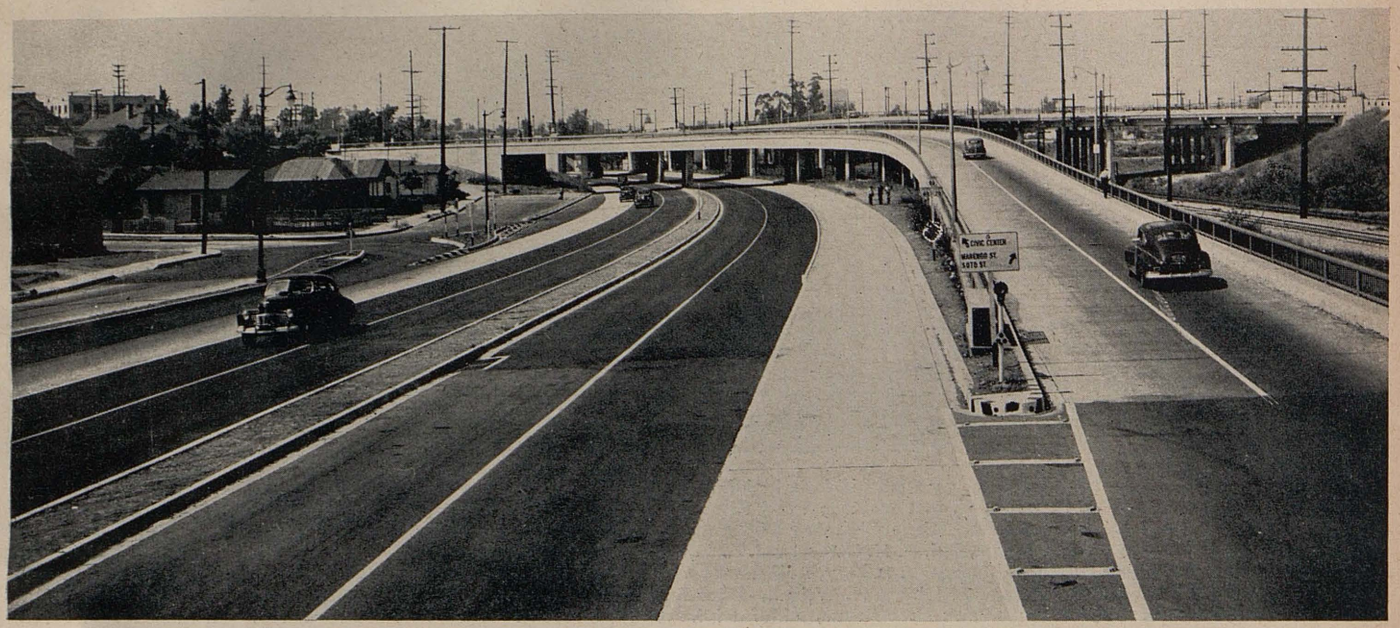
EACH State highway department has been requested to proceed at once with a designation of routes for inclusion in the National System of Interstate Highways, it was announced by Thomas H. MacDonald, Commissioner of Public Roads. The designation is to be made in accordance with the Federal-Aid Highway Act of 1944 which requires that: "There shall be designated within the Continental United States a National System of Interstate Highways not exceeding forty thousand miles in total extent so located as to connect by routes as direct as practicable, the principal metropolitan areas, cities, and industrial centers, to serve the National defense and to connect at suitable border points with routes of continental importance in the Dominion of Canada and the Republic of Mexico."

The act requires that: "The routes of the National System of Interstate Highways shall be selected by joint action of the State Highway Departments of each State and the adjoining States, as provided by the Federal Highway Act of November 9, 1921, for the selection of the Federal-aid system."

Under this provision, the Administrator of the Federal Works Agency is authorized to approve routes proposed by the State Highway Departments for inclusion in the National System of Interstate Highways.

In making the announcement Commissioner MacDonald said, "Designation of the system is an important step toward launching a large postwar highway program. Construction of such a system is an outstanding feature of the long-range highway program. The recent Federal legislation authorizes $225,000,000 for the Federal-aid Highway System and $125,000,000 for urban highways in each of the first three postwar fiscal years. These funds will be available for improvement of the National Interstate System and other highways."

Free Flow of Traffic on or off Freeways Presents Many Problems

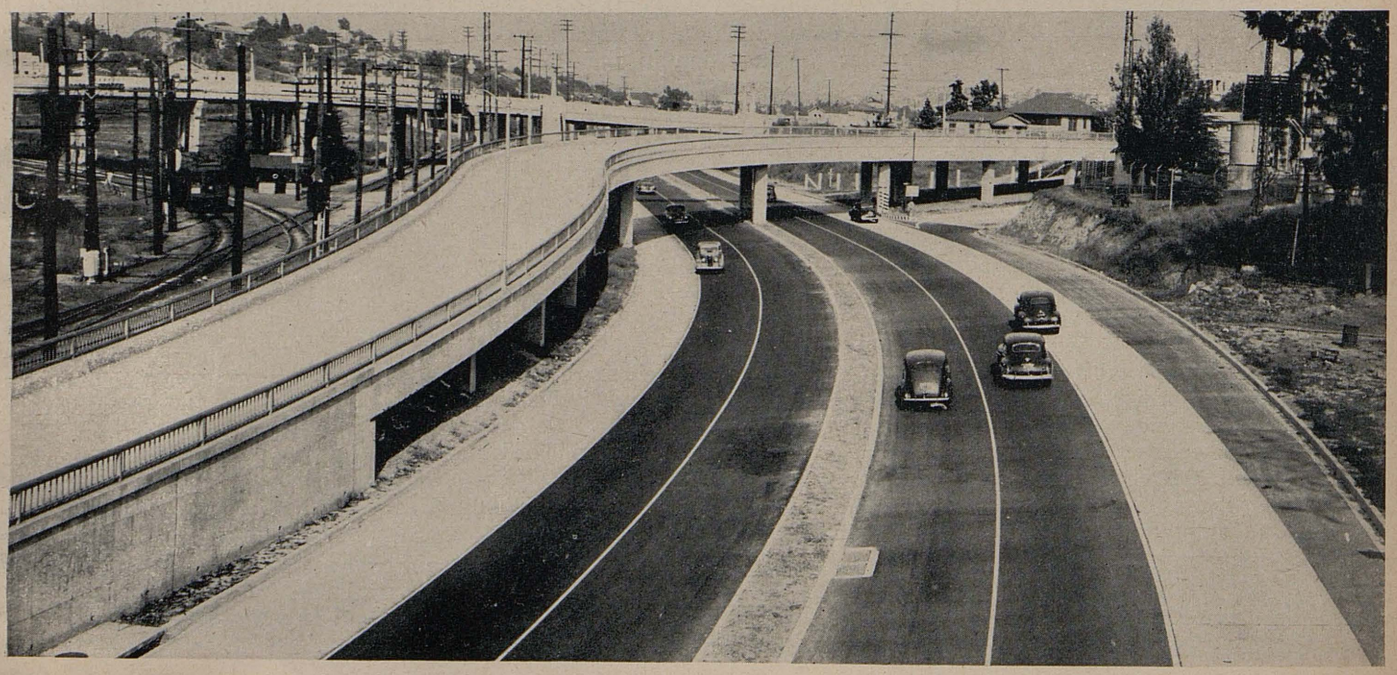


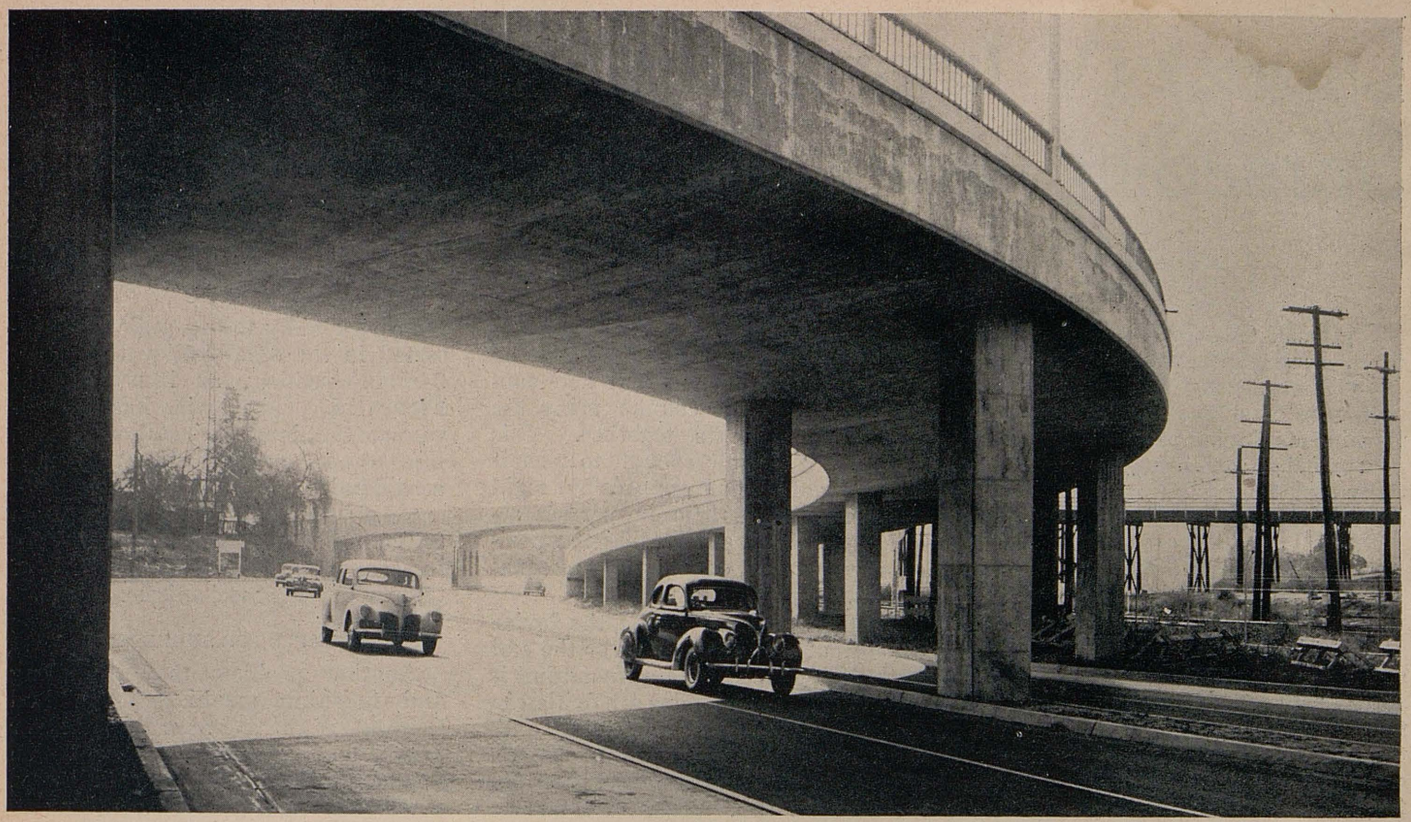
This photo shows Pomeroy Street Off-Ramp. The view is looking west on Ramona Freeway. The off-ramp to Soto Street starts on right and crosses freeway. Soto Street overhead crossing in background

IN metropolitan areas, provision for a free flow of traffic on or off a freeway presents many difficult problems to the engineer. Connections with the freeway must meet the alignment of the existing streets in a manner that will permit traffic to move with reasonable speed and safety and will keep property damage down to a reasonable figure.

Since those who laid out the existing streets had no premonition of a future freeway in the vicinity, it is very likely that these streets will approach the freeway at inconvenient angles and

Pomeroy On-Ramp. View is looking east at on-ramp from Pomeroy Street with Marengo Street overcrossing in the background





This view is looking east under Pomeroy Street On-Ramp at Cornwell Street overcrossing and shows type of structure which was required

intersections will occur at undesirable points. To add to the difficulties, a railroad or car line may have been placed close by. Access to the adjacent property must be provided.

All these requirements seriously cramp the engineer's style but making the best of such unfavorable conditions is his job.

Getting traffic off or on a freeway without interference to traffic nearly always requires structures of some form or other. Such structures should be designed so as to have a minimum of features which distract the attention of drivers. Heavy walls or piers close by the roadway, dark corners or pockets, and a heterogeneous assembly of trusses and girders produce a feeling of constriction or uneasiness. Furthermore, in order to conform with the general effort to beautify the roadsides, the aesthetics of the structures must be given serious consideration.

The pictures which accompany this article illustrate a case where the structures used in providing suitable connections with a freeway are laid out and designed with a minimum of features that tend to restrict the free flow of traffic. Also, they are pleasing in appearance because of their simplicity and flowing lines.

The location is along the Ramona Freeway in the vicinity of Cornwell, Marengo and Soto Streets in Los Angeles. These three streets are carried over the freeway on concrete structures and also over the adjacent tracks of the Pacific Electric Railway.

It was found necessary to provide connections between the freeway and Soto Street; and also between it and Pomeroy Street which is located between the Cornwell and Marengo Street crossings. The curvature of the freeway, the proximity of the tracks, and the angles between the side streets and the freeway presented a difficult situation that is obvious from the pictures.

The type of structure used on the connecting ramps has columns as small as structural safety and appearance will permit and has a smooth slab surface over the roadway. These features very materially minimize the feeling of restriction that normally occurs when approaching overhead structures. The plain lines of the columns and flowing lines of the superstructure offer a minimum of features to distract the driver's attention.

Col. E. J. Murray Awarded Bronze Star for Heroism

One of more than 300 engineers of the Division of Highways now serving in the armed forces, Col. Edward J. Murray of Sacramento, Assistant Bridge Engineer on military leave, has been awarded the bronze star for meritorious conduct in connection with military operations against the Japanese on Luzon from January 9th to February 9th.

Colonel Murray commanded a regimental combat unit in the assault landing at Lingayen Beach and in subsequent operations preparatory to the attack on the enemy's main battle positions in the foothills of the Zambales Mountains.

Colonel Murray, who until 1941 was Commander of the 184th (Sacramento) Regiment of the National Guard, went overseas in 1942 and has seen active service in the Hawaiian Islands, Guadalcanal and New Britain as well as the Philippines. He is now Civil Affairs Officer in the Headquarters of the 40th Division on Panay.

District IV Improves Mechanical Spreading and Finishing Machine

By EARL WITHYCOMBE, Assistant Construction Engineer

CONSIDERABLE difficulty has been experienced at various times throughout the State with that type of spreading and finishing machine employing the vibratory tamper principle of spreading and partially compacting the mixture without the use of side forms.

VIBRATION CONTROL

This type of machine has come into more or less general use in the west to spread plant mix, primarily, but has also been used extensively of late to spread asphalt concrete as well. Such machines have the advantage in the time of war of employing a minimum of manpower, which is an all essential feature.

The quality of work performed by these machines is not up to the standard of that obtained by former methods. However, the uniformity is good. As with all mechanical equipment, the results obtained depend to a great extent upon the skill of the operator and in this respect these machines are no different than that of any other mechanical spreader.

The vibratory tamper unit is in two sections, each being driven by a separate V-belt drive. Although both belts are driven from a common shaft and adjustments are provided for regulating the belt tension, the adjustments are not sufficient to insure that both sections of the tamper are always driven at the same speed, and periodic vibrations are set up in the machine, causing undulations in the resulting surface. These undulations are somewhat similar, although to a much lesser degree, to the effect made on a freshly spread bituminous mixture by driving a crawler tractor over it.

Last summer a fairly new spreader was in service on State Route 1 in Marin County, laying a 3-inch asphalt concrete pavement in two 1½-inch lifts. Mechanical adjustments failed to correct the vibrations, causing pavement roughness. Resident Engineer H. A. Simard refused to permit the machine to be used on surface work until this condition was corrected. Superintendent Bill Russell for Contractor A. G. Raisch, devised and had constructed a flexible coupler tying the two tamper shafts together. This coupling is flexible enough to permit crowning of the tamper bars but rigid enough to hold them in perfect sequence, thereby eliminating the periodic vibration caused by unequal speeds.

As illustrated in **Figure I,** the device consists of placing a cap over the end of each tamper shaft and fastening it with keys. Three holes are drilled in each cap at 120 degrees spacing, and, when assembled, the holes in one cap are spaced at 60 degrees from the holes in the other cap. Holes of the same diameter were also drilled in a piece of ¾-inch "Thermoid" at 60 degrees spacing. Sets of three pins each were tapped into each cap and the "Thermoid" disc fitted into place over the pins. This device functions entirely satisfactorily but is somewhat difficult to install.

A later development was installed on machines operating on contracts on State Route 75 in Contra Costa County. These devices were almost identical in that the six cast holes, 1 15/16-inch in diameter, in the pulley wheels, were connected with three bolts fastened rigidly to one pulley and inserted in the other pulley through a flexible bushing, as illustrated in **Figure II.** This device has the advantage that it can be installed readily, but the wear on the flexible bushing is considerable.

Consideration might also be given to the use of a splined universal joint in connecting the two sections of tamper driving mechanisms.

SHAPER FOR SHOULDER

Another problem that spreading and finishing machines have had to meet is the forming of shoulder tapers on resurfacing projects. In resurfacing on the open highway, where curb and gutter do not exist, it is necessary to feather out onto the existing shoulder with a wedge of mixture usually 2 feet in width, for resurfacing not exceeding 3 inches in thickness and with a depth at the outer edge of 0.08 foot.

In resurfacing with a greater thickness, the lower courses are extended over the shoulder for a correspondingly greater width and with the same slope as the surfacing. These tapers were first formed by hand, then by drags of various descriptions and finally by shapers attached rigidly to the spreading and finishing machine.

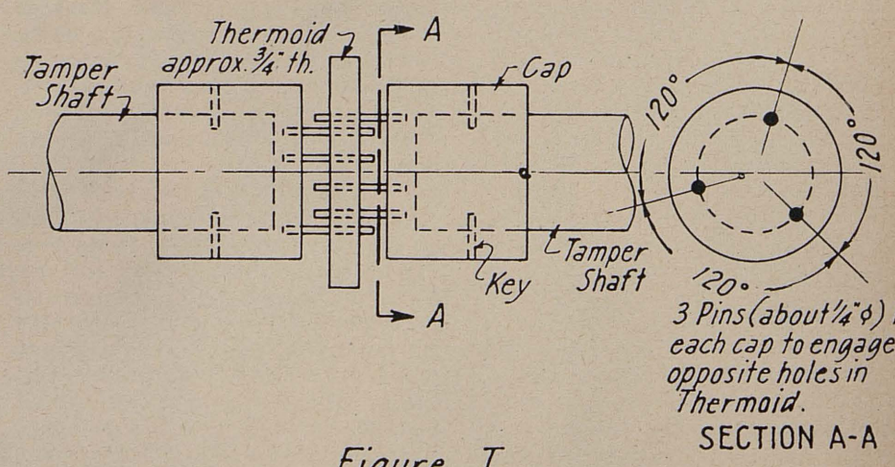


Figure I

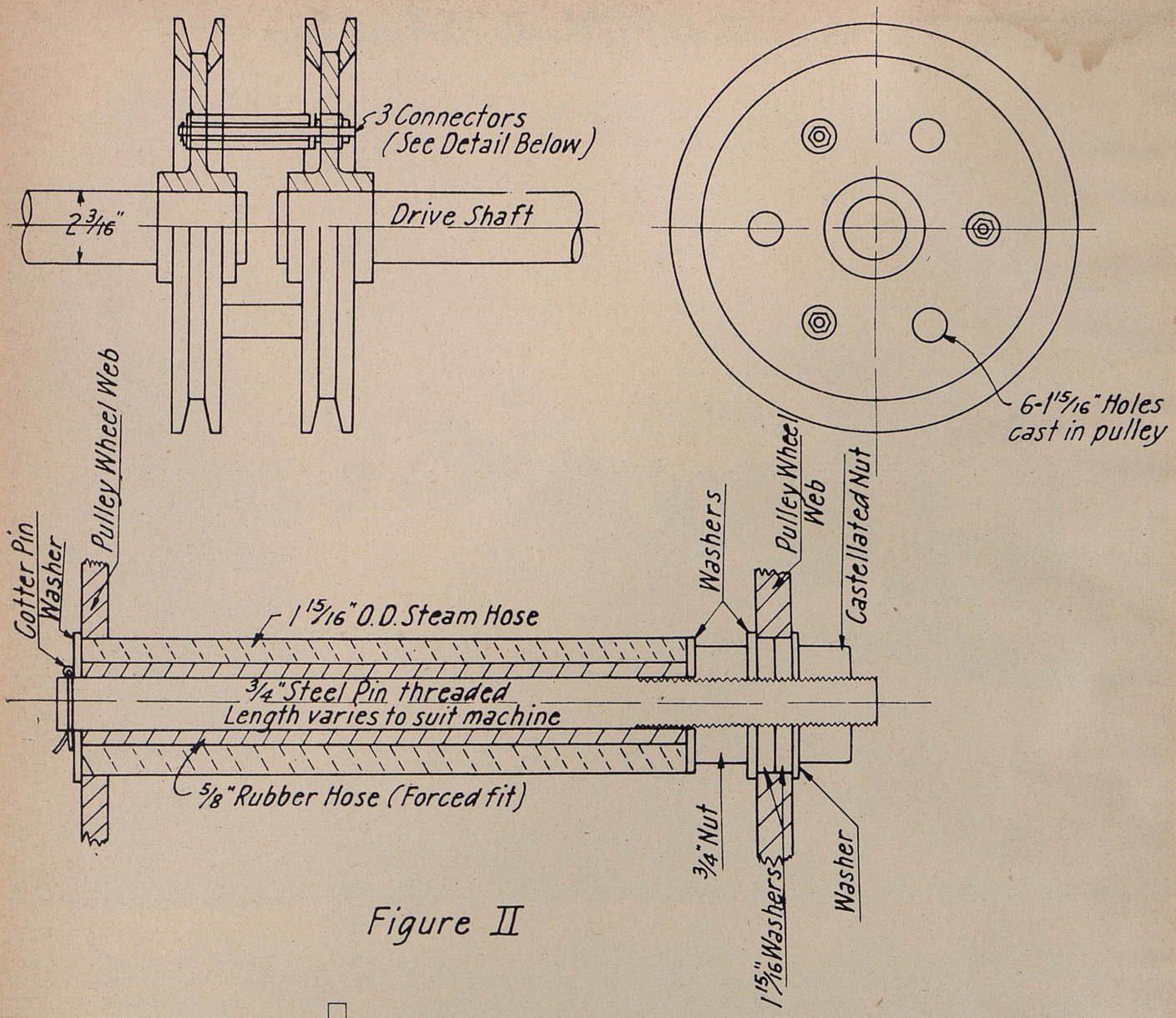


Figure II

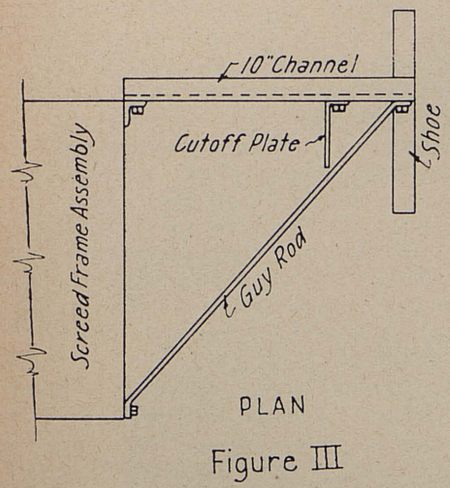


Figure III

The existing shoulder is usually irregular in cross fall, and, rather than have widely varying depths at the outer edge of the taper, a shaper was constructed to follow the undulations of the existing shoulder. This consists of a 3-foot length of 10-inch channel section fastened to the screed with one bolt through the lower corner, which acts as a hinge. The outer end riding on a shoe 2 feet in length is connected with the screed frame assembly by means of a rod that permits the unrestricted rise and fall of the shaper with the changes in cross fall of the existing shoulder. The cutoff shoe on the machine proper is entirely removed, and a cutoff plate is bolted to the 10-inch channel section at the desired width to be spread. This device is illustrated in **Figure III.**

DESIGN CHANGES NECESSARY

It is believed that these devices are the best so far developed and are recommended for general use throughout the State.

The foregoing changes are suggested as temporary corrective measures for machines already in service. It is our belief that the manufacturers of this equipment are the ones to make the necessary changes in the design of the machines to overcome the objections raised and the necessary steps are being taken in this regard.

The work in District IV was conducted under the supervision of District Engineer Jno. H. Skeggs and District Construction Engineer R. P. Duffy.

Right of Way Problems on Freeways

(Continued from page 4)

streets were checked. The investigation included the study of over 125 typical cul-de-sac street situations in the metropolitan area of Los Angeles. We are selecting more than 200 cul-de-sac street locations containing all types of building improvements such as office buildings, industrial plants, single family residences, hotels, apartments and retail stores for further study—it having been our conclusion that this group of locations represented typical real estate conditions wherever found. The length, width and type of improvement of the street was also taken into consideration.

It is our opinion at this time that the damage, if any, to individual properties depends to a great extent on the depth of the dead-end street. In other words, the distance of the individual properties in the cul-de-sac from the next intersecting cross-street.

We took into consideration the high nervous tension existing in the modern cities generally, which is primarily created by heavy traffic volume; the fact that a reasonable proportion of the population is constantly seeking out greater quiet, and less traffic confusion in the vicinity of its place of abode; and that the sacrifice of certain conveniences and advantages of a through street as compared to a cul-de-sac are, in the minds of these people, is more than offset by the substantial advantages of the quiet, seclusion and safety features of residences on cul-de-sac streets.

DEDUCTIONS

We naturally deduce from these findings that there is a ready market for residential properties on the cul-de-sac streets.

A hotel or apartment house abutting upon a cul-de-sac loses the advertising value it would have located on a through street. It also must be conceded that any type of commercial enterprise is probably more difficult for the average person to find than if it were located on a well-known through street.

It therefore must be determined whether this loss of advertising value and certain difficulty of location is offset by the increased safety to pedestrian patronage because of less and slower traffic, the definite safety advantages to prospective tenants having children, and the increased quiet and privacy.

There is a definite damage to retail mercantile establishments because of their being located on a newly created cul-de-sac street. The kind of damage and the monetary value thereof requires careful analysis and study of each individual case.

It has been found that certain types of office buildings, for example, those housing the headquarters office or the district office of organizations operating on a State-wide or Nation-wide basis, find certain distinct advantages on the cul-de-sac street as compared to a through street, particularly a heavily traveled arterial. Advantages of the location are the elimination of annoyance of through traffic to employees because of noise, fumes and dust. The natural result of the elimination of these factors tends to minimize the nervous tension of employees, with resulting increase in production.

TYPICAL EXAMPLES

Some typical examples of this situation are the district office of the Union Oil Company and the Home Office of the Metropolitan Life Insurance Company, both in San Francisco. On the other hand, there are definite disadvantages to the location of an office building containing upper floor retail shops, offices of professional men, etc., all of which create a heavy flow of traffic to and from the building, unless the entrance of such a building would be located not more than 50 to 100 feet into the cul-de-sac. In the study of industrial properties, we found numerous manufacturers both large and small, who purposely located on cul-de-sac streets because of the advantages of getting away from the annoyance and delays caused by through traffic passing in front of their plant and also because of the increased safety factor to the employees.

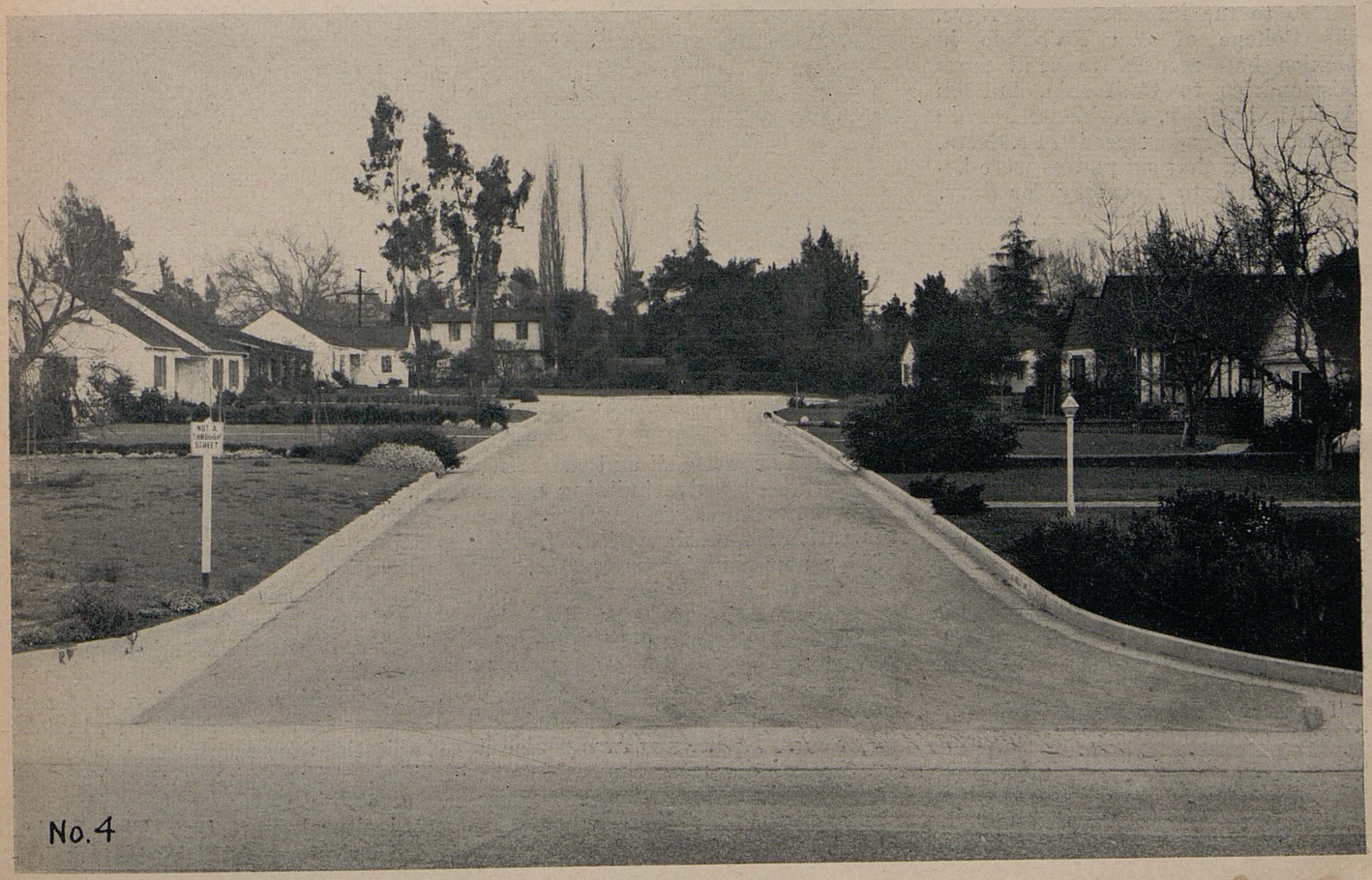
On the other hand, we found an equal number of operators of manufacturing plants who would not under any circumstances locate their factories upon cul-de-sac streets.

Our conclusion is that there is sufficient demand for industrial properties on cul-de-sac streets to create a reasonable demand which should offset to a great extent the damage, if any.

We are entirely satisfied that the many advantages to the owner and occupant of single family and multiple dwelling improvement located on cul-de-sac streets more than make up for the disadvantages and inconveniences, and that when the cul-de-sac is not over a maximum of five lots deep, even the property located in the sac itself has a fair market value comparable to a similar residential development on a through street. This conclusion is based upon the assumption that the highest and best use of both properties is for residential purposes.

Photograph No. 3 showing Serrano Place south from Lemon Grove Avenue in Los Angeles, and **Photograph No. 4**, Los Arboles Lane in San Marino, are typical examples of the type of development that is found upon cul-de-sac streets, both examples represent improvements comparable in every way to the improvements located upon adjoining through streets.

In our study of the numerous examples previously referred to in this article, we have not taken into consideration the several adverse decisions of the Supreme Court of the State of California—the cases of *People* vs. *Ricciardi, Bacich* vs. *State Board of Control, Beals* vs. *Department of Water and Power,* and others—in reaching our conclusions, for the reason that our studies have been made for the purpose of determining the actual effect upon the various types of properties, and whether the properties were actually enhanced or depreciated in value, regardless of the legal aspect of each situation.



No. 4

CALIFORNIA MISSIONS

(Continued from page 13)

sidio was completed. Greatly saddened, Fr. Serra returned to Monterey. He had blessed a site for a military post and not for one of his beloved missions. In postponing the start of Mission Santa Barbara Governor Neve acted in direct opposition to the wishes of the Viceroy of Mexico.

The presidio builders found the Indians, known as Yanonalits after their chief of that name, extremely friendly. The natives willingly helped to build the post and the numerous barracks, dwellings and other buildings required.

Fr. Serra made his last visit to Santa Barbara in November, 1783, on a farewell trip to all the missions to administer the holy Sacrament of Confirmation. He performed this service in the chapel of the presidio. Governor Neve was recalled to Mexico and only a month before his death at Monterey, Fr. Serra received from Governor Pedro Fages the glad tidings that Mission Santa Barbara was at last to be established.

Due to the interference of Neve, the College of San Fernando in Mexico had refused to send more missionaries to California, but on April 1, 1786, Fr. Presidente Fermin Lasuen, who had succeeded Fr. Serra, was notified that six padres were being assigned to Monterey for duty. In October of that year, Fr. Lasuen arrived at Santa Barbara from Monterey with Fr. Cristobal Oramas and Fr. Antonio Paterna of Mission San Luis Obispo.

Fountain in garden of Mission Santa Barbara

BUILDING BEGAN

While Fr. Lasuen raised and blessed a cross on the site selected on December 4, 1786, formal founding of this, the tenth, mission did not take place until December 16th, following the arrival of Governor Fages. Fr. Lasuen then returned to Monterey leaving Fathers Paterna and Oramas. Early in the next year the work of building the mission began, the two priests meanwhile living at the presidio, a mile distant.

The story of Mission Santa Barbara, "Queen of the Missions," is so inextricably woven into the history of the Santa Barbara presidio and early California that it is difficult to relate it without going into voluminous detail involving much historical data. Hence what follows is but the essence of the tale.

Records faithfully kept by the resident padres at Santa Barbara during the "Mission Period" and thereafter tell of the extensive building operations that characterized activities at the station from its inception. During 1789 a new church was erected. In 1793 a more imposing edifice was started, the third church to be built, and was dedicated March 19th, the following year. With extensions, it served until 1812, when it was partially demolished by the earthquake of that year. It, in turn, was replaced by the existing structure of stone. During this construction era many other mission buildings were completed. In 1797 the padres received the Fourteen Stations of the Cross which adorn the nave of the present mission church.

REBUILT AFTER EARTHQUAKE

The imposing church built after the earthquake was begun in 1815 and finished in 1820. In this connection, Father Engelhardt asserts that each successive church was constructed around the one it replaced and that the three places of worship dedicated in 1789, 1794 and 1820 all occupied the same site.

The Indian community at Santa Barbara increased steadily and adobe habitations for each family were provided. The neophytes were given food and clothing and taught trades and agricultural pursuits. The Indian rancherias controlled by the mission-

aries prospered. In 1806 a reservoir of masonry was built and today is evidence of the skill and patience of the padres. The fountain that may be seen at Santa Barbara was constructed in 1808.

Fr. Vicente de Sarria, Commissary Prefect of the Missions, recorded on November 5, 1817, that the Indians of the channel islands were coming to the mission to be baptized and many of them were remaining there.

UNREST AMONG INDIANS

An uprising of Indians, who were growing more resentful under military oppression, occurred at Mission Santa Ines on the afternoon of February 21, 1824, and spread to Santa Barbara. The trouble was precipitated by the flogging at Santa Ines of a neophyte of Purisima Mission. In spite of efforts by Fr. Antonio Ripoll, resident missionary, to calm the Santa Barbara Indians several clashes between the neophytes and the presidio soldiers took place, three of the latter were wounded and two natives were killed. The Indians fled to the mountains and Captain Jose de la Guerra, presidio commandante, dispatched a force after them. A skirmish ensued in which four Indians were killed. Later, Fr. Ripoll and Fr. Sarria accompanied an expedition into the mountains and persuaded the frightened fugitives to return to the mission, but not before four defenseless natives had been slain by soldiers on the mission grounds and the adobe homes of the neophytes looted.

In December, 1827, the Mexican governor ordered the expulsion from California of all Spaniards under 60 years of age, except those who had married Mexican women. Father Ripoll and Fr. Altimira of San Buenaventura were subject to the ban and without waiting to be ejected fled from the country on January 23, 1828. Fr. Ripoll was succeeded by Fr. Juan Moreno.

MISSIONS CONFISCATED

Mission Santa Barbara witnessed a skirmish between government forces and a band of revolters led by Joaquin Solis, who started an unsuccessful insurrection at Monterey in November, 1829. This incident was important to the missionaries for out of it grew the unfair banishment of Fr. Luis Martinez of Mission San Luis Obispo, who was accused by Governor Echeandia of aiding the rebels.

On July 15, 1833, Governor Jose Figueroa issued his decree emancipating the mission Indians, a year later ordered secularization of the missions and on November 4, 1834, completed his confiscation of the Franciscan stations. At this time, Santa Barbara mission owned 3,400 head of cattle, 2,624 sheep, 25 goats, 55 pigs, 340 horses and 70 mules.

Mission Santa Barbara was turned over to Jose Garcia, civil administrator, on July 25, 1835. An inventory showed the mission and property to be valued at $113,960, less debts amounting to $1,000. The padres and their Indian wards now were dependent upon the politicos for food, housing and clothing.

Governor Figueroa died September 29, 1835, expressing the wish that he be buried in the church of Santa Barbara Mission. The funeral was held at Monterey and Figueroa's body taken to Santa Barbara in the brigantine Avon. As no record of burial was entered in the mission Death Register it was not until August 24, 1911, when the church vaults were opened and the remains of Figueroa identified that the mystery surrounding his final resting place was cleared up.

Mariano Chico was appointed to succeed Figueroa. He was overbearing and unfriendly. Arriving at Santa Barbara on June 14, 1836, he claimed that he had been received with scant courtesy by the fathers of Mission Santa Ines and because Fr. Duran asserted no disrespect had been intended, Chico returned to Monterey and ordered Fr. Duran expelled from California. On the day the padre was to take ship from Santa Barbara, the people of that pueblo arose en masse and prevented the priest's expulsion. Six days later, Chico was recalled to Mexico.

CALIFORNIA'S FIRST BISHOP

Father Duran's long, brave fight to protect his "children," as he called the mission Indians, has been dealt with at length by all mission historians. He welcomed the arrival on January 11, 1842, of the Very Rev. Francisco Garcia Diego y Moreno, who had been appointed by Pope Gregory XVI as the first Bishop of the newly created Diocese of California.

Following the successful revolt against Governor Micheltorena, who had restored the California missions to the church, Pio Pico took charge of the

(Continued on page 32)

Quarter Century Club of the Division of Highways Has 54 Members

There are now 54 members of the Quarter Century Club of the Division of Highways. Membership is composed of employees of the Division who have been in service for 25 years or more.

Officers of the club for 1945 are:

President, C. C. Carleton, Chief Attorney; First Vice President, George Hanson, Assistant Highway Engineer; Second Vice President, J. G. Standley, Principal Assistant Engineer; Secretary-Treasurer, C. H. Ryon, Chief Clerk Headquarters Shop; Historian, Thomas E. Stanton, Materials and Research Engineer.

During the year 1944, the following became members of the Club:

H. N. Houston, District VII. Mr. Houston is a Maintenance employee in District VII and first entered the service of the department on April 14, 1916. He became a member on April 18, 1944.

W. B. Cannon, Shop 7. Mr. Cannon is Superintendent of Equipment in District VII and first entered the service of the department on August 17, 1917. He became a member on May 10, 1944.

Fred R. Garrison, District III. Mr. Garrison is a Maintenance Superintendent in District III and first entered the service on August 19, 1919. He became a member on August 19, 1944.

J. H. Skeggs, District Engineer in District IV. Mr. Skeggs first entered the service on August 25, 1919. He became a member on October 31, 1944.

Howard F. Briggs, District VI. Mr. Briggs is an Associate Highway Engineer in District VI and first entered the service on May 9, 1919. He became a member on November 14, 1944.

The purpose of the organization has been purely social—a get together organization where members available can meet occasionally and reminisce concerning interesting events in State highway history.

President Carleton requests that any employees of the Division of Highways who are eligible send in application for membership.

In Memoriam

Robert Max Shobe, Jr.

ROBERT MAX SHOBE, JR., Assistant Highway Engineer in the Department of Public Works, Division of Highways, District VI, Fresno, succumbed to pneumonia following an operation. He passed away on January 6, 1945, in the St. Josephs Hospital in San Francisco.

Mr. Shobe was born in Umphreys, Missouri, June 21, 1917, and was reared in Visalia, California, where he attended grammar and high school and the Visalia Junior College.

Between 1937 and 1941, he was employed by Tulare County and later by the City of Visalia in engineering work. In December, 1941, he accepted a position in the District XI office as a delineator, subsequently qualifying as an Assistant Highway Engineer, in which capacity he transferred to District VI last February.

While working in District XI, Mr. Shobe enlisted in the Navy and was granted a leave of absence in October, 1942. After several months in the Navy he was given a medical discharge and returned to work in District XI.

He is survived by his wife and parents.

Former Highway Man Turns Inventor at a Belgium Bomber Base

A NINTH AIR FORCE FIGHTER BOMBER BASE, BELGIUM: Master Sergeant Claude L. Williams, 26 years old, Rio Vista, California, armament section chief in the "Thunder Bums" fighter squadron, has rigged up a bomb loading device which enables one man to load a 1,000-pound bomb on a P-47 Thunderbolt in one minute.

Sgt. Williams is a former employee of the State Highway Department of California.

Previously, because of uneven terrain on which the planes are dispersed, four or five men were needed to lift the bomb by hand from the bomb cradle to hook it to the fixed bomb shackles under the wings of the airplane. The new device enables an armorer to adjust the 500- or 1,000-pound bomb to the shackle without help.

With the "adjustable-pitch" bomb loading cradle the armorers in the "Thunder Bums" squadron were able to load 12 Thunderbolts with bombs under each wing, as well as reload all the .50 calibre machine guns, in 35 minutes, a procedure which previously took them at least an hour.

CALIFORNIA MISSIONS

(Continued from page 31)

government and Santa Barbara Mission was doomed.

On April 30, 1846, Bishop Diego died and two months later, June 10th, Pico sold Mission Santa Barbara to Richard S. Den for $7,500. Five weeks after the passing of Bishop Diego, good Fr. Duran went to his reward.

American occupation came in July and records of the mission tell of visits by Commodore R. F. Stockton, Colonel John C. Fremont and others who followed the Stars and Stripes. On May 31, 1850, the Very Rev. Joseph Sadoc Alemany, Provincial of the Dominicans, was named by the Pope to be first Bishop of Monterey with jurisdiction over all of California. It was Bishop Alemany who obtained consent from Rome for the founding of an ecclesiastical college at Santa Barbara and formally bestowed the mission upon the Franciscans for that purpose in April, 1853. And it was Bishop Alemany who waged the long fight in the United States courts to recover the California missions. President Lincoln formally returned Santa Barbara mission to the church on March 18, 1865.

In July, 1856, the church and convent erected by the Franciscans in the city of Santa Barbara was ceded to the College of the Propagation of the Faith of the Friars Minor and the Franciscan monks retired to the old mission, and by grace of the Pope their school there since has been known as the College of Our Lady of Sorrows. Unlike the other missions, Santa Barbara never was deserted by the Franciscans, the mission candles never have ceased burning since the day of its founding. The mission was damaged by an earthquake in 1925, but was restored. Its great wealth of old church treasures and relics and its sheer beauty must be seen to be appreciated.

CORRECTION

Instructions to motorists desiring to visit San Gabriel Mission from Los Angeles, which appeared in connection with the article on this mission in the last issue of California Highways and Public Works, should have read "* * * out North Broadway to Huntington Drive keeping on the right side of Huntington Drive to the community of Alhambra. Turn right at Main Street and continue to the east city limits of Alhambra, turning right at Mission Road, and proceed two blocks to the mission."

Mission motorists leaving Mission San Buenaventura at Ventura take the Coast Highway, El Camino Real (U. S. 101), through the charming Carpinteria Valley, the city of Carpinteria, Summerland and Montecito, famed the world over for its beautiful estates, and come into Santa Barbara. The mission is located at Garden, Los Olivos and Laguna streets and is 14 blocks from the business center. Busses leaving the downtown district every 20 minutes stop at the mission.

Motoring from the north the route is over the Coast Highway, U. S. 101, direct from San Francisco to Santa Barbara, or through the San Joaquin Valley to Bakersfield, thence west to Taft and Maricopa, then south over the new Ventura-Maricopa Highway to Ojai, west 17 miles to Carpinteria and north 12 miles to Santa Barbara.

Next—Mission Santa Ines and Mission La Purisima Concepcion.

In Memoriam

Fred C. Weigel

On January 8, 1945, Fred C. Weigel, Associate Highway Engineer in District V, succumbed to a brain tumor following a brief illness. He was 45 years of age.

"Fred" was born in Cleveland, Ohio, in 1899 receiving his high school education in Tucson, Arizona, and college education at the University of Arizona.

His early engineering activities carried him into the copper mines around Globe and Miami, Arizona. He later worked for the Southern Pacific Railroad of Mexico and left that position to engage in private work in Santa Barbara, California. He came to work for the Division of Highways in District V in November, 1927, first serving as a rodman on a survey party. Through successive years he advanced to Associate Highway Engineer in 1941 in which capacity he served until his death. In recent years he was Resident Engineer on many contracts in District V and during the most recent months served on design in the District Office.

His untimely death is deeply felt by his co-workers in District V and other associations made in the progress of his work. He is survived by his wife Leota, his mother Mrs. Gussie Weigel, and his sister Mrs. Margaret White of Bellflower, California.

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Department of Public Works

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