

## Technical Report Documentation Page

**1. REPORT No.**

**2. GOVERNMENT ACCESSION No.**

**3. RECIPIENT'S CATALOG No.**

**4. TITLE AND SUBTITLE**

Data on Roadway Structure and Roadway Condition

**5. REPORT DATE**

August 1953

**6. PERFORMING ORGANIZATION**

**7. AUTHOR(S)**

F.N. Hveem

**8. PERFORMING ORGANIZATION REPORT No.**

**9. PERFORMING ORGANIZATION NAME AND ADDRESS**

State of California  
Department of Public Works  
Division of Highways

**10. WORK UNIT No.**

**11. CONTRACT OR GRANT No.**

**12. SPONSORING AGENCY NAME AND ADDRESS**

**13. TYPE OF REPORT & PERIOD COVERED**

**14. SPONSORING AGENCY CODE**

**15. SUPPLEMENTARY NOTES**

**16. ABSTRACT**

In memoranda to Division Engineers dated May 25, 1950, and May 10, 1951, Mr. H.S. Fairbank, Deputy commissioner, U.S. Bureau of Public Roads outlined an expansion of the survey of truck traffic volumes and weights that had been in progress since 1942. He requested the cooperation of the States in carrying out the expanded program. Under this program, quarterly truck traffic volumes and weights were to be taken at selected locations and pavement conditions in a 1,000 or 2,000 foot section of pavement near each selected weighing location were to be evaluated. Information requested by the Bureau was to be classified in the following groups:

1. Traffic Characteristics
2. Roadway structure
3. Roadway condition
4. Roadway costs

**17. KEYWORDS**

Research No. 00258  
Work Order No. 13NN26

**18. No. OF PAGES:**

424

**19. DRI WEBSITE LINK**

<http://www.dot.ca.gov/hq/research/researchreports/1930-1955/53-03.pdf>

**20. FILE NAME**

53-03.pdf

4109

V. 1

C. 1

53-03

DND

---

4109  
1  
1

State of California  
Department of Public Works  
Division of Highways

LOAD-CONDITION STUDIES

in cooperation with

U. S. BUREAU OF PUBLIC ROADS

DATA ON

ROADWAY STRUCTURE AND ROADWAY CONDITION

Prepared by

MATERIALS AND RESEARCH DEPARTMENT

F. N. Hveem

Materials and Research Engineer

Research No. 00258  
Work Order No. 13NN26

August 15, 1953



INDEX

Index  
Tab  
Number

- 1 General Discussion
- 2 Location Map
- 3 Description and Location of Loadometer Stations
- 4 through 11

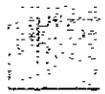
Data concerning Portland Cement Concrete Pavements

	Loadometer Station No.		
4	"	"	12
5	"	"	18
6	"	"	32
7	"	"	26
8	"	"	44
9	"	"	58
10	"	"	71
11	"	"	5

12 through 27

Data concerning Asphaltic Pavements

	Loadometer Station No.		
12	"	"	76
13	"	"	75
14	"	"	11
15	"	"	79
16	"	"	14
17	"	"	21
18	"	"	24
19	"	"	24
20	"	"	50
21	"	"	50
22	"	"	44
23	"	"	93
24	"	"	67
25	"	"	61
26	"	"	91
27	"	"	62



1

August, 1953

LOAD-CONDITION STUDIES  
ROADWAY STRUCTURE AND ROADWAY CONDITION

In memoranda to Division Engineers dated May 25, 1950, and May 10, 1951, Mr. H. S. Fairbank, Deputy Commissioner, U.S. Bureau of Public Roads outlined an expansion of the survey of truck traffic volumes and weights that had been in progress since 1942. He requested the cooperation of the States in carrying out the expanded program. Under this program, quarterly truck traffic volumes and weights were to be taken at selected locations and pavement conditions in a 1,000 or 2,000 foot section of pavement near each selected weighing location were to be evaluated. Information requested by the Bureau was to be classified in the following groups:

1. Traffic Characteristics
2. Roadway structure
3. Roadway condition
4. Roadway costs

Data pertaining to Items 1 and 4 were assembled by the Planning Survey Department. All work in connection with Items 2 and 3 above was assigned to the Materials and Research Department under Work Order No. 13NN26. Approximate locations for the test sections were selected in advance of field crew operations by a group of representatives from the U.S.B.P.R., Headquarters Design Department and the Materials and Research Department. Starting on January 22, 1951, one field crew worked intermittently through October 15, 1952 establishing the pavement sections selected for test throughout the State and collected the data requested by the Bureau. A total of 25

## Load-Condition Study

sections was established at, or near, 20 selected locations for collecting truck traffic volumes and weights.

In general, sections were 1,000 feet in length, with a few exceptions when local conditions made it desirable to increase or decrease the total length.

The limits of all test sections established were marked with lath and survey markers. Letters have been sent to each District in which test sections were established, advising the District Engineer of the general location and specific stationing of the sections, and requesting that the limits of the section be marked by the Maintenance Department with culvert markers. Culvert markers were to have the top four inches painted with federal yellow paint and were to show the station of the beginning or end of the section.

Data requested by the Bureau on test sections with portland cement concrete pavements differed markedly from that on sections with asphaltic mix surfaces. Descriptions of field operations have accordingly been divided into two groups.

### Portland Cement Concrete Pavements

Within the general area selected, a section of pavement, 1,000 feet in length, was established. Exact location of each section was made on the basis of various factors, including uniformity of pavement, shoulders, drainage and side slopes, as well as its suitability to adequate traffic control during the time the crew was working.

## Load-Condition Study

A total of nine sections was established in which the pavements were portland cement concrete.

Each section was first laid out in a "grid" system - each 10 foot longitudinal interval was indicated with a "4" mark of white traffic lacquer. Each 50 foot point and each station were indicated with a "+" mark and the applicable figures. Exact procedure varied according to the number of lanes of pavement involved in the section. At locations in which the pavement was the ordinary two lane roadway, each edge and the centerline of pavement were stationed and marked at 10 foot intervals as outlined above. Where there were three lanes of pavement, only one of the outer lanes was considered as comprising the section and both inner and outer edges of the one lane were stationed. In the case of multi-lane divided highways, two adjacent lanes with traffic in the same direction make up the section and the edges and centerline of the lanes were stationed. The grid system was used in locating all items on diagrams as noted below.

At each section, a comprehensive survey of the roadway and roadside conditions was made. Plan diagrams of the roadway within the section limits were prepared in the field and are reproduced in this report. Shown graphically are all joints, cracks, corner breaks, intersecting roads, road approaches, culverts, bridges, side drains, shoulders, patches, subsealing or mudjacking holes and steel pins set for levels. Noted also are the condition of joint and crack seal, extent and class of

## Load-Condition Study

pumping, depth of faulting and amount of spalling at cracks and joints, and the condition of pavement and shoulders.

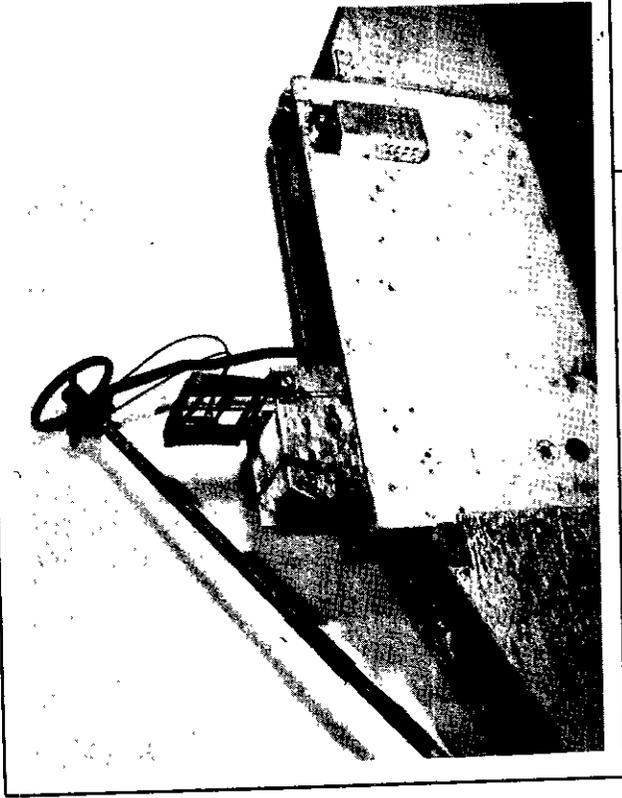
On sheets accompanying the diagrams are cross-section notes to indicate drainage conditions. Notes are recorded as fractions, the numerator indicating the elevation of and the denominator the distance to the point.

The Bureau memoranda requested information on "joint and crack openings". It is presumed that this request refers to the width of opening. Attempts to obtain measurements of width were unsuccessful because of edge rounding and joint and crack sealing. An alternative method of installing gage points across each joint and crack was considered. Such an operation would be time-consuming and costly. A large number of measurements would be required to permit separation of the effects of moisture and temperature variations from long time changes. Furthermore, the data would not yield information on the total width of opening. For these reasons no data are reported on widths of joints and cracks.

The Bureau memoranda placed considerable emphasis on pavement roughness measurements of the various sections. The Profilograph of the Materials and Research Department was used to obtain these measurements.

Pictures of the Profilograph and a typical record obtained with it are shown on Page 5.

Longitudinal profilograph records, indicating surface roughness, curling, etc., were taken of each lane of pavement



RECORDING MECHANISM

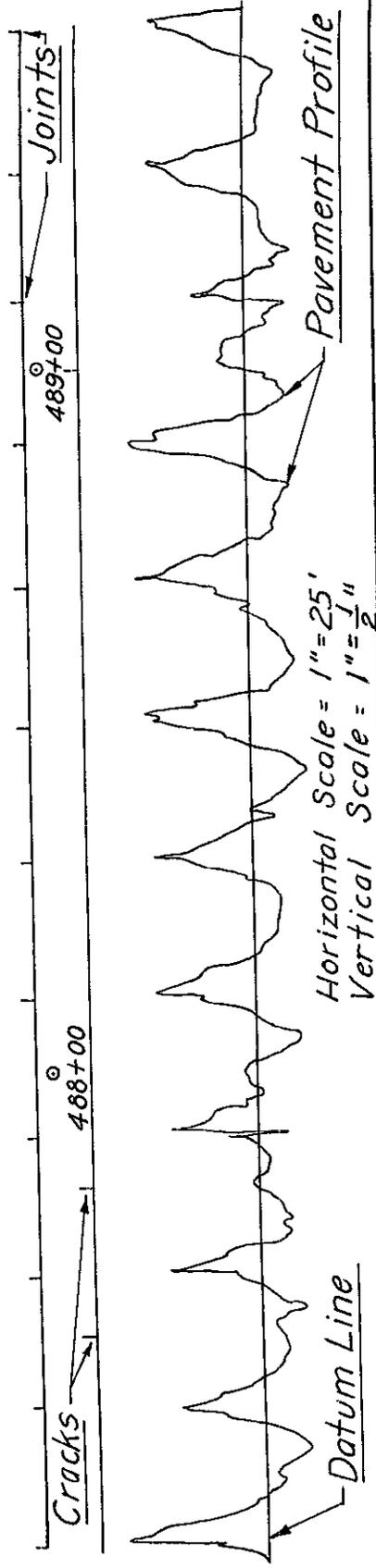


READY FOR USE

~ PROFILOGRAPH ~

State of California ~ MATERIALS & RESEARCH DEPT. ~ Division of Highways

Portion of Longitudinal Profilograph Record



### Load-Condition Study

in each section. These records were made with the recording wheel as close as possible to a wheel track in each lane. All records have been labeled and are on file in the Sacramento Laboratory.

In order to obtain samples of soils supporting the road-way pavement 8" diameter holes were drilled in two or three locations in each section. "In-place" density tests, using the California Sand-Volume equipment modified to fit an 8" diameter core hole, were taken to a depth of at least 12" below the bottom of the pavement. Materials from the "in-place" density tests were forwarded to the Sacramento Laboratory in sealed cans for determination of "relative density in place" and moisture content.

When information obtained from the various districts indicated courses of imported material immediately below the bottom of pavement (or cement-treated base), this material was sampled in one layer, if 10" or less in thickness. If the imported material was indicated to be 12" or more in thickness, it was sampled in two layers. When district information indicated no imported material underlying the pavement or cement-treated base, supporting soils were sampled in layers 5" to 8" in thickness. A typical structural section drawn from test hole results is included in the report for each section.

At each section, bench marks were established near the ends of the section. Location and descriptions of bench marks will be found in the individual files for the various sections.

## Load-Condition Study

Steel pins were placed in the pavement slabs by means of a "Ramset" gun and levels were run over these pins. Elevations so established are for the purpose of noting any vertical movement of the slabs in the future. Levels were taken with care by ordinary but not "precise" methods. Errors in closure were in excess of 0.016 foot in a few instances. The possible error in the recorded elevation of any point may approach 0.02 foot and this should be borne in mind in evaluating indicated movements as the result of future level readings.

Photographs were taken of each section as a whole and individual photographs were taken of some of the worst cracks and joints in the section.

### Asphaltic Mix Surfaces

Exact location of each section was determined as for the Portland Cement Concrete Pavement sections.

A total of 16 sections was established in which the pavements were of asphaltic mix.

Each section was laid out in a grid system with each 10 foot longitudinal interval indicated with a "+" mark of white traffic lacquer. Each 50 foot longitudinal interval and each station were indicated with a "+" and the applicable figures. In addition to the traffic lacquer marking, steel pins were placed in the pavement at 20 foot longitudinal intervals by means of a "Ramset" gun. These pins were used for elevations and transverse profiles as noted below.

## Load-Condition Study

In general, the longitudinal lines of pins and marks were placed along the centerline and the edges of pavement of the section lanes. In some sections where the pavement was abnormally wide, it was necessary to place four lines of pins and marks in the section, instead of the usual three. Where this became necessary a line of pins and marks was placed in the approximate center of each lane of pavement, and along each edge of the travelled way. The grid system was used for locating all items on diagrams as noted below, as well as for elevations and transverse profiles.

At each test section a comprehensive survey of the roadway and roadside conditions was made. Plan diagrams were prepared in the field, of the roadway within the section limits. Shown graphically on these diagrams are all intersecting roads, culverts, bridges, side drains, shoulders, cracks, areas of alligator cracking, areas of raveling, areas of surfacing shoving or creeping, patches, shoulder and drainage conditions, and location of steel pins set for levels and transverse profiles.

Samples of underlying soils were taken in the same manner described under the Portland Cement Concrete Pavement test sections. A typical structural section of the roadway, drawn from test hole results, is included in the individual report for the section.

In the sections of asphaltic mix surfacing, the Bureau memoranda requested that roughness measurements be made both longitudinally (in the outer wheel track of each pavement lane)

## Load-Condition Study

to show shoving of the pavement, and transversely to show lateral flow out of the wheel tracks. The Profilograph of the Materials and Research Department was used for these measurements.

The determination of transverse profiles by means of a level was considered but was abandoned in favor of an adaptation of the longitudinal Profilograph.

In brief, the device consisted of a 14 foot length of 6 inch aluminum channel which served as a platform for the recorder carriage. The channel was fitted with short fixed length (6"±) legs on one side and with adjustable legs on the other. Along one side of the channel a piece of flat steel stock was secured to act as a guide, while along the other side a brass rack was secured. A small carriage was built of aluminum to which the recorder from the Profilograph could be fastened. A train of gears was built into the carriage so that combined with the gearing of the recorder, an approximate 1:4 ratio was obtained, thus providing that 3"± on the record equalled one foot of pavement. An arm carrying a small rubber tired wheel was pivoted at the forward end of the carriage and connected through an arm to the recording pen of the Profilograph recorder. The connecting arm was provided with an adjustable reduction ratio device so that records could be made on a 1:1, 1:2, 1:3 or 1:4 ratio.

The two fixed length legs of the Transverse Profilograph were equipped with "feet" which were machined to fit over the heads of the steel pins that were placed in the pavement at 20

## Load-Condition Study

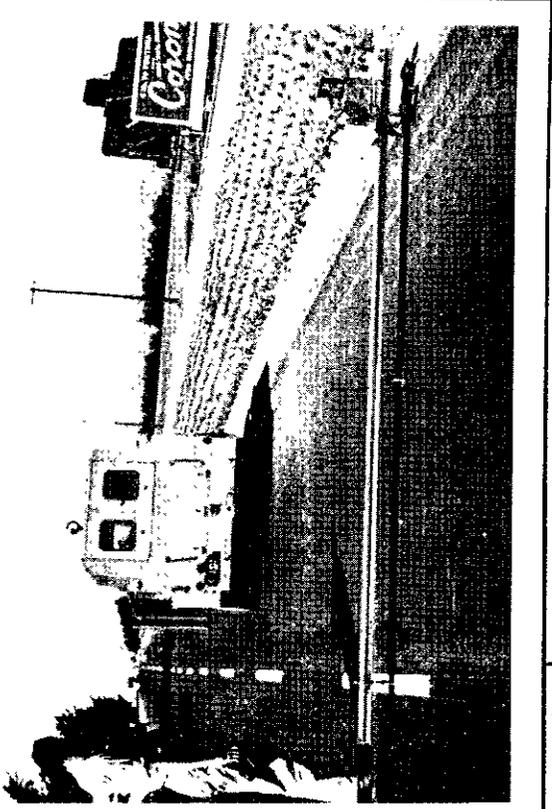
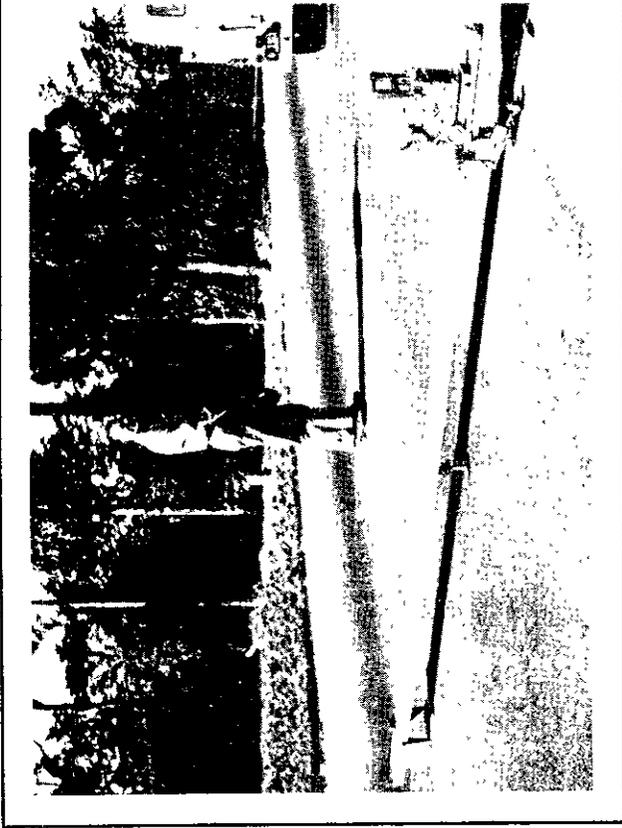
foot intervals. In the field, the fixed length legs were placed on the pins, the channel was leveled by the adjustable legs and the carriage was pushed across the pavement lane, obtaining a graphic record of the pavement surface referred to the plane of the channel. Familiarity with the machine led to an increased speed of operation so that usually all transverse profiles in a test section were taken in 4 to 5 hours. Pictures of the machine and a typical record obtained with it are shown on Page 11.

Bench marks were established near the ends of each test section and elevations, based either on actual or assumed bench mark elevations, were taken on the steel pins placed in the pavement. Comparative elevations on these pins were to be the basis for the future comparison of original and subsequent transverse profilograph records.

As stated with reference to rigid pavements, the recorded elevation of any point may be in error by as much as 0.02 foot. However, relative future movements within a distance of a few feet as indicated by records taken with the longitudinal and transverse Profilographs should be subject to a much smaller degree of error.

Cross-sections were taken over the roadway and shoulders and adjacent land to show drainage. Cross-section notes are included as a part of the individual report on each section.

Photographs were taken of the test section as a whole as well as any particularly severe cracks or breaks in the pavement.



READY FOR USE

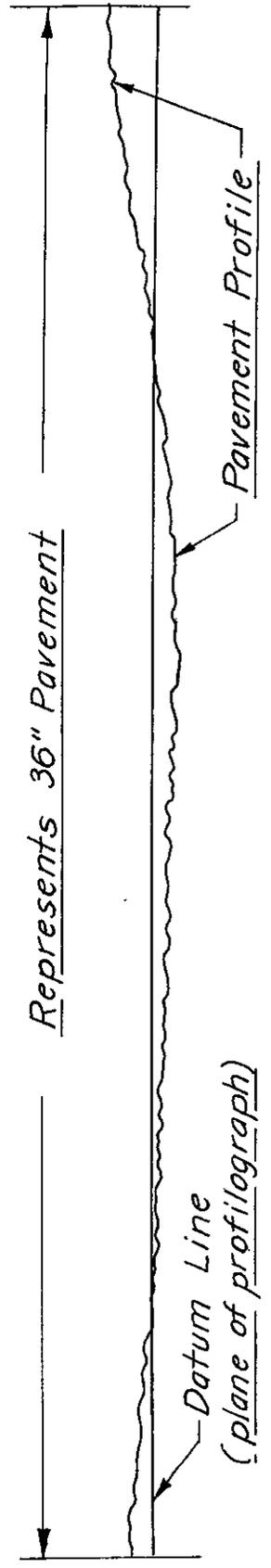
TRANSVERSE PROFILOGRAPH

*State of California ~ MATERIALS & RESEARCH DEPT. ~ Division of Highways*

Portion of Transverse Profilograph Record

*Vertical Scale - Normal  
Horizontal Scale -  $\frac{1}{4}$  Normal*

Represents 36" Pavement



Datum Line  
*(plane of profilograph)*

Pavement Profile

## Load-Condition Study

### Soil Tests

All soil samples taken in connection with the establishment of the pavement sections were forwarded to Sacramento for testing. As requested by the Bureau, tests made on base, subbase, and/or basement soil samples included Liquid Limit, Plastic Limit, Mechanical Analysis (one hour hydrometer), Compaction and Moisture Content and the calculation of "in-place" density and percent compaction.

Liquid Limit, Plastic Limit and Mechanical Analysis (one hour hydrometer) tests were made in accordance with prescribed A.S.T.M. procedures.

Compaction tests were made by the California Field or Impact Method of Compaction, detailed in A.S.T.M. "Procedures for Testing Soils - 1950", pgs. 209-211, and the California Division of Highways Standard Specifications, January 1949, pg. 25. Relative compaction of material in place was calculated on the basis of these tests.

The relationship between the results of the California Method and A.A.S.H.O. Method T 99-49 is not constant for all soils. In general the density obtained by the California method exceeds that by the A.A.S.H.O. method by about 5 percent on sandy type soils and about 20 percent on clay type soils.

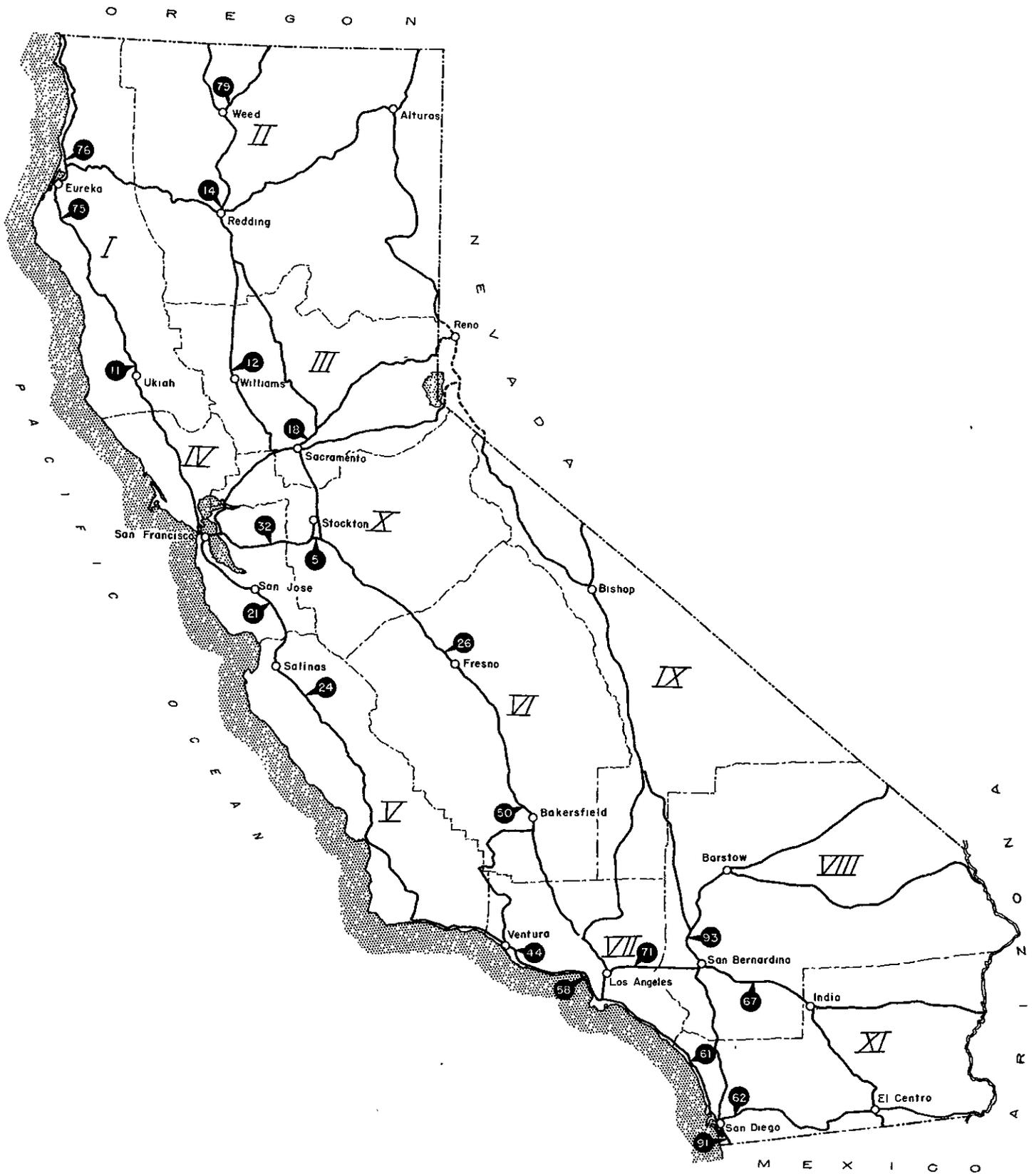
Test results for soils sampled in each pavement section are summarized and made a part of the report for the individual section.

Load-Condition Study

Scope of Report

This report is intended to present complete data of all original studies relative to roadway structure and roadway condition. The traces obtained with the longitudinal and transverse Profilograph have not been reproduced for inclusion with this report however, since they would greatly increase the bulk of the report and would serve no useful purpose until subsequent profiles have been taken. Profilograph records are on file in the office of the Materials and Research Department. The extent of future movements can be determined at any point traversed by the Profilograph by comparison of the recorded traces.

2



3

## LOCATION OF TEST SECTIONS

Loadometer Station			Test Sections	
No.	Location	Dist. Co. Rte. Sec.	Station	Location with Respect to Load Station
76	Arcata	I-Hum-1-I	100+00 to 110+00	0.2 mi. N.
75	Scotia	I-Hum-1-E	147+00 to 157+00	0.5 mi. N.
11	Ukiah	I-Men-1-C	189+65 to 199+65	0.1 mi. N.
79	Weed	II-Sis-72-A	153+00 to 163+00	0.2 mi. N.E.
14	Redding	II-Sha-3-B	42+00 to 52+00	Adjacent
12	Williams	III-Col-7-B	480+00 to 490+00	0.2 mi. N.
18	Fulton Ave.	III-Sac-3-B	299+70 to 309+00	0.1 mi. N.E.
21	Coyote	IV-SC1-2-B	690+00 to 700+00	2.0 mi. S.
32	Greenville	IV-Ala-5-A	Section "P" - 558+00 to 568+00	0.4 mi. W.
24	Soledad	V-Mon-2-D	Section "C" - 72+00 to 82+00	1.0 mi. N.
24	Soledad	V-Mon-2-D	565+00 to 575+00	1.5 mi. S.
26	Herndon	VI-Fre-4-C	351+00 to 361+00	2.0 mi. S.
50	Bakersfield	VI-Ker-4-D	290+00 to 300+00	0.2 mi. N.
50	Bakersfield	VI-Ker-4-D	330+00 to 340+00	0.8 mi. N.
44	Ventura	VII-Ven-2-C	332+60 to 343+50	1.7 mi. S.E.
44	Ventura	VII-Ven-2-C	388+00 to 398+00	0.8 mi. S.E.
58	Culver City	VII-L.A-60-C	25+90 to 36+00	0.1 mi. N.
71	West Covina	VII-L.A-26-WCov	83+00 to 93+00	Adjacent
93	Cajon	VIII-SBd-31-B	Section "A" - 411+00 to 421+00	7.0 mi. S.
67	Whitewater Junction	VIII-Riv-26-C	290+00 to 300+00	2.5 mi. W.
5	Mossdale Junction	X-S.J-66-A	234+00 to 244+00	Adjacent
61	Oceanside	XI-S.D-2-C	117+50 to 127+50	0.2 mi. S.
61	Oceanside	XI-S.D-2-C	Section "D" 313+00 to 333+00	6.0 mi. N.
91	Chula Vista	XI-S.D-2-F	287+50 to 298+50	Adjacent
62	El Cajon	XI-S.D-12-C	299+00 to 309+00	Adjacent

4

DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE

LOCATION: Loadometer Station No. 12 is located 0.3 miles north of the north city limits of Williams, Road III-Col-7-B.

The section selected for test is located approximately 1.5 miles north of the Loadometer Station.

LENGTH: The section is established between Sta. 480+00 and Sta. 490+00, total length - 1000 feet.

Roadway is a 2-lane highway. Section includes both lanes.

SURFACE:

Type: Portland cement concrete, constructed in 1931, reinforced as noted below.

Width: 2 lanes, each 10 feet wide, total width 20 feet.

Reinforcing: All reinforcing steel is 1/2" square deformed bar. Edges of each 10 ft. lane are reinforced with 2 bars 20 ft. 10 in. long, spaced 4 in. from edges of slab and 4 in. apart vertically. Ends of each bar are fixed at one transverse joint and extend through the next joint into 12 in. metal sleeves which are fixed in the slab.

At each transverse joint, 2 bars, 9 ft. 8 in. long are placed on each side of the joint.

Bars are spaced 4 inches horizontally from the

Loadometer Station No. 12  
Road III-Col-7-B

ROADWAY STRUCTURE

SURFACE:

Reinforcing: joint, 4 inches apart vertically and extend to  
(Continued) within 2 inches of the edges of the slab.

Joints:

Spacing and Dowels: A longitudinal weakened plane joint between the lanes extends throughout the section. Information furnished by the District indicates that tie bars, 12" x 3/4", were installed at 48 inch centers along this longitudinal joint. Transverse joints are spaced 20 feet apart. Each 3rd joint is an expansion joint, remainder are weakened plane contraction joints. As noted above, longitudinal reinforcing steel extends through all transverse joints. Contraction joints have no load transfer devices or dowels other than such dowel action as the steel provides. In addition to reinforcing steel passing through them, the expansion joints have 24" x 3/4" dowels spaced at 28" centers starting 32" from the edge of pavement. (3 per 10-foot lane.)

Thickness: Each lane is of 9"-7"-7"-9" cross-section. Transition from 9" to 7" is made in a distance of 2 ft. from the edges of the slab. At areas sampled 7" thickness of pavement was found.

Loadometer Station No. 12  
Road III-Col-7-B

ROADWAY STRUCTURE

BASE:

Type and  
Thickness:

Imported sand and gravel base. Construction plans indicate a total thickness of 12" of this material but thicknesses found in sampling varied from 4-3/4" to 7".

Soil Clas-  
sification:

A-2-4 and A-6

BASEMENT SOIL:

Type:

Mottled brown and blue adobe clay, very wet and plastic. Sampled to depths of from 17-1/2" to 21" below the bottom of pavement.

Soil Clas-  
sification:

A-7-6

SIDE DITCH  
DRAINAGE:

The section roadway is entirely in a shallow fill. Profile grade of the roadway is level for all practical purposes. When constructed, pavement sloped uniformly from right edge down to the left edge of pavement. Subsequent faulting, etc., have modified this condition but it is still generally true.

On the left of the section, there are no clearly defined side ditches. Paralleling the roadway throughout the section, beyond the right of way line, is a swamp area which is from 2.0 to 3.0 ft. below the elevation of the pavement.

On the right, the paved shoulder and area beyond it slope down from the edge of pavement

Loadometer Station No. 12  
Road III-Col-7-B

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:  
(Continued)

to a ditch which parallels the roadway at a distance of 53 to 56 feet from centerline. Ditch flow line elevation is 3.0 to 3.5 feet below the pavement, and drainage is towards the north.

There are no culverts or bridges within the section.

ROADWAY CONDITION:

GENERAL:

The pavement in the section shows a large number of short (1.5 ft. or less in length) severe cracks, too numerous and too short to show graphically on the plan diagram.

In the left lane, cracks are short, severe and parallel to centerline between Sta. 484+00 and Sta. 490+00, end of the section.

In the right lane, cracks are short, severe and transverse, and are especially noticeable in these areas:

Station 483+50 to Station 484+00  
Station 485+50 to Station 485+70  
Station 487+10 to Station 488+00

SPECIAL  
CONDITIONS:

(1) Roadway  
Section:

As noted above, the section roadway is entirely in a shallow fill, and present pavement elevation

Loadometer Station No. 12  
Road III-Col-7-B

ROADWAY CONDITION:

SPECIAL  
CONDITIONS:

- (1) Roadway Section:  
(Continued) is from 2.0 to 3.0 ft. above that of the surrounding areas.
- (2) Pumping: There are no evidences of pumping throughout the section. Pavement has warped severely and permanently at joints, but there is no visual evidence that this warping has been followed by pumping.
- (3) Faulting: There is considerable faulting at joints and cracks in various places throughout the section. This has been indicated on the plan diagram. Throughout the section, the longitudinal joint between lanes shows faulting which varies from 0.17" to more than 1.00". The right (northbound traffic) lane is lower than the left lane.
- (4) Shoulders: Throughout the section, there are asphaltic mix shoulders which vary in width from 4.0 to 4.5 feet. Shoulders are in generally fair condition, but there are many areas in which the mix has rutted and cracked badly under traffic.
- (5) Miscellaneous: Pavement throughout the section was subsealed with asphalt during the winter of 1949-50.

Loadometer Station No. 12  
Road III-Col-7-B

ROADWAY CONDITION:

ROUGHNESS MEASUREMENTS:

Bench Marks  
and Levels:

Bench marks were established at the section for use in taking cross-sections and pavement levels.

<u>B.M. No.</u>	<u>Location</u>	<u>Description</u>	<u>Elevation</u>
1	60' rt. of $\pm$ , Sta. 479+80	Wire in top of R/W monument	85.000 (Assumed)
2	39.5' lt. of $\pm$ , Station 490+19.5	1/4" diam. pin in pipe cap	83.119

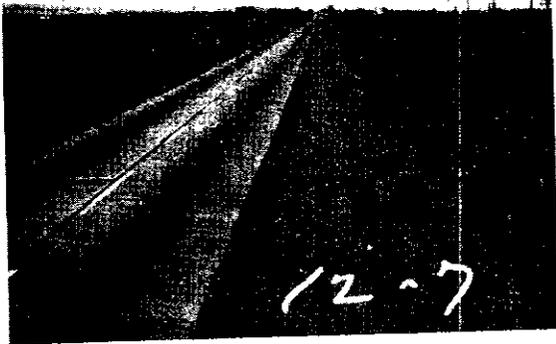
Profilograph  
Records:

By means of the Profilograph, records were made of the longitudinal profiles of each lane of the travelled way surface. Records were made with the recording wheel of the machine 30" from the outer edge of each lane.

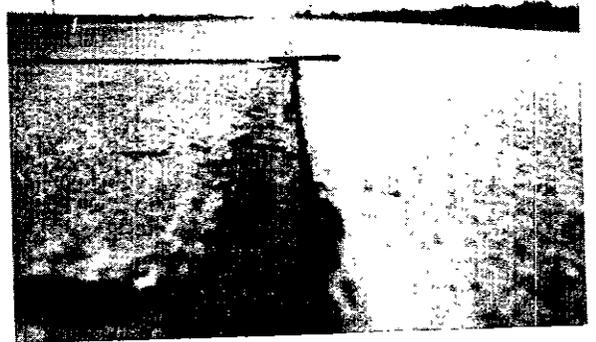
Profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 12

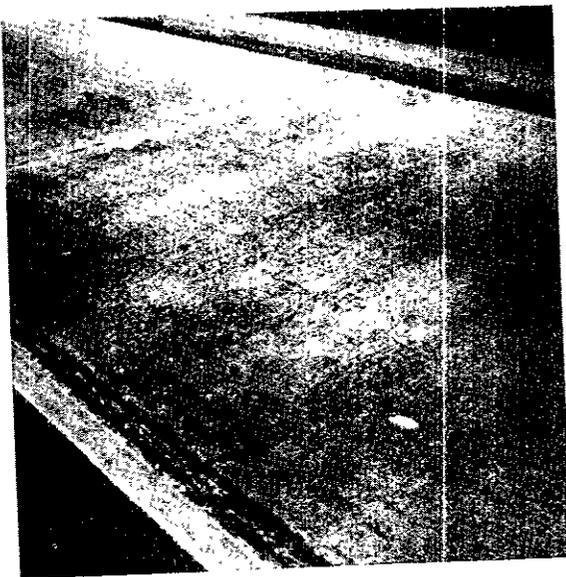
III-Col-7-B



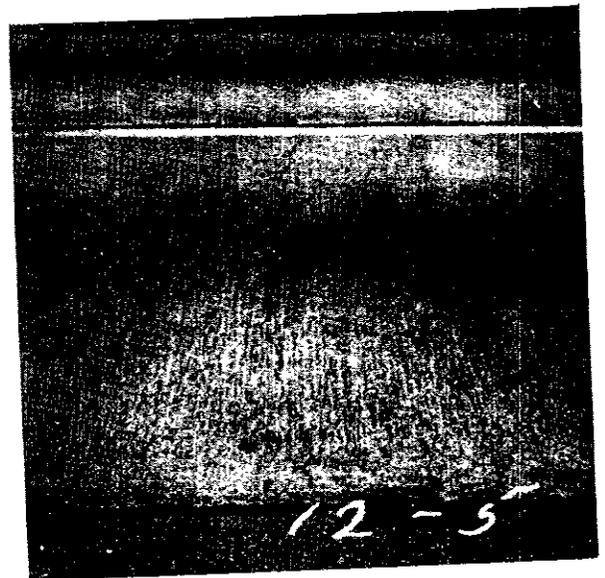
Ahead on line from Sta.  
479+80



Faulting along longitudinal  
joint, back from Sta. 480+10



Longitudinal Cracking in  
Lt. lane. Sta. 487+40 to  
Sta. 487+50



Transverse Crack in R.  
lane Station 489+79

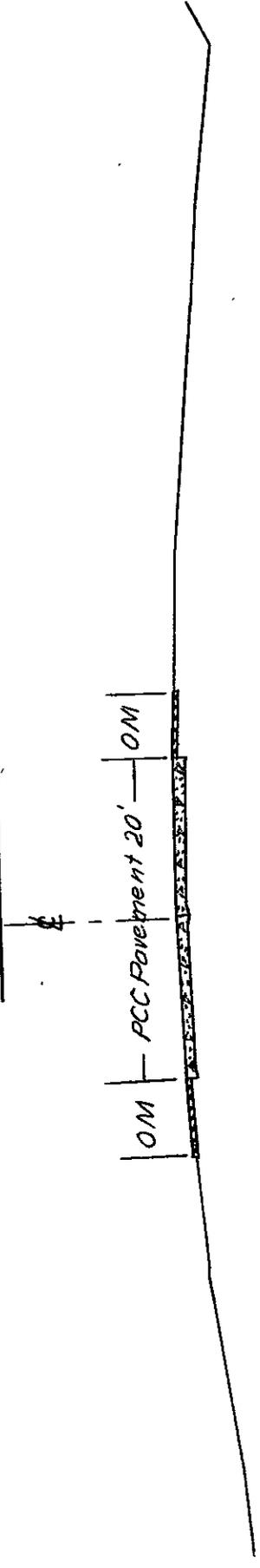
State of California, Div. of Highways  
Materials & Research Department  
Research No. 00258, W.O. No. 13NN26

Loadometer Station No. BR 12  
III-Col-7-B

ROADWAY CONDITION SURVEY

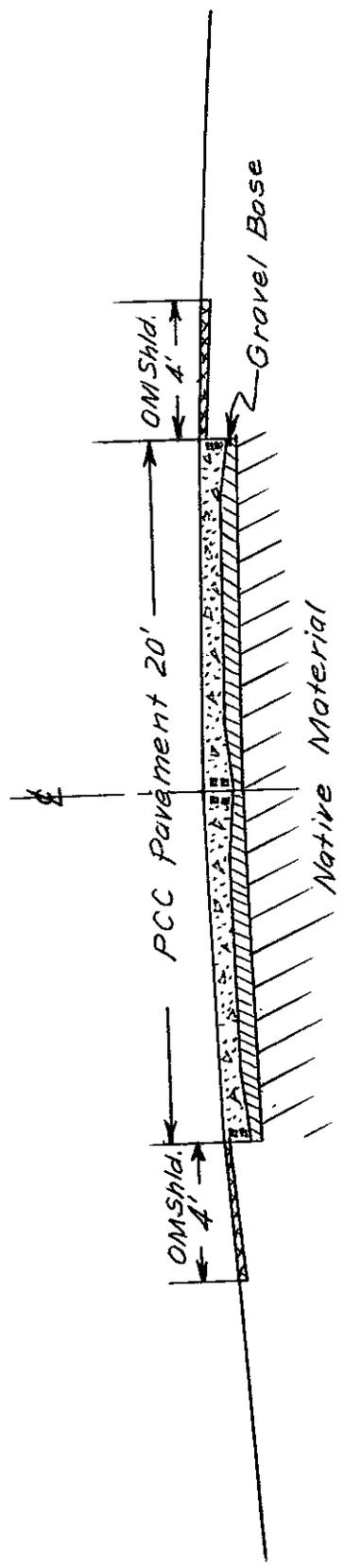
Scale: 1" = 10'

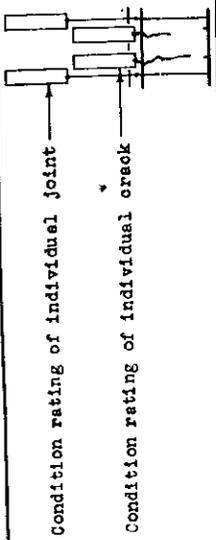
TYPICAL ROADWAY SECTION



Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION





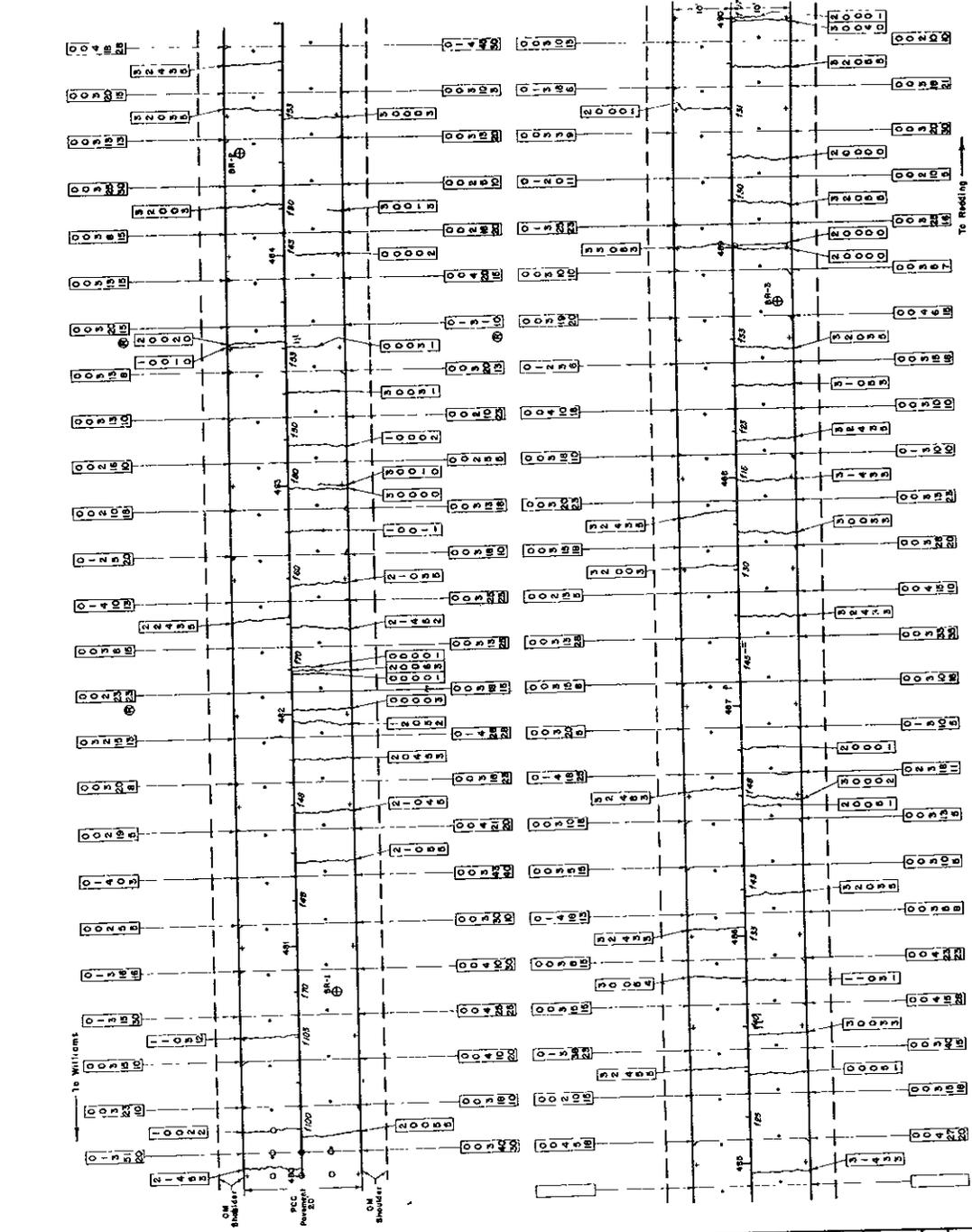
Condition rating of individual joint  
 Condition rating of individual crack

The table below indicates the significance of arrangement of the numbers in the rating "flag", and the values used in rating the condition of the individual joint or crack:

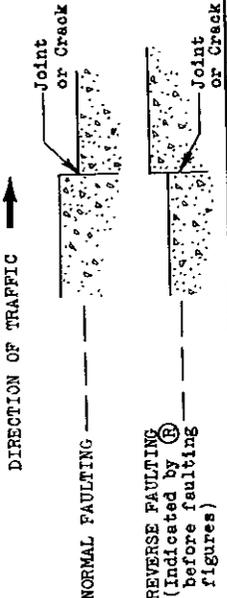
J O I N T S					
Position of Number in Flag	0	1	2	3	4
TOP NUMBER	None	Some Secondary Cracking	"SECONDARY" CRACKING NEAR SPALLS*		
SECOND NUMBER	None	Slight	Marked	Extreme	Complete
THIRD NUMBER	None	Excellent	Good	Fair	Poor
FOURTH NUMBER	FAULTING, in 100ths of an inch				
FIFTH NUMBER	AT INNER END OF JOINT. (Measured at a point 18" from the longitudinal joint.)				
FIFTH NUMBER	AT OUTER END OF JOINT. (Measured at a point 18" from the outer pavement edge.)				

\*"Secondary" cracking as used above refers to the more or less concentric cracking frequently found adjacent to spalled areas.

C R A C K S					
Position of Number of Flag	0	1	2	3	4
TOP NUMBER	Tight but Definite	Very Definite	Marked	Extreme	Shattered Area
SECOND NUMBER	None	Slight	Marked	Extreme	Shattered Area
THIRD NUMBER	Not Sealed	Excellent	Good	Fair	Poor
FOURTH NUMBER	FAULTING, in 100ths of an inch				
FIFTH NUMBER	AT INNER END OF CRACK. (Measured at a point 18" from the longitudinal joint.)				
FIFTH NUMBER	AT OUTER END OF CRACK. (Measured at a point 18" from the outer pavement edge.)				



TYPES OF FAULTING AT JOINTS AND CRACKS



LEGEND

- ⊕ 8" diameter core hole for soil samples
- 5" diameter core hole
- Mudjacking or subsaling for holes
- + Permanent reference points set for levels

Figures preceded by this symbol / indicate faulting along the longitudinal joint between lanes. Figures are placed on the low side of the joint.

TEST RESULTS SUMMARY

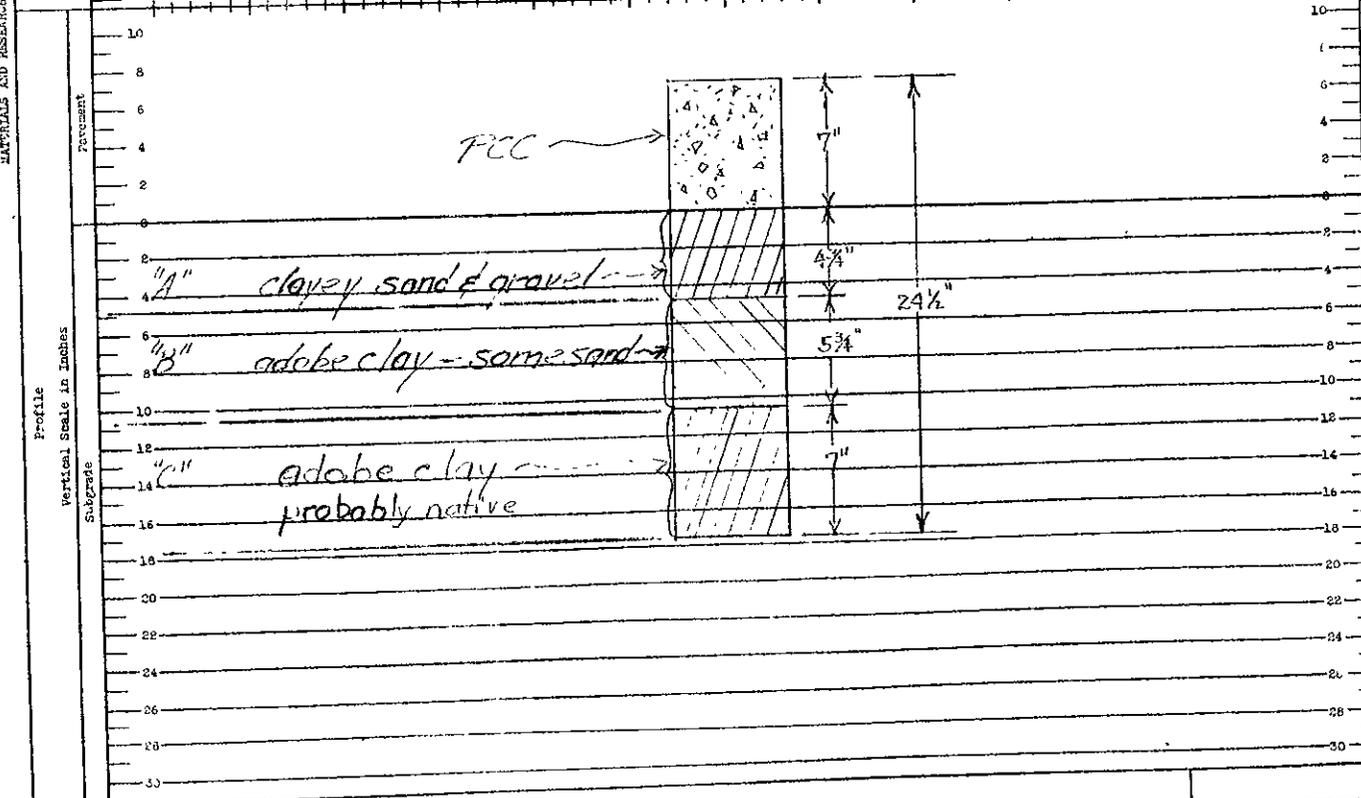
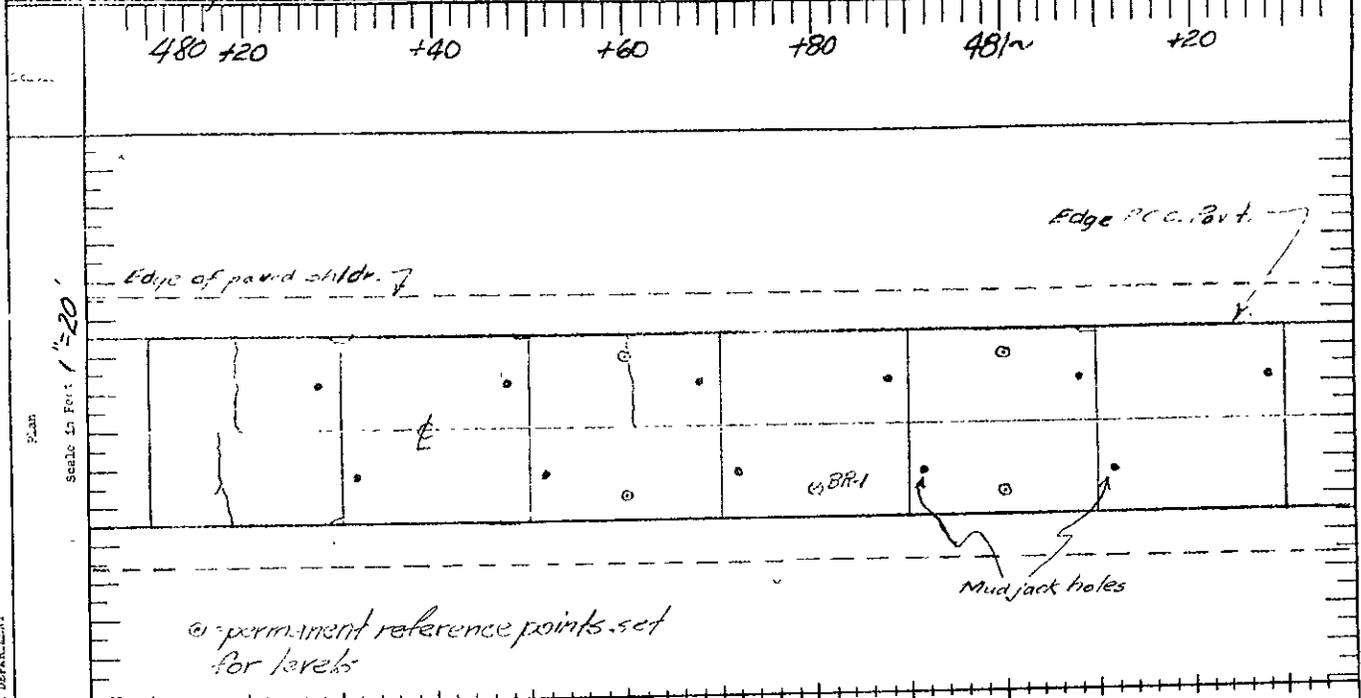
Load. Sta. No. 12  
III-Col-7-B

Line	Sample No.		Sample Hole Location		Pavement		Soil Samples	
	Fld.	Lab.	Station	Position	Type	Thick-ness	Depth below Btm. Pav't.	Layer Des-cription
1	BR-1-A	51-4029	480+80	6.6' Rt. of centerline	PCC	7"	0 - 4-3/4"	Base
2	BR-1-B	51-4030	480+80	same	PCC	7"	4-3/4" - 10 1/2"	Subbase
3	BR-1-C	51-4031	480+80	same	PCC	7"	10 1/2" - 17 1/2"	Basement
4	BR-2-A	51-4032	484+44	7.4' Lt. of centerline	PCC	7"	0 - 5"	Base
5	BR-2-B	51-4033	484+44	same	PCC	7"	5" - 13"	Subbase
6	BR-2-C	51-4034	484+44	same	PCC	7"	13" - 21"	Basement
7	BR-3-A	51-4035	488+76	7.7' Rt. of centerline	PCC	7"	0" - 7"	Base
8	BR-3-B	51-4036	488+76	same	PCC	7"	7" - 21"	Basement

Line	In Place Test Data			Lab. Test Data		HRB Soil	Specific Gravity	
	Moist.	Density	% Rel. Comp.	Optimum Moisture	Maximum Density	Classification	Pass. 4	Ret. 4
1	6	145	104	7	139	A-2-4	2.65	2.68
2	27	103	90	17	114	A-7-6	2.61	
3	26	100	89	16	112	A-7-6	2.61	
4	7	148	106	7	139	A-2-4	2.65	2.63
5	27	98	89	17	111	A-7-6	2.56	
6	30	92	84	18	109	A-7-6	2.59	
7	9	137	100	9	137	A-2-6	2.64	2.65
8	26	101	91	18	111	A-7-6	2.60	

Line	Sieve Analysis - Percent Passing										Atterberg Limits	
	2"	3/4"	4	8	16	30	50	200	270	5M	LL	PL
1	100	94	63	53	44	36	34	12	11	7	26	16
2			100	99	98	97	96	91	81	57	46	20
3						100	99	97	95	51	52	21
4	100	92	65	52	43	36	28	17	16	8	26	16
5			100	99	99	99	99	97	97	54	54	24
6						100	99	98	98	57	54	24
7	100	94	73	63	56	49	39	26	23	13	31	16
8			100	99	99	98	97	95	93	62	49	22

Dist. III	Co. Col	Rte. 7	Sec. B	Contract No.	Date of Constr. 1931	Test Hole No. P.P-1
Dist. from End of Fill	Dist. from End of Cut	No. of Lanes two	Traffic Med to Hwy	Side Ditches R & L	Depth 24 7/8" 1.05"	Date of Sampling 10-17-51
Road Agricultural			Right R/R R/W	Grade 0.0%	Up	



STATE OF CALIFORNIA  
DIVISION OF HIGHWAYS  
DEPARTMENT OF PUBLIC WORKS  
MATERIALS AND RESEARCH DEPARTMENT

4 DUPE	Party	Conrad Hammer Clawson Coan
	Drawn By	Coan

LOCATION AND PROFILE SKETCH

PAVEMENT INVESTIGATION

RESEARCH NO. 00258

Dist. <u>III</u> Co. <u>Col</u>	Sta. <u>7</u>	Sec. <u>B</u>	Contract No. _____	Date of Constr. <u>1931</u>	Post Hole No. <u>BR-2</u>
Fill <u>RT &amp; LT</u>	Apprx. Depth <u>Aug 30'</u>	Dist. from End of Fill _____	No. of Lanes <u>two</u>	Traffic <u>Med to Hvy</u>	No. _____
Cut _____	Apprx. Depth _____	Dist. from End of Cut _____	Side Ditches <u>RT &amp; LT</u>	Depth <u>2' 0 5"</u>	Date of Sampling <u>10-17-51</u>
Roadside Use, Left <u>Agricultural</u>		Right <u>RR RW</u>		Grade <u>0.0 %</u>	Up _____

Station

484~      +20      +40      +60      +80      485~

Profile

Vertical Scale in Feet

Subgrade

Remarks \_\_\_\_\_

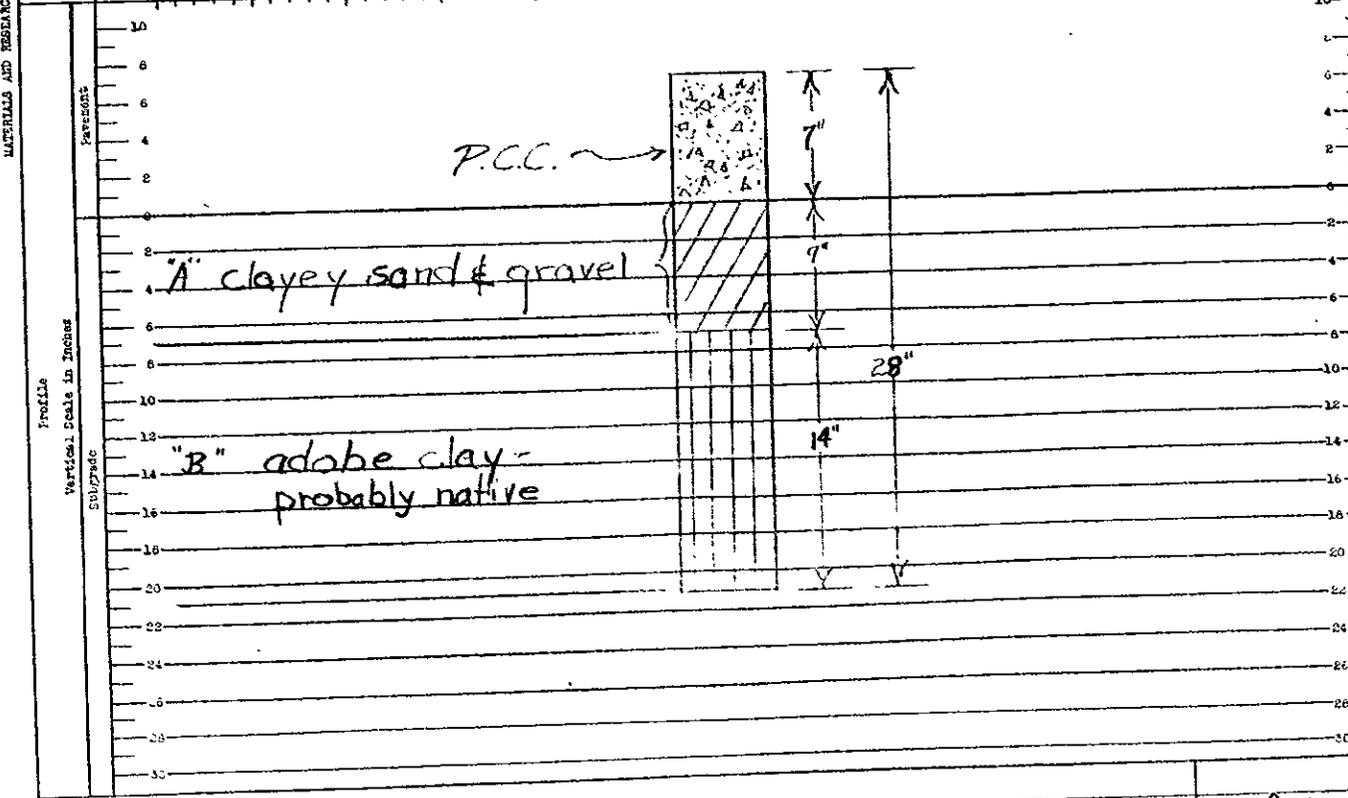
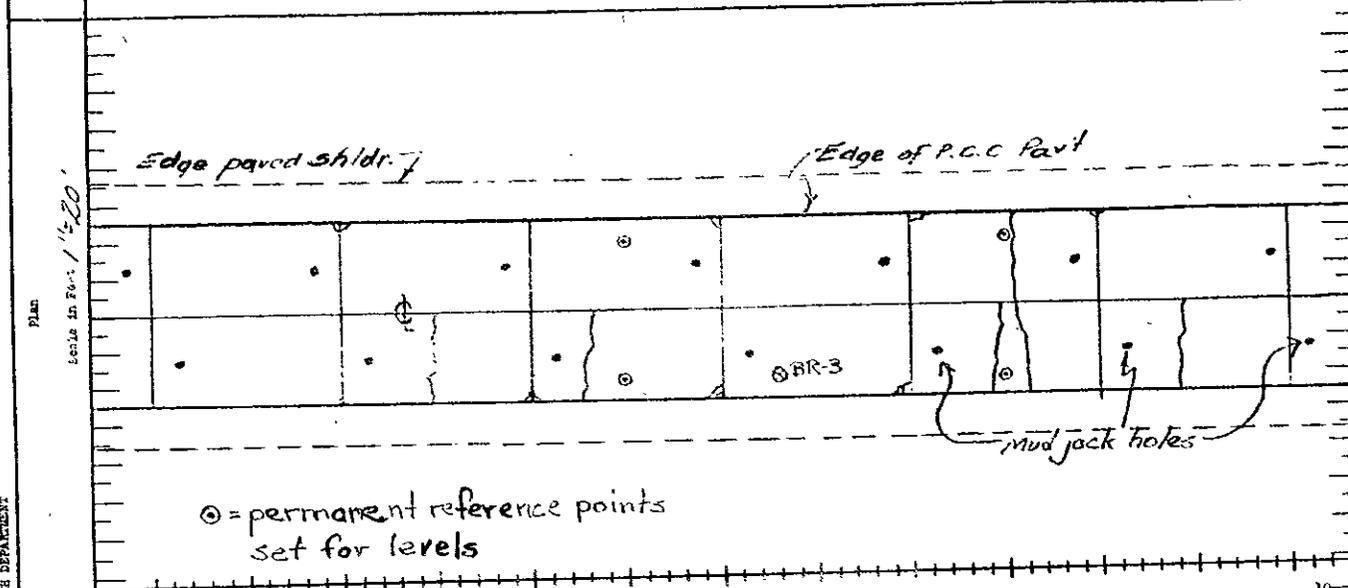
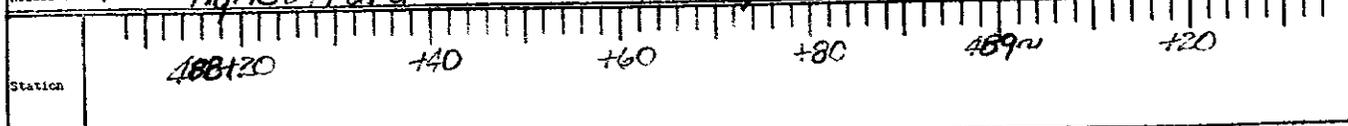
Party Copel  
Humbert  
Clawson  
Coan

DRAWN BY \_\_\_\_\_

STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

FAVORITE INVESTIGATION

Dist. III	Co. Col	Rtd. 7	Sec. B	Contract No.	Date of Constr. 1931	Test Hole No. BR-3
Fill R1&L4	Approx. height Avg. 30	Dist. from End of Fill	No. of Lanes two	Traffic Med to Hwy	Depth 26.5	Date of Sampling 180 of 51
Cut	Approx. Depth	Dist. from End of Cut	Slope Ditches R1&L4	Grade 2.0%	Up	
Roadside Use, Left Agriculture		Right RR R/W				



STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

Confal  
 Party  
 Humbert  
 Clawson  
 Coan

Drawn by

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 12  
 Dist. TL Co. Col Rte. 7 Sec. 8  
 Loc. Design BR  
 Sta. 480+00 to 483+00  
 Sheet No. 1 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

	Left of Roadway							Right of Roadway						
		Toe of Fill	Shldr Point	Edge Pav'd Shldr.	Edge Conc.	Center Left Lane	Center Right Lane	Edge Conc.	Edge Pav'd Shldr.			Ditch	Ditch Bank.	
483+00		82.9 39.5	83.2 32.5	85.2 22.5	85.62 14.5	85.72 10.0	85.89 5.0	85.86 5.0	85.89 10.0	85.73 14.0	85.5 22.5	83.9 41.5	82.4 54.5	
+50		82.9 39.5	83.4 32.0	85.2 23.0	85.55 14.0	85.70 10.0	85.94 5.0	85.92 5.0	85.93 10.0	85.70 14.5	85.3 23.5	84.6 40.5	82.3 54.0	
482+00		82.9 39.5	83.5 31.5	85.0 23.0	85.53 14.0	85.65 10.0	85.89 5.0	85.87 5.0	85.90 10.0	85.60 14.5	85.1 25.0	84.0 42.0	82.4 56.5	
+50		82.9 39.5	83.2 33.0	84.9 24.0	85.48 14.0	85.73 10.0	85.87 5.0	85.86 5.0	85.90 10.0	85.60 14.5	85.3 23.9	84.0 43.5	83.0 53.5	83.7 59.5
481+00		82.8 39.5	83.3 32.0	85.3 22.5	85.59 14.5	85.68 10.0	85.89 5.0	85.89 5.0	85.91 10.0	85.73 14.0	85.3 24.0	84.6 43.5	82.9 53.5	83.8 59.5
+50		83.0 39.5	83.3 33.0	85.1 24.0	85.54 14.5	85.74 10.0	85.95 5.0	85.90 5.0	85.97 10.0	85.71 14.0	85.5 23.0	84.1 43.5	82.8 54.0	83.9 59.0
480+00		83.0 39.5	83.3 32.5	85.1 23.5	85.65 14.5	85.70 10.0	85.93 5.0	85.86 5.0	85.92 10.0	85.65 14.5	85.4 23.8	84.6 43.5	82.8 54.5	83.9 59.5

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 12  
 Dist. III Co. Cal Rte. 7 Sec. B  
 Loc. Design BE  
 Sta. 484+00 to 490+00  
 Sheet No. 2 of 2

*Drainage Cross-Sections*  
 ROADWAY CONDITION SURVEY

	Left of Roadway							Right of Roadway						
		Toe of Fill	Shldr. Pavt	Edge Pavt Shldr.	Edge Conc.	Left Lane	Right Lane	Edge Conc.	Edge Pavt Shldr.			Ditch	Ditch Bank	
490+00	82.7	82.9	85.0	85.61	86.02	86.16	86.16	86.18	85.96	85.7	84.0	82.9	83.9	
	40.5	31.0	22.0	14.0	10.0	5.0	5.0	10.0	14.5	20.5	45.0	54.0	59.0	
489+00	82.9	83.1	85.1	85.63	85.97	86.15	86.16	86.20	85.97	85.5	84.1	82.5	83.7	
	39.5	31.0	22.0	13.8	10.0	5.0	5.0	10.0	14.0	23.5	40.0	54.5	61.0	
488+00	82.8	83.1	85.0	85.51	85.90	86.04	86.08	86.13	85.91	85.6	84.0	82.9	83.7	
	39.5	32.5	22.5	14.5	10.0	5.0	5.0	10.0	14.5	22.5	43.0	55.5	60.0	
487+00	82.6	83.0	85.1	85.54	85.80	85.98	85.95	86.00	85.74	85.3	83.9	82.5	83.3	
	40.0	33.0	22.0	14.0	10.0	5.0	5.0	10.0	14.5	22.5	41.5	53.0	60.0	
486+00	82.7	83.1	85.2	85.48	85.75	85.92	85.89	85.97	85.68	85.2	83.8	82.6	83.7	
	39.5	32.0	22.0	14.5	10.0	5.0	5.0	10.0	14.5	23.0	43.5	55.0	59.5	
485+00	82.8	83.1	84.9	85.48	85.73	85.93	85.91	85.96	85.76	85.5	83.8	82.8	83.7	
	39.5	33.5	22.5	14.5	10.0	5.0	5.0	10.0	14.0	22.0	44.5	54.0	59.5	
484+00	82.8	83.1	85.0	85.52	85.64	85.89	85.93	85.91	85.73	85.2	83.7	82.4	83.4	
	40.0	33.0	22.0	14.5	10.0	5.0	5.0	10.0	14.5	23.5	43.0	54.5	59.5	

5

Research No. 00258  
Work Order No. 13NN26

Loadometer Station No. 18  
Road III-Sac-3-B

DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE

**LOCATION:** Loadometer Station No. 18 is located 0.2 miles northeast of the junction of Route 3 and Route 98, toward Roseville.

The section selected for test is located immediately northeast of the Loadometer Station, the beginning of the section being 120 feet from the station.

**LENGTH:** The section is established between Sta. 299+70 and Sta. 310+00, total length - 1030 feet.

Roadway is a three lane highway. The section covers only the right (northeast bound traffic) lane.

**SURFACE:**

**Type:** Portland cement concrete constructed in 1930 reinforced as noted below.

**Width:** The section lane is 10 feet in width.

**Reinforcing:** All reinforcing steel is 1/2" square deformed bar. Edges of each 10 ft. lane are reinforced with 2 bars 20 ft. 10 in. long, spaced 4 inches from edges of slab and 4 inches apart vertically. Ends of each bar are fixed at one transverse joint and extend through the next joint into 12" metal sleeves which are fixed in the slab.

Loadometer Station No. 18  
Road III-Sac-3-B

ROADWAY STRUCTURE:

SURFACE:

Reinforcing:  
(Continued)

At each transverse joint, 2 bars, 9'8" long, are placed on each side of the joint. Bars are spaced 4" horizontally from the joint, 4" apart vertically and extend to within 2" of the edges of the slab.

Joints:

Spacing  
and  
Dowels:

A longitudinal weakened plane joint between lanes extends throughout the section. So far as can be determined from District records, there are no tie bolts between adjacent lanes. Transverse joints are spaced 20 feet apart. Each 3rd joint is an expansion joint, remainder are weakened plane contraction joints. As noted above, longitudinal reinforcing steel extends through all transverse joints. Contraction joints have no load transfer devices or dowels other than such dowel action as the steel provides. In addition to reinforcing steel through them, the expansion joints have 24" x 3/4" dowels spaced at 28" centers starting 32" from edge of pavement. (3 per lane.)

Thickness:

The section lane is of 9"-6"-6"-9" cross-section. Transition from 9" to 6" is made in a distance of 2 feet from the edges of the

ROADWAY STRUCTURE

SURFACE:

Thickness:  
(Continued)

slab. At areas sampled, 6-1/2" to 6-3/4"  
thickness of pavement was found.

BASE:

Type and  
Thickness:

No evidence of any imported material. At  
areas sampled, material was a sandy adobe clay  
with some gravel. Sampled to a depth of 13-1/2"  
below the bottom of pavement.

Soil Clas-  
sification:

A-4

SIDE DITCH  
DRAINAGE:

The section roadway is in a slight cut on the  
right and in fill on the left. Profile grade  
of the roadway is level for all practical pur-  
poses. Natural drainage in the area is generally  
transverse from right to left across the line  
of the roadway.

On the right, side drainage flows in both  
directions from Sta. 302+50. Side drainage back  
is carried under the roadway in an 18" C.M.P.  
culvert at Sta. 299+70. This culvert empties  
into a reinforced concrete drop inlet box with  
cast steel grating on the left of the roadway.

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:  
(Continued)

Side drainage ahead from Sta. 302+50 is carried under the roadway in an 18" C.M.P. culvert at Sta. 309+02.5. This culvert empties into an RC drop inlet box with cast steel grating on the left of the roadway. Between Sta. 308+38 and Sta. 308+48 on the right, side drainage ahead is carried under a residence driveway in a 12" C.M.P. culvert parallel to centerline. Both RC drop inlet boxes referred to above also serve as collectors for 12" C.M.P. side drains along the left of the roadway. Depths of the side drains vary from 3 to 6 feet below shoulder grade and centerline of the drains varies from 3 to 7 feet left of the left edge of P.C.C. pavement. Flow in the 12" C.M.P. side drain, left, is towards the beginning of the section. At Sta. 299+70, all drainage from the side drain and the 18" C.M.P. under the roadway flows out of the RC drop inlet box through an 18" C.M.P. which empties into a natural draw, away from the roadway. There are no clearly defined side ditches along

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:  
(Continued)

the roadway, although the area which carries side drainage on the right of the roadway is from 0.1 to 0.7 ft. lower than the elevation of the pavement. On the left there is no ditch along the toe of the fill.

ROADWAY CONDITION

GENERAL:

The surface of the pavement throughout the section shows fairly heavy surface wear with much of the exposed aggregate having a high polish. The joint near Sta. 304+10 and the slabs adjacent to it have settled. This settling has caused a fault along the longitudinal joint between lanes beginning at Sta. 304+04, reaching its greatest depth at the joint at Sta. 304+10 and decreasing toward the transverse cracks at Sta. 304+21.

SPECIAL  
CONDITIONS:

(1) Roadway  
Section:

As noted above, the roadway is in a very slight cut on the right and in a fill on the left. Present pavement elevations are from 0.1 to 0.7 ft. higher than the gutter on the right and from 0.1 to 0.6 ft. lower than the surrounding area. On the left roadway pavement, elevations are from 2.0 to 3.0 feet higher than

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (1) Roadway Section (Continued) the surrounding area.
- (2) Pumping: There are no evidences of pumping throughout the section.
- (3) Faulting: There is some faulting at joints and cracks in the section. It has been indicated on the plan diagram. Maximum faulting along the longitudinal joint near Sta. 304+10 is 0.75".
- (4) Shoulders: Throughout the section there are asphaltic mix shoulders which vary from 2.0 to 3.0 feet in width. Shoulders are in generally good condition.
- (5) Miscellaneous: There are several small patches in the section at locations where joints or cracks have spalled out and been repaired. The area has been sub-sealed in the past, but the dates were not available as to when this was done.

ROUGHNESS MEASUREMENTS:

Bench Marks and Levels: Bench marks were established at the section for use in taking cross-sections and pavement levels.

Loadometer Station No. 18  
Road III-Sac-3-B

ROADWAY CONDITION

ROUGHNESS MEASUREMENTS:

Bench Marks  
and Levels:  
(Continued)

<u>B.M. No.</u>	<u>Location</u>	<u>Description</u>	<u>Elevation</u>
1	50' rt. ± Sta. 299+70	1/4" diam. steel pin in PCC H/W	60.000 (Assumed)
2	46' rt. ± Sta. 309+02	1/4" diam. steel pin in PCC H/W	61.363

Profilograph  
Records:

Longitudinal: By means of the Profilograph, records were made of the longitudinal profiles of the section lane. Records were made with the recording wheel of the machine 30" from the outer edge of pavement. Profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 18

III-Sac-3-B



Ahead on line from Sta.

299+70



Transverse Crack at Sta.

301+00



Corner Break at Station

305+65



Patched break adjacent

to Station 306+85

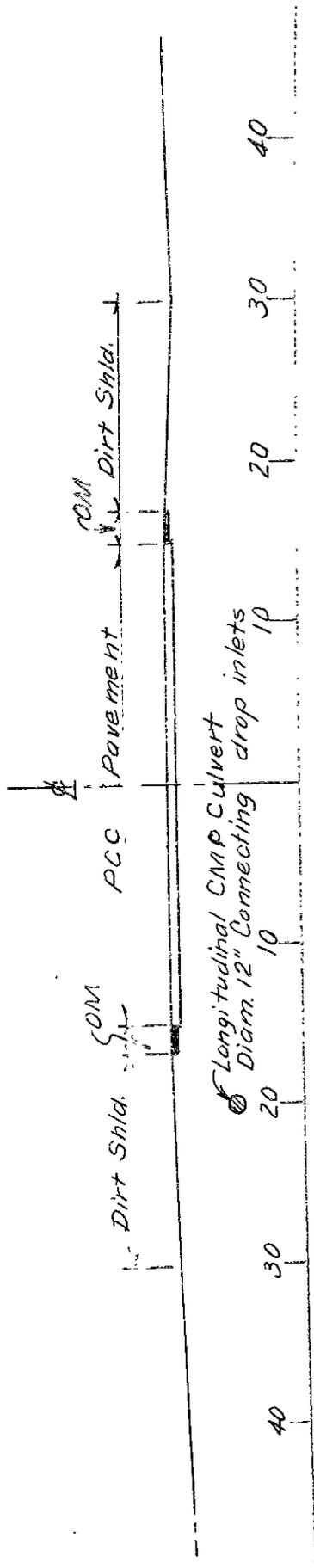
State of California, Div. of Highways  
 Materials & Research Department  
 Research No. 00258, W.O. No. 13NM26

Loadometer Station No. EI 18  
 III-Sac-3-B

ROADWAY CONDITION SURVEY

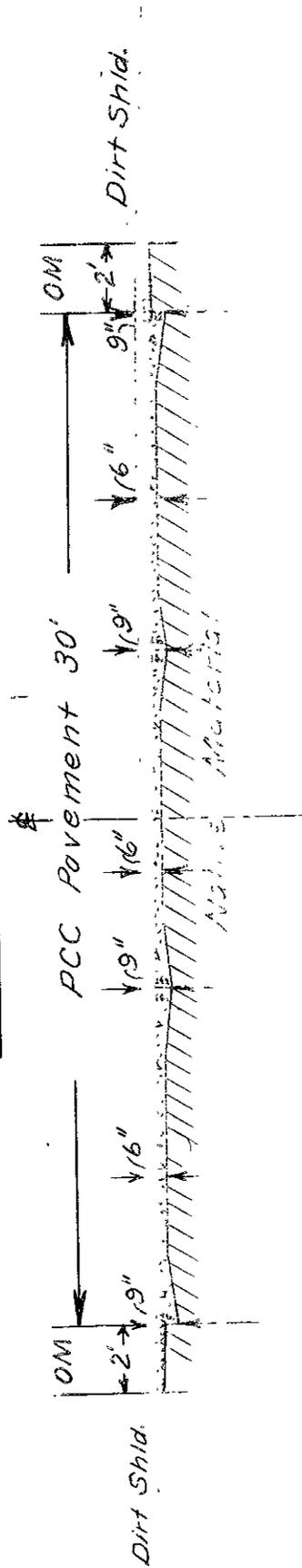
Scale: 1" = 10'

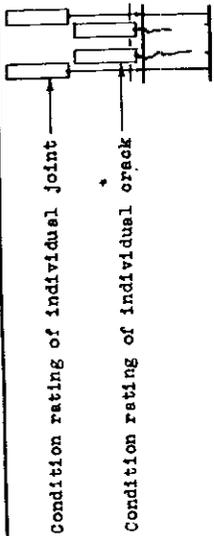
TYPICAL ROADWAY SECTION



Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION





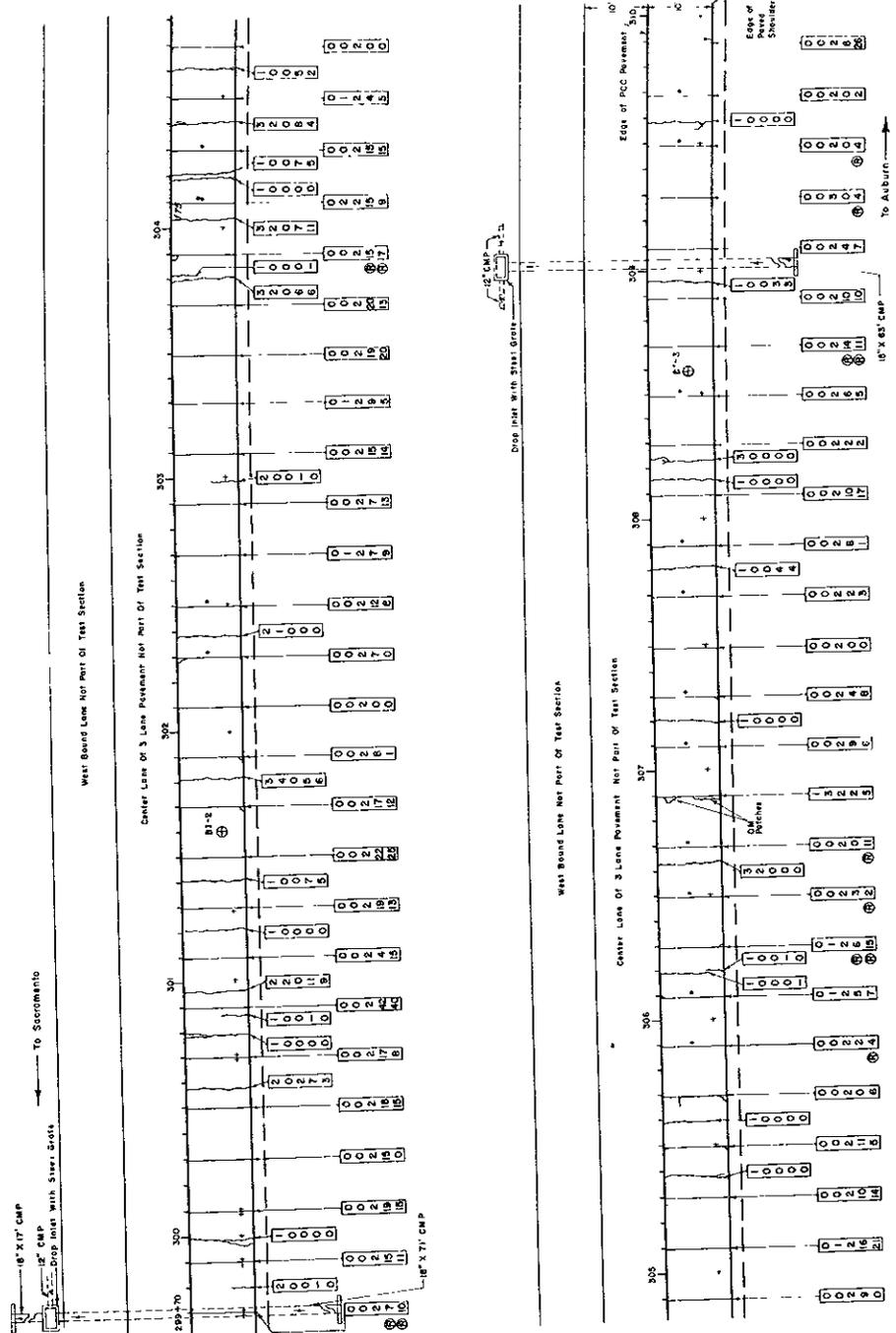
The table below indicates the significance of arrangement of the numbers in the rating "flag", and the values used in rating the condition of the individual joint or crack:

Position of Number in Flag	JOINTS				
	0	1	2	3	4
TOP NUMBER	None	Some Secondary Cracking			
SECOND NUMBER	None	Slight	Marked	Extreme	Complete
THIRD NUMBER	None	Excellent	Good	Fair	Poor

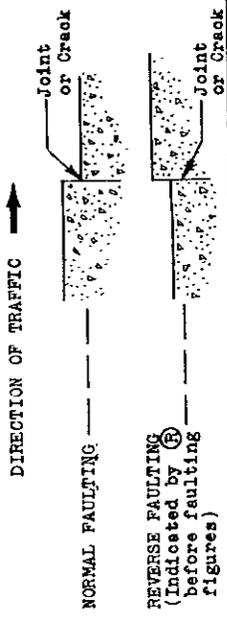
Position of Flag	CRACKS				
	0	1	2	3	4
TOP NUMBER	Tight but Definite	Very Definite	Marked	Extreme	Shattered Area
SECOND NUMBER	None	Slight	Marked	Extreme	Shattered Area
THIRD NUMBER	Not Sealed	Excellent	Good	Fair	Poor

Position of Flag	FAULTING, in 100ths of an inch				
	0	1	2	3	4
TOP NUMBER	AT INNER END OF JOINT. (Measured at a point 18" from the longitudinal joint.)	AT OUTER END OF JOINT. (Measured at a point 18" from the outer pavement edge.)			
SECOND NUMBER	*Secondary cracking as used above refers to the more or less concentric cracking frequently found adjacent to spalled areas.				
THIRD NUMBER	None	Excellent	Good	Fair	Poor

LOADMETER STA. NO. 18  
III-Sac-3-B



**TYPES OF FAULTING AT JOINTS AND CRACKS**

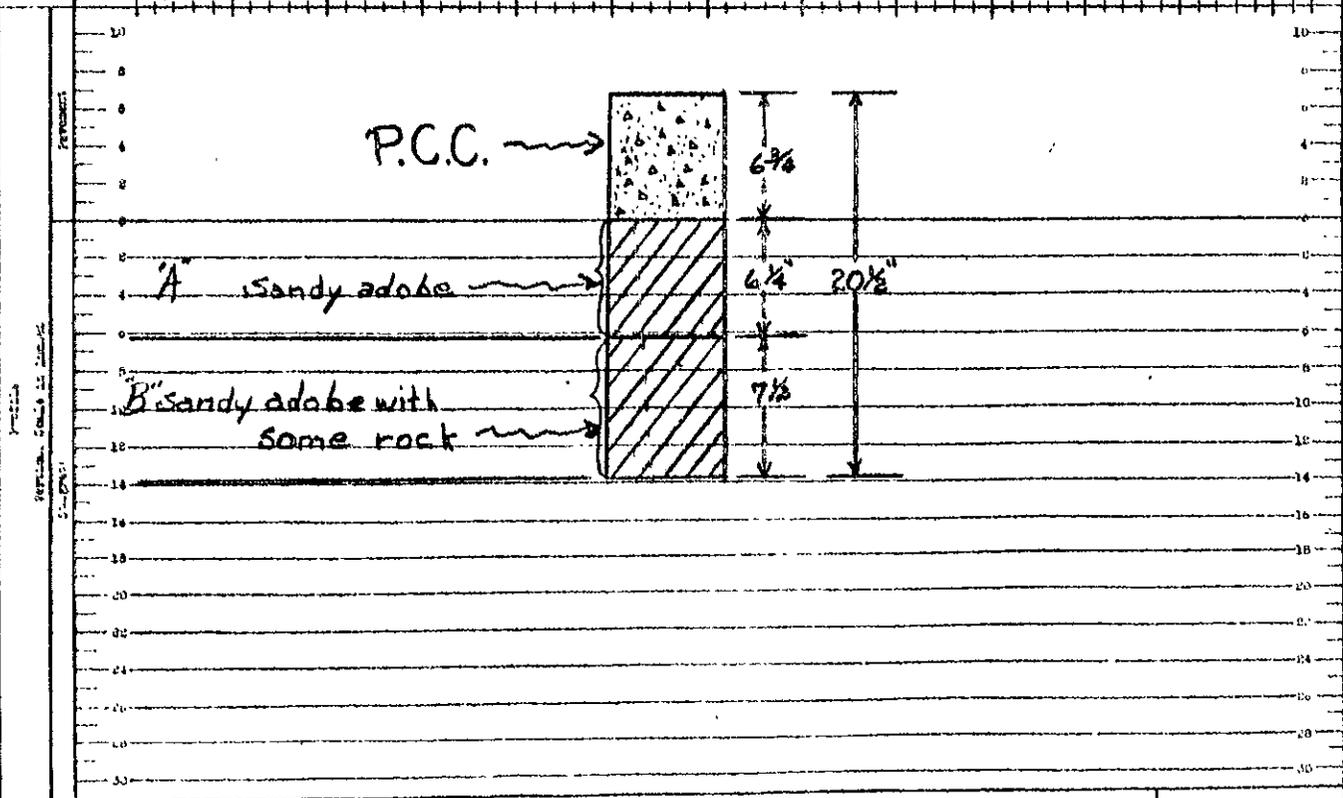
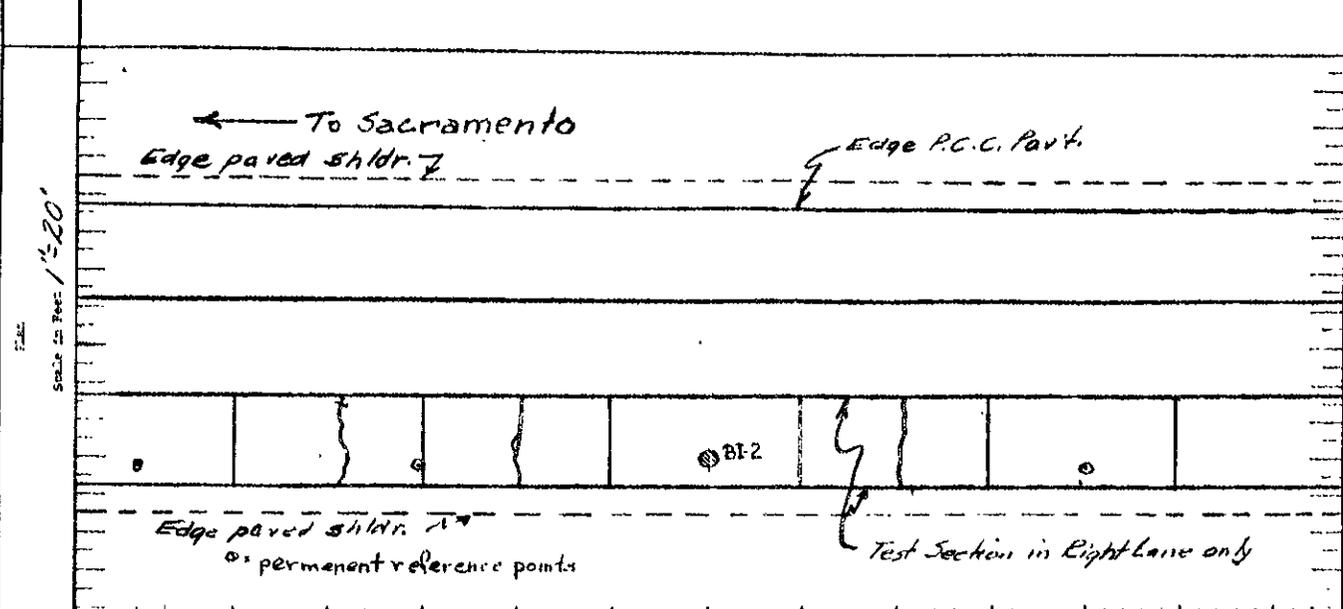
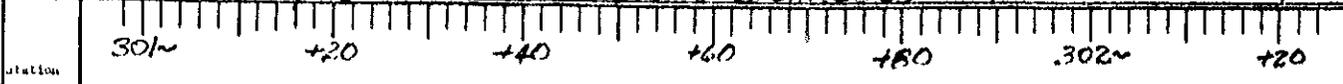


**LEGEND**

- ⊕ 8" diameter core hole for soil samples
  - 5" diameter core hole
  - Mudjacking or subsaling for holes
  - + Permanent reference points set for levels
- Figures preceded by this symbol *f* indicate faulting along the longitudinal joint between lanes. Figures are placed on the low side of the joint.



Dist. <i>III</i> Co. <i>Sac.</i> Hts. <i>3</i>	Sec. <i>B</i>	Contract No. <i>-</i>	Date of Constr. <i>1929</i>	Test Hole No. <i>BI-2</i>
Proj. <i>Bl. E. 11.</i>	Approx. height <i>12.25 ft</i>	Dist. from end of fill <i>-</i>	No. of Lanes <i>3</i>	Traffic <i>Heavy</i>
Out <i>-</i>	Approx. Depth <i>-</i>	Dist. from end of cut <i>-</i>	Side Ditches <i>Not clearly defined</i>	Depth <i>0 -</i>
Pavement Use, Int. <i>undeveloped</i>		Right <i>Roadside businesses</i>		Grade <i>0 x</i> Up <i>-</i>



STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 MATERIALS AND RESEARCH DIVISION

DRAWN BY *Coan*  
 CHECKED BY *Clawson*  
 DATE *8-1-51*

LOCATION AND PROFILE SKETCH

PAVEMENT INVESTIGATION

RESEARCH NO. 0000 00250

Dist. III	Co. Sac	Rte. 3	Sec. B	Contract No. —	Date of Constr. 1929	Test Hole No. BI-3
Fill Blt	Approx. height 18' 28' 30'	Dist. from End of Fill	No. of lanes 3	Traffic Heavy	Depth 0'	Date of Sampling 3-9-51
Out	Approx. Depth	Dist. from End of Out	Side Ditches Not clearly defined	Grade 0'	Up +	
Roadside Use, left Undeveloped		Right Residences (2)				

Station

308~ +20 +40 +60 +80 309~ +20

Plan

Scale in Feet 1"=20'

Profile

Vertical Scale in Inches

Remarks: At 20" below pavement surface - hard layer of rock & old Oil Mix. - apparently broken up during construction & covered with excavation material.

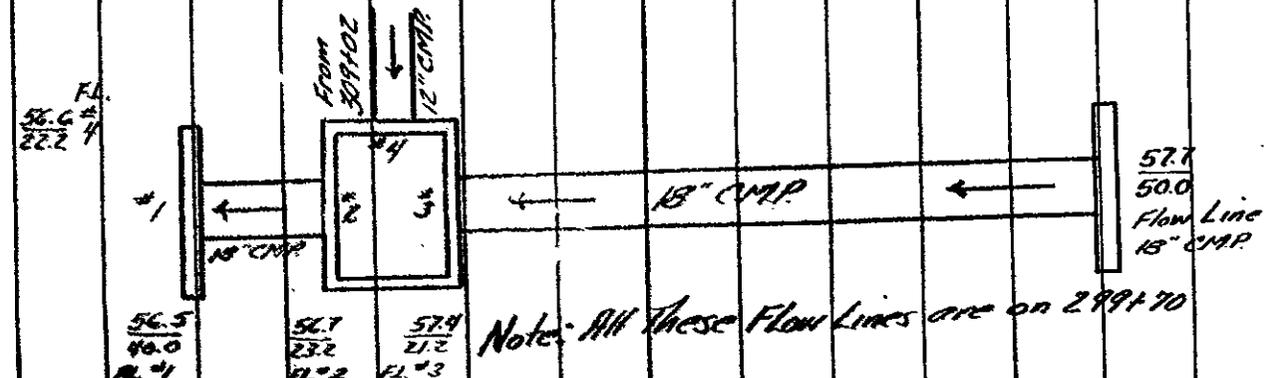
Drawn By **Cosn**

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 18  
 Dist. III Co. Sac. Rte. 3 Sec. B  
 Loc. Design 87  
 Sta. 299+70 to 304-  
 Sheet No. 1 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

	Left of Roadway						Right of Roadway						
				Field Shots	Field Shots	Dirt Shldr.	Edge Pav't	Edge Pav't	Dirt Shldr.	Gutter	Field Shots		
304~				61.3	62.3	62.66	62.73	62.4	63.0				
				45.0	29.5	15.0	15.0	30.5	40.5				
303~				60.6	62.2	62.73	62.79	62.1	63.1				
				45.0	28.5	15.0	15.0	29.5	43.5				
302~				59.9	62.2	62.2	62.85	62.95	62.2	61.5			
				43.5	33.5	28.5	15.0	15.0	29.5	46.0			
301~				60.5	62.5	62.5	62.90	62.97	62.4	61.5			
				45.5	33.0	28.5	15.0	15.0	28.5	45.0			
300				58.3	62.6	62.92	63.02	62.1	61.2				
				43.5	35.0	15.0	15.0	34.5	45.0				
299+71.5													
299+70													
299+70													
299+70													



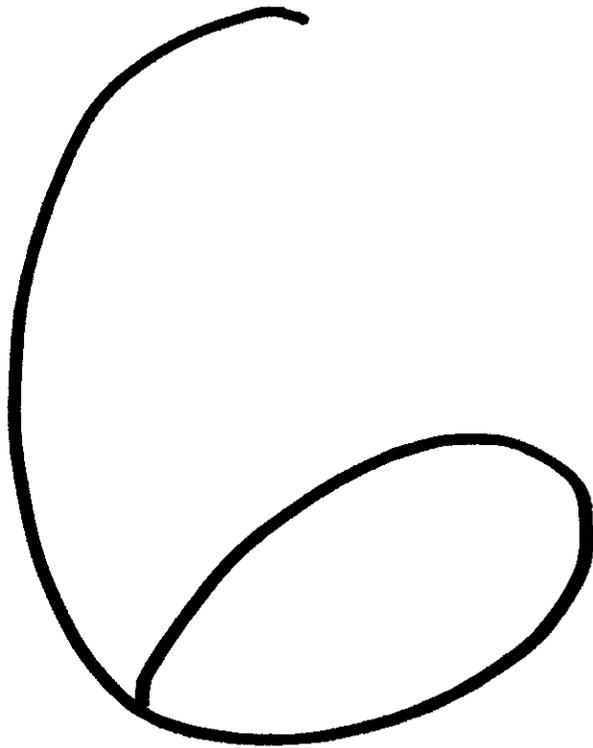
*Notes: All these Flow Lines are on 299+70*

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 18  
 Dist. III Co. Sec Rte. 3 Sec. B  
 Loc. Design BT  
 Sta. 305~ to 310~  
 Sheet No. 2 of 2

*Drainage Cross-Sections*  
 ROADWAY CONDITION SURVEY

		Left of Roadway					Right of Roadway							
		Field Shots.	Edge of Dirt Shldr.	Edge of Pav't	Edge of Pav't.	Edge of Dirt Shldr.	Field Shots.							
310~			60.2	61.5	62.27	62.42	61.6	60.4						
			43.0	29.0	15.0	15.0	30.5	44.0						
309+04	Flow line Elev. 58.4 18.0	12" CMP.												
309+02.5	58.4 17.0	18" CMP.										59.0	Flow line	18" CMP
309+01	58.2 18.0	12" CMP.										46.0		
309~			60.3	61.4	62.25	62.42	61.8	61.2						
			45.5	30.5	15.0	15.0	30.5	43.5						
+48								59.1	Flow line shots on 12" CMP side drain under driveway					
+28								59.2	45.0					
308~			60.4	61.8	62.38	62.45	62.0	61.4						
			42.0	29.5	15.0	15.0	29.5	43.5						
307~			61.2	62.2	62.45	62.55	61.9	61.9						
			43.0	29.5	15.0	15.0	30.5	44.5						
306~			61.8	62.3	62.54	62.66	62.1	62.6						
			43.5	30.5	15.0	15.0	30.0	42.5						
305~			62.1	62.4	62.59	62.68	62.6	63.0						
			43.5	29.5	15.0	15.0	30.0	43.0						



DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE

LOCATION: Loadometer Station No. 32 is located 0.5 mile west of Greenville, IV-Ala-5-A, at the west end of Altamont Pass.  
The section selected is located 0.4 miles west of the Loadometer Station on Road IV-Ala-5-F.

LENGTH: The section selected for test is established between Sta. 558+00 (east) and Sta. 568+00, (west), a total length of 1000 feet. Roadway is a 4-lane divided expressway. The section is established in the two right (westbound traffic) lanes.

SURFACE:

Type: Portland cement concrete, not reinforced.  
Constructed in 1949-50.

Width: Two 12 foot width lanes, total width 24 feet.

Joints: Transverse weakened plane contraction joints.

Spacing, etc. No dowels or load transfer devices. "Cold" or contact transverse joint at end of each day's work.  
Longitudinal joint between lanes is a tongue and groove or keyed joint. There are 30" x 5/8" tie bolts, at 30" centers along the longitudinal joint between lanes.

Thickness: 8" uniform section, each lane.

Loadometer Station No. 32  
Road IV-Ala-5-F

ROADWAY STRUCTURE

BASE:

Type and  
Thickness:

Cement-treated base, 3-1/2" to 4" in thickness.

Soil Clas-  
sification:

Not sampled

SUBBASE:

Type and  
Thickness:

Clean sand and gravel. Thickness varied from 11-1/4" to 12". Refer to typical section for this test section for placement of this material in the prism.

Soil Clas-  
sification:

A-1-A

BASEMENT SOIL:

Type and  
Thickness:

Black and gray adobe clay, sampled to a depth of 22" below the bottom of pavement.

Soil Clas-  
sification:

A-4 and A-7-6

SIDE DITCH  
DRAINAGE:

Entire section roadway is in a slight fill. The section pavement has a profile grade of -0.65% and drainage is from east (Sta. 558) to west (Sta. 568). Pavement slopes down from inner edge to outer edge, all drainage from pavement itself thus being taken off to the outside shoulder. Center of the division strip between the two roadways is depressed and acts as a longitudinal

Loadometer Station No. 32  
Road IV-Ala-5-F

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:  
(Continued)

surface drain for both roadways. Center of strip is from 1.1 to 1.7 feet below the elevation of the shoulder. Drainage along the section in this center strip flows into drop inlet boxes on the outside of the roadway fill. Drainage along the outer fill slope of the section flows in a ditch which parallels the roadway. This ditch is from 0.7 to 1.4 feet below the elevation of the shoulder. Drainage along the outer slopes also flows into the drop inlet boxes at Sta. 560+50 and Sta. 565+06. All drainage into these drop inlets is then carried out under the adjacent service roads in 12" C.M.P. culverts which drain into surface ditches.

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (1) Roadway Section: As noted above, the section roadway is entirely in fill. Present pavement elevations are from 1.5 to 2.0 feet above the surrounding areas.
- (2) Pumping: There are no evidences of any pumping in the section.
- (3) Faulting: There is some slight faulting at joints and cracks which is noted on the plan diagram.

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (4) Shoulders: Asphaltic plant mixed surfacing shoulders border the pavement throughout the section. On the inner edge of pavement, shoulders are 2.0 ft. wide, with a heavy asphaltic penetration treatment adjacent to that, giving in effect a surfaced shoulder 5.5 feet wide. There is very poor bond between the pavement and shoulder along the inner edge. Shoulder has pulled away from the pavement throughout the section. In places the opening between the pavement and shoulder is  $3/4$ " wide and open to a depth of 3". Along the outer edge of pavement, shoulders of plant mixed surfacing are 7.5 feet in width. This surfacing has not pulled away from the pavement so severely as has the inner shoulder but there are many places where it has done so. No asphaltic seal has been applied between the pavement and shoulders.
- (5) Miscellaneous: Throughout the section there are several transverse joints which are "wavy" and which will probably develop serious spalling in the future. Some of these have already spalled to some extent.

Loadometer Station No. 32  
Road IV-Ala-5-F

ROADWAY CONDITION

ROUGHNESS MEASUREMENTS:

Bench Marks  
and Levels:

Two bench marks were established at the section for use in taking cross-sections and pavement levels:

<u>B.M. No.</u>	<u>Location</u>	<u>Description</u>	<u>Elevation</u>
1	40' rt. of $\pm$ Sta. 556+14	1/4" diam. steel pin in W. curb D.I.	500.00 (Assumed)
2	40' rt. of $\pm$ Sta. 569+48	1/4" diam. steel pin in E. curb D.I.	491.316

Profilograph  
Records;

By means of the Profilograph, records were made of the longitudinal profiles of each lane of the traveled way surface. Records were made with the recording wheel of the machine 30" into each lane from the outside edge of pavement in each lane.

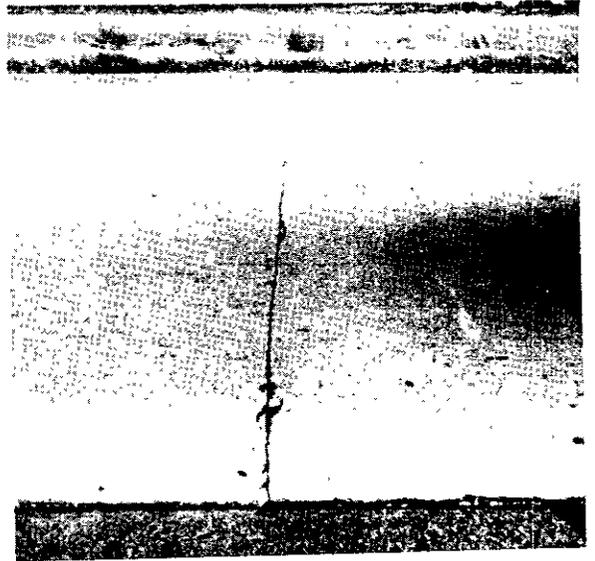
Profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 32

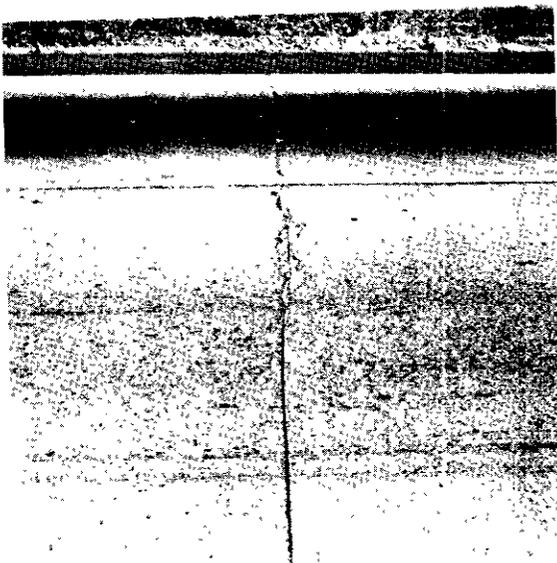
IV-Ala-5-F



Ahead on line from  
Station 558+00



Spalled Joint in Right  
Outer Lane Sta. 559+74



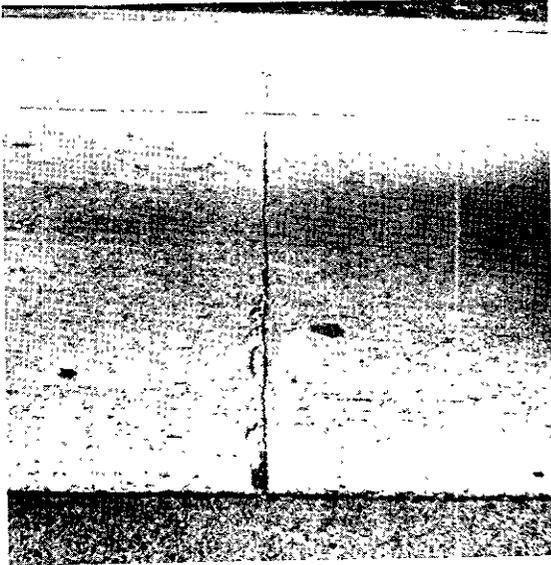
Spalled Joint in Right  
Inner Lane Sta. 560+35



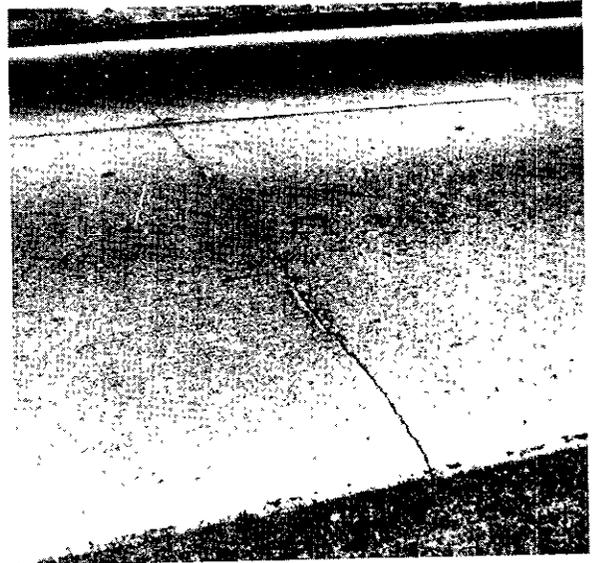
Spalled Joint in Right  
Inner Lane Sta. 562+30

Loadometer Sta. No. 32

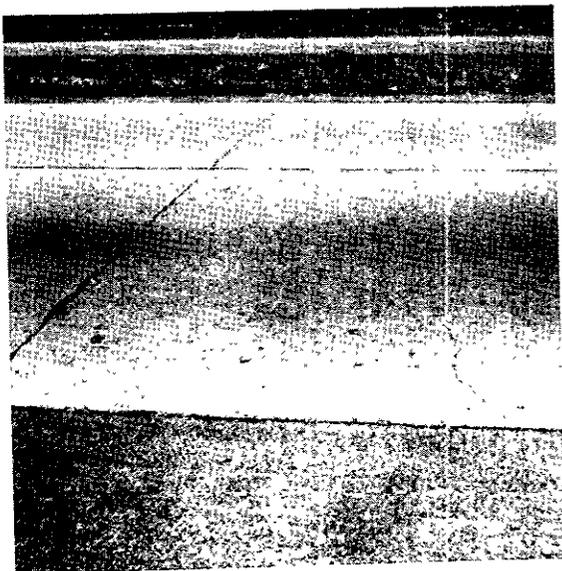
IV-Ala-5-F



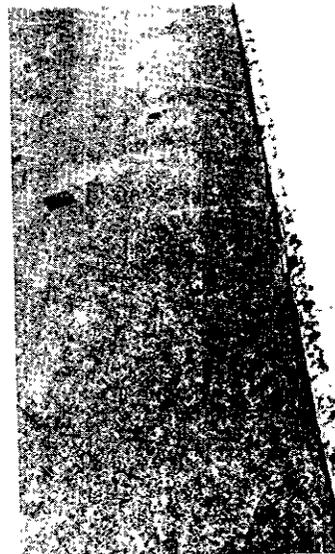
Spalled Joint Right  
Outer Lane Sta. 564+10



Spalled Joint Right Inner  
Lane Sta. 565+90



Spalled Joint and Corner  
Crack in Right Outer  
Lane Sta. 566+65



Opening Between Inner  
Shoulder and Edge of  
Pavement Sta. 567+90

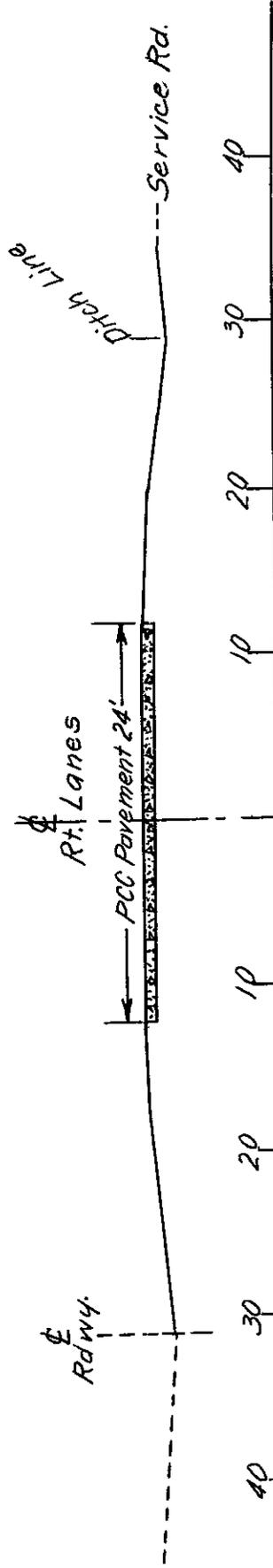
State of California, Div. of Highways  
 Materials & Research Department  
 Research No. 00258, W.O. No. 13NN26

Loadometer Station No. CB 32  
 IV-Ala-5-B

ROADWAY CONDITION SURVEY

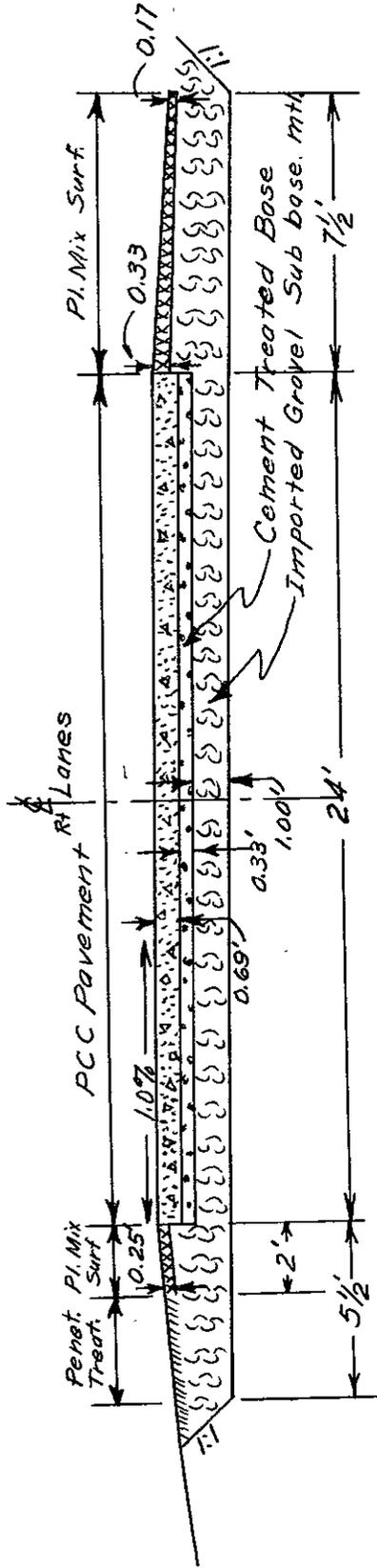
Scale: 1" = 10'

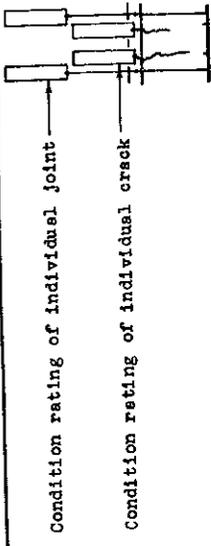
TYPICAL ROADWAY SECTION



Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION



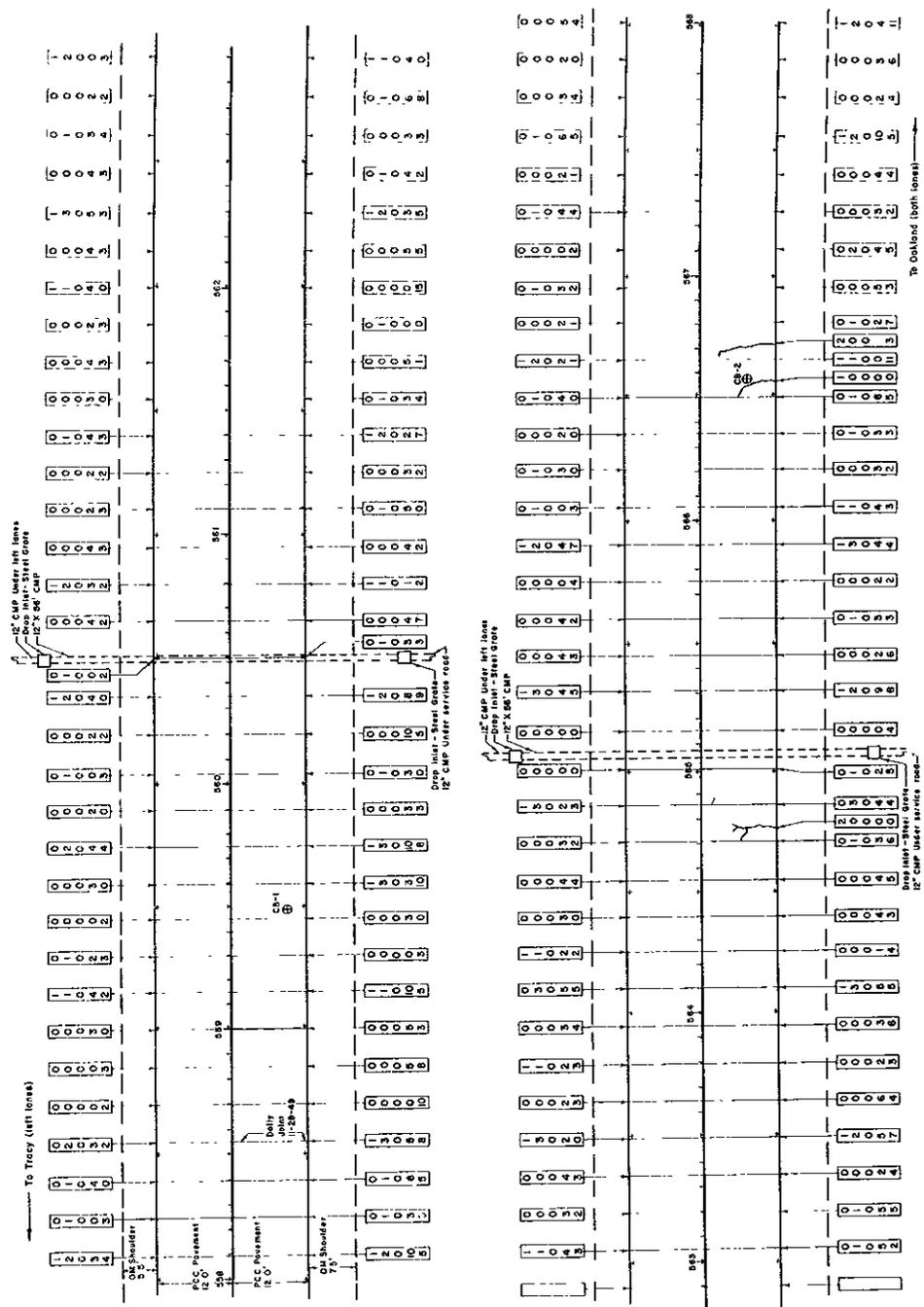


The table below indicates the significance of arrangement of the numbers in the rating "flag", and the values used in rating the condition of the individual joint or crack:

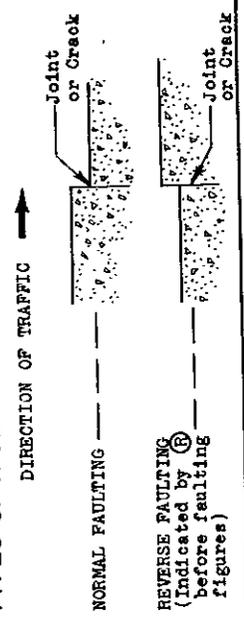
Position of Number in Flag	JOINTS				
	0	1	2	3	4
TOP NUMBER	None	Some Secondary Cracking			
SECOND NUMBER	None	Slight	Marked	Extreme	Complete
THIRD NUMBER	None	Excellent	Good	Fair	Poor
FOURTH NUMBER	FAULTING, in 100ths of an inch				
FIFTH NUMBER	AT INNER END OF JOINT. (Measured at a point 18" from the longitudinal joint.)				
	AT OUTER END OF JOINT. (Measured at a point 18" from the outer pavement edge.)				

\*Secondary cracking as used above refers to the more or less concentric cracking frequently found adjacent to spalled areas.

Position of Number of Flag	CRACKS				
	0	1	2	3	4
TOP NUMBER	Tight but Definite	Very Definite	Marked	Extreme	Shattered Area
SECOND NUMBER	None	Slight	Marked	Extreme	Shattered Area
THIRD NUMBER	Not Sealed	Excellent	Good	Fair	Poor
FOURTH NUMBER	FAULTING, in 100ths of an inch				
FIFTH NUMBER	AT INNER END OF CRACK. (Measured at a point 18" from the longitudinal joint.)				
	AT OUTER END OF CRACK. (Measured at a point 18" from the outer pavement edge.)				



**TYPES OF FAULTING AT JOINTS AND CRACKS**



**LEGEND**

- ⊕ 8" diameter core hole for soil samples
- 5" diameter core hole
- Mudjacking or subsesaling for holes
- + Permanent reference points set for levels

Figures preceded by this symbol / indicate faulting along the longitudinal joint between lanes. Figures are placed on the low side of the joint.

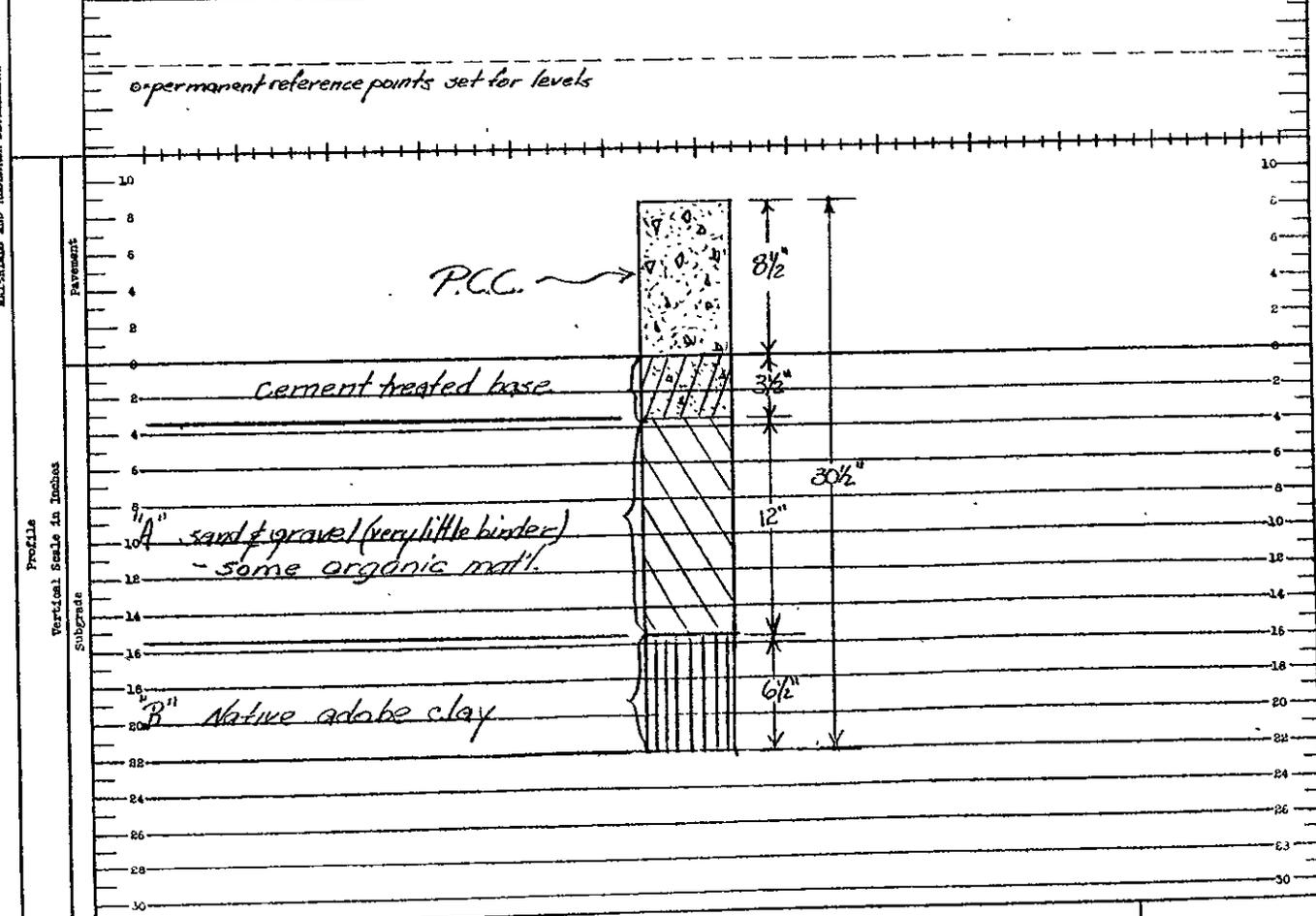
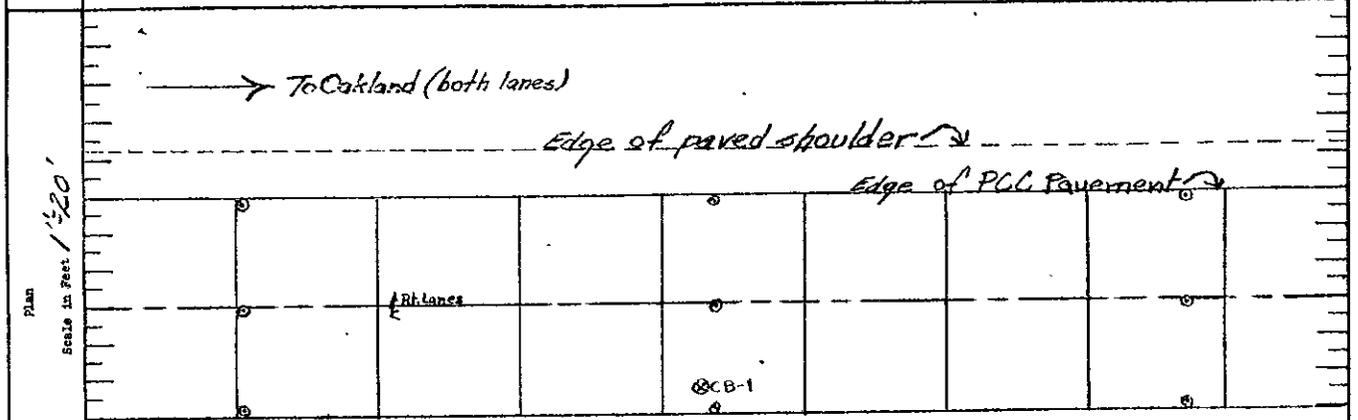
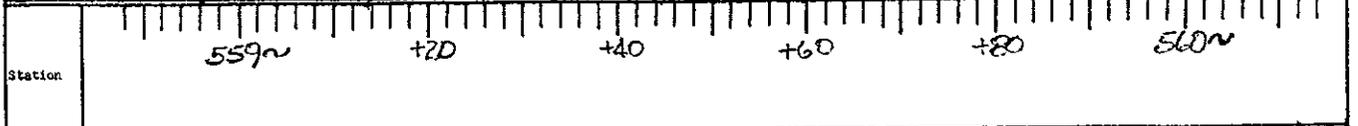


LOCATION AND PROFILE SKETCH

PAVEMENT INVESTIGATION

RESEARCH NO. 50257

Dist. <u>IV</u> Co. <u>Ala</u> Sta. <u>5</u> Sec. <u>F</u>	Contract No. <u>—</u>	Date of Constr. <u>1949-1950</u>	Test Hole No. <u>CB-1</u>
Fill <u>—</u> Approx. Height <u>Ave. 19</u>	Dist. from End of Fill <u>—</u>	No. of Lanes <u>four-lane</u>	Traffic <u>Hvy</u>
Cut <u>—</u> Approx. Depth <u>—</u>	Dist. from End of Cut <u>—</u>	Side Ditches <u>Rt. &amp; Lt.</u>	Depth <u>12"</u> Date of Sampling <u>7-24-52</u>
Roadside Use, left <u>Expressway</u>			Grade <u>6</u> % Up <u>←</u>



Remarks:

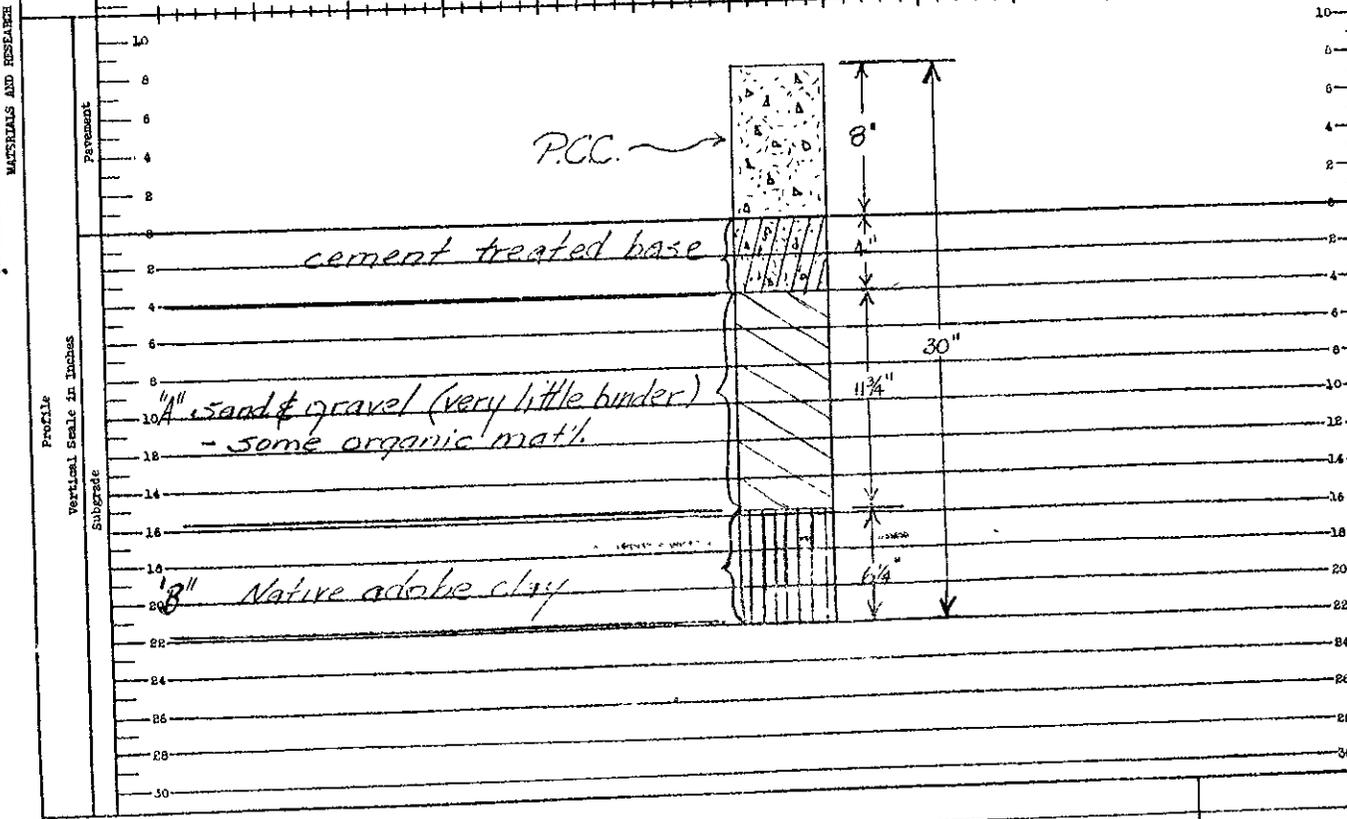
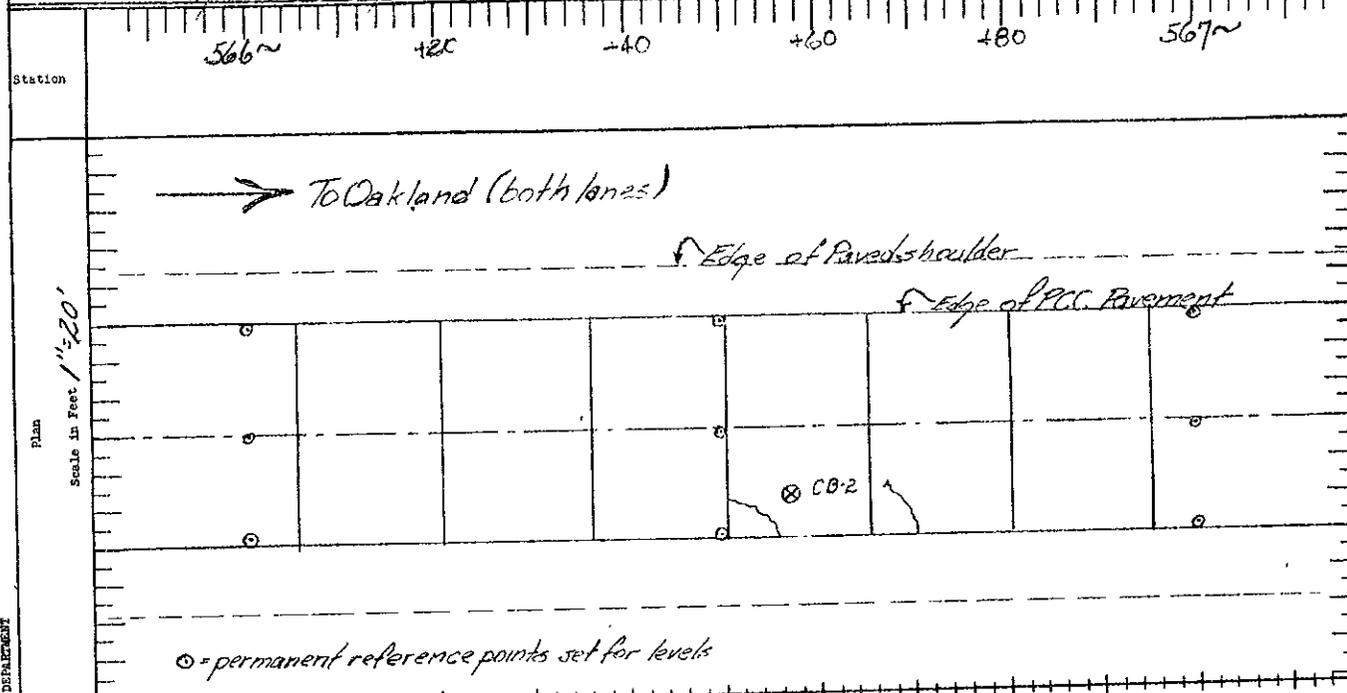
Party Smith  
Clouston  
Coan

Drawn By Coan

STATE OF CALIFORNIA  
DIVISION OF HIGHWAYS  
DEPARTMENT OF PUBLIC WORKS  
MATERIALS AND RESEARCH DEPARTMENT

PAVEMENT INVESTIGATION

Dist. <u>II</u>	Co. <u>Ala</u>	Pta. <u>E</u>	Sec. <u>F</u>	Contract No. <u>    </u>	Date of Constr. <u>1949-1950</u>	Test Hole No. <u>CB-2</u>
Fill <u>    </u>	APPROX. ELEV. <u>Ave. 19'</u>	Dist. From End of Fill <u>    </u>	No. of Lanes <u>four-Div.</u>	Traffic <u>10,000</u>	Depth <u>19'</u>	Date of Sampling <u>7-25-52</u>
Cut <u>    </u>	APPROX. DEPTH <u>    </u>	Dist. From End of Cut <u>    </u>	Side Ditches <u>Rt &amp; Lt</u>	Grade <u>6%</u>	Up <u>    </u>	
Roadside Use, <u>Expressway</u>						



STATE OF CALIFORNIA  
DIVISION OF HIGHWAYS  
DEPARTMENT OF PUBLIC WORKS  
MATERIALS AND RESEARCH DEPARTMENT

Remarks:

Party Smith  
Clawson

Drawn By Cran

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 32  
 Dist. IV Co. Ala Rte. 5 Sec. E  
 Loc. Design CB  
 Sta. 558+00 to 562+00  
 Sheet No. 1 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

*& Right Lanes*

	Left				Right				
	Ditch & division strip	outer edge of paved Shoulder	inner edge of paved Shoulder		inner edge of paved Shoulder	outer edge of paved Shoulder	break in Slope	Ditch	Top of Service road fill
562~	496.6 31.0	498.00 17.5	498.28 12.0		498.13 12.0	497.76 19.5	497.1 26.0	496.8 29.0	497.4 35.0
561~	497.1 31.0	498.70 17.5	498.98 12.0		498.78 12.0	498.37 19.5	497.6 26.0	497.3 29.0	497.8 35.0
	Flow line of 12" C.M.P.				Flow line of 12" C.M.P.				
150	495.51 29.0							495.29 27.0	
	Drop Inlet Steel grate				Drop Inlet Steel grate				
560~	498.1 31.0	499.43 17.5	499.63 12.0		499.39 12.0	498.97 19.5	498.4 26.0	497.9 29.0	498.3 35.0
559~	498.5 31.0	500.14 17.5	500.28 12.0		500.05 12.0	499.63 19.5	498.9 26.0	498.5 29.0	499.0 35.0
558~	499.1 31.0	500.72 17.5	500.94 12.0		500.69 12.0	500.29 19.5	499.5 26.0	498.9 29.0	499.7 35.0

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 32  
 Dist. IV Co. Ala Rte. 5 Sec. E  
 Loc. Design CB  
 Sta. 563+00 to 568+00  
 Sheet No. 2 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

*Right Lanes*

	<i>Left</i>			<i>Right</i>				
	ditch & division strip	outer edge of paved shoulder	inner edge of paved shoulder	inner edge of paved shoulder	outer edge of paved shoulder	Break in Slope	Ditch	Top of service road fill.
568~	493.0 31.0	494.19 17.5	494.46 12.0	494.22 12.0	493.79 19.5	493.0 26.0	492.8 29.0	493.3 35.0
567~	493.4 31.0	494.86 17.5	495.15 12.0	494.87 12.0	494.42 19.5	493.8 26.0	493.6 29.0	494.0 35.0
566~	494.2 31.0	495.45 17.5	495.70 12.0	495.51 12.0	495.04 19.5	494.4 26.0	494.2 29.0	494.7 35.0
+06~	Flow line of a 12" CMP			Flow line of a 12" CMP				
		493.2 29.0				492.9 27.0		
	Drop Inlet - Steel grate			Drop Inlet - Steel grate				
565~	494.9 31.0	496.17 17.5	496.38 12.0	496.19 12.0	495.90 19.5	495.2 26.0	495.4 29.0	495.5 35.0
564~	495.4 31.0	496.79 17.5	497.08 12.0	496.80 12.0	496.54 19.5	495.9 26.0	495.6 29.0	496.2 35.0
563~	495.9 31.0	497.42 17.5	497.71 12.0	497.48 12.0	497.07 19.5	496.4 26.0	496.1 29.0	496.7 35.0

7

DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE

LOCATION:

Loadometer Station No. 26 is located 7.5 miles north of the north city limits of Fresno, near the Fresno-Madera County Line, road VI-Fre-4-C. The section selected for test is approximately 5.5 miles north of the north city limits of Fresno, and 2.0 mi. south of the Loadometer Station.

LENGTH:

The section is established between Sta. 351+00 and Sta. 361+00, a total length of 1000 feet. Roadway is a 3-lane highway, outer lanes of P.C.C. and middle lane of asphaltic concrete pavement. The section covers only the right (northbound traffic) lane.

SURFACE:

Type:

Portland cement concrete, reinforced as noted below. Constructed in 1937.

Width:

10 feet

Reinforcing:

Transverse only, 1/2 square deformed bar on each side of each joint, and 11" from the joint.

Joints:

Joints are spaced 20 feet apart. Each third joint is an expansion joint. Remainder are weakened plane contraction joints.

Spacing  
and  
Dowels:

Loadometer Station No. 26  
Road VI-Fre-4-C

ROADWAY STRUCTURE

SURFACE:

Joints:

Spacing  
and  
Dowels:  
(Continued)

Each transverse joint has nine  $3/4$ " dowels through it on  $14$ " centers, starting  $4$ " from edge of pavement.

Thickness:

The lane selected for testing is of  $9$ "- $6\frac{1}{2}$ "- $6\frac{1}{2}$ "- $9$ " cross-section. Transition from  $9$ " to  $6-1/2$ " is made in a distance of 2 feet from each edge.

BASE:

Type and  
Thickness:

Clean sand, clayey sand and gravel  
Thickness varies from  $6-1/4$ " to  $15-3/4$ ".  
Material also serves as a cushion course as noted below.

Soil Clas-  
sification:

A-1-b, and A-2-4

NOTE: At all locations sampled, below the base and cushion course, an old asphaltic mix pavement was encountered, thickness unknown.

SIDE DITCH  
DRAINAGE:

The section roadway is entirely in fill. Profile grade of the roadway is level for all practical purposes.

On the left, there are no clearly defined ditches. Agricultural lands border the right of way on the left and side drainage apparently

Loadometer Station No. 26  
Road VI-Fre-4-C

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:  
(Continued)

runs off onto these lands and is absorbed.  
On the right, the roadway is paralleled by the Valley Line of the Southern Pacific Railroad. Toe of fill for the railroad is approximately 55' from the right edge of pavement in the section. The area between the toe of roadway fill and toe of railroad fill serves to accommodate drainage from both. The area has been rough bladed, has no defined ditch, varies from two to four feet below the elevation of the edge of pavement and has a slight slope to the north. There are no culverts or bridges within the section.

ROADWAY CONDITION:

SPECIAL  
CONDITIONS:

- (1) Roadway Section: As noted above, the entire section roadway is in fill. Present pavement elevations are from 1.0 to 4.0 feet above the surrounding areas.
- (2) Pumping: There are no evidences of pumping in the section.
- (3) Faulting: There is some faulting at joints and cracks which is indicated on the plan diagram.

Loadometer Station No. 26  
Road VI-Fre-4-C

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

(4) Shoulders: Throughout the section, the outer lanes of P.C.C. pavement are bordered by asphaltic mix shoulders, which are in generally good condition.

On the left of the roadway, shoulders are 15 to 17 feet in width.

On the right of the roadway, total shoulder width is 8.5 feet. Immediately adjacent to the section lane is a recent, extra blanket of asphaltic mix which extends 3.5 to 4.5 feet from the right outer edge of pavement.

(5) Miscellaneous: There are no evidences of the section lane having been mudjacked or subsealed.

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:

Two bench marks were established at the section for use in taking cross-sections and pavement levels.

<u>B.M. No.</u>	<u>Location</u>	<u>Description</u>	<u>Elevation</u>
1	25' rt. of rt. edge pavement Sta. 346+50	1/4" diam. steel pin set in P.C.C. headwall	300.000 (Assumed)

Loadometer Station No. 26  
Road VI-Fre-4-C

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:  
(Continued)

<u>B.M. No.</u>	<u>Location</u>	<u>Description</u>	<u>Elevation</u>
2	40' rt. of rt. edge pavement Sta. 360+85	1/4" diam. steel pin set in R. R. spike in telegraph pole	297.910

Profilograph  
Records:

By means of the Profilograph, records were made of the longitudinal profiles of the section lane of the traveled way surface. Records were made with the recording wheel of the machine 30" into the lane from each edge of pavement.

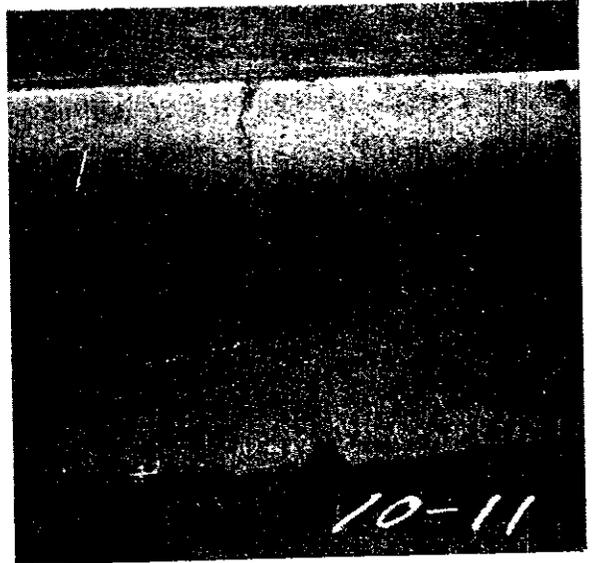
Profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 26

VI-Fre-4-C



Ahead on Line from Sta.  
351+00



Transverse Crack at  
Station 352+13



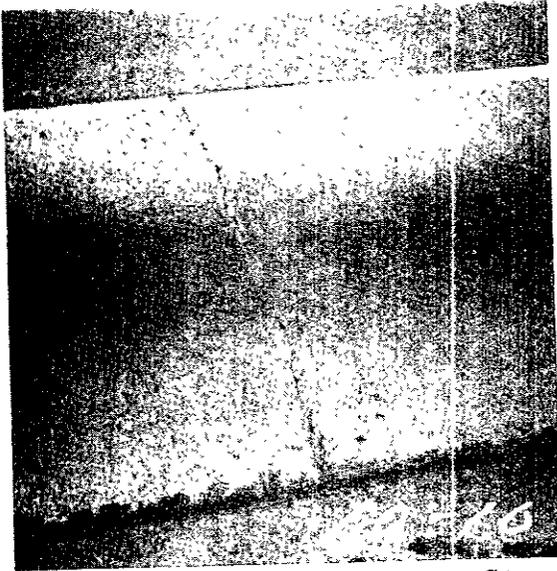
Transverse Crack at Sta.  
353+10



Transverse Cracks at  
Station 353+90

Loadometer Sta. No. 26

VI-Fre. 4-C



Transverse Crack at Sta.

354+49



Transverse Crack at Sta.

356+30



Transverse Crack at

Station 357+92



Back on line from Sta.

361+00

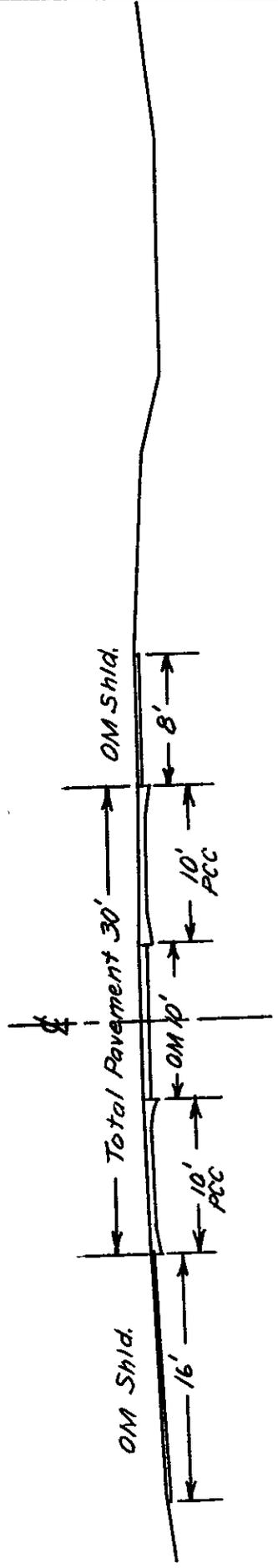
State of California, Div. of Highways  
 Materials & Research Department  
 Research No. 00258, W.O. No. 13NN26

Loadometer Station No. BZ 26  
 VI-Fre-4-C

ROADWAY CONDITION SURVEY

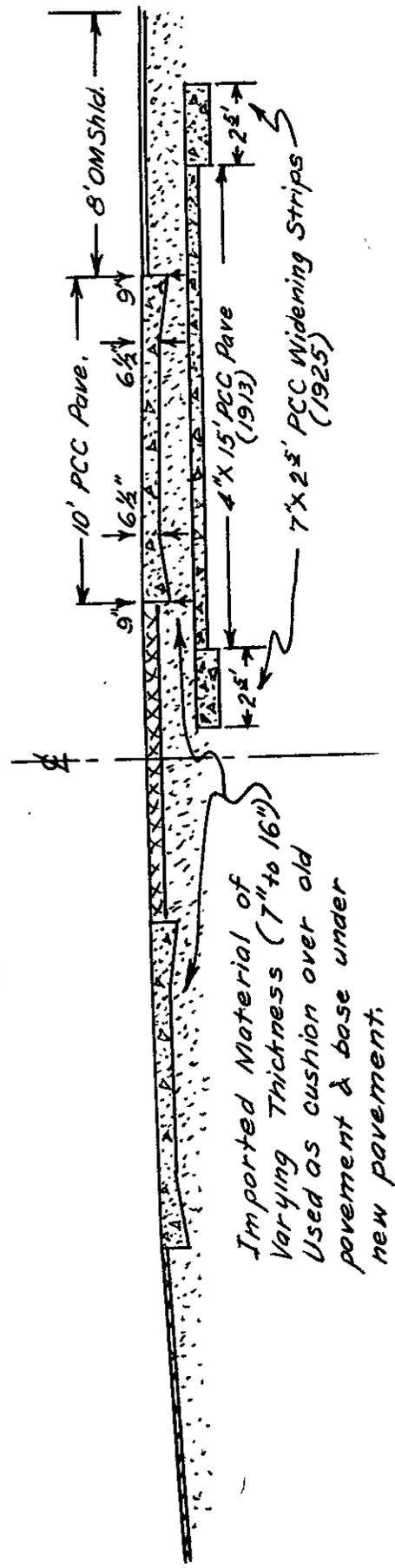
Scale: 1" = 10'

TYPICAL ROADWAY SECTION



TYPICAL STRUCTURAL SECTION

Scale: 1" = 5'



*Imported Material of Varying Thickness (7" to 16") Used as cushion over old pavement & base under new pavement.*

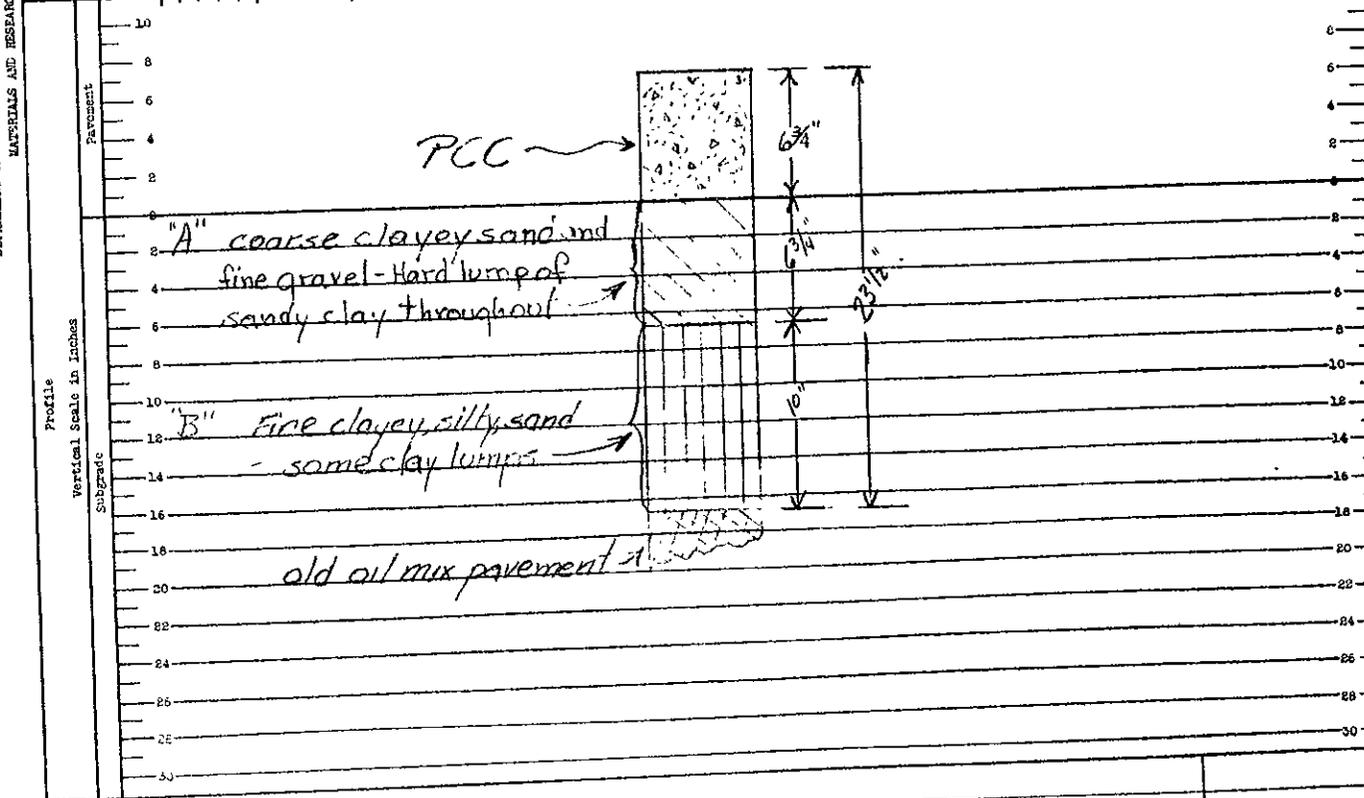
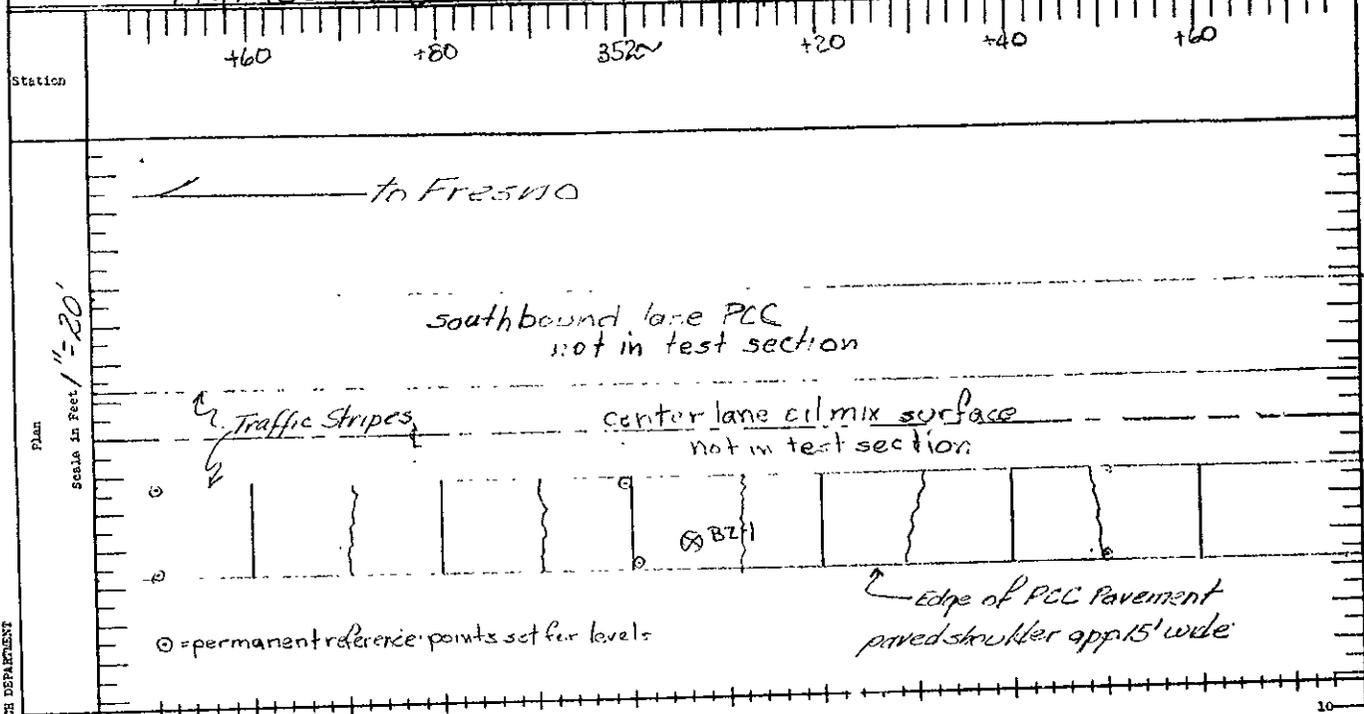
*Test Section Established in Right Lane Only (PCC Pavement)*





PAVEMENT INVESTIGATION

Dist. VI	Co. Fre Rte. 4	Sec. C	Contract No. -	Date of Constr. 7-1957	Test Hole No. BZ-1
Fill X	APPROX. EIGHT 1.5' to 2'	Dist. from End of Fill	No. of Lanes three	Traffic Heavy	
Cut -	APPROX. DEPTH	Dist. from End of Cut	Side Ditches None - barely defined	Depth	Date of Sampling 4-21-52
Roadside Use, Left Agricultural			Right RR R/W		Grade 0% Up

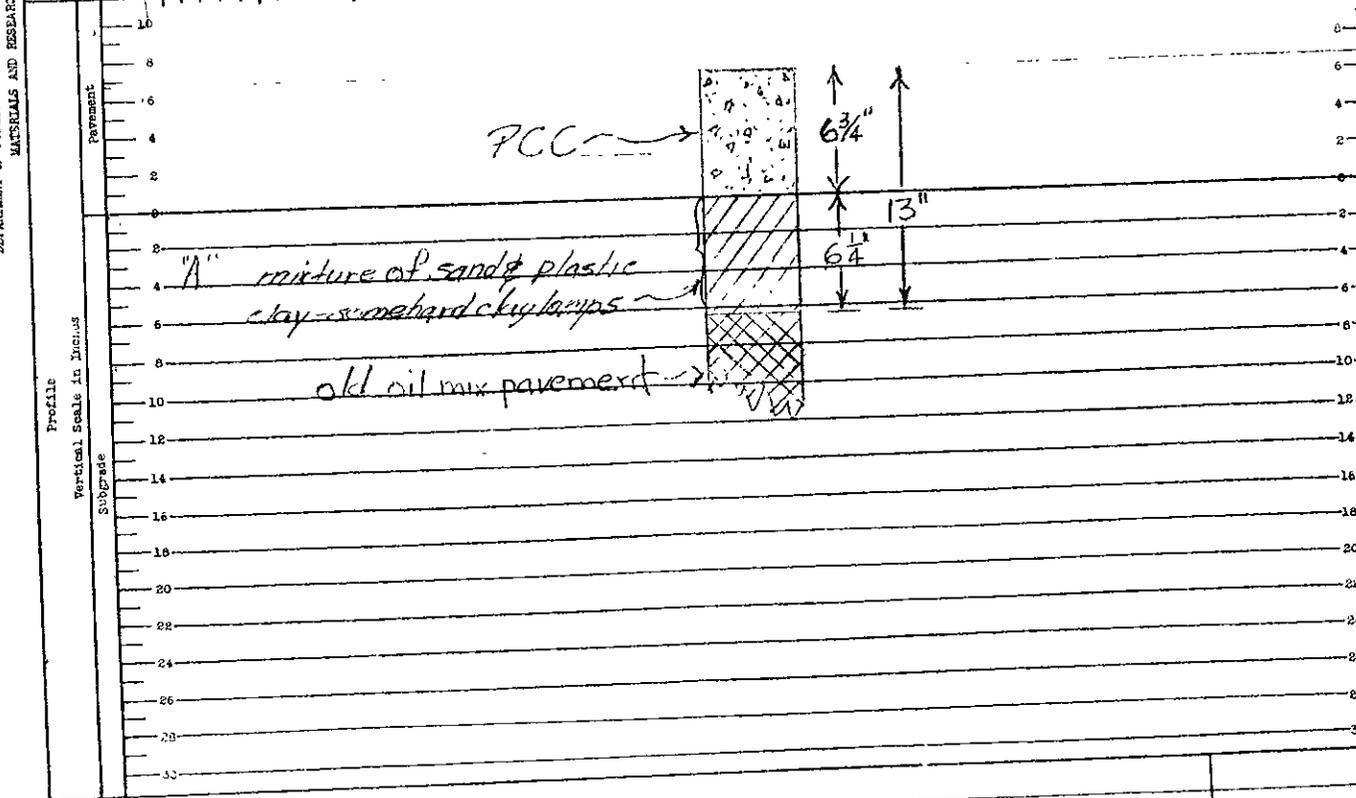
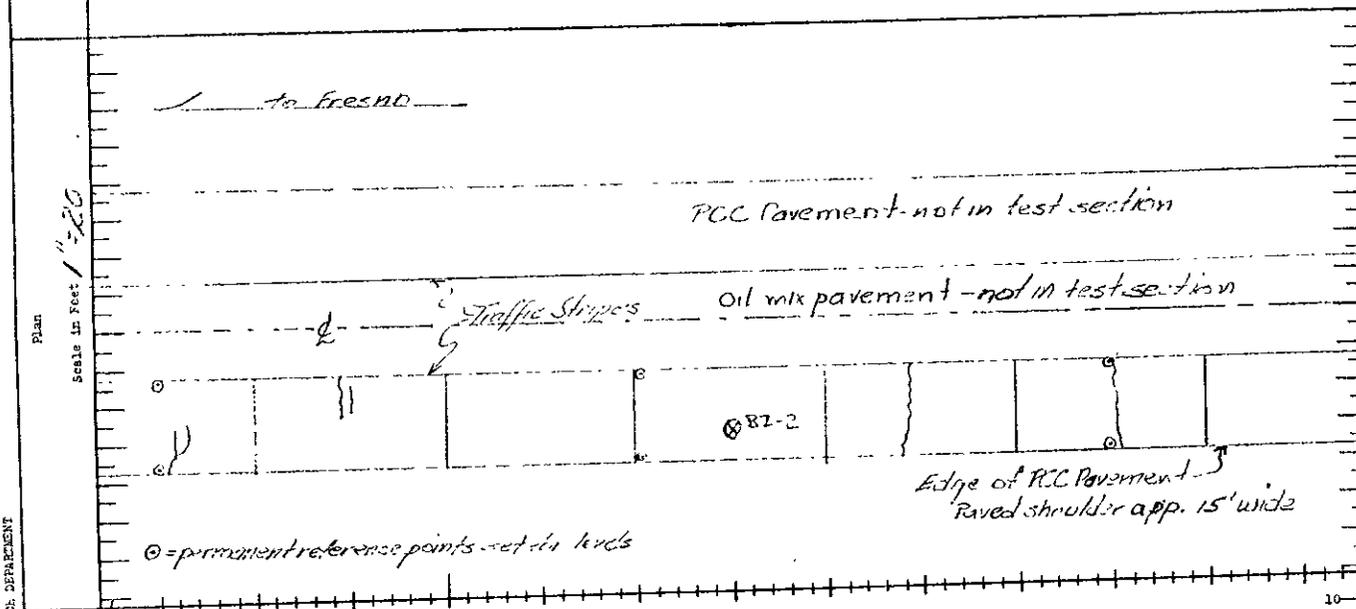


STATE OF CALIFORNIA  
DIVISION OF HIGHWAYS  
DEPARTMENT OF PUBLIC WORKS  
MATERIALS AND RESEARCH DEPARTMENT

Drawn by	Smith Clawson Coan
----------	--------------------------

FAVORITE INVESTIGATION

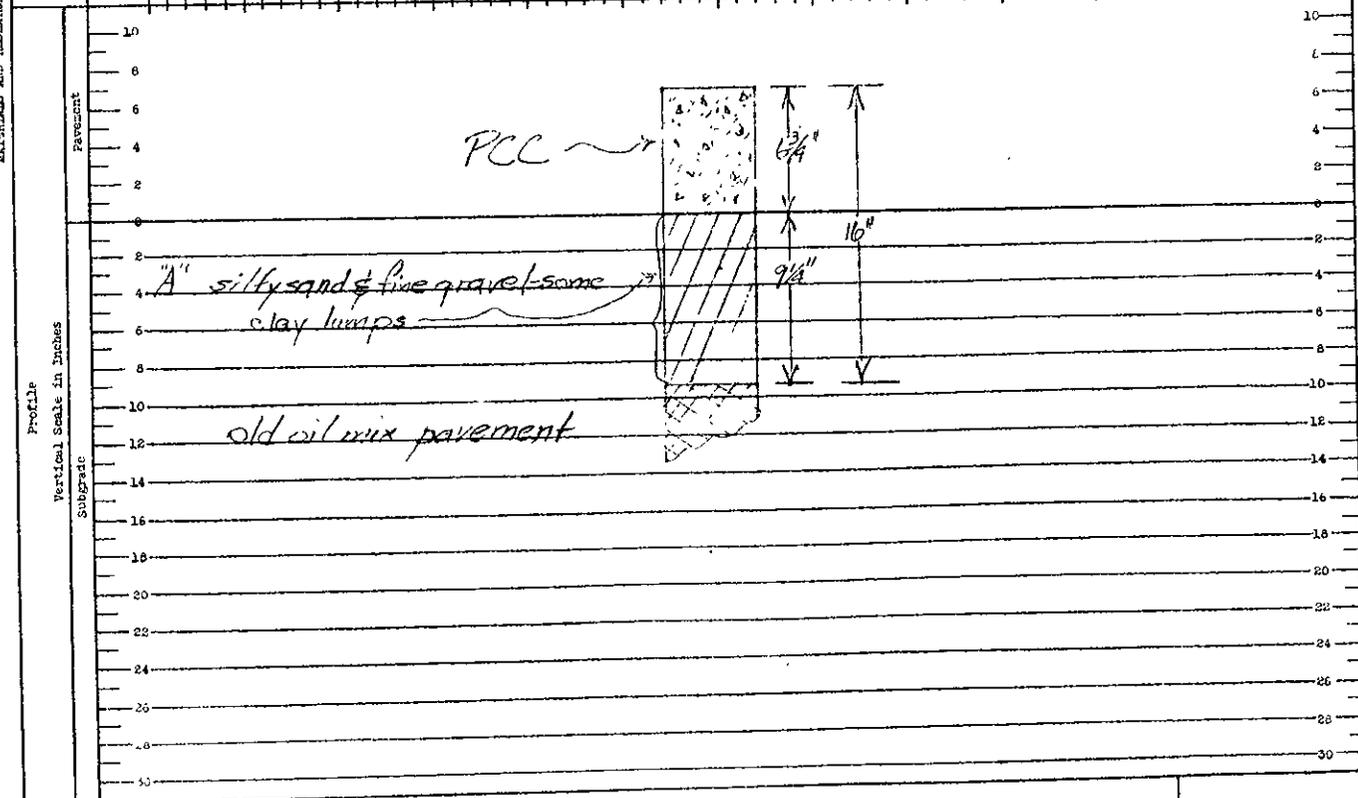
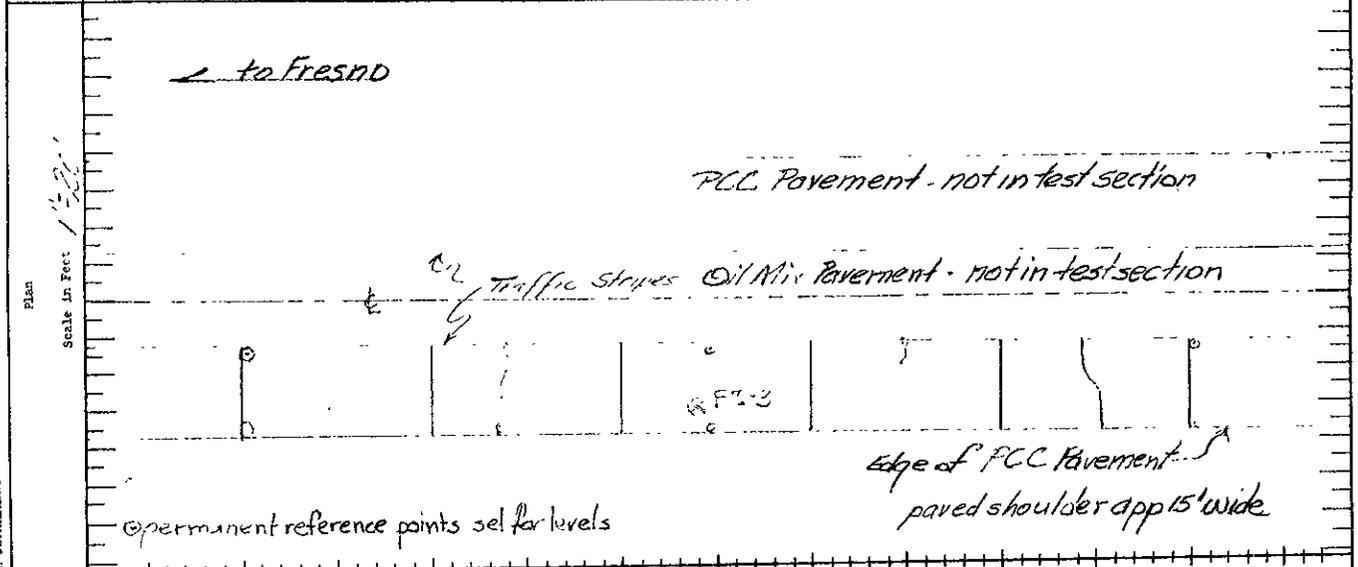
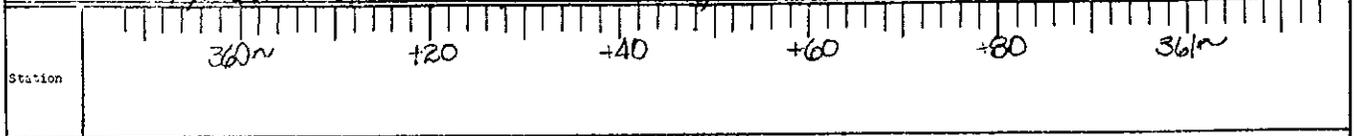
Dist. VI	Co. Fre	Rte. 4	Sec. C	Contract No.	Date of Constr. ?-1937	Test Hole No. BZ-2
Fill X	Dist. from End of Fill 15 to 20	Dist. from End of Out	Do. of Lanes three	Traffic Heavy	Depth	Date of Sampling 4-22-52
Subgrade	Agricultural		Right RR - P/W		Grade 0 1/2	Up



STATE OF CALIFORNIA  
 DIVISION OF HIGHWAYS  
 DEPARTMENT OF PUBLIC WORKS  
 MATERIALS AND RESEARCH DEPARTMENT

Party Smith  
Clauson  
 Drawn By Coan

Dist. VI Co. Fre Rte. 4	Sec. C	Contract No. ---	Date of Constr. 2-1957	Test Hole No. BZ-3
Fill <input checked="" type="checkbox"/>	Approx. depth 15' to 2'	Dist. from end of Fill	No. of Lanes 3 lanes	Traffic Heavy
Cut <input type="checkbox"/>	Dist. from End of Cut	Side Ditches Not clearly defined	Depth ---	Date of sampling 4-30-52
Roadside Use, left Agricultura	Right RR R/W	Grade 0 x	Up ---	



STATE OF CALIFORNIA DEPARTMENT OF PUBLIC WORKS DIVISION OF HIGHWAYS MATERIALS AND RESEARCH DEPARTMENT

Drawn by Coan	Party Smith
	Clawson

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. CO258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 26  
 Dist. VI Co. Fre Rte. 4 Sec. C  
 Loc. Design BZ  
 Sta. 351+00 to 356+00  
 Sheet No. 1 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

		Left					Right							
		Right way line	Shoulder Point	outer edge of paved Shoulder	Left outer E.P.	Left inner E.P.	Right inner E.P.	Right outer E.P.	Edge Shoulder resurface	outer edge of paved Shoulder	Shoulder Point		Top of R.R. f.11	
356~		297.7	298.0	298.14	298.63	298.73	298.72	298.61	298.55	298.36	297.9	295.9	296.7	
		50.0	39.0	31.0	15.0	5.0	5.0	15.0	19.5	23.5	35.0	51.0	71.0	
+50		297.6	298.1	298.35	298.73			298.72	298.68	298.50	298.1	297.3	297.3	
		50.0	38.0	31.0	15.0	5.0	5.0	15.0	19.5	23.5	35.0	45.0	72.0	
355~		297.6	298.2	298.40	298.83	298.92	298.94	298.82	298.76	298.82	298.1	297.6	298.0	
		50.0	37.0	31.0	15.0	5.0	5.0	15.0	19.0	23.5	36.0	46.0	73.0	
+50		297.7	298.1	298.39	298.97			298.88	298.73	298.81	298.3	298.1	298.2	
		50.0	38.0	32.0	15.0	5.0	5.0	15.0	19.5	23.5	35.0	52.0	70.0	
354~		297.2	298.4	298.55	299.16	299.23	299.24	299.13	299.09	298.94	298.5	297.6	298.0	
		50.0	36.0	31.0	15.0	5.0	5.0	15.0	19.5	23.5	36.0	50.0	70.0	
+50		297.5	298.3	298.68	299.25			299.28	299.18	299.00	298.6	297.1	297.7	
		50.0	36.0	32.5	15.0	5.0	5.0	15.0	18.5	23.5	34.0	51.0	72.0	
353~		297.8	298.4	298.89	299.43	299.55	299.52	299.43	299.38	299.15	298.6	296.9	296.9	
		50.0	38.0	32.0	15.0	5.0	5.0	15.0	18.5	23.5	33.0	50.0	73.0	
+50		297.8	298.8	299.08	299.59			299.59	299.52	299.40	299.0	297.0	296.9	
		50.0	36.0	32.0	15.0	5.0	5.0	15.0	18.5	23.5	33.0	50.0	73.0	
352~		297.9	299.0	299.30	299.74	299.85	299.84	299.75	299.65	299.52	298.9	297.4	297.4	
		50.0	36.0	30.5	15.0	5.0	5.0	15.0	18.5	23.5	36.0	52.0	70.0	
+50		298.4	299.2	299.45	299.89			299.91	299.81	299.66	299.1	297.5	297.1	
		50.0	35.0	30.5	15.0	5.0	5.0	15.0	19.5	23.5	33.0	50.0	70.0	
351~		298.4	299.4	299.58	300.04	300.16	300.15	300.07	299.98	299.77	299.2	297.5	297.5	
		50.0	36.0	30.5	15.0	5.0	5.0	15.0	19.5	23.5	33.0	48.0	70.0	

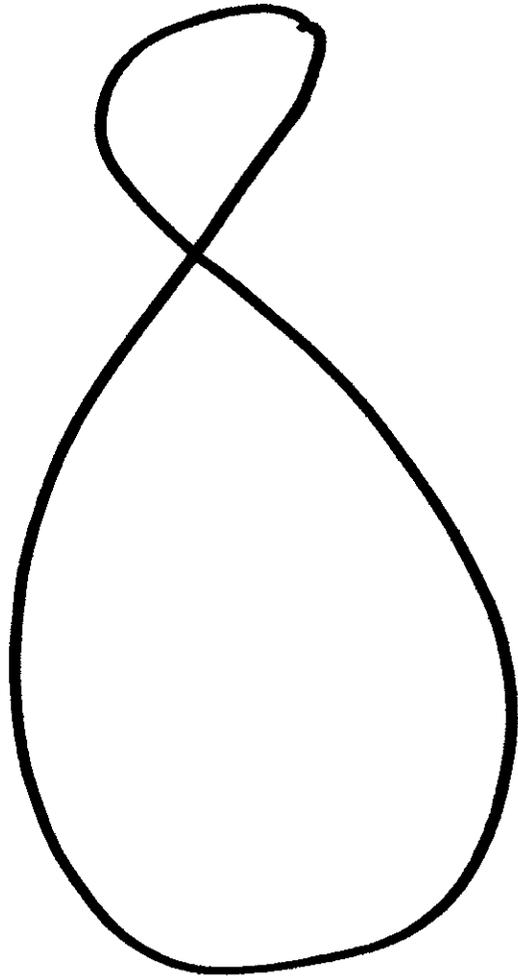
State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 26  
 Dist. VI Co. Fre Rte. 4 Sec. C  
 Loc. Design BZ  
 Sta. 356+50 to 361+00  
 Sheet No. 2 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

		Left					Right						
		Right edge of Way Line	Shoulder Point	outer edge of paved Shoulder	Left outer E.P.	Left inner E.P.	Right inner E.P.	Right outer E.P.	Shoulder resurface	outer edge of paved Shoulder	Shoulder Point		Toe of P.P. f. 11
361~		296.7	297.5	298.04	298.64	298.75	298.73	298.64	298.54	298.32	297.4	295.3	296.5
		50.0	39.0	31.0	15.0	5.0	5.0	15.0	19.5	23.5	35.0	45.0	73.0
150		296.7	297.1	297.98	298.59			298.61	298.53	298.33	297.4	296.2	296.8
		50.0	40.0	31.0	15.0	5.0	5.0	15.0	19.5	24.0	36.0	50.0	73.0
360~		296.8	297.2	297.97	298.54	298.68	298.67	298.54	298.46	298.23	297.1	295.1	295.5
		50.0	40.0	31.0	15.0	5.0	5.0	15.0	19.0	23.5	35.0	50.0	73.0
150		296.6	297.3	297.95	298.53			298.52	298.43	298.23	297.2	295.1	295.8
		50.0	37.0	32.0	15.0	5.0	5.0	15.0	19.0	23.5	35.0	50.0	73.0
359~		296.8	297.1	297.94	298.49	298.60	298.59	298.47	298.42	298.27	297.5	296.7	297.4
		50.0	40.0	32.0	15.0	5.0	5.0	15.0	19.0	23.5	34.0	45.0	73.0
150		296.7	297.2	297.96	298.47			298.50	298.45	298.29	297.5	296.7	297.4
		50.0	40.0	32.0	15.0	5.0	5.0	15.0	19.0	23.5	35.0	49.0	73.0
358~		296.8	297.7	297.90	298.44	298.54	298.56	298.46	298.41	298.23	297.4	296.4	297.5
		50.0	38.0	32.0	15.0	5.0	5.0	15.0	18.5	23.5	33.0	50.0	73.0
150		296.9	297.4	297.91	298.48			298.44	298.40	298.23	297.3	296.4	296.6
		50.0	39.0	32.0	15.0	5.0	5.0	15.0	19.0	23.5	34.0	45.0	73.0
357~		296.9	297.4	297.87	298.52	298.57	298.59	298.48	298.40	298.23	297.2	295.9	296.3
		50.0	41.0	32.0	15.0	5.0	5.0	15.0	19.0	23.5	35.0	45.0	73.0
356+50		297.0	297.4	297.98	298.57			298.53	298.47	298.27	297.4	294.8	295.7
		50.0	40.0	32.0	15.0	5.0	5.0	15.0	19.0	23.5	34.0	50.0	73.0

*Bullard Avenue on left between Sta. 356+62 and Sta. 356+82*



Research No. 00258  
Work Order No. 13NN26

Loadometer Station No. 44  
Road VII-Ven-2-C.

#### DATA OF SECTION SELECTED FOR TEST

This section is the second of two sections established in conjunction with Loadometer Station No. 44 and is designated as Location "B".

#### ROADWAY STRUCTURE:

**LOCATION:** Loadometer Station No. 44 platform scales are located 2.3 miles east of the junction of Route 2 and Route 79, approximately 5 miles east of the east city limits of Ventura, Road VII-Ven-2-C.

The section selected for test is located 1.7 miles southeast of the Loadometer Station approximately 4.0 miles southeast of the junction of Route 2 and Route 79.

**LENGTH:** The section is established between Sta. 332+60 and Sta. 343+50 a total length of 1090 feet. Roadway is a 3-lane highway. The section covers only the left (southeast bound traffic) lane.

#### **SURFACE:**

Type and  
Width:

Portland cement concrete reinforced and unreinforced (See Location and Profile Sketches of areas sampled.) The lane selected for testing is 10.0' in width and was constructed in 1925-26 over old (1917) P.C.C. pavement 15' wide.

Loadometer Station No. 44  
Road VII-Ven-2-C

ROADWAY STRUCTURE

SURFACE:

Reinforcing: Steel mesh and steel bar reinforcing were found in pavement cores. Information as to details of pavement reinforcing are not available.

Joints: Joints have no regular spacing. Original slab lengths varying from 34 ft. to 143 ft. Information as to dowels etc., is not available.

Spacing and Dowels:

Thickness: Pavement thickness is variable. At one sample hole the core was 13" thick in one slab, at another core was 13" thick in two slabs, and at the third sample hole, core was 14" thick in two slabs.

BASE:

Type and Thickness: Clean sand 20" in thickness found only at Sta. 338+45.0. District construction records indicate no base or subbase material was placed under P.C.C. pavement.

Soil Classification: Material found at Sta. 338+45 classified as A-1-b and A-3.

BASEMENT SOIL:

Type and Thickness: Black and brown silty adobe clay. Native soil found immediately below pavement at Sta. 33+60.5 and 342+10.0, and below the sand base at Sta. 338+45.0. Sampled to depths of from 12" to

Loadometer Station No. 44  
Road VII-Ven-2-C

ROADWAY STRUCTURE

BASEMENT SOIL:

Type and  
Thickness:  
(Continued)

13-1/2" below bottom of pavement.

Soil Clas-  
sification:

A-4 and A-6

SIDE DITCH  
DRAINAGE:

The section is generally in a slight fill. The section roadway is on a +0.5% profile grade with surface drainage generally flowing from Sta. 343+50 (northwest) back towards the beginning of the section.

On the right, parallel to the roadway, 25.0 to 26.0 ft. from the right edge of pavement, is a ditch from 2.0' to 2.5' in depth. Drainage is carried from northwest to southeast under several road approaches to local business and residences in C.M.P. culverts.

On the left of the roadway, the Coast Route of the Southern Pacific Railroad parallels the roadway and the R.R. right of way adjoins the highway right of way. Area between railroad and highway fills has been bladed to a comparatively uniform section. Approximate center of the area is lower than the remainder and carries drainage runoff, from northwest to southeast of the Santa Clara River.

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:  
(Continued)

There are no culverts or bridges under the roadway within the section.

SPECIAL  
CONDITIONS:

- (1) Roadway Section: As noted previously, the entire section roadway is in a slight fill. Present pavement elevations are from 0.5' to 1.0' above those of the surrounding areas.
- (2) Pumping: There are no evidences of pumping in the section, although many slabs show visible movement under truck traffic.
- (3) Faulting: All joints and many of the cracks in the section pavement are faulted. Joint faulting varies from 0.05" to 0.24", crack faulting varies from 0.02" to 0.30". Depth of faulting is noted on the plan diagram.
- (4) Shoulders: Asphaltic mix shoulders from 8.0' to 9.0' in width border the pavement slabs throughout the section. Shoulders have shoved, cracked and rutted and are in generally poor condition.
- (5) Miscellaneous: The section area was subsealed with asphalt in 1948.  
  
Where spalling has become severe and where small slabs have settled, there are oil mix patches.

Loadometer Station No. 44  
Road VII-Ven-2-C

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:

Two bench marks were established at the section by the field crew for use in taking cross-sections and pavement levels.

<u>B.M.</u> <u>No.</u>	<u>Location</u>	<u>Description</u>	<u>Elevation</u>
1	23' rt. of rt. outer E.P. Sta. 332+50	1/4" diam. steel pin in PCC H/W	100.000 (Assumed)
2	25' rt. of rt. outer E.P. Sta. 341+92	Same as above	101.77

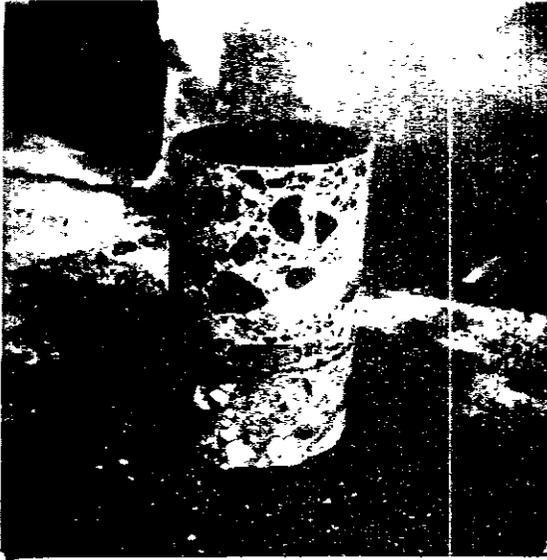
Profilograph  
Records:

By means of the Profilograph, records were made of the longitudinal profiles of the section lane of traveled way surface. Records were made with the recording wheel of the machine 30" from the left outer edge of pavement.

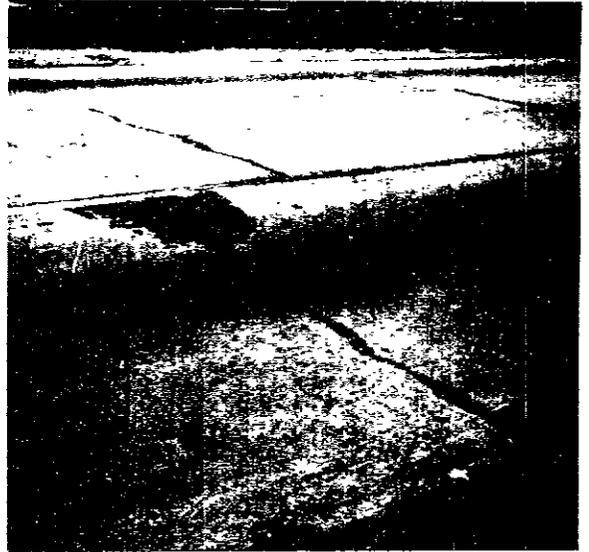
Profilograph Records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 44

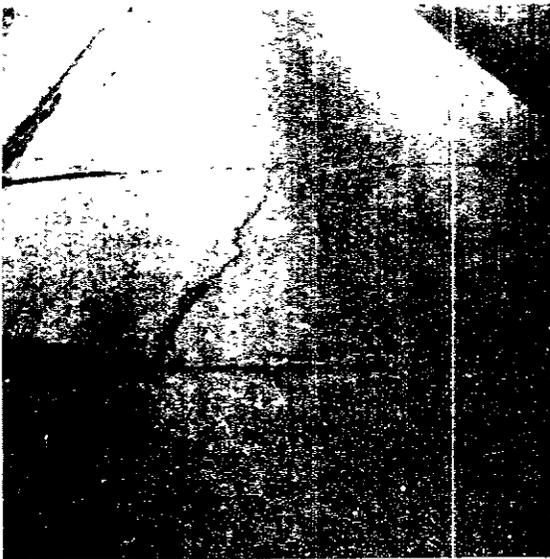
VII-Ven-2-C



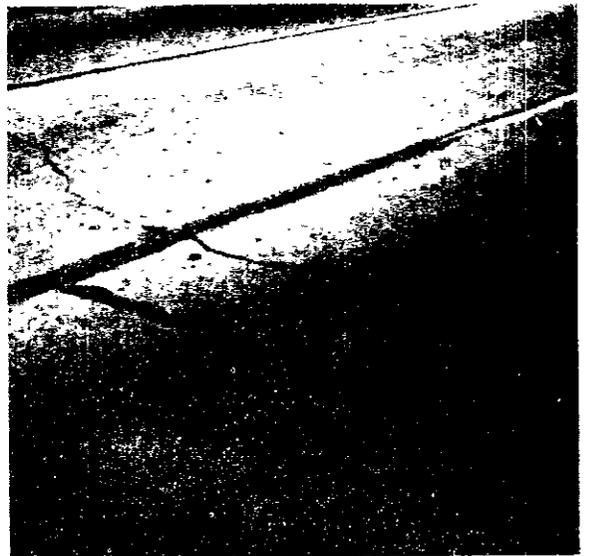
Full depth of Pavement.



Severe Crack at Station  
Station 335+69



Badly Cracked Area Sta.  
339+40 to Sta. 339+50



Interior Corner Break  
Station 341+30

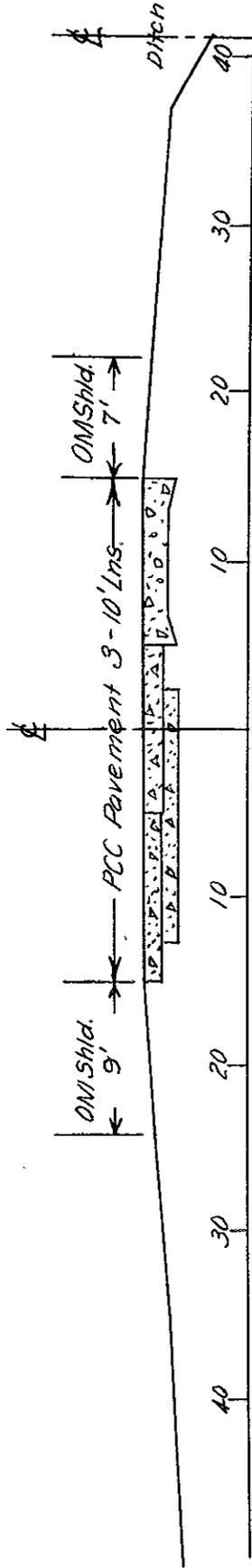
State of California, Div. of Highways  
 Materials & Research Department  
 Research No. 00258, W.O. No. 13NN26

Loadometer Station No. AVb 44  
 VII-Ven-2-C

ROADWAY CONDITION SURVEY

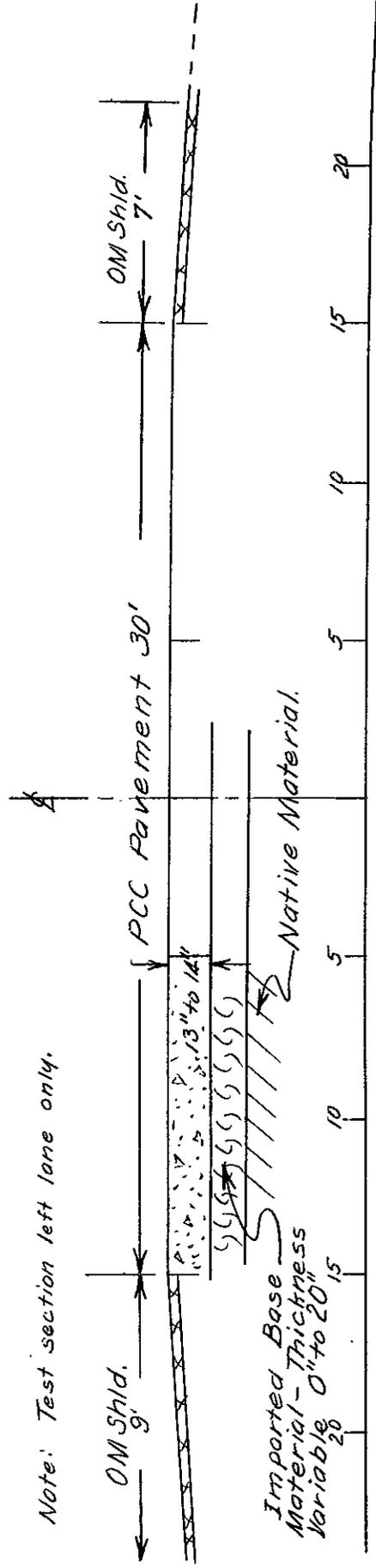
Scale: 1" = 10'

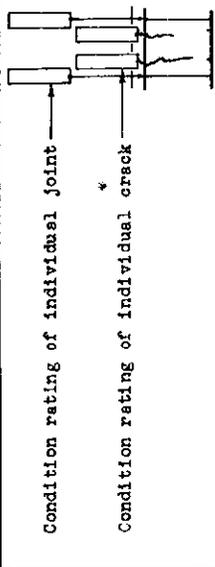
TYPICAL ROADWAY SECTION



Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION





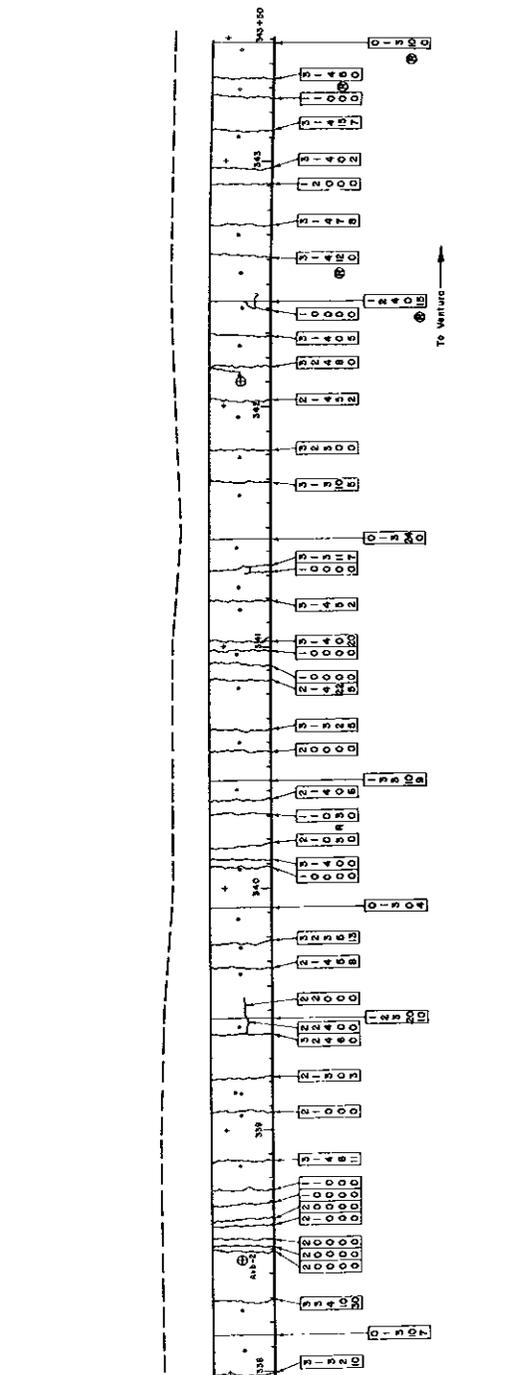
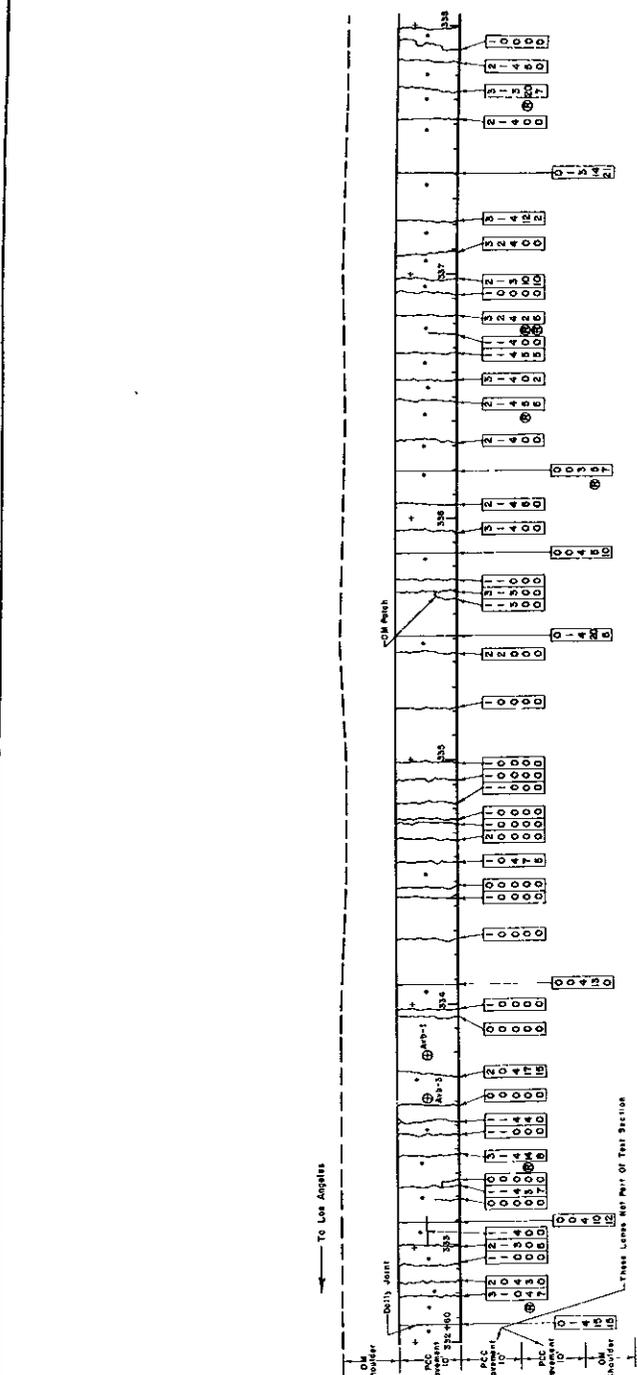
Condition rating of individual joint — 4  
 Condition rating of individual crack — 3

The table below indicates the significance of arrangement of the numbers in the rating "flag" and the values used in rating the condition of the individual joint or crack:

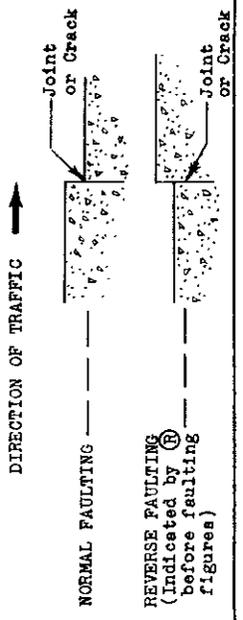
J O I N T S					
Position of Number in Flag	0	1	2	3	4
TOP NUMBER	None	Some Secondary Cracking	"SECONDARY" CRACKING NEAR SPALLS*		
SECOND NUMBER	None	Slight	Marked	Extreme	Complete
THIRD NUMBER	None	Excellent	Good	Fair	Poor
FOURTH NUMBER	FAULTING, in 100ths of an inch				
FIFTH NUMBER	AT INNER END OF JOINT. (Measured at a point 18" from the longitudinal joint.)				
SIXTH NUMBER	AT OUTER END OF JOINT. (Measured at a point 18" from the outer pavement edge.)				

\*Secondary cracking as used above refers to the more or less concentric cracking frequently found adjacent to spalled areas.

C R A C K S					
Position of Number of Flag	0	1	2	3	4
TOP NUMBER	Tight but Definite	Very Definite	Marked	Extreme	Shattered Area
SECOND NUMBER	None	Slight	Marked	Extreme	Shattered Area
THIRD NUMBER	Not Sealed	Excellent	Good	Fair	Poor
FOURTH NUMBER	FAULTING, in 100ths of an inch				
FIFTH NUMBER	AT INNER END OF CRACK. (Measured at a point 18" from the longitudinal joint.)				
SIXTH NUMBER	AT OUTER END OF CRACK. (Measured at a point 18" from the outer pavement edge.)				



**TYPES OF FAULTING AT JOINTS AND CRACKS**



**LEGEND**

- ⊕ 8" diameter core hole for soil samples
  - 5" diameter core hole
  - Mudjacking or subsaling for holes
  - + Permanent reference points set for levels
- Figures preceded by this symbol  $f$  indicate faulting along the longitudinal joint between lanes. Figures are placed on the low side of the joint.

TEST RESULTS SUMMARY

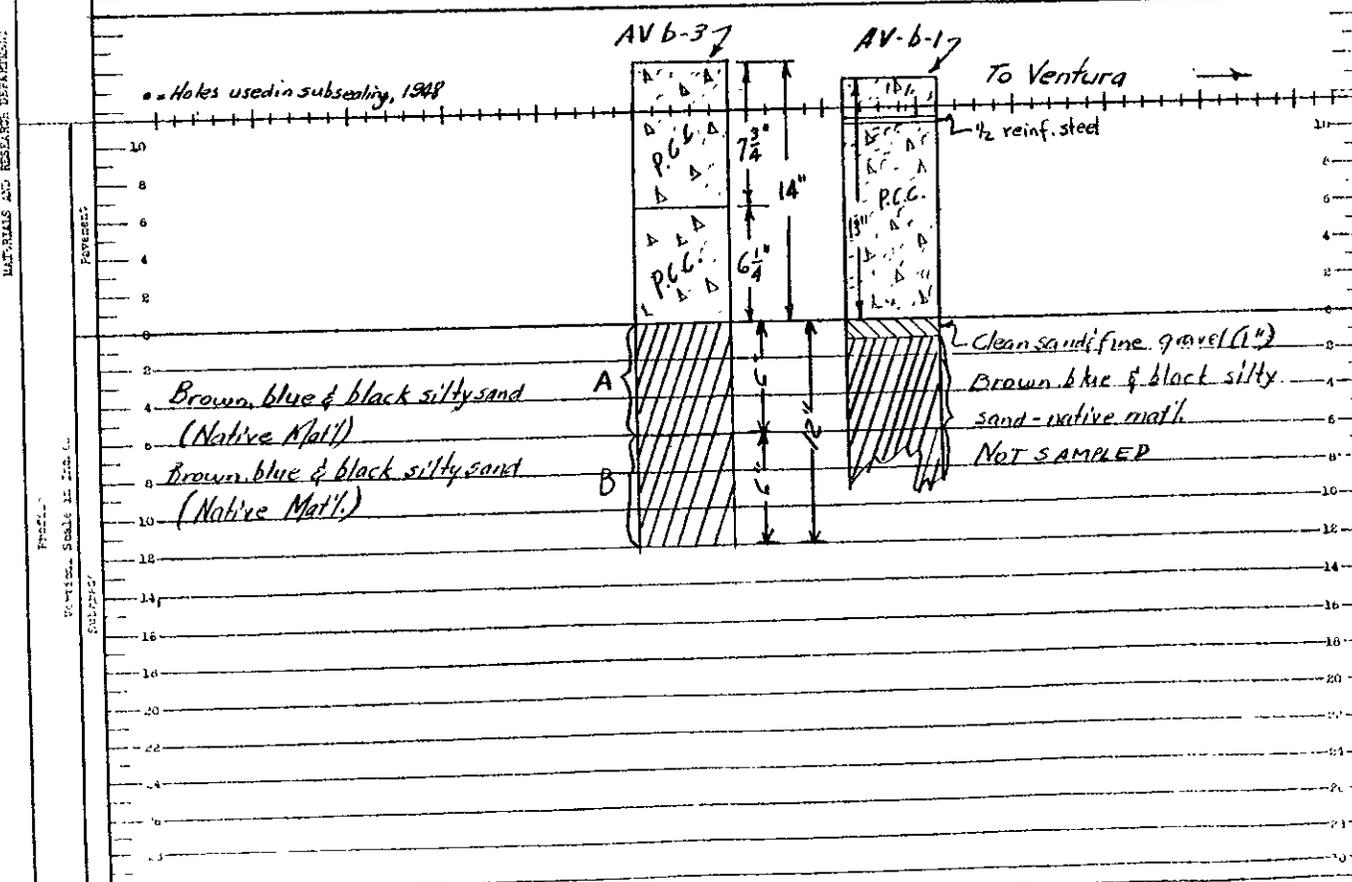
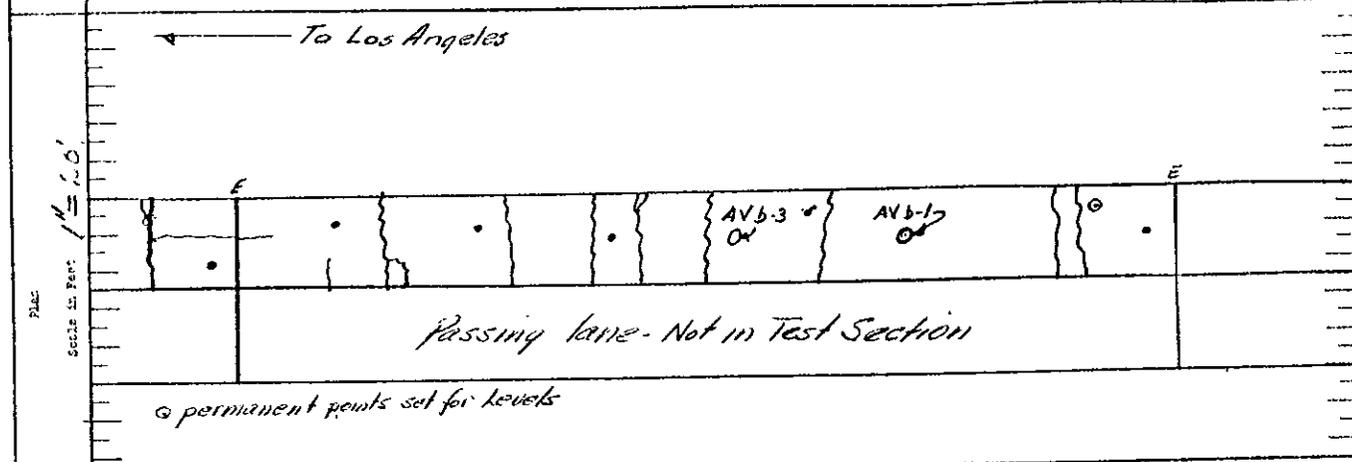
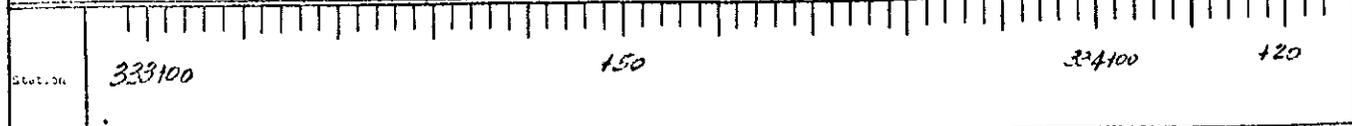
Load. Sta. No. 44  
VII-Ven-2-C

Line	Sample No.		Sample Hole Location		Pavement		Soil Samples	
	Field	Lab.	Station	Position	Type	Thick-ness	Depth below Btm. Pav't.	Layer Des-cription
1	AVb2A	51-730	338+45	Centerline left lane	PCC	0-13"	0 - 7"	Base
2	AVb2B	51-730A	338+45	Same	PCC	0-13"	7 - 20"	Subbase
3	AVb3A	51-731	333+61	Centerline left lane	PCC	0-14"	0 - 6"	Basement
4	AVb3B	51-731A	333+61	Same	PCC	0-14"	6 - 12"	Basement
5	AVb4A	51-732	342+10	Centerline left lane	PCC	0-13"	0 - 7"	Basement
6	AVb4B	51-732A	342+10	Same	PCC	0-13"	7 - 14"	Basement

Line	In Place Test Data			Lab. Test Data		HRB Soil	Specific Gravity	
	Moist.	Density	% Rel. Comp.	Optimum Moisture	Maximum Density	Classification	Pass. 4	Ret. 4
1	4	91	81	13	113	A-1-b	2.64	
2	7	95	86	14	110	A-3	2.63	
3	21	98	80	11	122	A-4	2.62	
4	20	100	81	12	122	A-4	2.62	
5	24	96	83	14	116	A-6	2.58	
6	27	85	75	14	114	A-6	2.58	

Line	Sieve Analysis - Percent Passing										Atterberg Limits	
	2"	3/4"	4	8	16	30	50	200	270	5M	LL	PL
1	100	97	94	92	88	74	41	6	4	4	N	P
2		100	99	99	97	90	57	9	7	6	N	P
3					100	99	97	76	71	17	28	19
4					100	99	96	76	70	25	28	19
5				100	98	96	89	76	72	29	34	21
6			100	99	98	95	87	76	72	27	38	23

St. <b>VI</b>	Cs. <b>Ven</b>	Sto. <b>2</b>	Sec. <b>C</b>	Subtract No. <b>—</b>	Date of Constr. <b>19-6-1923</b>	Test Hole No. <b>AVB-16</b>
Fill <b>✓</b>	Dist. from Right	Dist. from Left	No. of Lanes <b>3</b>	Traffic <b>Heavy</b>	Test Hole No. <b>AVB-3</b>	
Out <b>—</b>	Dist. from Right	Dist. from Left	Side Ditches <b>Right-ditchest Pipes Left-no clear-ditching</b>	Depth <b>RT 28" L 120"</b>	Date of Sampling <b>1-29-51</b>	
Name of Loc. <b>RR. &amp; Hwy R/W</b>				Right <b>Sen. stations &amp; commercial</b>		Grade to <b>5.96</b>

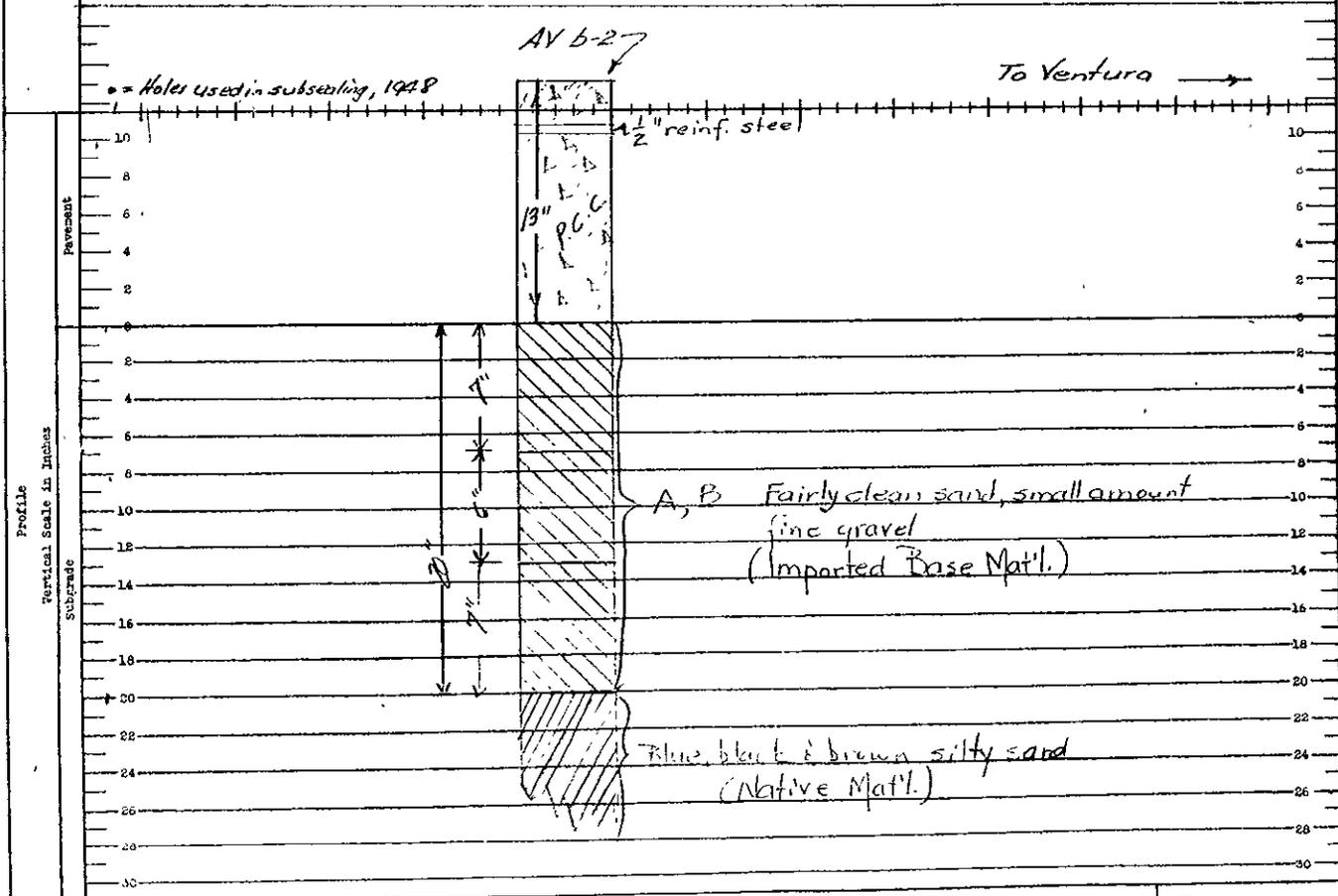
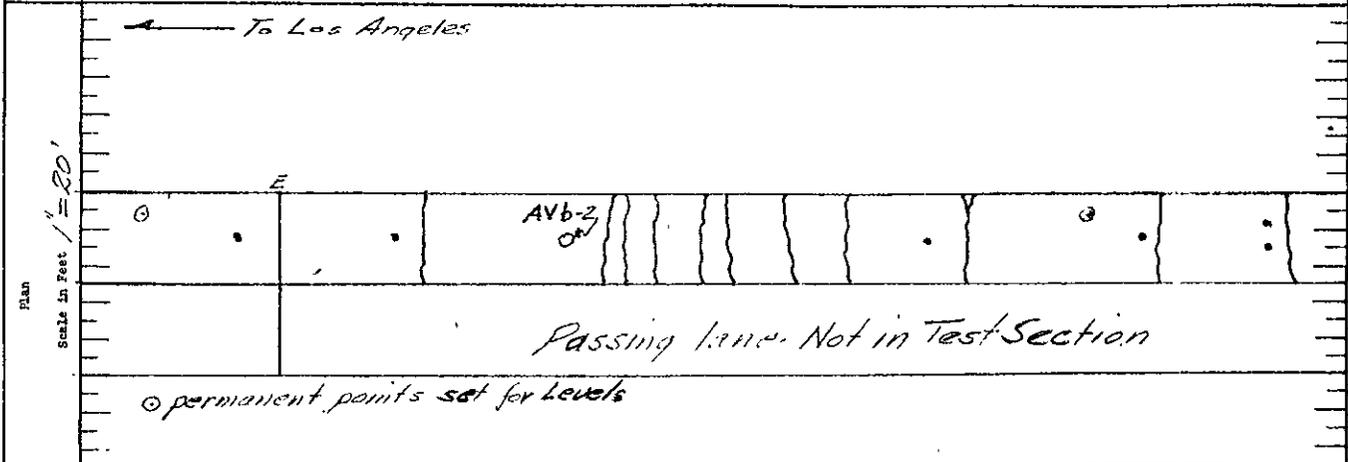


Note variation in pavement construction & base material between two test holes only 18' apart

Reprint  
 Return  
 Party **(10 to 50)**  
 Date **5/1/58**

STATE OF CALIFORNIA, DIVISION OF HIGHWAYS  
 DEPARTMENT OF PUBLIC WORKS  
 MATERIALS AND RESEARCH DEPARTMENT

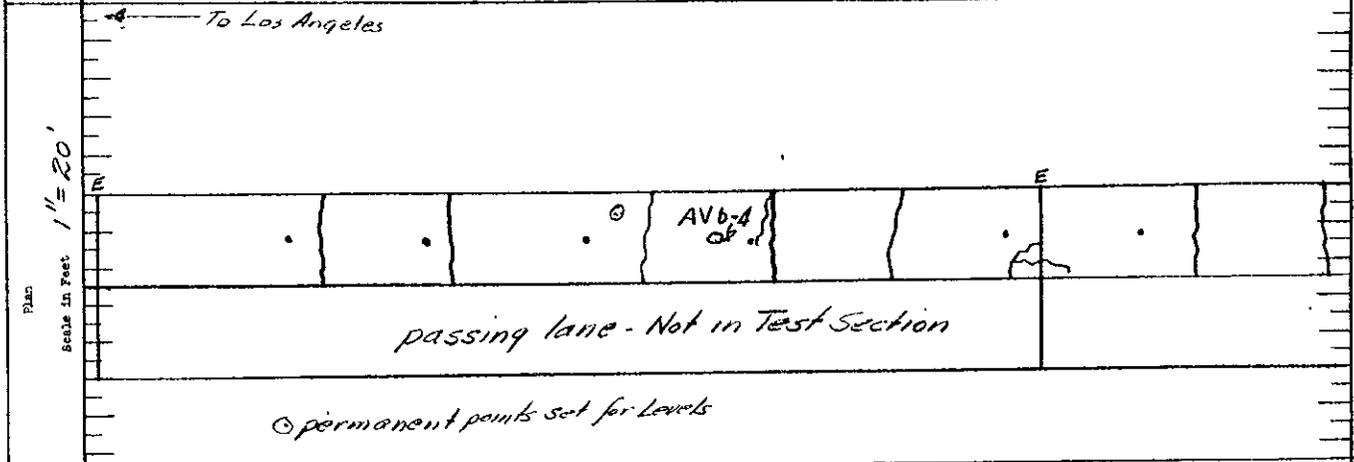
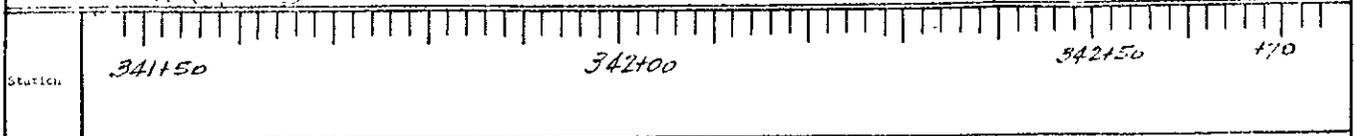
Dist. VII	Co. Ven	Rto. 2	Sec. C	Contract No. —	Date of Constr. 1926	Test Hole No. AV b-2
Fill /	Approx. cigit 10	Dist. from End of Fill	No. of Lanes 3	Traffic Heavy		
Cut —	Approx. Septa	Dist. from End of Cut	Side R <sup>h</sup> - ditches w/pipes Ditches Lt - no clear ditchline	Depth 21 25' ± (+ 10, ±)	Date of Sampling 1-26-51	
Hoastle Cor, left RR & Hwy R/W			Right Ser Stations & commercial		Grade C.3 ±	Up →



STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

Revised	By	Bourne
Party	Clayson	
Drawn By	Clayson	

Dist. from E.I. of Cut	Dist. from E.I. of Fill	No. of Lanes	Traffic	Date of Constr.	Test hole no.
10'		3	Heavy	12/6/53	AV 6-4
Dist. from E.I. of Cut	Dist. from E.I. of Fill	Side Rd. - Ditches & Pipes	Depth	Date of Sampling	
		None - No clear ditchline	1' 2 5/8" 1' 1 1/2" (1)	1/30/51	
Road Name: RR & Hwy. R/W		Right: Service Stations & Commercial		Grade: 0.1%	Up: →



STATE OF CALIFORNIA DEPARTMENT OF HIGHWAYS  
 DEPARTMENT OF FIELD WORKS  
 MATERIALS AND RESEARCH DEPARTMENT

By: *Lawson*  
 Checked: *Lawson*  
 Approved: *Lawson*

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NA26  
 Job Number \_\_\_\_\_

Load. Sta. No. 44  
 Dist. III Co. San Rte. 2 Sec. C  
 Loc. Design Avb  
 Sta. 332+60 to 335+50  
 Sheet No. 1 of 3

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

	Left						Right						
			Ditch	Toe of Slope	outer edge of paved Shldr.	Left edge of Pav't			outer edge of paved Shldr.	Shoulder Point	Ditch		
+50			98.4	98.5	99.9	100.2							
			54.0	38.0	24.0	15.0							
335~			98.3	98.4	99.8	100.1							
			53.0	37.0	23.0	15.0							
+50			98.1	98.5	99.5	99.9							
			53.0	36.0	23.0	15.0							
334~			98.1	98.3	99.3	99.9							
			54.0	35.0	24.0	15.0							
+50			97.8	97.9	98.9	99.5							
			54.0	33.0	24.0	15.0							
333~			97.7	98.3	99.3	99.7			99.4	98.6	96.3		
			53.0	35.0	24.0	15.0			22.0	37.0	41.0		
332+60			97.3	98.0	99.2	99.6							
			51.0	35.0	24.0	15.0							

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 10008  
 W.O. No. 13 N N 10  
 Job Number \_\_\_\_\_

Load. Sta. No. \_\_\_\_\_  
 Dist. 12 Co. 12 Rte. \_\_\_\_\_ Sec. \_\_\_\_\_  
 Loc. Design 116  
 Sta. 220+10 to 220+50  
 Sheet No. 2 of 5

ROADWAY CONDITION SURVEY

Left						Right						
		Ditch	Top of Slope	outer edge of paved Shoulder	Left edge of Pav't.			outer edge of paved Shoulder	Shoulder Point	Ditch		
150		99.5	99.5	100.8	101.0							
		49.0	35.0	22.5	15.0							
339~		99.3	99.4	100.7	100.9							
		52.0	37.0	23.0	15.0							
150		99.3	99.0	100.5	100.7							
		54.0	37.0	23.0	15.0							
338~		99.1	99.2	100.4	100.7							
		55.0	36.0	23.0	15.0							
150		98.9	99.4	100.2	100.5							
		54.0	35.0	23.0	15.0							
337~		98.9	98.8	100.2	100.5							
		54.0	37.0	23.5	15.0							
150		98.8	98.6	100.0	100.4							
		56.0	38.0	23.0	15.0							
336~		98.4	98.6	100.0	100.3							
		54.0	38.0	23.5	15.0							

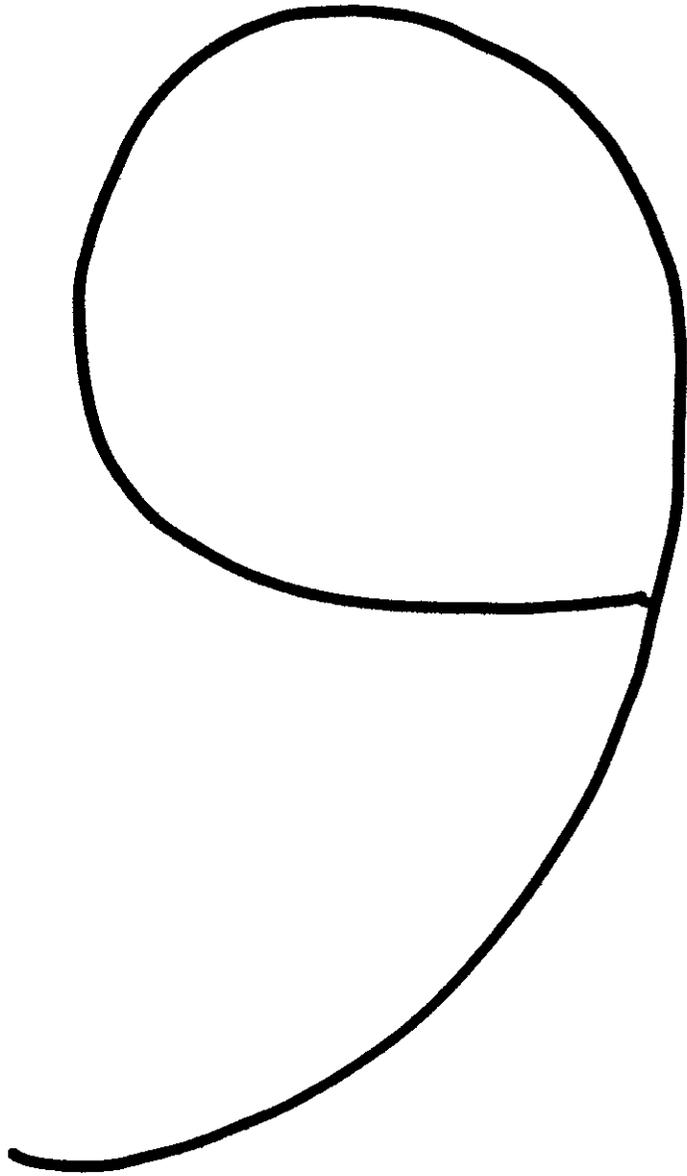
State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 0025B  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 44  
 Dist. VII Co. Ven Rte. 2 Sec. C  
 Loc. Design AK6  
 Sta. 340+00 to 343+00  
 Sheet No. 3 of 3

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

⊥

	Left					Right				
	Ditch	Toe of Slope	Shoulder Point	outer edge of paved Shoulder	Left edge of Pav't.	outer edge of paved Shoulder	Shoulder Point	Ditch		
+50	100.1	101.1	102.2	102.4	102.6	102.3	101.9	99.4		
	52.0	31.0	28.0	21.0	15.0	23.0	34.0	40.0		
343~	100.0	100.8	101.6	102.2	102.4	102.1	101.7	99.0		
	52.0	31.0	28.0	21.0	15.0	22.5	34.0	40.0		
+50	99.9	100.5	101.2	102.0	102.2					
	51.0	31.0	28.0	21.0	15.0					
342~	99.9	100.0	101.0	101.8	102.0	101.7	101.2	98.7		
	49.0	31.0	28.0	20.5	15.0	23.0	36.0	40.0		
+50	99.3	100.1	100.8	101.1	101.3					
	50.0	31.0	27.0	19.5	15.0					
341~	99.3	99.7	100.4	101.2	101.5					
	49.0	31.0	28.0	21.0	15.0					
+50	99.6	99.4	100.2	101.1	101.3	101.0	100.5	98.3		
	48.0	33.0	30.0	21.0	15.0	23.0	36.0	41.0		
340~	99.5	99.3	100.0	101.0	101.1					
	48.0	33.0	31.0	21.0	15.0					



DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE:

LOCATION: Loadometer Station No. 58 is located 1.6 miles northwest of the Junction of Route 60 and Route 174, toward Santa Monica.

Section selected for test is located 1.7 mile northwest of the Junction of Route 60 and Route 174, (250 ft. north of Loadometer Station No. 58).

LENGTH: The section is established between Sta. 25+90 (north) and Sta. 36+00 (south), a total length of 1010 feet.

Roadway is a 4 lane undivided highway. The section includes the two left (northbound traffic) lanes only.

SURFACE:

Type: Portland cement concrete, constructed in 1931-1932. No information available on reinforcing or dowels.

Width: Two lanes, each 10 feet wide; total width 20 feet.

Thickness: Designed section: 9"-7"-7"-9". As sampled, thickness of pavement varied from 8-3/4" to 9" at center line of left outer lane.

BASE:

Type and Thickness: Silty sand. Thickness variable as sampled, from 6-1/4" to 8" on centerline of left outer

ROADWAY STRUCTURE

BASE:

Type and  
Thickness:  
(Continued)

lane. Construction plans indicate no imported base - probably a selected material from roadway excavation to the south.

Soil Clas-  
sification:

A-2-4

SUBBASE:

Type and  
Thickness:

Silty sand, with some adobe clay. As sampled, thickness varies from 18" to 29-1/2".

Soil Clas-  
sification:

A-2-4

SIDE DITCH  
DRAINAGE:

The section roadway is entirely in fill. Profile grade of the roadway pavement is -0.20%. On the roadway, gutters parallel the pavement at a distance of 13 to 16 feet from the outer edges of pavement, right and left. Gutters are from 0.4 to 0.8 feet lower in elevation than the edges of pavement, and drainage flows from both ends of the section toward the culvert at center-line Station 34+10. Berms on the outer edges of the fill keep drainage from eroding the slopes. Opposite Sta. 29+25, Sta. 33+29 and Sta. 34+31 are 12" CMP down drains which intercept some of the drainage from the gutters and lead it to the toe of fill slope.

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE  
(Continued)

On the left, there are no clearly defined side ditches along the toe of fill slope.

On the right, starting opposite the end of the 4' x 3.5' R.C. box culvert, a ditch starts which extends to the end of the section, Sta 36+00. Ditch has a bottom width of 2.5', varies from 0.8 to 1.1 feet in depth, and its centerline varies from 37.5 to 38.5 feet from right edge of pavement. There is little grade in the ditch. Main function of the ditch and culvert appear to be as "equalizers" between the two sides of the roadway fill. There are no other culverts or bridges in the section than those listed above.

ROADWAY CONDITION

GENERAL:

Many slabs throughout the section show surface checking in varying degrees of severity.

Listed below are the most noticeable of these:

LEFT OUTER LANE:

Sta. 31+40 to 31+80	Severe
Sta. 32+20 to 32+40	Fairly Severe
Sta. 34+40 to 34+60	Fairly Severe
Sta. 35+00 to 36+00	Fairly Severe

LEFT INNER LANE:

Sta. 27+60 to 27+80	Severe
Sta. 30+00 to 30+20	Severe
Sta. 31+40 to 34+20	Fairly Severe
Sta. 35+00 to 35+20	Fairly Severe
Sta. 35+60 to 35+80	Fairly Severe

ROADWAY CONDITION:

SPECIAL CONDITIONS:

- (1) Roadway Section: As previously noted, the section roadway is entirely in fill. Present pavement elevation is from 3.0' to 4.0' above surrounding agricultural lands.
- (2) Pumping: There are no evidences of pumping in the section.
- (3) Faulting: There is some faulting in the section. All faulted joints and cracks are indicated on the plan diagram.
- (4) Shoulders: Throughout the section, pavement is bordered by asphaltic mix shoulders which vary in width from 7.0' to 9.5'. Shoulders are in generally fair condition, although there are some areas of alligator cracking. As indicated on the cross-section notes, shoulders at some locations are from 0.1' to 0.2' below the elevation of the edges of the pavement, immediately adjacent to the pavement. Water pockets in these low areas during and after rains.
- (5) Miscellaneous: There are no evidences of the pavement ever having been mudjacked or subsealed.

ROUGHNESS MEASUREMENTS:

- Bench Marks and Levels: Four bench marks were established at the section for use in taking cross-sections and pavement levels.

ROADWAY CONDITION

ROUGHNESS MEASUREMENTS:

<u>Bench Marks and Levels: (Continued)</u>	<u>B.M. No.</u>	<u>Location</u>	<u>Description</u>	<u>Elevation</u>
	1	13' lt. of lt. edge pavement Sta. 22+95	1/4" steel pin in P.C.C. head- wall	20.00 (Assumed)
	2	30.5' lt. of lt. edge pavement Station 34+26	Same	16.48
	3	31.0' rt. of rt. edge of pavement Station 23+95	Same	19.01
	4	31.0' rt. of rt. edge of pavement Station 33+85	Same	16.36

Profilograph  
Records:

Longitudinal: By means of the Profilograph, records were made of the longitudinal profiles of each lane of the traveled way surface. Records were made with the recording wheel of the machine 30" into the lane from the outer edge of the outer lane and from the inner edge of the inner lane. Profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 58

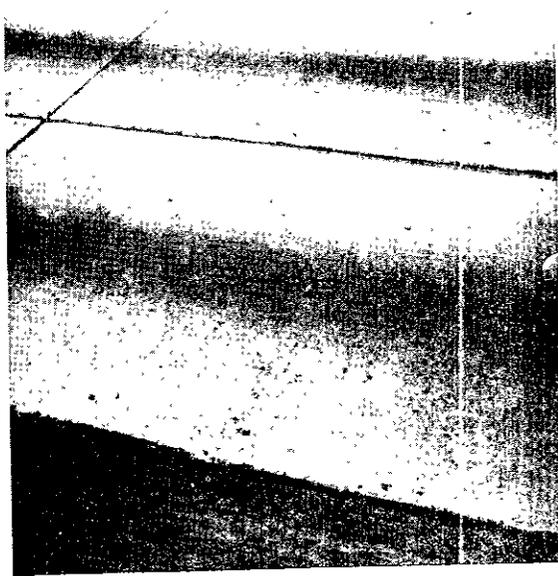
VII-L.A-60-C



Ahead on Line from  
Station 25+90



Spalled Joint at  
Station 31+98



Shoulder Cracking at  
Station 34+30



Back on Line from  
Station 36+00

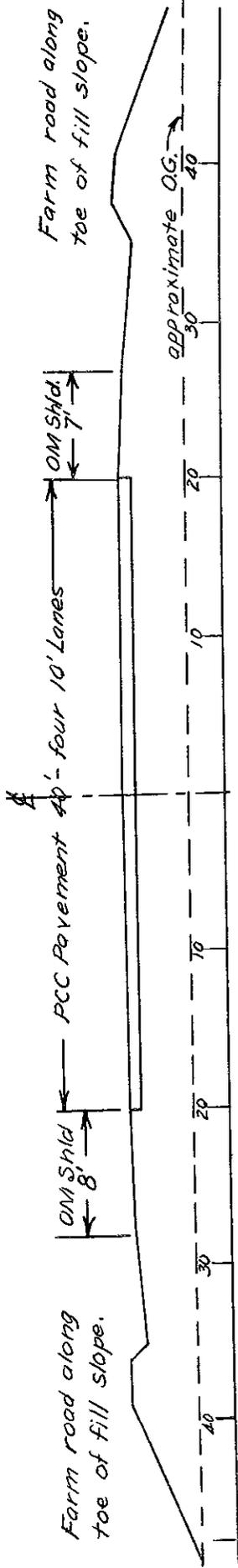
State of California, Div. of Highways  
 Materials & Research Department  
 Research No. 00258, W.O. No. 13NN26

Loadometer Station No. AW 58  
 VII-L.A-60-C

ROADWAY CONDITION SURVEY

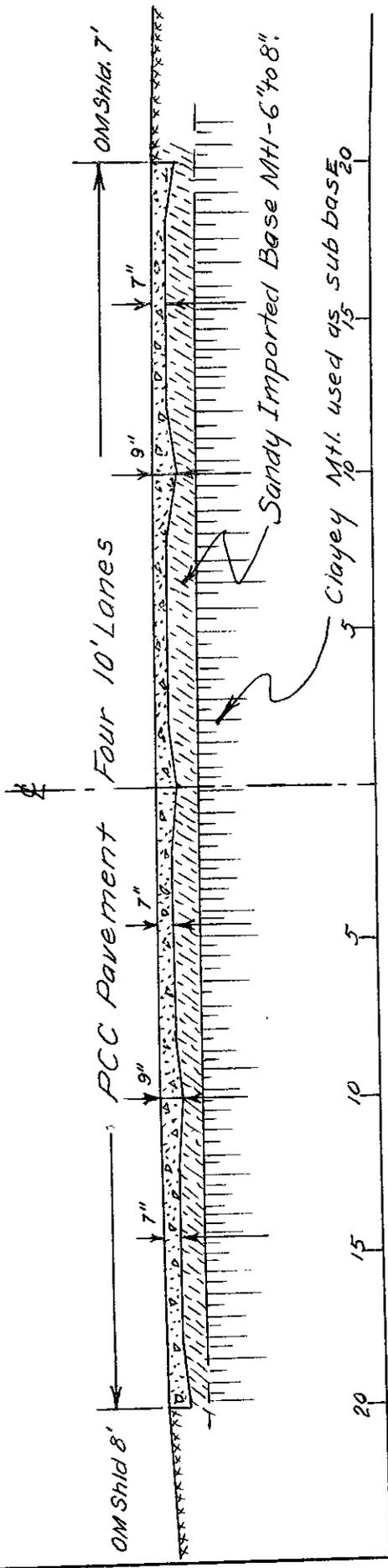
Scale: 1" = 10'

TYPICAL ROADWAY SECTION



Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION



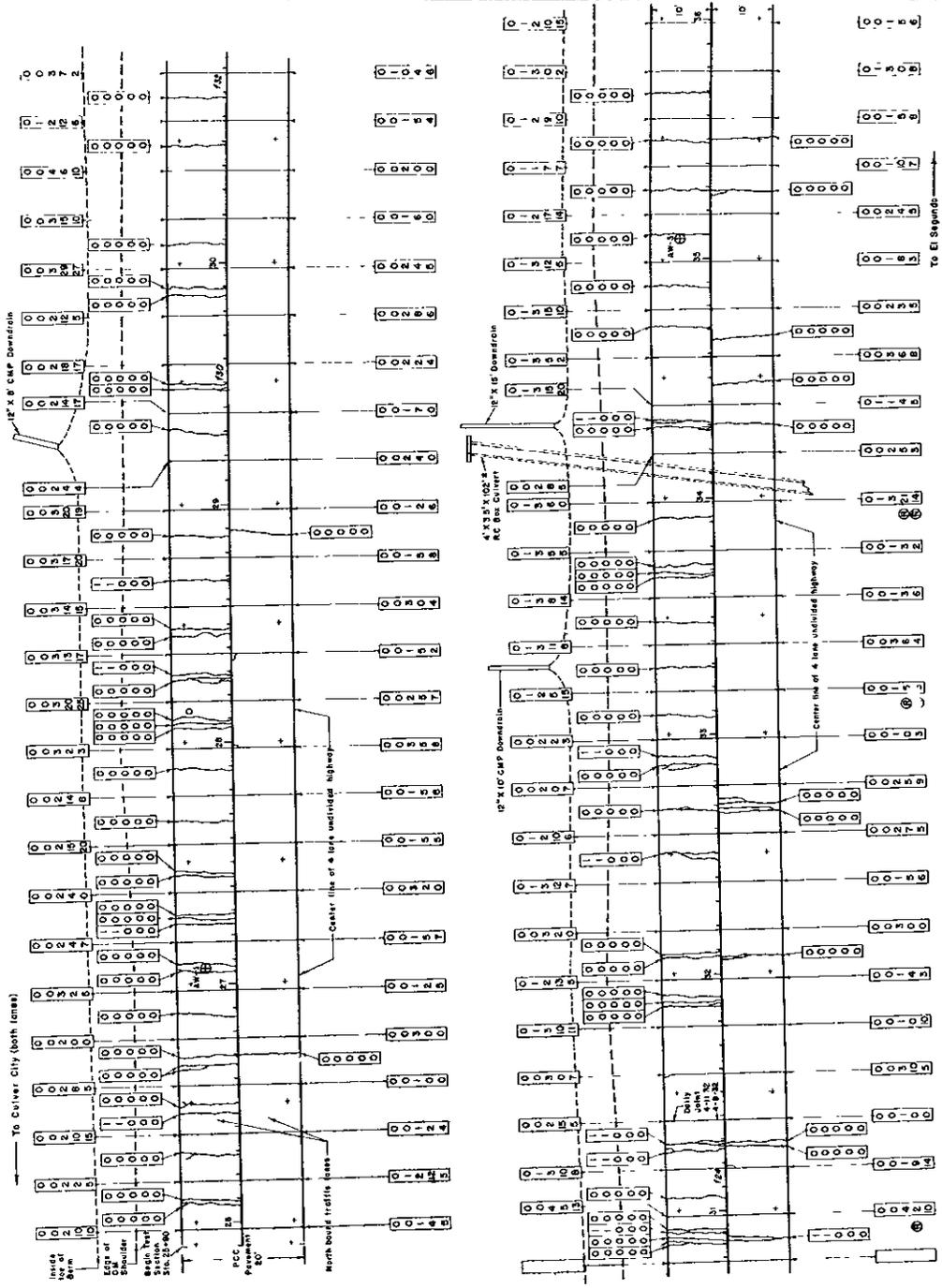
Condition rating of individual joint

Condition rating of individual crack

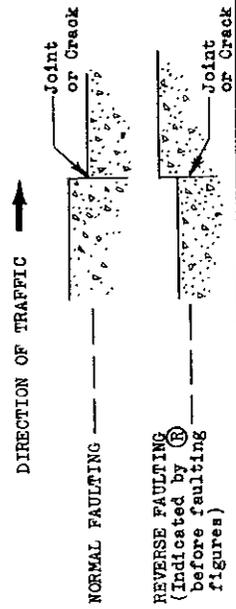
The table below indicates the significance of arrangement of the numbers in the rating "flag", and the values used in rating the condition of the individual joint or crack:

POSITION OF NUMBER IN FLAG		0	1	2	3	4
TOP NUMBER	"SECONDARY" CRACKING NEAR SPALLS*					
	None	Some Secondary Cracking				
SECOND NUMBER	DEGREE OF SPALLING					
	None	Slight	Marked	Extreme	Complete	
THIRD NUMBER	CONDITION OF SEAL					
	None	Excellent	Good	Fair	Poor	
FOURTH NUMBER	FAULTING, in looths of an inch AT INNER END OF JOINT. (Measured at a point 18" from the longitudinal joint.)					
FIFTH NUMBER	AT OUTER END OF JOINT. (Measured at a point 18" from the outer pavement edge.)					
*Secondary cracking as used above refers to the more or less concentric cracking frequently found adjacent to spalled areas.						
Position of Number of Flag	CRACKS					
	0	1	2	3	4	
TOP NUMBER	DEGREE OF CRACKING					
	Tight but Definite	Very Definite	Marked	Extreme	Shattered Area	
SECOND NUMBER	DEGREE OF SPALLING					
	None	Slight	Marked	Extreme	Shattered Area	
THIRD NUMBER	CONDITION OF SEAL					
	Not Sealed	Excellent	Good	Fair	Poor	
FOURTH NUMBER	FAULTING, in looths of an inch AT INNER END OF CRACK. (Measured at a point 18" from the longitudinal joint.)					
FIFTH NUMBER	AT OUTER END OF CRACK. (Measured at a point 18" from the outer pavement edge.)					

LOADMETER STA. NO. 22  
VI-1.4.5-11-55



TYPES OF FAULTING AT JOINTS AND CRACKS



LEGEND

- ⊕ 8" diameter core hole for soil samples
- 5" diameter core hole
- Mudjacking or subsealing for holes
- + Permanent reference points set for levels

Figures preceded by this symbol  $f$  indicate faulting along the longitudinal joint between lanes. Figures are placed on the low side of the joint.

TEST RESULTS SUMMARY

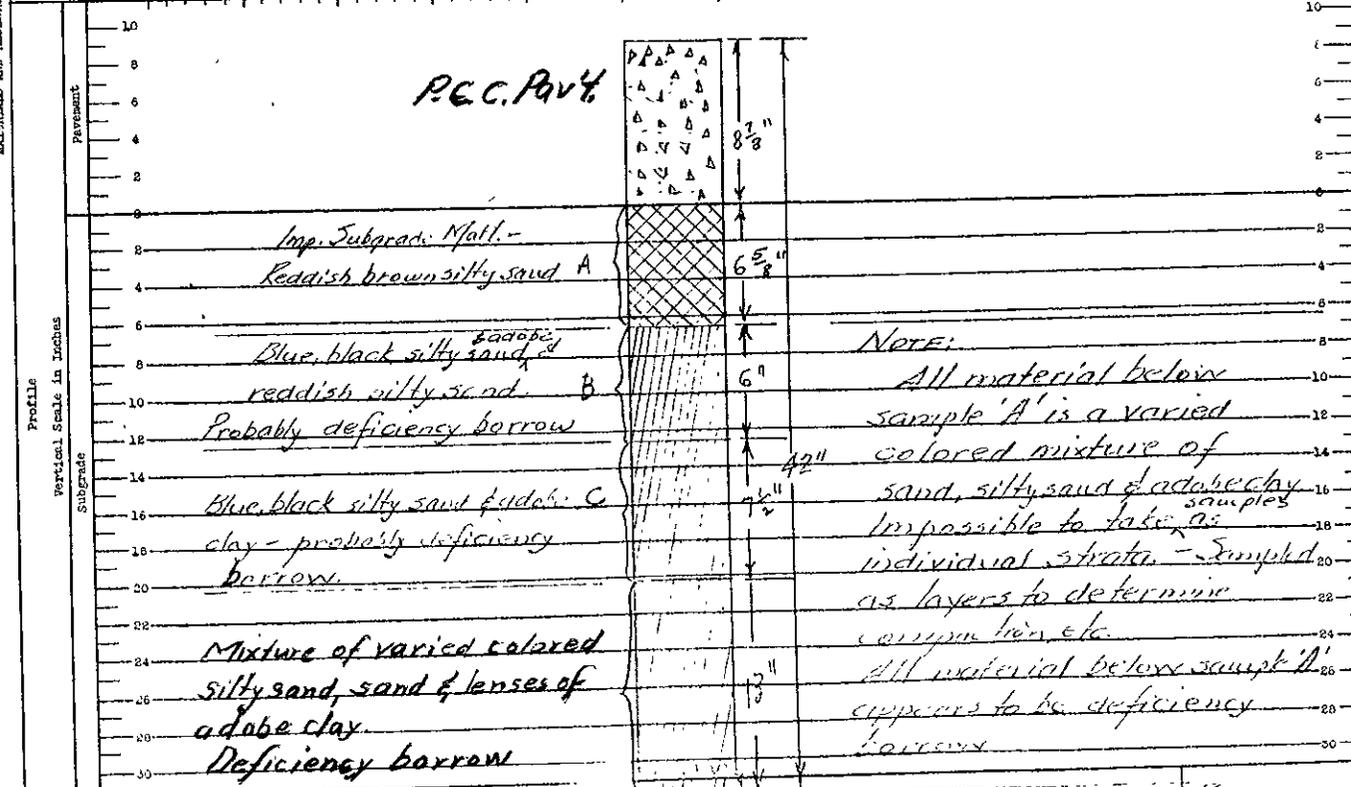
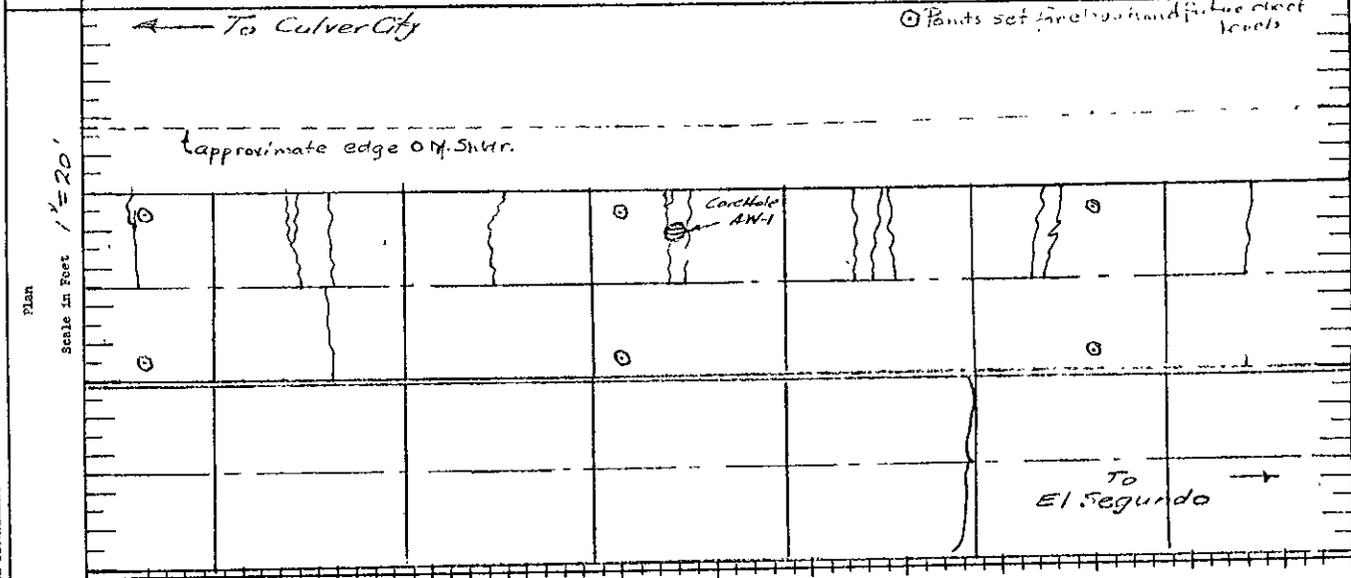
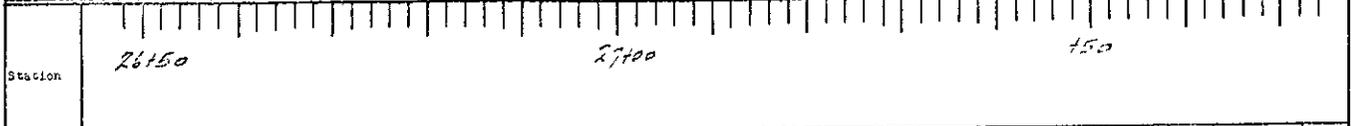
Load. Sta. No. 58  
VII-L.A-60-C

Line	Sample No.		Sample Hole Location		Pavement		Soil Samples	
	Field	Lab.	Station	Position	Type	Thick-ness	Depth below Brm. Pav't.	Layer Description
1	AW-1-A	51-900	27+06	at lt. outer lane	PCC	8-7/8	0 - 6-5/8	Base
2	AW-1-B	51-900A	27+06	Same	PCC	8-7/8	6-5/8-12-5/8	Subbase
3	AW-1-C	51-900B	27+06	Same	PCC	8-7/8	12-5/8 - 33"	Subbase
4	AW-2-A	51-901	31+08	at lt. outer lane	PCC	8-7/8	0 - 8"	Base
5	AW-2-B	51-901A	31+08	Same	PCC	8-7/8	8 - 13-3/4"	Subbase
6	AW-2-C	51-901B	31+08	Same	PCC	8-7/8	13-3/4 - 26"	Subbase
7	AW-3-A	51-902	35+08	at lt. outer lane	PCC	8-3/4	0 - 6-1/4"	Base
8	AW-3-B	51-902A	35+08	Same	PCC	8-3/4	6 1/4" - 12"	Subbase
9	AW-3-C	51-902B	35+08	Same	PCC	8-3/4	12 - 26 1/4"	Subbase

Line	In Place Test Data			Lab. Test Data		HRB Soil	Specific Gravity	
	Moist.	Density	% Rel. Comp.	Optimum Moisture	Maximum Density	Classification	Pass. 4	Ret. 4
1	14	117	98	12	119	A-2-4	2.66	
2	8	137	105	9	130	A-2-4	2.62	
3	7	136	105	9	129	A-2-4	2.63	
4	12	118	98	12	120	A-2-4	2.61	
5	8	137	108	10	127	A-2-4	2.62	
6	9	131	101	9	129	A-2-4	2.63	
7	15	115	102	13	113	A-2-4	2.64	
8	7	138	108	10	128	A-2-4	2.67	
9	7	136	105	9	129	A-2-4	2.62	

Line	Sieve Analysis - Percent Passing										Atterberg Limits	
	2"	3/4	4	8	16	30	50	200	270	5M	LL	PL
1				100	99	97	81	18	16	10	N	P
2					100	98	70	27	26	10	N	P
3					100	98	68	22	21	8	N	P
4				100	99	97	76	17	15	9	N	P
5					100	97	66	19	18	9	N	P
6					100	97	65	21	19	9	N	P
7				100	99	96	85	12	10	6	N	P
8					100	98	66	20	18	9	N	P
9					100	99	68	19	18	8	N	P

Dist. <b>III</b>	Co. <b>LA</b>	Sta. <b>60</b>	Sec. <b>C</b>	Contract No.	Date of Constr. <b>April 1932</b>	Test Hole No. <b>AW-1</b>
Fill <input checked="" type="checkbox"/>	Dist. from End of Fill <b>32</b>	Dist. from End of Cut	No. of Lanes <b>4-undivided</b>	Traffic <b>Heavy</b>	Depth	Date of Sampling <b>2-19-51</b>
Cut <input type="checkbox"/>	Dist. from End of Cut	Side Ditches <b>None</b>	Grade <b>2.5%</b>	Up <input type="checkbox"/>		
Roadside: Left <b>Truck gardening</b>			Right <b>Truck gardening</b>			



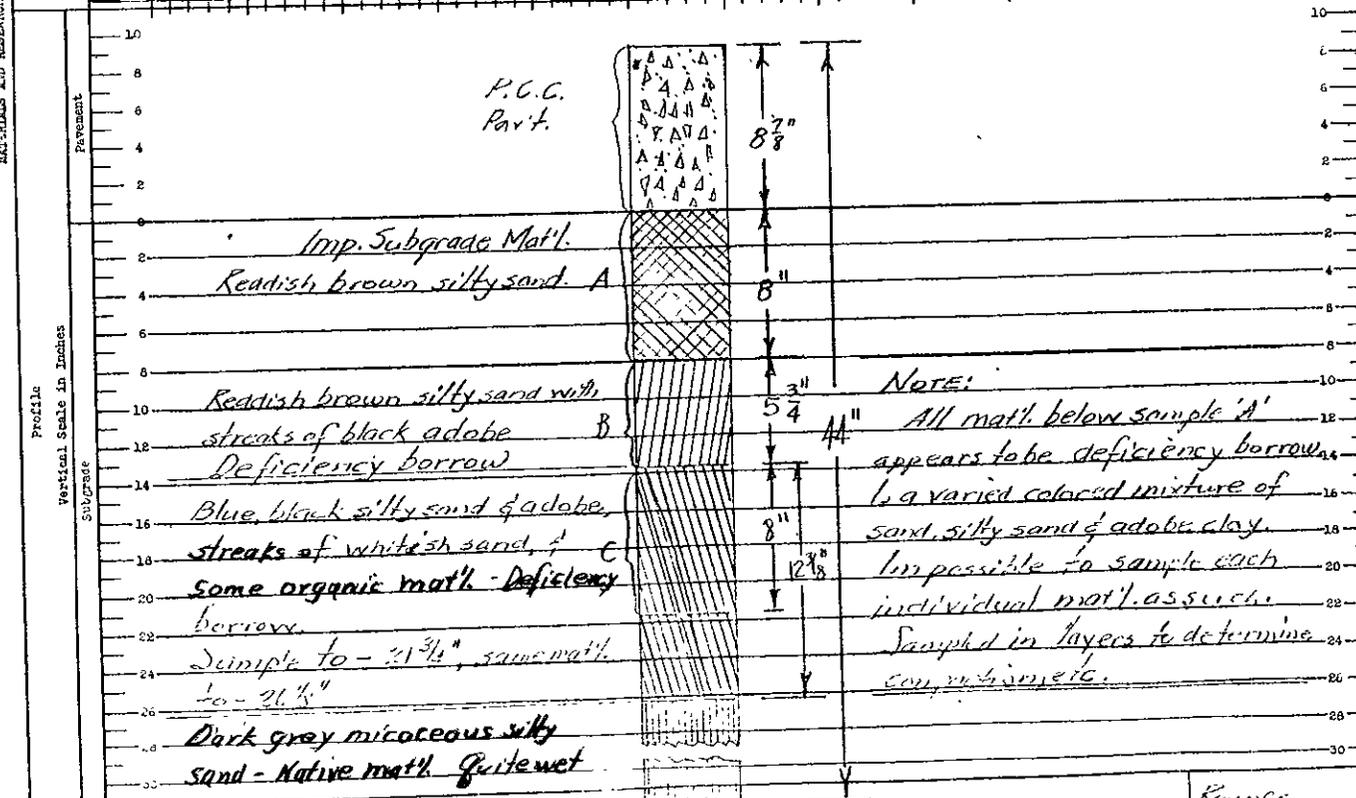
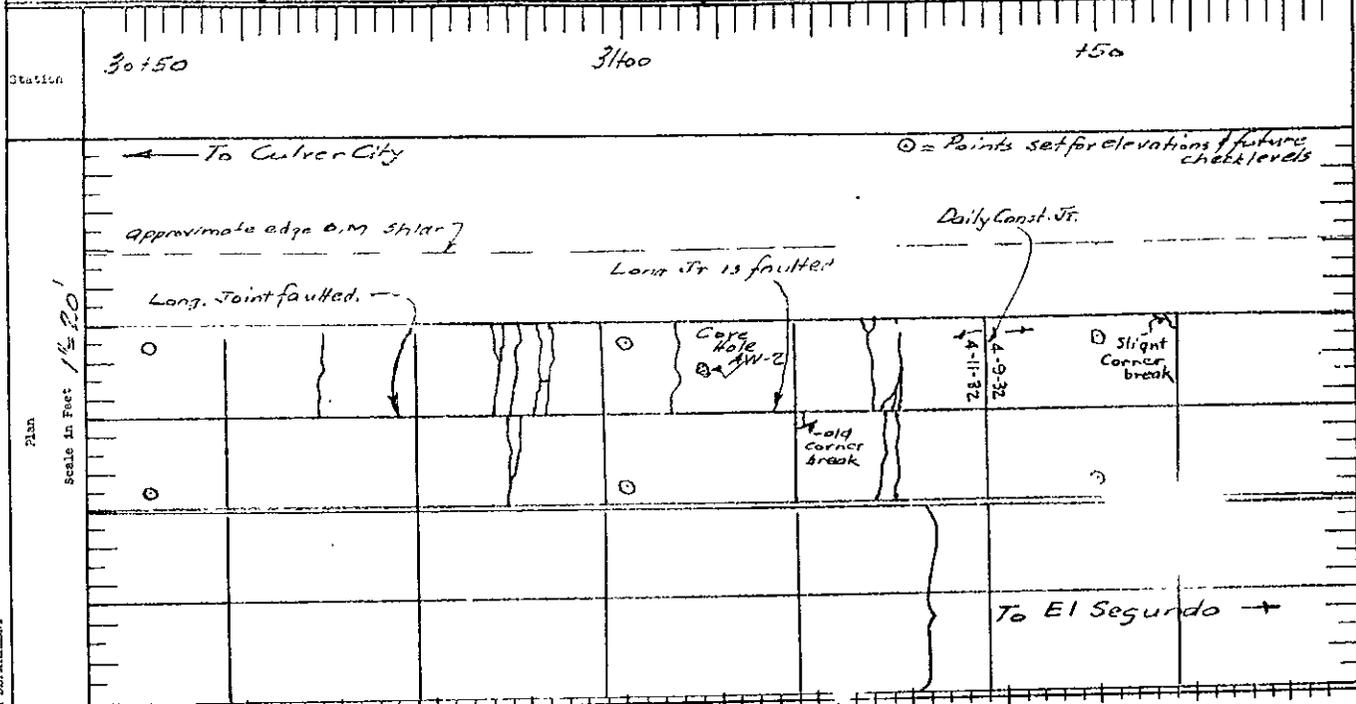
Remarks: **Below - 42" below part surface material to micaceous silty sand Too deep to sample**

Party: **C. M. ...**

Drawn By: **C. M. ...**

STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

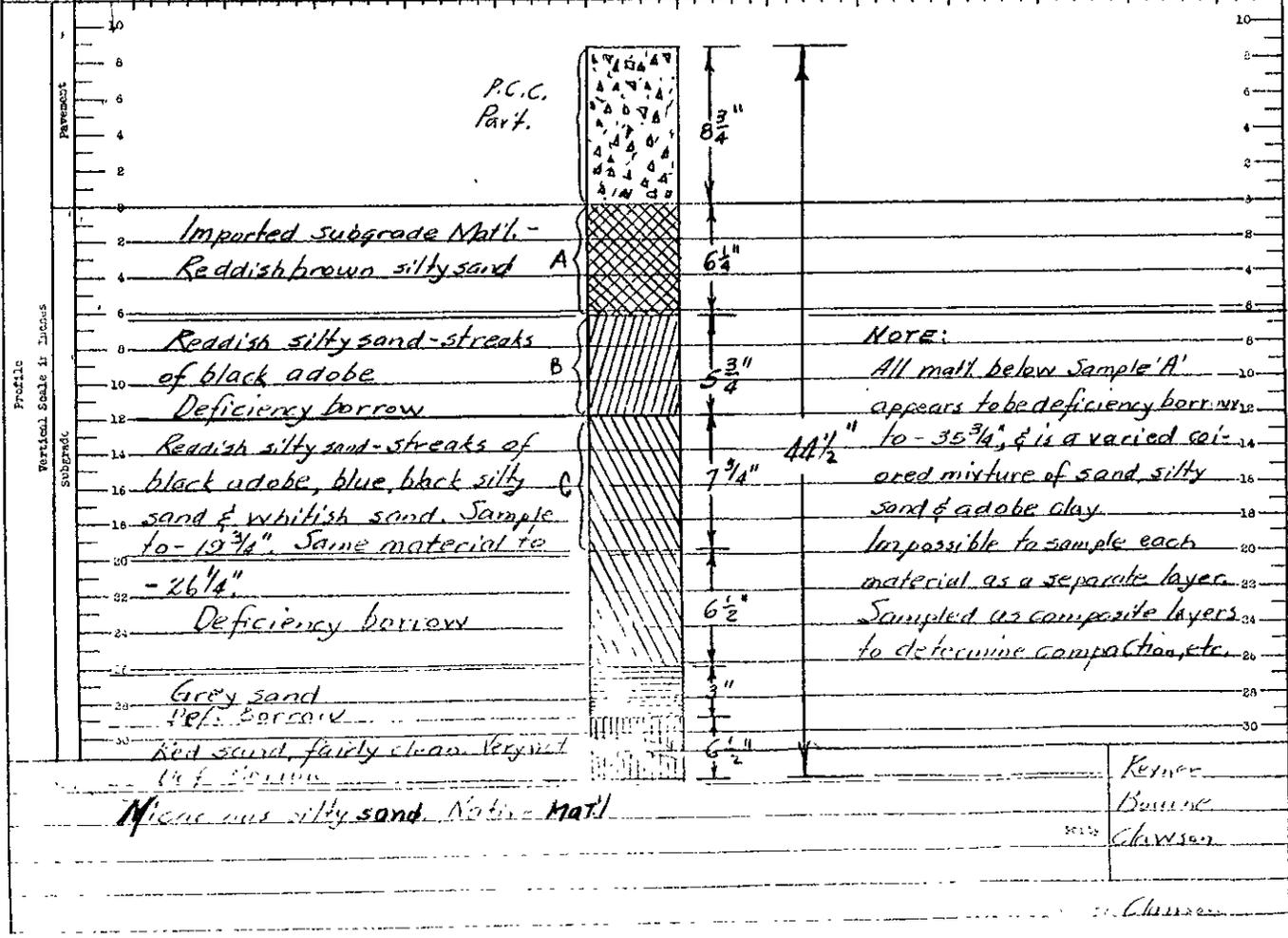
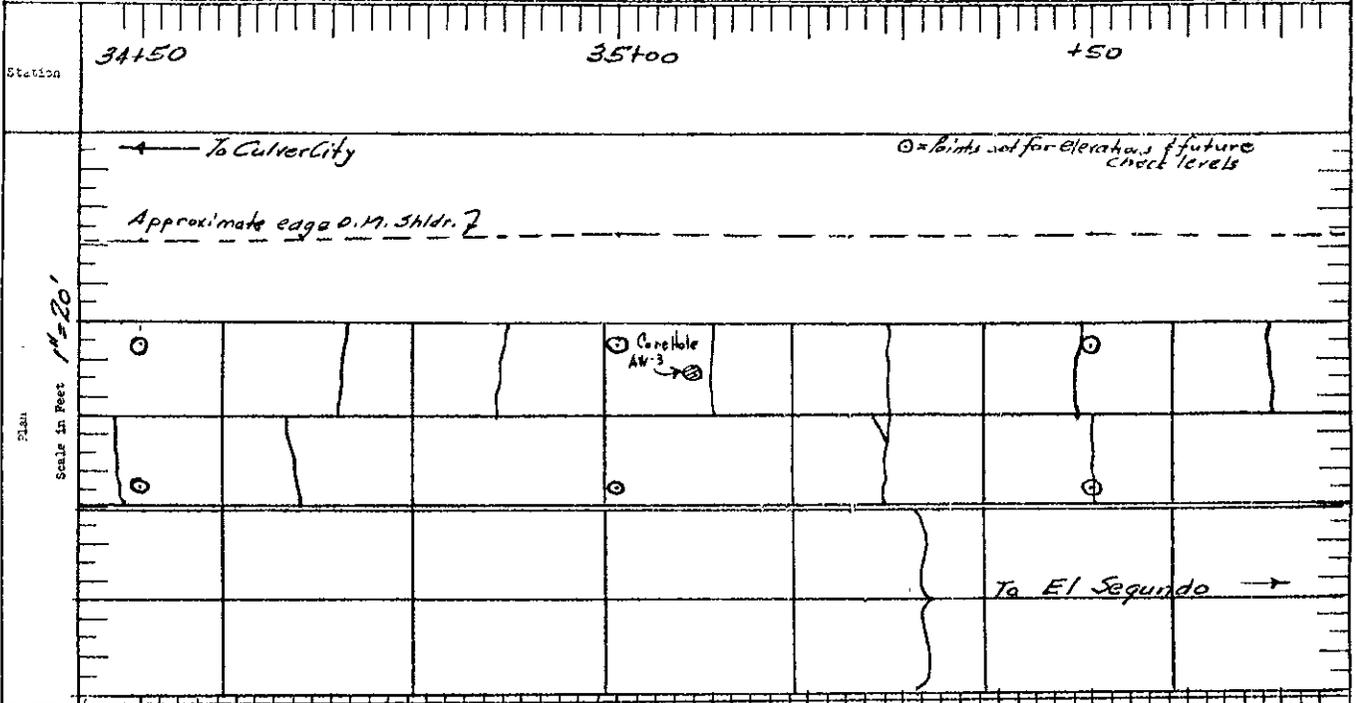
Dist. <b>III</b>	Co. <b>LA</b>	Rte <b>50</b>	Sec. <b>3</b>	Contract No.	Date of Constr. <b>April, 1932</b>	Test Hole No. <b>AW-2</b>
Fill <input checked="" type="checkbox"/>	Dist. from End of Fill <b>5400</b>	<b>3600</b>	No. of Lanes <b>4-undivided</b>	Traffic <b>Heavy</b>		
Cut <input type="checkbox"/>	Dist. from End of Cut		Side Ditches <b>None</b>	Depth	Date of Sampling <b>2-20-51</b>	
Remarks <b>Truck gardening</b>			Right <b>Truck gardening</b>	Grade <b>0.2%</b>	Up <b>←</b>	



STATE OF CALIFORNIA  
DIVISION OF HIGHWAYS  
DEPARTMENT OF PUBLIC WORKS  
MATERIALS AND RESEARCH DEPARTMENT

Party: **Reynolds**  
**Clayson**

Dist. <b>VI</b>	Co. <b>LA</b>	Dist. <b>60</b>	Sec. <b>C</b>	Contract No.	Date of Constr. <b>April, 1932</b>	Test Hole No. <b>AW-3</b>
Fill <input checked="" type="checkbox"/>	Asphalt <b>3"</b>	Dist. from End of Fill <b>5800</b>	<b>3200</b>	No. of Lanes <b>4-undivided</b>	Traffic <b>Heavy</b>	
Cut <input type="checkbox"/>	Asphalt <b>3"</b>	Dist. from End of Cut		Side Ditches <b>None-left</b>	Depth <b>1 to 5'</b>	Date of Sampling <b>2-20-51</b>
Route to be on, left <b>Truck Gardening</b>		Right <b>Truck Gardening</b>		Grade <b>0.20 %</b>		Up <b>→</b>



STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

Keener  
 Busine  
 Chaverson

Chaverson

State of Calif., Div. of Highways  
Materials & Research Dept.

Research No. 00258  
W.O. No. 13NN26  
Job Number \_\_\_\_\_

Load. Sta. No. 58  
Dist. VII Co. LA Rte. 60 Sec. C  
Loc. Design AW  
Sta. 25+90 to 29+25  
Sheet No. 1 of 3

*Drainage Cross Sections*  
ROADWAY CONDITION SURVEY

	Left							Right						
	Top of fill Slope	Top of berm outer edge	Top of berm inner edge	Gutter Line	Outer edge O.M. Shldr.	O.M. Shldr. adj. to P.C.C. Pav't.	Edge of P.C.C. Pav't.	Edge of P.C.C. Pav't.	O.M. Shldr. adj. to P.C.C. Pav't.	Outer edge of paved Shldr.	Gutter Line	Top of berm inner edge	Top of berm outer edge	Top of fill Slope
29+25	<p><i>C.M.P. Down Drain:</i>                      Inlet opposite +25; 37° left of <math>\phi</math>. Elev at inlet = 18.3. Berm is narrowed from inner edge to provide inlet gutter to mouth of bell.</p>													
29+00	16.0 39.0	19.9 38.5	19.9 36.5	18.9 34.5	19.4 27.5	19.5 20.0	19.6 20.0	19.6 20.0	19.5 20.0	19.4 27.5	19.0 34.5	19.9 36.0	19.5 39.0	15.4 55.0
28+00	16.2 48.0	20.0 38.0	20.1 36.5	19.2 35.0	19.5 28.5	19.7 20.0	19.8 20.0	19.7 20.0	19.6 20.0	19.4 28.5	19.2 35.0	19.9 36.5	19.8 38.0	15.4 53.0
27+00	16.4 48.0	20.3 38.5	20.2 36.0	19.6 34.5	19.8 27.0	19.9 20.0	20.0 20.0	20.0 20.0	19.9 20.0	19.7 27.5	19.3 36.0	20.4 37.0	20.2 38.5	15.6 53.0
26+00	17.0 47.0	20.7 38.5	20.7 36.0	19.9 34.0	20.0 27.5	20.1 20.0	20.2 20.0	20.2 20.0	20.1 20.0	19.9 27.5	19.6 35.5	20.7 37.5	20.7 39.0	17.4 53.0
25+90	17.1 47.0	20.5 39.0	20.7 35.0	19.9 34.0	20.0 27.0	20.2 20.0	20.2 20.0	20.2 20.1	20.2 20.0	20.1 26.5	19.6 36.5	20.4 37.0	20.4 39.0	17.0 54.0

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 56258  
 A.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 58  
 Dist. VII Co. LA Rte. 60 Sec. C  
 Loc. Design AW  
 Sta. 29+30 to 33+55  
 Sheet No. 2 of 3

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

	Left							Right						
	Toe of fill slope	Top of berm outer edge	Top of berm inner edge	Gutter Line	outer edge Paved Shoulder	O.M. Shldr. adj. to P.C.C. Pav't.	Edge P.C.C. Pav't.	Edge P.C.C. Pav't.	O.M. Shldr. adj. to P.C.C. Pav't.	outer edge of paved Shoulder	Gutter Line	Top of berm inner edge	Top of berm outer edge	Toe c. fill slope
33+55 } 33+40 }	Farm road left. Starts 36.0' left of E. Elevation 15.7													
33+29	C.M.P. down drain left. Normal to E. 12" C.M.P. onto 16" C.M.P. bell at inlet. Berm is narrowed from inner edge to provide inlet to C.M.P. Inlet 37.5 left, Elev. 17.7 Outlet 47.5 left, Elev. 15.3													
33+00	15.4 52.0	19.1 39.5	19.3 37.0	18.2 35.0	18.5 28.0	18.8 20.0	18.8 20.0	18.8 20.0	18.7 20.0	18.4 29.5	17.9 35.0	18.3 37.5	18.2 41.0	15.2 57.0
32+00	15.4 49.0	19.1 39.0	19.2 36.5	18.5 35.0	18.8 29.0	19.0 20.0	19.0 20.0	19.0 20.0	19.0 20.0	18.7 27.0	18.2 35.5	19.3 37.5	19.1 40.5	15.3 54.0
31+00	15.6 49.0	19.6 39.0	19.5 36.0	18.8 34.0	19.0 27.5	19.1 20.0	19.2 20.0	19.2 20.0	19.1 20.0	18.8 27.0	18.4 33.0	19.3 36.0	19.2 38.5	15.2 52.0
30+00	15.5 48.0	19.7 38.5	19.8 36.0	18.9 33.0	19.1 27.5	19.3 20.0	19.4 20.0	19.3 20.0	19.2 20.0	19.0 21.0	18.7 35.5	19.5 36.0	19.5 37.0	15.5 52.0
29+30	C.M.P. down drain left 12" C.M.P. onto 16" bell of C.M.P. Not normal to E. outlet opposite +30 +5.5' left Elev. of outlet 15.2													

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 A.C. No. 13NN26  
 Job Number

Load. Sta. No. 58  
 Dist. VII Co. LA Rte. 60 Sec. C  
 Loc. Design AW  
 Sta. 33+57 to 36+00  
 Sheet No. 3 of 3

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

	Toe of fill slope	Top of berm outer edge	Top of berm inner edge	Gutter Line	outer edge O.M. Shoulder	O.M. Shoulder adj. to P.C.C. Pav't.	Edge of P.C.C. Pav't.	Edge of P.C.C. Pav't.	O.M. Shoulder adj. to P.C.C. Pav't.	outer edge of O.M. Shoulder	Gutter Line	Top of berm inner edge	Top of berm outer edge	Toe of slope
36+00	152 52.0	19.3 40.0	19.3 35.5	18.8 34.5	18.9 29.5	19.0 20.0	19.0 20.0	18.9 20.0	18.9 20.0	18.6 29.0	18.1 34.5	19.0 37.5	18.8 44.5	18.8 51.5
35+97 } 35+82 }												Top ditch slope 14.8 54.0	bottom ditch 14.0 56.5	bottom ditch 14.0 59.0
35+00	15.1 52.0	19.2 41.0	19.4 37.0	18.4 34.5	18.6 29.5	18.7 20.0	18.8 20.0	18.7 20.0	18.7 20.0	18.5 29.0	18.3 34.0	19.0 37.5	18.9 41.0	15.1 54.0
34+31												Top ditch slope 15.1 56.0	bottom ditch 14.0 57.5	bottom ditch 14.0 60.0
34+24 } 34+20 }												Top Ditch Slope 14.5 55.0	Bottom Ditch 13.7 57.0	Bottom Ditch 13.7 59.0
34+00	15.1 51.0	19.0 38.5	19.0 36.0	18.1 34.0	18.4 28.0	18.6 20.0	18.6 20.0	18.6 20.0	18.6 20.0	18.1 29.0	17.4 35.5	18.7 39.5	18.7 43.5	14.5 53.5
33+97 <sup>5</sup>														
33+89 33+85														
33+75 33+57														

Farm road right starts 36.0 right of & Elev. 18.5 Concrete pipe culvert carries side ditch under farm road

12" CMP down drain left 12" onto 16" bell at inlet. Starts 36.2 left of & Elev. 18.9 Ends 51.5' left of & Elev. 14.4. Inlet plugged.

Left (East) end of 4x35' R.C.B. culvert Elev. at end now 14.4. Original flowline Elev. was 12.4. Culvert has 2.3' of silt in it, and now acts as an equalizer between fields on opposite sides of roadway. Left end has 13' clear waterway. End is 50.8' left of &. No definite inlet ditch.

A CMP normal to roadway &, starts 39.0 right of &. Elev. 17.8; Ends 52.0 right of &, Elev. 13.6; Outlet is plugged. Berm is narrowed to provide inlet to CMP.

Right (west) end of 4x35' R.C.B. culvert: Elev. at end now 14.4. original flowline was 11.4. Culvert has 3.0 feet of silt. End is 51' right of &. Culvert now acts as equalizer only. (See elev. of opposite end above) Right end has only 0.5' clear waterway. At +85 outlet ditch has been cleaned below culvert level. Present flowline Elev. 13.6. Bottom of ditch is 2.5' wide.

Farm road on right of roadway starts 38.5 right of &. Elevation 17.9

10

DATA OF SECTION SELECTED FOR TEST

NOTE

At the time sections were selected for testing in Los Angeles County, it was agreed that a crack survey would be adequate for this site, since much information on surfacing, base and subbase conditions was on file at the Materials and Research Department from a previous pavement investigation in this area.

This Loadometer Station was abandoned in 1951 as being too dangerous to operate.

Information available on pavement, base, and subbase is detailed for this site in the same form as for all other sections.

ROADWAY STRUCTURE

LOCATION: Loadometer Station No. 71 is located 2.7 miles east of the Junction of Route 26 and Route 170. Test section is located adjacent to the Loadometer Station.

LENGTH: The section selected for test is located at the Loadometer Station, between Sta. 83+00 and Sta. 93+00, a total length of 1000 feet. Roadway is a 4-lane undivided highway. The section is established in the two right (east-bound traffic) lanes only.

SURFACE:

Type: Portland cement concrete, reinforced as noted below. Inner lane constructed 1933-34. Outer lane constructed 1936-37.

ROADWAY STRUCTURE

SURFACE:

Width: 2 lanes, each 10' wide, total width 20 feet.

Reinforcing: INNER LANE: All reinforcing steel is 1/2" square deformed bar. Edges of lane are reinforced with 2 bars 20 feet 10 inches long, spaced 4" from edges of slab and 4" apart vertically. Ends of each bar are fixed at one transverse joint and extend through the next joint into 12" metal sleeves which are fixed in the slab.

At each transverse joint, 2 bars 9 feet 8 inches long, are placed on each side of the joint. Bars are spaced 4" horizontally from the joint, 4" apart vertically and extend to within 2 inches of the edges of the slab.

OUTER LANE: No longitudinal reinforcing steel.

At transverse joints, 2 1/2" deformed steel bars, spaced 4" apart vertically are placed on each side of the joint 11" from the joint.

Joints:

Spacing and Dowels: INNER LANE: Transverse joints are spaced 20 feet apart. Each 5th joint is an expansion joint. Remainder are weakened plane contraction joints. As noted above, longitudinal reinforcing steel extends through all transverse

ROADWAY STRUCTURE

SURFACE:

Joints: joints. Weakened plane contraction joints  
Spacing and have no dowels or load transfer devices  
and  
Dowels: other than the dowel action of the reinforcing  
(Continued) steel. Expansion joints have, in addition to  
the reinforcing steel, 5 dowels, 3/4" in  
diameter spaced at 28" centers starting 4" from  
edge of pavement. Dowels are fixed at one end  
and sleeved at the other end.

OUTER LANE: Transverse joints are spaced 20  
feet apart. Each 3rd joint is an expansion  
joint. Remainder are weakened plane contrac-  
tion joints. All transverse joints have 9  
dowels, 3/4" in diameter spaced on 14" centers.

Thickness: INNER LANE: 9"-7"-7"-9" cross section

OUTER LANE: 9"-6-1/2"-6-1/2"-9" cross-section

BASE: Information given below on base and subbase  
soils and conditions was accumulated during  
a pavement investigation by the Materials and  
Research Department in 1944-45.

Type and Thickness: INNER LANE: Construction records indicate "1'  
or less of native soil, local borrow and  
salvaged surfacing". Samples were taken under  
the left outer slab in 1944-45. Taken in two

ROADWAY STRUCTURE

BASE:

Type and  
Thickness:  
(Continued)

sample layers, 0 to 6" below bottom of pavement and 6" to 12" below bottom of pavement.

OUTER LANE: Construction records indicate "Blended subgrade, 1.0', under 10' PCC lane". Samples were taken under the right outer slab in 1944-45. Taken in two sample layers, from 0 to 3", and from 3" to 8" or 9" below the bottom of pavement. All samples taken in 1944-45 which are applicable to this section were taken in the vicinity of Station 65.

Soil Classification:

INNER LANE: A-4 and A-6

OUTER LANE: A-1-b

SIDE DITCH  
DRAINAGE:

Detailed study was not made at this location other than a survey of actual pavement surface conditions. In general however, both sides of the roadway have asphalt treated shoulders which slope down to side ditches. Ditches are from 0.8' to 1.3' below the elevation of the pavement, and are 20' (+) from the edges of the pavement. There are no culverts or bridges in the section.

ROADWAY CONDITION

SPECIAL CONDITIONS:

- (1) Roadway Section: Entire section roadway is in a slight fill from 0.8' to 1.5' above the surrounding areas.
- (2) Pumping: There are no evidences of pumping in the section.
- (3) Faulting: There is some faulting in the section, particularly in the outer lane. This has been indicated on the plan diagram.
- (4) Shoulders: Asphalt treated shoulders throughout the section from 10 to 12 feet in width.
- (5) Miscellaneous: Especial notice should be taken of the difference in the amount of cracking present in the inner and outer lanes.

ROUGHNESS MEASUREMENTS:

No roughness measurements were taken in the section.

Loadometer Sta. No. 71

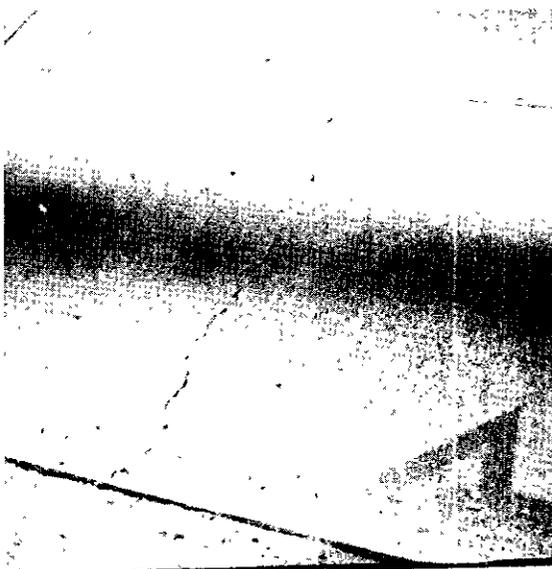
VII-L.A-26-W. Gov.



Ahead on line from Sta.  
83+00



Transverse Crack in Rt.  
Outer Lane Sta. 88+11



Transverse Crack in Rt.  
Outer Lane Sta. 88+90



Back on Line from Sta.  
93+00

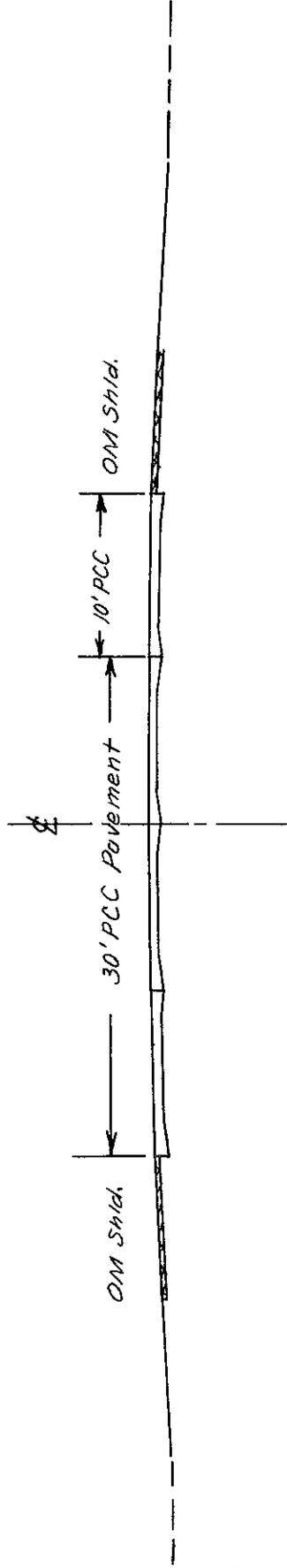
State of California, Div. of Highways  
 Materials & Research Department  
 Research No. 00258, W.O. No. 13NN26

Loadometer Station No. 71  
 VII-L.A.-26-W.Cov

ROADWAY CONDITION SURVEY

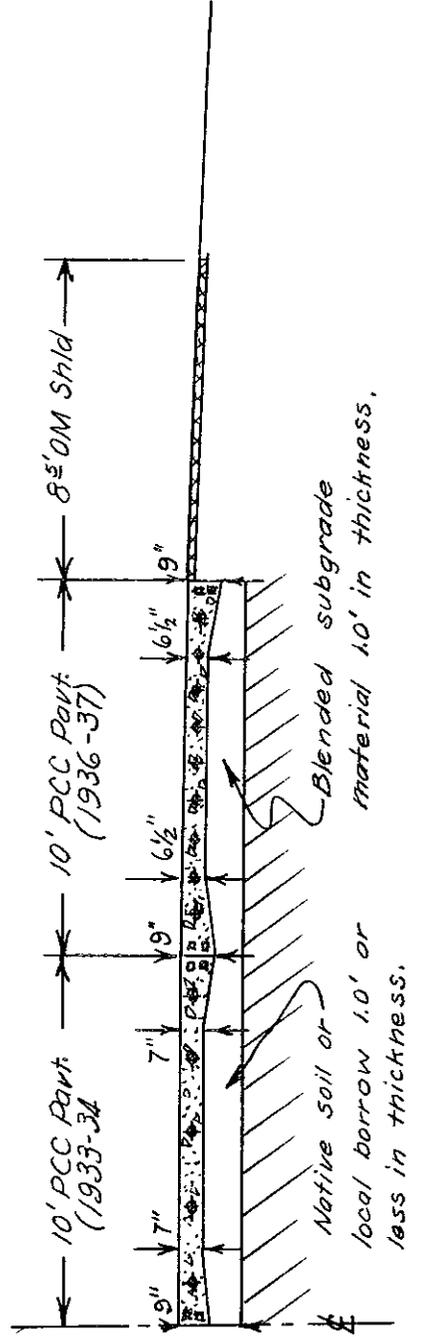
Scale: 1" = 10'

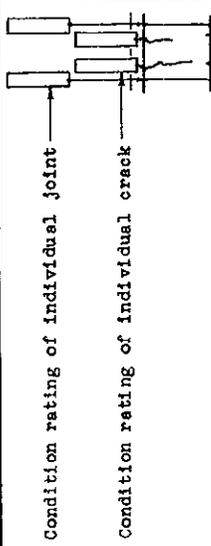
TYPICAL ROADWAY SECTION



Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION



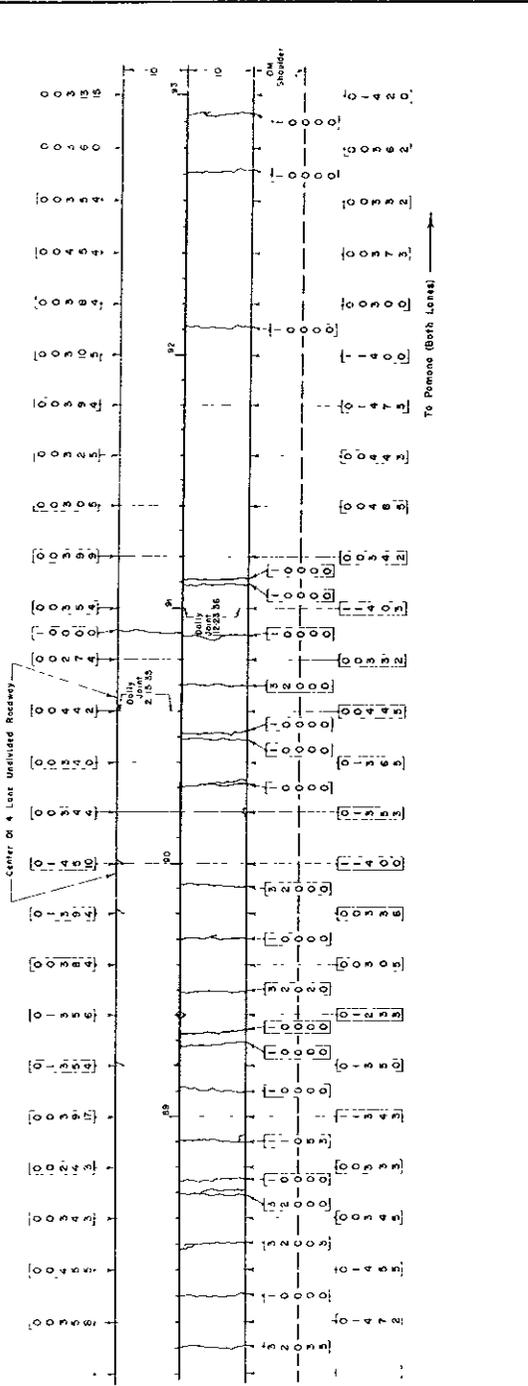
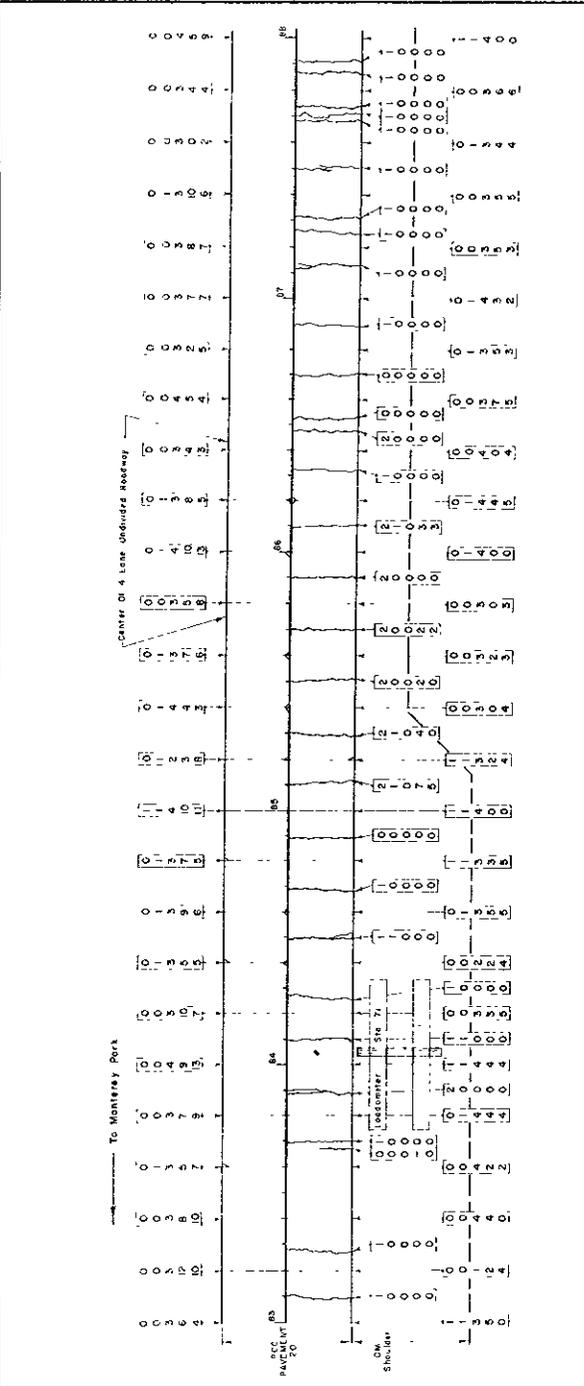


The table below indicates the significance of arrangement of the numbers in the rating "flag", and the values used in rating the condition of the individual joint or crack:

Position of Number in Flag	JOINTS				
	0	1	2	3	4
TOP NUMBER	None	Some Secondary Cracking	"SECONDARY" CRACKING NEAR SPALLS*		
SECOND NUMBER	None	Slight	Marked	Extreme	Complete
THIRD NUMBER	None	Excellent	Good	Fair	Poor
FOURTH NUMBER	FAULTING, in 100ths of an inch AT INNER END OF JOINT. (Measured at a point 18" from the longitudinal joint.)				
FIFTH NUMBER	AT OUTER END OF JOINT. (Measured at a point 18" from the outer pavement edge.)				

\*Secondary cracking as used above refers to the more or less concentric cracking frequently found adjacent to spalled areas.

Position of Number of Flag	CRACKS				
	0	1	2	3	4
TOP NUMBER	Tight but Definite	Very Definite	Marked Extreme	Shattered Area	
SECOND NUMBER	None	Slight	Marked Extreme	Shattered Area	
THIRD NUMBER	Not Sealed	Excellent	Good	Fair	Poor
FOURTH NUMBER	FAULTING, in 100ths of an inch AT INNER END OF CRACK. (Measured at a point 18" from the longitudinal joint.)				
FIFTH NUMBER	AT OUTER END OF CRACK. (Measured at a point 18" from the outer pavement edge.)				



### TYPES OF FAULTING AT JOINTS AND CRACKS

DIRECTION OF TRAFFIC →

NORMAL FAULTING:

REVERSE FAULTING (Indicated by ⊕ before faulting figures):

### LEGEND

- ⊕ 8" diameter core hole for soil samples
- 5" diameter core hole
- Mudjacking or subsampling for holes
- + Permanent reference points set for levels

Figures preceded by this symbol / indicate faulting along the longitudinal joint between lanes. Figures are placed on the low side of the joint.

TEST RESULTS SUMMARY

Load. Sta. No. 71  
VII-L.A-26-C.W.Gov.

Line	Sample No.		Sample Hole Location		Pavement		Soil Samples	
	Field	Lab.	Station	Position	Type	Thickness	Depth below Btm. Pav't.	Layer Description
1	K-16-A		64+99	16' lt. rdwy. &	PCC	7"	0 to -6"	Base
2	K-16-B		64+99	Same	PCC	7"	-6" to -12"	Subbase
3	K-17-A		65+30	15' lt. rdwy. &	PCC	7"	0 to -6"	Base
4	K-17-B		65+30	Same	PCC	7"	-6" to -12"	Base
5	K-18-A		65+01	16' lt. rdwy. &	PCC	7"	0 to -6"	Base
6	K-18-B		65+01	16' lt. rdwy. &	PCC	7"	-6" to -12"	Subbase
7	K-19-A		65+10	15' rt. rdwy. &	PCC	6-7/8"	0 to -3"	Base
8	K-19-B		65+10	Same	PCC	6-7/8"	-3" to -8"	Base
9	K-20-A		65+02	Same	PCC	6-7/8"	0 to -3"	Base
10	K-20-B		65+02	Same	PCC	6-7/8"	-3" to -9"	Base

Line	In Place Test Data			Lab. Test Data		HRB Soil	Specific Gravity	
	Moist.	Density	% Rel. Comp.	Optimum Moisture	Maximum Density	Classification	Pass. 4	Rev. 4
1	10.1	120	95	10.0	126	A-6	2.67	
2	11.5	98	79	11.1	124	A-4	2.67	
3	8.7	119	95	11.1	124	A-4	2.67	
4	9.4	102	82	11.1	124	A-4	2.67	
5	10.1	120	96	10.0	126	A-4	2.67	
6	12.5	99	80	11.1	124	A-4	2.67	
7	4.6	123	92	6.0	134	A-1-b	2.61	
8	4.9	134	100	6.0	134	A-1-b	2.61	
9	5.2	122	91	6.0	134	A-1-b	2.61	
10	5.6	135	101	6.0	134	A-1-b	2.61	

Line	Sieve Analysis - Percent Passing										Atterberg Limits	
	2"	3/4"	4	8	16	30	50	200	270	5M	LL	PL
1		100	99	96	93	87	79	45	39		15	2
2			100	99	97	95	89	54	48		N	P
3			100	99	95	92	86	50	45		N	P
4			100	97	98	96	89	57	51		N	P
5		100	98	92	89	84	77	43	38		15	2
6		100	97	95	94	91	84	51	45		N	P
7			100	99	84	62	44	17	14		N	P
8	98	96	93	85	72	59	44	19	16		N	P
9		100	98	96	80	60	41	16	14		N	P
10	100	97	93	87	74	64	50	24	21		N	P

1

2

3

Research No. 00258  
W.O. Number 13NN26

Loadometer Station No. 5  
Road X-SJ-66-A

DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE

**LOCATION:** Loadometer Station No. 5 is located approximately 0.3 mile east (toward Manteca) of the junction of State Highway Route 5 (U.S. 50) and State Highway Route 66 (Sign Rt. 120).

The end station of the section selected for test is approximately 200' east of the Loadometer Pit. Stations increase from east to west.

**LENGTH:** The section is established on 1000' of two lane pavement between Station 234+00 and Station 244+00.

**SURFACE:**

**Type:** Pavement is reinforced Portland cement concrete placed in 1933.

**Width:** Section consists of two 10' wide lanes of P.C.C. with 2 foot asphaltic mix shoulders on each side of pavement.

**Reinforcing and Dowels:** The only dowels are at the transverse expansion joints which are at sixty (60) foot intervals. These dowels are three-quarter (3/4) inch round, twenty-four (24) inches long and spaced 28 inches on centers, 3 per lane starting 32" from edge of pavement. Dowels have one end fixed and the other in a metal sleeve, to form a slip joint. There are six dowels at each transverse expansion joint.

ROADWAY STRUCTURE

SURFACE:

Reinforcing  
and Dowels  
(Continued)

Each sixty foot section is divided into 20 foot panels by two weakened plane joints. There is a longitudinal weakened plane joint running along the center of pavement.

All reinforcing steel is one-half inch square deformed bars. In each 20 foot panel there are eight longitudinal bars, twenty feet ten inches long with metal sleeves at transverse joints (expansion and weakened plane) and 8 transverse bars, 9 feet eight inches long. There are 10 bar supports per panel.

Longitudinal bar reinforcing consists of eight bars placed in two layers on four inch vertical spacing, with pairs of bars located four inches from the edges of pavement and four inches to each side of the longitudinal joint.

Transverse bar reinforcing, being one-half of pavement width in length, consists of eight bars placed in two layers with four inch vertical spacing; the pairs of bars located four inches on each side of expansion joints and weakened plane joints. The uppermost transverse bar was placed two inches below the finish surface with longitudinal bars wired to their lower side at points of contact.

ROADWAY STRUCTURE

SURFACE:

Thickness: Section consists of two thickened edge lanes. Each lane is 7-1/4" thick for the center six feet increasing in the outer two feet on each edge to a thickness of 9".

BASE:

Type and Thickness: The base material is a micaceous silty sand with some fine gravel and broken pieces of asphaltic mix. In two locations sampled this material varied in thickness from 4-1/2" to 13".

Soil Classification: A-1-b and A-2-4

SUBBASE:

Type and Thickness: At one location the material underlying the base was sampled and found to be a 7-3/4" layer of black sandy silt with some gravel and broken pieces of asphaltic mix.

Soil Classification: A-2-4

SIDE DITCH  
DRAINAGE:

The section pavement was construction on a low "fill". Centerline profile grade is a minus 1/2% from east to west. Runoff to the left is carried by a side ditch parallel to the roadway to a culvert outlet at Sta. 243+53 and thence by natural water course away from the roadway.

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:  
(Continued)

Runoff to the right drains into a wide, low area between the roadway and a railroad fill approximately 90' right. This area in turn is drained by the culvert at 243+53.

ROADWAY CONDITION

SPECIAL CONDITIONS:

- (1) Roadway Section: As noted previously, the section is in a slight roadway fill. Present pavement elevations are approximately one foot above the surrounding area.
- (2) Pumping: There are no evidences of pumping in the section.
- (3) Faulting: All transverse joints are faulted. The longitudinal joint between lanes also shows some faulting. Depth of faulting is shown on the plan diagram.
- (4) Shoulders: Asphaltic mix shoulders averaging two feet in width border the pavement in the section. Maintenance bladed dirt shoulders extend ten feet more on the right and fourteen feet on the left.

Loadometer Station No. 5  
Road X-SJ-66-A

ROADWAY CONDITION:

ROUGHNESS MEASUREMENTS:

Bench Marks  
and Levels:

Bench marks were established by the field crew near the ends of the section.

B.M. No.	Location	Description	Elevation
1	80' Rt. Sta. 234+46	1/4" diam. steel pin in RR spike in telephone pole	50.000 (assumed)
2	34' left Sta. 243+53	1/4" diam. steel pin in PCC H/W	46.610

Profilograph  
Records:

By means of the Profilograph, records were made of the longitudinal profiles of each lane of the traveled way surface. Records were made with the recording wheel of the machine 30" left of the right outer edge of pavement and again with the recording wheel 30" right of the left outer edge of pavement. Profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 5

X-S.J-66-A



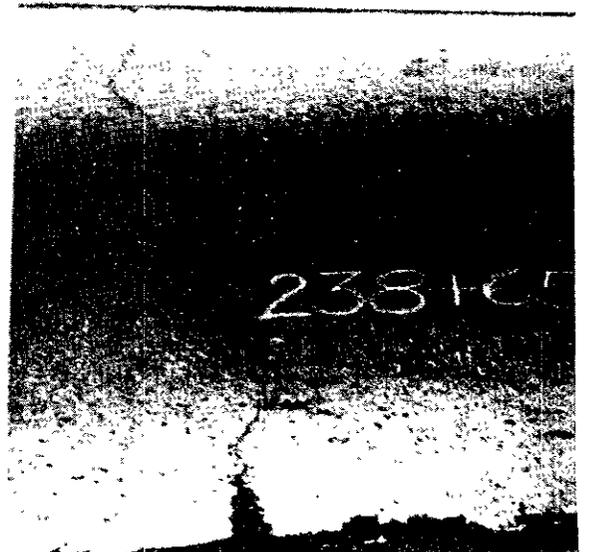
Ahead on Line from  
Station 234



Crack 1/3 slab ahead of  
Joint Right Lane Sta. 234+62



Crack 2/3 Slab Ahead of  
Joint Right Lane Sta. 235+06



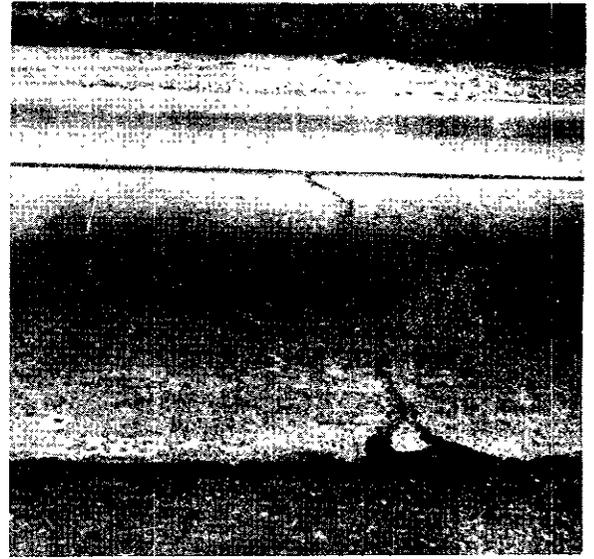
Crack in Center of Slab  
Left Lane Sta. 238+65

Loadometer Station #5

X-S.J-66-A



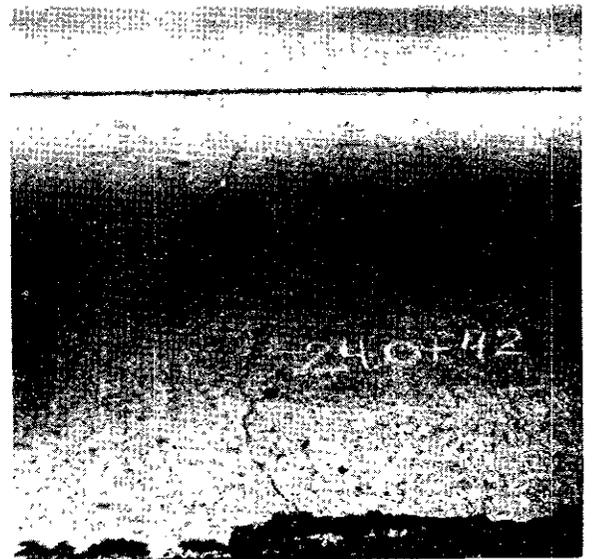
Maintenance Rework On  
Joint Sta. 236+14



Crack in Center of Slab  
Right Lane Sta. 238+03



Joint Spalling  
Left Lane Sta. 239+95



Crack 1/3 Slab Ahead of  
Joint Right Lane  
Station 240+42

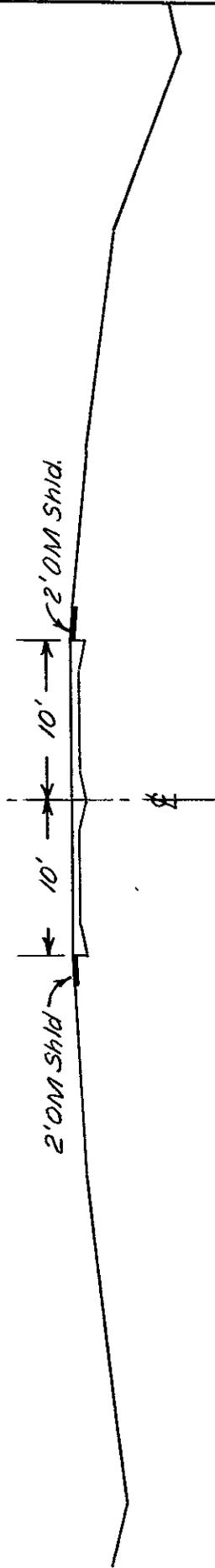
State of California, Div. of Highways  
Materials & Research Department  
Research No. 00258; W.O. No. 13NN26

Loadometer Station No. BV 5  
X-S. J-66-A

ROADWAY CONDITION SURVEY

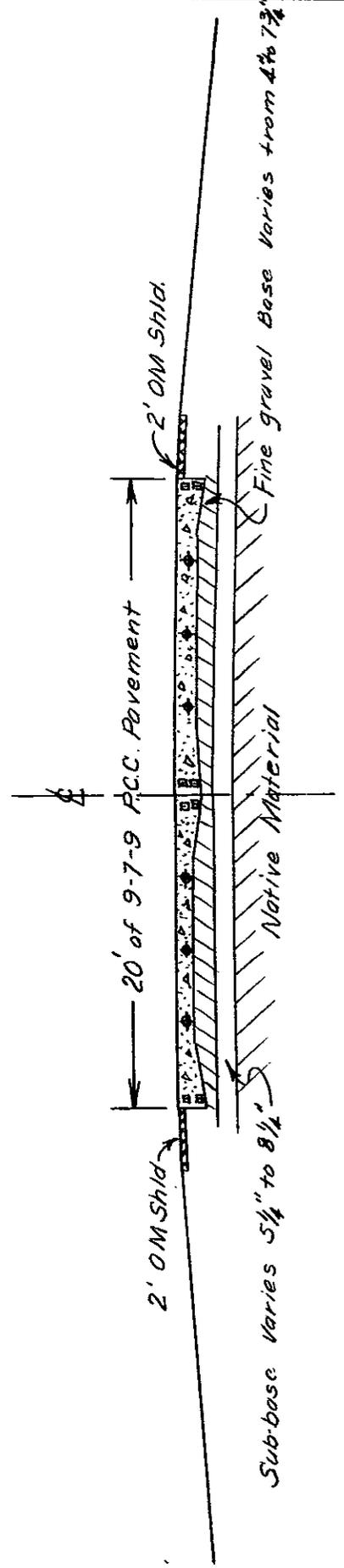
Scale: 1" = 10'

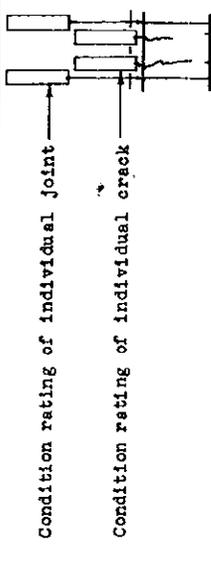
TYPICAL ROADWAY SECTION



Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION





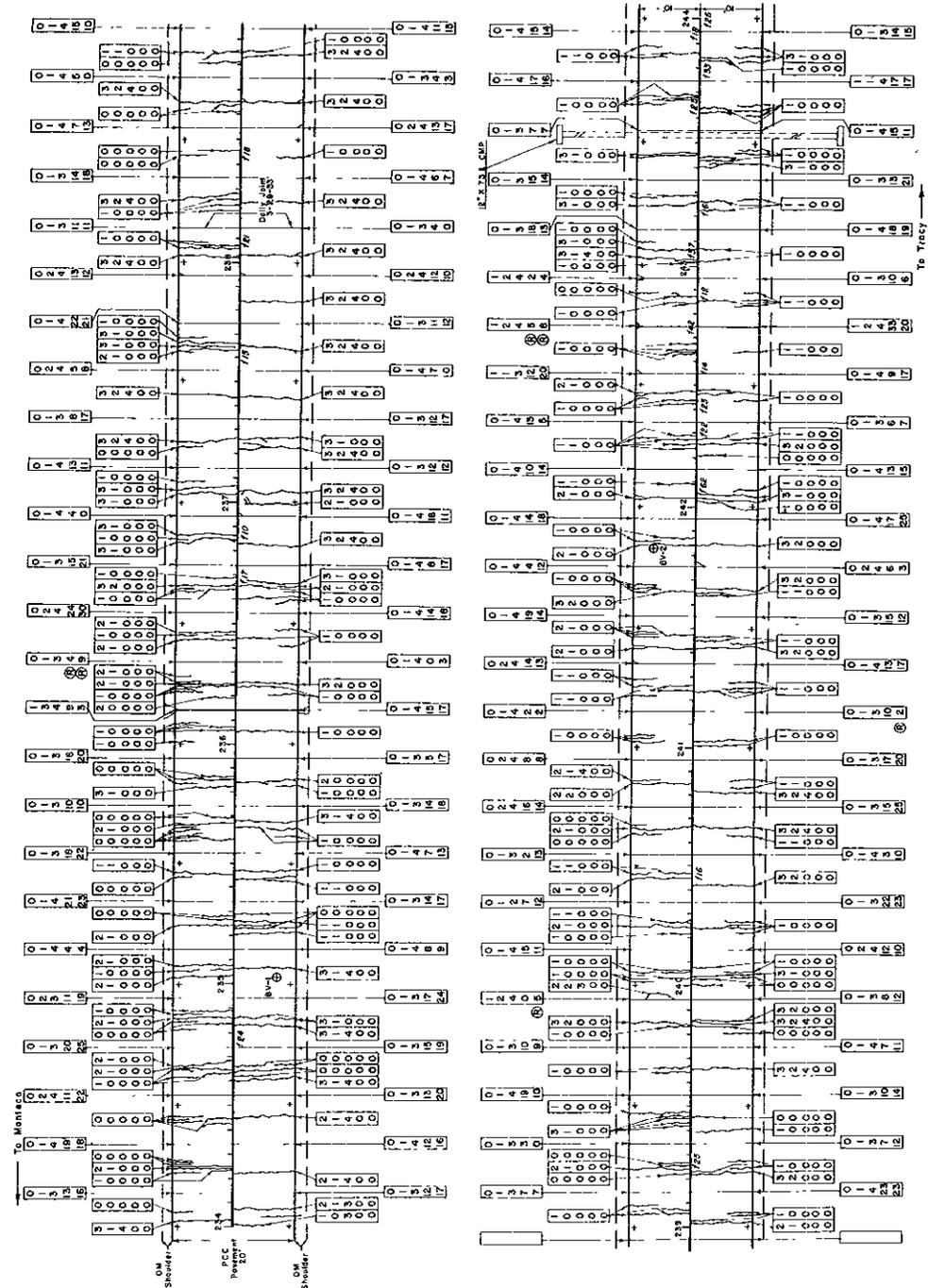
The table below indicates the significance of arrangement of the numbers in the rating "flag", and the values used in rating the condition of the individual joint or crack:

JOINTS				
Position of Number in Flag	1	2	3	4
TOP NUMBER	None	Some Secondary Cracking	"SECONDARY" CRACKING NEAR SPALLS*	
SECOND NUMBER	None	Slight	Marked	Extreme Complete
THIRD NUMBER	None	Excellent	Good	Fair
FOURTH NUMBER	FAULTING, in 100ths of an inch AT INNER END OF JOINT. (Measured at a point 18" from the longitudinal joint.)			
FIFTH NUMBER	AT OUTER END OF JOINT. (Measured at a point 18" from the outer pavement edge.)			

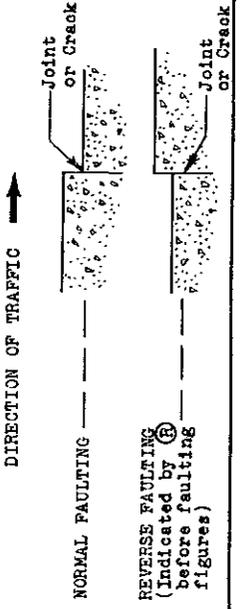
\*"Secondary" cracking as used above refers to the more or less concentric cracking frequently found adjacent to spalled areas.

CRACKS				
Position of Number of Flag	1	2	3	4
TOP NUMBER	Tight but Definite	Very Definite	Marked Extreme	Shattered Area
SECOND NUMBER	None	Slight	Marked Extreme	Shattered Area
THIRD NUMBER	Not Sealed	Excellent	Good	Fair
FOURTH NUMBER	FAULTING, in 100ths of an inch AT INNER END OF CRACK. (Measured at a point 18" from the longitudinal joint.)			
FIFTH NUMBER	AT OUTER END OF CRACK. (Measured at a point 18" from the outer pavement edge.)			

LOADOMETER STA. NO. 5  
X-S-J-66-A



### TYPES OF FAULTING AT JOINTS AND CRACKS



### LEGEND

- ⊕ 8" diameter core hole for soil samples
  - 5" diameter core hole
  - Mudjacking or subsampling for holes
  - + Permanent reference points set for levels
- Figures preceded by this symbol *f* indicate faulting along the longitudinal joint between lanes. Figures are placed on the low side of the joint.

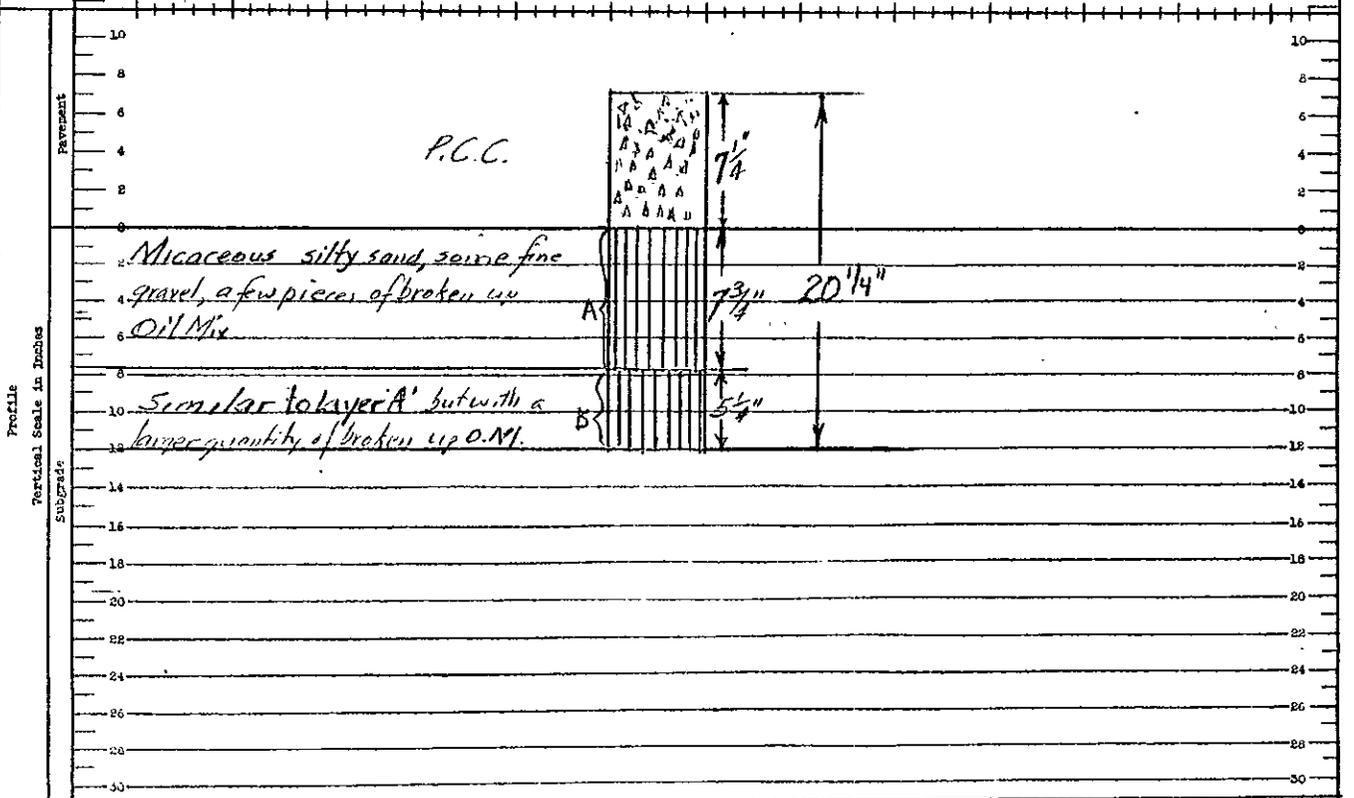
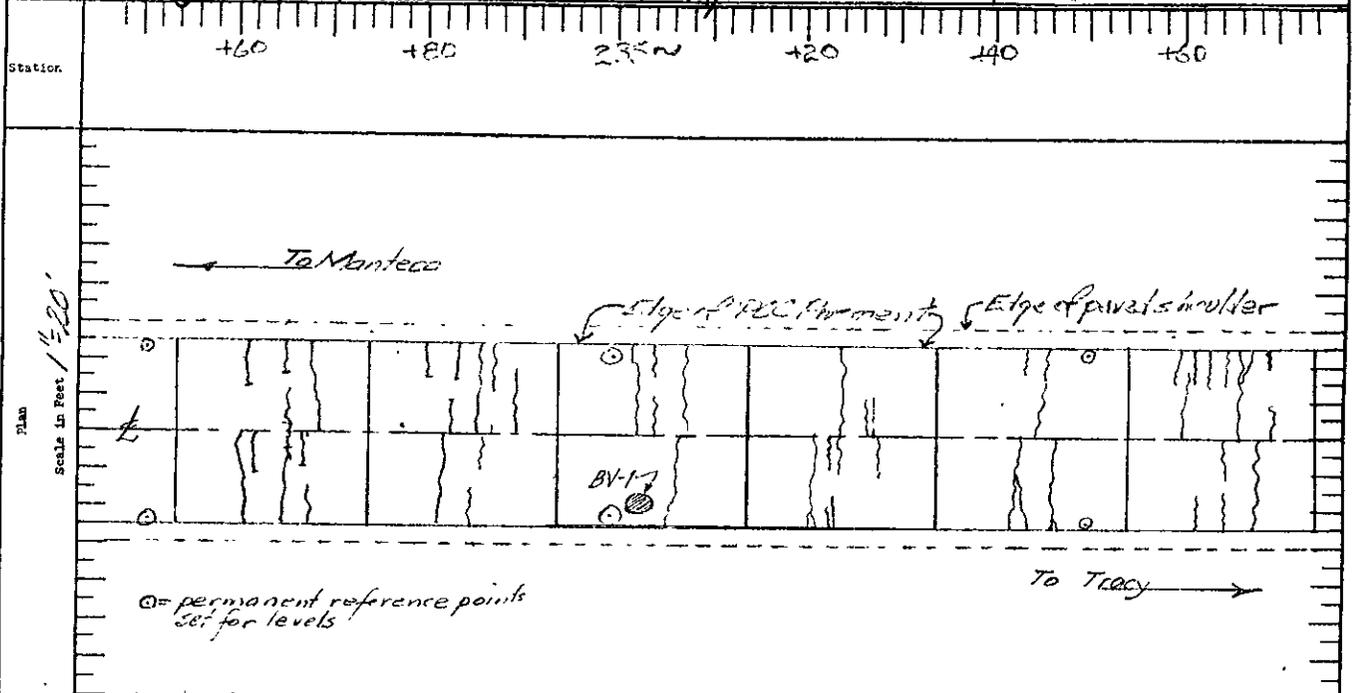


LOCATION AND PROFILE SKETCH

PAVEMENT INVESTIGATION

RESEARCH NO. 00255

Dist. <b>X</b>	Co. <b>S.J.</b>	Rta. <b>66</b>	Sec. <b>A</b>	Contract No.	Date of Constr. <b>1932</b>	Test Hole No. <b>BV-1</b>
Fill <input checked="" type="checkbox"/>	Approx. height <b>15</b>	Dist. from End of Fill	No. of Lanes <b>Two</b>	Traffic <b>Lt. to Med</b>	Depth <b>15'-2'</b>	Date of Sampling <b>7-28-52</b>
Cut <input type="checkbox"/>	Approx. Depth	Dist. from End of Cut	Side Ditches <b>Open on left. Not clearly defined on right</b>	Grade <b>0.5%</b>		
Roadside Use, etc. <b>Agricultural</b>			Right <b>RR R/W</b>			



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

By *[Signature]*

Party *Smith*

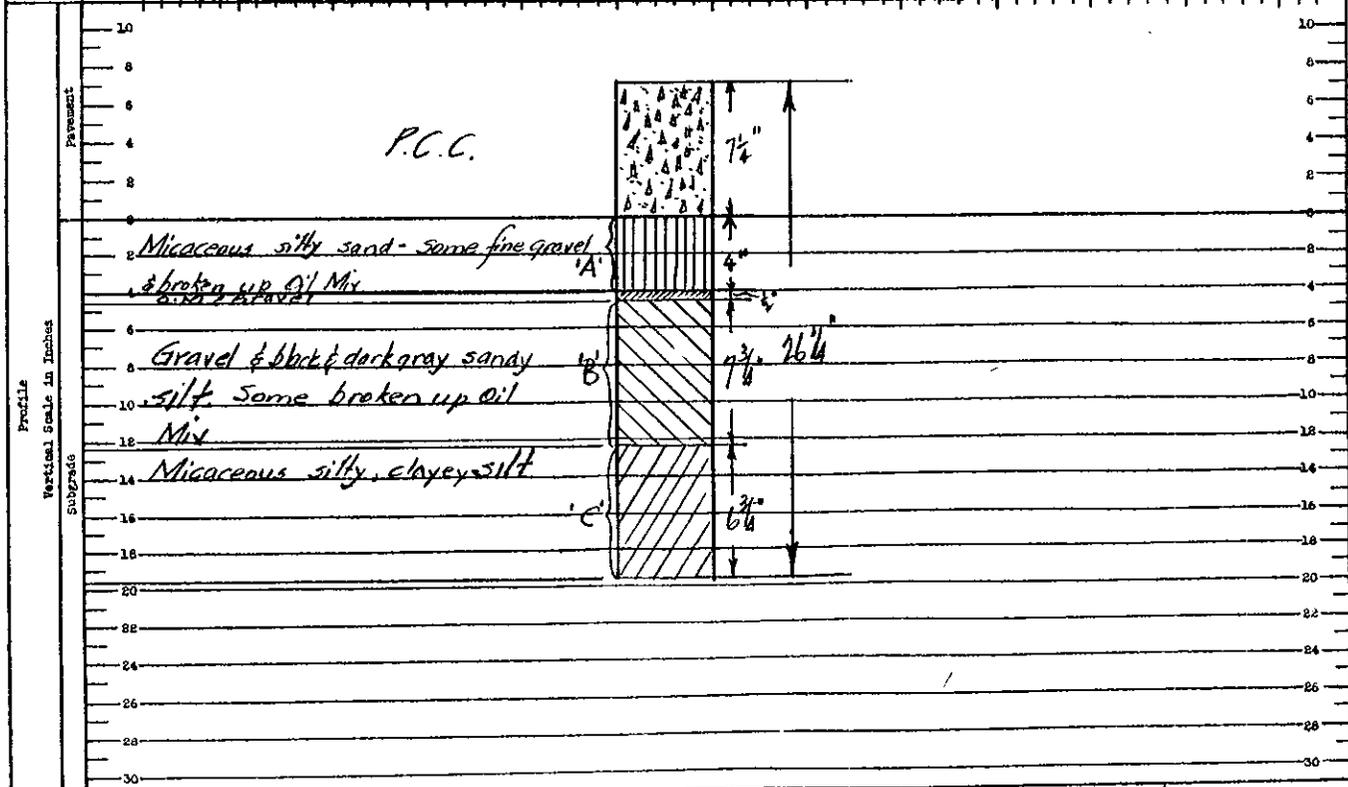
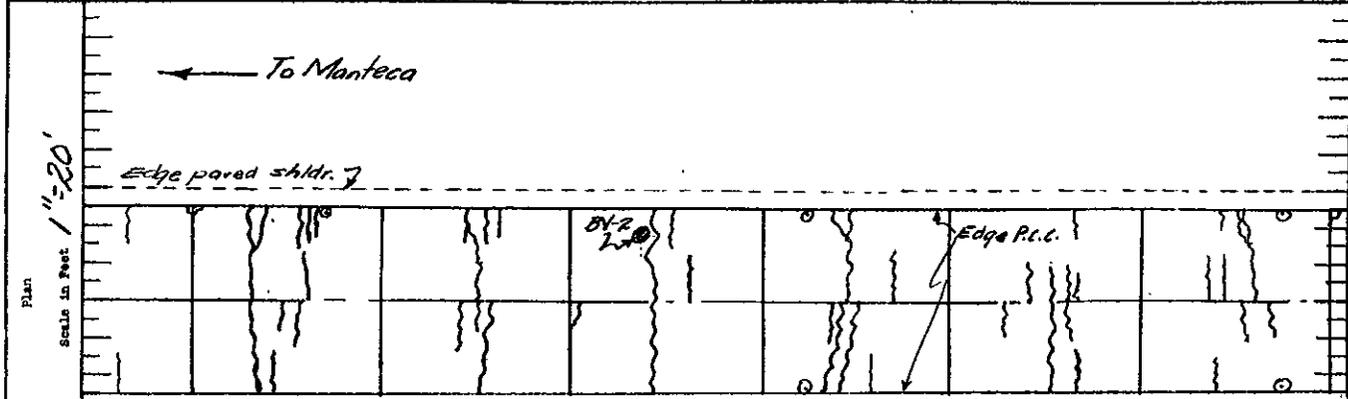
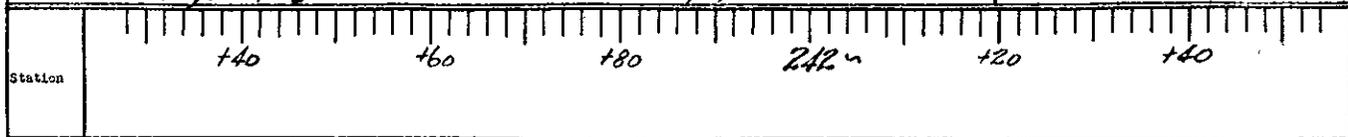
Drawn By *[Signature]*

LOCATION AND PROFILE SKETCH

PAVEMENT INVESTIGATION

RESEARCH NO. 00259

Dist. <i>I</i>	Co. <i>ST</i>	Hwy. <i>66</i>	Sec. <i>A</i>	Contract No. <i>—</i>	Date of Constr. <i>1932</i>	Test Hole No. <i>BV-2</i>
Fill <input checked="" type="checkbox"/>	Approx. height <i>10</i>	Dist. from End of Fill <i>—</i>	No. of Lanes <i>Two</i>	Traffic <i>Light to Medium</i>	No. <i>—</i>	
Out <input type="checkbox"/>	Approx. Depth <i>—</i>	Dist. from End of Cut <i>—</i>	Side Ditches <i>Ditched left. Not clearly defined on right</i>	Depth <i>15'-2'</i>	Date of Sampling <i>7-29-52</i>	
Roadside Use, Left <i>Agricultural</i>			Right <i>R.R. R/W</i>		Grade <i>0.4%</i>	Dr. <i>—</i>



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

REMARKS:

Party: *Smith*  
*Clawson*

Drawn By: *Clawson*

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 15NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 5  
 Dist. V Co. S.J. Rte. 66 Sec. A  
 Loc. Design BV  
 Sta. 234+00 to 239+00  
 Sheet No. 1 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

		<i>Left of Roadway</i>						<i>Right of Roadway</i>					
		Bank Shot.	Gutter Line	Virt Shldr. Point	Edge Road Shldr.	Edge Pavd Shldr.	Virt Shldr. Point	Grass in Slope	Toe Slope	Ditch			
239~		49.5	48.4	50.1	50.98	50.78	49.7	48.5	46.7	44.7			
		47.5	44.5	26.5	12.0	12.0	22.0	31.0	44.5	51.0			
+50		50.1	48.9	50.3	51.19	51.15	50.2	49.0	47.4	45.5			
		47.5	44.0	26.0	12.0	12.0	22.0	32.5	41.0	49.0			
238~		50.0	49.0	50.7	51.52	51.44	50.3	49.0	46.4				
		48.0	44.5	26.0	12.0	12.0	22.5	35.5	46.0				
+50		50.1	49.1	51.0	51.81	51.70	50.5	49.5	46.6				
		48.0	44.0	26.0	12.0	12.0	21.0	36.0	47.0				
237~		50.4	49.2	51.2	52.04	51.97	51.2	49.6	45.6				
		48.5	45.0	26.0	12.0	12.0	22.0	36.0	47.0				
+50		51.1	49.5	51.4	52.24	52.20	51.0	49.6	46.5				
		48.5	44.5	26.0	12.0	12.0	24.5	35.5	44.0				
236~		50.9	49.6	51.3	52.41	52.43	51.7	50.0	45.2				
		48.0	44.5	26.0	12.0	12.0	20.5	34.5	52.0				
+50		51.6	50.0	51.5	52.57	52.61	51.8	50.2	46.3				
		50.0	44.0	26.5	12.0	12.0	21.5	36.5	50.0				
235~		51.8	50.4	51.7	52.68	52.73	52.0	51.3	46.1				
		49.5	43.5	26.0	12.0	12.0	22.0	35.5	51.0				
+50		52.4	50.5	51.8	52.80	52.75	52.1	50.9	46.3				
		49.0	43.5	27.0	12.0	12.0	21.0	39.0	51.0				
234~		52.5	50.8	52.0	52.84	52.81	52.2	51.5	45.7				
		50.0	43.0	26.0	12.0	12.0	22.5	37.0	55.0				

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 5  
 Dist. X Co. S.J. Rte. 66 Sec. A  
 Loc. Design BV  
 Sta. 239+50 to 244+00  
 Sheet No. 6 of 8

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

		Left of Roadway						Right of Roadway					
		Bank Shot	Cutter Line	Dirt Shldr. Point	Edge Paved Shldr.	Edge Paved Shldr.	Dirt Shldr. Point	Break in Slope	Top of Slope				
244~		46.1	47.1	46.7	47.8	48.69	48.89	48.2	47.5	46.7	47.4	47.4	
		49.0	37.5	33.0	26.0	12.0	12.0	24.5	42.0	44.0	43.0	60.0	
+53	$\frac{44.7}{36.0}$ Outlet	Flow Line 12" CMP						Flow Line 12" CMP					
+50		45.6	46.0	47.1	47.9	48.74	48.89	48.1	47.7	46.2	46.0	48.4	47.9
		49.0	40.0	35.0	25.5	12.0	12.0	25.0	36.0	39.0	43.0	50.0	60.5
243~		46.2	46.4	47.8	48.90	49.01	48.1	47.3	46.3	47.6	47.6		
		49.0	43.5	27.5	12.0	12.0	26.0	42.5	46.0	50.0	60		
+50'		46.8	46.3	48.1	49.15	49.11	48.3	47.3	46.9	48.0	48.0		
		46.5	44.5	27.0	12.0	12.0	26.0	41.5	45.5	50.0	60.0		
242~		47.1	46.4	48.4	49.31	49.34	48.5	47.9	47.0	48.3	48.3		
		46.5	44.0	26.0	12.0	12.0	26.0	40.5	45.0	50.0	60.0		
+50		47.8	47.0	48.5	49.51	49.56	48.6	48.0	47.2	48.5	48.5		
		47.5	43.5	26.0	12.0	12.0	25.0	40.5	45.0	49.5	61.0		
241~		48.3	47.3	48.9	49.83	49.92	49.2	48.1	47.3	49.2	49.4		
		47.0	43.5	25.5	12.0	12.0	24.0	37.1	45.5	50.0	62.0		
+50		49.0	47.8	49.2	50.12	50.15	49.3	48.1	47.6	50.8	50.7		
		47.0	42.0	26.0	12.0	12.0	22.0	32.0	42.0	50.0	62.0		
240~		48.8	48.0	49.4	50.40	50.40	49.4	48.1	51.9	51.0			
		48.0	44.0	26.5	12.0	12.0	23.0	31.0	42.0	48.0			
239+50		48.8	48.1	49.7	50.71	50.55	49.6	48.3	46.4	45.5			
		48.0	44.5	26.5	12.0	12.0	22.0	35.0	47.0	51.0			

12

DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE

LOCATION: Loadometer Station No. 76 is located 1.1 miles north of the junction of Route 1 and Route 20 approximately 3 miles north of the north city limits of Arcata.  
The section selected for test is located 1.0 mile north of Loadometer Station No. 76, approximately 4 miles north of the north city limits of Arcata.

LENGTH: The section selected for test is established between Sta. 100+00 and Sta. 110+00.  
Section includes both lanes of a 2-lane roadway.

SURFACE:

Type: Dense graded asphaltic plant mixed surfacing with coarse seal coat wearing surface.  
Plant mixed surfacing blanket was placed in 1950 over other P.M.S. which is over an open graded oil mix surfacing.

Width: Traveled way is 20 feet wide (2-10' lanes).  
Total width of pavement, edge to edge, is approximately 25 feet. Present surfacing tapers abruptly to the older pavement outside of each 10 foot lane.

Thickness: Dense graded asphaltic P.M.S. is 3-1/2" thick.  
Open graded mix varies from 2" to 3" in

ROADWAY STRUCTURE

SURFACE:

Thickness:  
(Continued)

thickness. Total pavement thickness varies from 5-1/2" to 6-3/8".

BASE:

Type and  
Thickness:

Crusher run base, 8" to 8-1/2" in thickness. Material was placed in 1929 and served as roadway surfacing until asphaltic mix surfacing was placed.

Soil Clas-  
sification:

A-2-4

SUBBASE:

Type and  
Thickness:

Clean coarse sand and gravel. Minimum thickness, 8".

Soil Clas-  
sification:

A-1-a

SIDE DITCH  
DRAINAGE:

Section is entirely in fill. Section roadway is for all practical purposes level. There are no berms or gutters adjacent to the traveled way, all drainage apparently going over the fill slope. Side ditch parallel the roadway at the toe of fill slope throughout the section. Ditches average 1 foot lower in elevation than the original ground and average from 3 to 4 feet lower than pavement elevation. Drainage is carried from south to north.

Loadometer Station No. 76  
Road I-Hum-1-I

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:  
(Continued)

There are no culverts or bridges within the section.

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (1) Areas of Alligator Crackings: There are no areas of alligator crackings in the section.
- (2) Areas of Raveling: There are no areas of raveling in this section.
- (3) Areas of Shoving or Creeping: There are no areas of shoving or creeping in the section.
- (4) Patches: There are no patches in the section.
- (5) Roadway Section: Section roadway is entirely in fill. Traveled way pavement averages 0.3 ft. above dirt shoulder elevations and from 3 to 6 ft. above original ground elevations.
- (6) Shoulders: Shoulders in this section vary from 4 to 6 ft. in width (edge of traveled way to edge of fill.) Throughout the section old pavement averages 2.5 ft. in width in the shoulder areas and 0.3 ft. below traveled way elevation. Remainder of shoulder area is an unimproved dirt shoulder.

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:

A District bench mark is established on top

Loadometer Station No. 76  
Road I-Hum-1-I

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:

of a right of way monument 50 ft. right of centerline, Sta. 100+00, with an elevation of 38.17 ft.

The District bench mark was used as bench mark No. 1 for the section. Bench mark No. 2 for the section was established on top of a right of way monument 50 ft. lt. of centerline, Sta. 110+00 with an elevation of 34.285 ft.

Three lines of permanent reference pins were set in the section; one line on the traffic stripe and lines 12.0 ft. left and right of the stripe. Outer pin lines average 0.5 foot from the outer edges of pavement.

Profilograph  
Records:

Transverse:

The permanent reference points set for levels also serve as permanent markers for transverse profiles of the pavement surface. Using the machine developed for this purpose, transverse profilograph records in each lane were made at 20 foot longitudinal intervals throughout the section.

Loadometer Station No. 76  
Road I-Hum-1-I

ROADWAY CONDITION

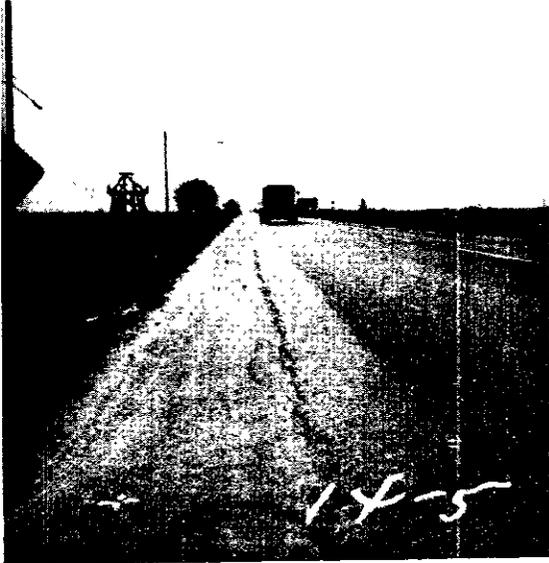
ROUGHNESS  
MEASUREMENTS:

Profilograph  
Records:

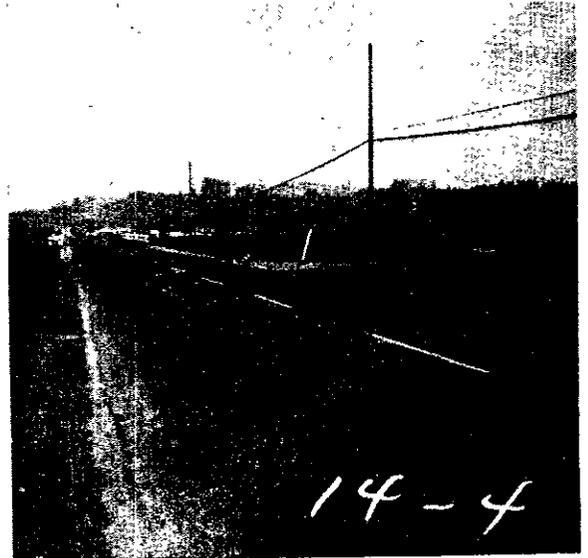
Longitudinal: By means of the Profilograph, records were made of the longitudinal profiles in each lane of the traveled way surface. Four parallel lines were recorded. In the right lane runs were made 24" right of center pin line and 33" left of right pin line. In the left lane they were made 24" left of center pin line and 33" right of left pin line. All profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. #76

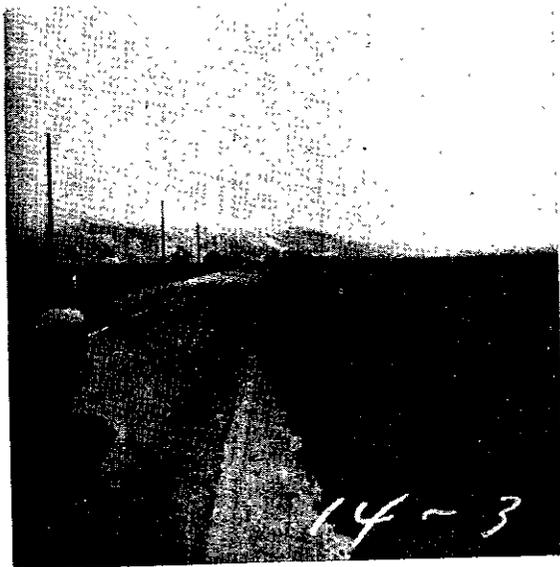
I-Hum-1-I



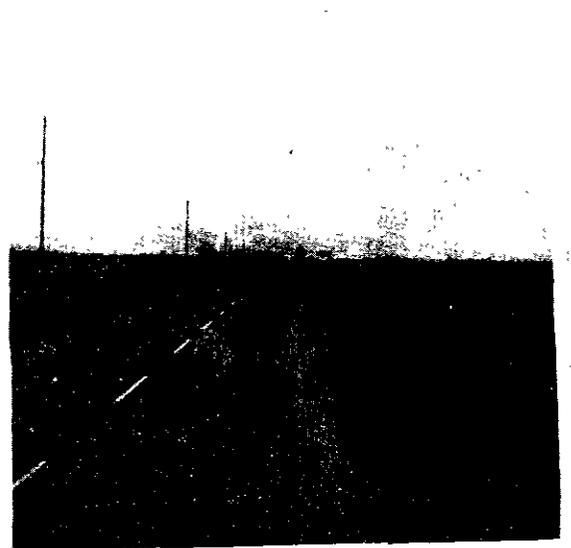
Edge of Blanket on Right  
Back from Sta. 106+50



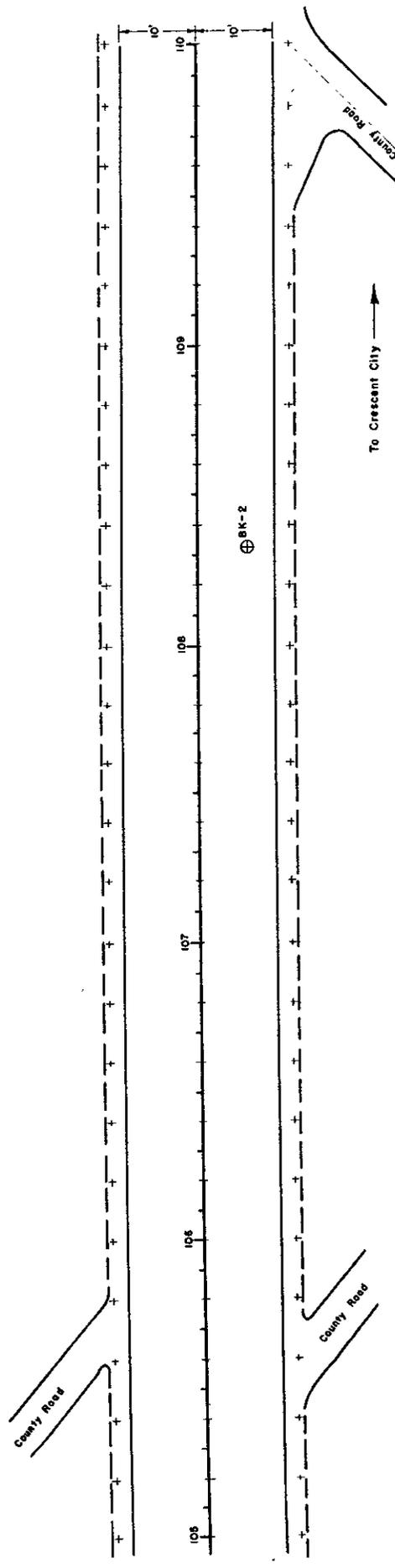
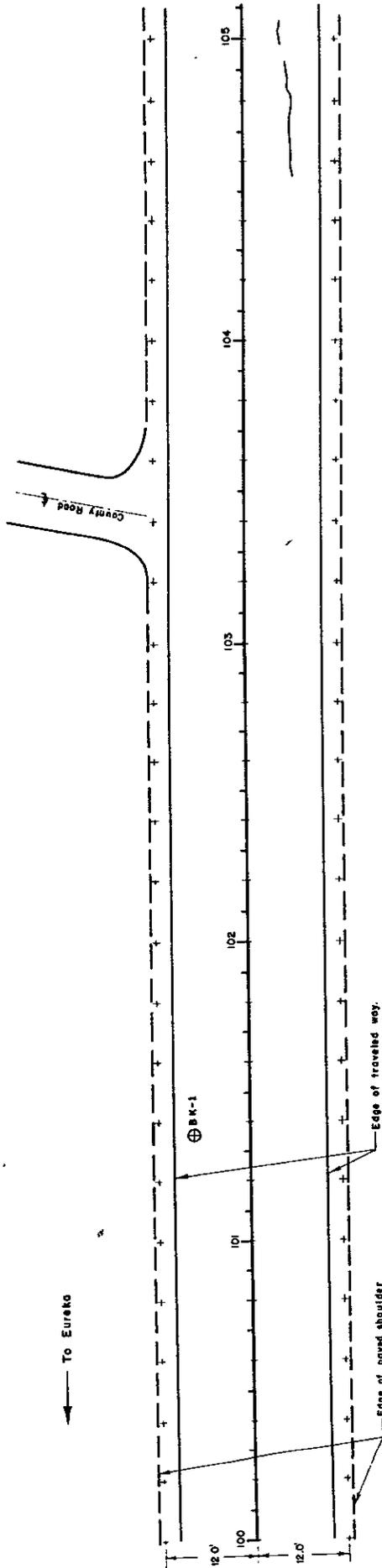
County Road Junction  
Right of Sta. 110+00



Edge of Blanket on Left  
Back from Sta. 110+00



Back on Line From  
Station 110+00



PAVEMENT LOCATION AND CONDITION CHART

LEGEND

-  Alligator Cracking
-  Failure
-  Block Cracking
-  Shoving
-  Patch

⊕ Location of Sample Hole + Location of Permanent Reference Points  
 LOADOMETER STA. NO. 76  
 I-Hum-1-I

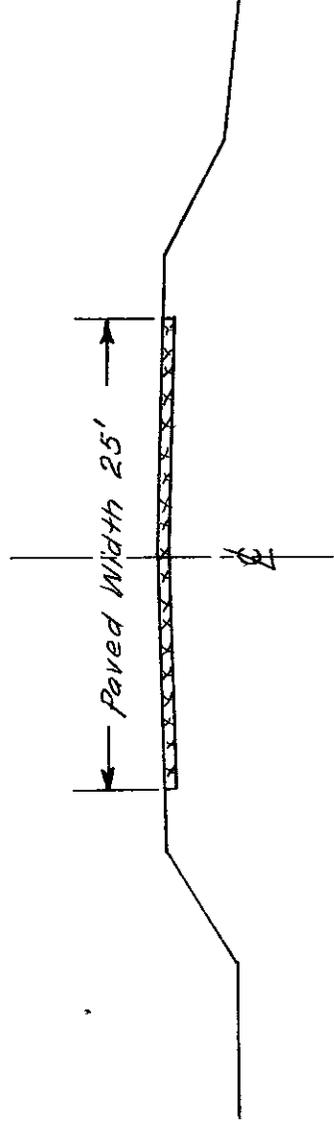
State of California, Div. of Highways  
Materials & Research Department  
Research No. 00258, W.O. No. 13NN26

Loadometer Station No. BK 76  
I-Hum-1-1

ROADWAY CONDITION SURVEY

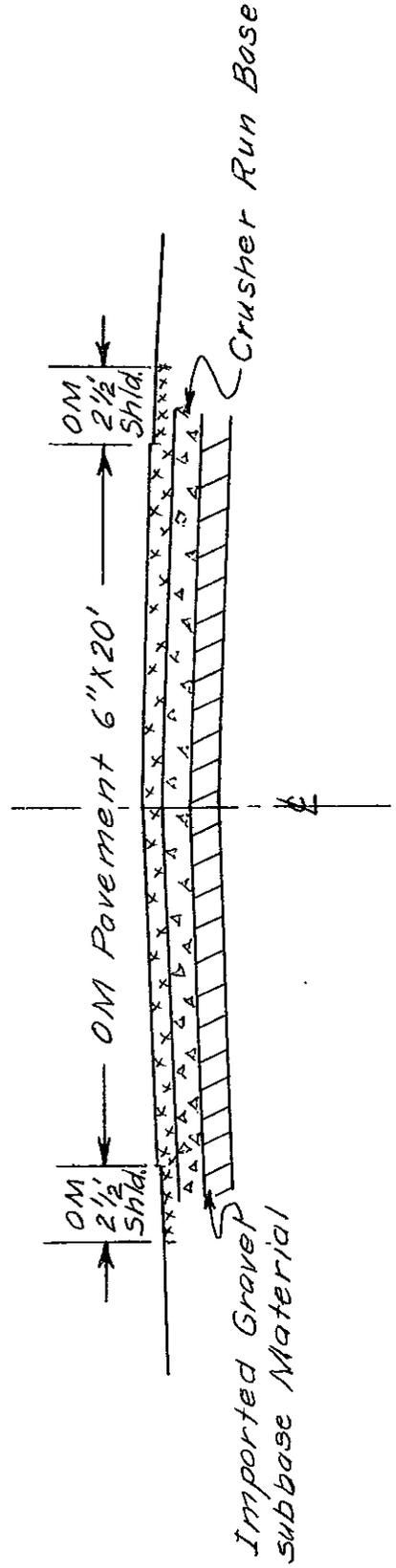
Scale: 1" = 10'

TYPICAL ROADWAY SECTION



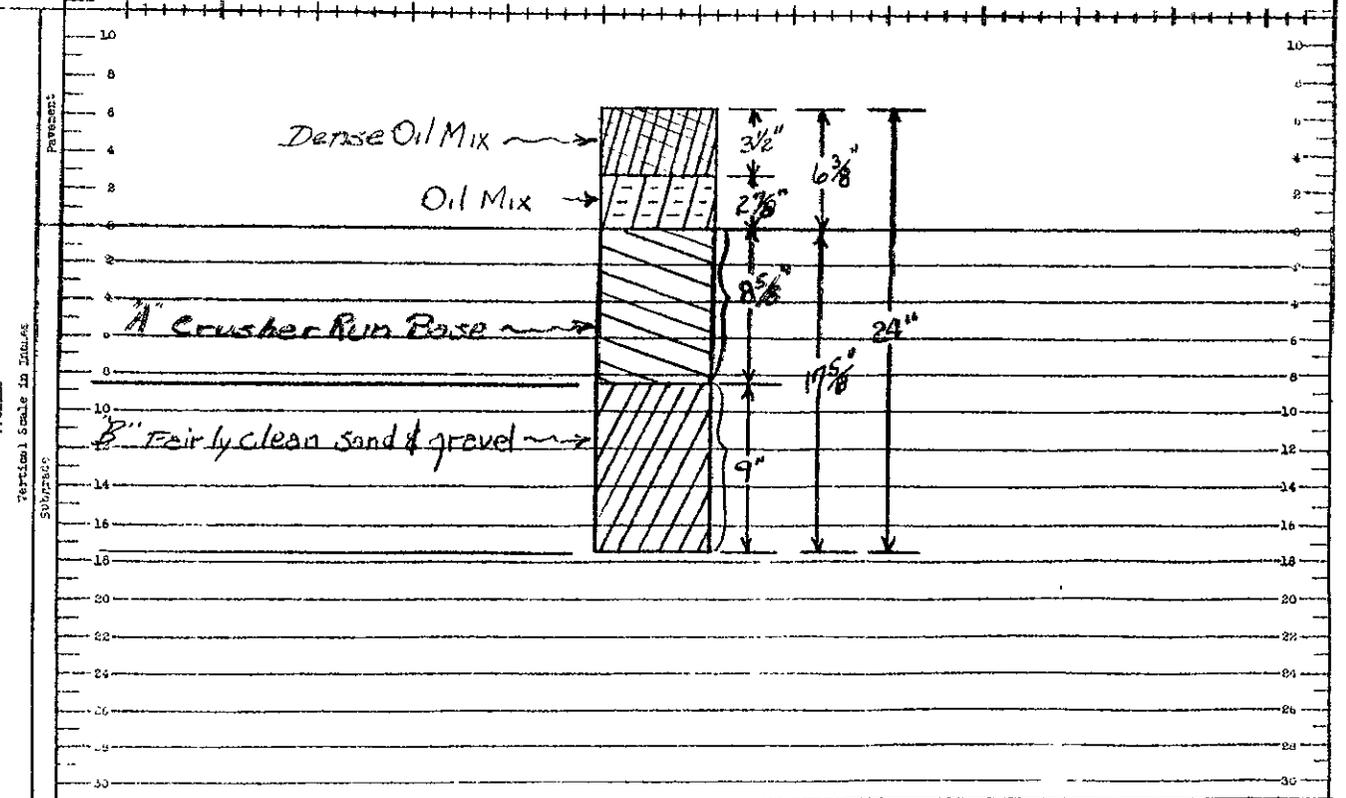
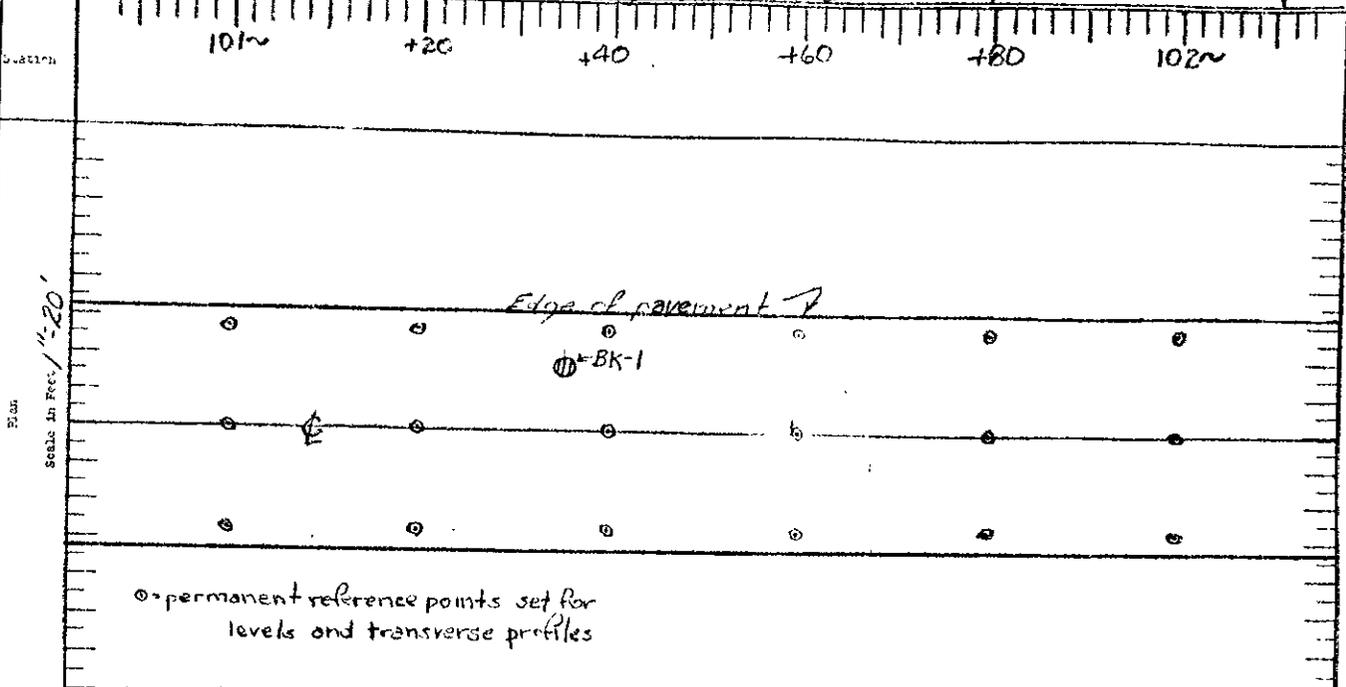
Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION





City <b>I</b>	Co. <b>Humboldt</b>	Sta. <b>1</b>	Dist. <b>I</b>	Contract No.	Date of Constr. <b>1929/1950</b>	Post No. <b>BK-1</b>	
Fill <input checked="" type="checkbox"/>	Gravel <b>30</b>	Gravel <b>30</b>	Gravel <b>30</b>	No. of lanes <b>2</b>	Traffic <b>Heavy</b>	Sp. <b>BK-1</b>	
City	Gravel	Gravel	Gravel	Side Ditches <b>well defined right</b>	Dept. <b>106th</b>	Date of Sampling <b>7-11-51</b>	
Left <b>Agricultural</b>			Right <b>Agricultural</b>			Grade <b>0</b>	Up <b>+</b>



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

Profile

Vertical Scale in Inches

Shrinkage

Party **Clawson Coan**

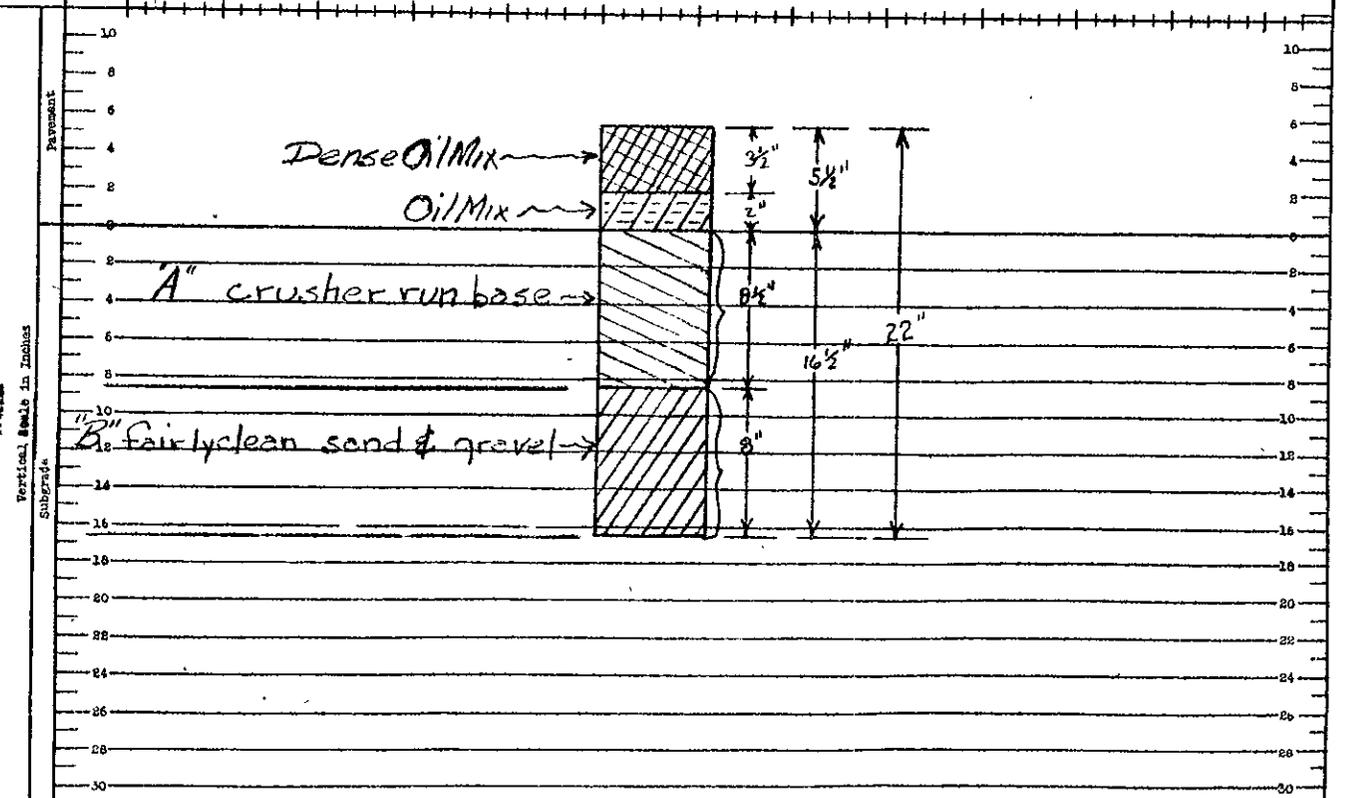
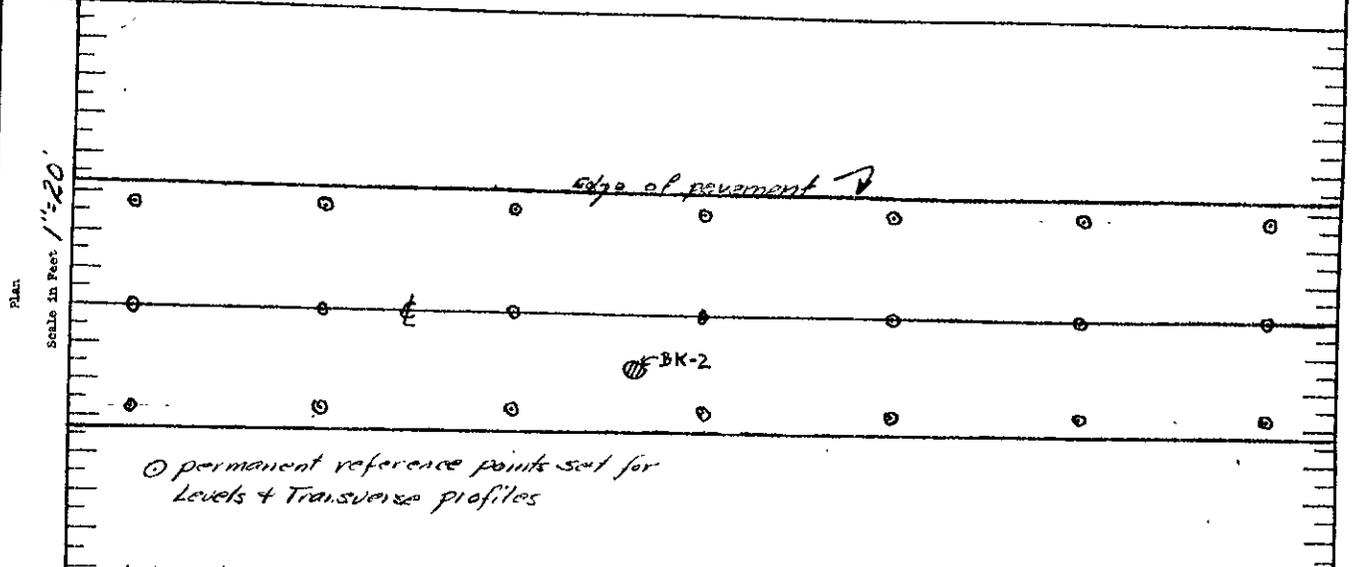
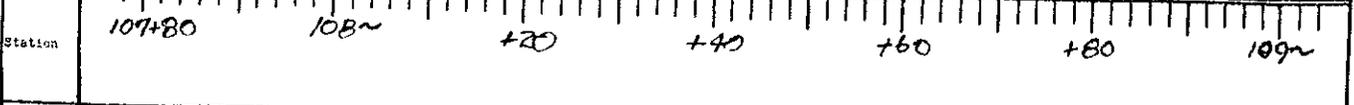
Drawn By **Coan**

LOCATION AND PROFILE SKETCH

PAVEMENT INVESTIGATION

RESEARCH NO. 00258

Dist. <u>I</u>	Co. <u>Humb</u>	Rte. <u>1</u>	Sec. <u>I</u>	Contract No. <u>        </u>	Date of Constr. <u>1929 &amp; 1950</u>	Test Hole No. <u>BK2</u>
Fill <input checked="" type="checkbox"/>	Approx. Height <u>4 1/2</u>	Dist. from End of Fill <u>        </u>	No. of Lanes <u>2</u>	Traffic <u>Heavy</u>	Date of Sampling <u>9-11-51</u>	
Out <u>        </u>	Approx. Depth <u>        </u>	Dist. from End of Out <u>        </u>	Side Ditches <u>well defined ditches</u>	Depth <u>1-6ft</u>	Grade <u>0 x</u> Up <u>        </u>	
Roadside Use, Left <u>Agricultural</u>			Right <u>Agricultural</u>			



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

Remarks:

Party Cowan

Drawn by Cowan

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 76  
 Dist. I Co. Hum Rte. 1 Sec. I  
 Loc. Design BK  
 Sta. 100+00 to 105+00  
 Sheet No. 1 of 2

*Drainage Cross-Sections*  
 ROADWAY CONDITION SURVEY

STATION	LEFT OF & ROADWAY						RIGHT OF & ROADWAY							
				Ditch	Toe of Fill	Edge of Ditch	Edge of Pavt	Edge of Pavt	Edge of Ditch	Toe of Fill	Ditch			
105+00				35.7	35.7	39.0	39.32	39.51	39.2	36.1	35.6			
				30.0	22.0	15.5	10.0	9.0	16.0	22.0	30.0			
104+00				36.6	36.6	39.1	39.43	39.47	39.1	36.1	35.8			
				32.0	23.0	16.0	10.0	9.5	16.0	21.0	30.0			
103+00				35.3	35.7	39.3	39.60	39.60	39.3	37.5	37.1			
				32.0	23.0	15.5	10.0	9.5	18.0	26.0	32.0			
102+00				35.9	36.1	39.3	39.62	39.42	39.1	35.8	35.6			
				30.0	22.0	16.0	10.0	10.0	16.0	23.0	30.0			
101+00				37.6	37.6	39.7	39.84	39.71	39.3	36.6	36.5			
				30.0	24.0	16.0	10.0	9.5	17.0	24.5	31.5			
100+00				38.3	38.1	39.4	39.74	39.79	39.4	38.6	38.6			
				35.5	26.0	17.0	10.0	9.0	18.5	26.0	29.5			



13

DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE

LOCATION: Loadometer Sta. No. 75 is located north of Eel River Bridge on State Highway Route 1 (U.S. 101), 2.2 miles south of Scotia south city limits.  
The section selected for test is located 0.5 mi. north of Loadometer Sta. No. 75, approximately 1.7 mi. south of south city limits of Scotia.

LENGTH: The section is established between Sta. 147+00 and Sta. 157+00, and includes both lanes of a 2-lane roadway.

SURFACE:

Type : Asphaltic plant mix surfacing, constructed in 1948.

Width: Traveled way is 22' wide (two 11' lanes). Total paved width edge to edge is 32 feet.

Thickness: Varied from 3-1/2 to 4" in areas sampled.

BASE:

Type and Thickness: A cement treated base varied in thickness from 3-3/4" to 6-3/4" in areas sampled.

SUBBASE:

Type and Thickness: Creek run gravel used in some portions as a cushion over an old PCC pavement, believed to be constructed in 1925-26. Thickness varies

Loadometer Station No. 75  
Road I-Hum-1-E

ROADWAY STRUCTURE

SUBBASE:

Type and  
Thickness:  
(Continued)

from a minimum of 6" in an area sampled over the old concrete to 24" in an area sampled to the left of the old concrete.

Soil Clas-  
sification:

A-2-4 and A-1-a

SIDE DITCH  
DRAINAGE:

For most part the section is in side hill construction. Right of roadway is in cut and left of roadway is in fill.

Roadway of the section is on a slight vertical curve, with approximately -1% from beginning toward Sta. 154+00 and approximately +1% from Sta. 154+00 toward end.

On the right, a clearly defined ditch with an average depth of two feet drains runoff parallel to roadway in both directions to culvert inlets at Stations 147+77, 150+58 and 154+20.

To left of roadway, embankment drops sharply to edge of right of way and runoff goes into a field used as pasture.

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

(1) Areas of  
Alligator  
Cracking:

There are no areas of alligator cracking in the section.

Loadometer Station No. 75  
Road I-Hum-1-E

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (2) Areas of Raveling: There are no areas of raveling in the section.
- (3) Areas of Shoving or Creeping: There are no areas of shoving or creeping in the section.
- (4) Patches: There are no patched areas in the section.
- (5) Roadway Section: Section is side hill construction cut on right, fill on left. Fill portion varied from 6' to 15'.
- (6) Shoulders: Paved shoulders in the section vary from 4 to 6 feet in width. On the right, pavement extends to within two or three feet of the ditch line. On the left there is an average of 11' of dirt shoulder outside the pavement. In addition, on the left, there are two "daylighted" areas which provide off the road parking space for vehicles.

ROUGHNESS MEASUREMENTS:

Bench Marks  
and Levels:

Bench marks were established by the field crew near the ends of the section. Bench Mark No. 1 is established on a steel pin set in the southeast corner of a culvert headwall right of Sta. 157+75 at an elevation of 129.040'. Bench Mark No. 2 was established on a steel pin set in southeast corner of a culvert headwall right of

ROADWAY CONDITION

ROUGHNESS MEASUREMENTS:

Bench Marks  
and Levels:  
(Continued)

Sta. 146+77 at an elevation of 129.564'.

Elevations are based on a District bench mark on a culvert headwall right of Sta. 154+20, elevation 127.26'.

Permanent reference pins were placed in three lines parallel to centerline roadway. One line is on the centerline of pavement; the other two are 12.3' left and 12.3' right of centerline.

Profilograph  
Records:

Transverse: The permanent reference points for levels also serve as permanent markers for transverse profiles of the pavement surface. Using the machine developed for this purpose, transverse profilograph records of the traveled way surface in each lane were made at 20 foot longitudinal intervals throughout the section.

Longitudinal: By means of the Profilograph, records were made of the longitudinal profiles in each lane of the traveled way surface. Four parallel lines were recorded. In the right lane runs were made 24" right of center pin line and 33" left of right pin line. In the left lane, they were made 24" left of center pin line and 33" right of left

Loadometer Station No. 75  
Road I-Hum-1-E

ROADWAY CONDITION

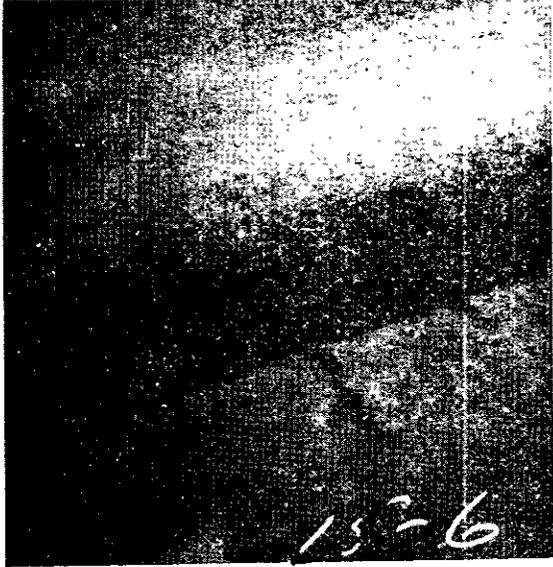
Profilograph  
Records:

Longitudinal: pin line.

All Profilograph records have been labeled and  
are on file at the Materials and Research  
Department for future use.

Loadometer Sta. No. 75

I-Hum-1-E



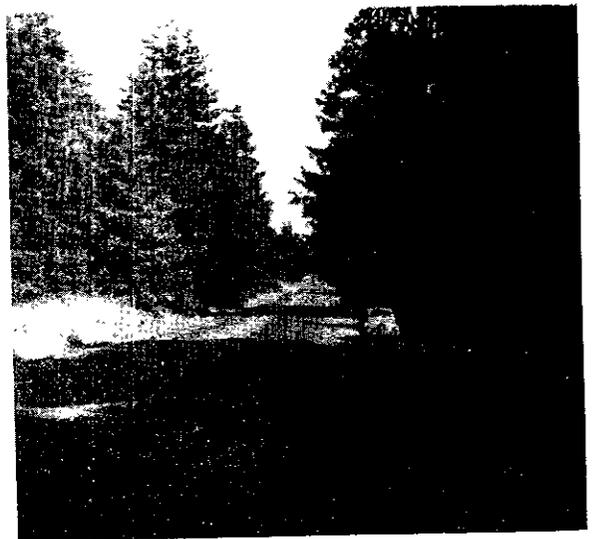
Transverse Crack in Shoulder  
and Right Lane Sta. 149+23



Longitudinal Crack Right  
of Sta. 153+50 to Sta. 153+65



Transverse and Longi-  
tudinal Cracks Sta. 154+58



Back on Line from  
Station 157+00

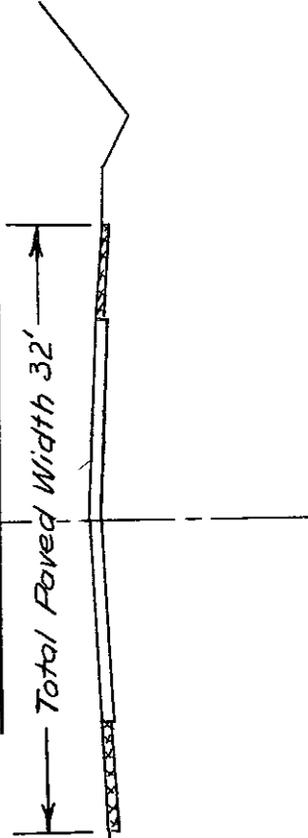
State of California, Div. of Highways  
Materials & Research Department  
Research No. 00258, W.O. No. 13NN26

Loadometer Station No. BL 75  
I-Hum-1-E

ROADWAY CONDITION SURVEY

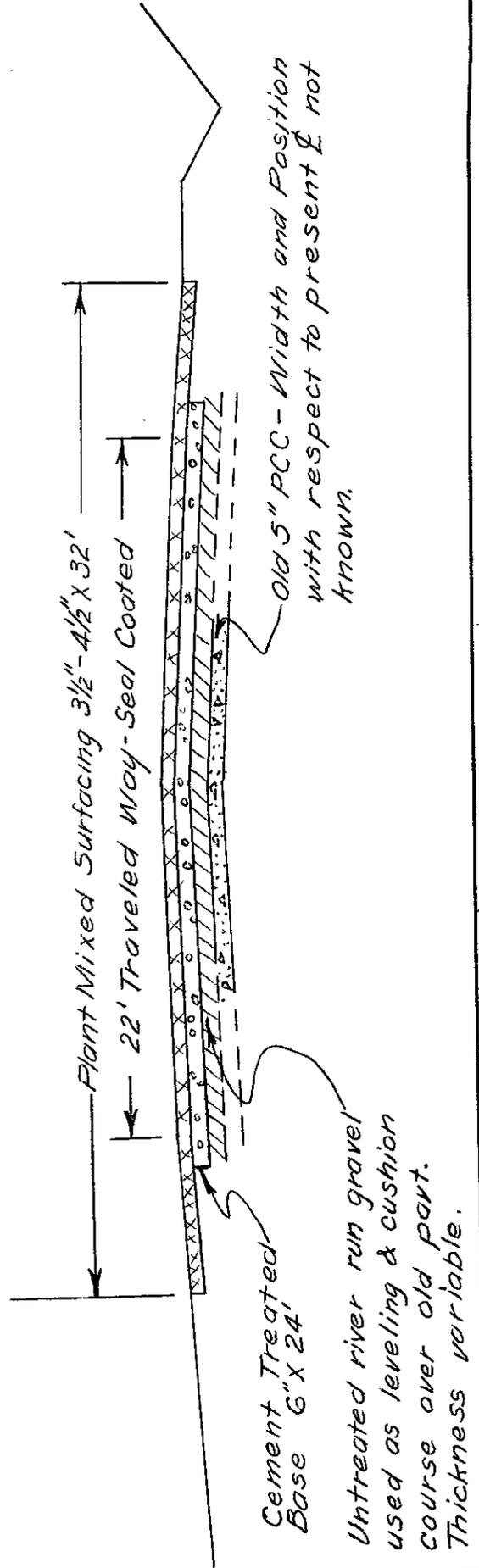
Scale: 1" = 10'

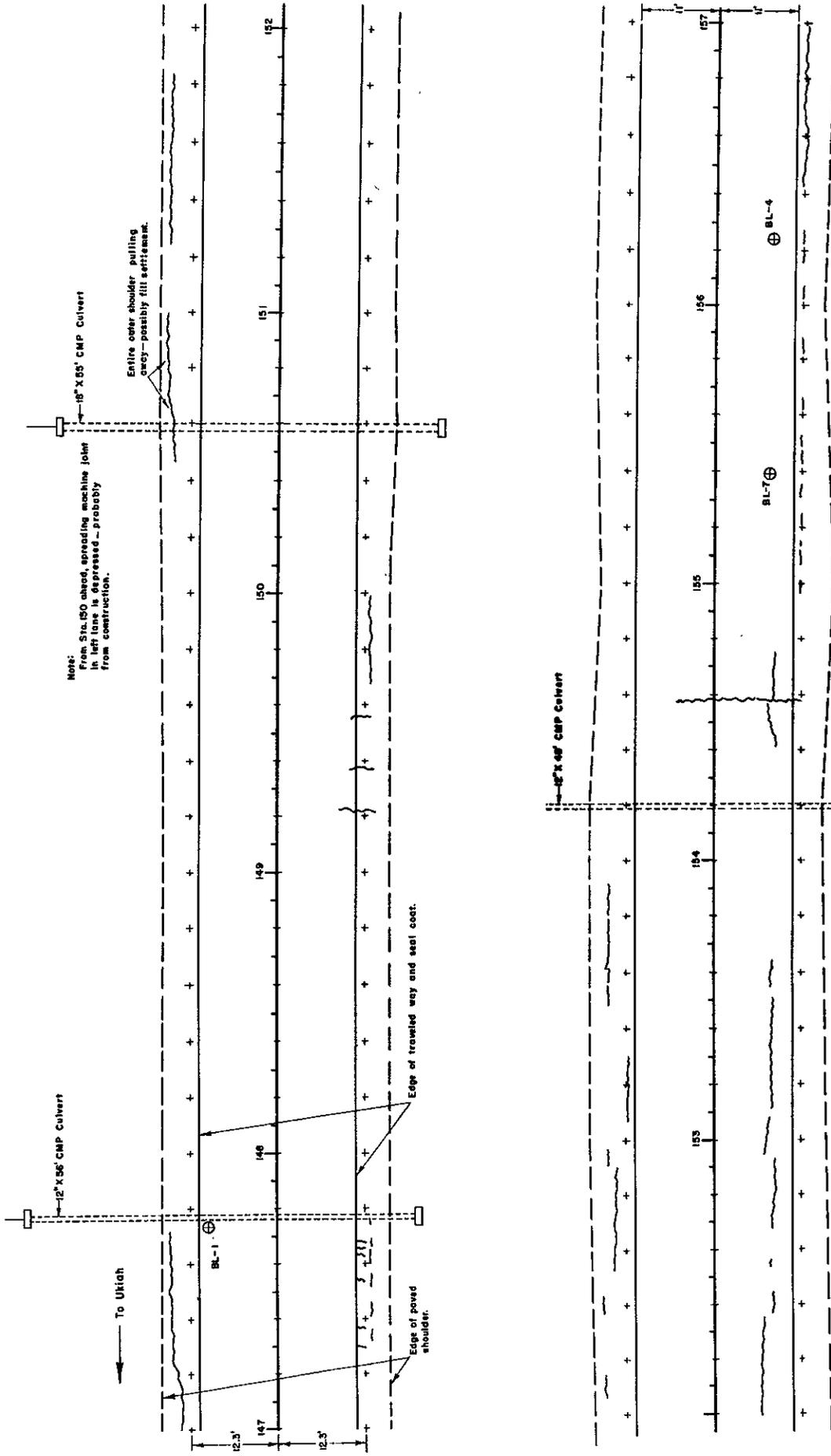
TYPICAL ROADWAY SECTION



Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION





PAVEMENT LOCATION AND CONDITION CHART

LEGEND

-  Alligator Cracking
-  Failure
-  Block Cracking
-  Shoving
-  Patch

⊕ Location of Sample Hole + Location of Permanent Reference Points LOADOMETER STA. NO. 75 I-Hum-1-E



Loadometer Station No. 11  
Road I-Men-1-C

ROADWAY CONDITION

SPECIAL CONDITIONS:

(4) Patches:  
(Continued)

Left Lane:

Sta. 1+05 to Sta. 1+10, in alligator cracked area  
Sta. 3+10 to Sta. 3+20, Same  
Sta. 2+90 to Sta. 3+70, Along edge of pavement  
Sta. 4+05 to Sta. 4+70, Same  
Sta. 4+85 to Sta. 5+10, In alligator cracked area  
Sta. 5+35 to Sta. 5+40, Same  
Sta. 5+55 to Sta. 5+70, Same  
Sta. 7+15 to Sta. 7+20, Along edge of pavement

Right Lane:

Sta. 4+80 to Sta. 5+15, along edge of pavement  
Sta. 7+50 to Sta. 7+95, Same  
Sta. 9+25 to Sta. 9+35, Same

(5) Roadway  
Section:

Elevation at centerline of roadway is for the most part, the same as the elevation in fields on either side.

(6) Shoulders:

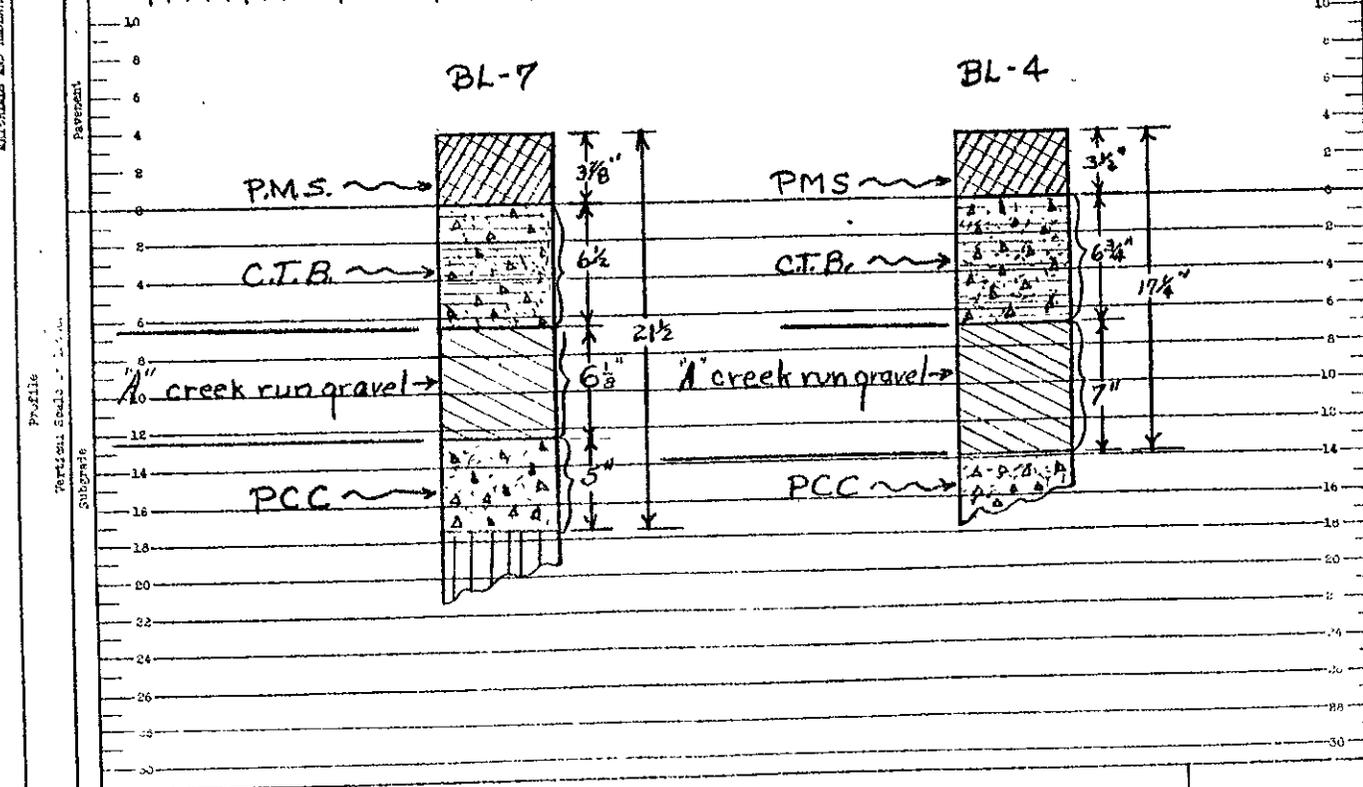
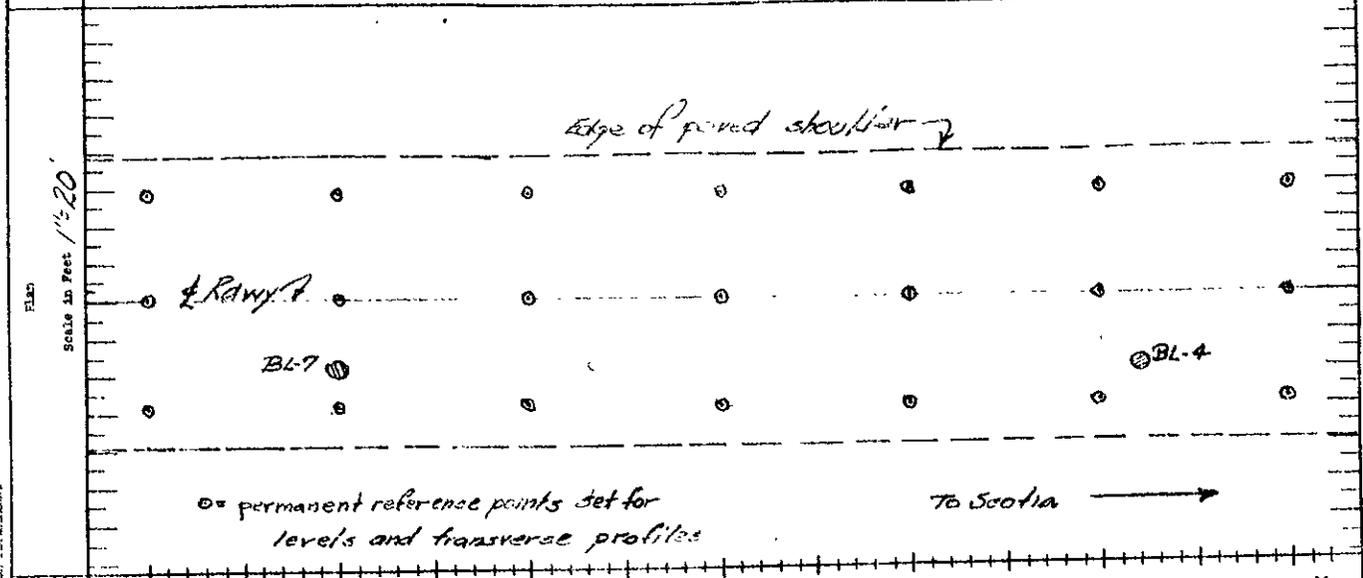
There are no paved shoulders in the section. However, the roadway pavement extends somewhat beyond the regularly traveled way and may be considered as shoulders. Edges of this pavement have broken and raveled away to a greater or lesser degree throughout the section. In some areas it has necessitated patching.

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:

Bench marks were established by the field crew near the ends of the section. Elevations were carried from USGS BM #V-104 approximately one-

Dist. I	Co. Hum Rte. 1	Sec. E	Contract No.	Date of Constr. 1948	Test Hole No. BL-4#7
Fill left side	Approx. width 10	Dist. from Ed of Fill	No. of Lanes 2	Traffic Med Heavy	Date of filing 9-6-51
Cut-on R. side	Approx. Depth 5	Dist. from Ed of Cut	Side Ditches None left, 1947 25' concrete	Grade 1.0%	Up
Material on left cattle grazing		Material on right Timber			



CALIFORNIA DEPARTMENT OF PUBLIC WORKS DIVISION OF HIGHWAYS MATERIALS AND RESEARCH REPORT

Date:   
 By: *Chuson*   
*Car*

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 75  
 Dist. 1 Co. Hum Rte. 1 Sec. E  
 Loc. Design BL  
 Sta. 147+00 to 151+00  
 Sheet No. 1 of 2

ROADWAY CONDITION SURVEY

Station	Left of Roadway						Right of Roadway					
	Toe of Fill	Shldr. Point	Edge of Pavt.	Edge T.W.	Edge T.W.	Edge of Pavt.	Top of Ditch	Btm. of Ditch	Outside Ditch Bank			
151+00	123.2 36.3	128.3 26.8	129.46 16.8	129.92 11.1	129.86 11.1	129.39 16.3	129.2 18.3	126.5 24.5	128.4 33.3			
150+58.7 18" CMP	121.4 31.3	128.5 25.3	129.71 16.8	130.23 11.3	130.03 11.3	129.53 16.3	129.3 17.8	128.2 23.3	126.0 27.8	Flow Line 18" CMP	Flow Line 18" CMP	
150+00	116.4 43.3	129.4 32.3	130.40 16.3	130.73 11.4	130.59 10.8	130.12 15.8	130.1 18.8	129.0 21.3	133.6 27.3			
149+00	122.2 59.3	130.1 36.3	131.39 16.1	131.60 11.1	131.23 11.1	130.82 15.8	130.6 18.3	130.1 20.3	136.0 28.3			
147+77 12" CMP	119.1 36.8	130.5 23.3	131.35 16.3	132.08 11.3	131.99 10.9	131.56 15.8	131.2 18.5	127.9 20.3		Flow Line 12" CMP	Flow Line 12" CMP	
147+00	122.4 33.3	131.1 23.8	132.24 16.5	132.66 11.1	132.61 11.3	132.29 15.9	132.0 16.1	(Ditch Btm.) 131.4 20.3	131.4 27.3	Bank of Ditch 133.7 24.3	134.1 32.3	

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 75  
 Dist. 1 Co. Hum Rte. 1 Sec. E  
 Loc. Design BL  
 Sta. 152+00 to 157+00  
 Sheet No. 2 of 2

ROADWAY CONDITION SURVEY

Rdwy.

Left of Roadway					Right of Roadway								
				Shldr	Edge of Pavt.	Edge of TW	Edge of TW	Edge of Pavt.	Shldr	Btm. of Ditch			
157	← Daylight Area →												
	130.6	130.5	128.9	129.9	130.20	130.60	130.81	130.50	129.5	127.5			
	36.3	28.5	25.3	23.3	16.3	11.1	11.0	16.3	35.3	56.8			
156+00		125.3	126.9	128.9	129.92	130.21	130.17	129.80	129.6	128.5	134.1	134.4	
		47.0	37.0	26.0	16.8	11.6	10.8	15.3	18.3	20.8	28.3	40.3	
155+00	← Daylight Area →												
	128.9	128.7	127.7	128.8	129.02	129.44	129.56	129.24	128.0	127.0			
	32.3	21.3	19.8	17.3	15.8	10.6	11.6	16.8	26.3	37.3			
154+20 12" CMP			Flow Line 12" CMP 123.9	128.2	128.64	129.00	128.95	128.55	128.2	125.5	126.1		
			25.0 Outlet	24.3	17.3	11.7	10.6	15.3	19.3	24.3	32.3		
153+00											(← Ditch →)		
			122.3	127.3	128.35	128.80	128.89	128.46	128.1	126.9	126.9	128.3	128.5
			38.3	28.3	17.3	11.4	10.9	15.8	18.3	20.8	22.3	25.3	29.8
152+00											Ditch		
			123.9	127.8	128.85	129.27	129.27	128.88	128.5	126.4	130.5		
			36.3	31.3	16.8	11.2	11.1	16.3	18.3	22.8	32.3		

14

DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE

LOCATION: Loadometer Station No. 11 is located at the junction of State Highway Route 1, (US 101), and State Highway Route 15. Pit is opposite the Ukiah Maintenance Station and weighs vehicles northbound on Route 1. The section selected for testing is established approximately 500 ft. north of Loadometer Station between Sta. 189+65 and Sta. 199+65. It includes both lanes of a two lane pavement. The north city limits of Ukiah is approximately 3 miles south of the section.

LENGTH: The section includes 1000' of roadway between Sta. 189+65 and Sta. 199+65, established by the laboratory field crew and hereafter referred to as Sta. 0+00 to Sta. 10+00.

SURFACE:

Type: Asphaltic mix probably a road mix construction; date unknown.

Width: Paved roadway varies from 30' to 32' in width in the limits of the section.

Thickness: In the two locations sampled, the total pavement thickness was 1-3/8" and 2".

Loadometer Station No. 11  
Road I-Men-1-C

ROADWAY STRUCTURE:

BASE:

Type and  
Thickness:

A granular material approximately 7" thick serves as a base. However, there is no abrupt transition to the material below it.

Soil Clas-  
sification:

A-1-a

SUBBASE:

Type and  
Thickness:

The subbase is a clayey sand and gravel native material, distinguished from the base by an increased amount of fines.

Soil Clas-  
sification:

A-2-4

SIDE DITCH  
DRAINAGE:

The section roadway is entirely in an "in grade" section. The section is on a vertical curve, grades of +1.0%, Sta. 0+00 to Sta. 7+00 and -1.0%, Sta. 7+00 to Sta. 10+00. Side ditches consist for most part of maintenance bladed gutter lines and average one foot below center-line elevation. Roadway runoff is carried both north and south from the vicinity of Sta. 7+00. There are no culverts under driveway turn-offs in the section.

ROADWAY CONDITION

GENERAL:

It should be noted when consideration is given to the pavement thickness and apparent age, that

Loadometer Station No. 11  
Road I-Men-1-C

ROADWAY CONDITION

GENERAL:  
(Continued)

the riding quality of the surface is generally very good.

SPECIAL  
CONDITIONS:

(1) Areas of  
Alligator  
Cracking

Areas of alligator cracking are shown graphically on the plan diagram and are listed below for convenience:

Left Lane:

Sta. 0+42 to Sta. 1+10, 1.8' wide, severe  
Sta. 1+34 to Sta. 1+36, 5.5' wide, fairly severe  
Sta. 1+72 to Sta. 3+21, Ave. 4' wide, severe  
Sta. 4+05 to Sta. 4+12, 4.5' wide, fairly severe  
Sta. 4+80 to Sta. 5+19, 4.6' wide, severe  
Sta. 5+32 to Sta. 5+44, 3.5' wide, severe  
Sta. 5+55 to Sta. 6+20, Ave. 6' wide, severe

Right Lane:

Sta. 0+00 to Sta. 0+07, 2' wide, failed  
Sta. 1+38 to Sta. 1+40, 6' wide, failed  
Sta. 6+30 to Sta. 6+40, 4' wide, severe

(2) Areas of  
Raveling:

There are no obvious areas of raveling in the traveled way of the sections.

(3) Areas of  
Shoving or  
Creeping:

There are no areas of shoving or creeping in the section.

(4) Patches:

For most part, patches in the section are located on the edges as mentioned above. These and other patched areas are shown graphically on the plan diagram and are listed below for convenience:

Loadometer Station No. 11  
Road I-Men-1-C

ROADWAY CONDITION

SPECIAL CONDITIONS:

(4) Patches:  
(Continued)

Left Lane:

Sta. 1+05 to Sta. 1+10, in alligator cracked area  
Sta. 3+10 to Sta. 3+20, Same  
Sta. 2+90 to Sta. 3+70, Along edge of pavement  
Sta. 4+05 to Sta. 4+70, Same  
Sta. 4+85 to Sta. 5+10, In alligator cracked area  
Sta. 5+35 to Sta. 5+40, Same  
Sta. 5+55 to Sta. 5+70, Same  
Sta. 7+15 to Sta. 7+20, Along edge of pavement

Right Lane:

Sta. 4+80 to Sta. 5+15, along edge of pavement  
Sta. 7+50 to Sta. 7+95, Same  
Sta. 9+25 to Sta. 9+35, Same

(5) Roadway  
Section:

Elevation at centerline of roadway is for the most part, the same as the elevation in fields on either side.

(6) Shoulders:

There are no paved shoulders in the section. However, the roadway pavement extends somewhat beyond the regularly traveled way and may be considered as shoulders. Edges of this pavement have broken and raveled away to a greater or lesser degree throughout the section. In some areas it has necessitated patching.

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:

Bench marks were established by the field crew near the ends of the section. Elevations were carried from USGS BM #V-104 approximately one-

Loadometer Station No. 11  
Road I-Men-1-C

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:  
(Continued)

half mile east of the section.

<u>B.M. No.</u>	<u>Location</u>	<u>Elevation</u>
1	31.8' Rt. Sta. 0+03	644.985
2	25.3' Rt. Sta. 10+80	649.962

Permanent reference pins were set in three parallel lines 12.3 feet apart. Edges of pavement and centerline stripe deviate sufficiently from these parallel lines to indicate that the section roadway is on a very slight curve to the right.

Profilograph  
Records:

Transverse: The permanent reference points for levels also serve as permanent markers for transverse profiles of the pavement surface. Using the machine developed for this purpose, transverse profilograph records of the traveled way surface, in each lane, were made at 20 foot longitudinal intervals throughout the section.

Longitudinal: By means of the Profilograph, records were made of the longitudinal profiles of each lane of the traveled way, surfaced in four parallel lines as follows:

Loadometer Station No. 11  
Road I-Men-1-C

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Profilograph  
Records:

Longitudinal:  
(Continued)

36" left of right pin line, 24" right of center  
pin line, 24" left of center pin line and 24"  
right of left pin line.

All profilograph records have been labeled and  
are on file at the Materials and Research  
Department for future use.

Loadometer Sta: No: 11

I-Men-1-0



Ahead on Line from  
Station 0+00



Showing Pavement Left of  
Centerline: Back from  
Station 3+00



Showing Pavement Left  
of Centerline, Sta.  
4+80 to Sta: 5+20



Showing Pavement Left  
of Centerline, Sta:  
5+30 to Sta: 6+20

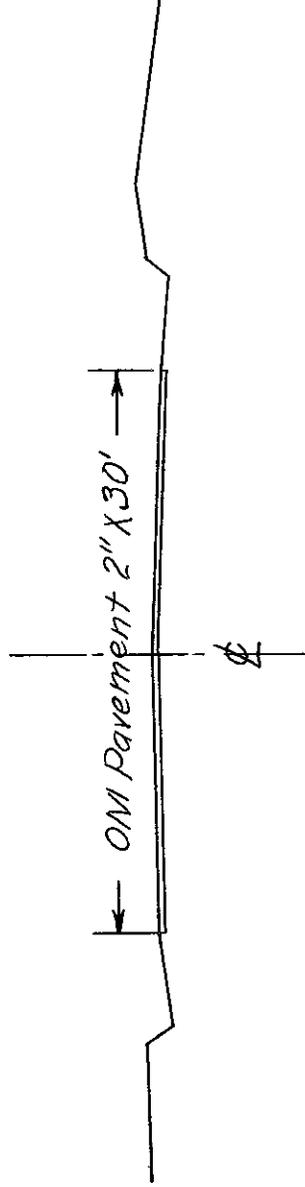
State of California, Div. of Highways  
Materials & Research Department  
Research No. 00258, W.O. No. 13NN26

Loadometer Station No. BM 11  
I-Men-1-C

R O A D W A Y   C O N D I T I O N   S U R V E Y

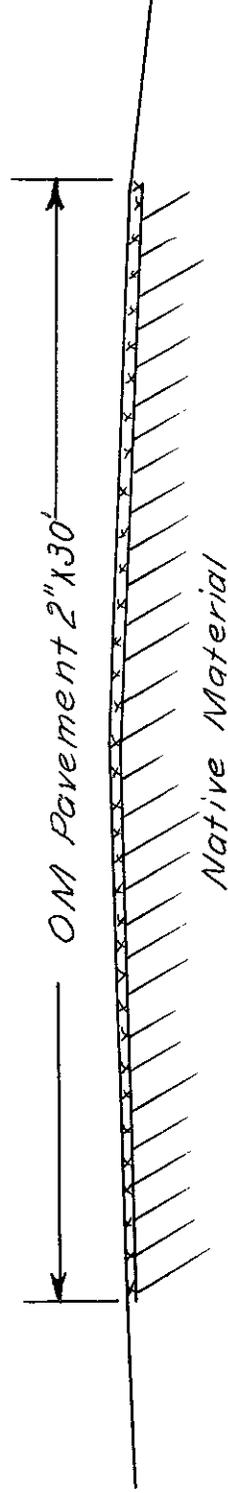
Scale: 1" = 10'

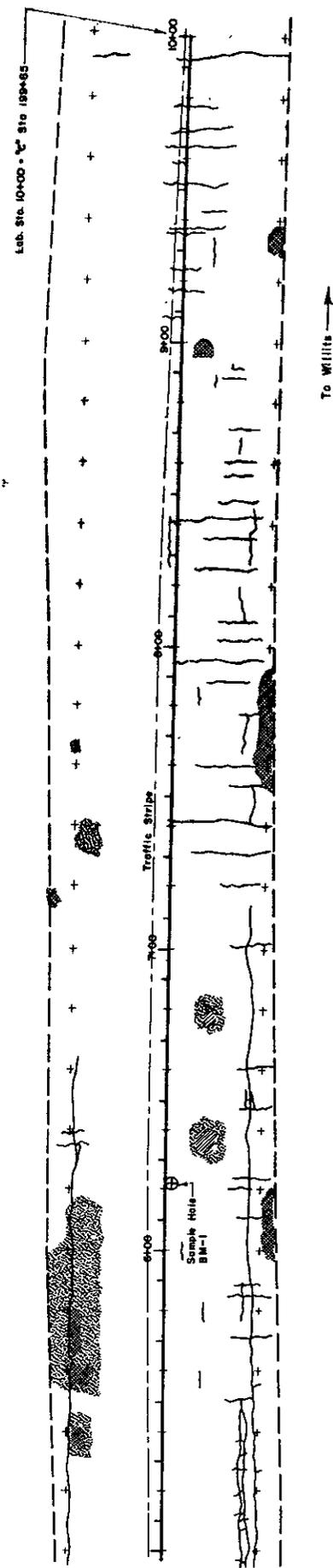
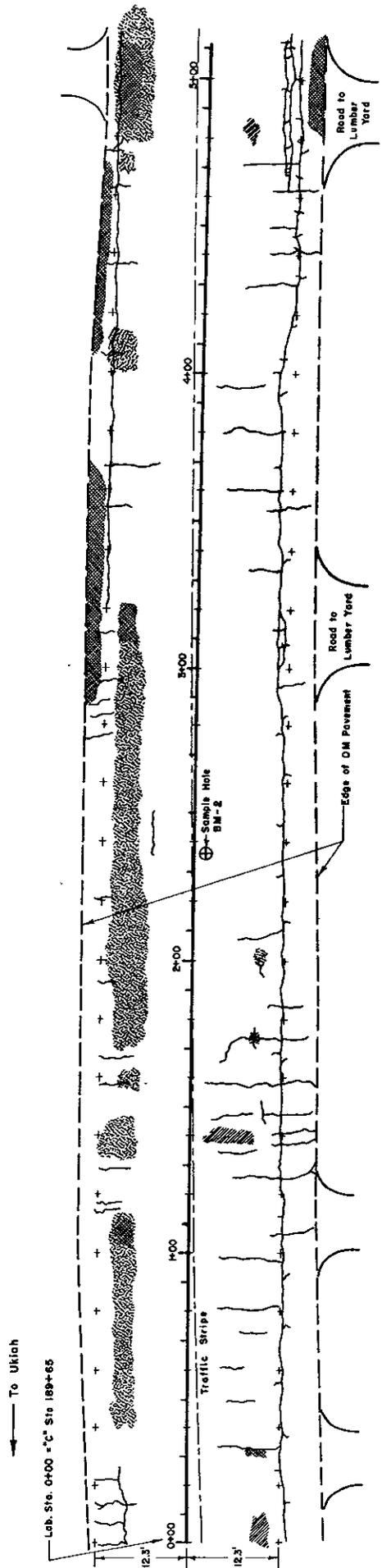
TYPICAL ROADWAY SECTION



Scale: 1" = 5'

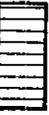
TYPICAL STRUCTURAL SECTION





PAVEMENT LOCATION AND CONDITION CHART

LEGEND

-  Alligator Cracking
  -  Failure
  -  Location of Sample Hole
  -  Block Cracking
  -  Shoving
  -  Patch
- + Location of Permanent Reference Points
- ⊕ LOADOMETER STA. NO. 11  
I-Men-1-C

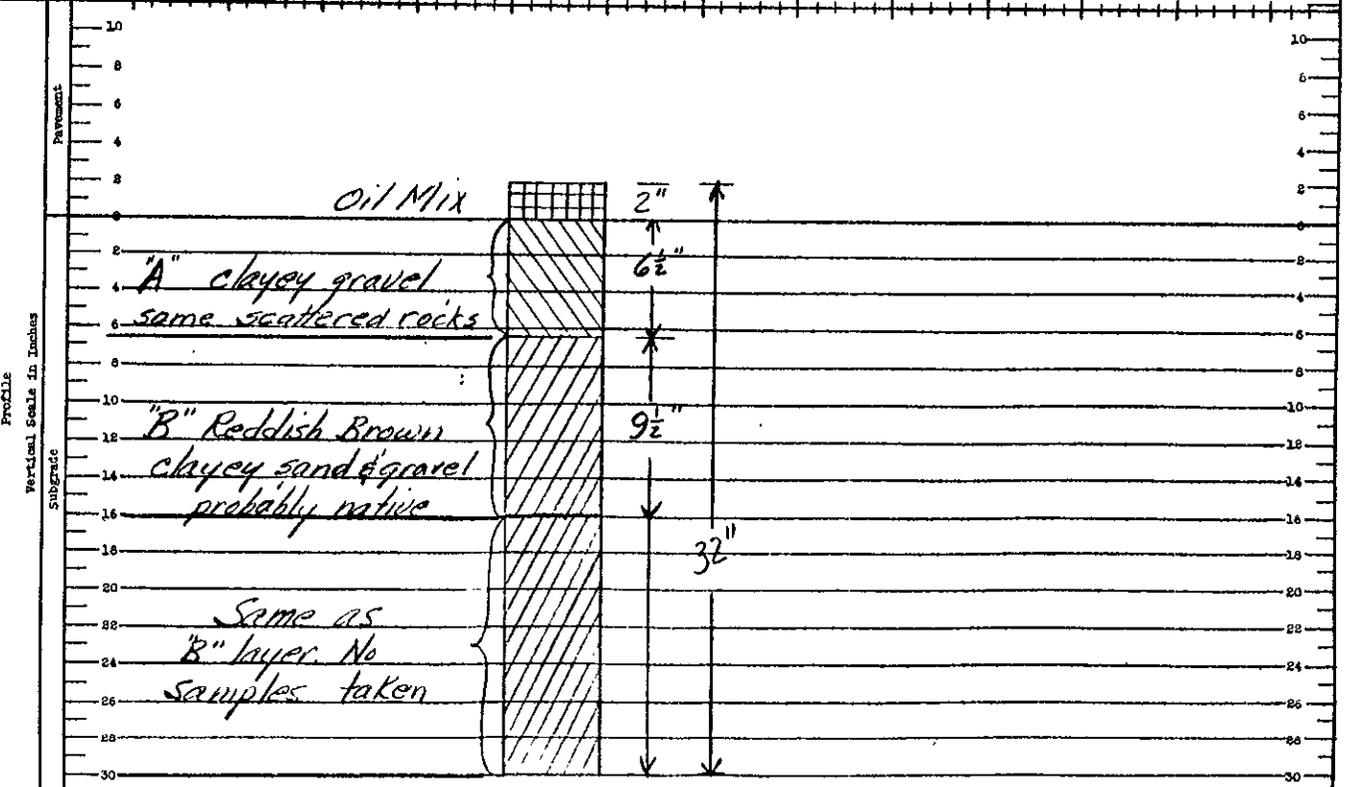
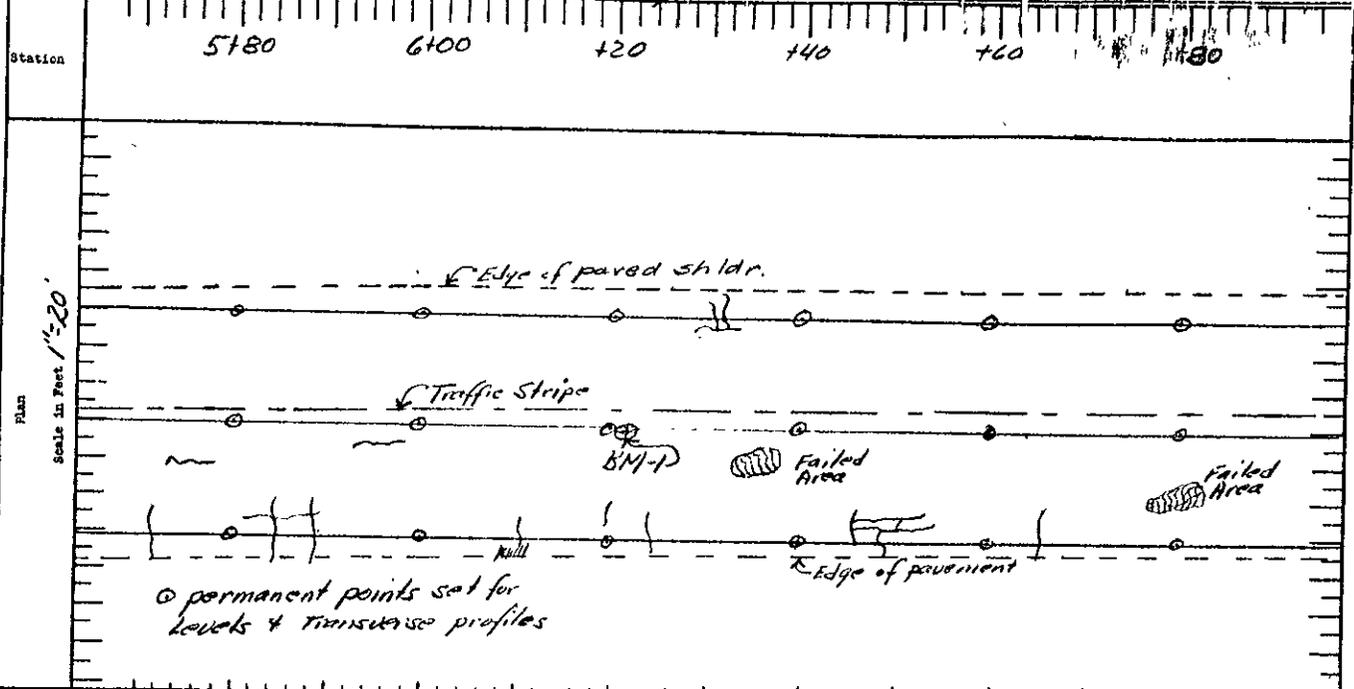


LOCATION AND PROFILE SKETCH

FAVORITE INVESTIGATION

RESEARCH NO. ~~20258~~ 00258

Dist. <i>T</i> Co. <i>Monro.</i> 1		Sec. <i>C</i>		Contract No.	Date of Constr. <i>Unknown</i>	Test Hole No. <i>BM-1</i>
Fill <i>grade</i>	Approx. Height	Dist. from End of Fill	No. of Lanes <i>Two</i>	Traffic <i>Med Heavy</i>		
Cut	Approx. Depth	Dist. from End of Cut	Side Ditch	<i>Approx 20' rt. &amp; Lt. d</i>	Depth <i>1.05</i>	Date of Sampling <i>8-30-51</i>
Roadside Use, left <i>Orchard</i>		Right <i>Vineyard</i>		Grade <i>1.05</i> Up		



Remarks:

Party: *Clawson*  
*Coan*

Drawn by: *Smith*

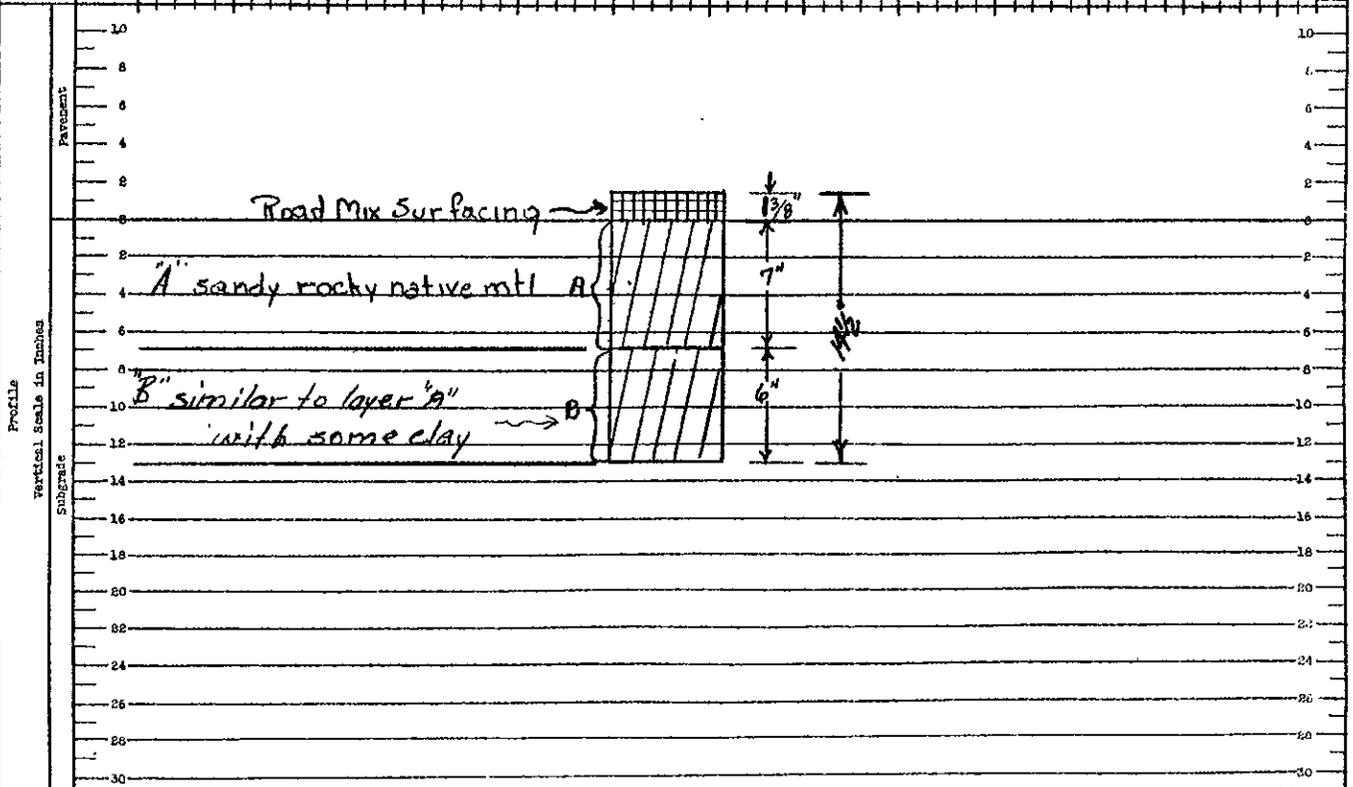
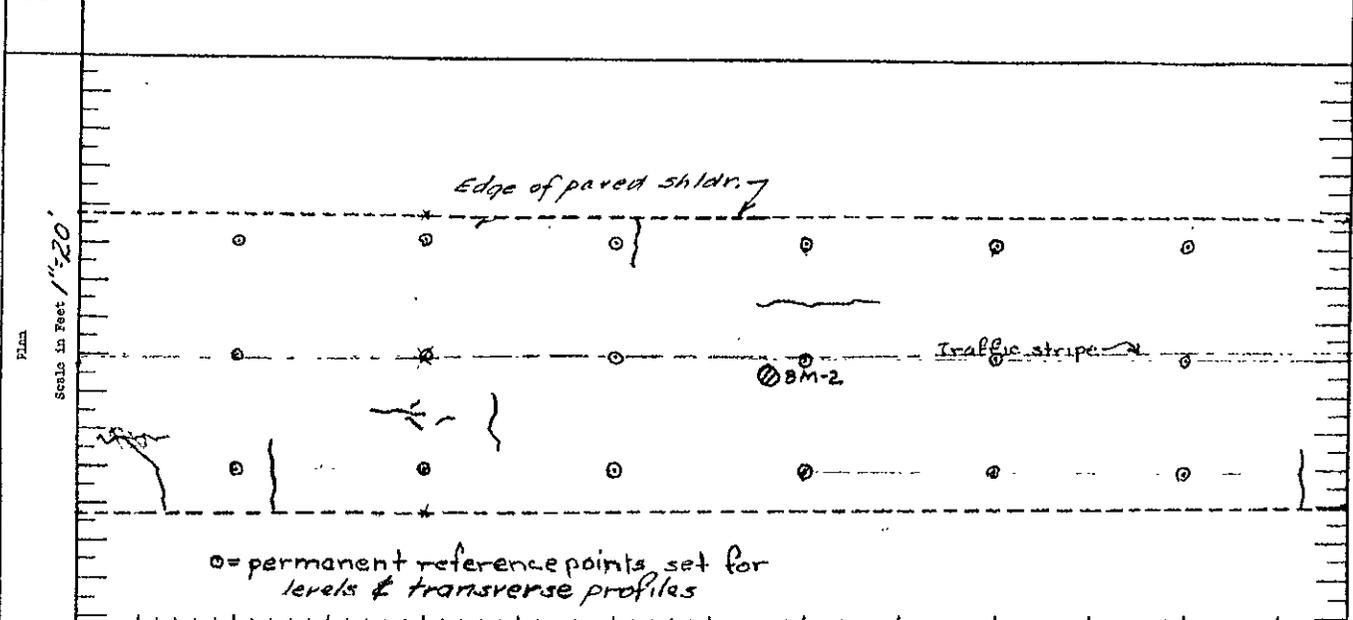
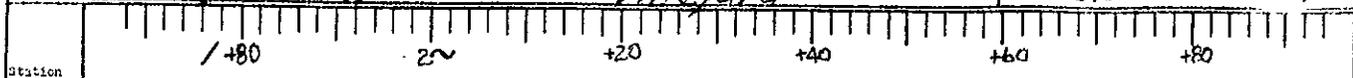
STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

LOCATION AND PROFILE SKETCH

PAVEMENT INVESTIGATION

RESEARCH NO. 00904 00258

Dist. <b>I</b>	Co. <b>Men</b>	Rto. <b>1</b>	Sec. <b>C</b>	Contract No. <b>—</b>	Date of Constr. <b>Unknown</b>	Test Hole No. <b>BM-2</b>
Fill <b>Ingrade</b>	Approx. Height	Dist. from End of Fill	No. of Lanes <b>2</b>	Traffic Mod. <b>Med</b>	Height <b>1.11</b>	No. <b>BM-2</b>
Cut	Approx. Depth	Dist. from End of Cut	Side Ditch: <b>Approx. 2' H. E.L.T.</b>	Depth <b>#0.8'</b>	Date of Sampling <b>8-30-51</b>	
Right-of-Way Use, Left	<b>Orchard</b>		Right	<b>Vineyard</b>		Grade <b>1.0%</b>



Remarks:

Party **Clawson Coan**

Drawn By **Coan**

STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT



State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN66  
 Job Number \_\_\_\_\_

Load. Sta. No. 11  
 Dist. 1 Co. Men Rte. 1 Sec. C  
 Loc. Design EM  
 Sta. 6100 to 10100  
 Sheet No. 2 of 2

*Drainage Cross-Sections*  
 ROADWAY CONDITION SURVEY  
 &  
 Roadway

**NOTE:** All distances are measured from center Pin Line

						Gutter	Edge of Pav't	Traffic Stripe	Edge of Pav't	Gutter	Bank Shots		
10100			648.3	648.7	648.0	648.31	648.78	648.05	647.2	648.2	648.7	648.2	
			32.3	21.0	20.0	16.3	0.6 left	12.9	18.3	19.3	25.3	34.3	
9100			647.6	647.7	647.2	648.04	648.91	648.47	647.3	648.0	647.6		
			36.0	23.5	22.5	17.8	1.6 left	12.5	18.3	19.3	34.3		
8100			648.5	649.1	648.7	648.0	648.46	648.98	648.41	646.8	647.9	647.5	
			36.5	23.5	21.3	20.8	16.3	22 left	12.6	18.3	19.3	34.3	
7100			649.5	650.2	648.3	648.63	649.14	648.48	647.8	648.9	649.5	648.0	
			35.5	20.8	19.5	15.6	2.25 left	13.4	18.3	19.3	23.3	32.3	
6100			648.9	649.4	647.9	648.35	648.82	648.43	647.7	649.6	650.4	649.4	
			36.5	21.0	20.3	15.3	2.2 left	14.3	18.8	20.3	23.3	33.3	

15



DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE

LOCATION: Loadometer Sta. 79 on Road II-Sis-72-A, is located 2.6 miles NE of the Jct. Route 72 and Route 3 towards Macdoel. There are no major road or highway turnoffs between the Station and the section.

The section selected for test is located 2.8 miles NE of the Jct. Rte. 72 and Route 3, 1000 feet NE of Loadometer Sta. 79.

LENGTH: The section is located between Sta. "A" 153+00 and Sta. "A" 163+00, a total length of 1000 feet. Roadway at the section location is a 2-lane highway. The section selected for test is established in both lanes.

SURFACE:

Type: Plant mixed surfacing, constructed in 1943.

Width: Traveled way is 22 feet wide

Thickness: Variable from 3-1/2" to 4"

BASE:

Type and Thickness: Silty sand and gravel native material.

Sampled to a depth of 17-1/2 inches below the bottom of the pavement. District information shows a penetration treatment of native material in 1943.

Soil Classification: A-1-b

DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE

LOCATION: Loadometer Sta. 79 on Road II-Sis-72-A, is located 2.6 miles NE of the Jct. Route 72 and Route 3 towards Macdoel. There are no major road or highway turnoffs between the Station and the section.

The section selected for test is located 2.8 miles NE of the Jct. Rte. 72 and Route 3, 1000 feet NE of Loadometer Sta. 79.

LENGTH: The section is located between Sta. "A" 153+00 and Sta. "A" 163+00, a total length of 1000 feet. Roadway at the section location is a 2-lane highway. The section selected for test is established in both lanes.

SURFACE:

Type: Plant mixed surfacing, constructed in 1943.

Width: Traveled way is 22 feet wide

Thickness: Variable from 3-1/2" to 4"

BASE:

Type and Thickness: Silty sand and gravel native material.

Sampled to a depth of 17-1/2 inches below the bottom of the pavement. District information shows a penetration treatment of native material in 1943.

Soil Classification: A-1-b

Loadometer Sta. No. 79  
Road II-Sis-72-A

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:

The section roadway is generally in cut on the right and in fill on the left.

The section is established on a slight vertical curve, the maximum grade being 1%. The highest point on the section is at Station 160+00.

Drainage is carried by ditches which parallel the roadway 37' to 39' left and 31' to 40' right, at an elevation of 2.0 to 2.5' below the shoulder point. Drainage from the beginning of the section to Sta. 160+00 is back to the southwest. From Sta. 160+00 to the end of the section, drainage is ahead to the northeast.

There are no culverts or bridges within the limits of this section.

ROADWAY CONDITION

GENERAL:

There are no paved shoulders within the limits of the section. At the edge of pavement there is a vertical drop averaging 0.1 foot to the dirt shoulder.

SPECIAL  
CONDITIONS:

- (1) Areas of  
Alligator  
Cracking:

There are no areas of alligator cracking within the section.

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (2) Areas of Raveling: There are no areas of raveling within the section.
- (3) Areas of Shoving or Creeping: There is a small area between Sta. 156+79 and Sta. 156+88, 8' to 10' left of centerline that shows shoving and signs of incipient failure.
- (4) Patches: There are no patches within the section.
- (5) Roadway Section: The section is generally in cut on the right and in fill on the left. The present surface elevation corresponds roughly with that of the surrounding area.
- (6) Shoulders: There are no paved or treated shoulders within the section limits. The native material is bladed to the gutter line and serves as a dirt shoulder.

ROUGHNESS  
MEASUREMENTS:

Bench Marks and Levels: Bench marks were established by the field crew near the ends of the test section.

B.M. No.	Location	Description	Elevation
1	50' lt. of T.S. & Sta. 153+58	1/4" steel pin in RR spike in 6" pin	3490.000 (Assumed)
2	44' rt. of T.S. & Sta. 163+60	Highest spot on large boulder. B.M. marked with paint	3491.721

Loadometer Sta. 79  
Road II-Sis-72-A

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:  
(Continued)

Permanent reference pins were established in 3 lines parallel to centerline. One pin line was along the traffic stripe and the other two were set 10.5' right and left of the traffic stripe, 0.5 ft. inside the edge of pavement.

Profilograph  
Records:

Transverse:

The permanent reference points for levels also serve as permanent markers for transverse profiles of the pavement surface. Using the machine developed for this purpose, transverse profilograph records of the traveled way surface in each lane were made at 20 foot longitudinal intervals throughout the section.

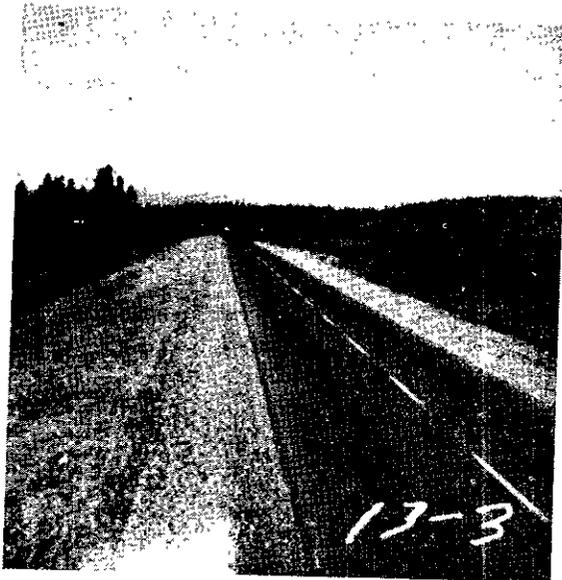
Longitudinal:

By means of the Profilograph, records were made of the longitudinal profiles of each lane of the traveled way surface. In each lane, a line of profiles was run with the recording wheel 24" inside the outer pin line.

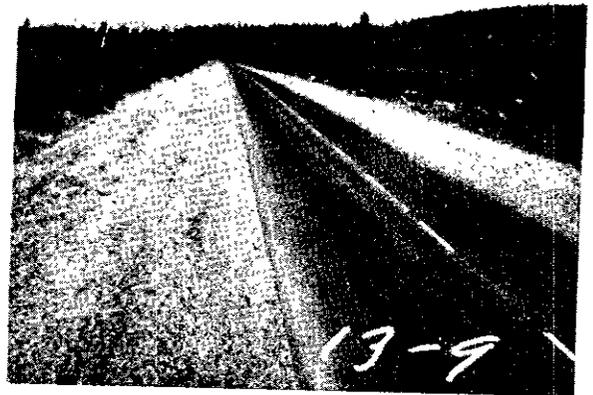
All profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 79

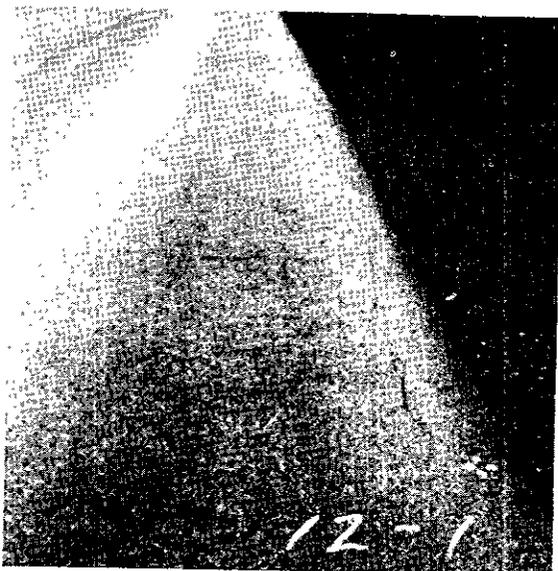
II-Sis-72-A



Ahead on Line from  
Station 153+00



Ahead on Line from  
Station 158+00



Minor Crack Left Sta.  
160+20 to Sta. 160+40



Back on Line from  
Station 163+00

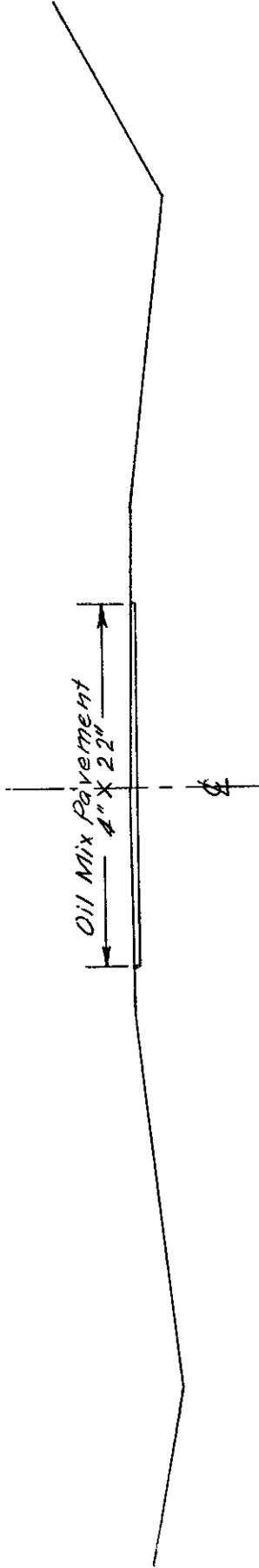
State of California, Div. of Highways  
Materials & Research Department  
Research No. 00258, W.O. No. 13NN26

Loadometer Station No. B0 79  
II-Sis-72-A

R O A D W A Y   C O N D I T I O N   S U R V E Y

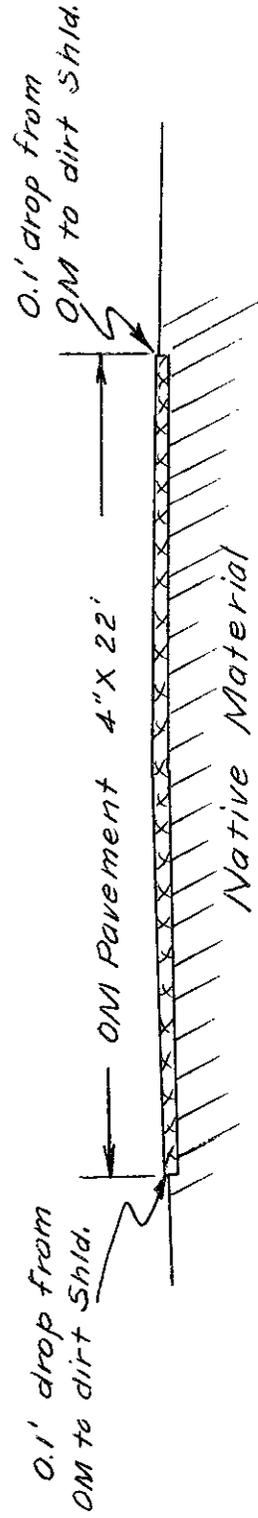
Scale: 1" = 10'

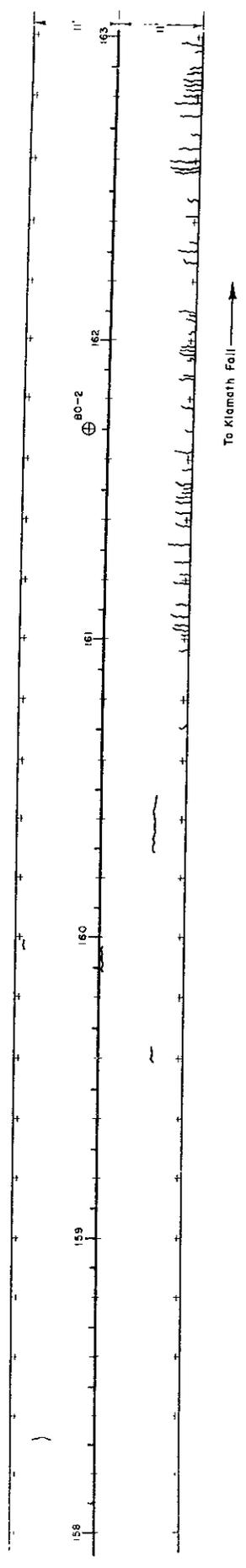
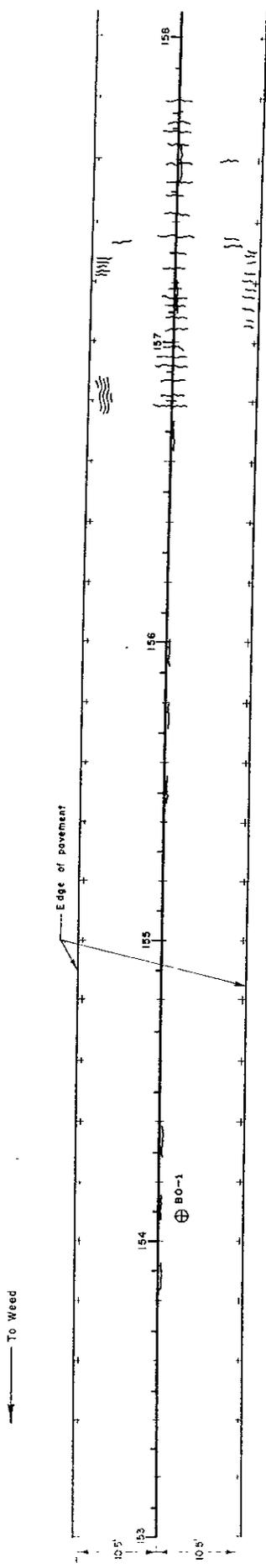
TYPICAL ROADWAY SECTION



Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION





PAVEMENT LOCATION AND CONDITION CHART

LEGEND

-  Alligator Cracking
-  Failure
-  Block Cracking
-  Shoving
-  Patch

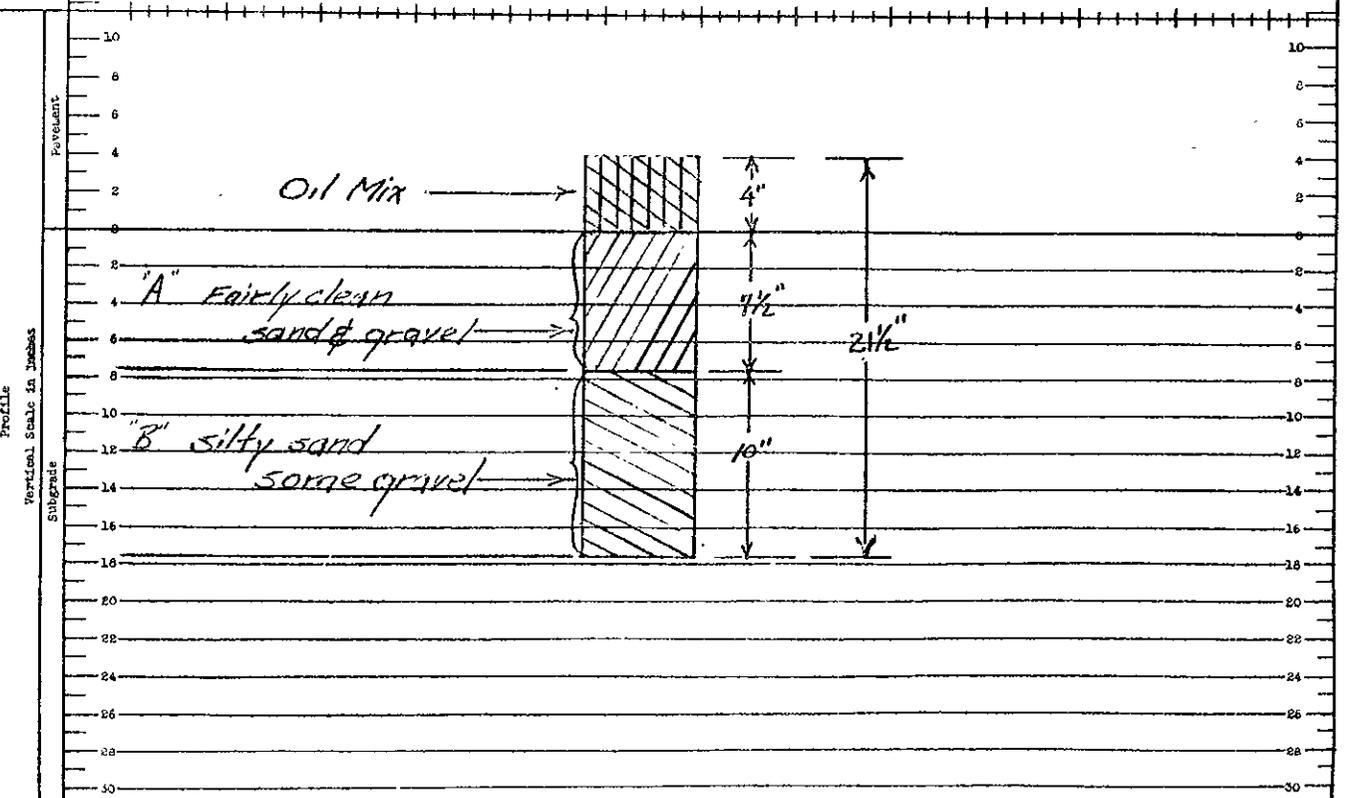
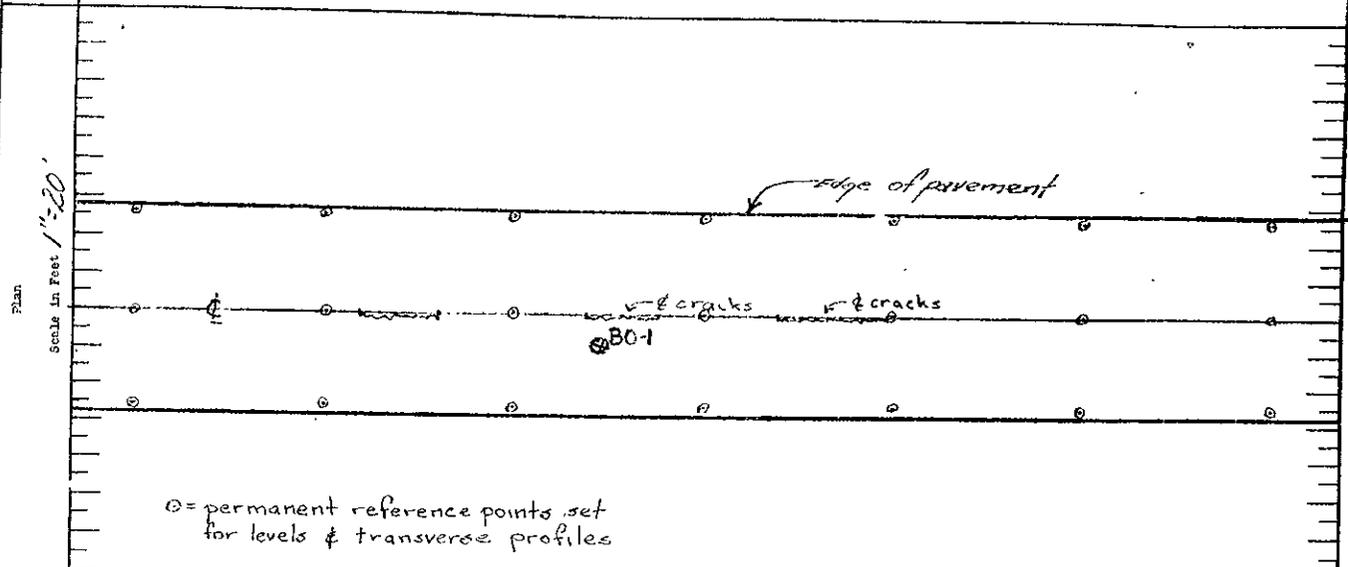
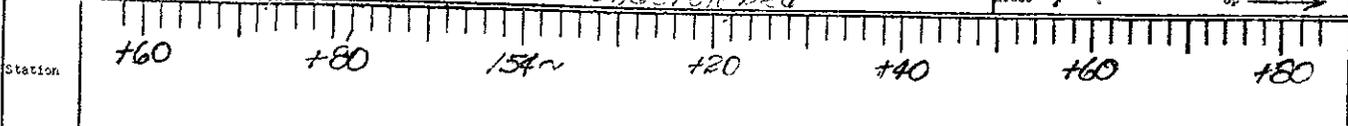
⊕ Location of Sample Hole + Location of Permanent Reference Points  
 LOADOMETER STA. NO. 79  
 II-Sis-72-A



LOCATION AND PROFILE SKETCH

RESEARCH NO. 00257

Dist. <u>77</u>	Co. <u>513</u>	Rte. <u>72</u>	Sec. <u>A</u>	Contract No.	Date of Constr. <u>1943</u>	Test Hole No. <u>BO-1</u>
Fill <u>cut Lt &amp; Rt.</u>	<u>A. Ave. 0.5</u>	<u>B. Ave. 0.5</u>	Dist. from End of Fill	No. of Lanes <u>2</u>	Traffic <u>light</u>	Date of Sampling <u>10-9-51</u>
Register Use, <u>underdrain</u>	<u>underdrain</u>	<u>underdrain</u>	Dist. from End of Out	Side Ditches <u>Et. 2 L.</u>	Depth <u>2.5 Ave.</u>	Grade <u>1</u> Up <u>→</u>



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

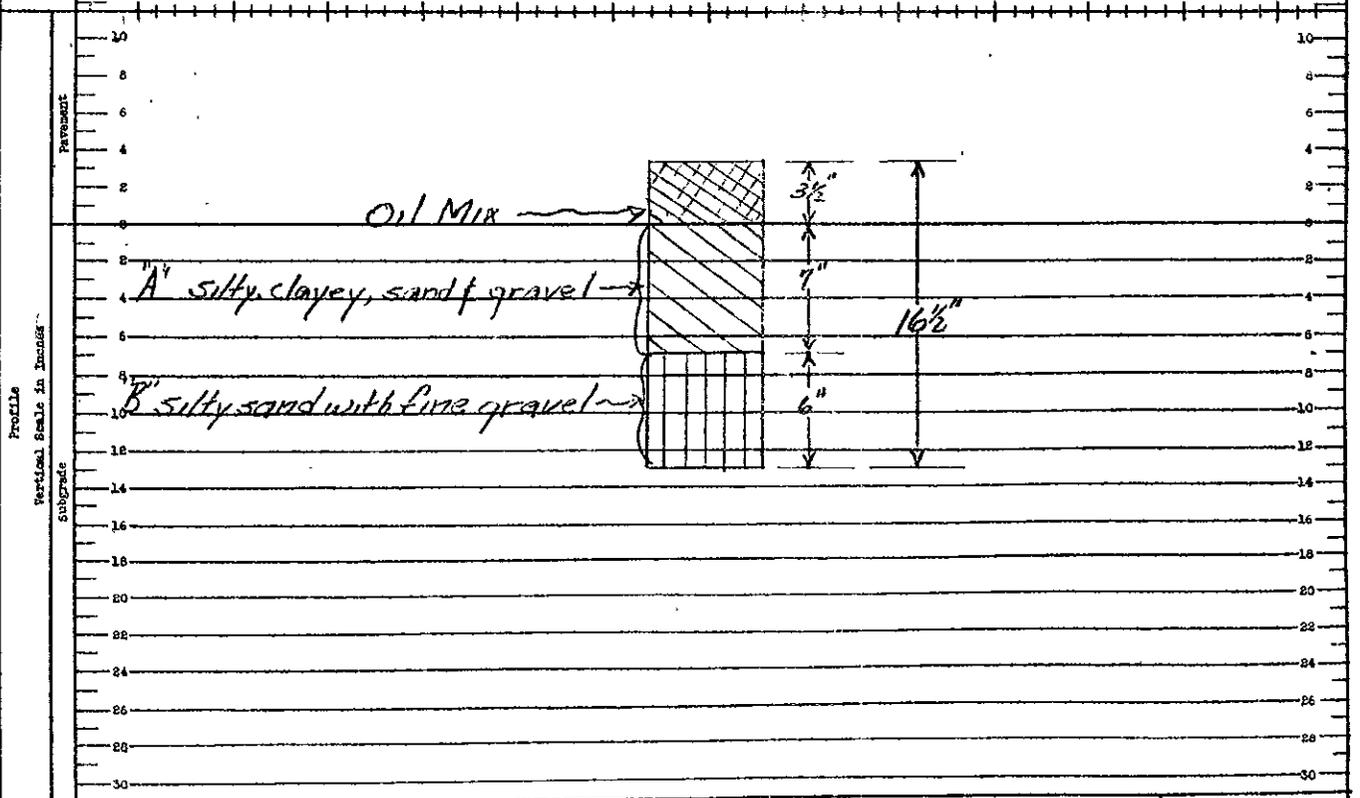
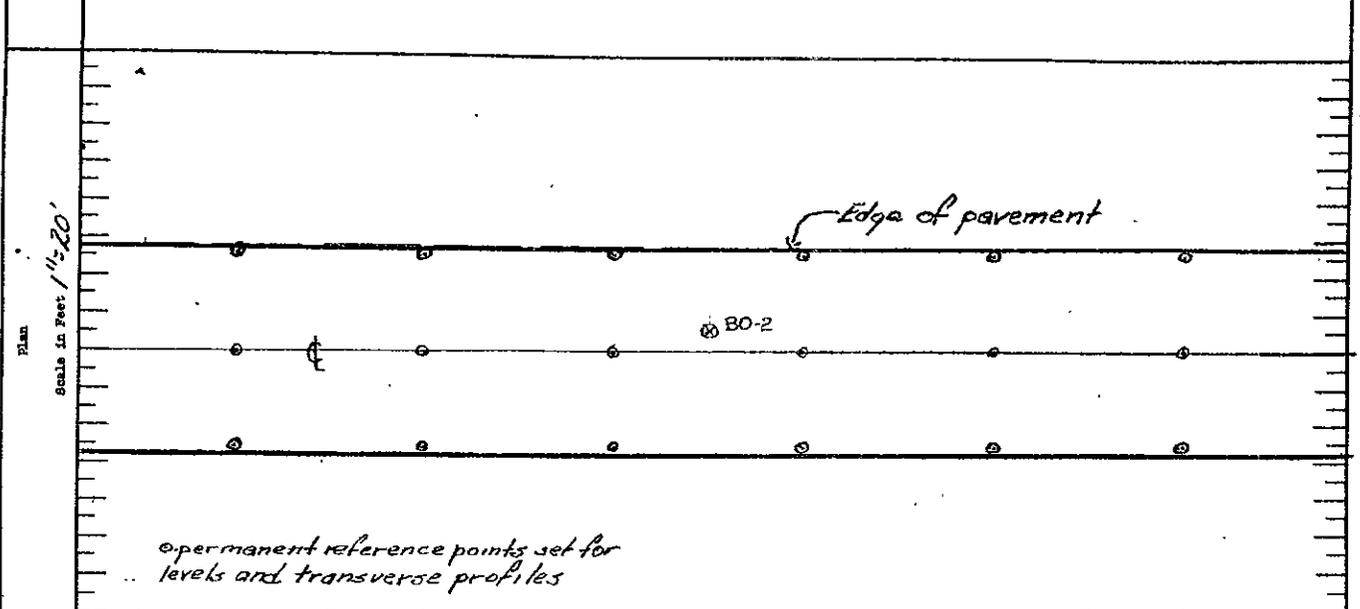
Scale:	
Party:	<u>Conrad</u> <u>Clawson</u> <u>Humbert</u>
Drawn By:	<u>Coan</u>

LOCATION AND PROFILE SKETCH

PAVEMENT INVESTIGATION

RESEARCH NO. 00253

Dist. <u>II</u> Co. <u>515</u> Rte. <u>76</u> Sec. <u>A</u>	Contract No. _____	Date of Constr. <u>1943</u>	Test Hole No. <u>BO-2</u>
Fill <u>on Left</u> Approx. Side <u>Lt. Ave. 20</u> Dist. from End of Fill _____	No. of Lanes <u>two</u>	Traffic <u>light</u>	
Out <u>on Right</u> Approx. Depth <u>Rt. Ave. 12</u> Dist. from End of Cut _____	Side Ditches <u>Rt. &amp; Lt.</u>	Depth <u>2<sup>o</sup> Ave.</u>	Date of Sampling <u>10-9-51</u>
Roadside Use, Left <u>Undeveloped</u>	Right <u>Undeveloped</u>	Grade <u>.5 %</u>	Up <u>←</u>



Remarks:

Party: Conrad Humbert Clawson

Drawn By: Coan

STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 79  
 Dist. II Co. Sis Rte. 72 Sec. A  
 Loc. Design 80  
 Sta. 153+00 to 158+00  
 Sheet No. 1 of 2

*Drainage Cross-Sections*  
 ROADWAY CONDITION SURVEY

	Left						Right					
	Top Slope		Ditch		Dirt Shldr. at E.P.	Edge Pavt	Edge Pavt	Dirt Shldr. at E.P.		Ditch		Top Slope
158+00	3488.1 49.0	3490.2 38.0	3489.0 37.0	3491.5 16.0		3491.72 11.0	3491.76 11.0		3491.6 16.0	3489.6 40.0	3490.1 43.0	3491.8 47.0
157+00	3489.5 46.0		3488.3 37.0	3490.8 17.0	3491.08 11.0	3491.15 11.0	3491.10 11.0	3490.94 11.0	3491.0 11.0	3489.0 39.0		3492.9 48.0
156+00	3489.8 46.0		3487.7 38.0	3490.1 15.0	3490.18 11.0	3490.39 11.0	3490.40 11.0	3490.27 11.0	3490.1 17.0	3488.1 38.0		3493.5 41.0
155+00	3489.5 47.0		3487.1 38.0	3489.3 15.0	3489.44 11.0	3489.54 11.0	3489.43 11.0	3489.33 11.0	3489.2 18.0	3487.4 35.0	3488.1 38.0	3493.6 48.0
154+00	3489.3 50.0		3486.0 38.0	3488.1 14.0	3488.48 11.0	3488.58 11.0	3488.51 11.0	3488.42 11.0	3488.2 17.0	3486.2 36.0		3492.4 48.0
153+00	3488.7 49.0		3485.0 38.0	3487.3 14.0	3487.35 11.0	3487.45 11.0	3487.45 11.0	3487.34 11.0	3487.2 17.0	3485.4 34.0	3486.5 38.0	3491.5 48.0

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NNZ6  
 Job Number \_\_\_\_\_

Load. Sta. No. 79  
 Dist. II Co. Sis Rte. 72 Sec. A  
 Loc. Design 80  
 Sta. 159+00 to 163+00  
 Sheet No. 2 of 2

*Drainage Cross-Sections*  
 ROADWAY CONDITION SURVEY

	Left						Right					
	Top Slope		Ditch		Dirt Shldr at E.P.	Edge Pav't	Edge Pav't	Dirt Shldr at E.P.		Ditch		Top Slope
163+00	3489.2 48.0	3489.2 38.0	3488.5 36.0	3491.0 15.0		3491.30 11.0	3491.44 11.0		3491.2 17.0	3489.4 32.0	3489.1 41.0	3492.3 48.0
162+00	3489.9 48.0	3489.8 40.0	3489.0 37.0	3491.4 16.0		3491.16 11.0	3491.79 11.0		3491.6 17.0	3490.6 31.0	3489.8 40.0	3493.0 48.0
161+00	3489.6 47.0	3489.6 39.0	3489.1 37.0	3491.8 14.0		3492.02 11.0	3492.06 11.0		3491.8 17.0	3489.9 32.0	3489.8 41.0	3492.4 47.0
160+00		3489.3 48.0	3488.9 39.0	3491.9 16.0	3492.02 11.0	3492.15 11.0	3492.17 11.0		3492.0 15.0	3489.9 40.0		3491.8 45.0
159+00		3488.9 49.0	3489.0 39.0	3491.7 16.0	3491.86 11.0	3491.99 11.0	3491.99 11.0		3491.7 18.0	3489.7 40.0		3491.9 47.0

DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE

LOCATION: Loadometer Sta. 79 on Road II-Sis-72-A, is located 2.6 miles NE of the Jct. Route 72 and Route 3 towards Macdoel. There are no major road or highway turnoffs between the Station and the section.

The section selected for test is located 2.8 miles NE of the Jct. Rte. 72 and Route 3, 1000 feet NE of Loadometer Sta. 79.

LENGTH: The section is located between Sta. "A" 153+00 and Sta. "A" 163+00, a total length of 1000 feet. Roadway at the section location is a 2-lane highway. The section selected for test is established in both lanes.

SURFACE:

Type: Plant mixed surfacing, constructed in 1943.

Width: Traveled way is 22 feet wide

Thickness: Variable from 3-1/2" to 4"

BASE:

Type and Thickness: Silty sand and gravel native material.

Sampled to a depth of 17-1/2 inches below the bottom of the pavement. District information shows a penetration treatment of native material in 1943.

Soil Classification: A-1-b

Loadometer Sta. No. 79  
Road II-Sis-72-A

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:

The section roadway is generally in cut on the right and in fill on the left.

The section is established on a slight vertical curve, the maximum grade being 1%. The highest point on the section is at Station 160+00.

Drainage is carried by ditches which parallel the roadway 37' to 39' left and 31' to 40' right, at an elevation of 2.0 to 2.5' below the shoulder point. Drainage from the beginning of the section to Sta. 160+00 is back to the southwest. From Sta. 160+00 to the end of the section, drainage is ahead to the northeast.

There are no culverts or bridges within the limits of this section.

ROADWAY CONDITION

GENERAL:

There are no paved shoulders within the limits of the section. At the edge of pavement there is a vertical drop averaging 0.1 foot to the dirt shoulder.

SPECIAL  
CONDITIONS:

- (1) Areas of  
Alligator  
Cracking:

There are no areas of alligator cracking within the section.

Loadometer Station No. 79  
Road II-Sis-72-A

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (2) Areas of Raveling: There are no areas of raveling within the section.
- (3) Areas of Shoving or Creeping: There is a small area between Sta. 156+79 and Sta. 156+88, 8' to 10' left of centerline that shows shoving and signs of incipient failure.
- (4) Patches: There are no patches within the section.
- (5) Roadway Section: The section is generally in cut on the right and in fill on the left. The present surface elevation corresponds roughly with that of the surrounding area.
- (6) Shoulders: There are no paved or treated shoulders within the section limits. The native material is bladed to the gutter line and serves as a dirt shoulder.

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:

Bench marks were established by the field crew near the ends of the test section.

B.M. No.	Location	Description	Elevation
1	50' lt. of T.S. & Sta. 153+58	1/4" steel pin in RR spike in 6" pin	3490.000 (Assumed)
2	44' rt. of T.S. & Sta. 163+60	Highest spot on large boulder. B.M. marked with paint	3491.721

Loadometer Sta. 79  
Road II-Sis-72-A

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:  
(Continued)

Permanent reference pins were established in 3 lines parallel to centerline. One pin line was along the traffic stripe and the other two were set 10.5' right and left of the traffic stripe, 0.5 ft. inside the edge of pavement.

Profilograph  
Records:

Transverse:

The permanent reference points for levels also serve as permanent markers for transverse profiles of the pavement surface. Using the machine developed for this purpose, transverse profilograph records of the traveled way surface in each lane were made at 20 foot longitudinal intervals throughout the section.

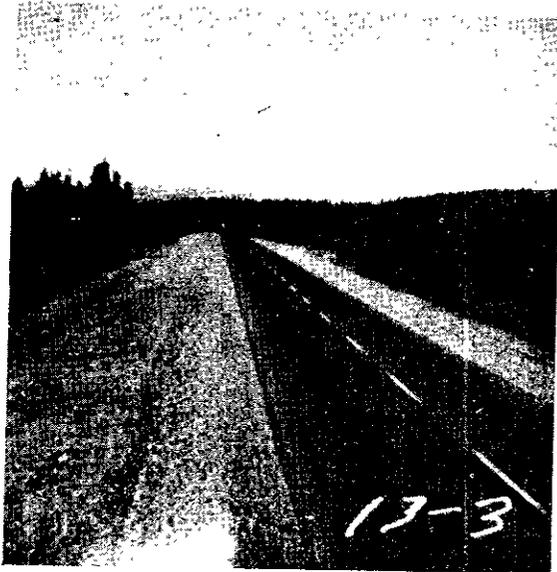
Longitudinal:

By means of the Profilograph, records were made of the longitudinal profiles of each lane of the traveled way surface. In each lane, a line of profiles was run with the recording wheel 24" inside the outer pin line.

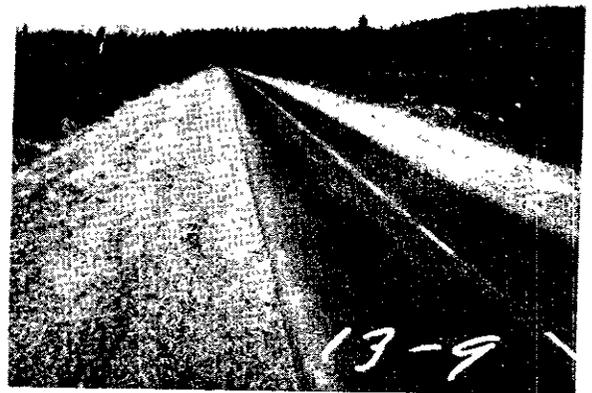
All profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 79

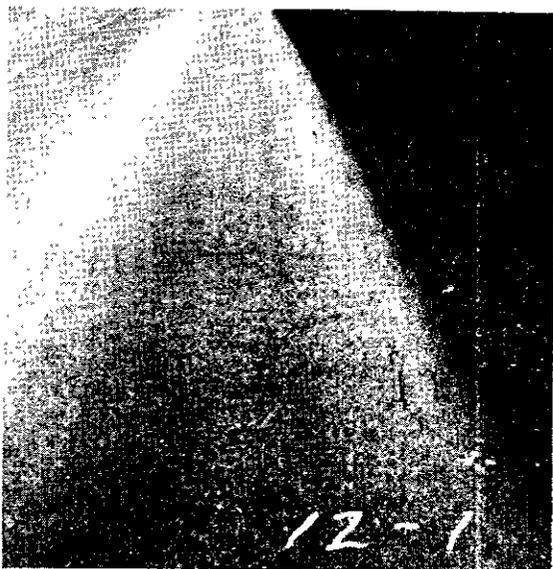
II-Sis-72-A



Ahead on Line from  
Station 153+00



Ahead on Line from  
Station 158+00



Minor Crack Left Sta.  
160+20 to Sta. 160+40



Back on Line from  
Station 163+00

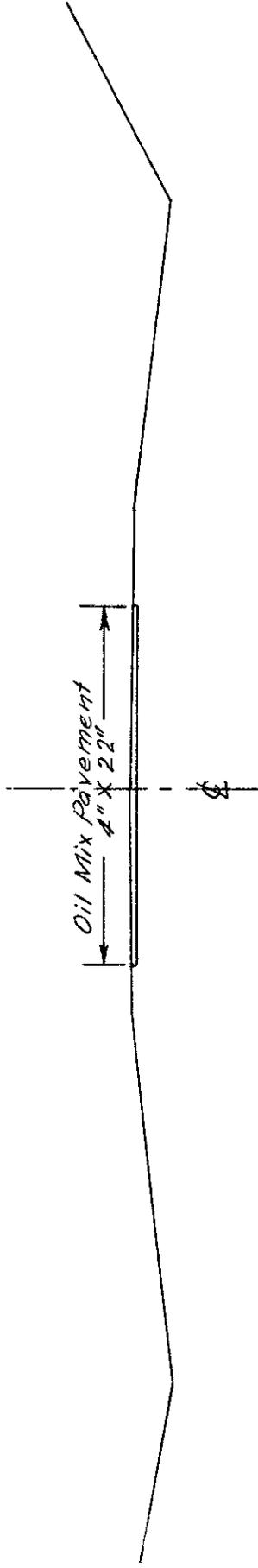
State of California, Div. of Highways  
Materials & Research Department  
Research No. 00258, W.O. No. 13NN26

Loadometer Station No. B0 79  
II-Sis-72-A

R O A D W A Y C O N D I T I O N S U R V E Y

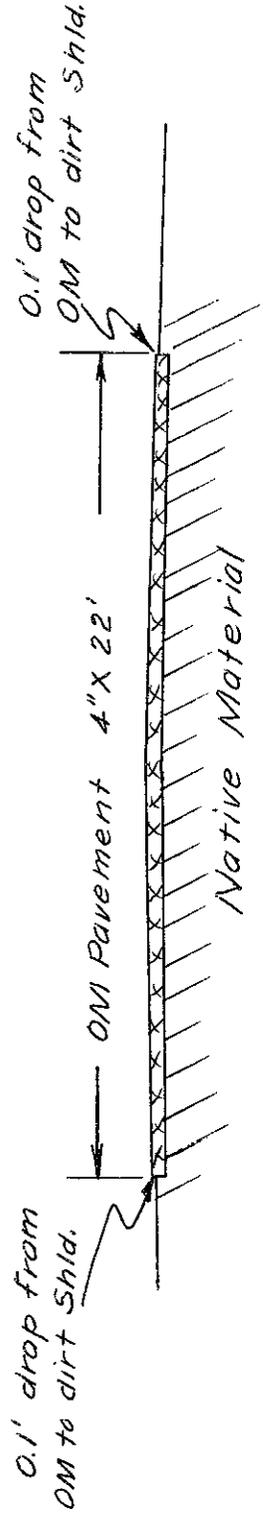
Scale: 1" = 10'

TYPICAL ROADWAY SECTION

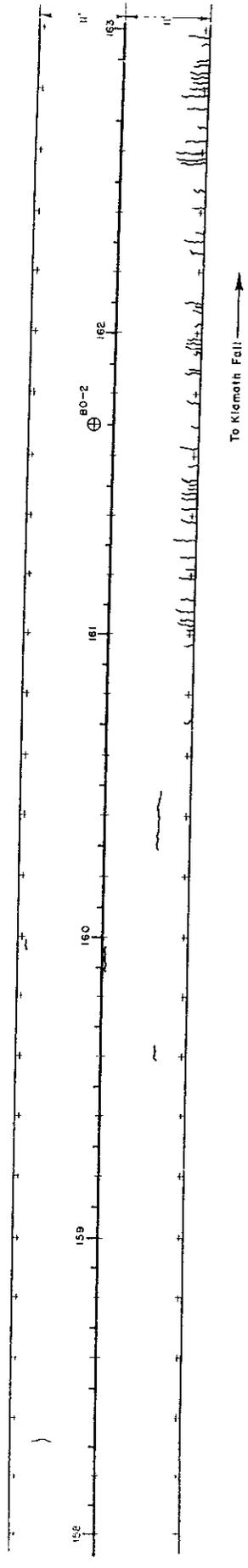
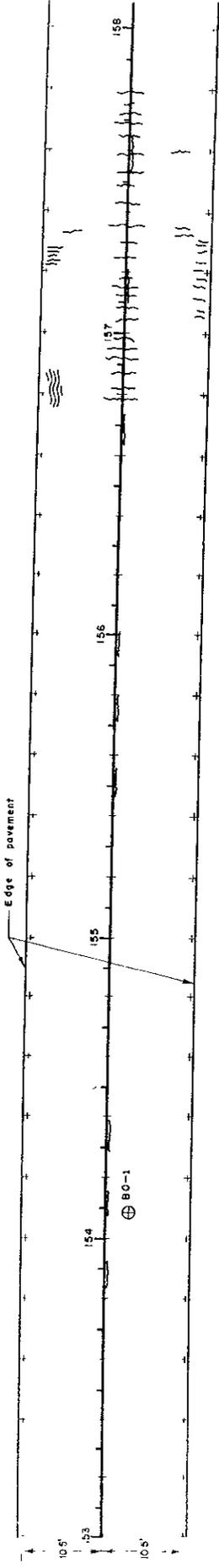


Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION



To Weard



### PAVEMENT LOCATION AND CONDITION CHART

#### LEGEND

-  Alligator Cracking
-  Location of Sample Hole
-  Failure
-  Block Cracking
-  Shoving
-  Patch

⊕ Location of Sample Hole + Location of Permanent Reference Points

LOADOMETER STA. NO. 79  
II-Sis-72-A

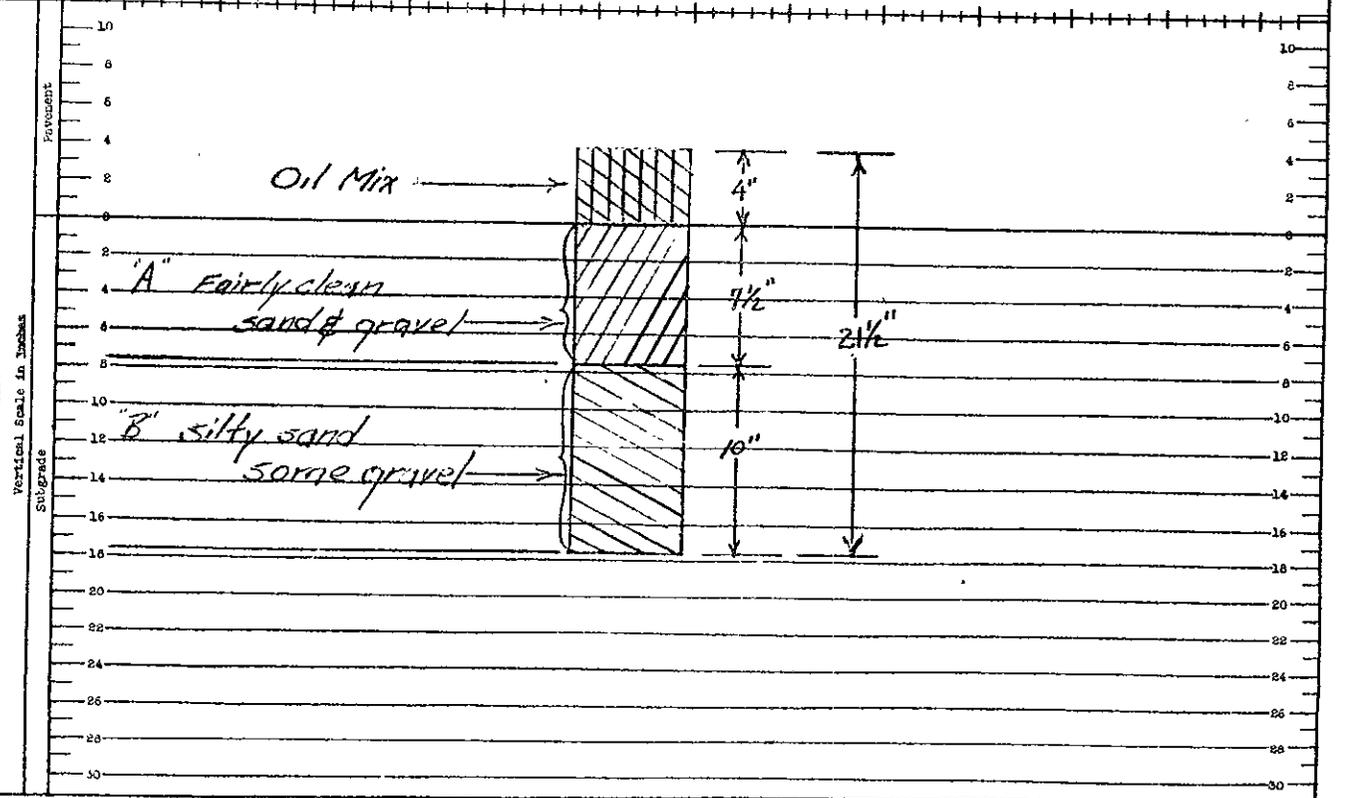
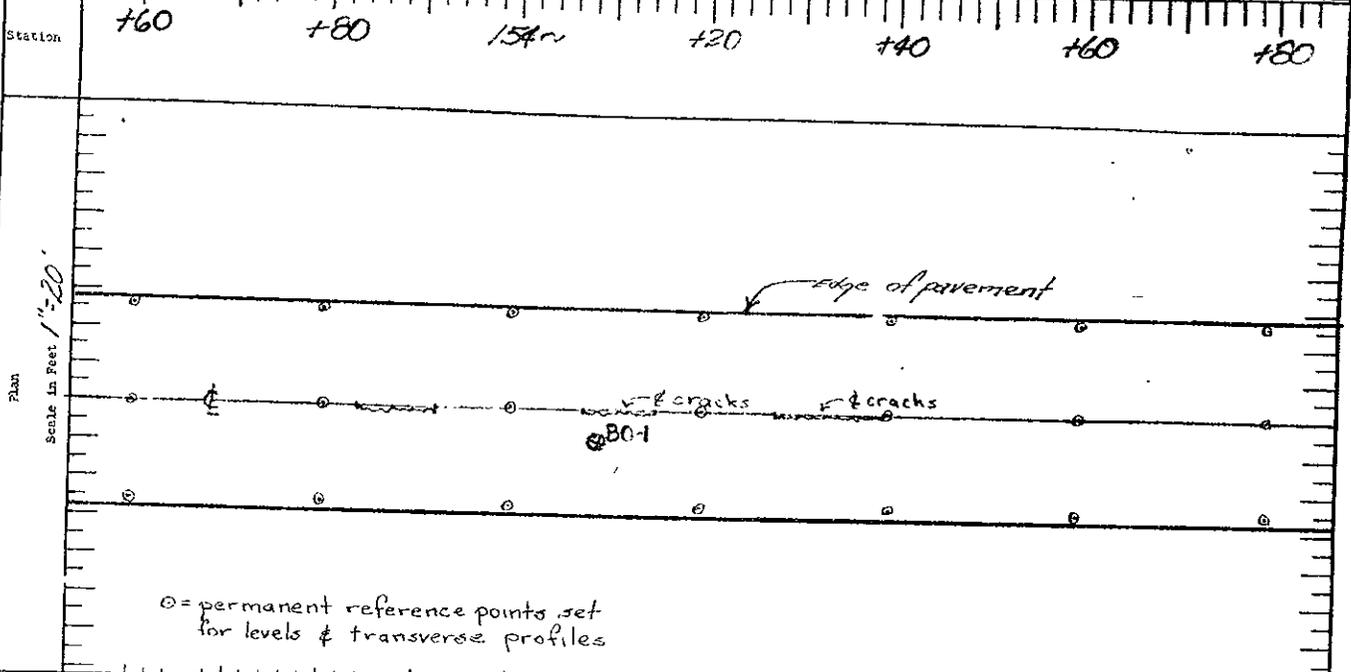


LOCATION AND PROFILE SKETCH

ROADWAY PAVEMENT INVESTIGATION

RESEARCH NO. ~~00257~~ 00258

Dist. <u>II 2.515</u> Rte. <u>72</u> Sec. <u>A</u>		Contract No.		Date of Constr. <u>1943</u>	Test Hole No. <u>B0-1</u>
Fill <u>cut L &amp; Rt.</u>	Dist. from 1/2 of Fill	No. of Lanes <u>2</u>	Traffic <u>light</u>	Date of Sampling <u>10-9-51</u>	
Left <u>1/2 Ave 0.5</u>	Dist. from End of Cut	Side Ditches <u>Rt. &amp; Lt.</u>	Depth <u>2.0 Ave.</u>	Grade <u>1 1/2</u> up $\rightarrow$	
Roadway Use, left <u>underload</u>			Right <u>underload</u>		



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

Remarks:

Party: Carroll  
Clawson  
Humbert

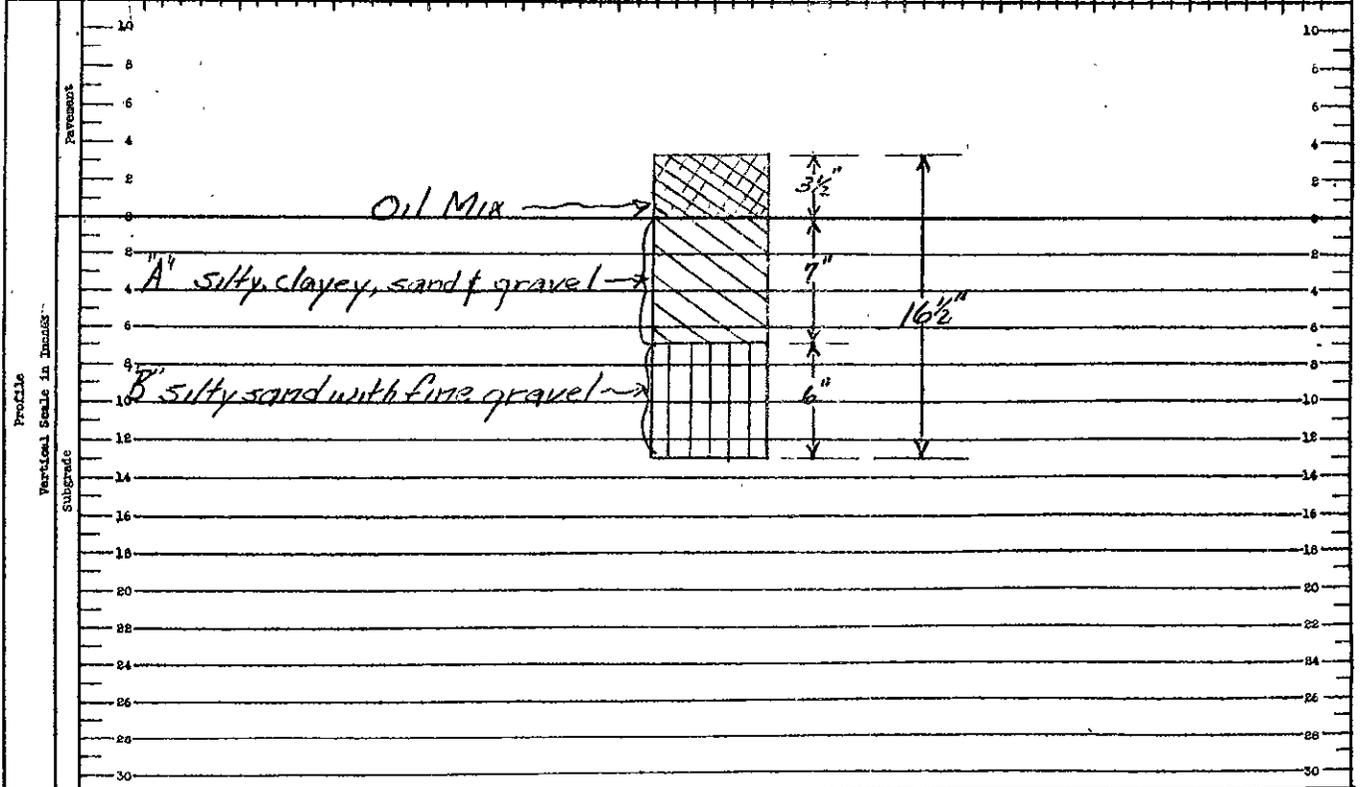
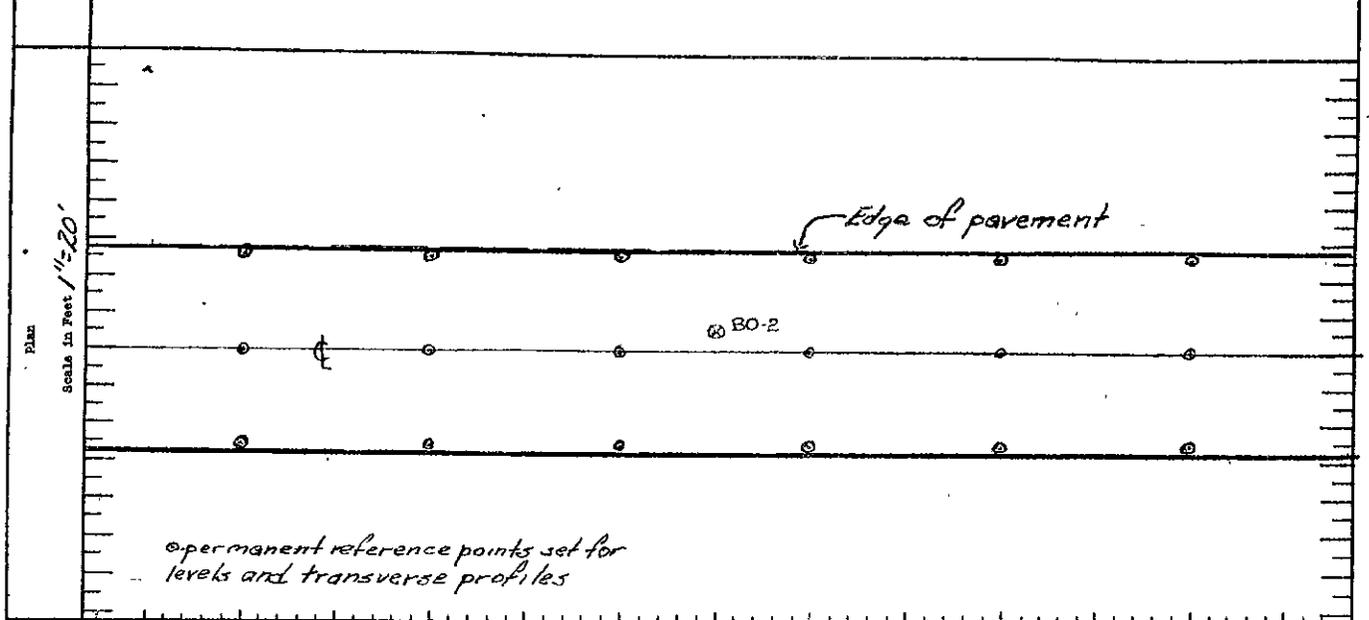
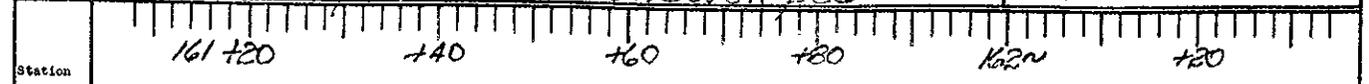
Drawn by: Coan

LOCATION AND PROFILE SKETCH

PAVEMENT INVESTIGATION

RESEARCH NO. 00258

Dist. <u>II</u> Co. <u>515</u> Rte. <u>72</u> Sec. <u>A</u>	Contract No. _____	Date of Constr. <u>1943</u>	Test Hole No. <u>BO-2</u>
Fill <u>on Left</u> Approx. Date <u>Lt. Apr 29</u>	Dist. from End of Fill _____	No. of Lanes <u>two</u>	Traffic <u>light</u>
Cut <u>on Right</u> Approx. Depth <u>at Ave. 12</u>	Dist. from End of Cut _____	Side Ditches <u>Rt. &amp; Lt</u>	Depth <u>2° Ave.</u> Date of Sampling <u>10-9-51</u>
Roadside Use, Left <u>Undeveloped</u>	Right <u>Undeveloped</u>	Grade <u>.5%</u>	Up ←



Remarks:

Party: Conrad Humbert Clawson

Drawn by: Coan

STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Dist. II Co. Sis Rte. 76 Sec. A  
 Loc. Design 80  
 Sta. 153+00 to 158+00  
 Sheet No. 1 of 2

*Drainage Cross-Sections*  
 ROADWAY CONDITION SURVEY

	Left						Right					
	Top Slope		Ditch		Dirt Shldr. at E.P.	Edge Pav't	Edge Pav't	Dirt Shldr. at E.P.		Ditch		Top Slope
158+00	3488.1 49.0	3490.2 35.0	3489.0 31.0	3491.5 16.0		3491.72 11.0	3491.76 11.0		3491.6 16.0	3489.6 40.0	3490.1 43.0	3491.8 47.0
157+00	3489.5 46.0		3489.3 37.0	3490.8 17.0	3491.08 11.0	3491.15 11.0	3491.10 11.0	3490.94 11.0	3491.0 11.0	3489.0 39.0		3492.9 48.0
156+00	3489.8 46.0		3489.7 38.0	3490.1 15.0	3490.18 11.0	3490.39 11.0	3490.40 11.0	3490.27 11.0	3490.1 17.0	3489.1 35.0		3492.5 40.0
155+00	3489.5 47.0		3489.1 38.0	3489.3 15.0	3489.44 11.0	3489.54 11.0	3489.43 11.0	3489.33 11.0	3489.2 18.0	3487.4 35.0	3488.1 38.0	3493.6 48.0
154+00	3489.3 50.0		3486.0 38.0	3488.4 14.0	3488.48 11.0	3488.58 11.0	3488.51 11.0	3488.42 11.0	3488.2 11.0	3486.2 36.0		3492.4 45.0
153+00	3488.7 49.0		3485.0 38.0	3487.3 14.0	3487.35 11.0	3487.45 11.0	3487.45 11.0	3487.34 11.0	3487.2 17.0	3485.4 34.0	3486.5 38.0	3491.5 48.0

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 79  
 Dist. II Co. Sis Rte. 72 Sec. A  
 Loc. Design 80  
 Sta. 159+00 to 163+00  
 Sheet No. 2 of 2

*Drainage Cross-Sections*  
 ROADWAY CONDITION SURVEY

	Left						Right					
	Top Slope		Ditch		Dist Sldr at E.P.	Edge Pav't	Edge Pav't	Dist Sldr at E.P.		Ditch		Top Slope
163+00	3489.2 48.0	3489.2 38.0	3488.5 36.0	3491.0 15.0		3491.30 11.0	3491.44 11.0		3491.2 17.0	3489.4 32.0	3489.1 41.0	3492.3 48.0
162+00	3489.9 48.0	3489.8 40.0	3489.0 37.0	3491.4 16.0		3491.16 11.0	3491.79 11.0		3491.6 17.0	3490.6 31.0	3489.8 40.0	3493.0 48.0
161+00	3489.6 47.0	3489.6 39.0	3489.1 37.0	3491.8 14.0		3492.02 11.0	3492.06 11.0		3491.8 17.0	3489.9 32.0	3489.8 41.0	3492.4 47.0
160+00		3489.3 48.0	3488.9 39.0	3491.9 16.0	3492.02 11.0	3492.15 11.0	3492.17 11.0		3492.0 15.0	3489.9 40.0		3491.8 45.0
159+00		3488.9 49.0	3489.0 39.0	3491.7 16.0	3491.86 11.0	3491.99 11.0	3491.99 11.0		3491.7 15.0	3489.7 40.0		3491.9 47.0

16



DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE

**LOCATION:** Loadometer Pit No. 14 on Road II-Sha-3-B is located 1.0 mile south of Jct. Rte. 3 and Rte. 28 towards Redding. The section selected for test is located on the tangent adjacent to the loadometer pit.

**LENGTH:** The section is located between Sta. "B" 42+00 and Sta. "B" 52+00, a total length of 1000 feet.

Roadway at the section location is a 2-lane highway, both lanes of which are included as part of the section.

**SURFACE:**

**Type:** Construction records show a plant mixed surfacing placed in 1948 over an open graded plant mixed surfacing placed in 1943. The original surfacing was road mix placed in 1935.

**Width:** Traveled way is 25 feet wide. The right lane is 12 ft. and the left lane is 13 ft. in width. The total width of pavement within the section limits varies from 32 feet to 40 feet. The areas on the right of roadway between Sta. 45+60 and Sta. 47+60 and between Sta. 48+40 and Sta. 52+00 and the area on the left between Sta. 45+20 and Sta. 50+50 have been filled to

Loadometer Station No. 14  
Road II-Sha-3-B

ROADWAY STRUCTURE

SURFACE:

Width:  
(Continued)

within 1.5' - 2.0' of roadway grade to accommodate traffic into roadside businesses. Some areas have been paved with oil mix surfacing; other areas have a gravel surface.

Thickness:

Plant mixed surfacing is 1 inch thick. The open graded plant mixed surfacing varies from 2-3/4" to 3-1/4". The road mix is from 2" to 3" in thickness. Total pavement thickness varies from 5-3/4" to 7-1/4". In the sample taken at Sta. 47+19 no open graded mix was found. Total pavement thickness was 5-1/2".

BASE:

Type and  
Thickness:

Crusher run base 3-3/4" to 5-1/2" in thickness. Material was placed in 1935.

Soil Clas-  
sification:

A-1-a

SUBBASE:

Type and  
Thickness:

Silty sand and gravel. Apparently roadway excavation from just north of the test section used to raise roadway grade above the surrounding ground level. Total thickness sampled from 7-3/4" to 13".

Soil Clas-  
sification:

A-1-b; A-2-4; A-4

Loadometer Station No. 14  
Road II-Sha-3-B

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:

Section roadway is entirely in fill. The section has a level profile grade. There are no clearly defined ditches within the section limits.

Generally, drainage in the area of the section selected for test is transverse to roadway centerline from left to right.

From Sta. 42+00 to the vicinity of Sta. 45+00 the drainage is back toward the beginning of the section. Drainage is carried from left to right of roadway through a 24" C.M.P. at Sta. 41+66, and away from the roadway in a natural swale.

A 24" C.M.P. at Sta. 51+63 carries drainage from left to right to a drop inlet box with a cast steel grating 64.5' feet right of Sta. 51+41. From there, drainage is carried away from the roadway under the roadside business in a 30" C.M.P.

Fill for roadside business was placed with no apparent provisions made for drainage which flows away from the roadway in all cases. Once off the filled area, this runoff water must seek its own outlet through natural drainage

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:  
(Continued)

channels to the nearby Sacramento River.

ROADWAY CONDITION

GENERAL:

From Sta. 42+00 to Sta. 47+30 the pavement of the traveled way is in excellent condition. From Sta. 47+30 to end of section the pavement shows considerable distress in the form of alligator cracking. There is no readily apparent reason for this difference of surface condition.

SPECIAL  
CONDITIONS:

(1) Areas of  
Alligator  
Cracking:

Areas of alligator cracking are shown graphically on the plan diagram and are listed below for convenience:

Left Lane:

- Sta. 47+30 to Sta. 47+57, 7.5 to 11.0' lt.  $\pm$   
3.5' wide - Severe
- Sta. 48+35 to Sta. 48+62, 6.5 to 9.5' lt.  $\pm$ ,  
3.0' wide, fairly severe
- Sta. 48+70 to Sta. 48+84, 2.0 to 5.0' lt.  $\pm$   
3.0' wide, not too severe
- Sta. 48+90 to Sta. 48+98, 7.0 to 9.5' lt.  $\pm$ ,  
2.5' wide, not too severe
- Sta. 49+12 to Sta. 49+17, 6.0 to 9.0' lt.  $\pm$ ,  
3.0' wide, not too severe
- Sta. 49+14 to Sta. 49+30, 2.0 to 3.0' lt.  $\pm$ ,  
1.0' wide, not too severe
- Sta. 49+23 to Sta. 50+25, 6.0 to 9.0' lt.  $\pm$ ,  
3.0' wide, severe
- Sta. 49+41 to Sta. 49+51, 2.0 to 4.0' lt.  $\pm$ ,  
2.0' wide, not too severe
- Sta. 49+60 to Sta. 50+42, 1.0 to 4.0' lt.  $\pm$ ,  
3.0' wide, severe

Loadometer Station No. 14  
Road II-Sha-3-B

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (1) Areas of  
Alligator  
Cracking:  
(Continued)

Left Lane (Continued)

Sta. 51+73 to Sta. 51+86, 1.5 to 3.0' lt.  $\pm$   
1.5' wide, not too severe

Right Lane:

Sta. 57+57 to Sta. 57+65, 2.0 to 3.5' rt.  $\pm$ ,  
1.5' wide, not too severe  
Sta. 48+60 to Sta. 50+36, 2.5 to 5.0' rt.  $\pm$ ,  
2.5' wide, severe  
Sta. 49+00 to Sta. 49+15, 7.0 to 10.0' rt.  $\pm$ ,  
3.0' wide, not too severe  
Sta. 49+90 to Sta. 50+32, 7.0 to 9.5' rt.  $\pm$ ,  
2.5' wide, fairly severe  
Sta. 50+55 to Sta. 50+70, 9.0 to 10.5' rt.  $\pm$ ,  
1.5' wide, not too severe  
Sta. 50+80 to Sta. 50+96, 2.0 to 4.5' rt.  $\pm$ ,  
2.5' wide, not too severe

- (2) Areas of  
Raveling: There are no areas of raveling in the  
section.
- (3) Areas of  
Shoving or  
Creeping: There are no areas of shoving or creeping in  
the section.
- (4) Patches: There are no patched areas within the section.
- (5) Roadway  
Section: The section roadway is entirely in fill. Pave-  
ment surface is from 4.0 to 5.5' above the  
surrounding areas.
- (6) Shoulders: Throughout the section there are asphaltic mix  
shoulders which vary in width from 3.0 to 5.0'.  
Shoulders are in generally fair condition.  
There are areas adjacent to the roadway that  
have been filled and paved for roadside

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

(6) Shoulders: business as was noted previously in this report.  
(Continued)

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:

Bench marks were established by the field crew near the ends of the section in P.C.C. headwalls.

B.M. No.	Location	Description	Elevation
1	35' lt. of Sta. 41+66	Ramset pin in center of PCC headwall	598.718
2	32' lt. of Sta. 51+65	Ramset pin in NW corner PCC headwall	600.00 (Assumed)

Permanent reference pins were established in 3 lines parallel to centerline. One pin line was along the traffic stripe, one pin line was set 11 feet left of the stripe, 1.7 to 2.5 feet inside the edge of traveled way. The third pin line was set 11 feet right of the stripe, 2.0 to 2.8 feet inside the edge of the traveled way.

Profilograph  
Records:

Transverse: The permanent reference points for levels also serve as permanent markers for transverse profiles of the pavement surface. Using the machine

Loadometer Station No. 14  
Road II-Sha-3-B

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Profilograph  
Records:

Transverse:  
(Continued)

developed for this purpose, transverse profilograph records of the traveled way surface in each lane were made at 20 foot longitudinal intervals throughout the section.

Longitudinal: By means of the Profilograph, records were made of the longitudinal profiles of each lane of the traveled way surface. In each lane, a line of profiles was run with the outer wheels of the Profilograph along the outer pin lines. All profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 14

II-Sha-3-B



Widening Strip Right Back  
from Station 52+00



Widening Strip Left Back  
from Station 52+00

State of California, Div. of Highways  
Materials & Research Department  
Research No. 00258, W.O. No. 13NN26

Loadometer Station No. BN 14  
II-Sha-3-B

ROADWAY CONDITION SURVEY

Scale: 1" = 10'

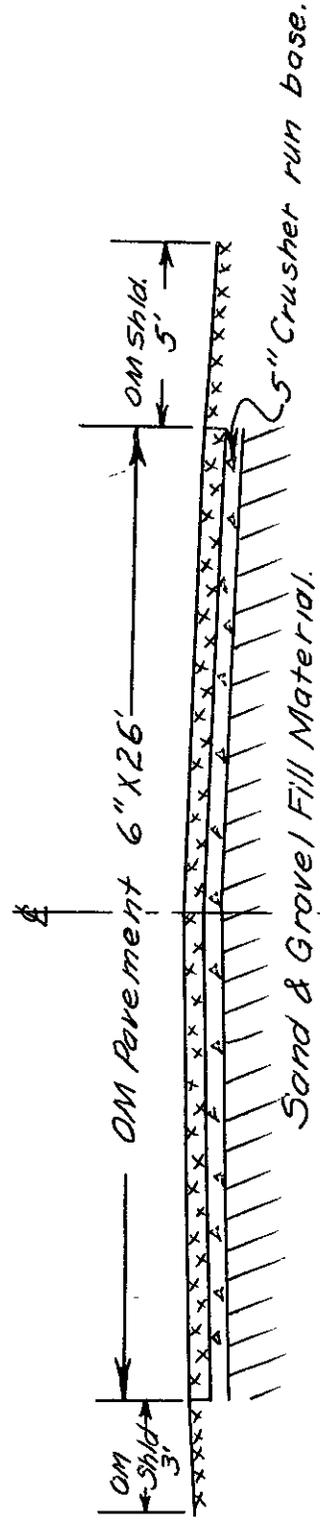
TYPICAL ROADWAY SECTION

Fill Extended for  
Roadside business  
Sta. 46 ahead  
both sides.

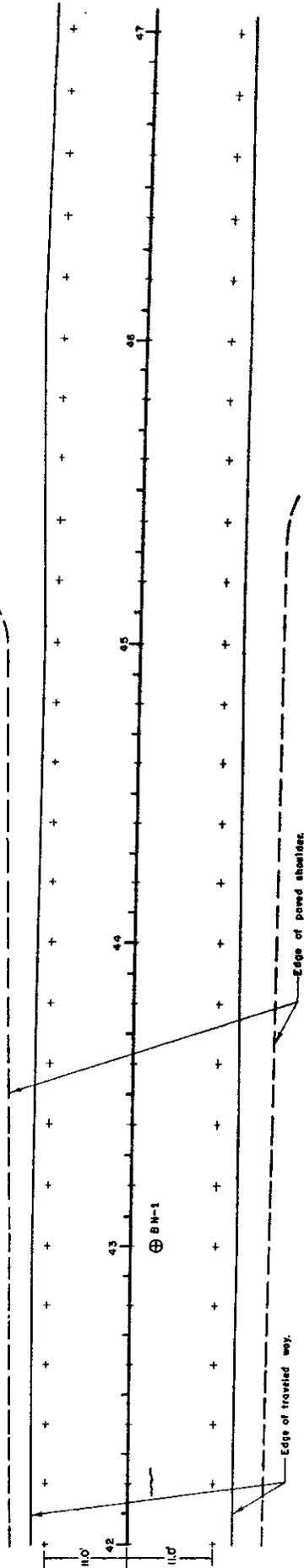


Scale: 1" = 5'

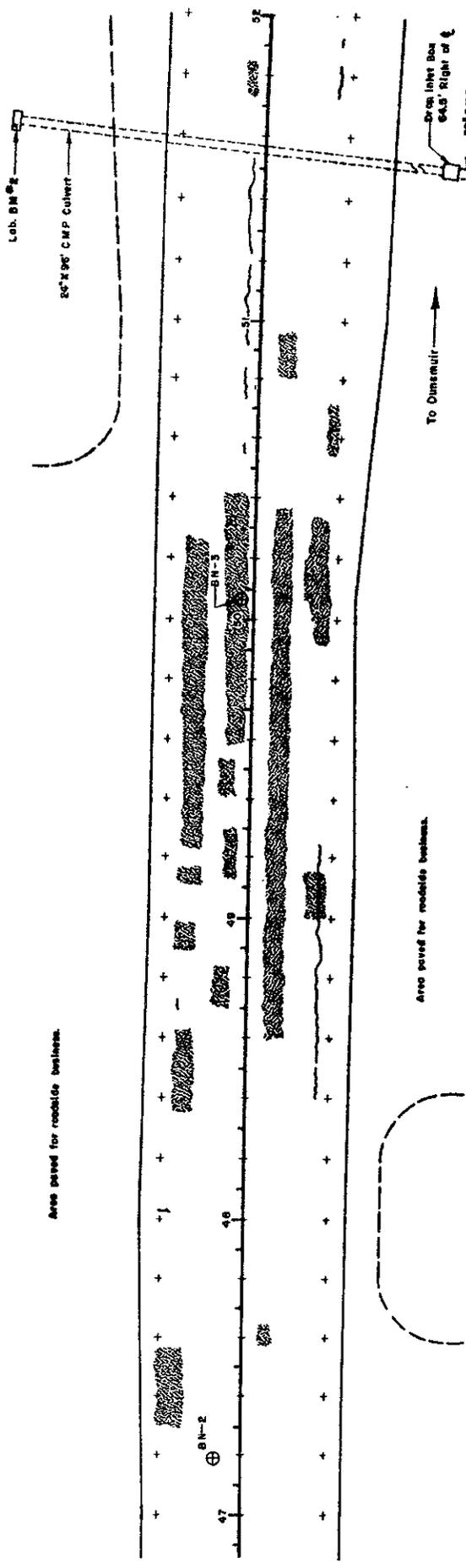
TYPICAL STRUCTURAL SECTION



← To Redding



Area paved for roadside business.

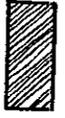


Area paved for roadside business.

Area paved for roadside business.

### PAVEMENT LOCATION AND CONDITION CHART

#### LEGEND

-  Alligator Cracking
-  Failure
-  Block Cracking
-  Shoving
-  Patch
- ⊕ Location of Sample Hole
- + Location of Permanent Reference Points

TEST RESULTS SUMMARY

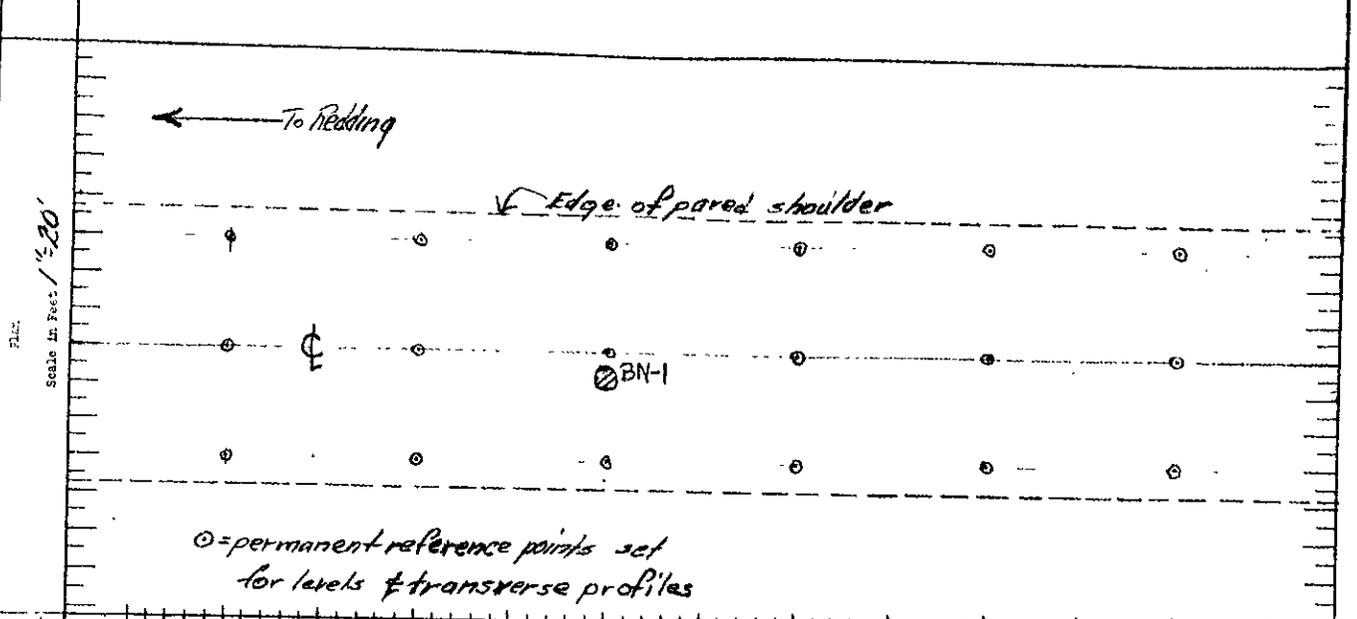
Load. Sta. No. 14  
II-Sha-3-B

Line	Sample No.		Sample Hole Location		Pavement		Soil Samples	
	Field	Lab.	Station	Position	Type	Thickness	Depth Below Btm. Pav't.	Layer Description
1	BN-1-A	51-3712	43+00	3.2' rt. of $\pm$	OM	7 $\frac{1}{4}$ "	0-3-3/4"	Base
2	BN-1-B	51-3713	43+00	Same	OM	7 $\frac{1}{4}$ "	3-3/4-7-3/4"	Subbase
3	BN-1-C	51-3714	43+00	Same	OM	7 $\frac{1}{4}$ "	7-3/4-16-3/4"	Probably Basement
4	BN-2-A	51-3715	47+19	3.4' lt. of $\pm$	OM	5 $\frac{1}{2}$ "	0-5-1/2"	Basement
5	BN-2-B	51-3716	47+19	Same	OM	5 $\frac{1}{2}$ "	5 $\frac{1}{2}$ - 10 $\frac{1}{2}$ "	Subbase
6	BN-2-C	51-3717	47+19	Same	OM	5 $\frac{1}{2}$ "	10 $\frac{1}{2}$ - 14 $\frac{1}{4}$ "	Probably Basement
7	BN-3-A	51-3718	50+07	1.5' lt. of $\pm$	OM	5-3/4"	0 - 4-3/4"	Base
8	BN-3-B	51-3719	50+07	Same	OM	5-3/4"	4-3/4 - 7-3/4"	Subbase
9	BN-3-C	51-3720	50+07	Same	OM	5-3/4"	7-3/4-14 $\frac{1}{4}$ "	Probably Basement

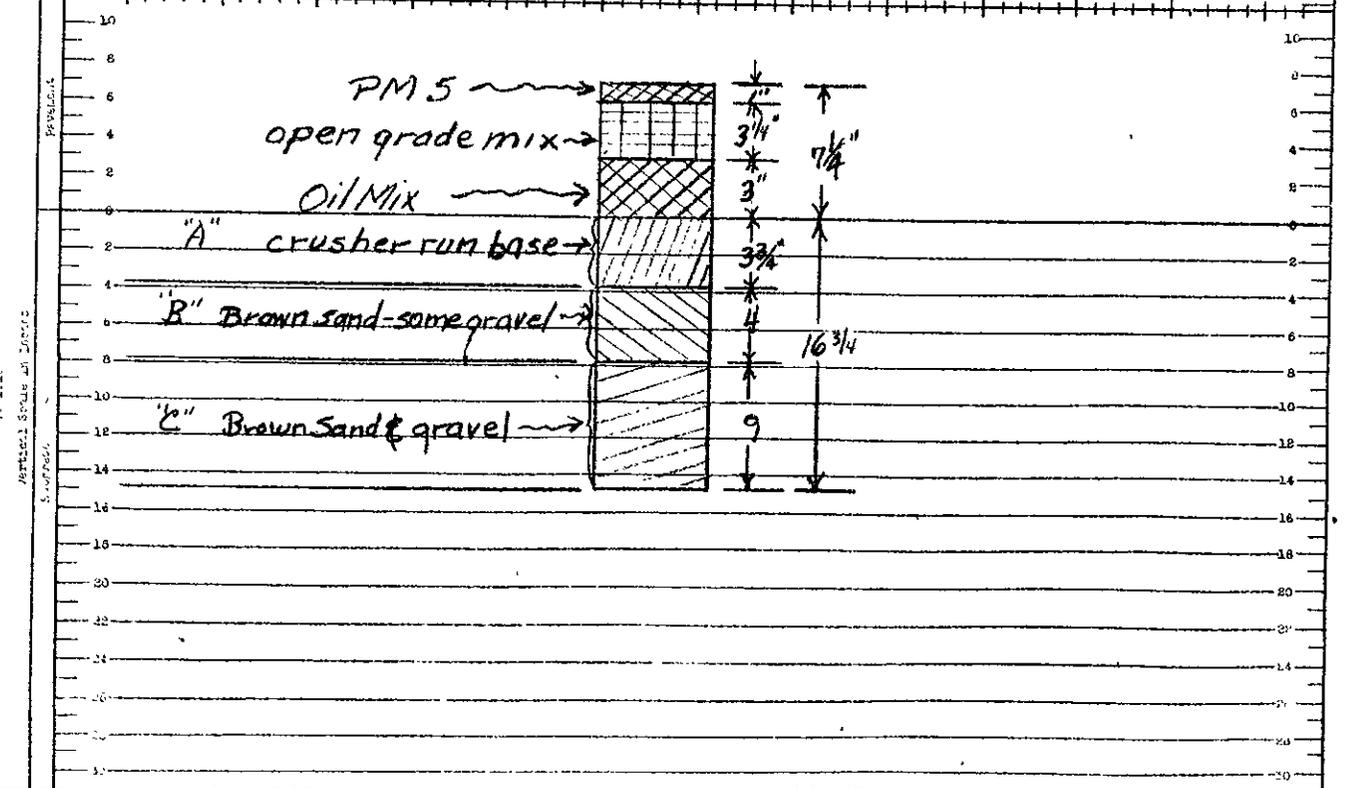
Line	In Place Test Data			Lab. Test Data		HRB Soil	Specific Gravity	
	Moist.	Density	% Rel Comp.	Optimum Moisture	Maximum Density	Classification	Pass. $\mu$	Ret. $\mu$
1	3	165	115	7	143	A-1-a	2.70	2.70
2	8	136	103	10	132	A-1-b	2.69	
3	11	130	99	10	131	A-2-4	2.68	
4	3	152	106	6	143	A-1-a	2.73	2.68
5	18	109	94	17	116	A-4	2.73	
6	11	124	92	10	135	A-2-4	2.73	2.70
7	4	160	110	7	145	A-1-a	2.75	2.68
8	9	124	95	11	130	A-2-4	2.69	
9	10	132	101	12	131	A-2-4	2.65	2.62

Line	Sieve Analysis - Percent Passing										Atterberg Limits	
	2"	3/4"	4	8	16	30	50	200	270	5M	LL	PL
1	100	91	53	45	39	31	23	13	13	5	25	19
2	100	96	89	84	76	62	39	16	14	4	N	P
3	94	90	84	80	74	65	50	25	23	9	N	P
4	100	87	40	32	24	18	14	8	8	4	24	18
5				100	99	98	89	42	36	10	N	P
6	100	86	72	68	63	55	44	26	24	9	30	21
7	100	91	46	37	30	24	17	11	10	4	23	18
8	100	95	90	83	77	67	48	17	14	6	N	P
9	100	97	89	82	77	67	47	17	14	6	27	20

Dist. <b>II</b>	Co. <b>Sha</b>	Rte. <b>3</b>	Sec. <b>B</b>	Contract No.	Date of Construction <b>1935-1943-1948</b>	Year Hole
Fill <input checked="" type="checkbox"/>	Approx. Elev. <b>3' to 4'</b>	Dist. from End of Fill <b>200' 150'</b>	No. of Lanes <b>2</b>	Traffic <b>Med Heavy</b>	No. <b>BN-1</b>	
Cut <input type="checkbox"/>	Approx. Depth	Dist. from End of Cut	Side Ditches <b>None clearly defined</b>	Depth	Date of Sampling <b>9-27-51</b>	
Road Use, Dist. <b>Undeveloped</b>			Right <b>Undeveloped</b>	Grade <b>0 x</b>	Up <b>—</b>	



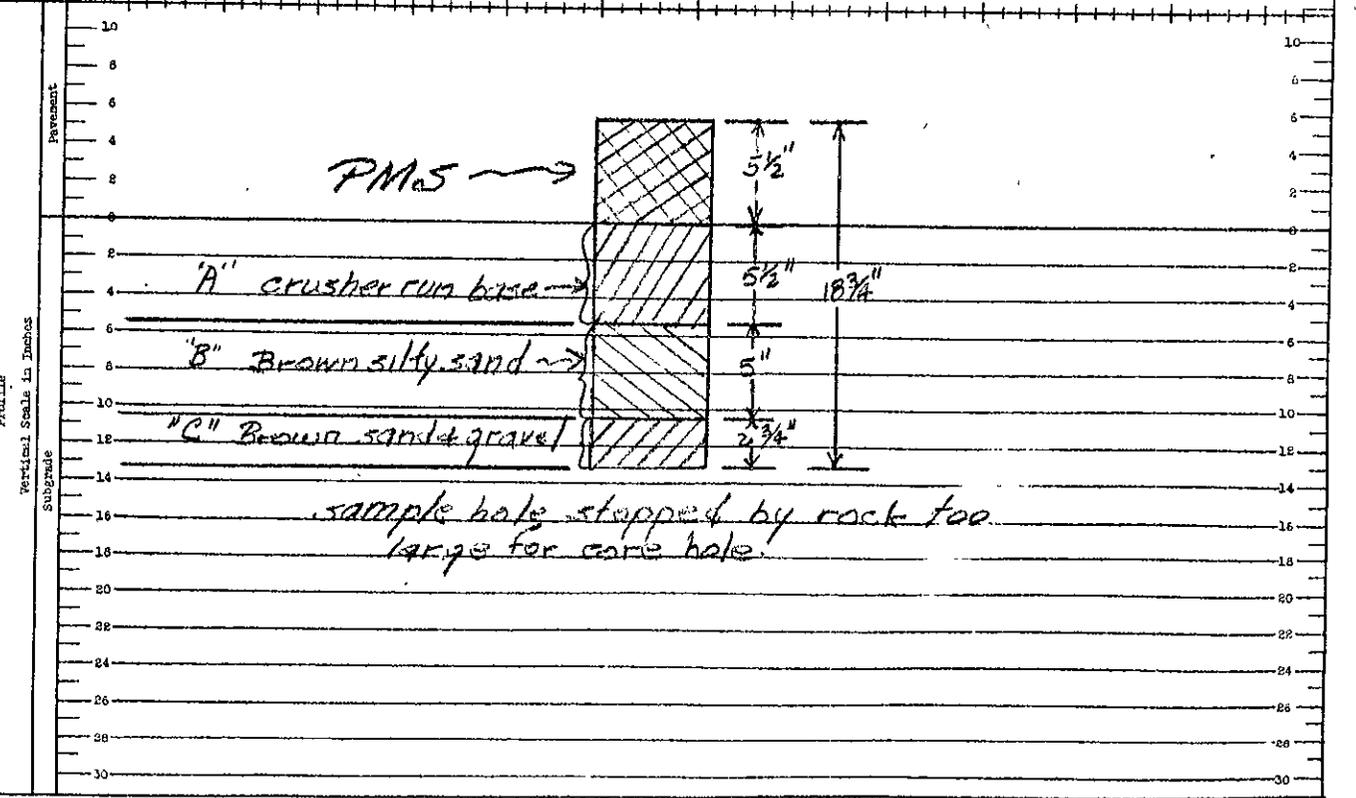
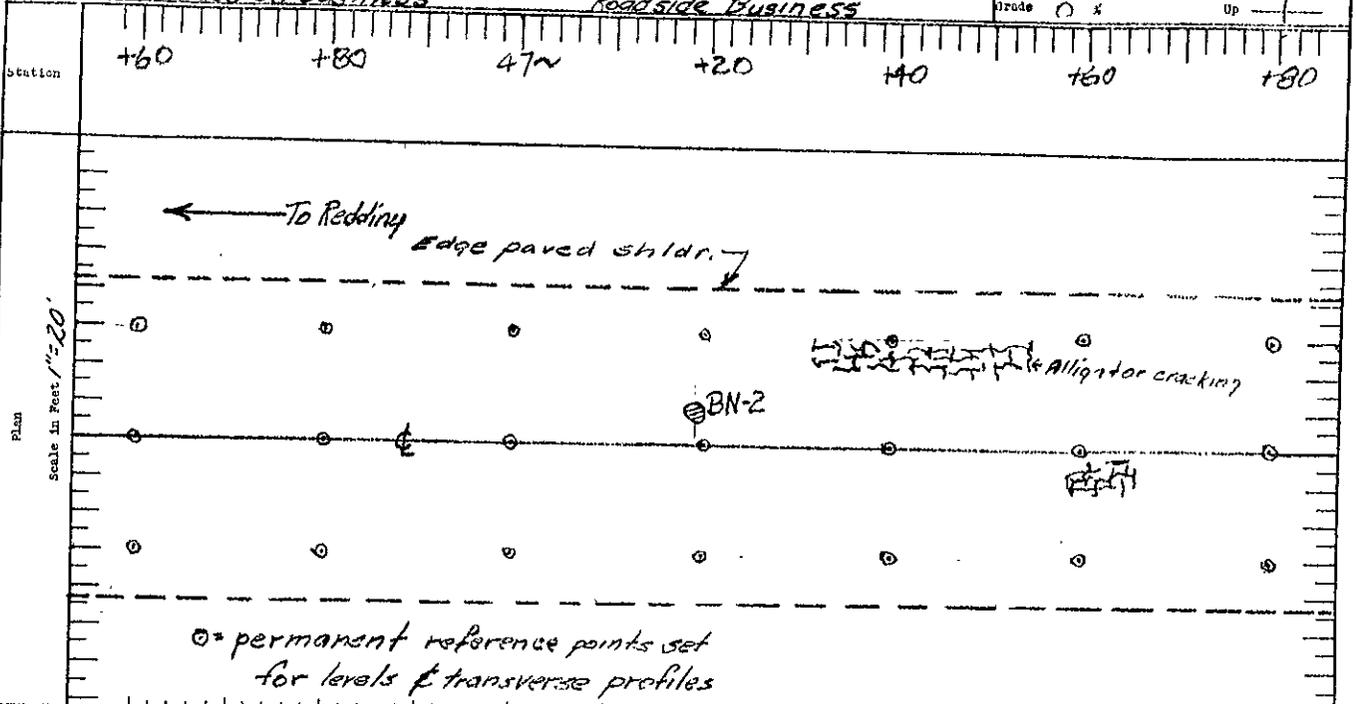
⊙ = permanent reference points set for levels & transverse profiles



STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

Party **Clawson Coan**  
 Drawn By **Coan**

Dist. <b>II</b>	Co. <b>Sho</b>	Rte. <b>3</b>	Sec. <b>B</b>	Contract No.	Date of Constr. <b>1935-1943-1948</b>	Test Hole No. <b>BN-2</b>
Fill <input checked="" type="checkbox"/>	Approx. Height <b>3'</b>	Dist. from End of Fill		No. of Lanes <b>2</b>	Traffic <b>Med Heavy</b>	
Cut <input type="checkbox"/>	Approx. Depth	Dist. from End of Cut		Side Ditch	<b>None clearly defined</b>	Date of Sampling <b>9-20-52</b>
Roadside Use, Left <b>Roadside Business</b>		Roadside Use, Right <b>Roadside Business</b>		Grade $0\%$	Up <input type="checkbox"/>	



DEPARTMENT OF PUBLIC WORKS DIVISION OF HIGHWAYS MATERIALS AND RESEARCH DEPARTMENT

Remarks:

Party **Clawson**

**Coan**

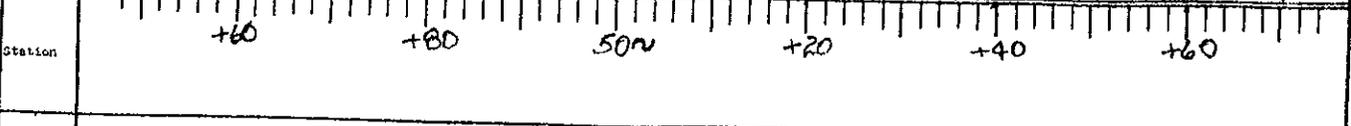
Drawn By **Coan**

LOCATION AND PROFILE SKETCH

ROADWAY INVESTIGATION

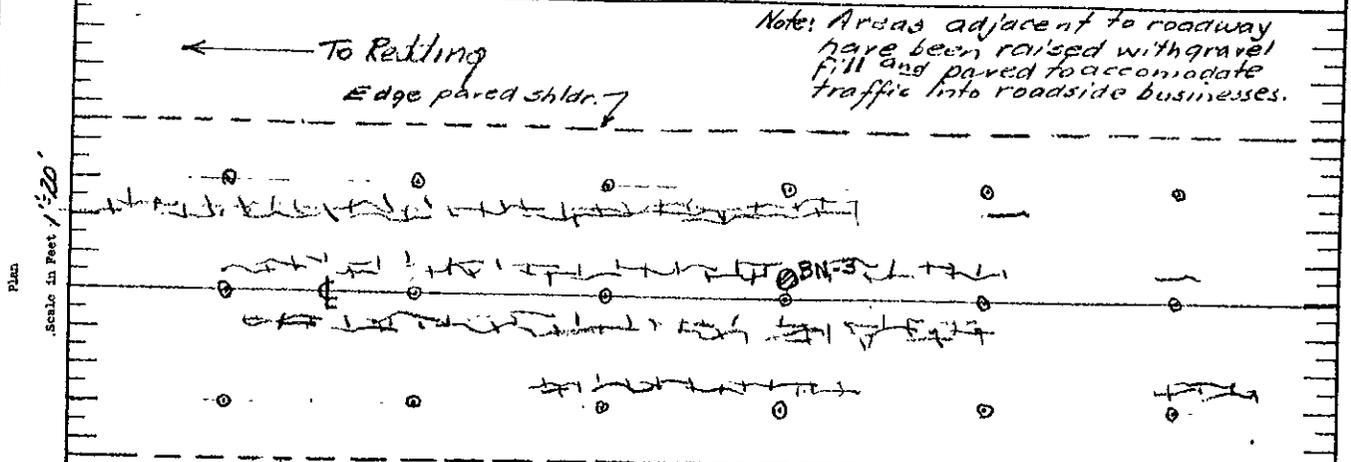
RESEARCH NO. 66057 00258

Dist. <b>II</b> Co. <b>Sha</b> Rte. <b>3</b>	Sec. <b>B</b>	Contract No. <b>—</b>	Date of Constr. <b>1935-1938-1948</b>	Test Hole No. <b>BN-3</b>
Fill <input checked="" type="checkbox"/>	Approx. Height <b>3'</b>	Dist. from End of Fill <b>—</b>	No. of Lanes <b>2</b>	Traffic <b>Med Heavy</b>
Cut <input type="checkbox"/>	Approx. Depth <b>—</b>	Dist. from End of Cut <b>—</b>	Side Ditches <b>None clearly defined</b>	Date of Sampling <b>9-28-52</b>
Roadside Use, left <b>Roadside Business</b>		Right <b>Roadside Business</b>		Grade <b>0%</b> up <b>—</b>

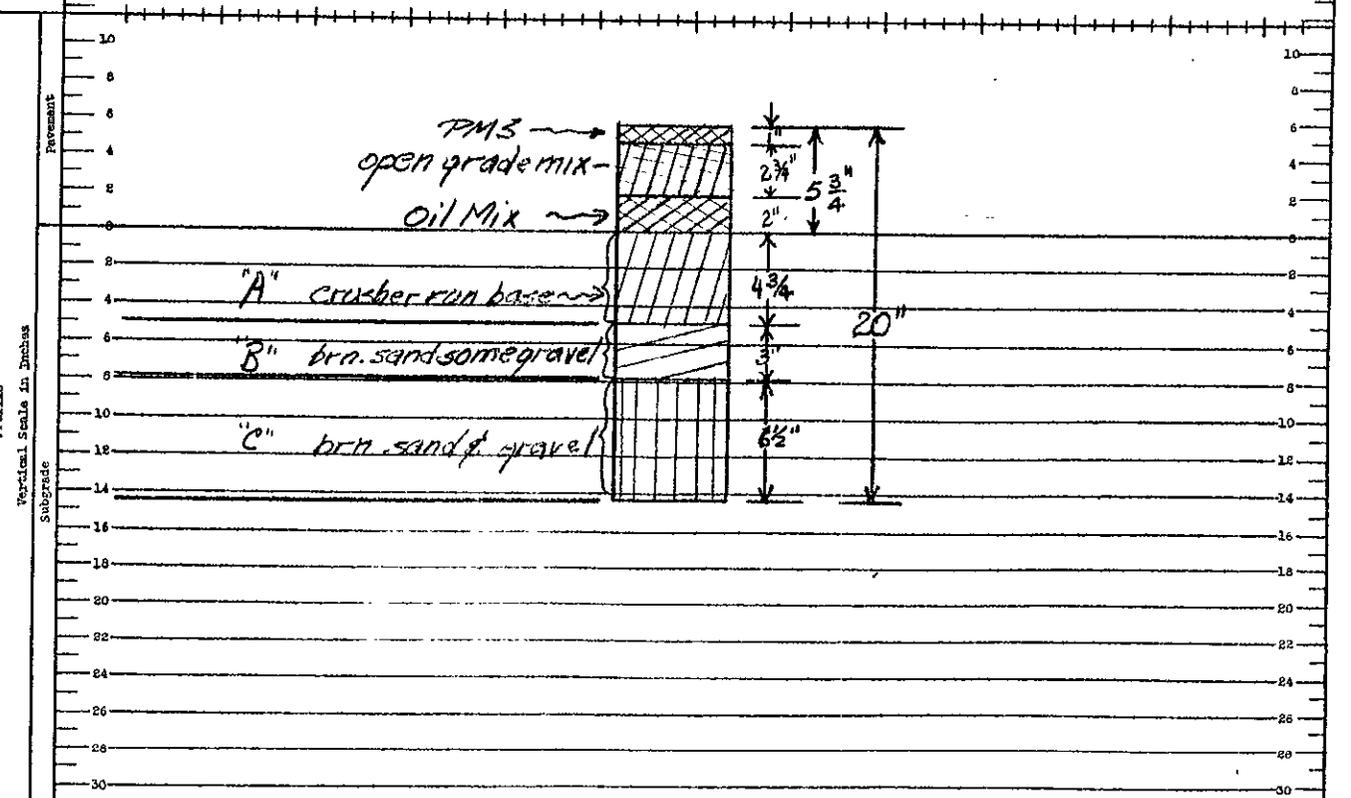


← To Redding  
Edge paved shldr. ↓

Note: Areas adjacent to roadway have been raised with gravel fill and paved to accommodate traffic into roadside businesses.



○ = permanent reference points set for levels & transverse profiles



Remarks:

Party **Clawson**  
**Coan**  
 Drawn by **Coan**

STATE OF CALIFORNIA  
DIVISION OF HIGHWAYS  
DEPARTMENT OF PUBLIC WORKS  
MATERIALS AND RESEARCH DEPARTMENT

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 14  
 Dist. II Co. Sha Rte. 3 Sec. B  
 Loc. Design BN  
 Sta. 42+00 to 47+00  
 Sheet No. 1 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

	Left of Roadway						Right of Roadway						
	Field Shots	Toe of Fill	Top of Fill	Edge Paved Shoulder	Edge Travelled Way	Edge Travelled Way	Edge Paved Shoulder	Top of Fill	Toe of Fill	Field Shot			
47+00													
				Paved for roadside business									
				602.1	602.80	602.11	602.68	602.41	602.1	600.7			
				40.0	16.0	12.8	13.1	17.8	30.0	52.0			
46+00													
				Paved for roadside business									
				600.9	601.6	602.45	602.58	602.67	602.58	601.5	601.1		
				57.0	32.0	17.0	13.3	13.7	16.8	38.0	50.0		
45+00													
				Paved for roadside business									
				601.6	602.41	602.74	602.74	602.49	601.8	597.5	597.1		
				39.0	17.5	12.7	13.4	18.8	32.5	48.0	60.0		
44+00													
				597.9	598.3	601.6	602.54	602.72	602.61	602.43	601.5	598.1	
				53.0	32.9	27.3	16.5	12.8	13.7	13.4	28.0	34.7	
43+00													
				597.0	597.7	601.6	602.34	602.59	602.66	602.39	601.8	598.1	597.5
				55.0	34.4	27.8	16.0	13.0	13.8	13.0	27.2	34.0	50.0
42+00													
				597.0	597.7	601.5	602.50	602.68	602.63	602.51	602.1	598.2	597.0
				53.0	33.5	28.1	15.6	12.5	13.6	17.4	27.7	35.7	60.0
				595.9	Flow line of 24" CMP						595.4		
				34.0								36.0	
				inlet						outlet			

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 14  
 Dist. II Co. Sha. Rte. 3 Sec. B  
 Loc. Design BN  
 Sta. 48+00 to 52+00  
 Sheet No. 2 of 2

*Drainage Cross-Sections*  
 ROADWAY CONDITION SURVEY

	Left						Right					
	Roadside	Business	Edge Pavt.	Edge T.W.	Edge T.W.	Edge Pavt.	Roadside	Business				
52+00	597.1 60.0	598.5 45.0	602.1 40.0	602.3 26.0	602.56 21.0	602.77 13.0	602.67 17.4	602.50 21.0	601.85 28.0	600.5 53.0		
	Sta. 51+63 32" Left & Inlet 24" CMP Standard P.C.C. Headwall Flow line Elev. 597.1						Sta. 51+41 64.5' Right & Drop Inlet with standard frame & grate for side drainage. 24" CMP from Sta. 51+63 empties into D.I. Box at H. Elev. 596.8. Drainage removed by 30" CMP (200') long under roadside Business Buildings to the East					
51+00			599.9 61.0	601.9 27.0	602.39 18.3	602.65 13.5	602.76 16.6	602.13 22.7	600.5 51.0			
50+00			600.5 50.0	601.6 26.0	602.35 17.0	602.58 13.0	602.69 13.3	602.46 19.0	602.33 27.2	602.20 44.0		
49+00			601.1 45.0	601.1 29.0	601.9 22.0	602.34 17.8	602.62 13.0	602.65 13.8	602.52 21.3	601.99 53.0		
48+00			600.9 44.0	601.4 32.0	602.14 23.0	602.47 13.7	602.51 13.5	602.36 18.0	601.5 38.3	597.8 47.0	597.1 60.0	

17

DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE

LOCATION:

Loadometer Sta. No. 21 on Road IV-SC1-2-B is located approximately 3.0 miles south of Jct. Rte. 2, San Jose to Gilroy and Route 68 bypass to San Jose, toward Gilroy. There are no major road or highway turnoffs between the scale and the section.

The section selected for test is located approximately 2.0 miles south of the Loadometer Station toward Gilroy.

LENGTH:

The section is located between Sta. "B" 690+00 and Sta. "B" 700+00, a total length of 1000 feet. Roadway at the section location is a 3-lane highway. The section is established in all three lanes.

SURFACE:

Type:

Present surface is asphaltic mix pavement in all three lanes. Construction plans from the last major construction on this route in 1937 which added the present left lane, show an old 20 foot P.C.C. pavement, construction date unknown, under the right and centerlane.

Width:

Present traveled way is three lanes each 11.0 ft. wide, for a total width of 33 feet. The total pavement width of the section varies from 48.5 to 49.0 feet.

ROADWAY STRUCTURE

SURFACE

Thickness:

In the right and center lanes, the asphaltic mix over the old 20 foot P.C.C. pavement varies from 8 to 10-1/2 inches. In the left lane, a total thickness of 13 inches of asphaltic mix was found. The old 20 foot P.C.C. pavement was found to vary from 4 to 5 inches in thickness.

Construction records of 1937 show a minimum of 2" thickness of asphaltic mix on the right and center lanes over the old P.C.C. pavement, and 6" of asphaltic mix over imported borrow in the left lane.

Apparently the difference between the Construction records of 1937 and what was found by the field crew is due to blankets placed by the maintenance forces.

BASE:

Type and  
Thickness:

In the left lane, added in 1937, a layer of sand and gravel 5-1/2 inches in thickness was found. Construction records show this material to be an imported borrow.

Soil Clas-  
sification

A-2-4

ROADWAY STRUCTURE

BASE:

Soil Clas-  
sification:  
(Continued)

In the right and centerlanes, under the old P.C.C. pavement, a layer of sandy silt and gravel was found. Thickness varied from 7 to 8 inches.

A-4

In the centerlane at Sta. 695+51, a layer of silty sand and gravel 3 inches thick with a soil classification of A-1-a was found below the 7 inch layer of base material. From all indications, this layer is just a pocket.

BASEMENT:

Type and  
Thickness:

Clayey silt in all three lanes, apparently native material. Thickness sampled varied from 6-3/8 to 10-1/2 inches.

Soil Clas-  
sification:

A-4

SIDE DITCH  
DRAINAGE:

Section is in grade on the left and in fill on the right. The section has a profile grade of +0.4%.

There are no clearly defined ditches within the section limits. Drainage on the right is carried in an area approximately 1.0 below the roadway surface between the roadway and the railroad fills.

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:  
(Continued)

On the left, the drainage is carried in an area bladed by maintenance forces into a gutter line. Drainage is from south to north. There are no culverts or bridges in the section.

ROADWAY CONDITION

GENERAL:

The roadway surface of all three lanes shows pitting throughout the section.

There are three clearly defined areas, listed below, in which the surface has been either gouged by a wheel rim or is failing and being whipped out by traffic.

Sta. 696+94, 2.0'Rt. of Rt. inner pin line  
Sta. 698+10, 2.0'Lt. of Rt. outer pin line  
Sta. 699+15, 2.5'Lt. of Rt. outer pin line

SPECIAL  
CONDITIONS:

(1) Areas of  
Alligator  
Cracking:

There are no areas of alligator cracking within the section.

(2) Areas of  
Raveling:

There are no areas of raveling within the section.

(3) Areas of  
Shoving  
or  
Creeping:

There are no areas of shoving or creeping within the section.

(4) Patches:

There are no patches within the section.

(5) Roadway  
Section:

The section is in grade on the left and in fill on the right. The roadway surface is

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (5) Roadway Section: (Continued) approximately 1.0 feet above the area on the right between the roadway fill and the rail-road fill.
- (6) Shoulders: Throughout the section there are asphaltic mix shoulders which are 8.0' wide on the left and vary from 7.5' to 8.0' in width on the right. Shoulders are in generally fair condition. The area on the left from the vicinity of Sta. 691+00 to Sta. 692+00 has been widened for an entrance to a school.

ROUGHNESS MEASUREMENTS:

Bench Marks  
and Levels:

Bench marks were established by the field crew near the ends of the section:

<u>B.M. No.</u>	<u>Location</u>	<u>Description</u>	<u>Elevation</u>
1.	25' rt. of rt. outer pin line Sta. 680+30	Ramset pin in R.R. spike in telegraph pole	95+588
2.	25' rt. of rt. outer pin line Sta. 700+25	Ramset pin in R.R. spike in tree	99.980 (Assumed)

Permanent reference pins were established in 4 lines parallel to centerline. One pin line was set along the traffic stripe between the right traffic lane and the passing lane.

ROADWAY CONDITION

ROUGHNESS MEASUREMENTS:

Bench Marks  
and Levels:  
(Continued)

One pin line was set along the traffic stripe between the left traffic lane and the passing lane. One line was set along each edge of the traveled way. In all cases, pin lines are 11.0' apart.

Profilograph  
Records:

Transverse:

The permanent points set for levels also serve as permanent markers for transverse profiles of the pavement surface. Using the machine developed for this purpose, transverse profilograph records of the traveled way surface in the left and right lanes and also in the passing lane were made at 20 foot longitudinal intervals throughout the section.

Longitudinal:

By means of the Profilograph, records were made of the longitudinal profiles of each lane of the traveled way surface. In the right lane two lines of profiles were run, one 30" from the left pin line and one 30" from the right pin line. In the centerlane, one line of profiles was run in the center of the lane.

Loadometer Station No. 21  
Road IV-SC1-2-B

ROADWAY CONDITION

ROUGHNESS MEASUREMENTS:

Profilograph Records:

Longitudinal:  
(Continued)

In the left lane two lines of profiles were run, one 30" from the right pin line and one 30" from the left pin line. All profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 21

IV-SCL-2-B



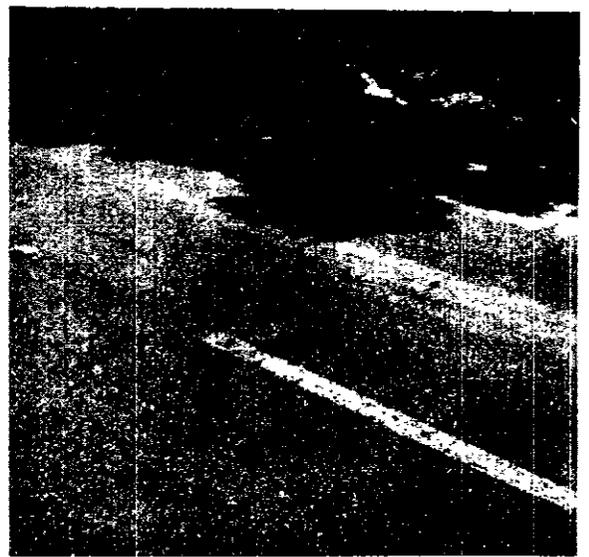
Surface Pitting Vicinity  
of Station 693+20



Crack across Right lane  
Station 694+10



Broken Area in Left Lane.  
Vicinity of Sta. 694+90



Longitudinal and Transverse  
Cracks in Rt. lane Station  
695+85

Loadometer Station No. 21

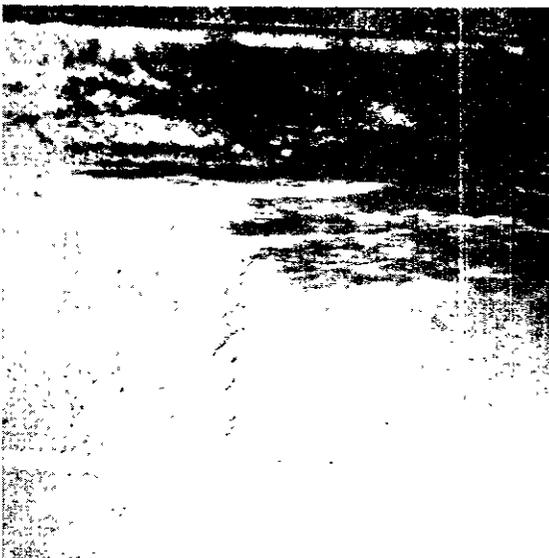
IV-SCL-2-B



Surface Pitting in Left  
Lane. Ahead from Sta.  
697+00



Severe Crack and Gouged  
Areas Right Lane Station  
698+00 to Sta. 698+20



Transverse Crack in Rt.  
lane Sta. 699+34



Transverse and longitudinal  
Cracks in Right Lane Sta.  
699+50 to Station 700+00

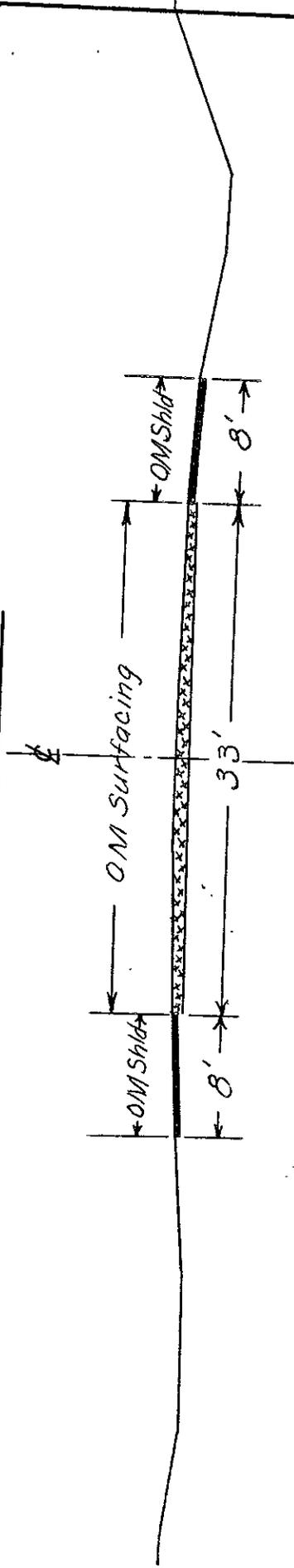
State of California, Div. of Highways  
Materials & Research Department  
Research No. 00258, W.O. No. 13NN26

Loadometer Station No. CC 21  
IV-S01-2-B

ROADWAY CONDITION SURVEY

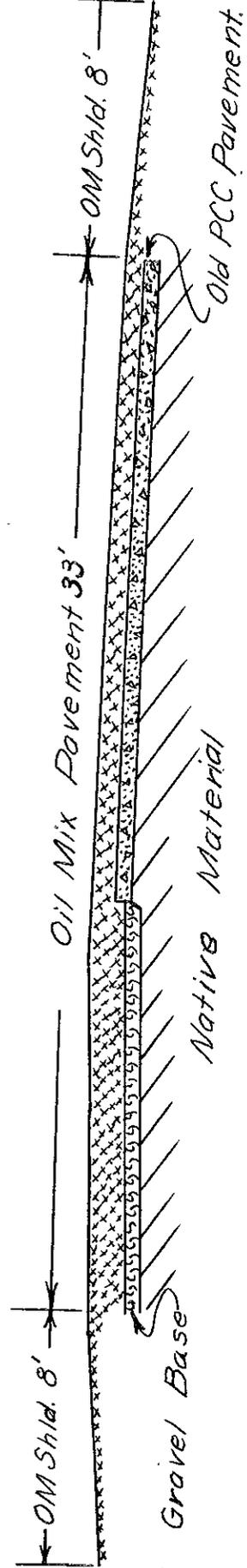
TYPICAL ROADWAY SECTION

Scale: 1" = 10'



TYPICAL STRUCTURAL SECTION

Scale: 1" = 5'



ROADWAY STRUCTURE

BASE AND SUBBASE  
MATERIAL:

Classifi-  
cation  
(Continued)

Below the base material are two slabs of PCC pavement. The upper slab varies from 5" to 5-1/2" in thickness and the lower slab varies from 3-1/2" to 4-1/2" in thickness so that total thickness of slabs varies from 9" to 9-1/2". Below the PCC slab, at two of the locations sampled, a clayey, silty sand and gravel was encountered which appeared to be an imported material. At the third location sampled, there was none of this material. Test results show material just under the old PCC pavement to be the same from all three locations sampled. Material is classified as A-6. Thickness of sample layers varied from 5-1/4" to 6-3/4". Below the material described above was native basement soil, a black and gray adobe clay, classified as A-7-6.

SIDE DITCH  
DRAINAGE

The section roadway is entirely in fill. The section roadway has a profile grade of +1.4% from south to north. Drainage runs from north towards the south and passes under the roadway beyond the section limits.

TEST RESULTS SUMMARY

Load. Sta. No. 21  
IV-SCL-2-B

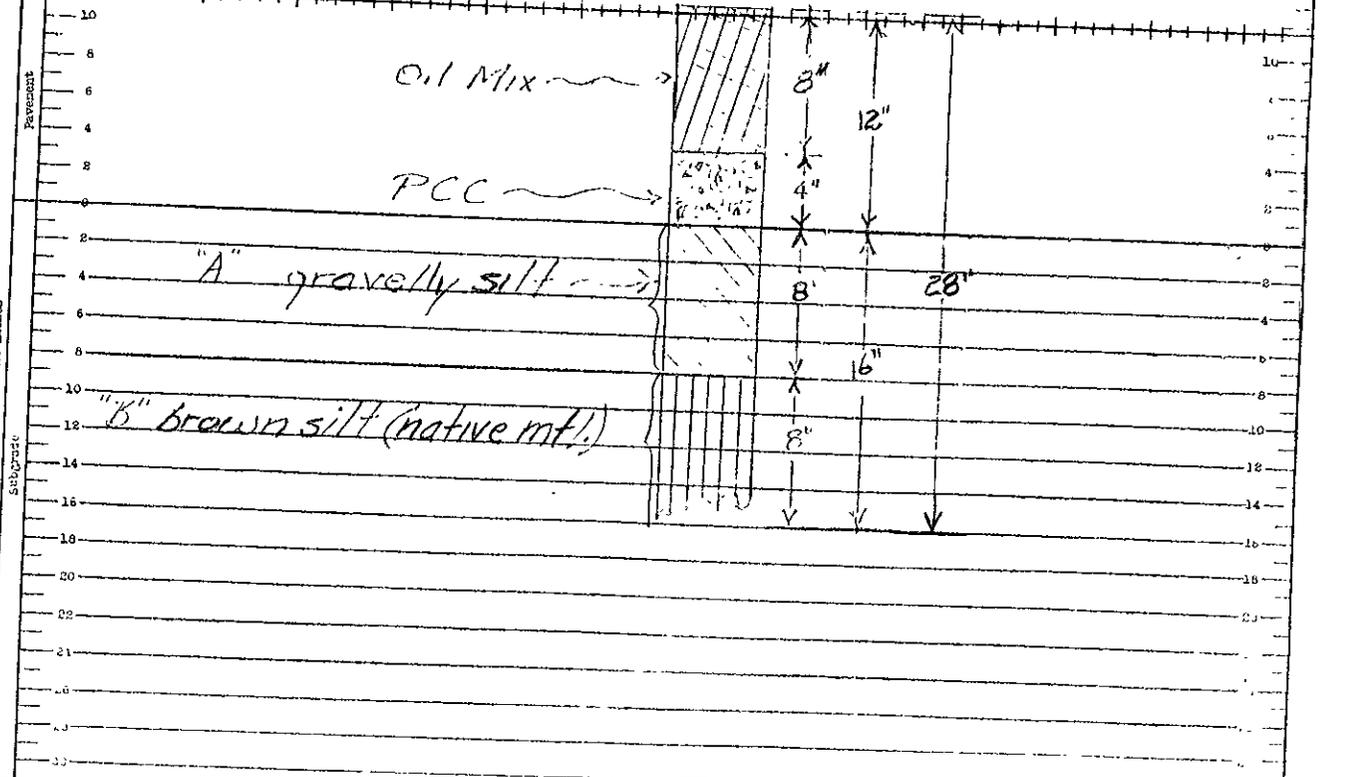
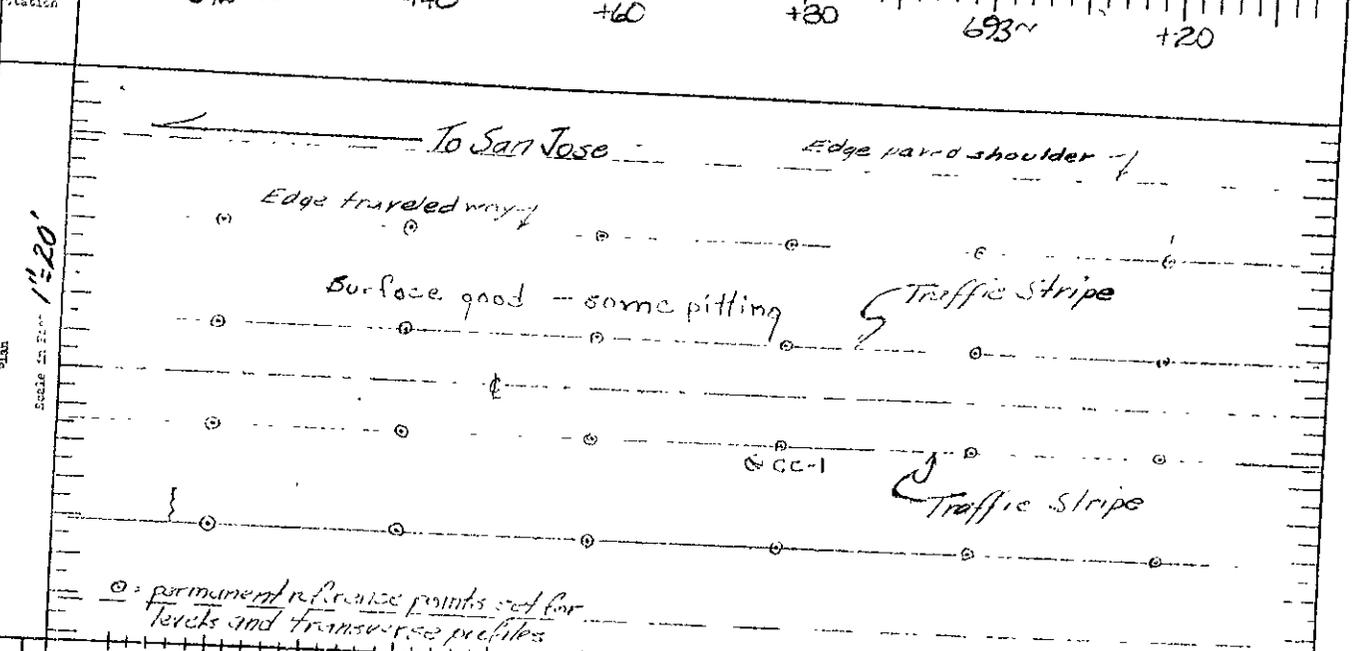
Line	Sample No.		Sample Hole Location		Pavement		Soil Samples	
	Field	Lab.	Station	Position	Type	Thick-ness	Depth below Btm. Pav't.	Layer Description
1	CC-1-A	52-3312	692+77	9' left of R.O.E.P.	OM PCC	8" 4"	0 - 8"	Base
2	CC-1-B	52-3313	692+77	same	OM PCC	8" 4"	8" - 20"	Basement
3	CC-2-A	52-3314	698+20	9' right of L.O.E.P.	OM	13"	0 - 5-1/2"	Base
4	CC-2-B	52-3315	698+20	Same	OM	13"	5-1/2"-16"	Basement
5	CC-3-A	52-3316	695+51	On centerline roadway	OM PCC	10" 5"	0 - 7-1/2"	Base
6	CC-3-B	52-3317	695+51	Same	OM PCC	10" 5"	7-1/2"-10-1/2"	Subbase
7	CC-3-C	52-3318	695+51	Same	OM PCC	10" 5"	10 1/2" - 17"	Basement

Line	In Place Test Data		Lab. Test Data		HRB Soil	Specific Gravity		
	Moist.	Density	% Rel. Comp.	Optimum Moisture	Maximum Density	Classification	Pass. 4	Ret. 4
1	7	2.25	94	9	12.5	A-4	2.63	2.58
2	11	2.06	88	14	12.2	A-4	2.60	
3	4	2.34	97	7	13.8	A-2-4	2.64	2.54
4	10	2.09	89	13	13.2	A-4	2.63	
5	13	2.07	88	13	12.1	A-4	2.61	
6	No	Sand	Volume	Take		A-1-a	2.64	2.59
7	5	2.02	89	15	13.5	A-4	2.59	

Line	Sieve Analysis - Percent Passing										Atterberg Limits	
	2"	3/4"	4	8	16	30	50	200	270	5M	LL	PL
1	99	95	85	80	73	66	60	26	43	15	23	18
2						30	99	36	80	20	26	21
3	83	65	36	30	22		10	6	5	3	25	17
4		100	97	94	92	90	87	72	68	23	29	21
5	100	95	92	90	89	88	87	68	62	23	25	20
6	100	89	44	37	34		28	5	13	4	19	18
7							100	84	78	30	31	22

LOCATION AND PROFILE SHEET

DIST. IV Co. 501 Rte. 2 Sec. B Contract No. \_\_\_\_\_ Date of Constr. 1937 Test Hole No. CC-1  
 P. On Right Aspect 12 Dist. from End of Fill \_\_\_\_\_ No. of Lanes Three Traffic Heavy  
 Out \_\_\_\_\_ Dist. \_\_\_\_\_ Dist. from End of Out \_\_\_\_\_ Side Ditch None Depth \_\_\_\_\_ Date of Sampling 8-8-52  
 HOLDS IN USE, LAST Agriculture Right Rail Road R/W Grade 0.11% Up →



STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

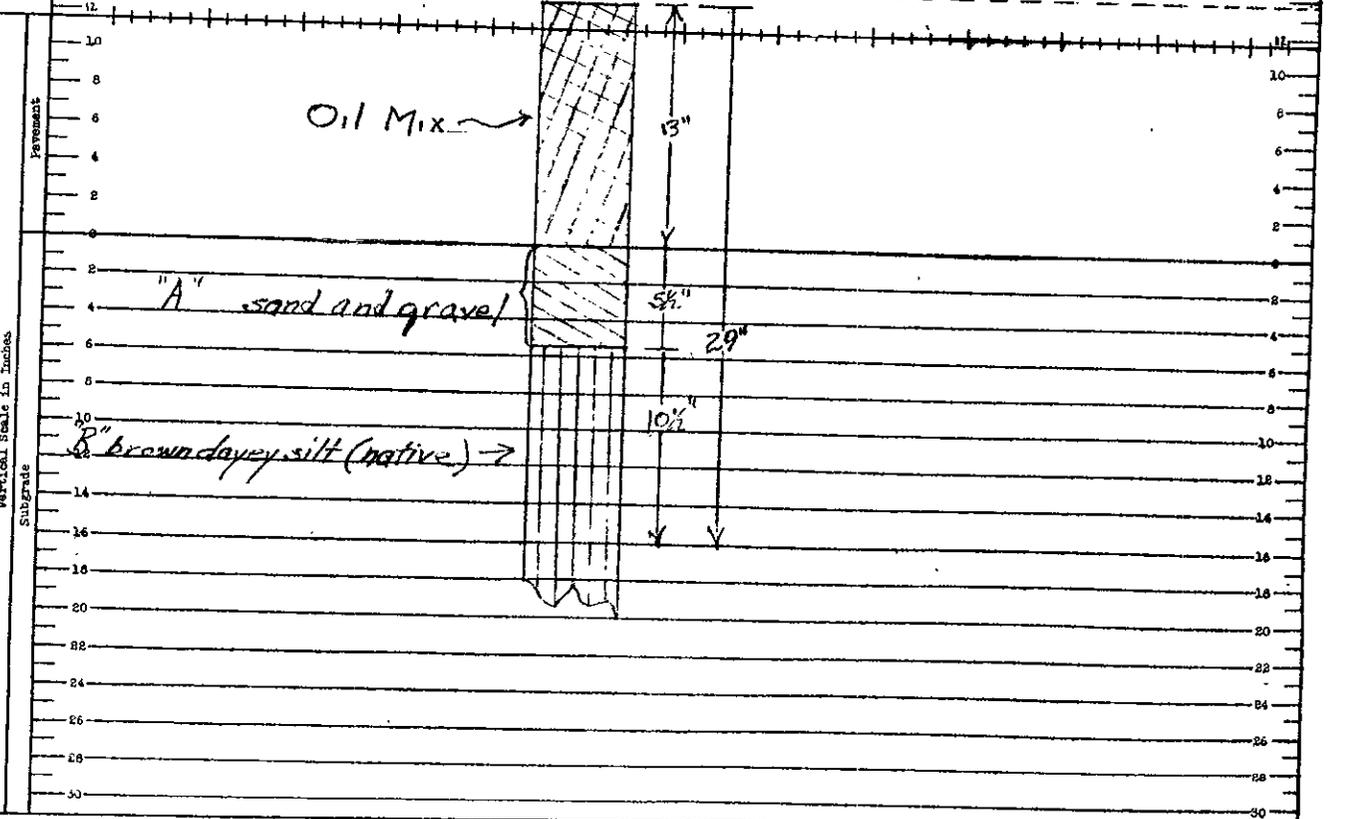
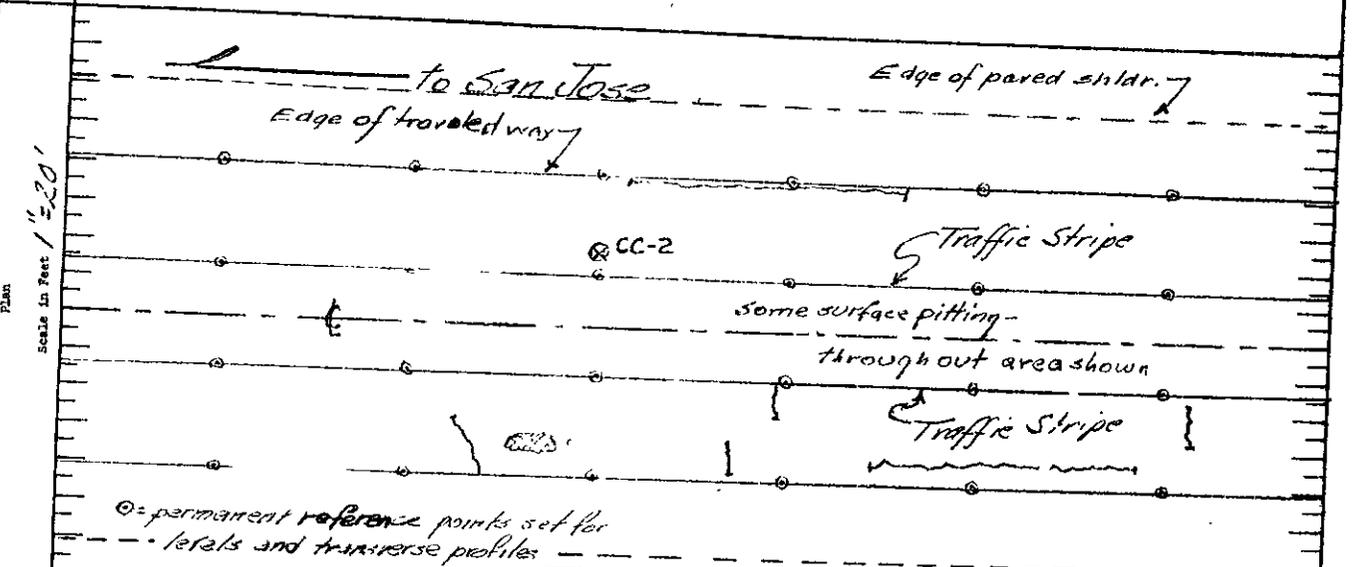
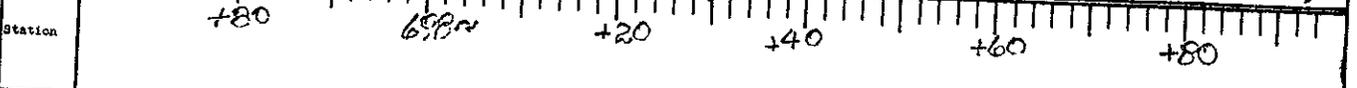
Smith  
 Coan  
 Clawson

ROADWAY PAVEMENT INVESTIGATION

LOCATION AND PROFILE SKETCH

RESEARCH NO. 00257

Dist. <i>IV</i> Co. <i>SI</i> Rte. <i>2</i> Sec. <i>3</i> Contract No. <i>—</i>	Date of Constr. <i>1937</i>	Test Hole No. <i>CC-2</i>
Fill <i>on Right</i> APPROX. Right <i>12</i> Dist. from End of Fill <i>—</i>	No. of Lanes <i>Three</i>	Traffic <i>heavy</i>
Cut <i>—</i> APPROX. Depth <i>—</i> Dist. from End of Cut <i>—</i>	Side Ditches <i>None</i>	Depth <i>—</i> Date of Sampling <i>8-11-52</i>
Roadside Use, left <i>Agricultural</i>	Right <i>RR SW</i>	Grade <i>—</i> Up <i>→</i>



Remarks:

Party	<i>Smith</i>
	<i>Coan</i>
	<i>Clawson</i>
Drawn By	<i>Coan</i>

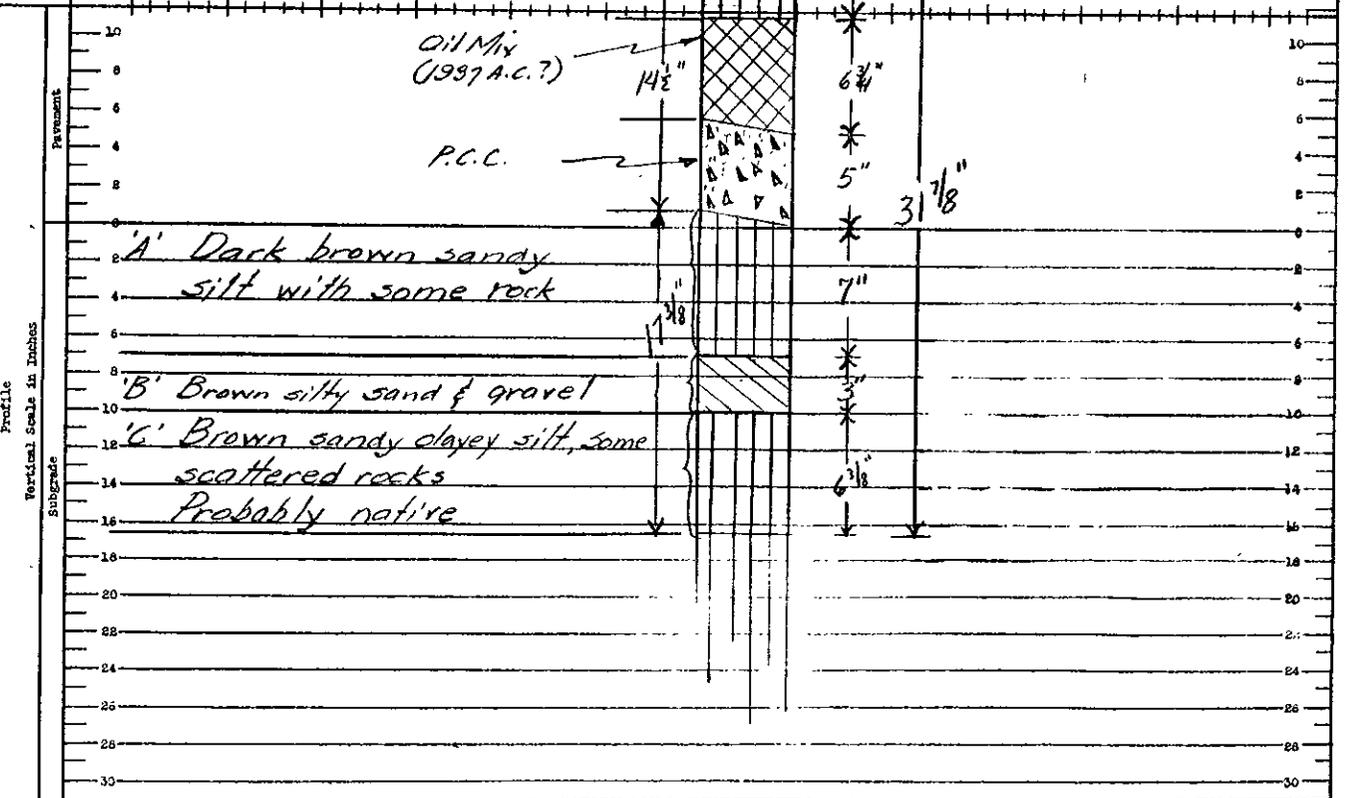
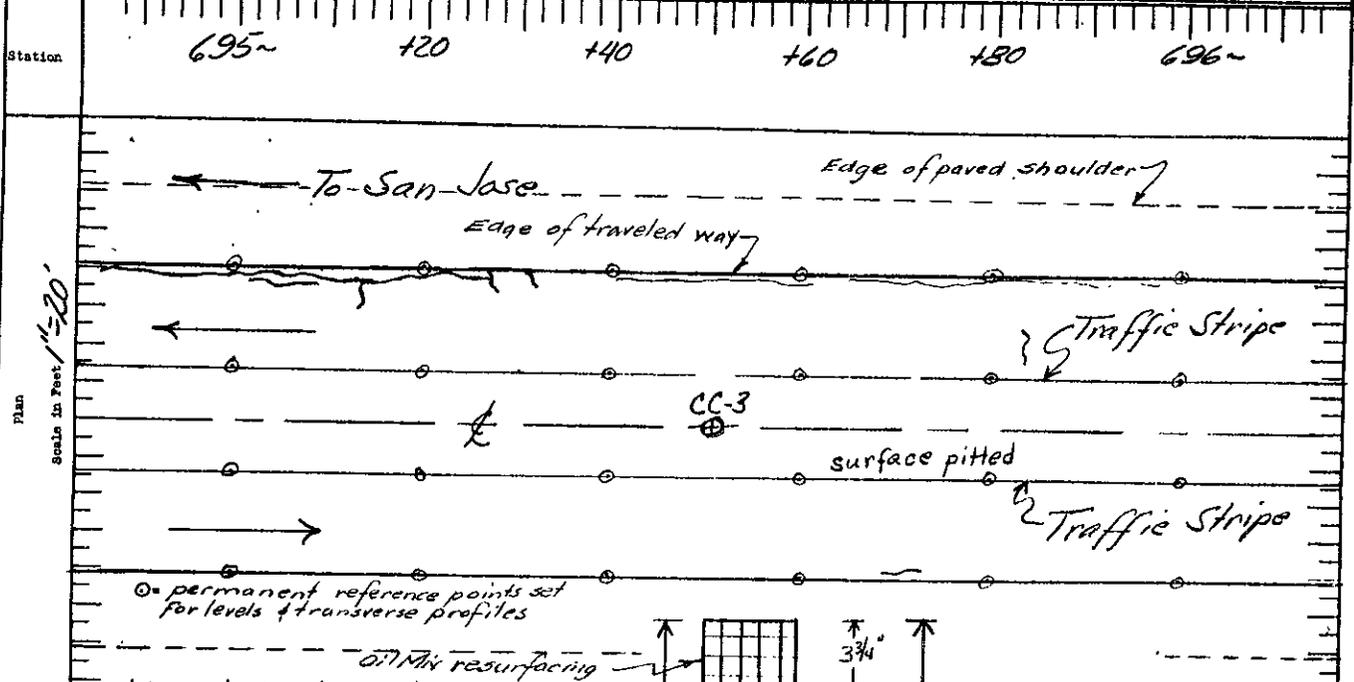
STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

LOCATION AND PROFILE SKETCH

PAVEMENT INVESTIGATION

RESEARCH NO. 00258

Dist. <i>IV</i> Co. <i>SCL</i> Rte. <i>2</i> Sec. <i>B</i>	Contract No. <i>—</i>	Date of Constr. <i>1937</i>	Test Hole No. <i>CC-3</i>
Fill <i>On Right</i> Approx. Height <i>10</i>	Dist. from End of Fill <i>—</i>	No. of Lanes <i>Three</i>	Traffic <i>Heavy</i>
Cut <i>—</i> Approx. Depth <i>—</i>	Dist. from End of Cut <i>—</i>	Side Ditch: <i>None</i>	Depth <i>—</i> Date of Sampling <i>8-12-52</i>
Roadside Use, Left <i>Agricultural</i>		Right <i>R.R. RW</i>	Grade <i>0.4%</i> Up <i>→</i>



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

Drawn by: <i>Smith</i>	Party: <i>Clawson Smith Can</i>
------------------------	---------------------------------

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 21  
 Dist. IV Co. SCI Rte. 2 Sec. B  
 Loc. Design CC  
 Sta. 690+00 to 695+00  
 Sheet No. 1 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

	Left					Right						
	Field adj.	Top of Slope	Side ditch	Break in Slope	Outer edge of paved Shoulder	Outer edge of paved Shoulder	Top of fill Slope	Top of P.R. fill Slope	Top of P.R. fill Slope			
695~	96.4	96.5	95.3	95.6	96.20	96.35	94.9	95.0	97.9			
	70.0	52.0	44.0	34.0	24.5	24.5	33.0	37.0	48.0			
694~	95.7	96.5	95.0	95.1	95.88	96.02	94.6	94.2	97.5			
	74.0	53.0	45.0	35.0	24.5	24.0	33.0	37.0	47.0			
693~	95.4	95.5	94.5	94.7	95.43	95.55	94.1	94.2	96.7			
	65.0	49.0	45.0	33.0	24.5	24.5	33.0	37.0	48.0			
692~	Hedge	95.0	94.8	94.5	95.03	95.16	93.5	93.4	96.3			
		55.0	44.0	31.0	24.5	24.5	33.0	37.0	48.0			
691~	Hedge	94.4	94.0	94.48		94.71	93.3	93.3	96.0			
		51.0	35.0	24.5		24.0	33.0	37.0	48.0			
690~	94.2	93.5	92.5	92.6	94.35	94.34	92.9	92.9	95.7			
	72.0	55.0	46.0	33.0	24.5	24.5	34.0	38.0	48.0			

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 21  
 Dist. IV Co. SCI Rte. 2 Sec. B  
 Loc. Design CC  
 Sta. 696+00 to 700+00  
 Sheet No. 2 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

±

	Left					Right						
	Field Adj.	Top of Slope	Side ditch	Break in Slope	Outer edge of paved Shoulder	Outer edge of paved Shoulder	Toe of fill Slope	Toe of P.R. fill Slope	Top of P.R. fill Slope			
700~		98.3	97.6	97.7	98.18		98.16	97.1	97.0	100.1		
		53.0	42.0	35.0	24.5		24.5	32.0	35.0	47.0		
699~		97.5	97.8	96.7	96.9	97.75		97.85	96.5	96.5	99.5	
		70.0	50.0	43.0	34.0	24.5		24.0	32.0	35.0	47.0	
698~		97.3	97.8	96.4	96.7	97.37		97.34	96.2	96.2	99.2	
		72.0	52.0	45.0	34.0	24.5		24.0	32.0	35.0	47.0	
697~		96.9	97.8	96.2	96.3	97.02		97.10	95.8	95.8	98.7	
		72.0	52.0	44.0	35.0	24.5		24.5	33.0	37.0	47.0	
696~		96.7	97.0	95.8	96.0	96.50		96.64	95.5	95.3	98.3	
		74.0	50.0	43.0	33.0	24.5		24.5	32.0	37.0	47.0	

18

DATA OF SECTION SELECTED FOR TEST

This section is one of two established in connection with Loadometer Station No. 24.

ROADWAY STRUCTURE

LOCATION:

Loadometer Station No. 24 is located on west side of State Highway Route 2 (U.S. 101), approximately 3.5 miles north of N.C.L. Soledad. The section selected for test is located 1 mile north of Loadometer Station and approximately 4.5 miles north of Soledad.

LENGTH:

The section selected for test is established on 1000' of two lane pavement between Station 72+00 and Sta. 82+00

SURFACE:

Type:

Pavement consists of asphaltic plant mix surfacing placed in 1937. Plant mix surfacing was placed in two courses. The first course being approximately 3/4 of the total tonnage used, and consisted of standard 1" maximum aggregates. In the second course, all aggregates passed a 3-mesh sieve. At least one seal coat has been placed on this pavement.

Width:

Average width of paved roadway including paved shoulders is 36 feet. Width of seal coat is 20 feet (two 10' lanes).

ROADWAY STRUCTURE

SURFACE  
(Continued)

Thickness: In three sample locations, pavement thickness varied from 3" to 3-1/2".

BASE:

Type and Thickness: Base material is an imported crusher run gravel 4-1/2" thick.

Soil Classification: A-1-a

SUBBASE:

Type and Thickness: An imported clayey sand and fine gravel varying in thickness in three locations from 7-1/8" to 12-7/8".

Soil Classification: A-2-4

The subbase is underlain by a 4" PCC pavement placed in 1916. The surface of the old concrete was covered with a thin asphaltic coating (1/8"). Slight deviations in the grade of this old pavement were compensated in the above mentioned subbase resulting in the thickness variation of the subbase.

SIDE DITCH  
DRAINAGE:

The section is located in essentially an "in grade" roadway section. Longitudinal grade line through the section is level. On the left of and parallel to the roadway

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE  
(Continued)

approximately 70' from the centerline, is a Southern Pacific rail line. Between the railway and the edge of roadway shoulder, an area averaging 30 feet in width and two feet below centerline elevation carries runoff in both directions from the vicinity of Station 77+00.

Runoff on the right of roadway is carried parallel to the roadway in both directions from the vicinity of Station 77+00 by a well defined side ditch averaging 2 feet in depth. There are no culverts within the limits of the section.

ROADWAY CONDITION

SPECIAL CONDITIONS:

(1) Areas of  
Alligator  
Cracking:

There are no areas of alligator cracking in the section. However, there are areas which are better described as "block cracking". These areas are shown graphically on the plan diagram and are listed below for convenience:

Left Lane:

Station to	Station	Width	Comment
72+00	72+34	4.0'	Severe
73+44	73+55	3.5'	Not Severe
77+94	78+25	2.3'	Not Severe
81+78	81+88	1.0'	Not Severe

ROADWAY CONDITION

SPECIAL CONDITIONS:

- (1) Areas of Alligator Cracking: (Continued)
 

Right Lane:			
	Station to Station	Width	Comment
	72+42      72+93	4.0'	Not Severe
	73+16      73+31	3.5'	Not Severe
	73+48      74+00	3.5'	Not Severe
  
- (2) Areas of Raveling
 

There are no areas of appreciable raveling in the test section.
  
- (3) Areas of Shoving or Creeping:
 

There are no areas of shoving or creeping within the traveled way of this section.
  
- (4) Patches:
 

Within the limits of the section there is only one patch. It is located 8' right of the centerline between Sta. 79+19 and Sta. 79+27 and is 1-1/2 feet wide.
  
- (5) Roadway Section:
 

Roadway of the section is a "grade" section. Agricultural lane on right is generally slightly above roadway and agricultural land beyond the railroad on the left is generally slightly below roadway. This condition conforms to a very gentle slope toward the Salinas River two or three miles west (left).
  
- (6) Shoulders:
 

Asphaltic mix shoulders are 8' wide on both sides of the traveled way. Due partly to the width of shoulders and partly to the nature of traffic, trucks frequently ride

ROADWAY CONDITION

SPECIAL CONDITIONS:

(6) Shoulders: entirely out on the shoulders. This  
(Continued) practice has resulted in a marked  
deterioration of the shoulder pavement,  
particularly on the right.

ROUGHNESS MEASUREMENTS:

Bench Marks and Levels: Bench marks were established by the field  
crew near the ends of the section as  
follows:

<u>B.M. No.</u>	<u>Station</u>	<u>Location</u>	<u>Elevation</u>
1	69+85	41' rt. in culvert headwall	150.000 (Assumed)
2	82+90	25.5' left of culvert headwall	148.519

Permanent reference points were set into  
the pavement in three longitudinal lines;  
one on centerline, and one on each shoulder  
12.0' from centerline.

Profilograph  
Records:

Transverse: The permanent reference points for levels  
also serve as permanent markers for trans-  
verse profiles of the pavement surface.  
Using the machine developed for this purpose,  
transverse profilograph records of the  
traveled way surface in each lane, were made

ROADWAY CONDITION

ROUGHNESS MEASUREMENTS:

Profilograph  
Records:

Transverse: at 20 foot longitudinal intervals throughout  
(Continued) the section.

Longitudinal: By means of the profilograph, records were  
made of the longitudinal profiles in each  
lane of the traveled way. In the right  
lane the profile was recorded 48" left of  
the right pin line, and in the left lane  
36" right of the left pin line.

All profilograph records have been labeled  
and are on file at the Materials and  
Research Department for future use.

Loadometer Sta. No. 24

V-Mon-2-C



Ahead on Line from Sta.

72+00



Cracks on Right Sta.

72+60



Transverse Crack in Right  
Lane. Station 72+64



Edge Crack and Transverse  
Cracks on Rt. shoulder

Station 73+70

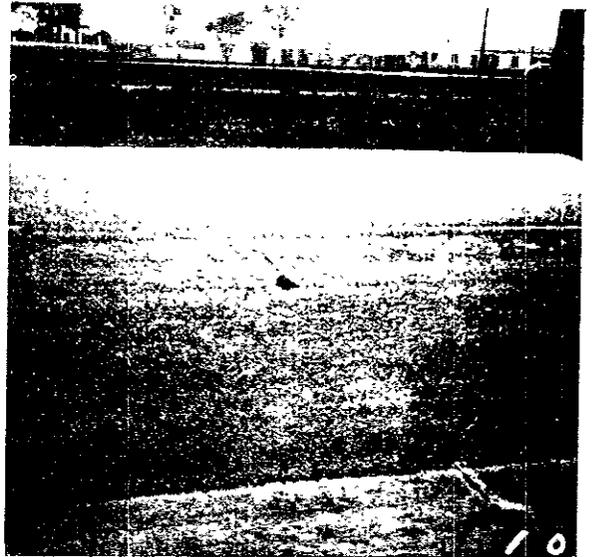
Loadometer Sta. No. 24

V-Mon-2-C



Unstable Area Right

Sta. 77+50 to Sta. 77+80



Transverse Crack

Station 80+46



Edge Crack Right Lane

Sta. 81+30 to Sta. 81+80



Back on Line from

Station 81+25

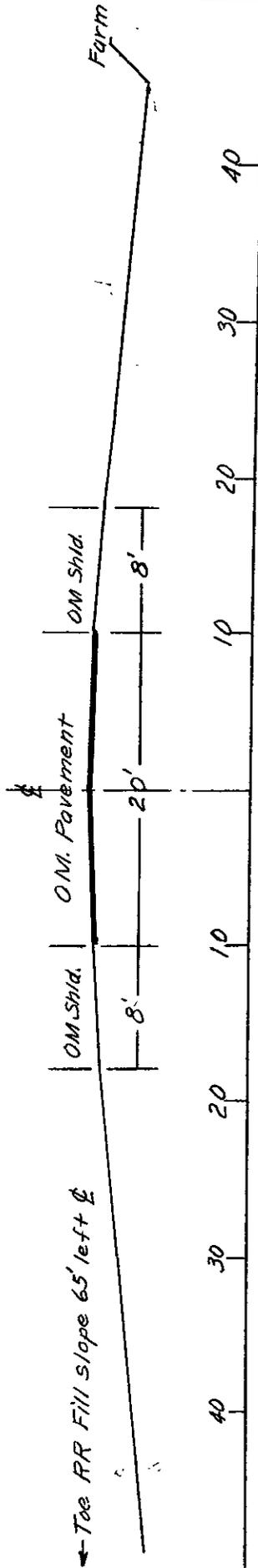
State of California, Div. of Highways  
 Materials & Research Department  
 Research No. 00258, W.O. No. 13NN26

Loadometer Station No. CF-24  
V-Mon-2-0

R O A D W A Y C O N D I T I O N S U R V E Y

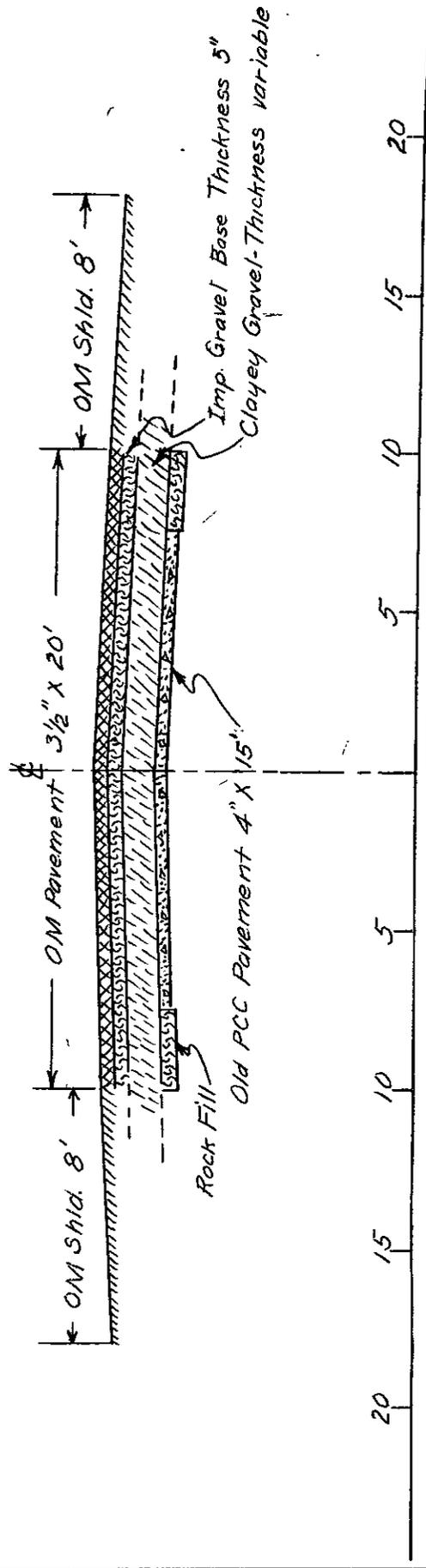
Scale: 1" = 10'

TYPICAL ROADWAY SECTION

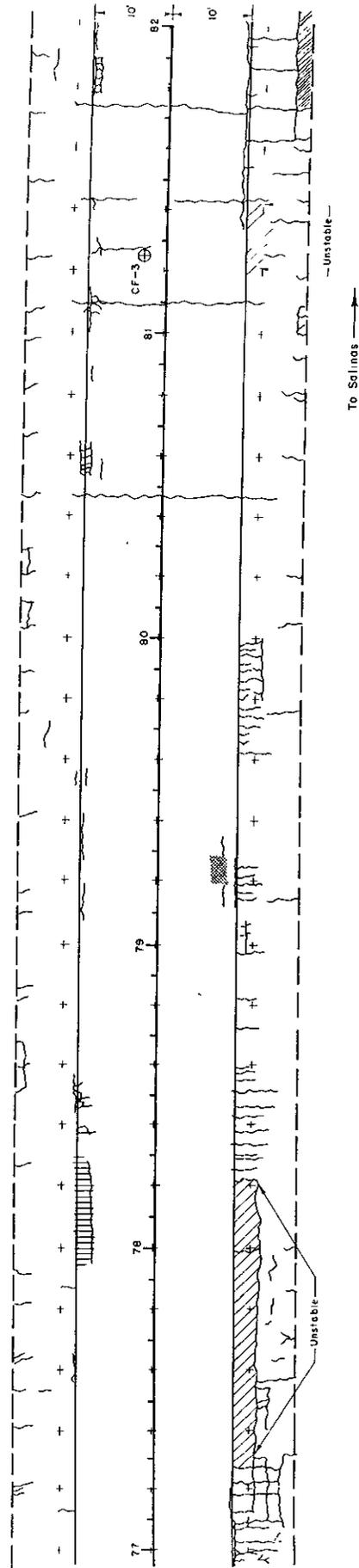
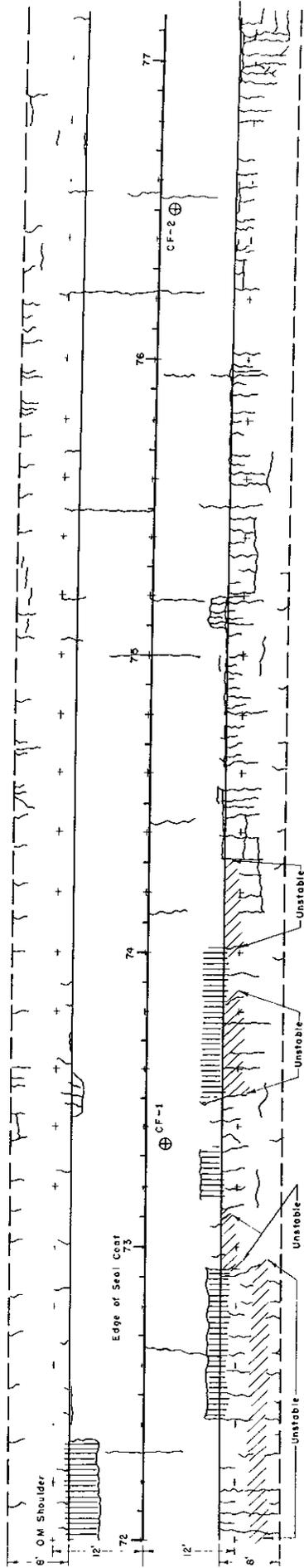


Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION



← To King City



### PAVEMENT LOCATION AND CONDITION CHART

#### LEGEND

-  Alligator Cracking
-  Location of Sample Hole
-  Failure
-  Block Cracking
-  Shoving
-  Patch

+ Location of Permanent Reference Points

TEST RESULTS SUMMARY

Load. Sta. No. 24  
V-Mon-2-C

Line	Sample No.		Sample Hole Location		Pavement		Soil Samples	
	Field	Lab.	Station	Position	Type	Thick-ness	Depth below Btm. Pav't.	Layer Des-cription
1	CF-1-A	52-4405	73+34	2.5' right of centerline	OM	3-1/2"	0 - 4-1/2"	Base
2	CF-1-B	52-4406	73+34	same	OM	3-1/2"	4 1/2" - 12 1/2"	Subbase
3	CF-2-A	52-4407	76+50	2' right of centerline	OM	3-1/2"	0 - 4-1/2"	Base
4	CF-2-B	52-4408	76+50	same	OM	3-1/2"	4 1/2" - 17 1/4"	Subbase
5	CF-3-A	52-4409	81+25	2.8' left of centerline	OM	3"	0 - 5"	Base
6	CF-3-B	52-4410	81+25	same	OM	3"	5" - 12"	Subbase
7	CF-3-C	52-4411	81+25	same	OM	3"	12" - 21"	Subbase

Line	In Place Test Data			Lab. Test Data		HRB Soil	Specific Gravity	
	Moist.	Density	% Rel. Comp.	Optimum Moisture	Maximum Density	Classification	Pass. 4	Ret. 4
1	3	145	101	7	144	A-2-a	2.77	2.78
2	5	129	95	8	132	A-2-4	2.61	
3	No	Tests				A-2-a	2.77	2.79
4	5	134	99	8	136	A-2-4	2.62	
5	3	146	101	8	144	A-1-a	2.80	2.78
6	4	126	94	7	134	A-2-4	2.63	
7	5	137	102	8	134	A-1-b	2.62	

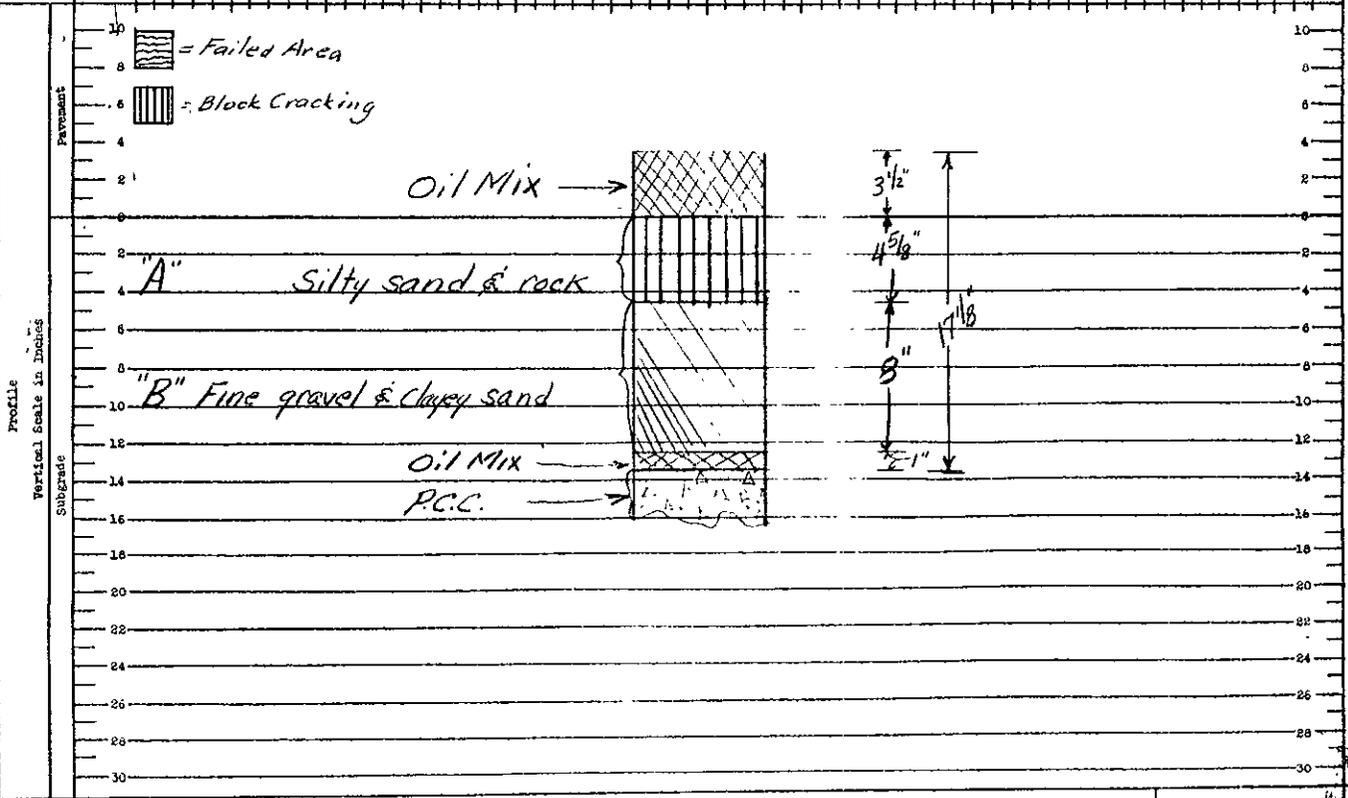
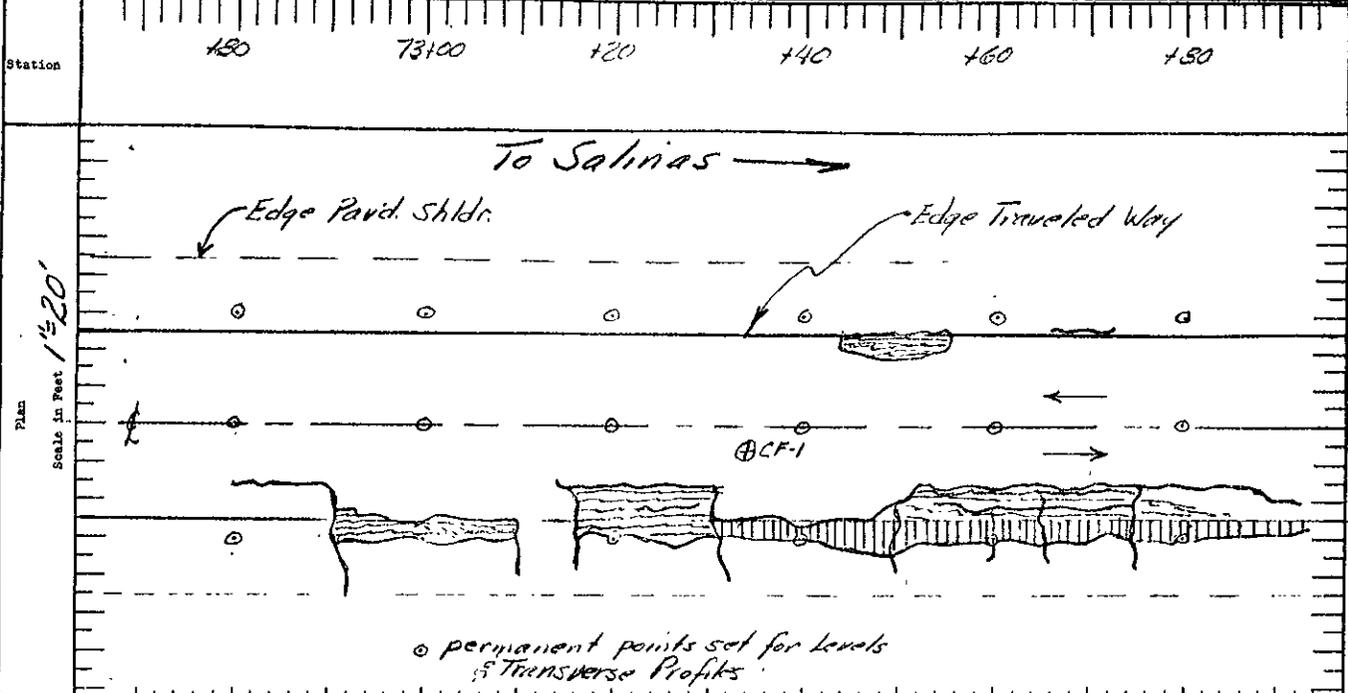
Line	Sieve Analysis - Percent Passing										Atterberg Limits	
	2"	3/4"	4	8	16	30	50	200	270	5M	LL	PL
1	100	85	58	49	39	31	25	14	12	3	N	P
2		100	99	89	73	57	46	30	28	11	20	16
3	98	82	56	47	38	29	22	12	11	5	N	P
4		100	97	89	74	58	46	38	26	10	20	16
5	100	84	54	45	34	27	21	12	11	5	N	P
6		100	98	93	76	60	47	26	24	10	19	17
7		100	97	88	71	54	41	22	19	9	N	P

LOCATION AND PROFILE SKETCH

ROADWAY FACILITY INVESTIGATION

RESEARCH NO. 6844 C.O. 2025

Dist. <i>V</i> Co. <i>Mon</i> Sta. <i>2</i>	Sec. <i>C</i>	Contract No.	Date of Constr. <i>1916-1937</i>	Test Hole No. <i>CF-1</i>
Fill <i>Grade</i>	Approx. height	Dist. from End of Fill	No. of Lanes <i>TWC</i>	Traffic <i>Heavy</i>
Out	Approx. Depth	Dist. from End of Out	Side Ditches <i>RF-Throughout</i>	Depth <i>20"</i>
Roadside Use, left <i>P.R. R/W</i>		Right <i>Agricultural</i>	Grade <i>0%</i>	Up



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

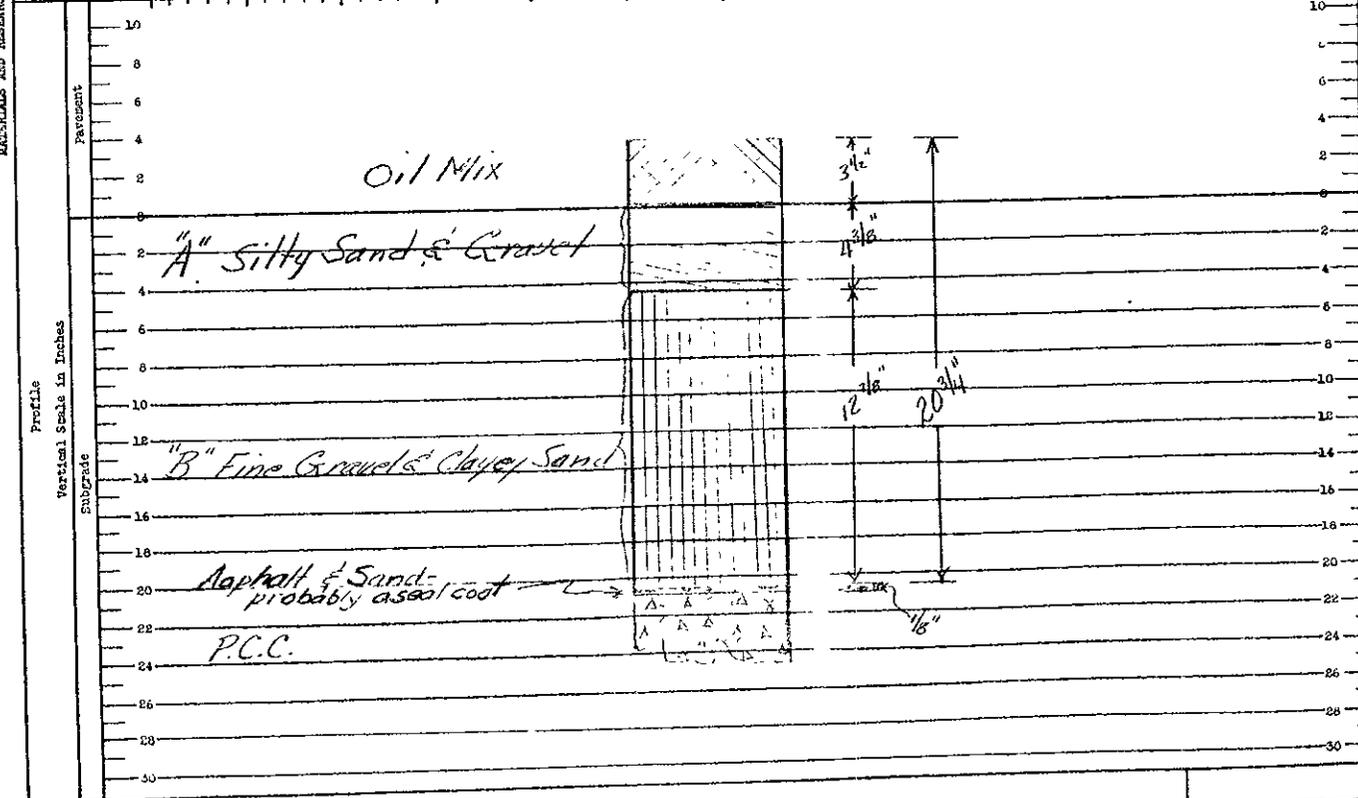
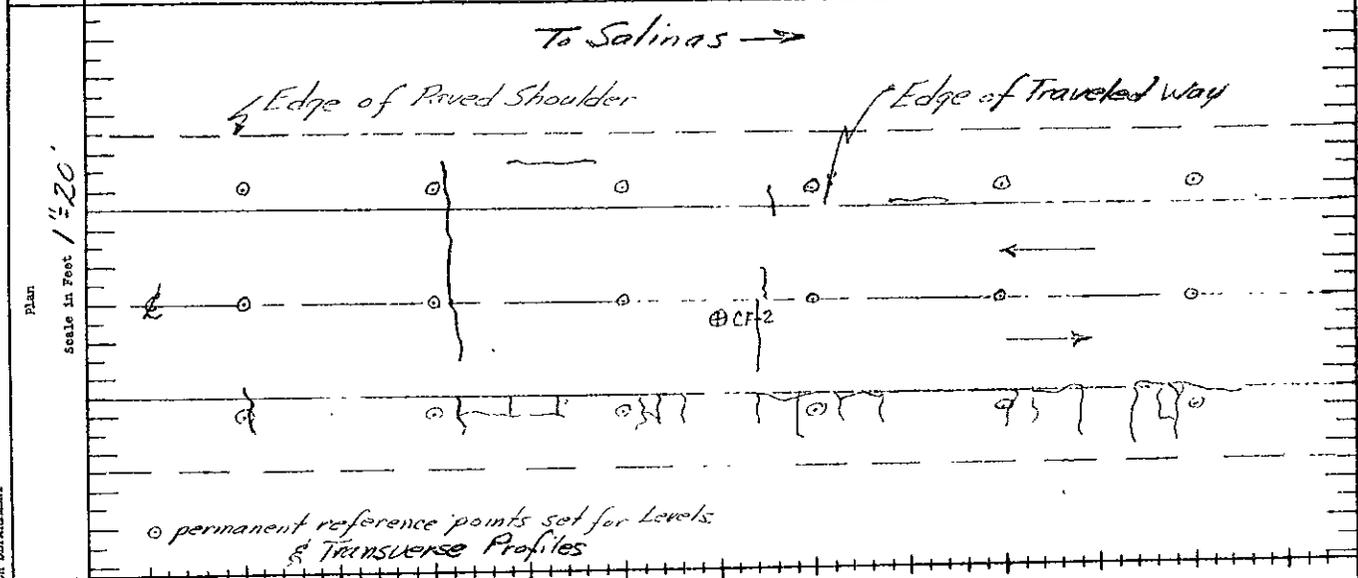
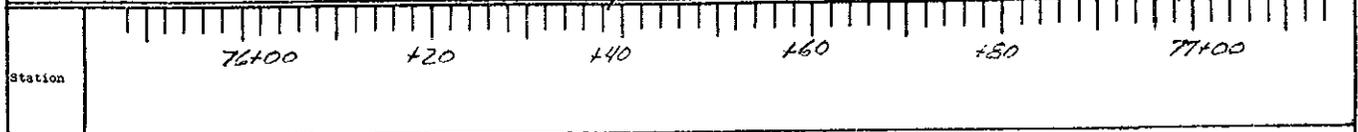
Party: *Chawson Smith*  
Drawn By: *Smith*

LOCATION AND PROFILE SKETCH

CONCRETE PAVEMENT INVESTIGATION

RESEARCH NO. 4774-00258

Dist. <i>V</i> Co. <i>Mon</i> Rte. <i>2</i>	Sec. <i>C</i>	Contract No. <i>—</i>	Date of Constr. <i>1916-1937</i>	Test Hole No. <i>CF-2</i>
Fill <i>Grade</i>	Approx. Height <i>—</i>	Dist. from End of Fill <i>—</i>	No. of Lanes <i>TWO</i>	Traffic <i>Heavy</i>
Cut <i>—</i>	Approx. Depth <i>—</i>	Dist. from End of Cut <i>—</i>	Side Ditches <i>Rt. Throughcut Lt. None</i>	Depth <i>22"</i>
Roadside Use, left <i>R.R. R/W</i>			Right <i>Agricultural</i>	Grade <i>0</i> x Up <i>—</i>



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

Remarks:

Party: *Clawson Smith*

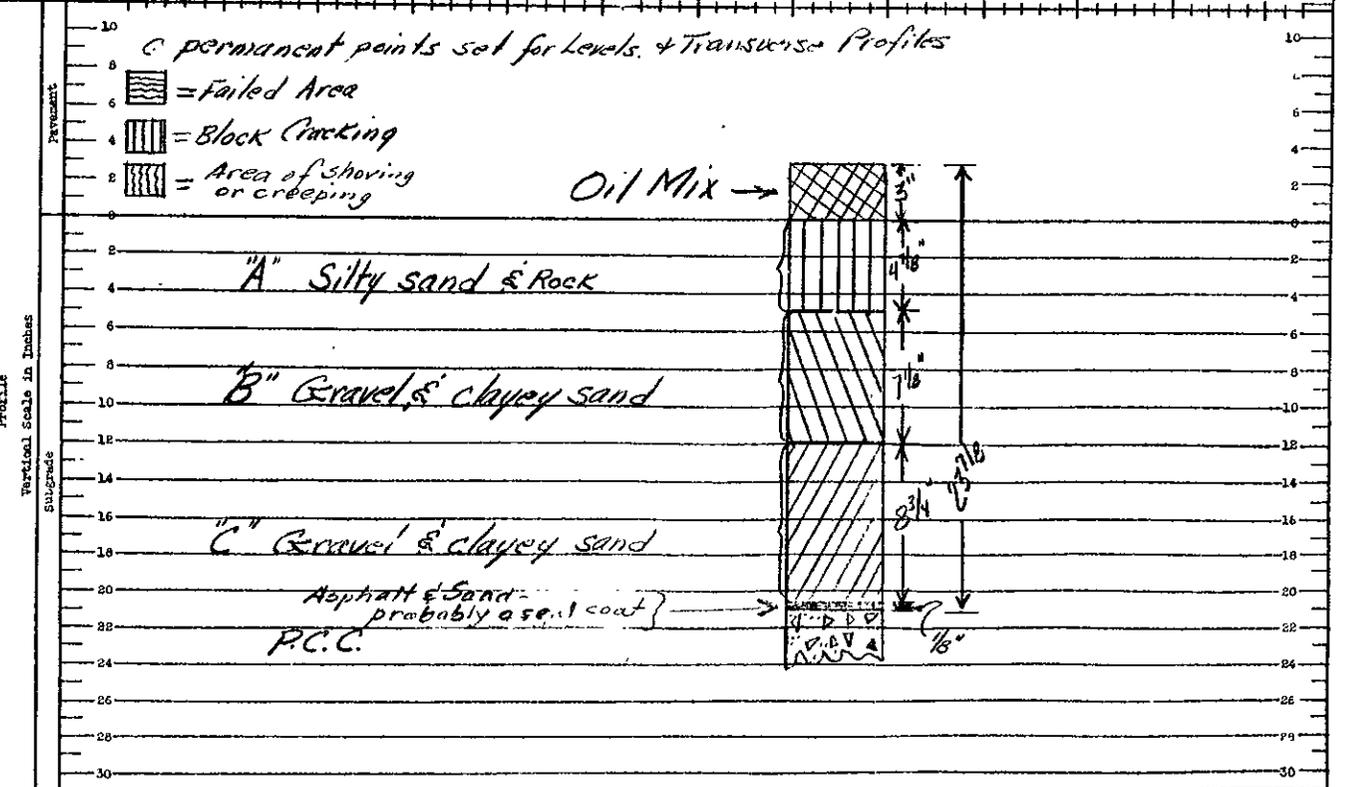
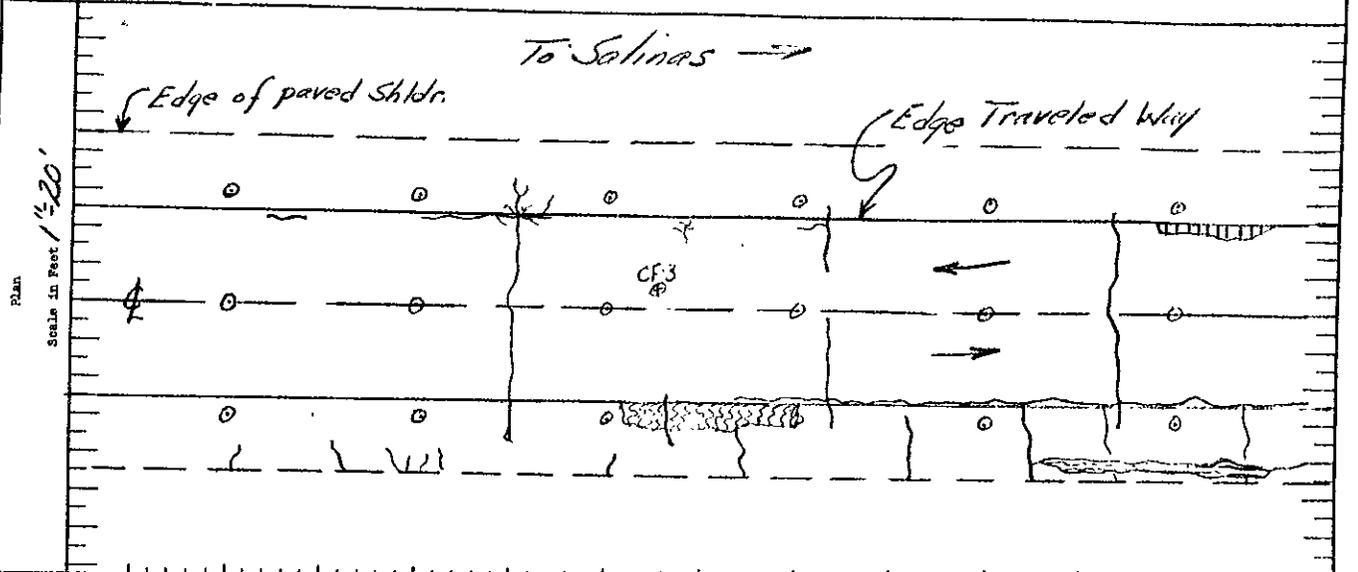
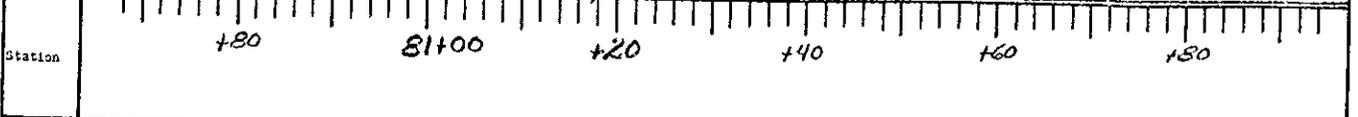
Drawn By: *Smith*

LOCATION AND PROFILE SKETCH

ROADWAY PAVEMENT INVESTIGATION

RESEARCH NO. *00255*

Dist. <i>V</i>	Co. <i>Mon</i>	Sta. <i>2</i>	Sec. <i>C</i>	Contract No.	Date of Constr. <i>1916-1937</i>	Test Hole No. <i>CF-3</i>
Fill <i>Grade</i>	Approx. Height	Dist. from End of Fill		No. of Lanes <i>Two</i>	Traffic <i>Heavy</i>	No.
Cut	Approx. Depth	Dist. from End of Cut		Side Ditches <i>cf. Throughout</i>	Depth <i>4.2'</i>	Date of Sampling <i>10-5, 6-52</i>
Roadside Use, Left <i>R.R. R/W</i>		Right <i>Agricultural</i>			Grade <i>0</i>	Up



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

Revised:	Party <i>Clawson Smith</i>
	Drawn By <i>Smith</i>

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 2A  
 Dist. V Co. Mon Rte. 2 Sec. C  
 Loc. Design CF  
 Sta. 72+00 to 77+00  
 Sheet No. 1 of 2

ROADWAY CONDITION SURVEY  
 Drainage Cross-Sections

	Left						Right					
	Top E.P. Shoulder	Side Ditch	Edge of Shoulder	Edge of Shoulder	Part of Edge Seal	Part of Edge Seal	Edge of Shoulder	Break in Slope	Side Ditch	Top of Bank	Field Elev.	
77~	146.3 65.0	146.7 48.0	148.5 24.0	149.25 18.0	149.69 10.0	149.65 10.0	149.21 18.0	149.0 24.0	147.4 42.0	149.4 52.0	149.9 68.0	
76~	146.5 65.0	146.5 48.0	147.9 30.0	149.12 18.0	149.59 10.0	149.67 10.0	149.38 18.0	148.9 25.0	147.0 44.0	149.3 54.3	149.8 68.0	
75~	146.5 65.0	146.5 47.0	148.0 30.0	149.21 18.0	149.66 10.0	149.58 10.0	149.23 18.0	148.8 24.0	147.1 45.0	149.1 54.0	149.2 68.0	
74~	147.2 65.0		148.7 25.0	149.12 18.0	149.55 10.0	149.60 10.0	149.31 18.0	148.9 25.0	147.2 45.0	149.7 50.0	150.0 68.0	
73~	146.6 63.0	146.5 48.0	147.9 30.0	149.16 18.0	149.58 10.0	149.59 10.0	149.34 18.0	148.9 26.0	147.1 45.0	150.2 55.0	150.4 68.0	
72~	146.1 63.0	146.1 49.0	147.7 30.0	149.08 18.0	149.55 10.0	149.54 10.0	149.09 18.0	148.8 24.0	146.8 45.0	150.5 55.0	150.4 68.0	

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 2A  
 Dist. V Co. Mon Rte. 2 Sec. C  
 Loc. Design CF  
 Sta. 18100 to 82100  
 Sheet No. 2 of 2

ROADWAY CONDITION SURVEY  
 Drainage Cross-Sections

	Left						Right					
	Top R.R. Fill		Side Ditch	Edge of Shoulder	Part of edge of road	Part of Edge of road	Edge of Road Shoulder	Break in Slope	Side Ditch	Top of Bank	Field Elev.	
82-	146.4 64.0	146.0 45.0	147.6 31.0	147.9 18.0	148.52 10.0	149.65 10.0	149.39 17.5	148.8 24.5	146.7 45.0	150.4 56.0	150.3 68.0	
81-	146.2 63.0	146.1 44.0	148.1 29.0	149.15 18.0	149.55 10.0	149.60 10.0	149.18 18.0	148.8 25.0	146.9 45.0	150.3 53.0	150.1 68.0	
80-	146.1 64.0	146.2 45.0	147.5 32.0	149.15 18.0	149.65 10.0	149.62 10.0	149.23 18.0	148.9 25.0	146.8 45.0	150.1 55.0	149.6 68.0	
79-	146.3 65.0	146.3 47.0	147.1 31.0	149.18 18.0	149.60 10.0	149.60 10.0	149.24 18.0	148.9 24.0	147.0 44.0	150.0 54.0	149.4 68.0	
78-	146.2 64.0	146.3 47.0	148.6 23.0	149.07 18.0	149.51 10.0	149.57 10.0	149.01 18.0	148.8 24.0	146.9 44.0	149.3 57.0	149.8 68.0	

19

Research No. 00258  
W.O. Number 13NN26

Loadometer Station No. 24  
Road V-Mon-2-D

DATA OF SECTION SELECTED FOR TEST

This section is one of two established in connection with  
Loadometer Station No. 24

ROADWAY STRUCTURE

LOCATION: Loadometer station No. 24 is located on the west side of State Highway Route 2 (U.S. 101) approximately 3.5 miles N. of North City Limits of Soledad. There are no major road or highway turnoffs between the Loadometer Station and the section. The section selected for test is located between 1.5 miles S. of the Loadometer Station and approximately 2.0 miles north of the north city limits of Soledad.

LENGTH: The section is located between Station "D" 565+00 and Sta. "D" 575+00, a total length of 1000 feet. Roadway at the section location is a 2-lane highway. The section is established in both lanes.

SURFACE:

Type: Most recent surface is a plant mixed blanket placed in 1952 over old plant mixed surface.

ROADWAY STRUCTURE

SURFACE:

Width:

The traveled way is 25 feet wide. The right lane is 12.0 feet and the left lane is 13.0 feet in width. The total pavement width varies from 37 to 39 feet.

Thickness:

Total thickness of surface found in locations sampled varies from 4-1/4 to 5 inches. Original construction records of 1932 show a minimum of 2-1/2 inches plant mixed surface. Apparently the difference between the original construction and present surface thickness is due to maintenance blankets, the most recent placed in 1952.

BASE:

Type and  
Thickness:

Silty sand and rock varying from 4-1/8 to 5.0 inches. Original construction records of 1932 show 5-1/2 inches of crusher run base.

Soil Clas-  
sification:

A-1-a and A-1-b

SUBBASE:

Type and  
Thickness:

Gravel and clayey sand varying in thickness from 6-3/8 to 11-3/8". According to construction data, this material was used to level out the irregularities in the old grade line.

ROADWAY STRUCTURE

SUBBASE:

Soil Clas-  
sification:

A-2-4

Below the material used as subbase was encountered an old PCC pavement that had an asphalt and sand seal. Construction records show this to be 4" x 15' PCC constructed in 1916.

SIDE DITCH  
DRAINAGE:

The section roadway is in slight fill due to the addition of leveling and base courses. Old PCC pavement surface was in slight cut section.

The section has a level profile grade. There are no clearly defined ditches within the section. Drainage is carried in maintenance bladed gutters from the south to the north at an elevation of from 2' to 2.5' below shoulder point.

There is a double 18" x 62.5' CMP at Sta. 565+64 which carries drainage under the roadway from left to right.

ROADWAY CONDITION:

SPECIAL CONDITIONS:

(1) Areas of  
Alligator  
Cracking:

There are no areas of alligator cracking.

ROADWAY CONDITION:

SPECIAL CONDITIONS:  
(Continued)

(2) Areas of Raveling: There are no areas of raveling.

(3) Areas of Shoving or Creeping: There are several areas, particularly on the right shoulder, that are showing. These areas are shown graphically on the plan diagram and are listed below for convenience.

On the left:

Sta. 573+40 to 574+22 from 0.5' lt. to 2.5' rt. of lt. pin line.

On the right

Sta. 566+80 to 567+20	-	Rt. pin line to 7.0	rt.
" 567+30 to 567+50	-	" " " "	" "
" 567+90 to 568+18	-	" " " "	2.0 rt.
" 568+63 to 568+92	-	" " " "	2.0 "
" 569+20 to 570+50	-	" " " "	3.0 "
" 572+70 to 573+10	-	" " " "	2.0 "

(4) Patches: There are no patched areas within the section.

(5) Roadway Section: The section roadway is in a slight fill. The present surface elevation is from 0.5 to 2.0 feet above the surrounding areas.

(6) Shoulders: There are asphaltic mix shoulders throughout the section, varying in width from 5.5 to 6.5 feet on the left, and from 5.5 to 7.5 feet on the right. The shoulders are in

ROADWAY CONDITION:

SPECIAL CONDITIONS:

(6) Shoulders:  
(Continued)

generally poor condition. Due to the width of the shoulder, and the nature of the traffic, the roadway is frequently driven as a four-lane roadway. This practice has resulted in a marked deterioration of the shoulder pavement.

ROUGHNESS MEASUREMENTS:

Bench Marks  
and Levels:

Bench marks were established by the field crew near the ends of the section.

<u>B.M. No.</u>	<u>Location</u>	<u>Description</u>	<u>Elevation</u>
1	36.6' rt. ⚡ Sta. 565+64	Ramset pin in PCC headway	175.000 (Assumed)
2	24.5' lt. ⚡ Sta. 576+03	Ramset pin in RR spike in power pole	175.603

Permanent reference pins were established in three lines parallel to centerline. One pin line was along the traffic stripe, one pin line was set 12.5' left of the stripe and the third line of pins was set 11.5' right of the stripe.

Profilograph  
Records:

Transverse:

The permanent reference points for levels also serve as permanent markers for transverse profiles of the pavement surface.

ROADWAY CONDITION

ROUGHNESS MEASUREMENTS:

Profilograph  
Records:

Transverse:  
(Continued)

Using the machine developed for this purpose, transverse profilograph records of the traveled way surface in each lane were made at 20 foot longitudinal intervals throughout the section.

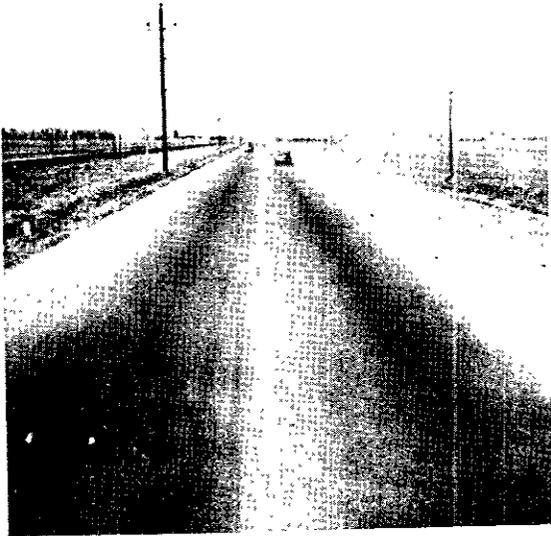
Longitudinal:

By means of the Profilograph, records were made of the longitudinal profiles of each lane of the traveled way surface. Two lines of profiles were covered. In each lane, a line of profiles was run with the recording wheel 30" into the lane from the outer pin line.

All Profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 24

V-Mon-2-D



Ahead on Line from  
Station 565+00



Cracks in Right Shoulder  
Sta. 569+90 to Sta. 570+20



Cracks in Left Shoulder  
Back from Sta. 571+60



Cracks in Right Shoulder  
Sta. 571+50 to Sta. 571+65

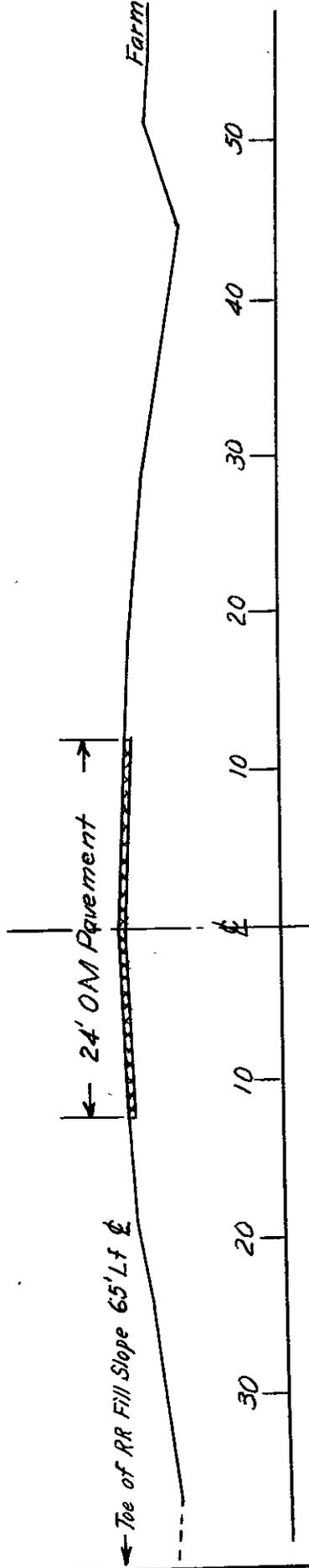
State of California, Div. of Highways  
 Materials & Research Department  
 Research No. 00258, W.O. No. 13NN26

Loadometer Station No. CG 24  
 V-Mon-2-D

ROADWAY CONDITION SURVEY

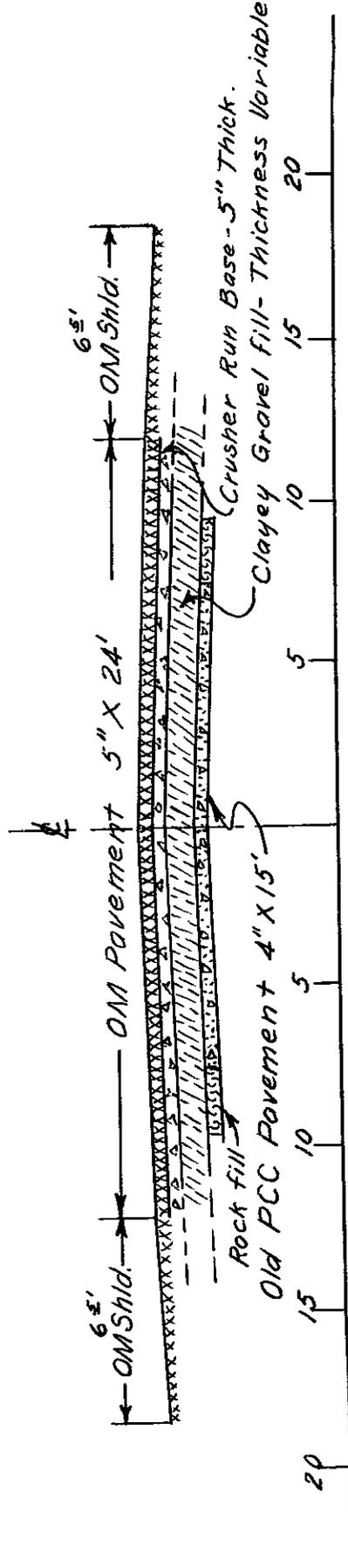
Scale: 1" = 10'

TYPICAL ROADWAY SECTION



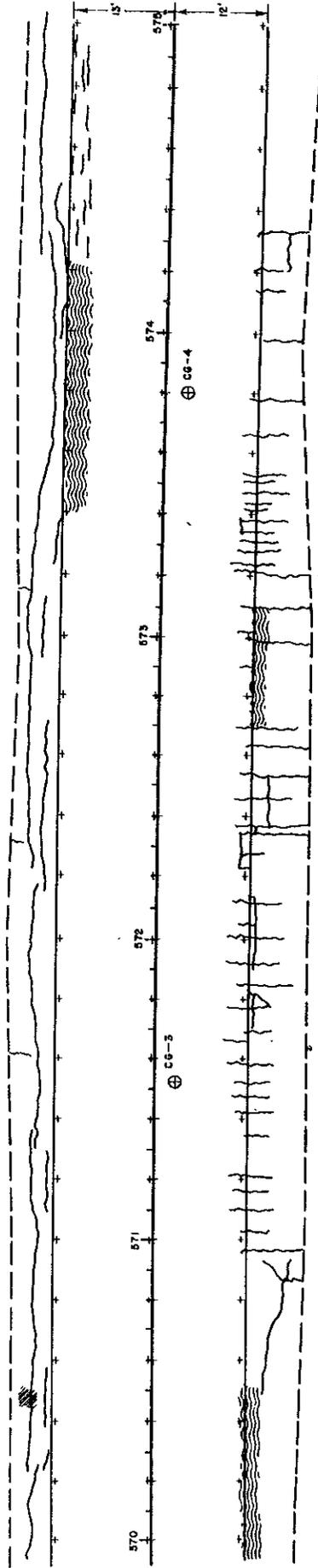
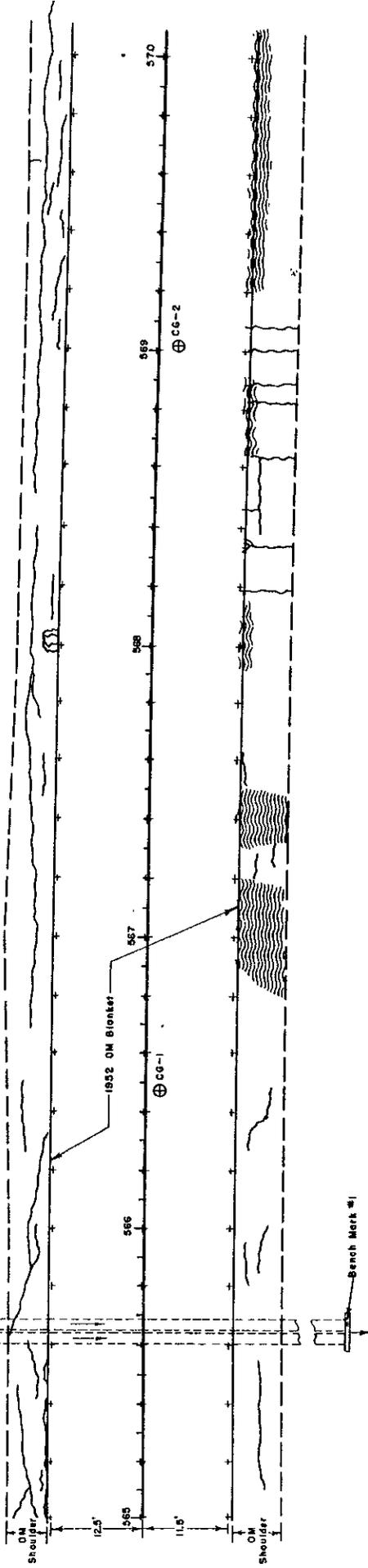
Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION



← To King City

Double 18" X 62.5' CMP



To Salinas →

### PAVEMENT LOCATION AND CONDITION CHART

#### LEGEND

-  Alligator Cracking
-  Failure
-  Location of Sample Hole
-  Block Cracking
-  Shoving
-  Patch

+ Location of Permanent Reference Points

TEST RESULTS SUMMARY

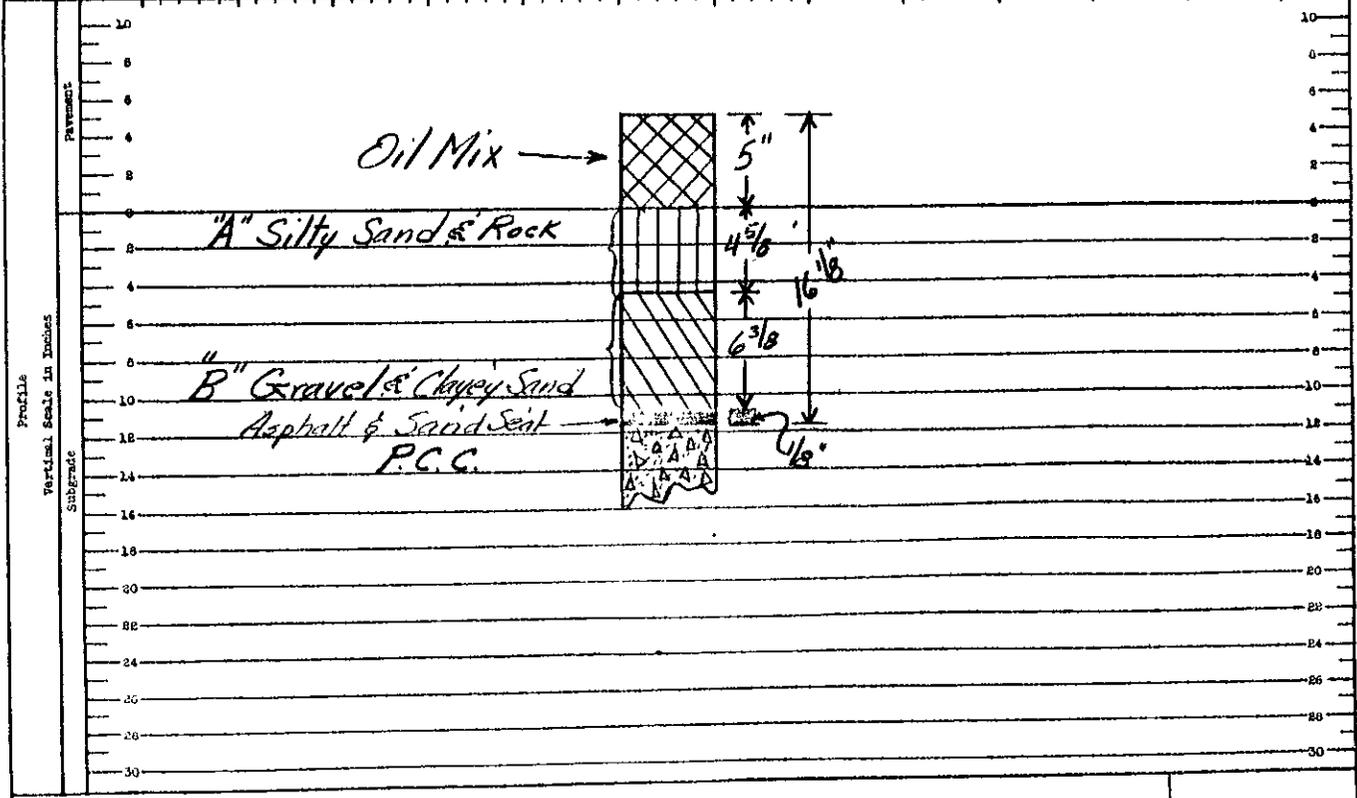
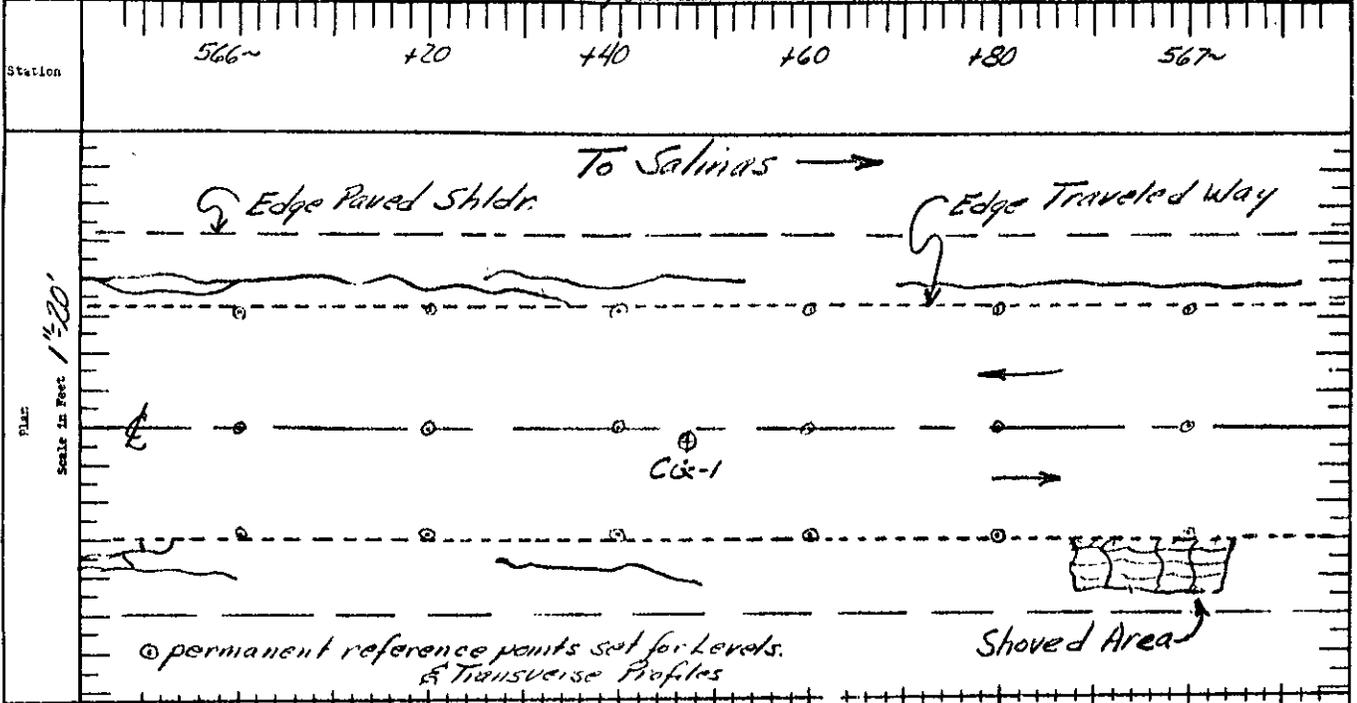
Load Sta. No. 24  
V-Mon-2-D

Line	Sample No.		Sample Hole Location		Pavement		Soil Samples	
	Field	Lab.	Station	Position	Type	Thick-ness	Depth below Btm. Pav't.	Layer Des-cription
1	CG-1-A	52-4412	566+47	2.6' right of centerline	OM	5"	0" - 4.5"	Base
2	CG-1-B	52-4413	566+47	same	OM	5"	4.5" - 11"	Subbase
3	CG-2-A	52-4414	569+02	2.5' right of centerline	OM	5"	0 - 4"	Base
4	CG-2-B	52-4415	569+02	same	OM	5"	4" - 11-1/4"	Subbase
5	CG-3-A	52-4416	571+52	2.5' right of centerline	OM	4-7/8"	0 - 4-5/8"	Base
6	CG-3-B	52-4417	571+52	same	OM	4-7/8"	4-5/8" - 15 1/2"	Subbase
7	CG-4-A	52-4418	573+80	2.8' right of centerline	OM	4-1/4"	0 - 4-1/2"	Base
8	CG-4-B	52-4419	573+80	same	OM	4-1/4"	4 1/8" - 15-3/4"	Subbase

Line	In Place Test Data			Lab. Test Data		HRB Soil	Specific Gravity	
	Moist.	Density	% Rel. Comp.	Optimum Moisture	Maximum Density	Classification	Pass. 4	Ret. 4
1	3	154	106	7	145	A-1-b	2.80	2.78
2	5	142	103	8	137	A-2-4	2.62	
3	3	154	105	8	146	A-1-a	2.80	2.80
4	5	126	91	7	139	A-2-4	2.63	
5	4	149	103	8	144	A-1-a	2.79	2.79
6	5	130	95	7	137	A-2-4	2.62	
7	3	148	103	7	143	A-1-a	2.77	2.79
8	5	128	93	7	131	A-2-4	2.61	

Line	Sieve Analysis - Percent Passing										Atterberg Limits	
	2"	3/4"	4	8	16	30	50	200	270	5M	LL	PL
1	100	90	65	56	44	34	27	16	14	4	N	P
2		100	98	87	70	56	45	21	30	12	22	15
3	100	86	63	55	42	34	27	16	14	4	N	P
4		100	97	83	64	50	41	29	27	11	22	15
5	100	92	63	51	40	32	25	14	13	4	N	P
6		100	97	84	65	51	42	29	28	11	22	16
7	100	74	48	40	31	25	19	11	10	2	N	P
8		100	96	84	63	50	40	28	20	10	21	16

Dist. <u>TK</u>	Co. <u>Man</u>	Rte. <u>2</u>	Sec. <u>D</u>	Contract No. <u>---</u>	Date of Constr. <u>9-16-1957</u>	Test Hole No. <u>CG-1</u>
Fill <u>Grade</u>	Approx. height <u>---</u>	Dist. from End of Fill <u>---</u>	No. of Lanes <u>TWO</u>	Traffic <u>Heavy</u>		
Cut <u>---</u>	Approx. Depth <u>---</u>	Dist. from End of Cut <u>---</u>	Side Ditches <u>None</u>	Depth <u>---</u>	Date of Sampling <u>10-6-52</u>	
Roadside Use, Left <u>R.R. R/W</u>		Right <u>Agricultural</u>			Grade <u>0</u>	Up <u>---</u>



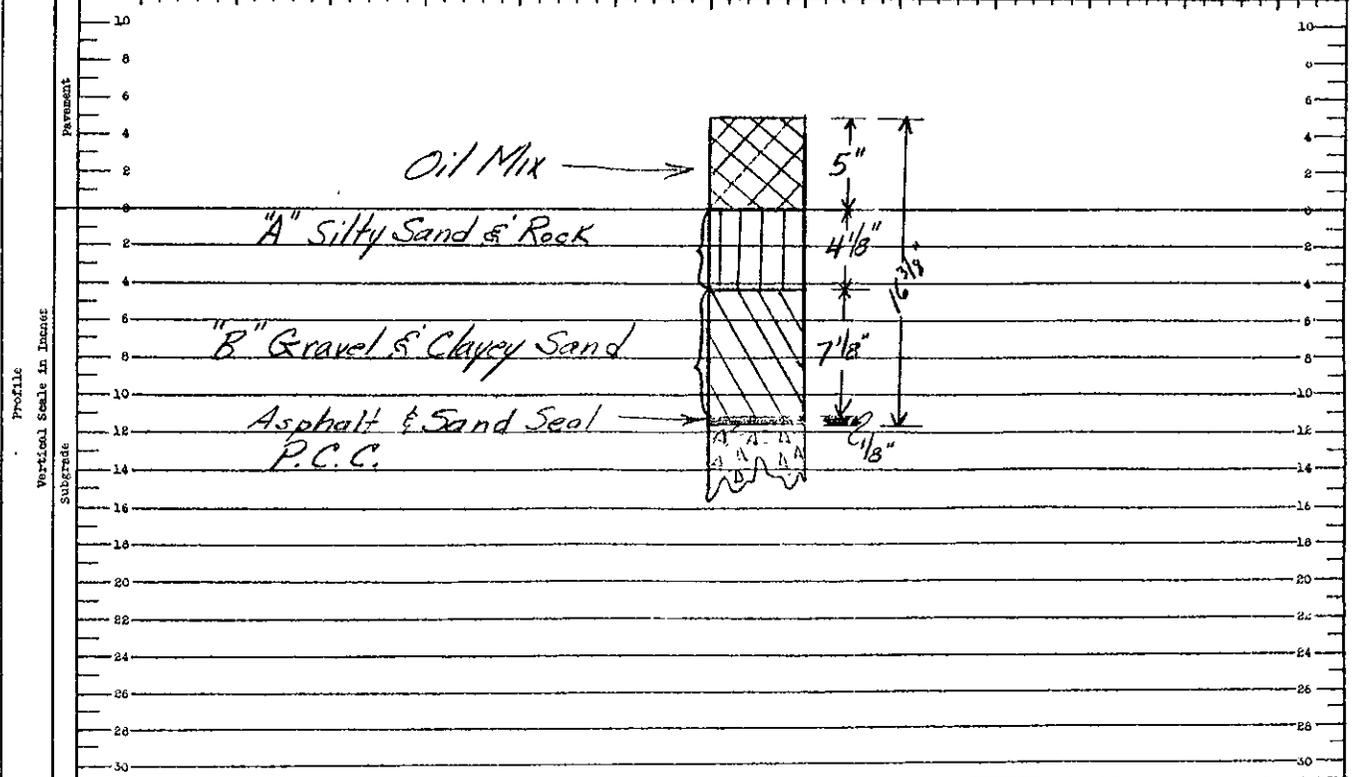
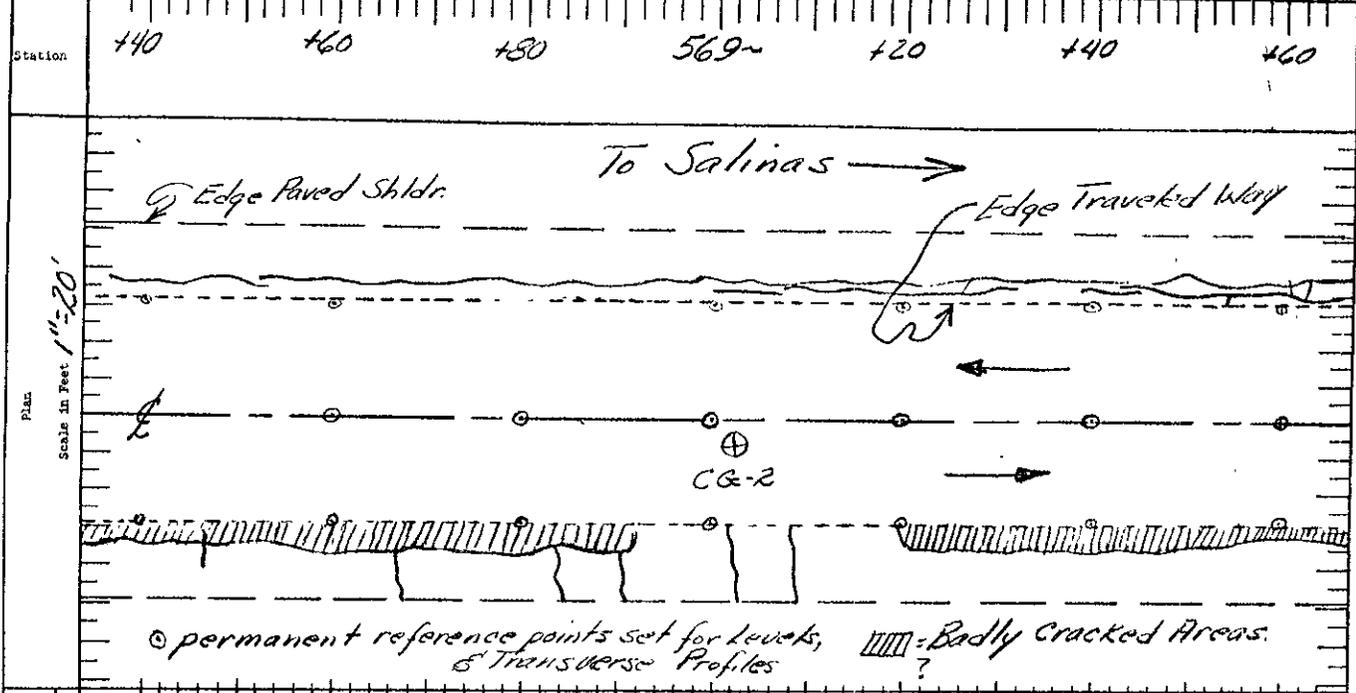
STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

R 1 (5)

Party Smith  
Clawson

Drawn By Smith

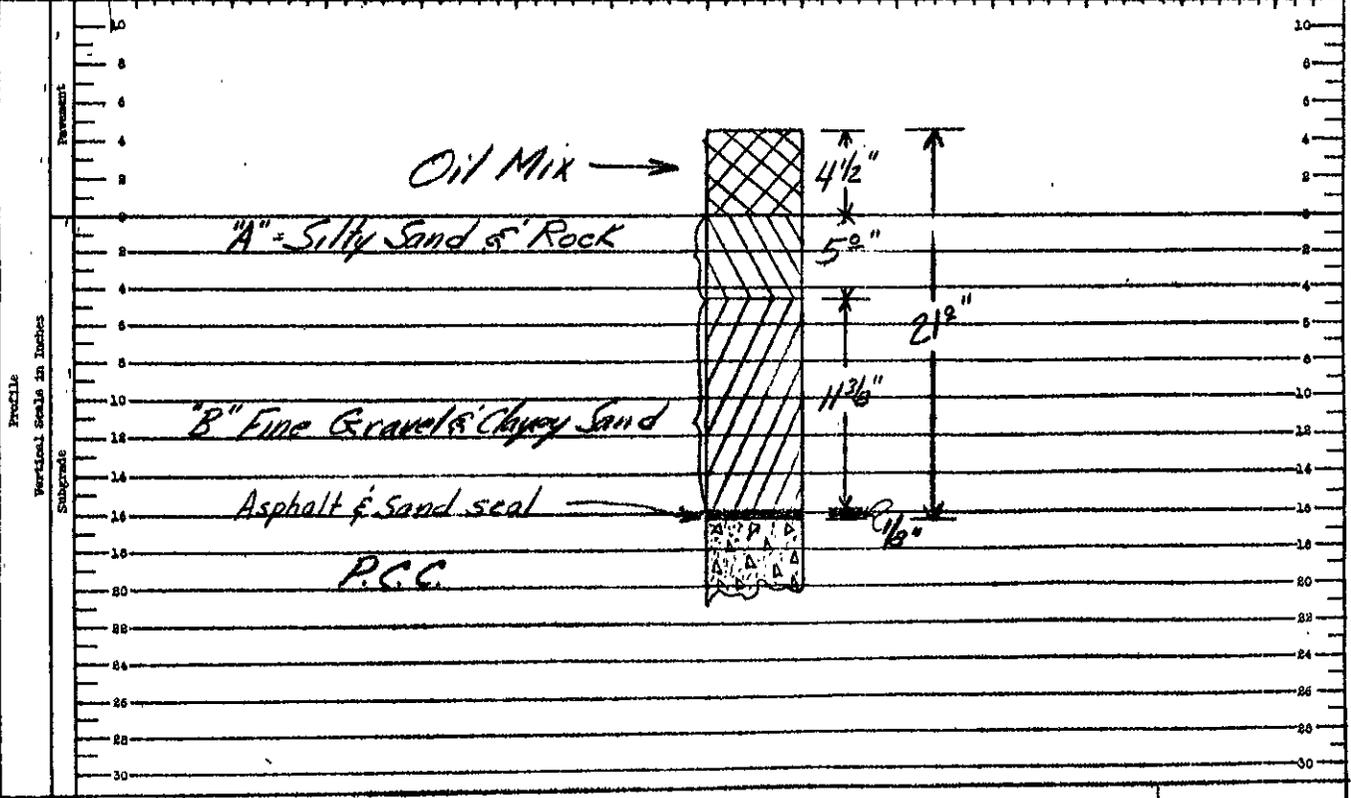
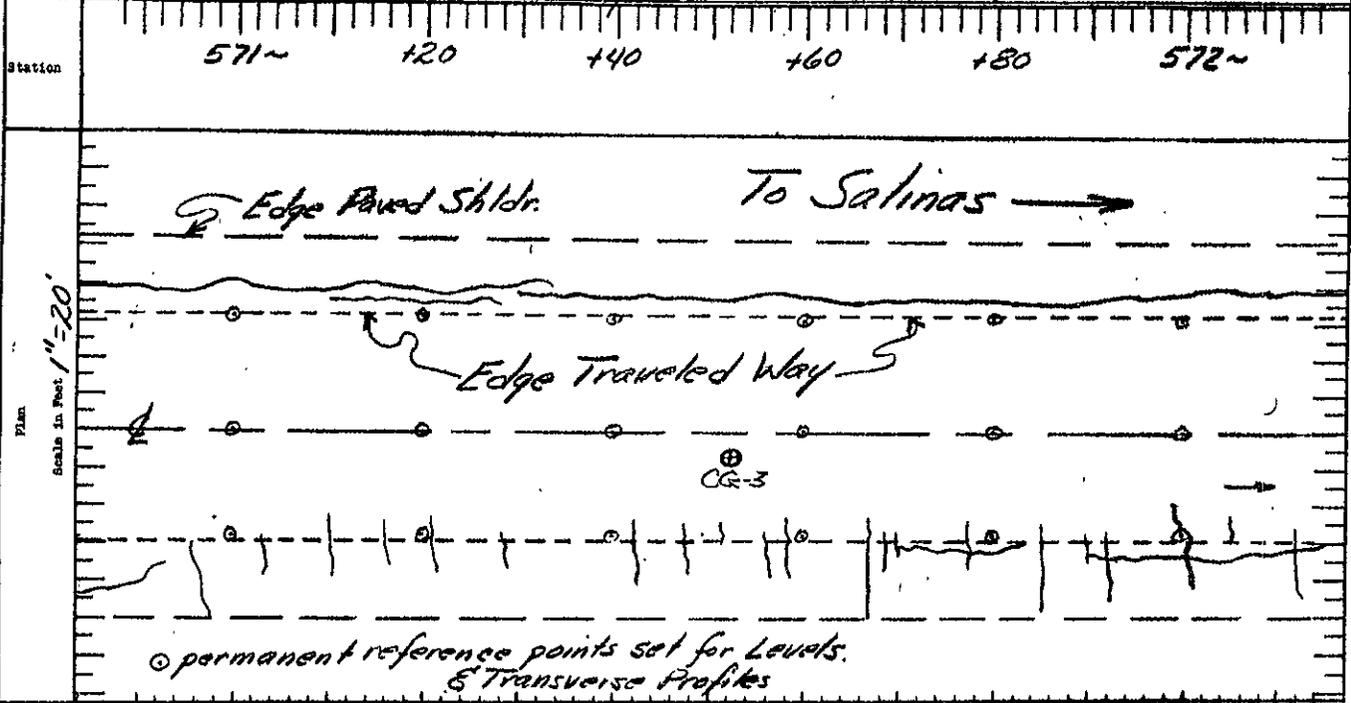
Dist. <u>V</u> Co. <u>Mon</u> Rte. <u>2</u> Sec. <u>0</u>	Contract No. <u>—</u>	Date of Constr. <u>11-1951-1952</u>	Post Hole No. <u>CG-2</u>
Fill <u>Grade</u>	Approx. Height <u>—</u>	Dist. from End of Fill <u>—</u>	No. of Lanes <u>TWO</u>
Cut <u>—</u>	Approx. Depth <u>—</u>	Dist. from End of Cut <u>—</u>	Traffic <u>HEAVY</u>
Roadside Use, left <u>R.R. R/W</u>		Right <u>Agricultural</u>	
Side Ditches <u>None</u>		Depth <u>—</u>	Date of Sampling <u>10-7-52</u>



STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

Party <u>Clawson Smith</u>
Drawn By <u>Smith</u>

Dist. <i>V</i>	Co. <i>Mon</i>	Rte. <i>2</i>	Sec. <i>D</i>	Contract No.	Date of Const. <i>1916-1937-1952</i>	Test Hole No. <i>CG-3</i>
Fill <i>Grade</i>	Approx. Height	Dist. from End of Fill	No. of Lanes <i>TWA</i>	Traffic <i>Heavy</i>		
Out	Approx. Depth	Dist. from End of Cut	Side Ditches <i>None</i>	Depth	Date of Sampling <i>10-9-52</i>	
Roadside Use, left <i>R.R. R/W</i>		Right <i>Agricultural</i>			Grade <i>0 %</i>	Up



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

Remarks:

Party *Smith Clawson*

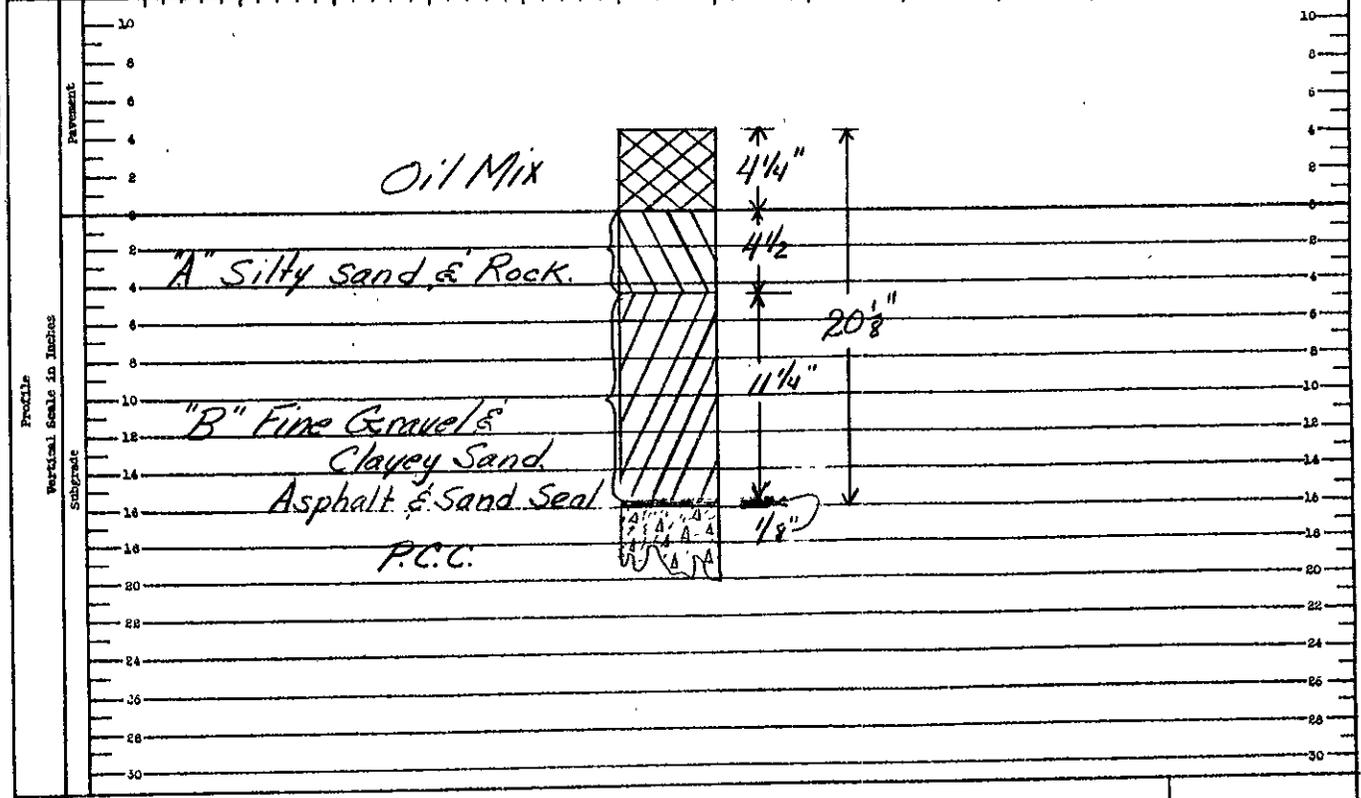
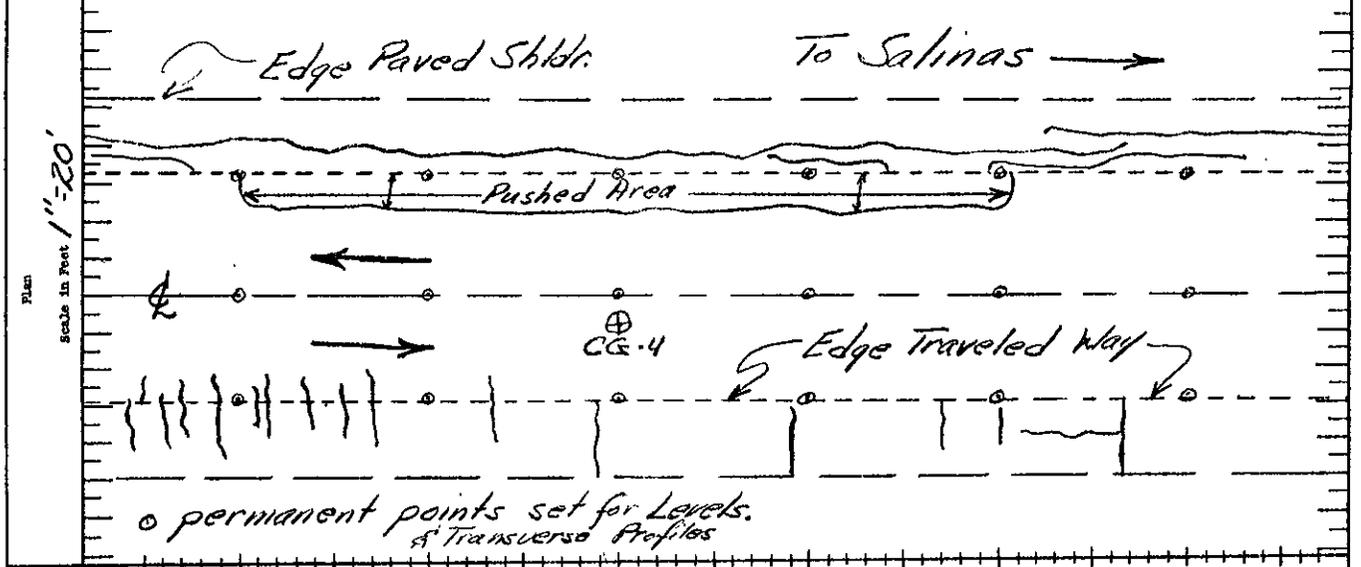
Drawn by *Smith*

LOCATION AND PROFILE SKETCH

CONCRETE PAVEMENT INVESTIGATION

RESEARCH NO. W-00258

Dist. <b>V</b>	Co. <b>Mon</b>	Rte. <b>2</b>	Sec. <b>D</b>	Contract No.	Date of Constr. <b>1/16-1937-1952</b>	Test Hole No. <b>CG-4</b>
Fill <b>Grade</b>	Approx. Height <b>-</b>	Dist. from End of Fill		No. of Lanes <b>TWO</b>	Traffic <b>Heavy</b>	
Out <b>-</b>	Approx. Depth <b>-</b>	Dist. from End of Cut		Side Ditches <b>None</b>	Depth <b>-</b>	Date of Sampling <b>10/8-9/52</b>
Roadside Use, Left <b>R.P. R/W</b>		Right <b>Agricultural</b>			Grade <b>0</b>	Up <b>-</b>



Remarks:

Party **Clawson Smith**

Drawn by **Smith**

STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 24  
 Dist. V Co. Mon Rte. 2 Sec. D  
 Loc. Design CG  
 Sta. 565+00 to 569+00  
 Sheet No. 1 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

	Left						Right						
	Top of R.R. Fill	Ditch	Edge of Road Shldr.	Paved Shldr. at Edge of Blanket	Pav't at Edge of Blanket	Pav't at Edge of Blanket	Paved Shldr. at Edge of Blanket	Edge of Paved Shldr.	Dirt Shldr.	Ditch	Top of Bank	Field Elev.	
569~	175.1 65.5	173.6 45.5	174.0 29.5	175.33 18.5	175.67 12.9	175.73 12.7	175.65 12.0	175.57 12.8	175.23 18.5	174.3 28.5	172.1 45.5	174.4 51.5	173.7 68.5
568~	175.8 58.5	174.2 29.5	175.39 18.5	175.11 12.4	175.77 12.7	175.71 11.9	175.65 12.1	175.26 18.5	174.5 27.5	172.0 45.5	174.4 53.5	173.7 67.5	
567~	175.6 64.5	174.8 28.5	175.44 19.5	175.79 13.1	175.86 12.4	175.83 11.8	175.77 12.0	175.38 18.5	174.2 30.5	172.0 44.5	174.0 52.5	173.6 68.5	
566~	175.4 42.5	173.9 28.5	175.37 18.5	175.79 12.9	175.87 12.7	175.69 12.0	175.63 12.2	175.30 18.5	174.6 30.5	172.3 45.5	172.6 52.5	174.0 67.5	
+64.	Double 18" C.M.P. Concrete Headwalls						Right & Left						
	Flow line 172.3 26.0						Flow line 172.2 36.5						
565~	175.0 44.5	173.9 27.5	175.27 18.5	175.71 12.7	175.78 12.5	175.71 12.0	175.64 12.2	175.28 18.5	174.5 29.5	172.5 45.5	174.6 52.5	174.4 67.5	

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 24  
 Dist. V Co. Mon Rte. 2 Sec. D  
 Loc. Design CG  
 Sta. 570100 to 575100  
 Sheet No. 2 of 2

Drainage Cross Sections  
 ROADWAY CONDITION SURVEY

	Left						Right					
	Toe of RR Fill	Ditch	Edge of Pavd Shldr.	Pavd Shldr. at edge of Blanket	Pay 7 of edge of Blanket	Pay 7 of edge of Blanket	Pavd Shldr. at edge of Blanket	Edge of Pavd Shldr.	Dirt Shldr.	Ditch	Top of Bank	Field Elev.
575-	174.4 64.5	172.5 36.5	174.49 19.0	175.33 13.0	175.38 12.8	175.41 11.9	175.37 12.1	175.12 19.0	174.2 28.5	171.5 45.5	174.0 51.5	172.6 68.5
574-	174.8 64.5	172.6 37.5	174.84 14.5	175.28 13.1	175.33 12.4	175.47 11.9	175.37 12.1	175.2 17.5	174.1 29.5	171.6 45.5	173.5 51.5	172.9 68.5
573-	174.8 64.5	172.3 34.5	174.89 18.5	175.31 12.4	175.36 12.7	175.47 11.7	175.36 12.1	175.02 19.5	174.2 29.5	171.8 44.5	174.0 51.0	172.2 69.5
572-	174.8 63.5	172.6 38.5	174.88 14.5	175.41 13.0	175.47 12.8	175.44 12.1	175.36 12.3	175.07 19.5	174.3 30.5	172.1 44.5	173.5 50.5	173.4 68.5
571-	174.5 68.5	172.5 37.5	174.84 18.5	175.48 12.4	175.52 12.7	175.61 12.0	175.53 12.2	175.31 19.5	174.4 28.5	172.0 45.5	174.3 57.5	173.7 71.5
570-	174.2 62.5	172.7 37.5	174.2 24.5	175.26 18.5	175.60 12.8	175.67 12.6	175.72 12.0	175.64 12.3	174.2 18.5	172.1 29.5	174.3 50.5	173.7 68.5

20

Research No. 00258  
Work Order No. 13NN26

Loadometer Station No. 50  
Road VI-Ker-4-D

### DATA OF SECTION SELECTED FOR TEST

This section is one of two established in connection with Loadometer Station No. 50.

### ROADWAY STRUCTURE

#### LOCATIONS:

Loadometer Pit on Road VI-Ker-4-D is located 0.3 mile north of the junction State Highway Route 4 (Bakersfield to Tulare) and State Highway Route 129 (Bakersfield to Porterville) toward Tulare.

There are no major road or highway turnoffs between the pit and the section.

The section selected for test is located 0.2 miles north of Loadometer Station No. 50 towards Tulare.

#### LENGTH:

The section is located between Sta. "D" 290+00 to Sta. "D" 300+00, a total length of 1000 feet. Roadway at the section location is a 4-lane divided highway. The section is located in the left (southbound) traffic lanes.

#### SURFACE:

Type: Oil mix surfacing with a fairly recent seal coat.

Width: Present traveled way, sealed area, is two 11 ft. lanes for a total width of 22 feet. The total paved width varies from 33 to 36 feet.

It should be noted that the seal does not extend to the edges of the most recent blanket.

Loadometer Station No. 50  
Road VI-Ker-4-D

ROADWAY STRUCTURE

SURFACE:

Thickness: The thickness of the oil mix surfacing varies from 3-1/4 to 3-3/4 inches.

BASE:

Type and Thickness: Silty, clayey sand and gravel. District forces state the material was treated with 1% cement. Thickness varied from 5-3/4 to 6-1/4 inches in the two locations sampled.

Soil Classification: A-1-b

SUBBASE:

Type and Thickness: Old oil mix pavement varying in thickness from 4-1/2 to 4-3/4 inches. Placed as a contact blanket on old P.C.C. pavement varying in thickness from 4-3/8 to 5 inches.

Construction dates on the old pavements are unknown.

Silty, clayey sand and some fine gravel. In the two locations sampled, the thickness varied from 7-5/8 to 7-3/4 inches.

Soil Classification: A-4

BASEMENT:

Type and Thickness: Silty, clayey sand and a little fine gravel. At two locations, thickness sampled varied

Loadometer Station No. 50  
Road VI-Ker-4-D

ROADWAY STRUCTURE

BASEMENT:

Type and  
Thickness :  
(Continued)

from 6-3/4 to 7-1/4 inches.

Soil Clas-  
sification:

A-6 and A-7-6

SIDE DITCH  
DRAINAGE:

The section roadway is in a slight fill, approximate height 1 ft. and has a profile grade of -0.25%.

There are no culverts or bridges within the section. Drainage within the section is from the south to the north. There are no definite ditches within the section. On the left, drainage is carried along the toe of the RR fill, 48.0 ft. left of and 3.0 ft. lower than, the centerline of the section pavement. On the right, drainage is along the centerline of the division strip between left and right lanes 33.0 ft. right of and 1.5 ft. lower than centerline of the section pavement.

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

(1) Areas of  
Alligator  
Cracking:

There are no areas of alligator cracking within the section.

Loadometer Station No. 50  
Road VI-Ker-4-D

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (2) Areas of Raveling: There are no areas of raveling within the section.
- (3) Areas of Shoving or Creeping: There are no areas of shoving or creeping within the section.
- (4) Patches: There are no patched areas in the section.
- (5) Roadway Section: The section is in a slight fill. The pavement surface is approximately 1.0' above the surrounding area.
- (6) Shoulders: There are asphaltic mix shoulders throughout the section. On the left of centerline, the shoulder is 6.0 feet in width and on the right the shoulder width varies from 2.0' to 5.0'. On the right, from the vicinity of Sta. 298+00 to the end of the section, the shoulder is in a poor condition. At all other locations within the section, the shoulders are in generally fair condition.

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:

Bench marks were established by the field crew near the ends of the section.

Loadometer Station No. 50  
Road VI-Ker-4-D

ROADWAY STRUCTURE

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:  
(Continued)

B.M. No.	Location	Description	Elevation
1	44' rt. of & lt. lanes Sta. 289+65	Ramset pin in PCC headwall	430.000 (Assumed)
2	45' rt. of & left lanes Sta. 302+04	Ramset pin in PCC headwall	426.185

Permanent reference pins were established in 3 lines parallel to centerline. One pin line was set along the traffic stripe, one pin line was set 12' left of the stripe, 1.0' outside the edge of seal. The third line of pins was set 12' rt. of the traffic stripe, 1.0' outside the edge of seal.

Profilograph  
Records:

Transverse: The permanent reference points for levels also serve as permanent markers for transverse profiles of the pavement surface. Using the machine developed for this purpose, transverse profilograph records of the traveled way surface in each lane were made at 20' longitudinal intervals throughout the section.

Loadometer Station No. 50  
Road VI-Ker-4-D

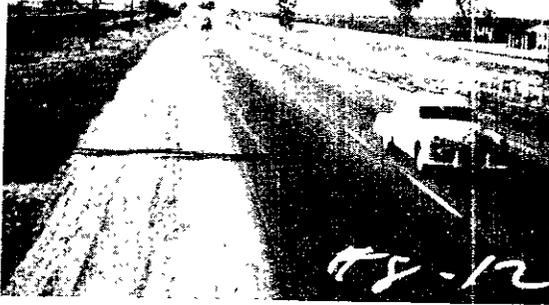
ROADWAY STRUCTURE

Profilograph  
Records:

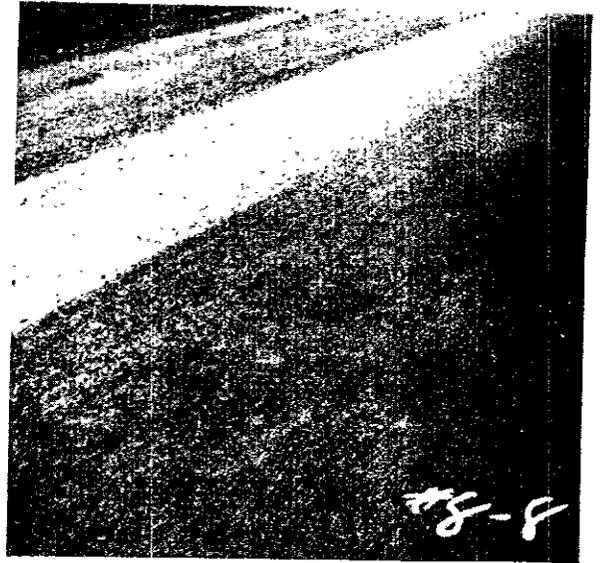
Longitudinal: By means of the Profilograph, records were made of the longitudinal profiles of each lane of the traveled way surface. In each lane, a line of profiles were run with the recording wheel 36 inches into the lane from the outer pin lines. All profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 50

VI-Ker-4-D "A"



Ahead on Line from Sta.  
290+00



Transverse Crack in Lt.  
Outer Lane. Sta. 295+39



Transverse Crack in Lt.  
Outer Lane. Sta. 298+28



Back on Line from Sta.  
300+00

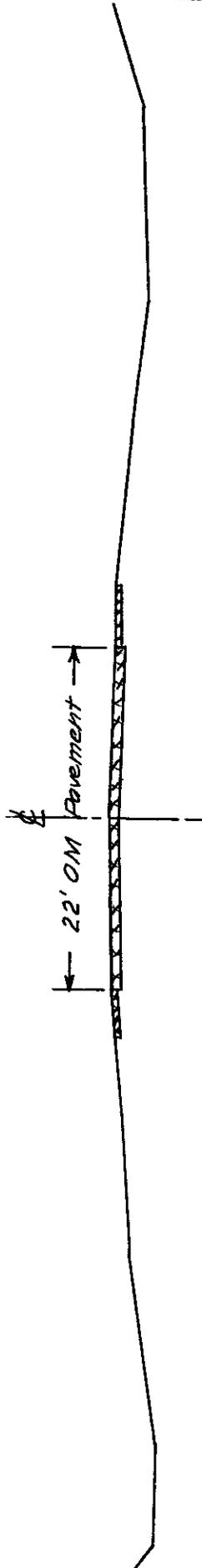
State of California, Div. of Highways  
 Materials & Research Department  
 Research No. 00258, W.O. No. 13NN26

Loadometer Station No. CAa 50  
 VI-Ker-4-D

R O A D W A Y C O N D I T I O N S U R V E Y

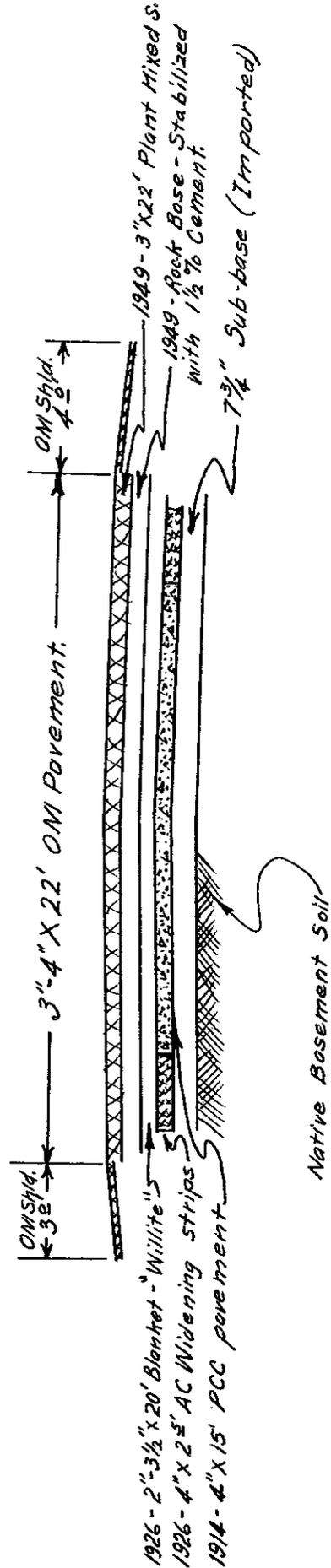
Scale: 1" = 10'

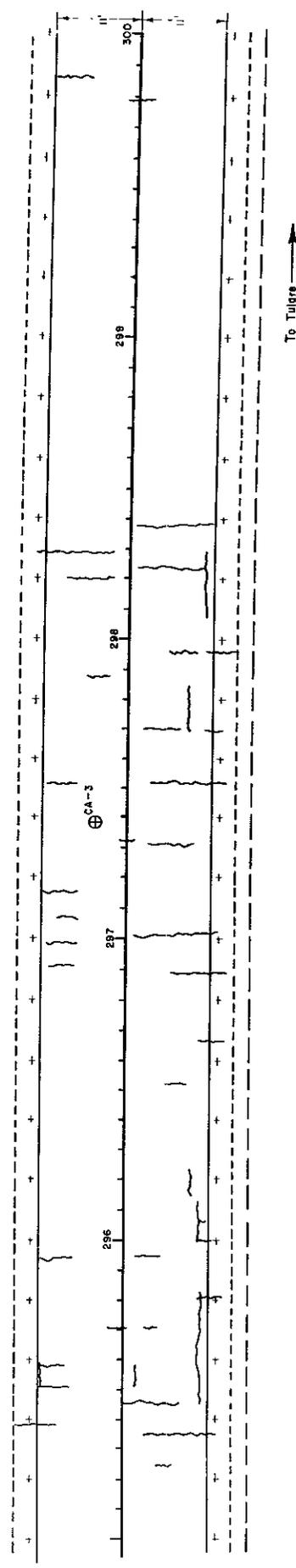
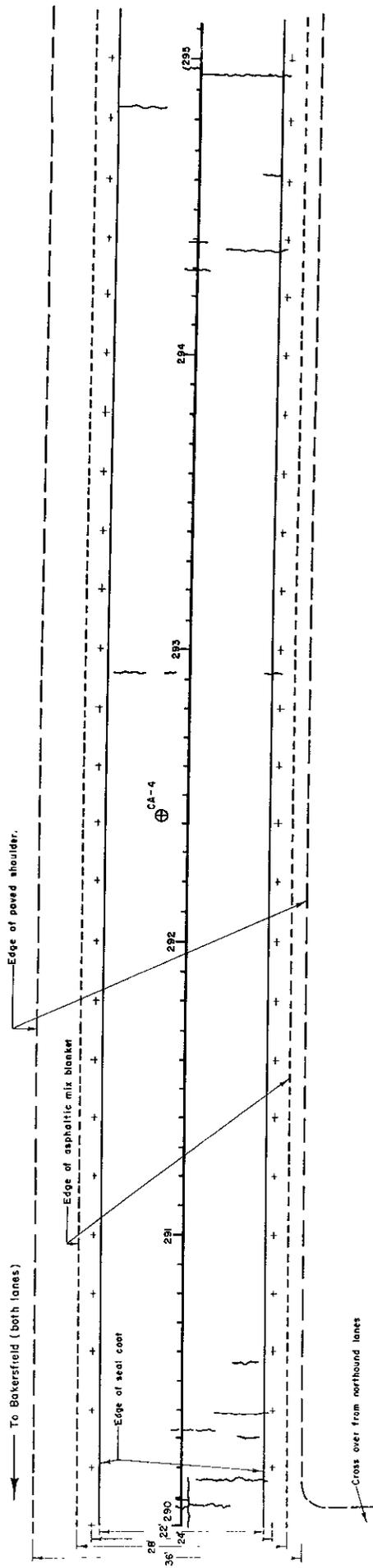
TYPICAL ROADWAY SECTION



Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION





PAVEMENT LOCATION AND CONDITION CHART

LEGEND

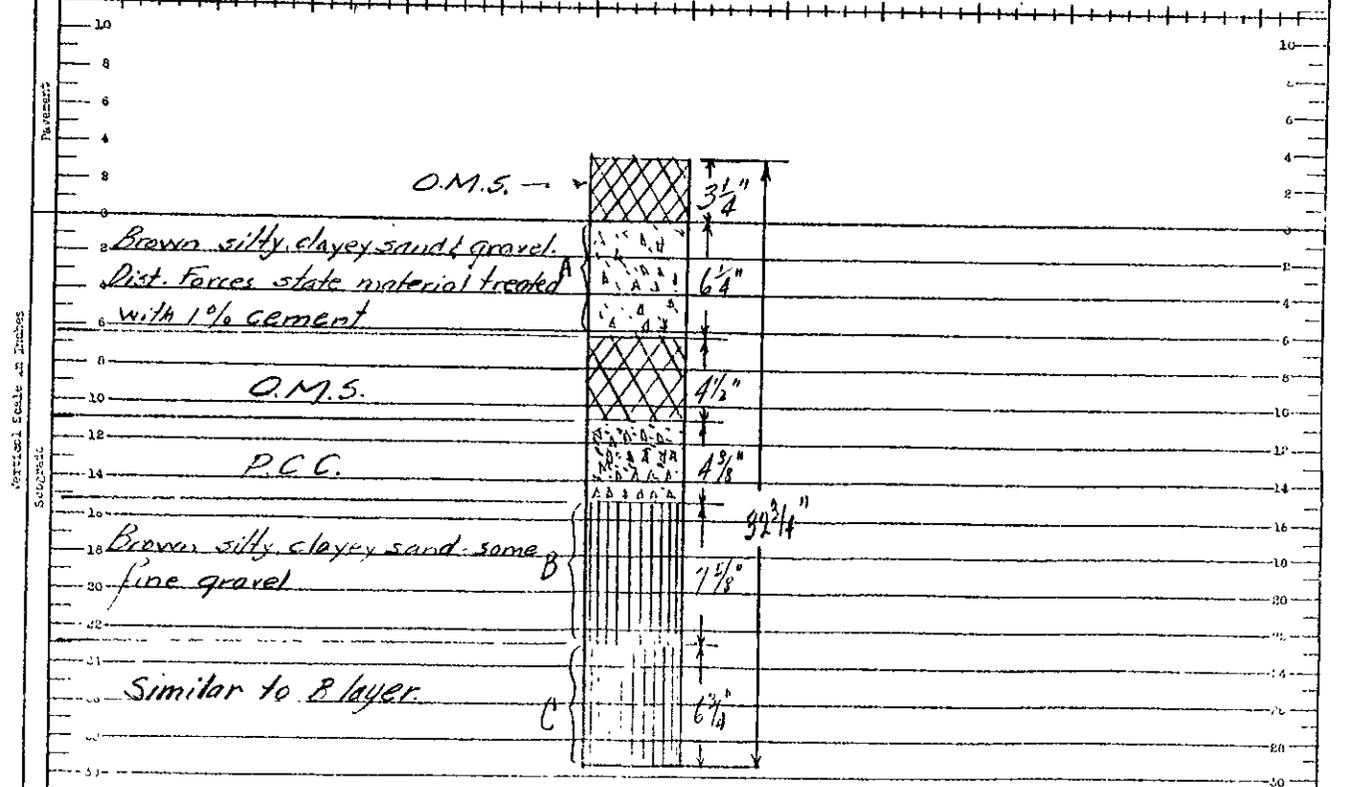
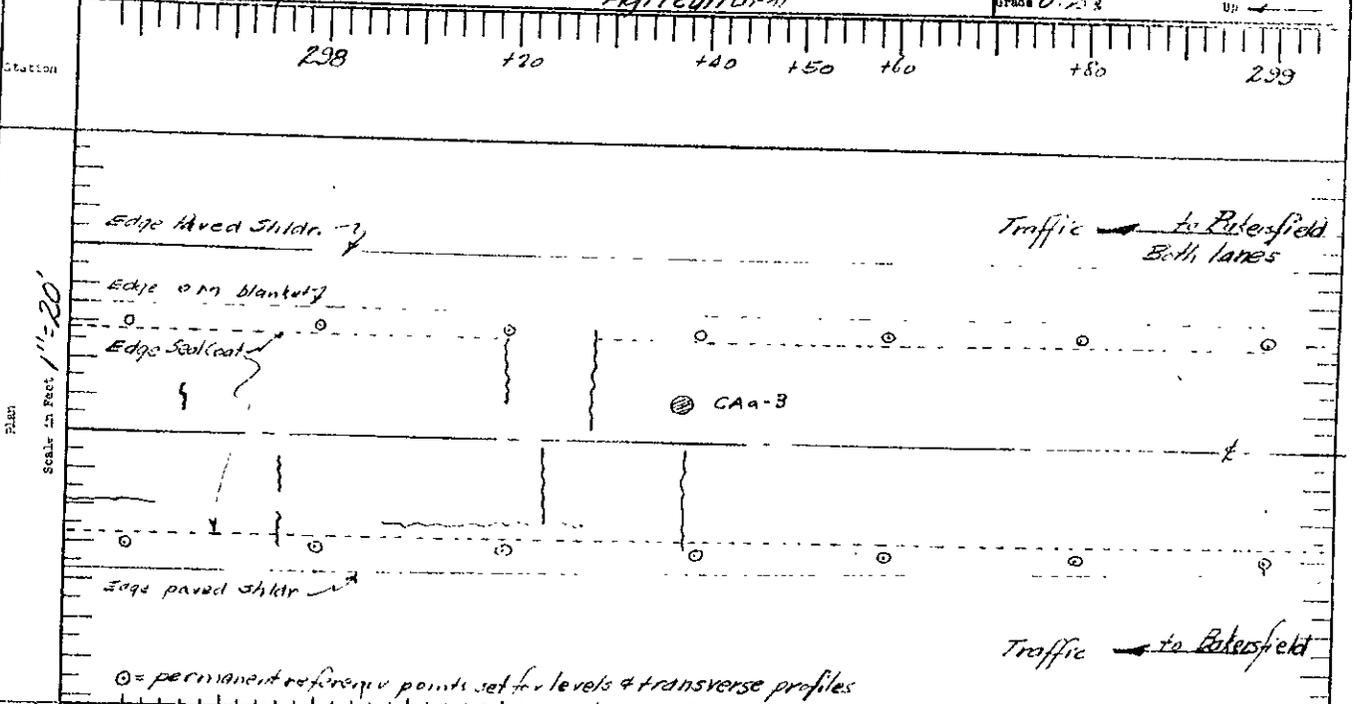
-  Alligator Cracking
  -  Failure
  -  Location of Sample Hole
  -  Block Cracking
  -  Shoving
  -  Patch
- LOADOMETER STA. No. 50  
VI-Ker-4-D



LOCATION AND PROFILE SKETCH

RESEARCH NO. 69624

Dist. VI	Co. Ker	Rto. 4	Sec. D	Contract No.	Date of Constr. Unknown	Post Hole No. CAA-3
Fill	APPROX. DIST. 10±	1st. from End of Fill	No. of Lanes 4 divided	Side Ditches None clearly defined	Traffic Medium	No.
Out	APPROX. Depth	Dist. from End of Out	Depth	Date of Striping 11-16 May 52		
No. of Lanes, Left R.R. R/W		Right Agricultural		Grade 0.25%	Up	



STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH LABORATORY

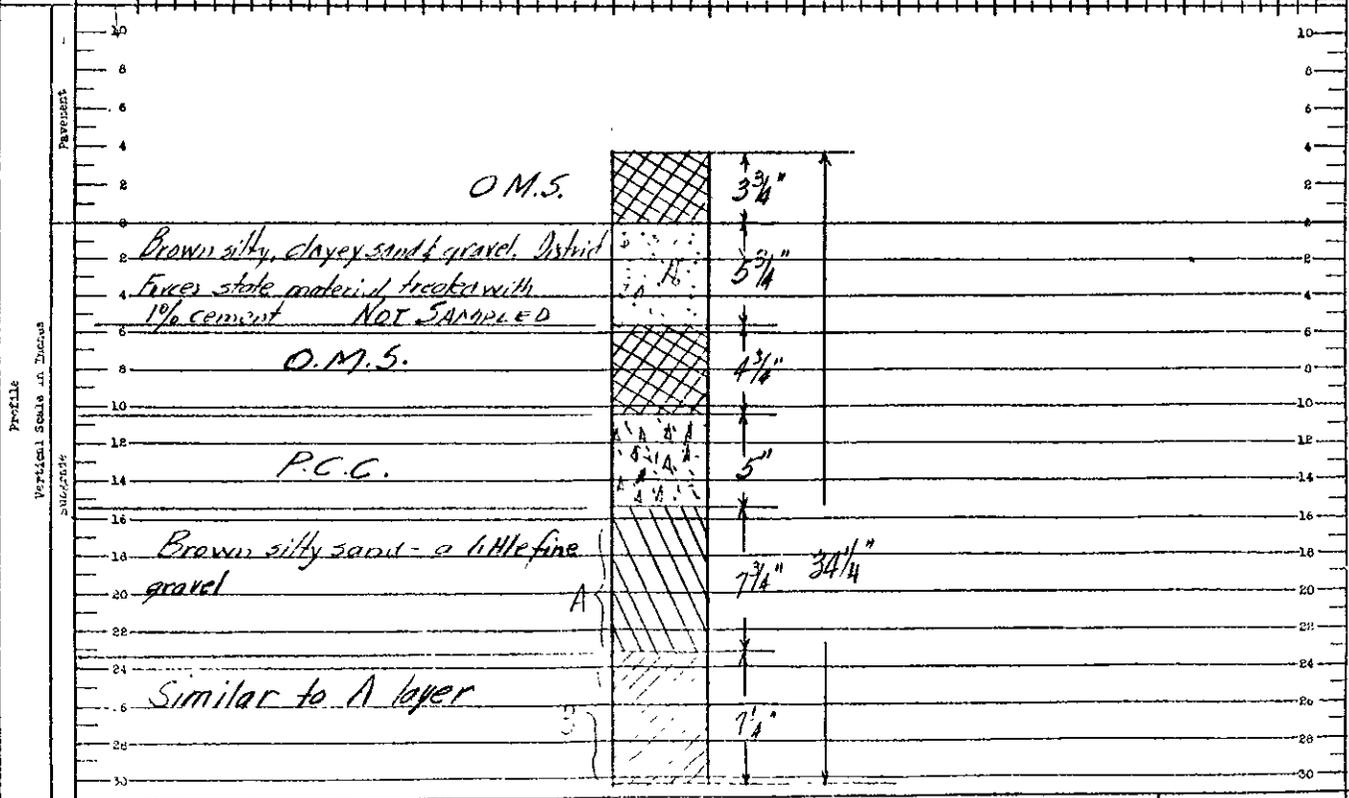
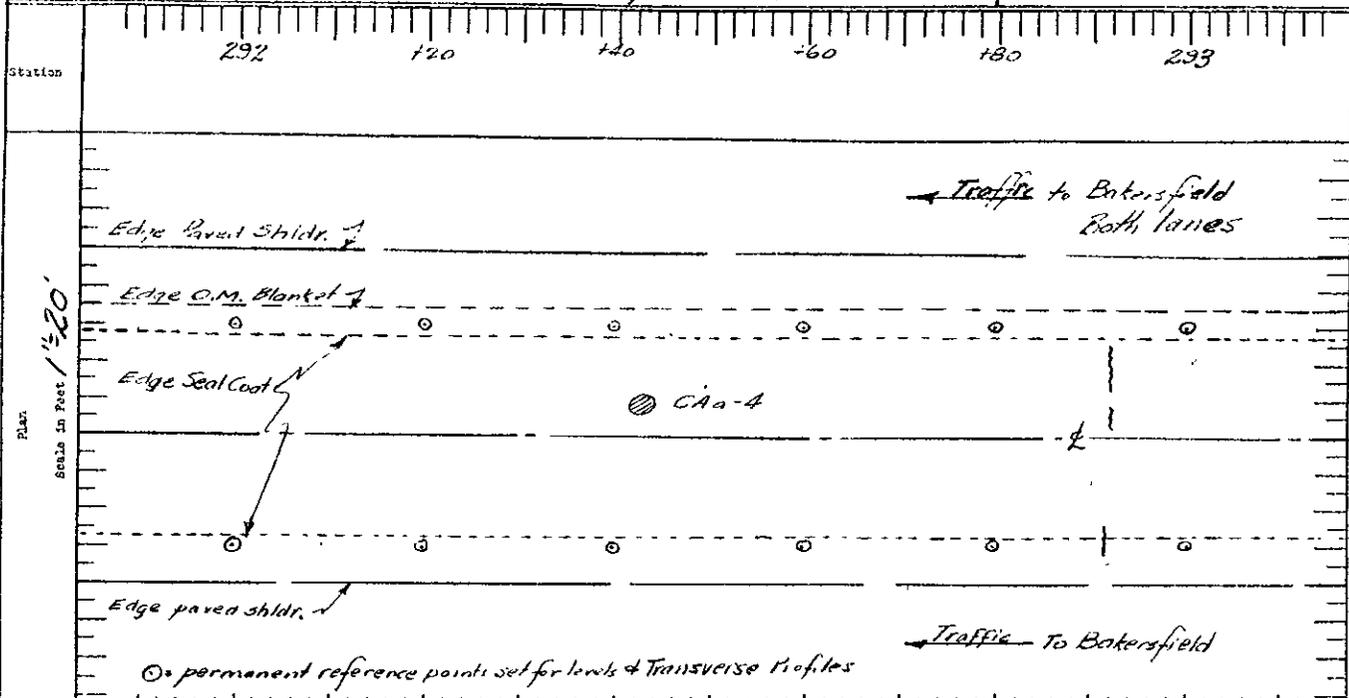
Party Smith  
 Clawson  
 C. Inverness

LOCATION AND PROFILE SECTION

ROAD INVESTIGATION

RESEARCH NO. ~~0021R~~ 0021R

Dist. <u>IL</u>	Co. <u>Ker</u>	Hwy. <u>4</u>	Sta. <u>D</u>	Contract No. <u>—</u>	Date of Constr. <u>Unknown</u>	Test Hole No. <u>CAa-4</u>
Fill <input checked="" type="checkbox"/>	Approx. Dist. <u>10' N</u>	Dist. from E.S. of Fill <u>—</u>	No. of Lanes <u>2-divided</u>	Traffic <u>Medium</u>		
Cut <input type="checkbox"/>	Approx. Depth <u>—</u>	Dist. from E.S. of Cut <u>—</u>	Side Ditches <u>None clearly defined</u>	Depth <u>—</u>	Date of Sampling <u>28 May '52</u>	
So. Side No. <u>R.R. R/W</u>			Right <u>Agricultural</u>	Grade <u>0.25%</u>	Up <u>—</u>	



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

Party Smith  
Clawson  
Checked by Clawson

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 50  
 Dist. VI Co. Ker Rte. 4 Sec. D  
 Loc. Design CAU  
 Sta. 290+00 to 295+00  
 Sheet No. 1 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

	Left						Right					
	Ditch Along R.R. Fill	R/W Line	Top Slope	Edge Pav'd Shldr.	Edge New Surface	Edge Traveled Way	Edge Traveled Way	Edge Pav'd Shldr.	Toe of Fill	Division Strip	Toe Fill	Hard Shoulder Northbound Lanes
295~	424.5 47.0	425.6 40.0	425.5 30.0	426.76 20.0	427.15 14.0	427.37 11.1	427.57 11.0	427.31 15.5	426.3 24.0	425.9 36.0	426.4 45.0	429.4 58.0
294~	425.2 48.0	425.6 40.0	426.1 30.0	427.28 20.0	427.60 14.0	427.81 11.2	427.95 11.1	427.58 16.0	426.6 23.0	426.5 33.0	426.9 47.0	429.5 58.0
293~	425.8 48.0	426.3 40.0	426.6 30.0	427.59 20.0	427.92 14.0	428.14 11.2	428.27 11.1	427.91 16.0	427.1 23.0	426.9 33.0	427.0 45.0	429.7 58.0
292~	426.4 48.0	427.7 40.0	427.4 30.0	428.03 20.0	428.33 14.0	428.48 11.2	428.56 11.1	428.21 16.0	427.3 24.0	427.2 33.0	427.5 46.0	429.9 58.0
291~		428.0 40.0	427.9 30.0	428.48 20.0	428.75 14.0	428.91 11.2	428.89 11.1	428.52 16.0	427.7 25.5	427.4 40.0	427.4 46.0	430.2 58.0
290~		427.7 40.0	427.8 30.0	428.55 20.0	428.93 14.0	429.17 11.2	429.28 11.1	429.14 16.0	428.08 47.0	430.67 64.0		

*Fixed Cross Curv*

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 50  
 Dist. VI Co. Ker Rte. 4 Sec. 0  
 Loc. Design CAa  
 Sta. 296+00 to 300+00  
 Sheet No. 2 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

	Left						Right					
	Ditch Along R.C. Fill	R/W Line	Toe Slope	Edge Pav'd Shldr.	Edge New Surface	Edge Traveled Way	Edge Traveled Way	Edge Pav'd Shldr.	Toe of Fill	Division Strip	Toe Fill	Pav'd Shldr. Northbound Lanes
300-	424.1 47.0	424.3 39.0	424.3 30.0	425.14 20.0	426.29 14.0	426.42 11.1	426.60 11.2	426.42 13.0	425.4 29.0	425.6 33.0	426.4 45.0	429.5 58.0
299-	423.7 47.0	424.0 40.0	424.3 30.0	425.74 20.0	426.29 14.0	426.46 11.1	426.62 11.1	426.43 13.0	425.4 23.0	425.4 30.0	426.0 45.0	428.4 58.0
298-	423.7 46.0	424.3 40.0	425.0 29.0	426.1 20.0	425.54 14.0	426.70 11.2	426.80 11.2	426.56 15.0	425.8 23.0	425.4 31.0	426.1 43.0	428.7 58.0
297-	423.9 47.0	424.1 40.0	424.9 30.0	426.19 20.0	426.71 14.0	426.91 11.3	427.05 11.0	426.81 15.0	425.9 23.0	425.7 34.0	426.3 45.0	429.6 58.0
296-	423.9 47.0	424.1 40.0	425.0 28.0	426.36 14.5	426.91 14.0	427.12 11.3	427.24 11.0	427.06 15.0	426.0 25.0	425.7 33.0	426.2 45.0	429.6 58.0

21

Research No. 00258  
Work Order No. 13NN26

Loadometer Station No. 50  
Road VI-Ker-4-D

#### DATA OF SECTION SELECTED FOR TEST

This section is one of two established in connection with Loadometer Station No. 50.

#### ROADWAY STRUCTURE

**LOCATION:** Loadometer Pit on Road VI-Ker-4-D is located 0.3 mile north of the junction State Highway Route 4 (Bakersfield to Tulare) and State Highway Route 129 (Bakersfield to Porterville) towards Tulare.

The section selected for test is located 0.8 mile north of Loadometer Station 50 towards Tulare.

**LENGTH:** The section is located between Station "D" 330+00 and Station "D" 340+00, a total length of 1000 feet.

Roadway at the section location is a 4-lane divided highway. The section is located in the left (southbound) traffic lanes.

**SURFACE:**

**Type:** Present roadway surface is oil mix surfacing. At one sample location 8.3' left of centerline at Sta. 331+97, the oil mix surfacing was a contact blanket on what appeared to be asphaltic concrete. At 3.0' left of centerline at Sta. 337+46, the oil mix surfacing was a contact blanket on P.C.C. pavement.

Loadometer Station No. 50  
Road VI-Ker-4-D

ROADWAY STRUCTURE

SURFACE:

Width: The present traveled way, which is the most recent blanket, is two 11.0 foot lanes for a total width of 22.0 feet. The total paved width varies from 33.0 to 58.0 feet.

Thickness: At the sample taken 8.3 feet left of centerline at Sta. 331+97, the oil mix surfacing was 6-1/2 inches thick. What appeared to be asphaltic concrete was 5-1/2 inches thick for a total pavement thickness of 12.0 inches. At Sta. 331+46, 3.0 ft. of centerline, the oil mix was found to be 6-1/8 inches thick and the P.C.C. pavement was 3-7/8 inches for a total pavement thickness of 10.0 inches.

No further information was made available to this office.

BASE:

Type and Thickness: In the sample at Sta. 331+97, a silty sand was found below the asphaltic mix surfacing. This material was sampled in two layers for a total thickness of 16-1/2 inches.

Soil Classification: A-2-4  
In the sample at Sta. 337+46, a silty clayey sand and a little fine gravel was encountered

Loadometer Station No. 50  
Road VI-Ker-4-D

ROADWAY STRUCTURE

BASE:

Soil Clas-  
sification:  
(Continued)

below the P.C.C. pavement. This material was  
sampled in two layers for a total thickness of  
14 inches.

Soil Clas-  
sification:

A-7-6

SIDE DITCH  
DRAINAGE:

The section roadway is entirely in a grade  
section and the roadway surface has a level  
profile grade.

There are no clearly defined ditches within the  
section limits. Drainage is generally from  
north to south. On the right, runoff is carried  
in the center of the median strip between the  
left and right lanes, from 0.5 to 1.0 feet below  
centerline elevation.

On the left, runoff is carried in the area be-  
tween the roadway shoulder and the RR fill which  
is parallel to, and approximately 45.0 feet  
left of the roadway centerline. There are no  
culverts or bridges within the section.

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

(1) Areas of  
Alligator  
Cracking:

There is one area of alligator cracking located  
in the left outer lane from 10.5' to 12.0' left

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (1) Areas of Alligator Cracking:  
(Continued) centerline between Sta. 337+30 and Sta. 337+50. Shown graphically on the plan diagram are two shattered areas located in the left outer lane. These areas are listed below for convenience.  
Sta. 335+52.5 to Sta. 335+66 from centerline to 3.0' lt.  
Sta. 338+30 to Sta. 340+00 from 9.5' to 12.0' lt. of centerline  
Both areas are spalling.
- (2) Areas of Raveling: There are no signs of raveling within the section.
- (3) Areas of Shoving or Creeping: There are no areas of shoving or creeping within the section.
- (4) Patches: There are no patches in the section.
- (5) Roadway Section: As previously noted, the section roadway is entirely in a grade section.
- (6) Shoulders: There are asphaltic mix shoulders throughout the section. Shoulders vary in width from 6.0' to 10.0' on the left and from 4.5' to 5.5' on the right. Except for an area on the left between Sta. 338+30 and Sta. 340+00 where a shattered area previously noted extends onto the shoulder, the shoulders are in generally fair condition.

Loadometer Station No. 50  
Road VI-Ker-4-D

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:

Bench marks were established by the field crew near the ends of the section.

<u>B.M. No.</u>	<u>Location</u>	<u>Description</u>	<u>Elevation</u>
3	41' rt. of ½ lt. lanes Sta. 328+25	Ramset pin in RR spike in E. face Power pole	450.00 (Assumed)
4	37' lt. of ½ lt. lanes Sta. 340+50	Ramset pin in RR spike in E. face of telegraph pole	450.252

Permanent reference pins were established in 3 lines parallel to centerline. One pin line was set along the traffic stripe. One pin line was set 12' lt. of the stripe and 1.0' outside the edge of blanket. The third line of pins was set 12' right of the stripe.

Profilograph  
Records:

Transverse: The permanent reference points for levels also serve as markers for transverse profiles of the pavement surface. Using the machine developed for this purpose, transverse profilograph records of the traveled way surface in each lane were made at 20' longitudinal intervals throughout the section.

Loadometer Station No. 50  
Road VI-Ker-4-D

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Profilograph  
Records:

Longitudinal: By means of the Profilograph, records were made of the longitudinal profiles of each lane of the traveled way surface. In each lane, a line of profiles were run with the recording wheel 36" into the lane from the outer pin lines.

All profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 50

VI-Ker-4-D "B"



Broken Area

Sta. 335+55 to Sta. 335+60



Shattered Area on Lt. Outer  
Shoulder. Sta. 338+30 to  
Sta. 338+90



Cracks Along Edge of  
Traveled Way. Station  
338+80 to Sta. 338+90



Back on Line from Sta. 340

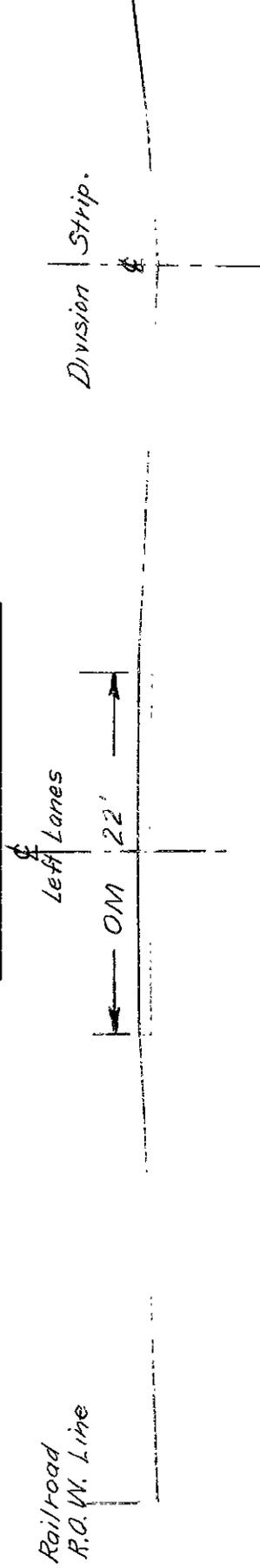
State of California, Div. of Highways  
 Materials & Research Department  
 Research No. 00258, W.O. No. 13NN26

Loadometer Station No. CAB 50  
 VI-Ker-4-D

ROADWAY CONDITION SURVEY

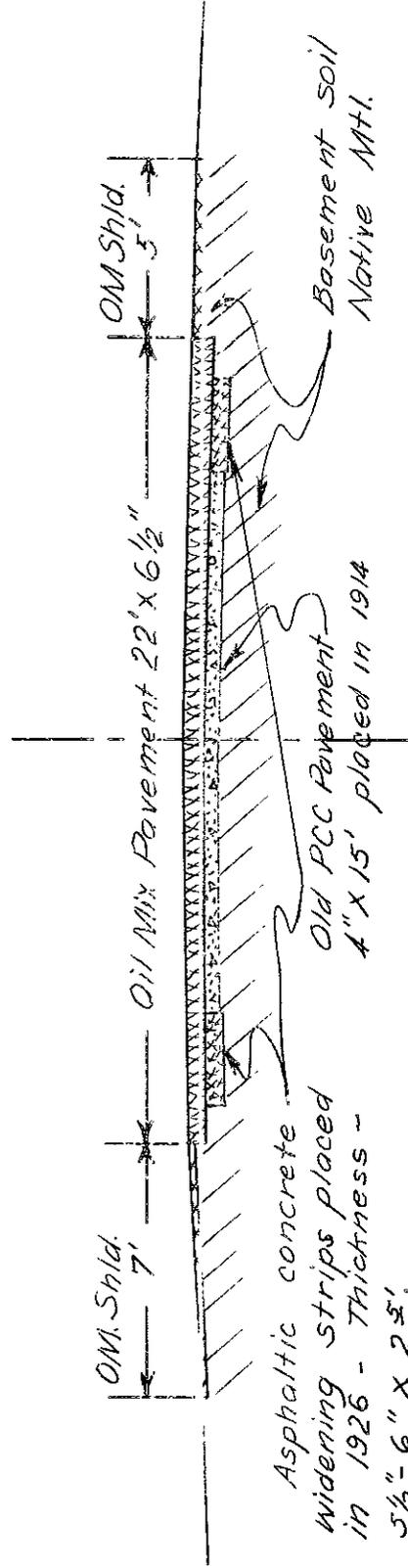
Scale: 1" = 10'

TYPICAL ROADWAY SECTION



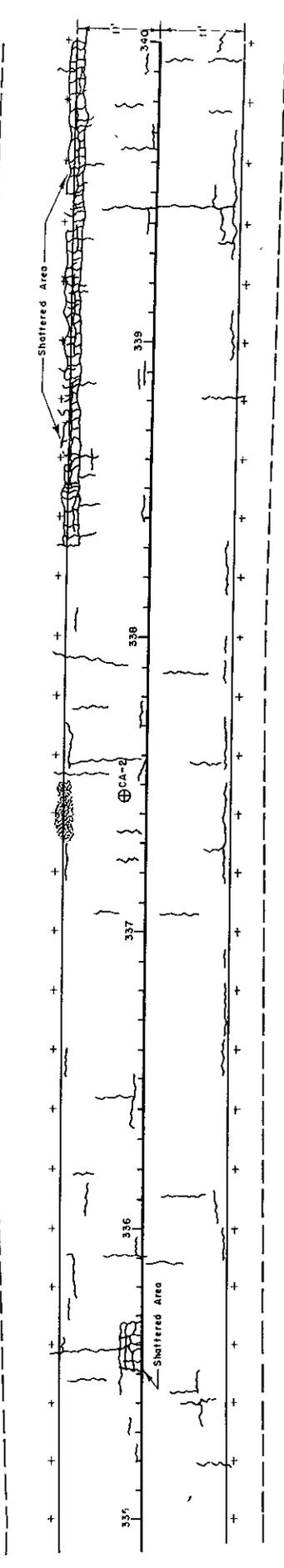
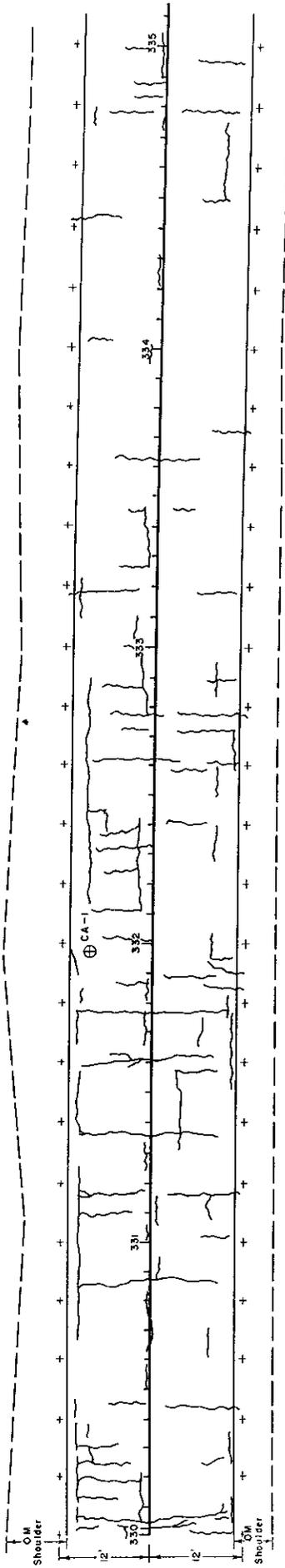
Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION



District Records indicate 20' x 2" (4) blanket of "Willite" in 1926  
 22' x 3" blanket of Plant Mixed Surf - 1949.

← To Bakersfield (both lanes)



To Tulare →

PAVEMENT LOCATION AND CONDITION CHART

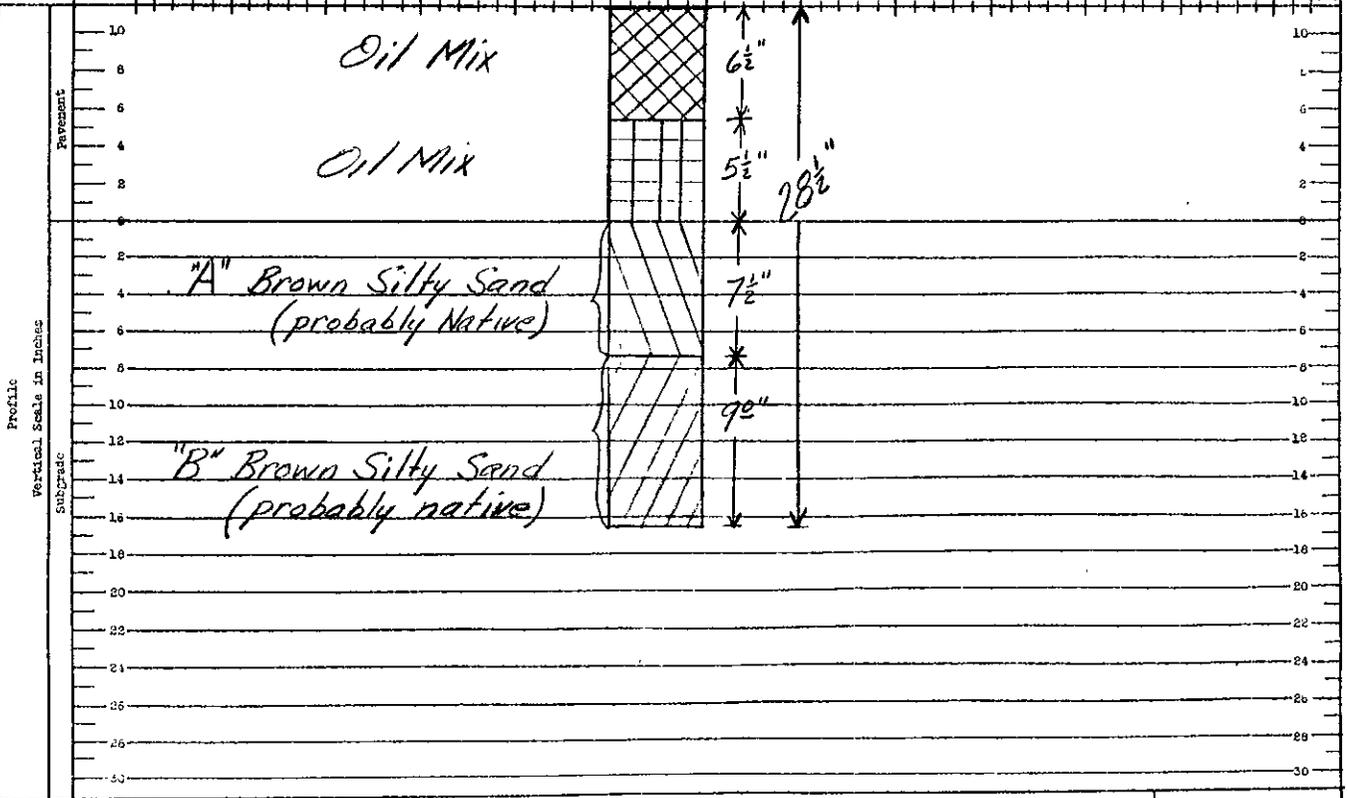
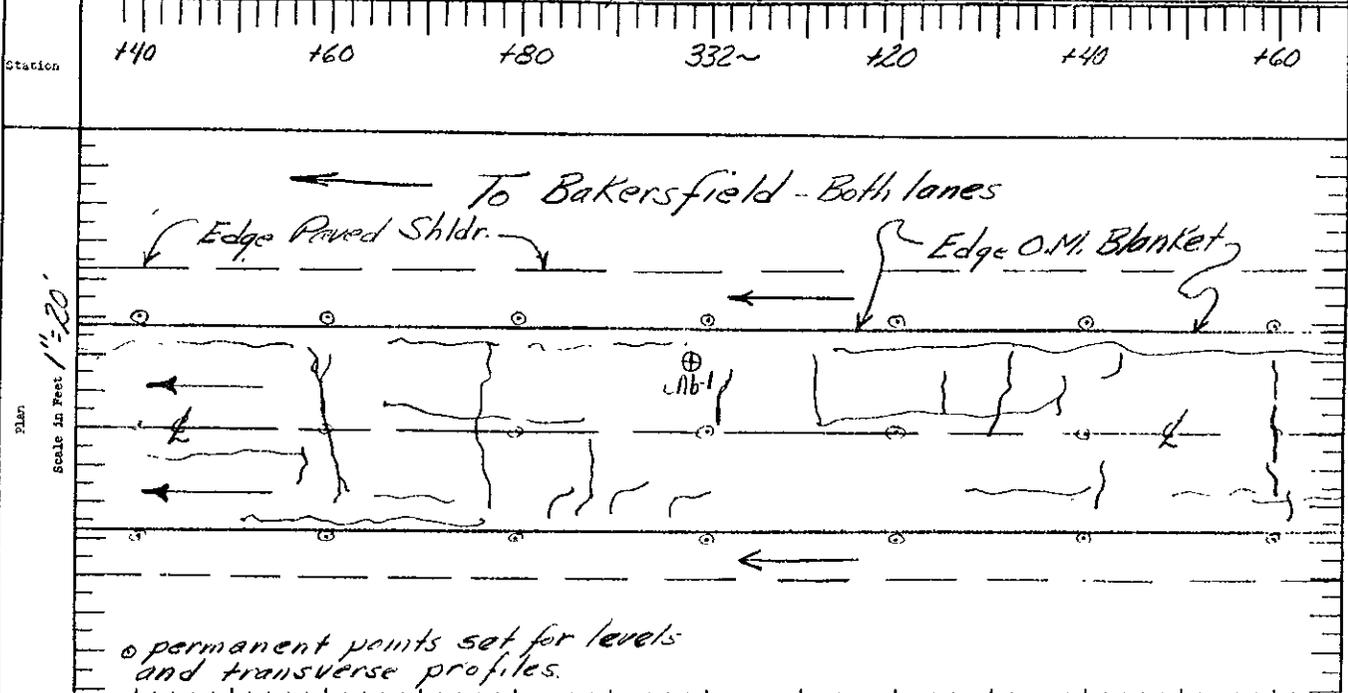
LEGEND

-  Alligator Cracking
-  Failure
-  Location of Sample Hole
-  Block Cracking
-  Location of Permanent Reference Points
-  Shoving
-  Patch

LOADOMETER STA. NO. 50  
VI-Ker-4-D



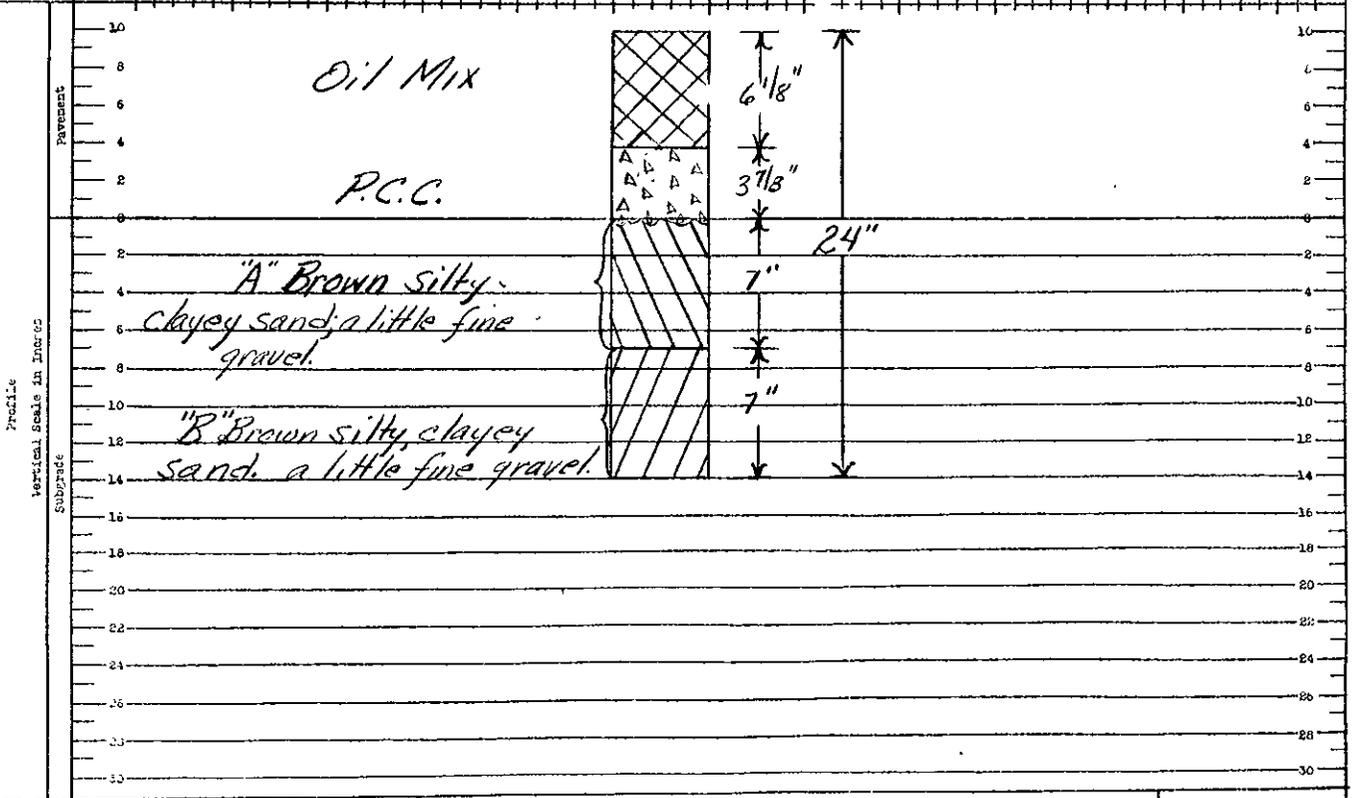
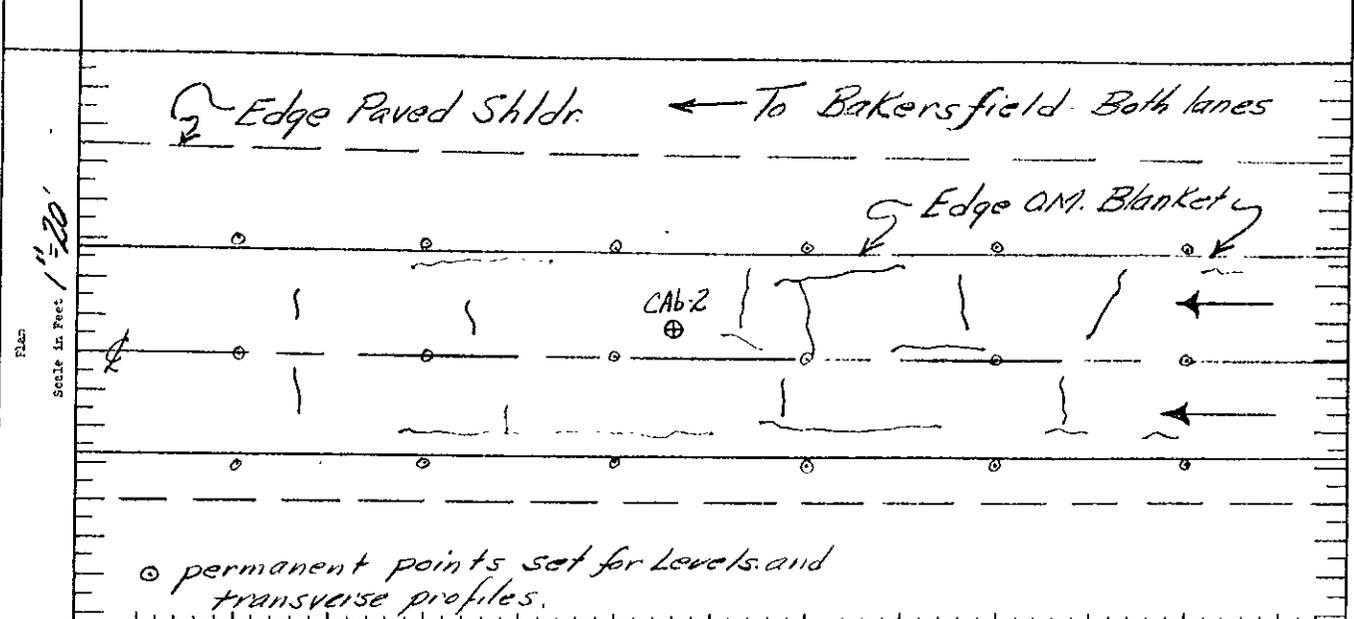
Dist. <u>VI</u> Co. <u>Ker</u> Rte. <u>4</u>	Sec. <u>D</u>	Contract No. <u>    </u>	Date of Constr. <u>Unknown</u>	Test Hole No. <u>CAB-1</u>
Fill <u>Grade</u>	Approx. Height <u>    </u>	Dist. from End of Fill <u>    </u>	No. of Lanes <u>Four-Divided</u>	Traffic <u>Medium</u>
Cut <u>    </u>	Approx. Depth <u>    </u>	Dist. from End of Cut <u>    </u>	Side Ditches <u>Not Clearly Defined</u>	Depth <u>    </u>
Roadside <u>R.R. E/W</u>		Right <u>Agricultural</u>		Date of Sampling <u>5-13-58</u>



Party <u>Smith</u>
<u>Clauson</u>
Drawn By <u>Smith</u>

STATE OF CALIFORNIA DEPARTMENT OF PUBLIC WORKS DIVISION OF HIGHWAYS MATERIALS AND RESEARCH DEPARTMENT

Sta. <b>II</b>	Co. <b>Kor</b>	Sec. <b>4</b>	Sec. <b>D</b>	Contract No.	Date of Constr. <b>Unknown</b>	Test Hole No. <b>CAB-2</b>
Fill <b>Grade</b>	Dist. from End of Fill	Dist. from End of Cut	No. of Lanes <b>Four-Divided</b>	Traffic <b>Medium</b>	Depth	Date of Sampling <b>5-13-52</b>
Dist. from End of Cut	Side Ditches <b>Not Clearly Defined</b>	Grade <b>0</b>	Right <b>Agricultural</b>			
R.R. R/W				Up		



STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

Party **Clawson Smith**  
 Drawn by **Smith**

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 50  
 Dist. VI Co. Ker Rte. 4 Sec. D  
 Loc. Design CAB  
 Sta. 330+00 to 335+00  
 Sheet No. 1 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

	Left						Right					
	R/W Line	Edge Paved Shldr.	Edge Traveled Way	Edge Traveled Way	Edge Paved Shldr.	% Division Strip	Toe Fill	Shldr North Bound Lanes				
335~	449.8 70.0	450.11 18.0	450.50 11.0	450.47 11.2	450.29 16.0	449.8 36.0	460.3 45.0	452.9 59.0				
334~	449.2 40.0	449.63 19.0	450.20 11.0	450.23 11.1	450.05 15.5	449.4 36.0	450.0 45.0	452.8 59.0				
333~	448.9 40.0	449.59 18.0	450.03 11.0	450.04 11.1	449.76 16.0	448.4 36.0	449.8 45.0	453.6 59.0				
332~	447.9 40.0	448.97 20.0	449.76 11.1	449.81 11.1	449.47 16.0	448.9 36.0	449.3 45.0	452.5 59.0				
331~	448.0 40.0	449.20 17.0	449.57 11.1	449.69 11.0	449.30 16.0	448.8 36.0	449.4 46.0	452.2 59.0				
330~	448.2 39.0	449.03 19.0	449.47 11.1	449.46 11.2	449.11 16.0	448.7 36.0	449.2 46.0	452.2 59.0				

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00255  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Dist. III Co. Ker Rte. 4 Sec. D  
 Load. Sta. No. 50  
 Loc. Design CAB  
 Sta. 336+00 to 340+00  
 Sheet No. 2 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

	<i>Left</i>					<i>Right</i>				
	R/W Line	Edge Paved Shldr.	Edge Traveled Way	Edge Traveled Way	Edge Paved Shldr.	Div. Strip	Toe Fill	Shldr. Northbound Lanes		
340~	449.2 40.0	450.50 20.5	451.13 11.0	451.16 11.1	450.83 16.5	450.2 36.0	450.7 45.0	453.4 59.0		
339~	450.3 40.0	450.39 21.5	450.99 11.0	451.06 11.2	450.71 16.0	450.24 36.0	450.4 45.0	453.3 59.0		
338	450.3 40.0	450.21 20.5	450.92 11.2	450.96 11.3	450.72 15.5	450.2 36.0	450.6 45.0	453.3 59.0		
337	450.3 40.0	450.15 22.5	450.86 11.2	450.85 10.9	450.63 15.5	450.3 36.0	450.5 45.0	453.2 59.0		
336	450.3 40.0	450.21 19.0	450.70 11.0	450.75 11.1	450.58 15.5	450.3 36.0	450.3 45.0	453.0 59.0		

22

Research No. 00258  
W.O. Number 13NN26

Loadometer Station No. 44  
Road VII-Ven-2-C

### DATA OF SECTION SELECTED FOR TEST

This section is one of two established in connection with Loadometer Station No. 44 and is designated "Location A".

#### ROADWAY STRUCTURE

**LOCATION** Platform scales are located 2.3 miles south of the junction of Route 2 and Route 79.

**LENGTH:** The section selected for test is located approximately 0.7 of a mile south of the platform scale. The section is established between Sta. 388+00 and Sta. 398+00. Road VII-Ven-2-C, a length of 1000 ft. Roadway is a 4 lane divided expressway. The section is established in the left (eastbound traffic) lanes.

**SURFACE:**

**Type:** Plant mixed surfacing constructed in 1949.

**Width:** 23' total, 11.0 ft. outer lane, 12.0 ft. passing lane.

**Thickness:** 4" to 4-1/4"

**BASE AND SUBBASE MATERIAL:**

**Type:** Clean sand and gravel

**Thickness:** Variable, from 4-1/2" to 7-3/4"

**Classification:** Base soil is classified as A-1-a

ROADWAY STRUCTURE

BASE AND SUBBASE  
MATERIAL:

Classifi-  
cation  
(Continued)

Below the base material are two slabs of PCC pavement. The upper slab varies from 5" to 5-1/2" in thickness and the lower slab varies from 3-1/2" to 4-1/2" in thickness so that total thickness of slabs varies from 9" to 9-1/2". Below the PCC slab, at two of the locations sampled, a clayey, silty sand and gravel was encountered which appeared to be an imported material. At the third location sampled, there was none of this material. Test results show material just under the old PCC pavement to be the same from all three locations sampled. Material is classified as A-6. Thickness of sample layers varied from 5-1/4" to 6-3/4". Below the material described above was native basement soil, a black and gray adobe clay, classified as A-7-6.

SIDE DITCH  
DRAINAGE

The section roadway is entirely in fill. The section roadway has a profile grade of +1.4% from south to north. Drainage runs from north towards the south and passes under the roadway beyond the section limits.

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:  
(Continued)

Along the inner edge of pavement are asphaltic mix shoulders which vary in width from 3' to 4'. Fill slopes are uniform from the edge of the shoulders toward the center of the division strip, which is from 1.5 ft. to 3.0 ft. lower than the edges of the shoulder. The center of the division strip acts as a drainage channel between the left and right roadways.

Along the outer edge of pavement, asphaltic mix shoulders are from 8.5' to 11.0' in width. Between Sta 388+00 and Sta 395+60, side slopes outside the paved shoulder area have been bladed at a uniform slope to the right of way line, a distance of from 21.0 to 28.0 feet. Between Sta. 395+60 and Sta 398+00, side slopes outside the paved shoulder area have been bladed uniformly to the top of a side drainage ditch located from 24.0' to 26.0' left of the outer edge of pavement. Bottom of ditch is 2.2' to 2.6' below the elevation of pavement. Drainage along the outer side of the roadway is from north to south (Sta. 398+00 towards 388+00) and out of the test section limits.

Loadometer Station No. 44  
Road VII-Ven-2-C

ROADWAY CONDITION

SPECIAL CONDITIONS:

- (1) Areas of Alligator Cracking: There are no areas of alligator cracking within the section.
- (2) Areas of Raveling: There are no areas of raveling within the section.
- (3) Areas of Shoving or Creeping: There are no areas within the section which indicate shoving or creeping of the surface.
- (4) Patches: The only patches within the limits of the section are those placed when sample holes were backfilled. Patches are approximately 1.0' wide by 3.0' long and are located at:  
  
Sta. 389+45, centerline left outer lane  
Sta. 392+98, centerline left outer lane  
Sta. 396+50, centerline left outer lane
- (5) Roadway Section: The section roadway is entirely in fill section. Section pavement varies from 1.0' to 2.5' above the adjacent agricultural lands on the left.
- (6) Shoulders: Asphaltic mix shoulders throughout the section are in uniformly excellent condition. On the left of the traveled way, shoulders vary from 8.5' to 11.0' in width on the right of the traveled way, shoulders vary from 3.0' to 4.0' in width.

ROADWAY CONDITION:

SPECIAL CONDITIONS:  
(Continued)

(6) Shoulders: Asphaltic mix shoulders throughout the section are in uniformly excellent condition. On the left of the traveled way, shoulders vary from 8.5' to 11.0' in width on the right of the traveled way, shoulders vary from 3.0' to 4.0' in width.

ROUGHNESS MEASUREMENTS:

Bench Marks  
and Levels:

Two bench marks were established by the field crew near the ends of section. An elevation of 150.000 feet was assumed for Bench Mark No. 1.

<u>B.M. No.</u>	<u>Location</u>	<u>Description</u>	<u>Elevation</u>
1	83.5' rt. of lt. inner E.P. Sta. 391+39	1/4" diam. pin in pipe cap	150,000 (Assumed)
2	26.2' rt. of lt. outer E.P. Sta. 395+80	1/4" diam. pin in R/W Monument	152.930

Three lines of permanent reference pins were established. One line was along the traffic stripe, one line was 10.5' left of the stripe and one line was 11.5' right of the stripe. Outside line of pins are set 0.5 ft. towards the stripe from the edges of pavement.

ROADWAY CONDITION

PROFILOGRAPH RECORDS:

Transverse: The permanent reference points for levels also serve as permanent markers for transverse profiles of the pavement surface. Using the machine developed for the purpose, transverse profilograph records were made of the traveled way surface in each lane at 20' longitudinal intervals.

Longitudinal: Using the Profilograph, longitudinal profilograph records were made of each lane of pavement in the section. Records were made with the recording wheel of the Profilograph 22" towards the traffic stripe from each of the outer pin lines.

Loadometer Sta. No. 44

VII-Ven-2-C



Ahead on Line from  
Station 388+00



Back on Line from  
Station 398+00

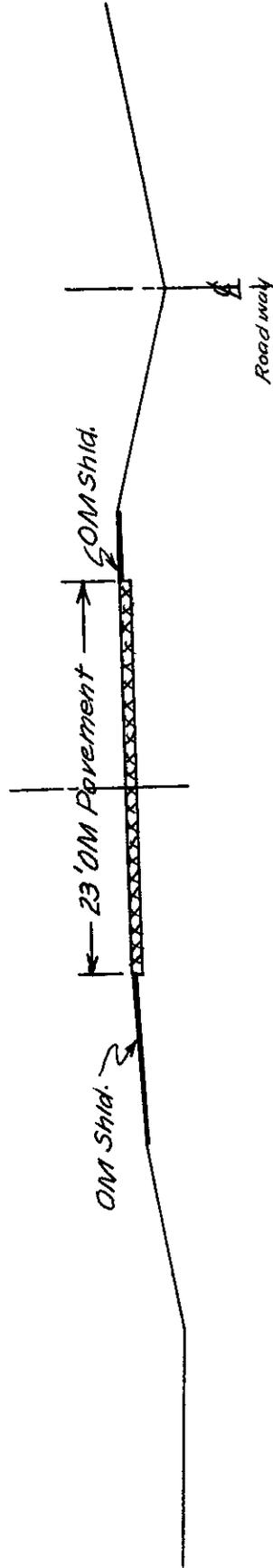
State of California, Div. of Highways  
Materials & Research Department  
Research No. 00258, W.O. No. 13NN26

Loadometer Station No. AVA 44  
VII-Ven-2-G

ROADWAY CONDITION SURVEY

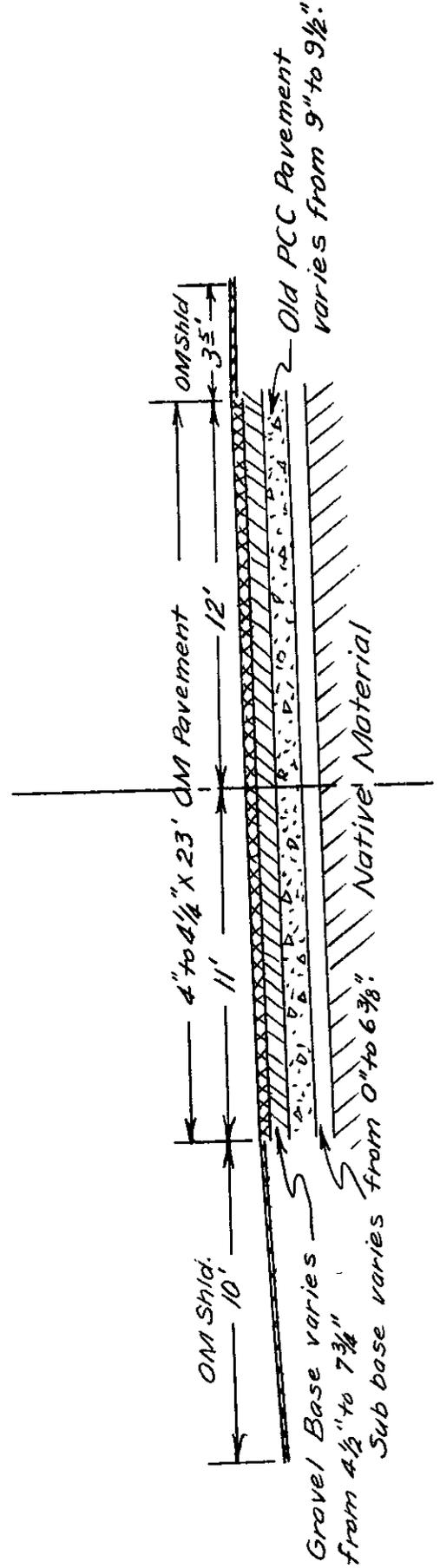
Scale: 1" = 10'

TYPICAL ROADWAY SECTION

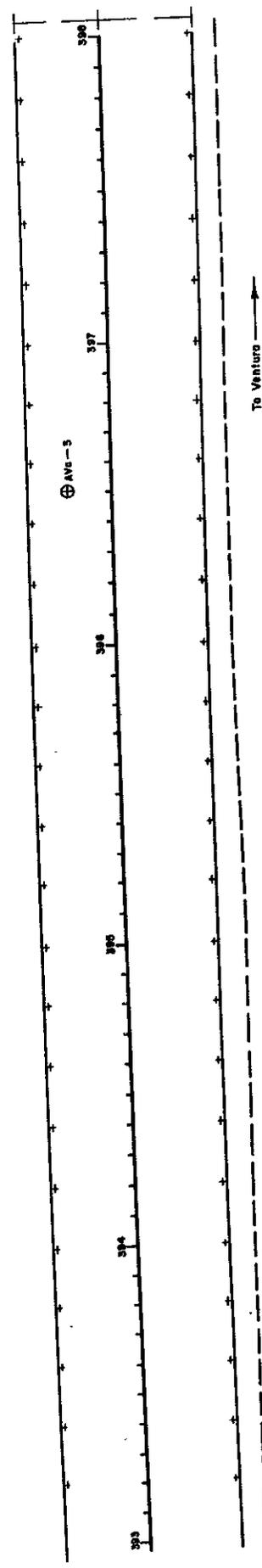
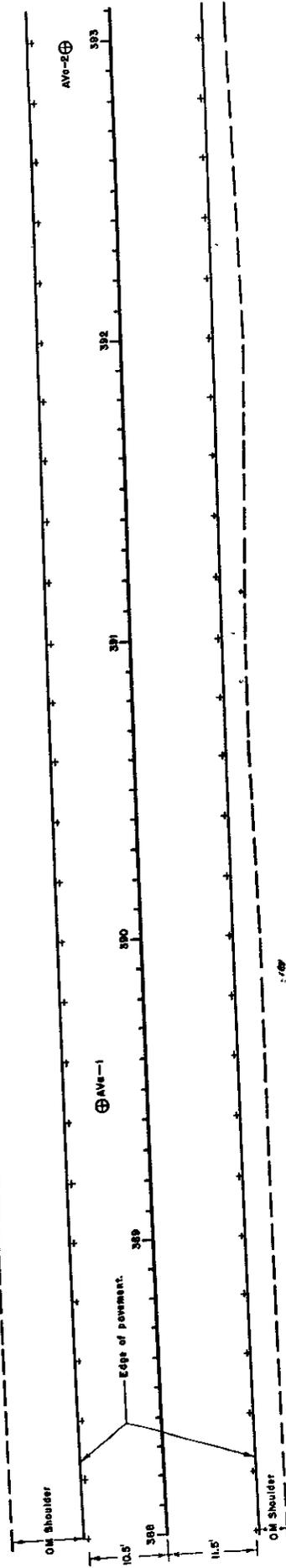


Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION



← To Los Angeles (Both lanes)



### PAVEMENT LOCATION AND CONDITION CHART

#### LEGEND

-  Alligator Cracking
  -  Location of Sample Hole
  -  Failure
  -  Block Cracking
  -  Shoving
  -  Patch
- + Location of Permanent Reference Points

LOADOMETER STA. NO. 44  
VII-Ven-2-C

TEST RESULTS SUMMARY

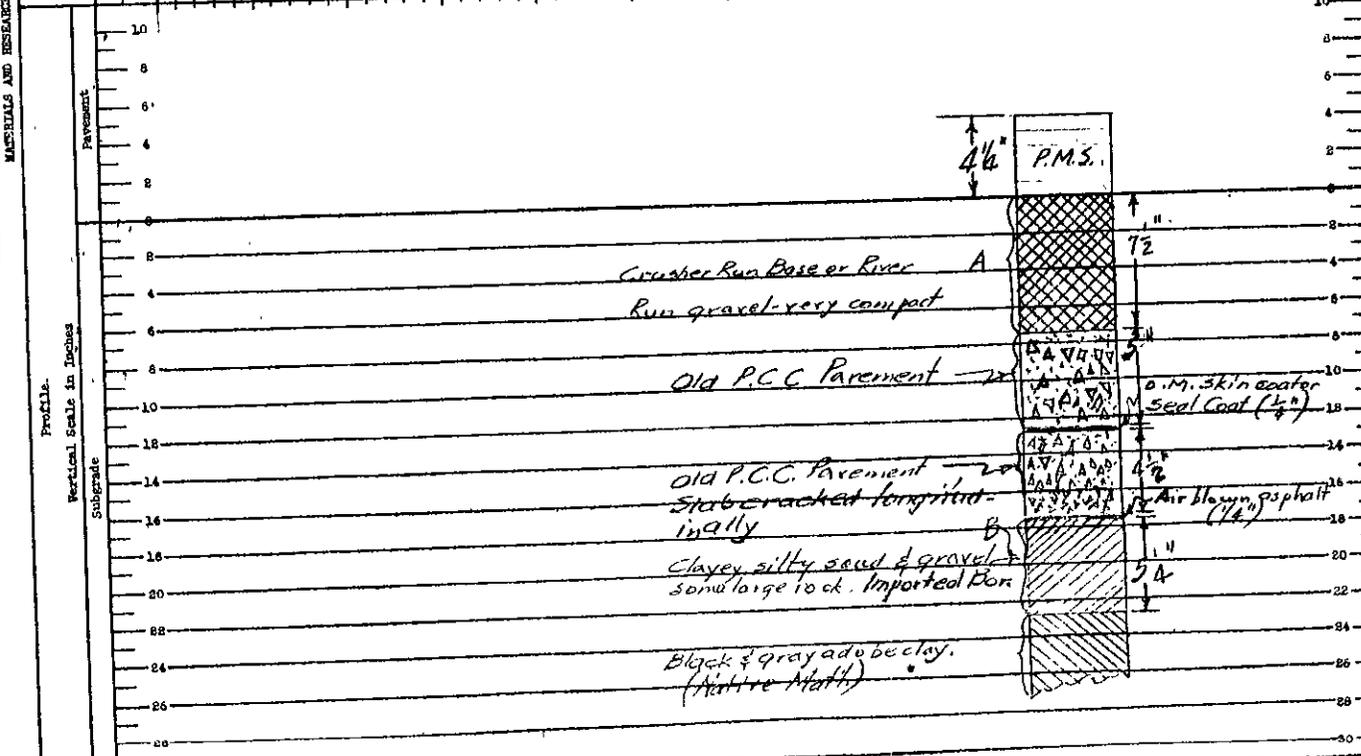
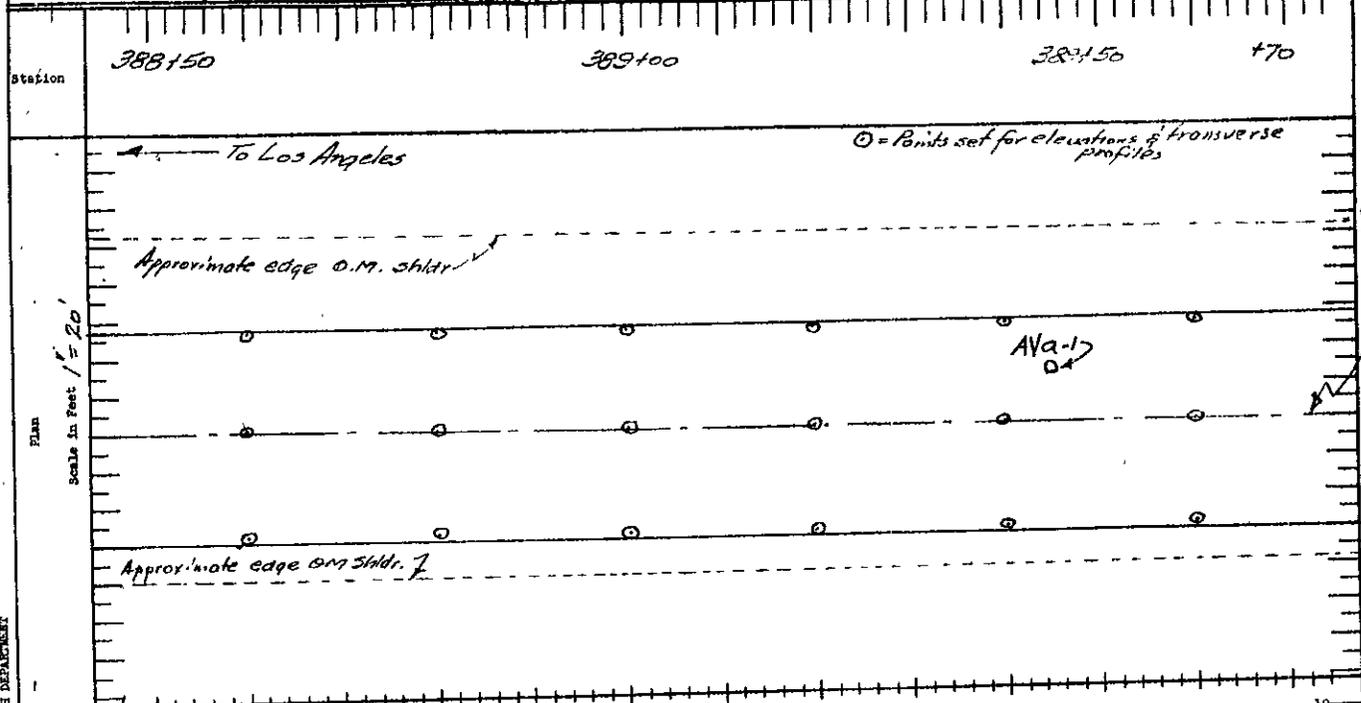
Load. Sta. No. 44  
VII-Ven-2-C

Line	Sample No.		Sample Hole Location		Pavement		Soil Samples		
	Field	Lab.	Station	Position	Type	Thick-ness	Depth below Btm. Pav't.	Layer Description	
1	AVa1A	51-828	389+45	6' left of A left lanes	OM	4-1/4"	0 - 7 1/2"	Base and Cushion	
2	AVa1B	51-828A	389+45	same	OM	4-1/4"	17" - 23"	Subbase	
3	AVa2A	51-829	392+98	Centerline left Outer lane	OM	4"	0 - 4 1/2"	Base and Cushion	
4	AVa2B	51-829A	392+98	same	OM	4"	14 - 20"	Subbase	
5	AVa2C	51-829B	392+98	same	OM	4"	20" - 30"	Basement	
6	AVa3A	51-830	396+50	Centerline L. Outer lane	OM	4"	0 - 7-3/4"	Base and Cushion	
7	AVa3B	51-830B	396+50	same	OM	4"	17 1/2" - 24"	Subbase	
8	AVa3C	51-830A	396+50	same	OM	4"	24" - 30"	Basement	

Line	In Place Test Data			Lab. Test Data		HRB Soil	Specific Gravity	
	Moist.	Density	% Rel. Comp.	Optimum Moisture	Maximum Density	Classification	Pass. 4	Ret. 4
1	6	144	107	7	135	A-1-a	2.63	2.53
2	10	139	106	10	134	A-6	2.62	2.47
3	8	150	111	7	135	A-1-a	2.62	2.50
4	20	122	88	10	127	A-6	2.61	2.38
5	26	103	92	16	127	A-7-6	2.61	
6	5	144	107	7	135	A-1-a	2.63	2.56
7	26	100	80	14	125	A-6		
8	27	89	82	18	108	A-7-6	2.60	

Line	Sieve Analysis - Percent Passing										Atterberg Limits	
	2"	3/4"	4	8	16	30	50	200	270	5M	LL	PL
1	100	64	35	30	25	18	12	4	4	2	N	P
2	96	88	79	77	73	66	59	49	47	24	35	18
3	100	75	42	37	32	24	15	6	5	3	N	P
4	98	90	83	80	75	69	63	54	51	17	37	20
5				100	99	99	98	93	91	42	45	23
6	100	66	35	29	24	18	12	4	3	2	N	P
7	100	99	96	91	85	77	70	56	53	27	37	19
8					100	99	99	95	93	54	53	25

Dist. <u>III</u> Co. <u>Ven</u> Rte. <u>2</u> Sec. <u>0</u>	Contract No. <u>        </u>	Date of Constr. <u>1949</u>	Test Hole No. <u>AVA-1</u>
Fill <input checked="" type="checkbox"/> Approx. Height <u>2-5 to 3'</u> Dist. from End of Fill <u>600   2000</u>	No. of Lanes <u>2</u>	Traffic <u>Heavy</u>	No. <u>        </u>
Cut <input type="checkbox"/> Approx. Depth <u>        </u> Dist. from End of Cut <u>        </u>	Side <u>RT - Through out - be - through - out</u>	Depth <u>LT 2-3'</u>	Date of Sampling <u>2-5-51</u>
Roadside Use, Left <u>Agricultural</u>		Right <u>Division strip - Agricultural beyond</u>	



Remarks:

By Keyner

Checked         

Tested Clayton

Drawn By C. A. V. 200

STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

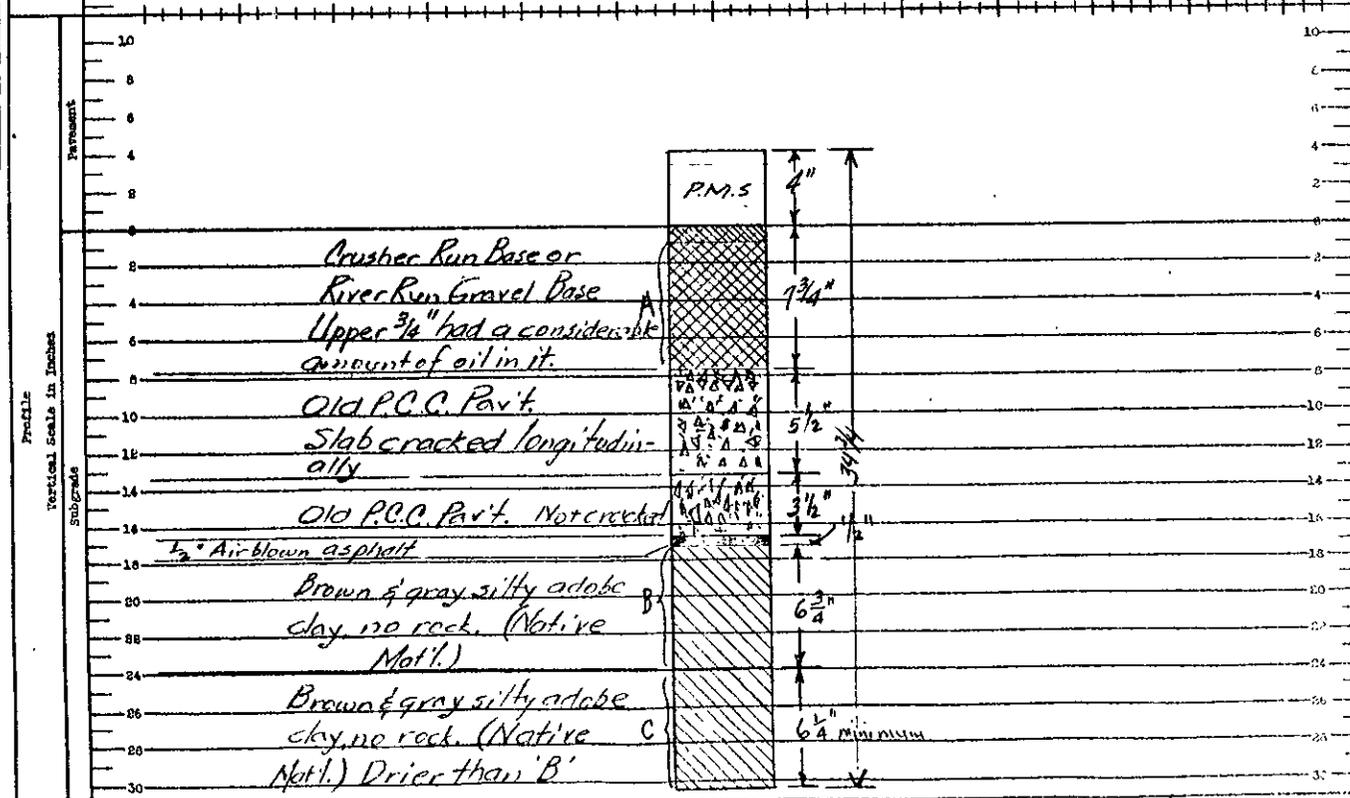
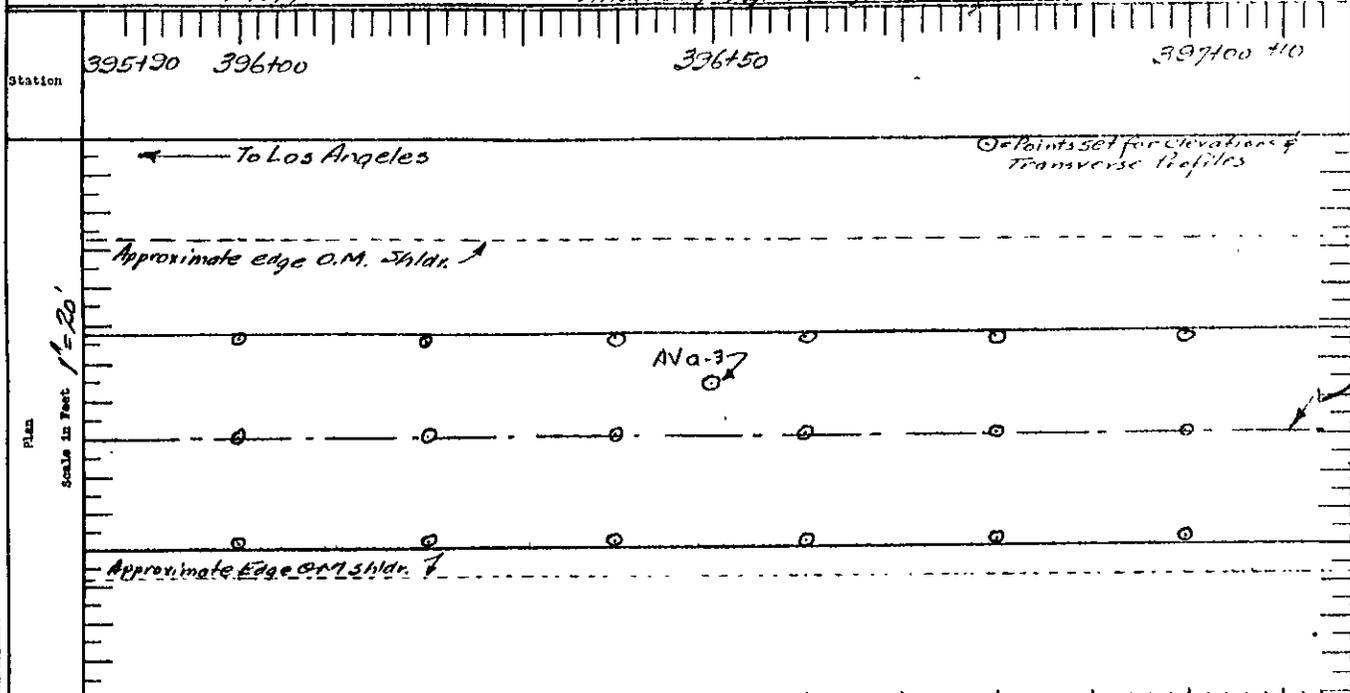


LOCATION AND PROFILE SKETCH

CONCRETE PAVEMENT INVESTIGATION

PROJECT NO. 000013

Dist. VII	Co. Ven	Rte. 2	Sec. C	Contract No. -	Date of Constr. 1949	Sheet No. AVa-5
Fill <input checked="" type="checkbox"/>	Approx. Height 251.32'	Dist. from End of Fill 1300	1300	No. of Lanes 2	Traffic Heavy	No. 2
Out -	Approx. Depth -	Dist. from End of Out -	-	Side Ditches 4'-Throat between lanes	Depth 11-25"	Date of Setting 2-8-51
Roadside Use, Left Cemetery		Right Division Ship. Airport beyond Rd.			Grade 1.3%	Dr -



Remarks: No 'skin' or seal coat between P.C.C. slabs as found at AVa-1

By: *Reynier Bourne*  
*Clawson*

Checked by: *Clawson*

STATE OF CALIFORNIA  
 DIVISION OF HIGHWAYS  
 DEPARTMENT OF PUBLIC WORKS  
 MATERIALS AND RESEARCH DEPARTMENT

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 44  
 Dist. III Co. Ken Rte. 2 Sec. C  
 Loc. Design AVr  
 Sta. 388+00 to 393+00  
 Sheet No. 1 of 2

*Drainage Cross Section*  
 ROADWAY CONDITION SURVEY

	Left of Roadway						Right of Roadway						
					Top Fill Slope	Edge o.M. Shldr.	Edge Pav't	Edge Pav't	Edge o.M. Shldr.	& Ditch			
393~					149.1 33.0	150.9 21.0	151.26 11.0	151.69 12.0	152.0 15.0	149.5 29.5			
392~					147.8 33.5	149.5 20.0	149.90 11.0	150.32 12.0	150.5 16.0	148.1 29.0			
391~					146.8 34.5	148.2 20.5	148.52 11.0	148.94 12.0	148.5 15.0	147.0 27.0			
160					145.8 34.0	147.5 21.0	147.95 11.0	148.42 12.0	148.2 15.0	146.3 27.0			
390~					144.8 38.5	146.8 19.5	147.06 11.0	147.47 12.0	147.3 15.5	145.5 26.5			
389~					143.1 37.0	145.3 20.5	145.80 11.0	146.14 12.0	146.0 15.5	144.1 25.5			
388~					141.2 37.5	143.9 20.5	144.35 11.0	144.76 12.0	144.6 15.0	142.8 24.5			

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 44  
 Dist. III Co. Ken Rte. 2 Sec. C  
 Loc. Design AV  
 Sta. 394+00 to 398+00  
 Sheet No. 2 of 2

*Drainage Cross section*  
 ROADWAY CONDITION SURVEY

Left of Roadway						Right of Roadway						
					Edge Pav't	Edge Pav't	Edge O.M. Shldr.	♀ Ditch				
				♀ Ditch	Top Ditch Bank	Edge O.M. Shldr.						
398~				155.2	156.4	157.2	157.82	158.26	158.2	155.6		
				35.0	33.0	22.0	11.0	12.0	15.3	32.0		
				♀ Ditch	Edge O.M. Shldr.	Break in c.r. Shldr.						
397~				154.2	155.8	156.1	156.59	157.01	156.9	154.0		
				37.0	23.5	20.5	11.0	12.0	15.0	30.5		
				152.6	154.1	154.5	155.12	155.63	155.5	152.6		
396~				35.5	23.5	20.5	11.0	12.0	15.0	30.5		
					Top Fill Slope	Edge O.M. Shldr.						
+60	Farm Road			152.5	153.9	154.75						
				39.0	23.5	11.0						
				151.2	153.4	153.95	154.31	154.1	151.5			
395~				33.0	20.5	11.0	12.0	15.5	29.5			
				150.2	152.1	152.70	153.01	152.9	150.1			
394~				32.0	21.0	11.0	12.0	15.5	29.5			

23

DATA OF SECTION SELECTED FOR TEST

The site originally designated for this section was at the location of the scales in Cajon Pass, road VIII-SBd-31-B. A proposed reconstruction of this section which included realignment and resurfacing at the designated site was to be placed under contract shortly after the section was established, so the section was established near Devore, road VIII-SBd-31-A.

ROADWAY STRUCTURE

LOCATION:

The weighing station for this section is located on road VIII-SBd-31-B, 5.6 miles east of Devore. There are no major highways intersecting or turning off of this route between the scales and the section.

The section selected for test is established 1.0 (+) mile west of Devore, approximately 6.6 miles from the loadometer station.

LENGTH:

The section is established between Station 411+00 and 421+00, a length of 1000 ft. and includes both lanes of the two-lane roadway.

SURFACE:

Type:

Asphaltic plant mixed surfacing, constructed in 1944 over various older pavements including a 1916 P.C.C. pavement 16' wide with 6' wide road-mixed asphaltic surfacing shoulders placed in 1936.

Loadometer Station No. 93  
Road VIII-SBd-31-A

ROADWAY STRUCTURE

SURFACE:

Width: Variable, from 36.8' to 39.3', striped as a 2-lane road driven by traffic as a 4-lane road.

Thickness: Variable, from 4-1/2" to 5-1/8". This surface is over various types of old pavement. Central section (22.0 to 24.0) of roadway has total pavement thickness of from 9" to 9-1/4". Shoulder areas have 5-1/8" of pavement. See Location and Profile sketches.

BASE AND SUBBASE MATERIAL:

BASE: At all locations sampled, a layer of fine silty sand and light gravel was encountered just below the pavement. This is apparently an imported subgrade material and varies in thickness from 4-1/4" to 7-1/4".

Type and Thickness:

Soil Classification: A-1-b or A-2-4

SUBBASE: In all locations sampled, below the layer of apparently imported material, silty sand and gravel was encountered. In some cases, gravel ran to large sizes. This material appears to be native material common to the alluvial deposit on which the roadway lies. Sampled to a depth of from 12" to 20" below bottom of pavement.

Type and Thickness:

Loadometer Station No. 93  
Road VIII-SBd-31-A

ROADWAY STRUCTURE

SUBBASE:

Soil Clas-  
sification:

A-1-b or A-2-4

SIDE DITCH  
DRAINAGE:

Roadway in the entire section is slightly higher than the surrounding country. Probably the original P.C.C. pavement was in a slight cut but additional blankets have raised the present surface. The section is built on an alluvial fan which is quite steep, the section being on an average grade of +2.3% from the beginning towards the end. Drainage is from east to west. There are slight ditches (from 0.9' to 1.4' below edge of pavement on the right and from 0.7' to 1.5' below edge of pavement on left) on either side of the roadway which collect all drainage water from the roadway. There are no culverts or bridges within the section.

ROADWAY CONDITION

There is only one crack in the section, located in the right (east bound) lane near Station 419+85. Throughout the section there are numerous fine, short cracks along the roadway centerline. However, these are considered to

Loadometer Station No. 93  
Road VIII-SBd-31-A

ROADWAY CONDITION

be very minor and are not shown on the plan diagram.

SPECIAL  
CONDITIONS:

- (1) Areas of Alligator Cracking: There are no areas of alligator cracking within the section.
- (2) Areas of Raveling: There are no areas of raveling within the section.  
  
In the left lane, between Sta. 411+00 and 418+93, the surface is roughened and slightly pitted, as though some of the fine material of the P.M.S. had whipped out under high speed traffic.
- (3) Areas of Shoving or Creeping: There are no areas within the section in which the surfacing shows evidences of creeping or shoving.
- (4) Patches: There is only one patch; an area 3' long by 2.5' wide at Station 416+00.
- (5) Roadway Section: The entire section is on a slight fill section. The present surface from 0.9 ft. to 1.5 ft. above original ground.
- (6) Shoulders: Shoulders have received little or no treatment within the section. In a few locations are evidences of an old penetration or similar treatment, but it is entirely ineffective at present.

Loadometer Station No. 93  
Road VIII-SBd-31-A

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (6) Shoulders: From the extreme edges of the P.M.S. to the  
(Continued) ditch line the shoulders are bladed by Main-  
tenance Forces but no further recent treatment  
is in evidence.  
Drainage conditions are noted previously under  
"Side Ditch Drainage".

ROUGHNESS  
MEASUREMENTS:

Bench Marks and Levels: Bench marks were established by the field crew near each end of the section. Steel pins set into railroad spikes in telephone poles were used for benches. Elevations of bench marks established were determined from a district bench mark.

<u>B.M.</u> <u>No.</u>	<u>Location</u>	<u>Description</u>	<u>Elevation</u>
1	37.2' Lt. & Sta. 411+39	1/4" diam. steel pin set in RR spike in tele- phone pole	1943.180
2	28.6' Lt. & Sta. 421+42.5	Same as above	1965.120

Because of the extreme width of the pavement, it was necessary to establish four lines of permanent reference pins on this section. On the left of the traffic stripe, one line of pins was

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:  
(Continued)

established 6.15 ft. from the stripe and another line was established 17.15' from the stripe. On the right of the stripe, two lines of pins were established at the same distance from the stripe.

Profilograph  
Records:

Transverse:

The permanent reference points for levels also serve as permanent markers for transverse profiles of the pavement surface. Using the machine developed for this purpose, transverse profilograph records were made at 20 foot longitudinal intervals throughout the section. Three sets of transverse profile records were required at this particular section to cover the traveled way surface. Lines of records were made with the machine set on the two left lines of pins, the two centerlines of pins and the two right lines of pins.

Longitudinal:

By means of the Profilograph, records were made of the longitudinal profiles of the pavement section. Four lines of profiles were recorded, one along each of the pin lines. In each run,

Loadometer Station No. 93  
Road VIII-SBd-31-A

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Profilograph  
Records:

Longitudinal: the machine was operated so that the wheels toward the outer edge of the roadway were adjacent to a pin line. All profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 93

VIII-SBd-31-A



Ahead on Line from  
Station 411+00



Back on Line from  
Station 421+00

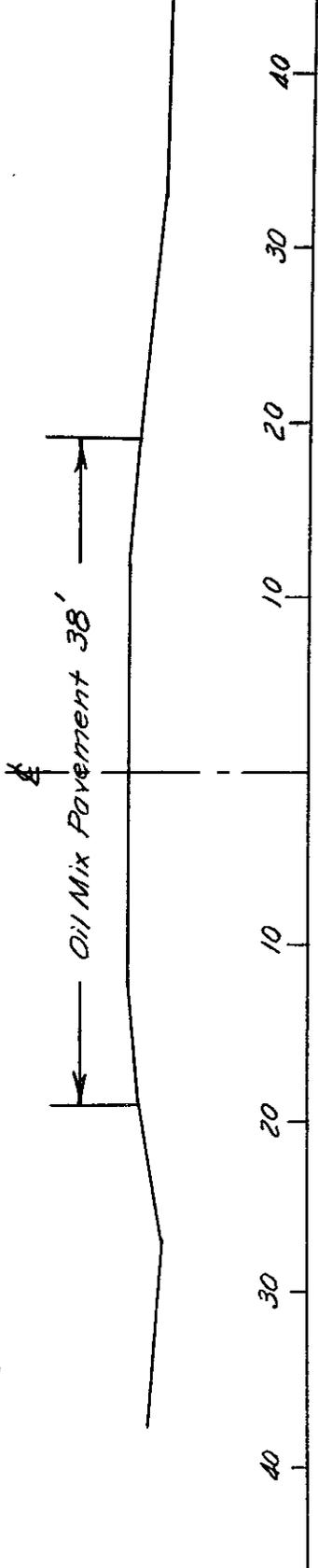
State of California, Div. of Highways  
 Materials & Research Department  
 Research No. 00258, W.O. No. 13NN26

Loadometer Station No. **BG 93**  
**VIII-SBd-31-A**

ROADWAY CONDITION SURVEY

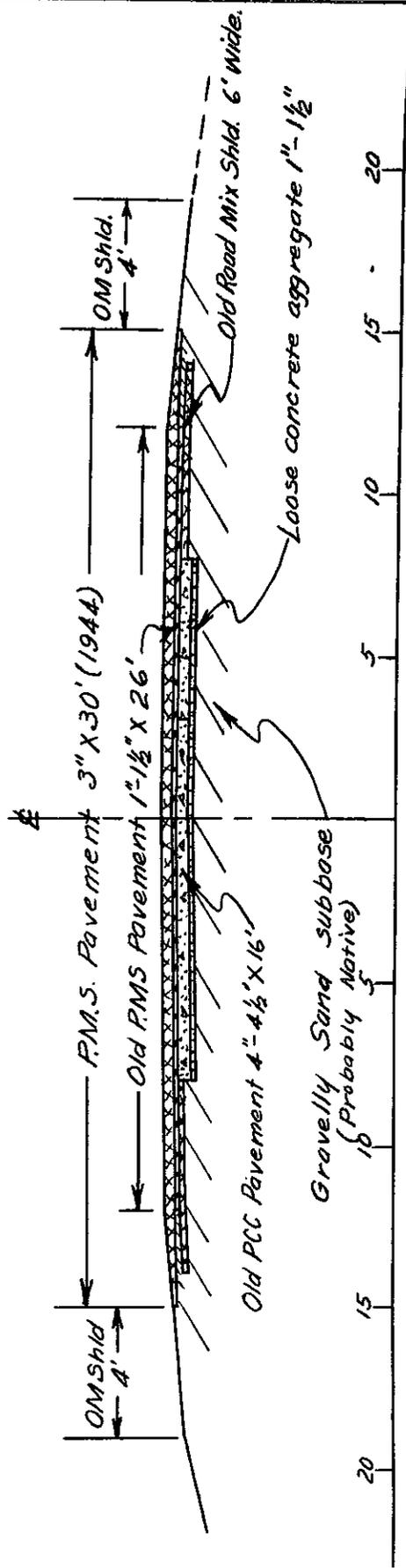
Scale: 1" = 10'

TYPICAL ROADWAY SECTION

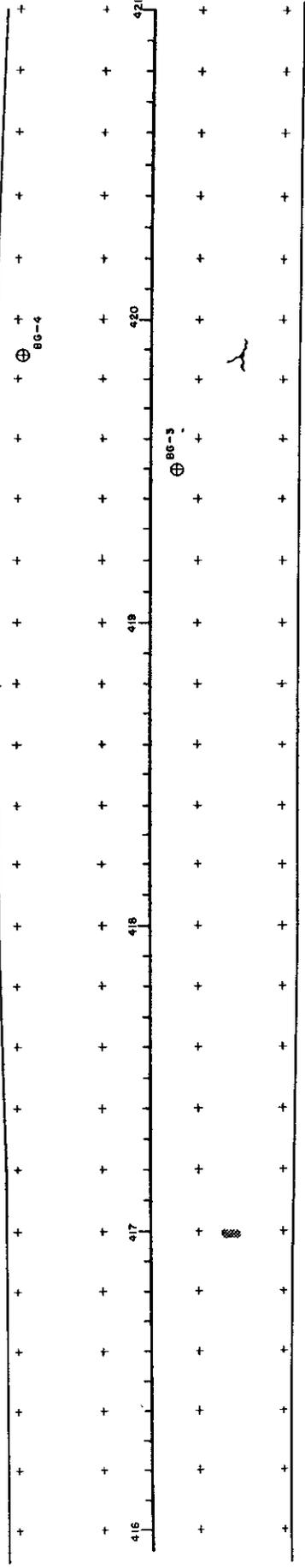
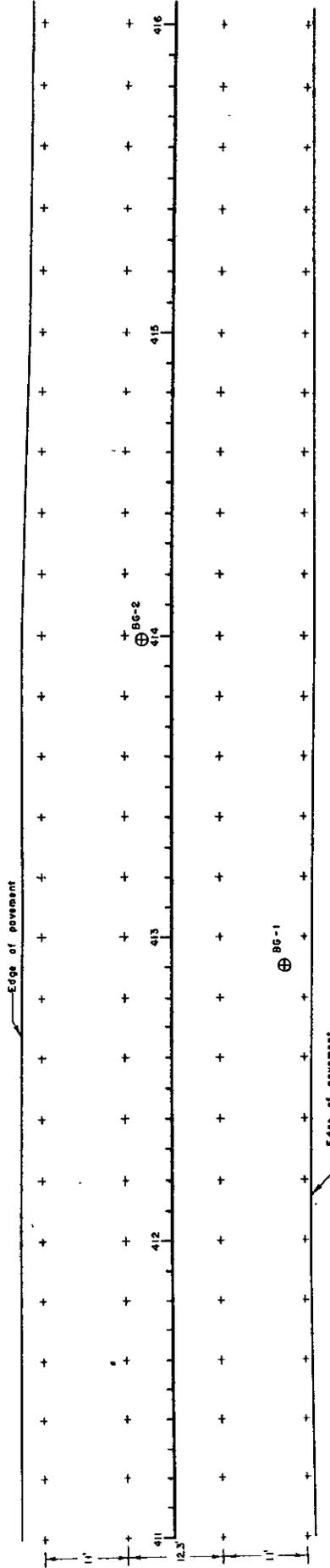


Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION



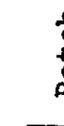
← To San Bernardino



To Victorville →

### PAVEMENT LOCATION AND CONDITION CHART

#### LEGEND

-  Alligator Cracking
-  Location of Sample Hole
-  Failure
-  Block Cracking
-  Shoving
-  Patch

⊕ Location of Permanent Reference Points

TEST RESULTS SUMMARY

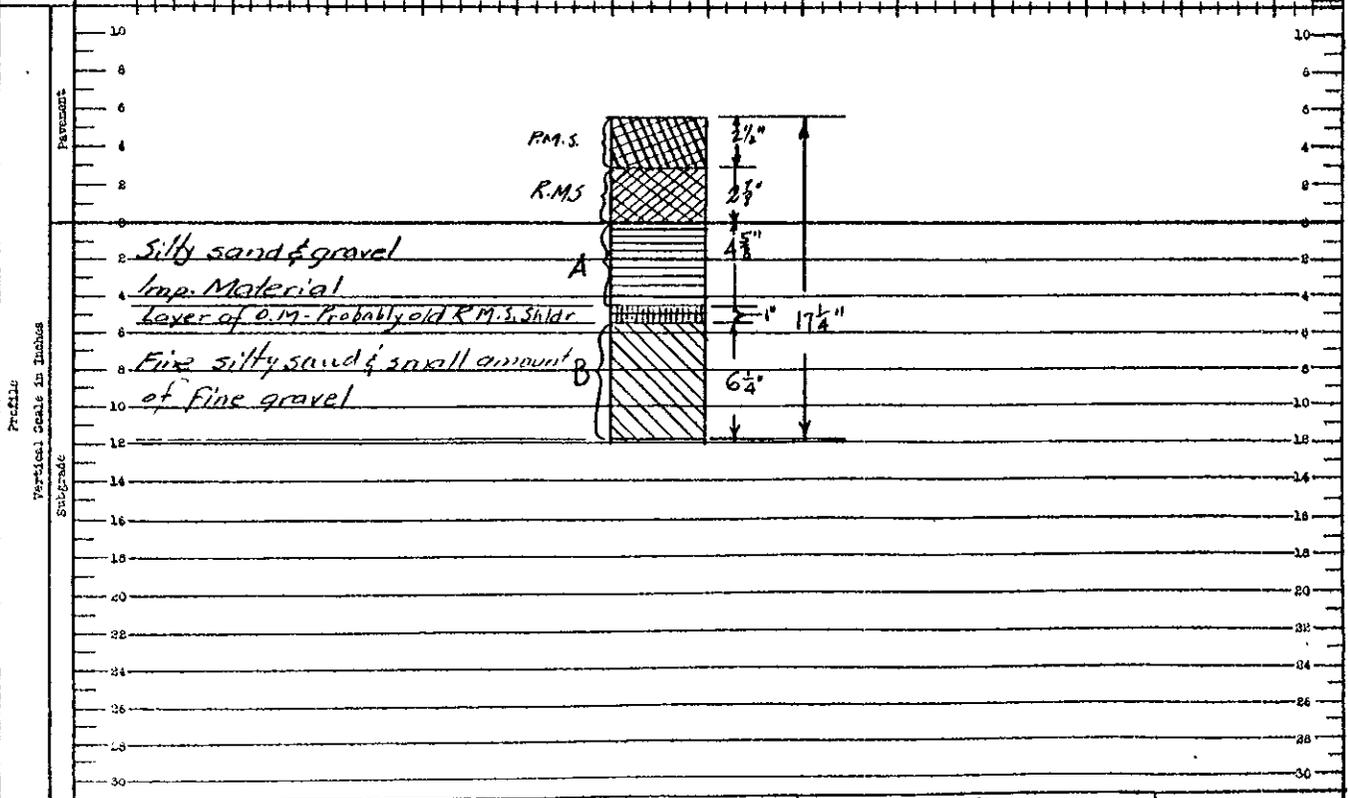
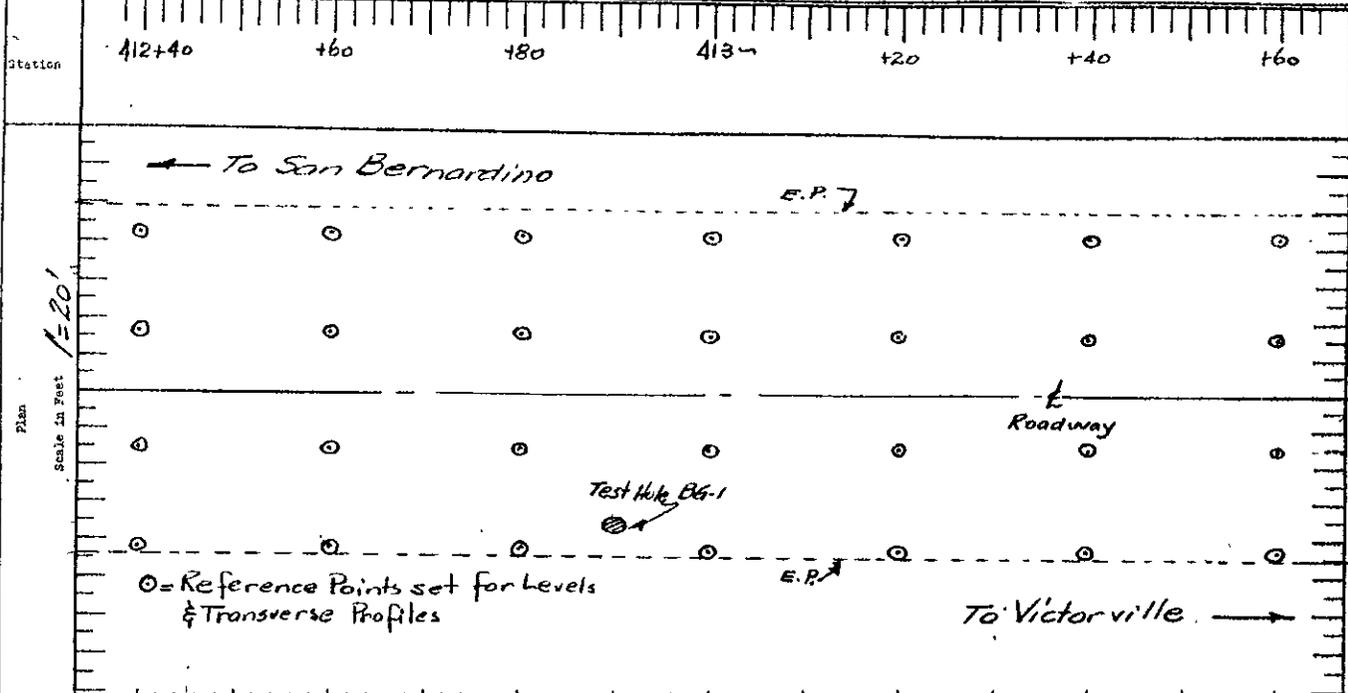
Load. Sta. No. 93  
VIII-SBd-31-A

Line	Sample No.		Sample Hole Location		Pavement		Soil Samples	
	Field	Lab.	Station	Position	Type	Thick-ness	Depth below Btm. Pav't.	Layer Des-cription
1	BG-1-A	51-2192	412+90	14.6' right of roadway	OM	5-3/8"	0 - 4-5/8"	Base
2	BG-1-B	51-2193	412+90	Same	OM	5-3/8"	5-5/8"-11-7/8"	Subbase
3	BG-2-A	51-2194	413+985	4' left of roadway	OM PCC	5" 4"	2 - 9-1/4"	Subbase
4	BG-2-B	51-2195	413+985	Same	OM PCC	5" 4"	9 1/2" - 16 1/2"	Subbase
5	BG-3-A	51-2196	419+50	3.5' right of roadway	OM PCC	4 3/4" 4-3/4"	1 1/2" - 6-3/4"	Subbase
6	BG-3-B	51-2197	419+50	3.5' right of roadway	OM PCC	4 1/2" 4-3/4"	6-3/4"-21 1/2"	Subbase or Basement
7	BG-4-A	51-2198	419+87	6.6' left of roadway	OM	5-1/8"	0 - 7-7/8"	Base
8	BG-4-B	51-2199	419+87	Same	OM	5-1/8"	7-7/8"-16-3/8"	Subbase or Basement

Line	In Place Test Data			Lab. Test Data		HRB Soil	Specific Gravity	
	Moist.	Density	% Rel. Comp.	Optimum Moisture	Maximum Density	Classification	Pass. 4	Ret. 4
1	3	130	99	7	131	A-1-b	2.69	2.64
2	8.4	107	88	12	122	A-2-4	2.71	
3	6.1	111	94	10	118	A-2-4	2.70	
4	6	116	91	9	127	A-1-b	2.69	2.64
5	2	130	99	8	131	A-1-b	2.75	2.63
6	1	No	Sand	Volume	Taken	A-1-b	2.68	2.65
7	5	122	99	10	123	A-2-4	2.67	
8	2	127	99	9	128	A-1-b	2.70	2.63

Line	Sieve Analysis - Percent Passing										Atterberg Limits	
	2"	3/4"	4	8	16	30	50	200	270	5M	LL	PL
1	93	85	78	75	67	54	37	12	8	2	N	P
2	100	99	97	96	92	84	73	35	27	5	N	P
3	100	99	97	96	92	85	71	21	17	4	N	P
4	99	96	89	85	77	62	40	16	13	4	N	P
5	95	75	64	62	59	51	36	10	8	2	N	P
6	89	78	70	64	53	37	22	6	4	1	N	P
7	100	98	92	88	83	74	57	18	16	3	N	P
8	92	81	69	65	59	50	36	8	6	1	N	P

Dist. <i>VI</i>	Co. <i>SB</i>	Rto. <i>51</i>	Sec. <i>A</i>	Contract No.	Date of Constr. <i>1916</i> <i>1936</i>	Test Hole No. <i>BG-1</i>
Fill <input checked="" type="checkbox"/>	Approx. Dist. <i>1-15'</i>	Dist. from End of Fill	Side Ditches <i>No clearly defined ditches</i>	No. of Lanes <i>2</i>	Traffic	No.
Cut <input type="checkbox"/>	Approx. Depth	Dist. from End of Cut	Depth	Grade <i>2.5%</i>	Date of Sampling <i>6-13-51</i>	
Left <i>Undeveloped</i>			Right <i>Small local businesses</i>			Op <i>→</i>



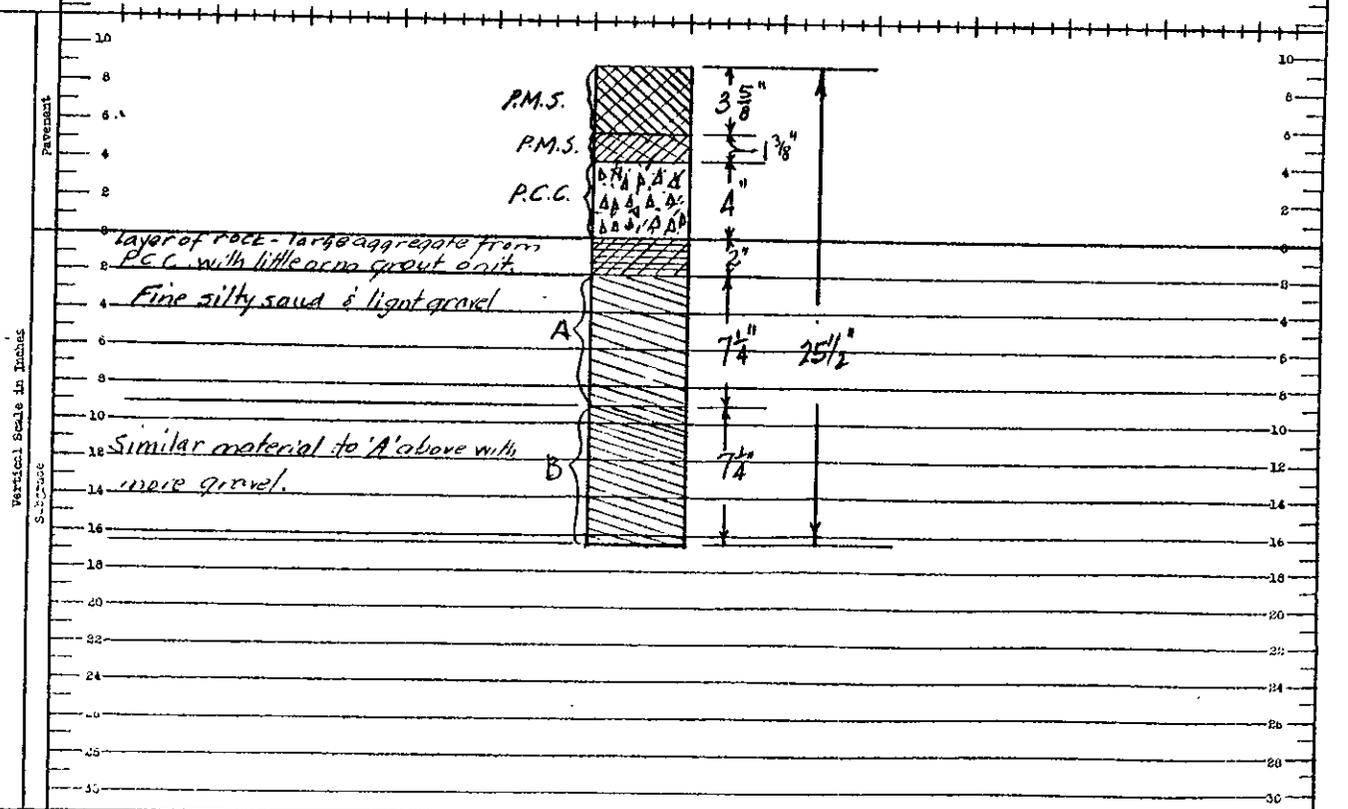
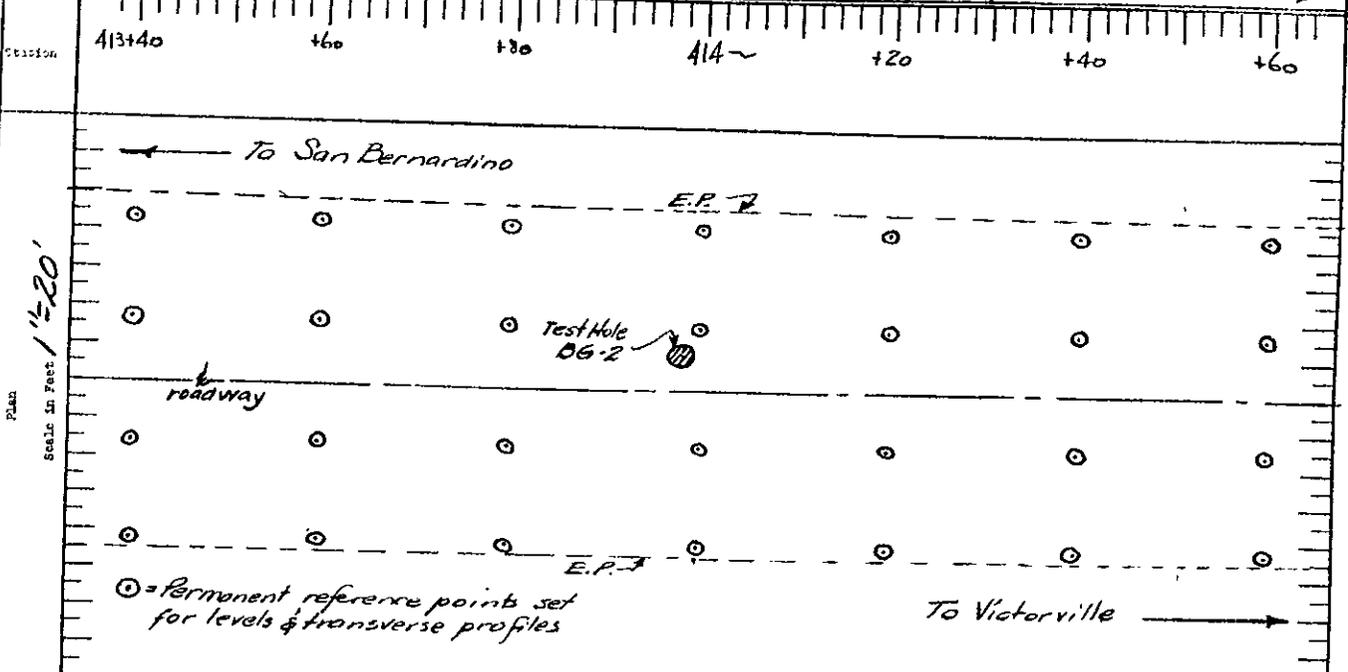
Material below O.M. layer is uniform to depth of 22 1/2" below profile grade.

Party *Keyser Clawson*

Drawn By *(Signature)*

STATE OF CALIFORNIA, DIVISION OF HIGHWAYS, DEPARTMENT OF PUBLIC WORKS, MATERIALS AND RESEARCH DEPARTMENT

Dist. VIII	Co. 5Bd	Rte. 31	Sec. A	Contract No.	Date of Constr. 1976 1936	Test Hole No. BG-2	
Fill	✓	Approx. height 1'-1 1/2'	Dist. from End of Fill	No. of Lanes 2	Traffic Heavy		
Exc.		Approx. Depth	Dist. from End of Cut	Side Ditches No clearly defined ditches	Depth	Date of Sampling 12/16/51	
Location Use, Left		Undeveloped			Right Small local businesses	Grade 2.3%	Up →



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

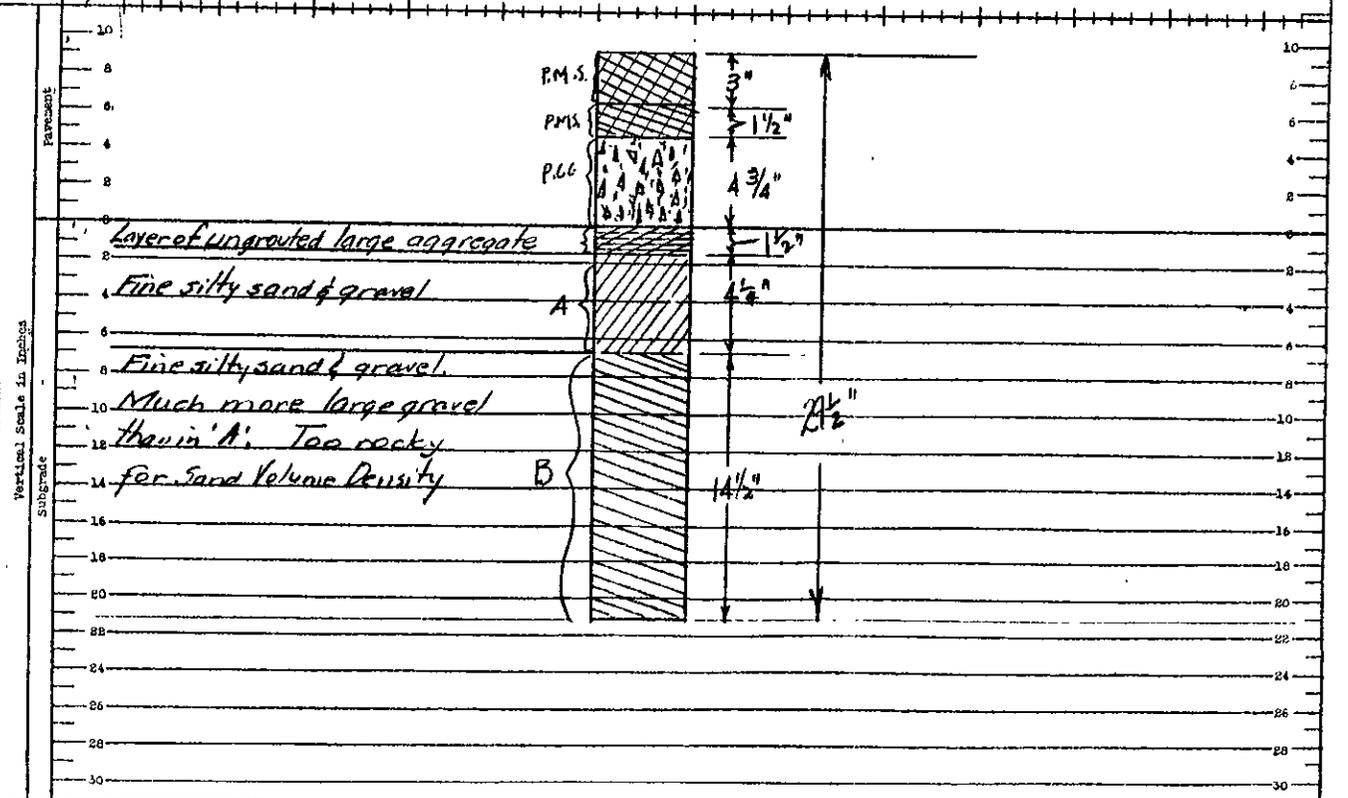
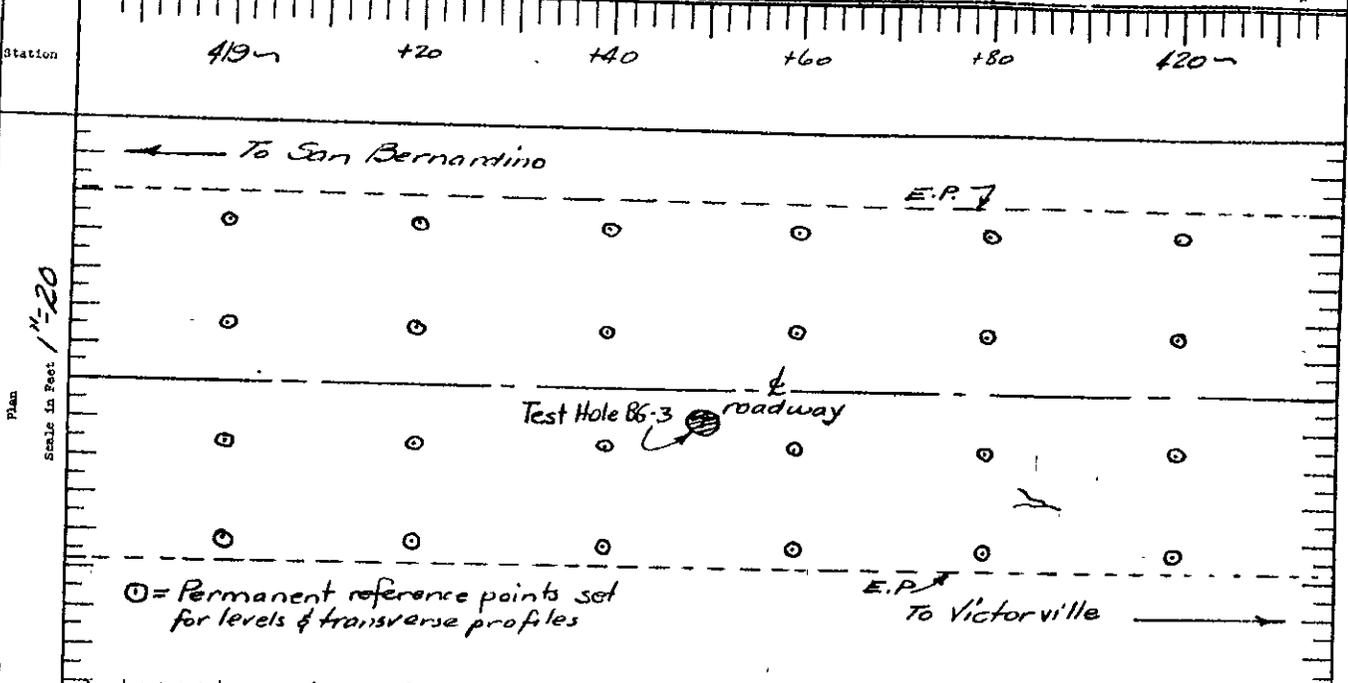
Rayner  
C. Lawson

Party

LOCATION AND PROFILE SKETCH

RESEARCH NO. 00258

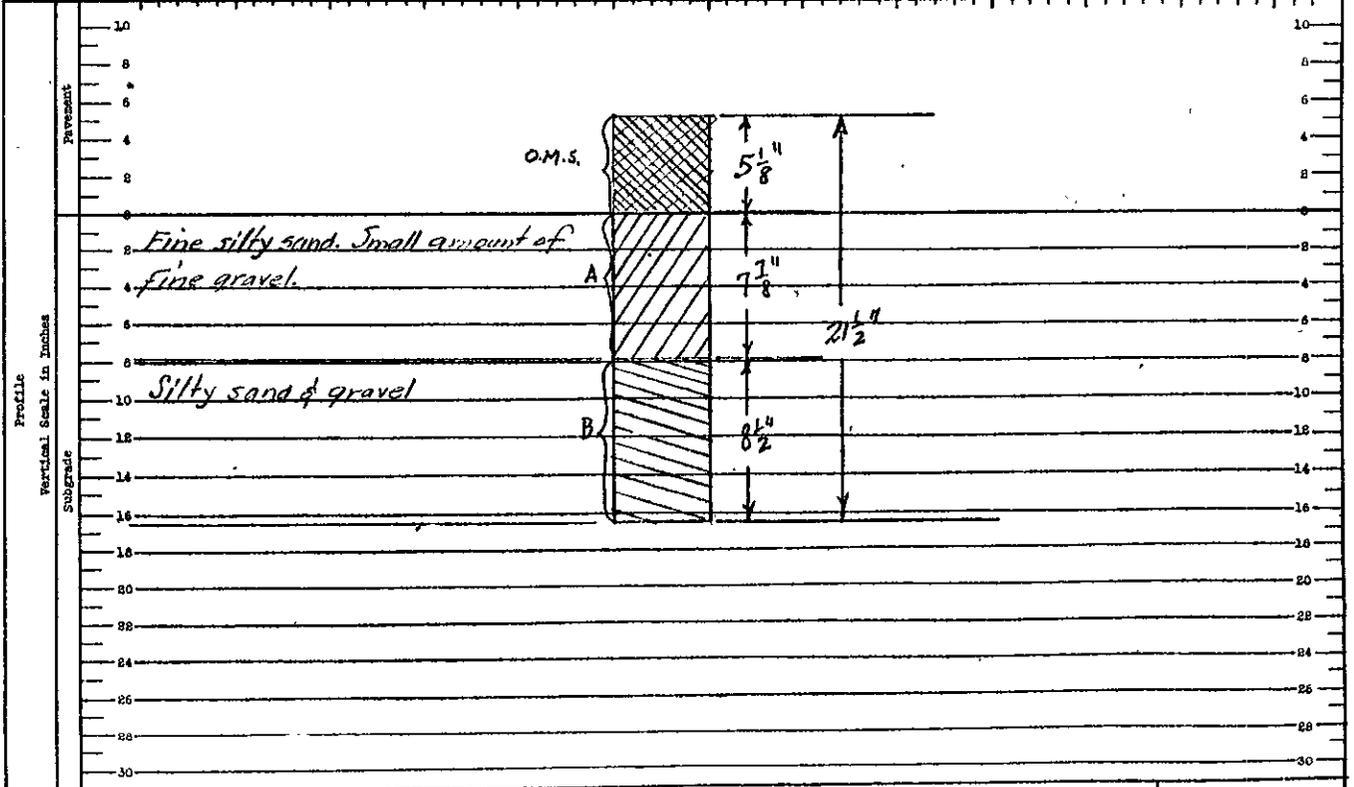
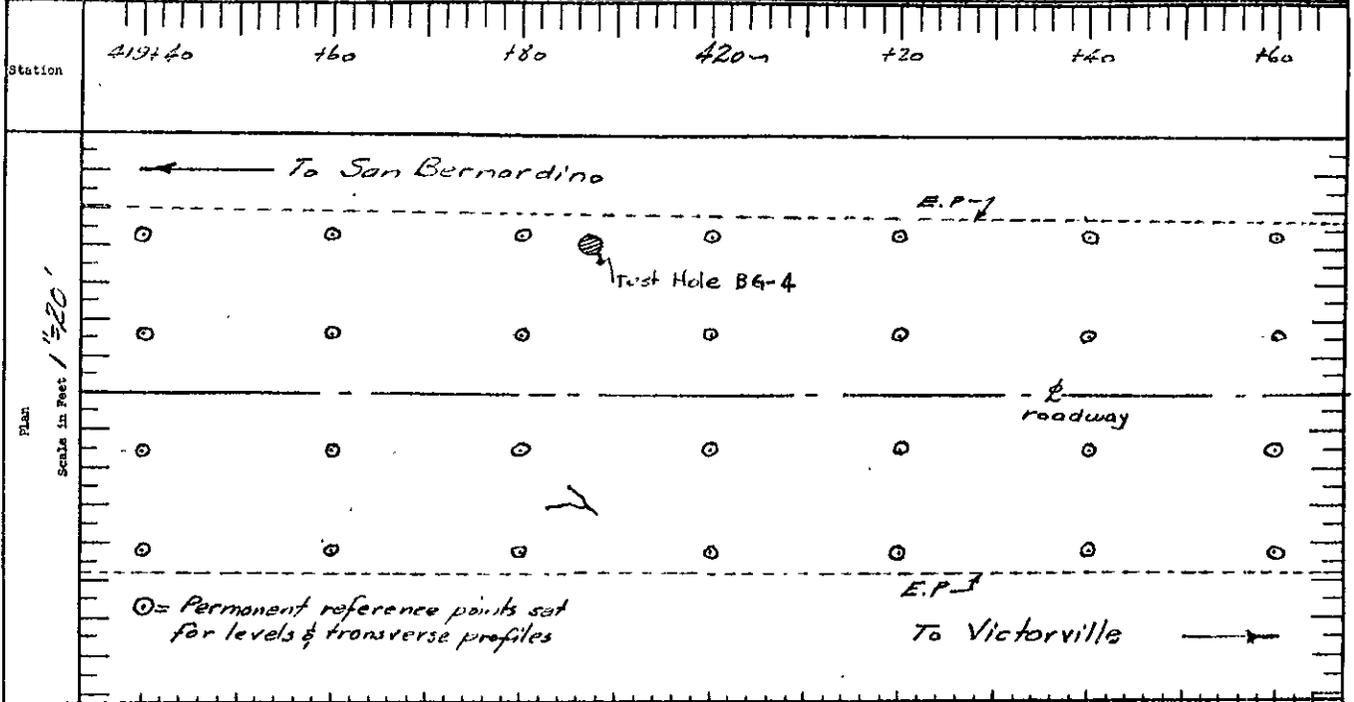
Dist. VIII	Co. SBd Hts. 31	Sec. A	Contract No.	Date of Constr. 1916 1936	Test Hole No. 86-3
Fill	Approx. Sigt 1'-15'	Dist. from End of Fill	No. of Lanes 2	Traffic Heavy	
Cut	Approx. Depth	Dist. from End of Cut	side Ditches No clearly defined ditches	Depth	Date of Sampling 13 June '51
Roadside Use, Left Undeveloped		Right Small local businesses		Grade 2.3%	Up



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

Drawn By	Keyner Clawson
Party	
Drawn By	CM

Dist. <u>III</u> Co. <u>SRA</u> Rte. <u>31</u> Sec. <u>A</u> Contract No. <u>    </u> Date of Constr. <u>1/16 1936</u> Test Hole No. <u>BG-4</u>
Fill <u>✓</u> Approx. <u>1-15'</u> Dist. from End of Fill <u>    </u> No. of Lanes <u>2</u> Traffic <u>Heavy</u> No. <u>    </u>
Out Approx. Depth <u>    </u> Dist. from End of Out <u>    </u> Side Ditches <u>No clearly defined ditches</u> Depth <u>    </u> Date of Sampling <u>12 June '51</u>
Remarks: Use, Int <u>Undeveloped</u> Right <u>Small local businesses</u> Grade <u>2.3%</u> Up <u>    </u>



Remarks:

Reyner  
Clawson

Party

Drawn By (11)

STATE OF CALIFORNIA  
DIVISION OF HIGHWAYS  
DEPARTMENT OF PUBLIC WORKS  
MATERIALS AND RESEARCH DEPARTMENT

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 93  
 Dist. VIII Co. 58d Rte. 31 Sec. A  
 Loc. Design B6  
 Sta. 41100 to 41600  
 Sheet No. 1 of 2

ROADWAY CONDITION SURVEY

2

Station	Left side Roadway				Roadway (Traffic Stripe)	Right side Roadway			
	Original Ground Elev.	Side Ditch	Extreme Edge Part.	'Break' in Part.		'Break' in Part.	Extreme Edge Part.	Side Ditch	Original Ground Elev.
416-	1952.5 35.6	1952.1 26.6	1952.20 18.6	1953.42 11.8	1953.47 0.0	1953.38 11.2	1952.96 18.0	1952.0 28.6	1952.3 36.2
415-	1950.1 36.2	1949.5 27.2	1950.23 18.9	1950.78 13.5	1950.86 0.0	1950.82 12.0	1950.41 18.0	1949.0 30.6	1949.1 36.6
414-	1947.5 33.6	1946.9 26.2	1947.76 19.6	1948.46 12.5	1948.67 0.0	1948.62 11.4	1948.11 18.2	1946.7 30.6	1946.8 35.7
413-	1945.0 38.3	1944.6 31.8	1945.59 19.8	1946.28 12.5	1946.51 0.0	1946.41 11.0	1945.96 18.0	1944.8 31.0	1945.2 37.2
412-	1942.2 40.3	1942.3 31.3	1943.22 19.8	1943.95 13.0	1944.24 0.0	1944.18 10.0	1943.72 17.8	1942.7 31.0	1943.1 40.5
411-	1940.8 39.4	1940.3 29.4	1941.09 19.9	1941.81 13.0	1942.07 0.0	1941.97 10.0	1941.54 17.2	1940.2 30.9	1940.9 35.9

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. CC 258  
 W.O. No. 13 NN 26  
 Job Number \_\_\_\_\_

Load. Sta. No. 93  
 Dist. VII Co. S Bd Rte. 31 Sec. A  
 Loc. Design B6  
 Sta. 417+00 to 421+00  
 Sheet No. 2 of 2

ROADWAY CONDITION SURVEY

€

Station	Left side Roadway					Roadway (Traffic Stripe)	Right side Roadway			
	Original Ground Elev.	Side Ditch	Extreme Edge Part.	'Break' in Part.			'Break' in Part.	Extreme Edge Part.	Side Ditch	Original Ground Elev.
421-	1964.1	1963.3	1964.4	1965.10		1965.11	1964.86	1964.40	1963.1	1963.0
	37.2	26.6	18.8	11.6		0.0	12.1	19.2	82.8	42.8
420-	1963.0	1961.6	1962.68	1963.38		1963.47	1963.28	1962.65	1961.3	1961.1
	41.6	27.1	20.0	12.2		0.0	12.0	19.2	82.2	40.6
419-	1959.9	1959.4	1960.56	1961.26		1961.47	1961.34	1960.61	1959.1	1959.1
	35.6	26.6	20.1	12.7		0.0	11.5	19.2	32.2	40.2
418-	1958.0	1956.4	1957.94	1958.71		1958.92	1958.80	1958.27	1956.9	1957.3
	40.6	82.6	19.6	12.0		0.0	12.0	19.0	31.6	39.2
417-	1955.0	1954.2	1955.32	1956.05		1956.20	1956.06	1955.58	1954.2	1955.8
	37.2	26.6	18.6	12.0		0.0	12.0	18.2	30.2	37.2

24

### DATA OF SECTION SELECTED FOR TEST

This Loadometer Station and section location were authorized in the list of stations and locations accompanying Headquarters Design Department letter of December 7, 1950, to the District Engineer of Districts VII, VIII, and XI. This station and location were substituted for Station No. 71, Road VII-L.A-26-W.Cov, near West Covina which was discontinued as being too dangerous to operate.

#### ROADWAY STRUCTURE

**LOCATION:**

Platform scales on Road VIII-Riv-26-C are located 13 miles east of Banning at the junction of Route 26 and Route 187. There are no major road or highway turnoffs between the scales and the section selected for test.

The section is located approximately 8 miles east of Banning.

**LENGTH:**

The section is located between Station "C" 290+00 and Station "C" 300+00, a total length of 1000 feet.

Roadway at the section location is a four lane divided highway. The section is established in the two left (east bound traffic) lanes.

**SURFACE:**

**Type:**

Plant mixed surfacing, constructed in 1940-1941.

**Width:**

Traveled way is 25 ft. wide. Outer lane is 11.0 ft. and inner lane is 14.0 ft. in width.

Loadometer Station No. 67  
Road VIII-Riv-26-C

ROADWAY STRUCTURE

SURFACE:

Thickness: Variable from 2-1/4" to 2-3/4".

BASE:

Type and Thickness: Cement Treated Base, varying from 8-1/4" to 9" in thickness.

Typical section as designed specified 9" of C.T.B. at outer edge of pavement and 6" at the inner edge.

SUBBASE:

Type and Thickness: Silty sand and gravel. Apparently a local borrow used to raise roadway grade above the surrounding ground level. Sampled to a depth of from 11-3/8" to 14" below bottom of C.T.B.

Soil Classification: A-1-b and A-2-4

SIDE DITCH DRAINAGE:

The roadway at the section selected for test is entirely in fill section.

The section has a profile grade of -1.9% and drainage runs from west to east. The section pavement has a uniform slope from the inner edge of pavement to the edge of outer shoulder carrying all drainage transversely to the outer fill slope.

There is no clearly defined ditch along the outer fill slope drainage runs along the toe of fill

Loadometer Station No. 67  
Road VIII-Riv-26-C

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:  
(Continued)

at an elevation of from 1.5' to 2.5' below the shoulder point.

All drainage is carried along the left outer toe of the fill, west to east and is carried completely under the section roadway, division strip and right roadway in two reinforced concrete box culverts.

Along the inner edge of the pavement is a berm from 0.7' to 1.0' higher in elevation than the pavement.

There are two reinforced concrete box culverts, as noted above.

3' x 6' R.C. box culverts, centerline at inlet opposite Sta. 290+43, floor slab clean.

Triple 4' x 6' R.C. box culvert centerline at inlet opposite Sta. 298+48, floor slab has 1.5 ft. of sand and gravel over it.

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

(1) Areas of  
Alligator  
Cracking:

There are no areas of alligator cracking within the section.

(2) Areas of  
Raveling:

There are no areas of raveling within the section.

ROADWAY CONDITION

SPECIAL  
CONDITION:

- (3) Areas of Shoving or Creeping: There are no areas within the section in which the surfacing shows evidence of creeping or shoving.
- (4) Patches: There are no patched areas within the section except for very minor ones where some of the spalled out surface has been patched by Maintenance forces. These patches have not been listed individually but have been noted on the plan diagram.
- (5) Roadway Section: The entire section is in fill section. Pavement surface is from 1.5' to 2.5' above surrounding areas.
- (6) Shoulders: There is an asphaltic plant mixed surfacing shoulder 7' in width along the outer (left) edge of pavement which ends in an untreated soil shoulder, 1.0' to 4.0' in width. On the inside (right) of the section, as previously noted, there is a berm, paved with plant mixed surfacing which varies from 0.7' to 1.0' higher in elevation than the roadway surfacing adjacent to it.

Loadometer Station No. 67  
Road VIII-Riv-26-C

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:

Bench marks were established near the ends of the section in the P.C.C. headwalls of box culverts. Elevations used in establishing these benches were based on district bench mark elevations.

<u>B.M. No.</u>	<u>Location</u>	<u>Description</u>	<u>Elevation</u>
1	23.0' lt. of T.S. 2, Sta. 290+41.5	1/4" diam. steel pin set flush in P.C.C. headwall	1739.375
2	23.0' lt. of T.S. 2, Sta. 298+46.0	Same as above	1724.483

Permanent reference pins were established in three lanes parallel to centerline. One pin line was along the traffic stripe, one pin line was set 11.5 ft. left of the stripe (0.5' (+) outside the edge of traveled way.) The third line of pins was set 11.5 ft. right of the stripe, 2.5 ft. from the bottom of the berm.

Profilograph  
Records:

Transverse:

The permanent reference points for levels also serve as permanent markers for transverse profiles of the pavement surface. Using the

Loadometer Station No. 67  
Road VIII-Riv-26-C

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Profilograph  
Records:

Transverse: machine developed for the purpose, transverse profilograph records of the traveled way surface in each lane were made at 20' longitudinal intervals throughout the section.

Longitudinal: By means of the Profilograph, records were made of the longitudinal profiles of each lane of the traveled way surface. Four lines of profiles were covered. In each lane, a line of profiles was run with the recording wheel 30" from the center pin line and another was run with the recording wheel 30" into the lane from the outer pin line.

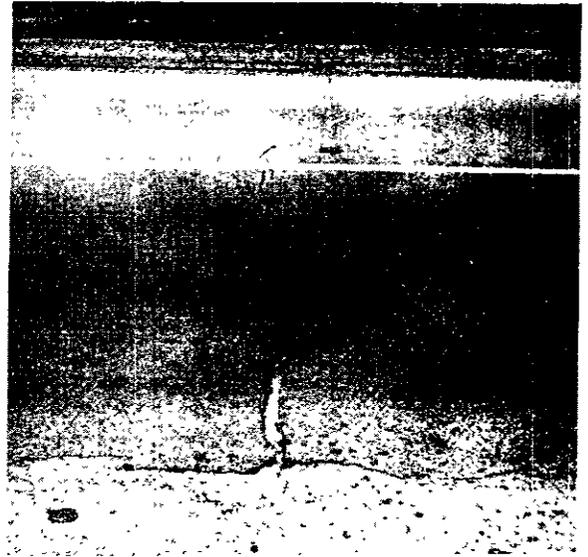
All profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 67

VIII-Riv.26-C



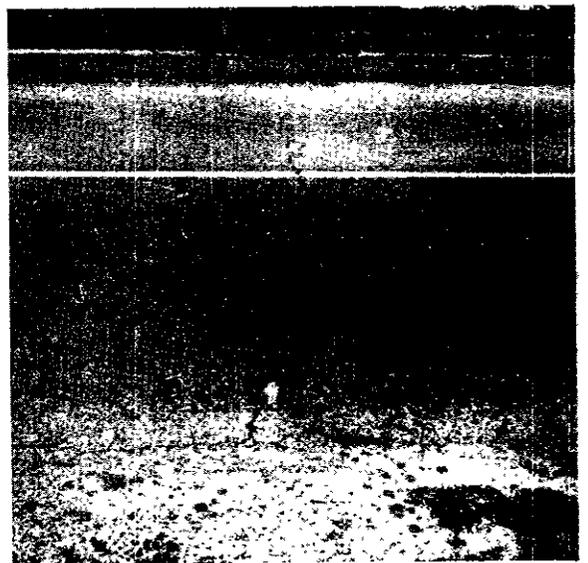
Edge Crack Left Outer  
Lane Ahead from Sta.291+13



Crack at Station 291+13



Severe Crack at  
Station 291+99



Severe Crack at  
Station 293+60

Loadometer Sta. No. 67

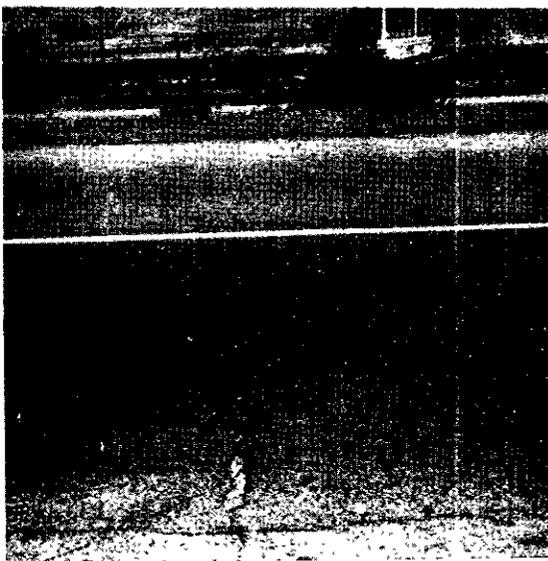
VIII-R1v-26-0



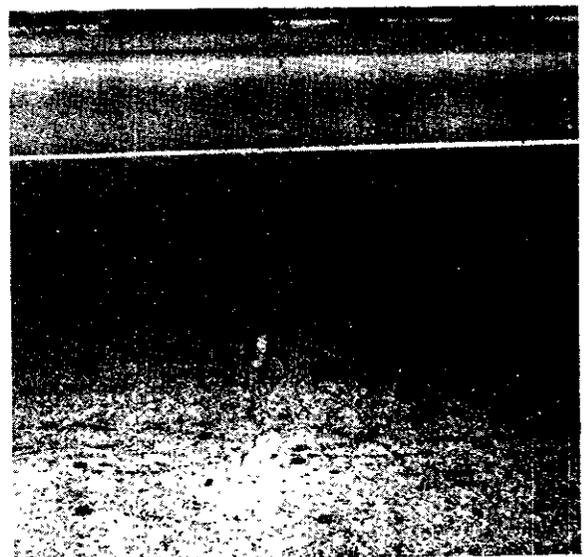
Severe Crack at  
Station 294+09



Crack at Station 294+62



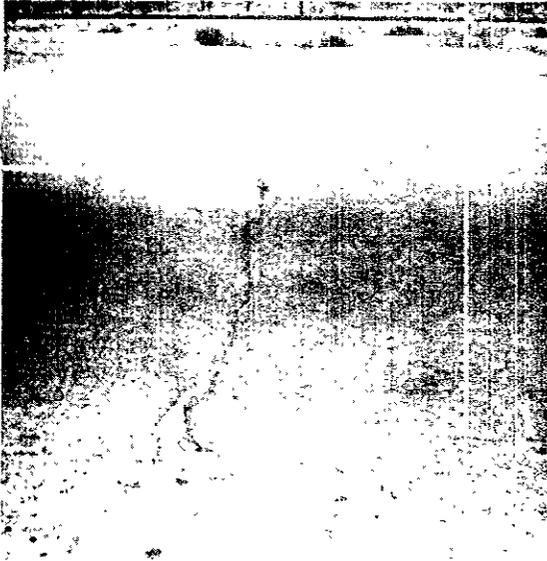
Crack at Station 295+06



Crack at Station 295+66

Loadometer Sta. No. 67

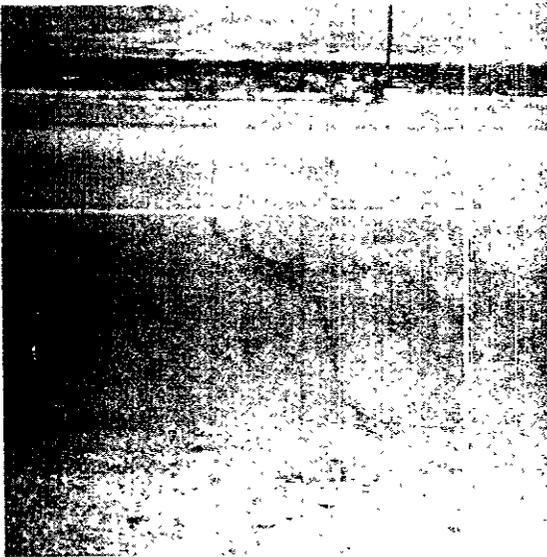
VIII-Riv-26-C



Crack at Station 296+84



Crack at Station 298+44



Crack at Station 299+40



Back on Line from  
Station 300+00

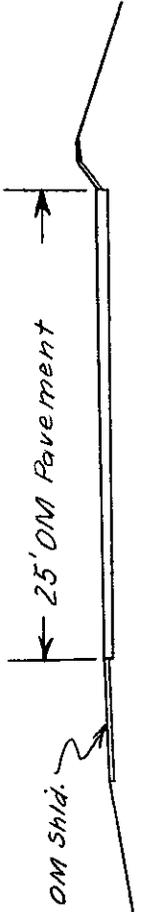
State of California, Div. of Highways  
Materials & Research Department  
Research No. 00258, W.O. No. 13NN26

Loadometer Station No. ~~BD-67~~  
VIII-RIV-26-C

ROADWAY CONDITION SURVEY

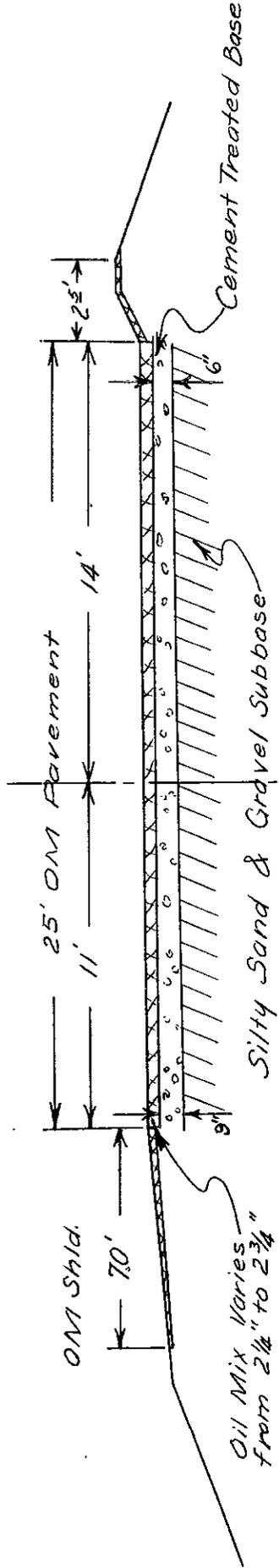
Scale: 1" = 10'

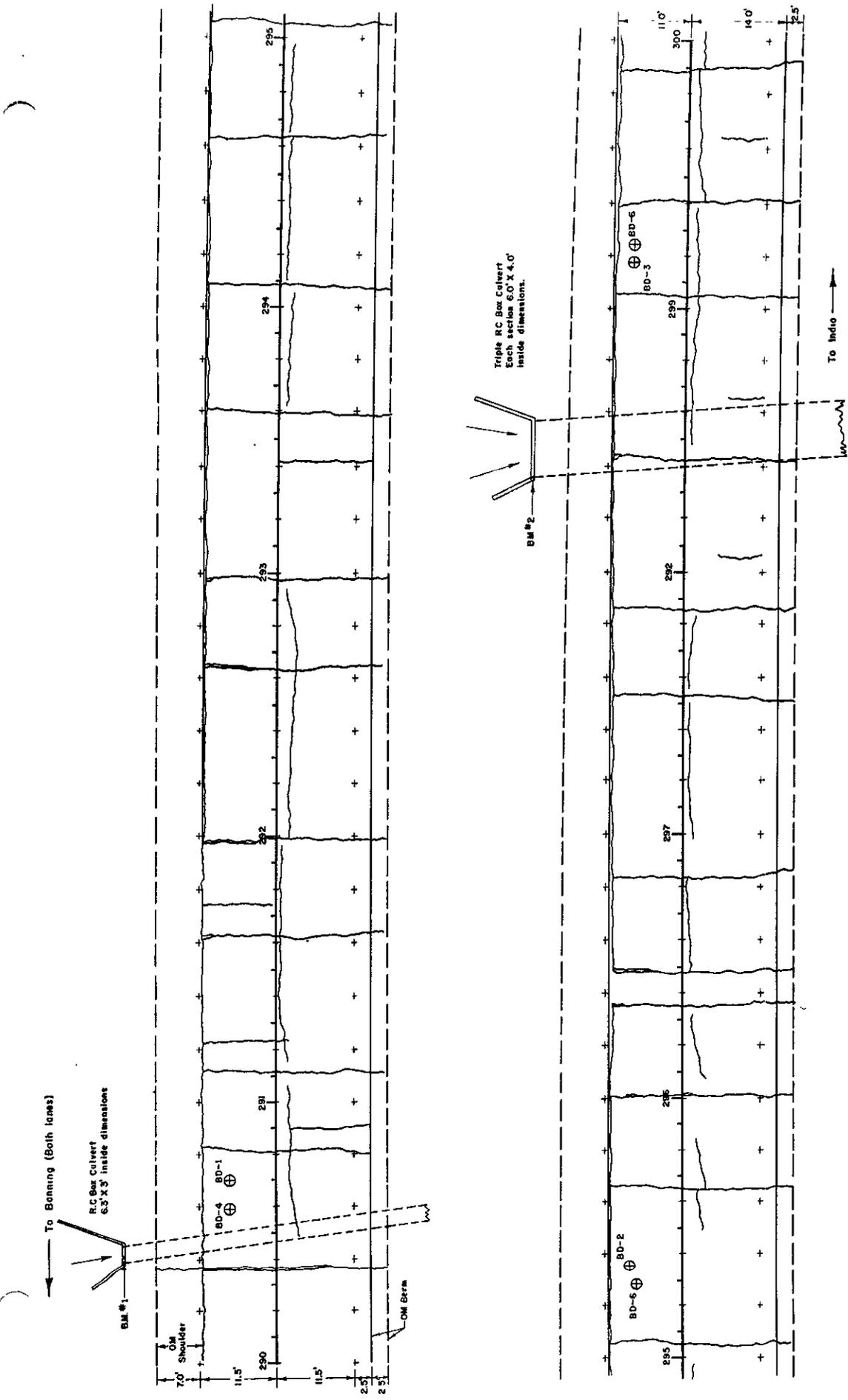
TYPICAL ROADWAY SECTION



Scale: 1" = 5'

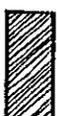
TYPICAL STRUCTURAL SECTION





PAVEMENT LOCATION AND CONDITION CHART

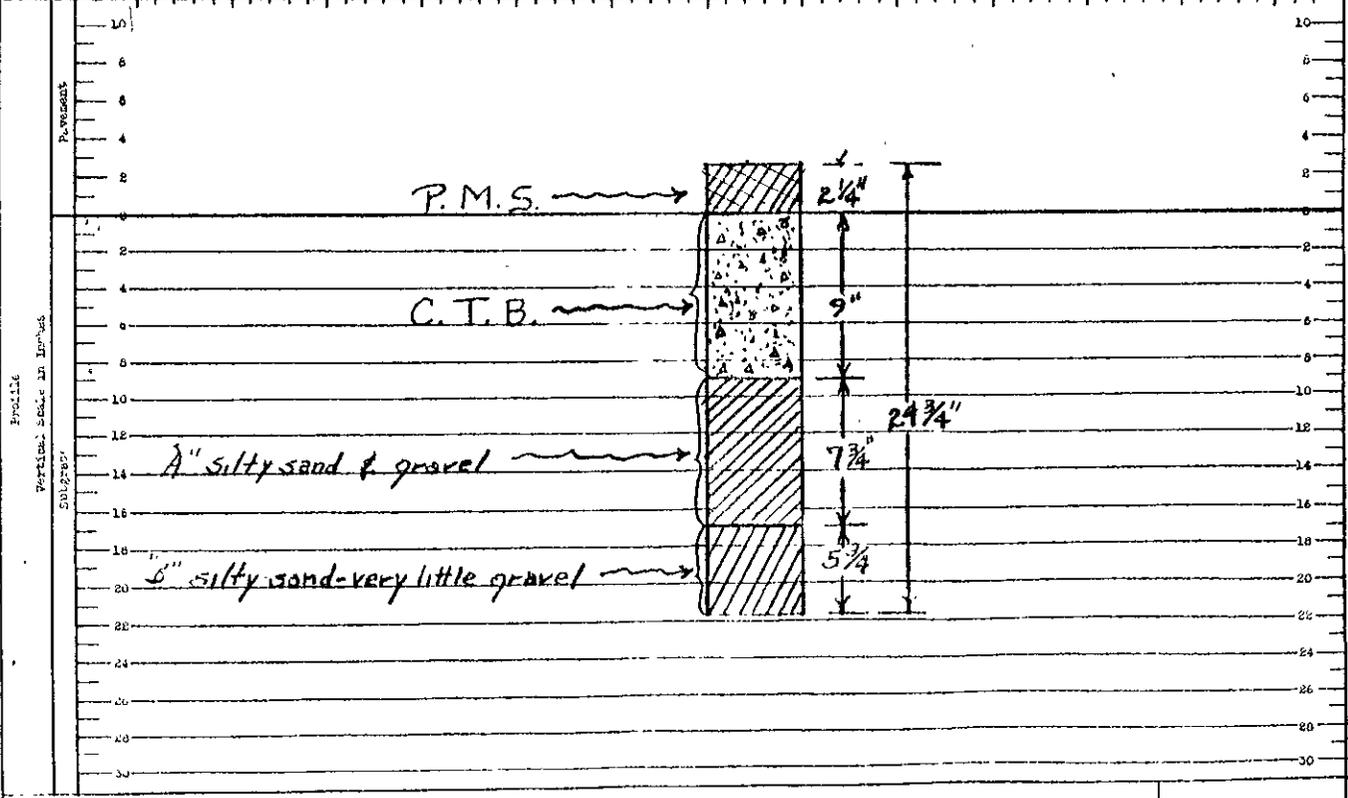
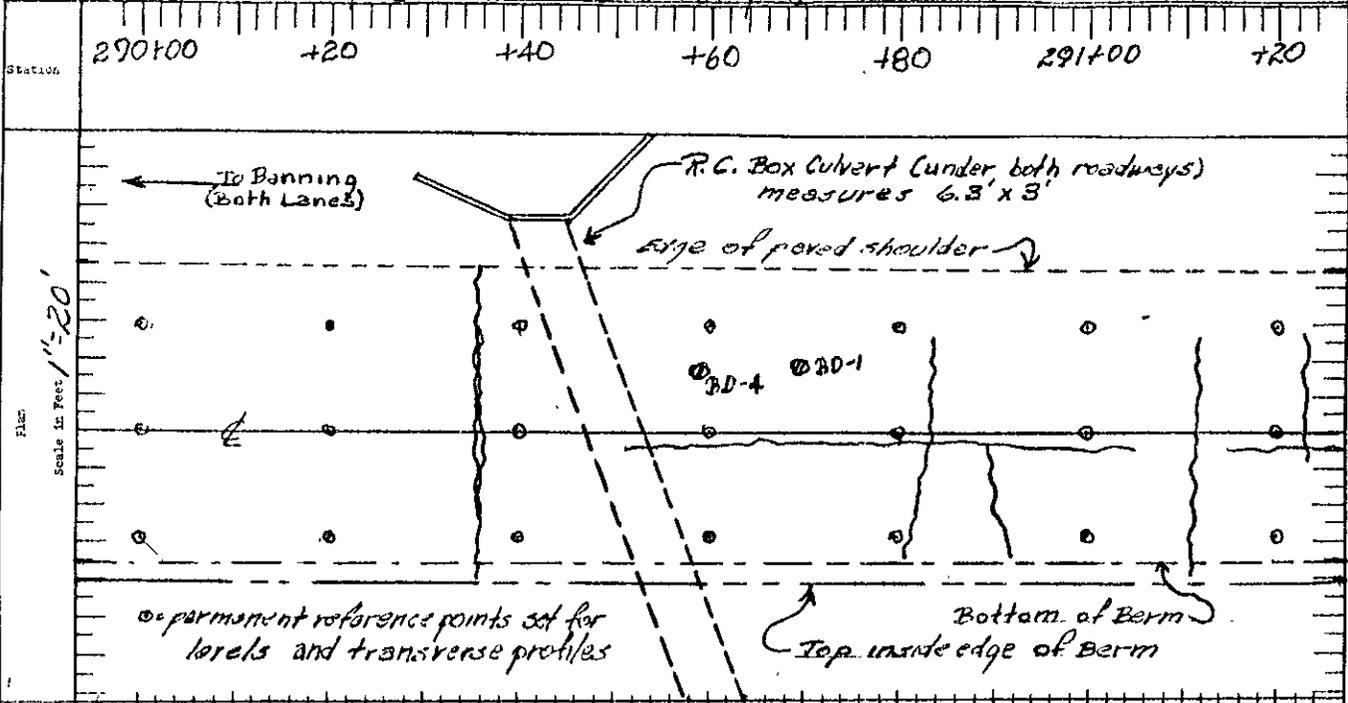
LEGEND

-  Alligator Cracking
-  Failure
-  Block Cracking
-  Shoving
-  Patch

⊕ Location of Sample Hole + Location of Permanent Reference Points



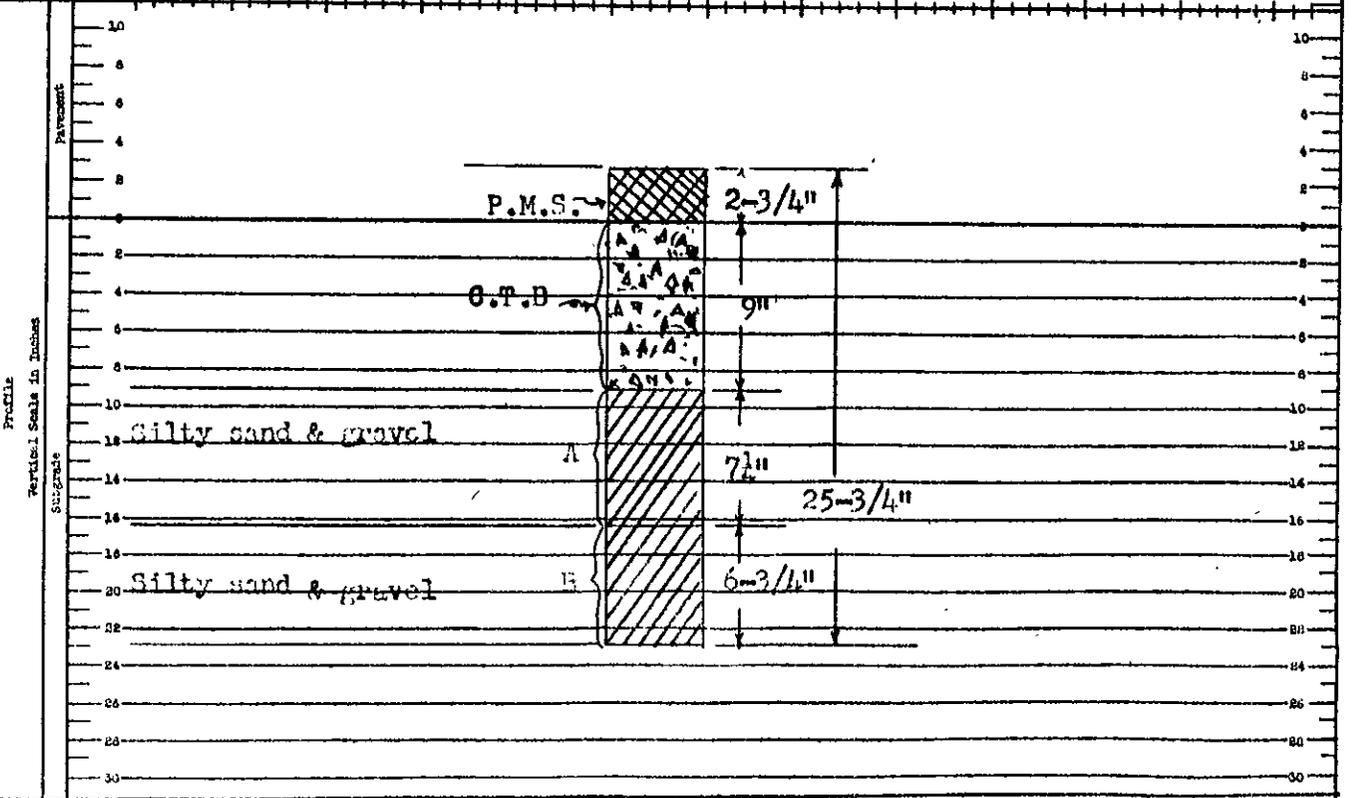
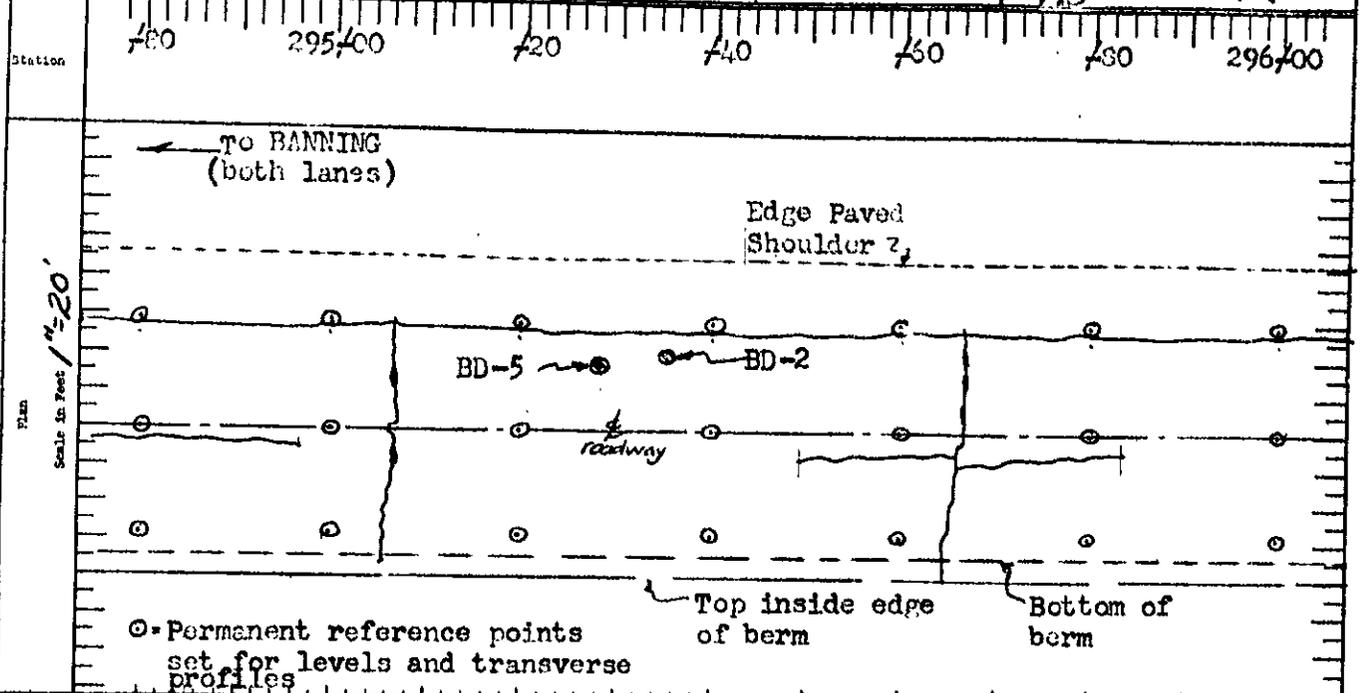
Dist. <u>VIII Co. RIV</u> Sta. <u>26</u> Sec. <u>C</u>	Segment No. <u>—</u>	Date of Constr. <u>1940-41</u>	Test Hole No. <u>BD-144</u>
Fill <u>X</u> Approx. height <u>2'-5"</u> Dist. from Ene. of Fill <u>—</u>	No. of Lanes <u>2</u>	Traffic <u>Heavy</u>	No. <u>(RE)</u>
Out <u>—</u> Approx. Depth <u>—</u> Dist. from Ene. of Out <u>—</u>	Side Ditches <u>Not clearly defined</u>	Depth <u>—</u>	Date of filing <u>5-16-51</u>
From Left <u>Undeveloped</u> Right <u>Undeveloped</u>		Grade <u>1.9%</u>	Up <u>←</u>



STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

by Clauson  
Kayser  
Cunn

Dist. VIII Co. RIV Sta. 26	Sec. C	Contract No.	Date of Const. 1940-41	Test Hole No. BD-2 & 5
Fill X	Approx. height 2' - 5'	Dist. from End of Fill	No. of Lanes 2	Traffic Heavy
Out	Approx. Depth	Dist. from End of Out	Side Ditches Not clearly defined	No. (BE)
Roadside Use, Left Undeveloped		Right Undeveloped		Date of Sampling 5/15/51
			Depth 9'	Up ←



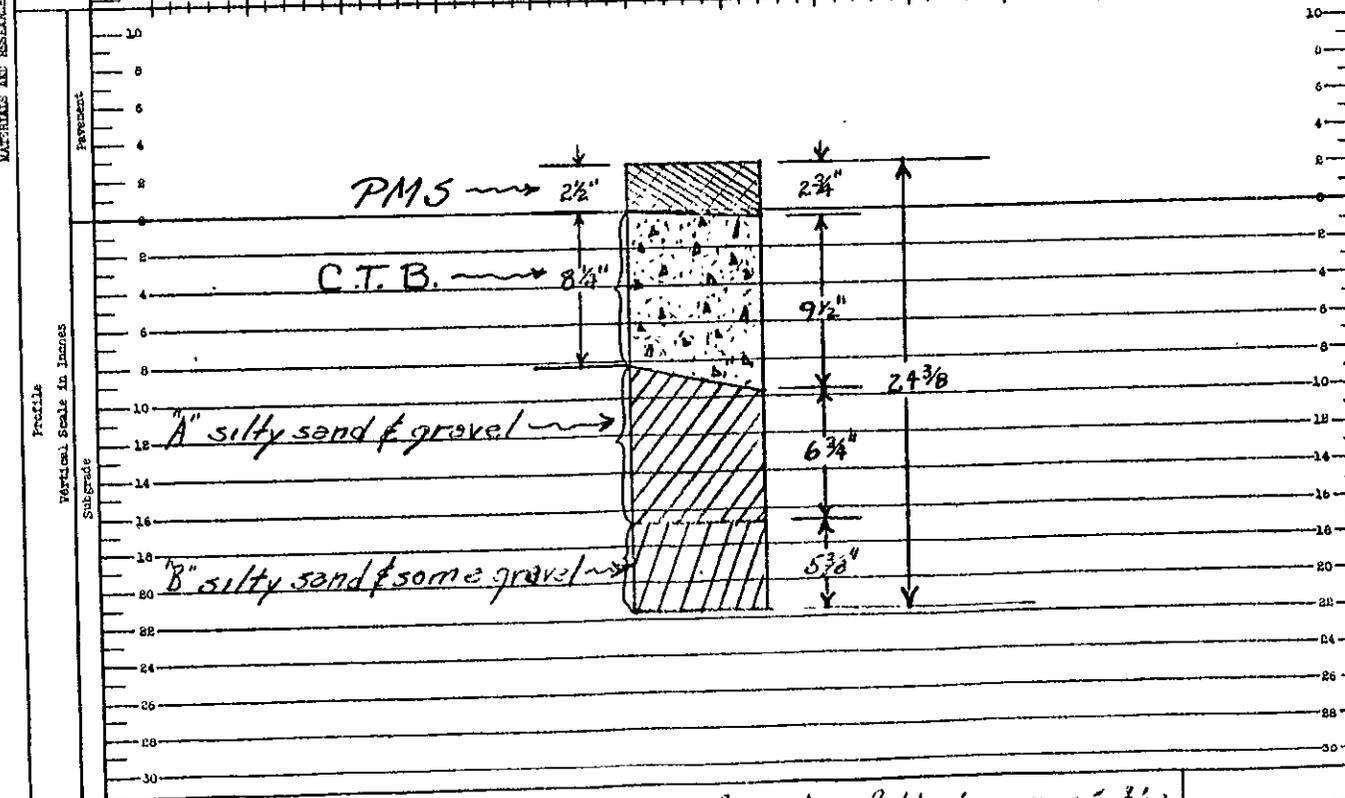
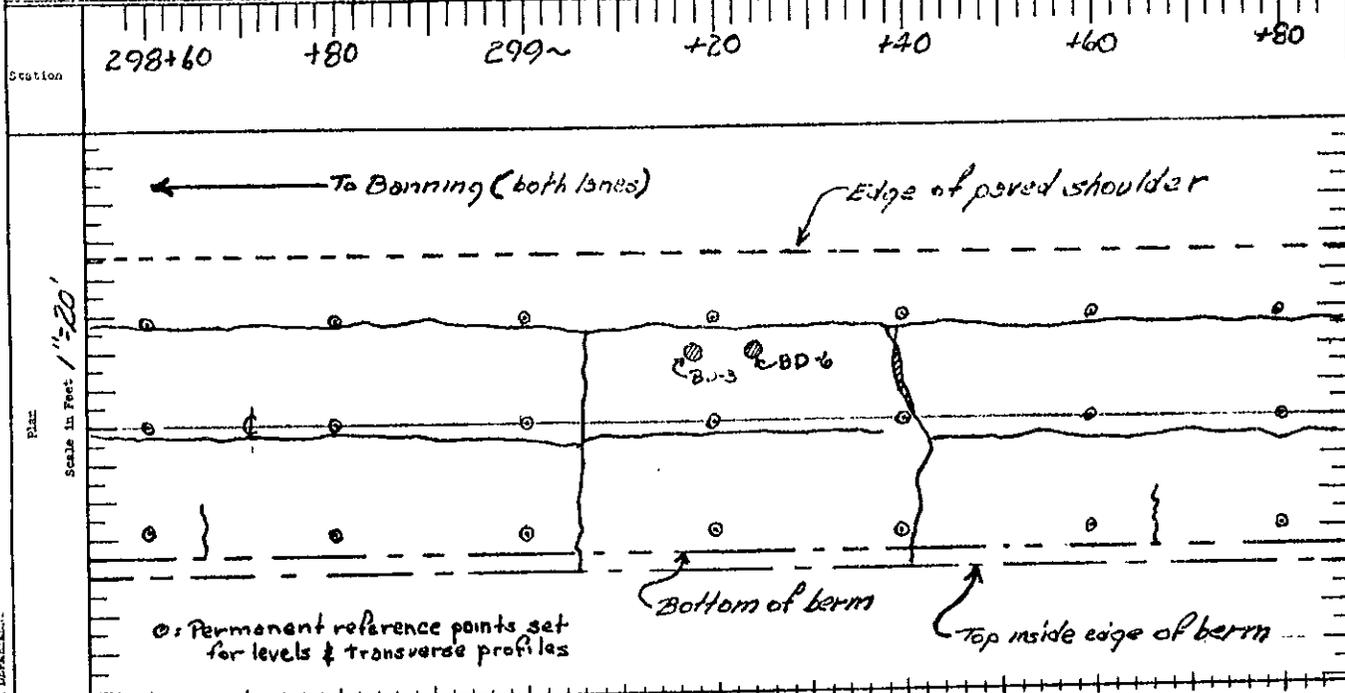
STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAY MATERIALS AND RESEARCH DEPARTMENT

Remarks:

Party: Reyner, Clawson

Drawn by: Clawson

Dist. <b>VIII</b> Co. <b>RIV</b> Hte. <b>26</b> Sec. <b>C</b>	Contract No. <b>—</b>	Date of Constr. <b>1940-41</b>	Test Hole No. <b>BD-3 &amp; 6</b>
Fill <b>✓</b> Approx. height <b>2'-5"</b>	Dist. from End of Fill <b>—</b>	No. of Lanes <b>2</b>	Traffic <b>heavy</b>
Cut <b>—</b> Approx. depth <b>—</b>	Dist. from End of Cut <b>—</b>	Side Ditches <b>Not clearly defined</b>	Date of Sampling <b>5-15-51</b>
Road Use, Left <b>Undeveloped</b>		Right <b>Undeveloped</b>	Grade <b>1.9%</b> Up <b>4</b>



STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

Note: should be taken of the non-uniformity of thickness of the surfacing and base. Thicker section is toward the outside of the water base

Party **Clawson  
 Beyner  
 Coan**

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 67  
 Dist. III Co. Civ. Rte. 26 Sec. C  
 Loc. Design BD (4BE)  
 Sta. 290+00 to 292+00  
 Sheet No. 1 of 4

ROADWAY CONDITION SURVEY

of Roadway

Station	Left of Roadway				Right of Roadway			
	Top of Slope	Edge of C&T Shldr	Edge of Rd Shldr	Bottom of Berm	Top of Berm	Top of Berm	Elev. of Division Strip	
292-	1734.8 29.5	1736.1 21.5	1736.3 18.0	1737.2 14.0	1738.1 15.5	1738.1 16.5	1735.8 23.5	
+50	1735.0 30.5	1736.7 20.0	1737.1 18.0	1738.0 14.0	1738.9 15.5	1738.9 16.5	1736.8 23.5	
291-	1736.1 27.0	1737.8 19.0	1738.0 18.0	1739.0 14.0	1740.0 15.5	1740.0 16.5	1738.2 23.5	
+50	1737.4 30.0	<del>1738.0</del>	1739.0 18.0	1739.9 14.0	1740.7 15.5	1740.7 16.5	1738.8 24.0	
+43	R.C. Box Culvert, 6.3' x 3.0' Flow line elevation at inlet = 1734.6							
290-	1736.9 30.0	1739.7 22.0	1740.0 18.2	1740.6 14.0	1741.5 15.5	1741.5 16.5	1739.7 23.0	

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 67  
 Dist. VIII Co. Div. Rte. 26 Sec. C  
 Loc. Design BD (6BE)  
 Sta. 292+50 to 294+50  
 Sheet No. 2 of 4

ROADWAY CONDITION SURVEY

Roadway

Station	Left of Roadway						Right of Roadway							
			Toe of Slope		Edge Dirt Shldr.		Edge Paved Shldr.		Bottom of Berm	Top of Berm	Top of Berm	Center of Division Strip		
+50			1730.8 30.5		1731.7 21.5		1732.0 18.0		1732.6 14.0	1733.5 15.5	1733.5 16.5	1731.4 23.5		
294 -			1730.5 29.5		1732.1 21.5		1732.7 18.5		1733.5 14.0	1734.4 15.5	1734.4 16.5	1732.2 23.5		
+50			1731.4 27.5		1733.2 21.0		1733.6 18.0		1734.5 14.0	1735.3 15.5	1735.3 16.5	1733.3 22.0		
293 -			1733.0 27.0		1734.3 21.5		1734.6 18.0		1735.3 14.0	1736.0 15.5	1736.0 16.5	1734.2 22.5		
292+50			1733.9 27.0		1735.2 21.5		1735.4 18.0		1736.2 14.0	1737.0 15.5	1737.0 16.5	1735.0 23.0		

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 67  
 Dist. VII Co. Riv. Rte. 26 Sec. C  
 Loc. Design BD (495)  
 Sta. 295+00 to 297+50  
 Sheet No. 3 of 4

ROADWAY CONDITION SURVEY  
 &  
 Roadway

Station	Left of Roadway						Right of Roadway							
			Top of Slope		Edge of Dirt Shldr.		Edge of Paved Shldr.		Bottom of Berm	Top of Berm	Top of Berm	2 (2) of Division Strip		
+50			1722.5 30.0		1726.1 19.0		1726.3 18.0		1727.1 14.0	1727.9 15.5	1727.9 16.5	1726.0 24.0		
297-			1723.6 29.0		1727.1 19.0		1727.3 18.0		1728.0 14.0	1728.8 15.5	1728.8 16.5	1726.9 24.0		
+50			1725.0 30.0				1728.2 18.0		1729.0 14.0	1729.8 15.5	1729.8 16.5	1727.6 24.5		
296 -			1726.2 30.0		1728.9 20.5		1729.1 18.0		1729.9 14.0	1730.7 15.5	1730.7 16.5	1728.6 24.0		
+50			1728.1 29.0		1729.5 22.5		1730.1 18.5		1730.8 14.0	1731.6 15.5	1731.6 16.5	1729.5 24.5		
295 -			1729.1 30.5		1730.6 21.5		1731.1 18.5		1731.7 14.0	1732.7 16.5	1732.7 16.5	1730.3 24.5		

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 67  
 Dist. III Co. Riv. Rte. 26 Sec. C  
 Loc. Design BD (1/BE)  
 Sta. 298+00 to 300+00  
 Sheet No. 4 of 4

ROADWAY CONDITION SURVEY

&  
 Roadway

Station	Left of Roadway				Right of Roadway			
	Toe of Slope	Edge of Art Shldr.	Edge of Paved Shldr.	Bottom of Berm	Top of Berm	Top of Berm	Edge of Division Strip	
300-	1719.6 28.0	1721.0 21.0	1721.5 17.5	1722.2 14.0	1723.2 15.5	1723.2 16.5	1721.6 24.0	
+50	1720.3 27.5	1721.6 21.5	1722.5 17.5	1723.2 14.0	1724.2 15.5	1724.2 16.5	1722.4 24.0	
299-	1721.3 28.5	1723.0 20.5	1723.5 17.5	1724.2 14.0	1725.2 15.5	1725.2 16.5	1723.4 24.5	
+50	1719.2 23.5 <i>On gravel at inlet end of culvert</i>	1724.1 22.0	1724.5 18.0	1725.1 14.0	1726.1 15.5	1726.1 16.5	1724.4 24.0	
+46	<i>Triple 6'x3' R.C. Box Culvert. Elevation on Floor Slab at <math>\frac{1}{2}</math> = 1717.6</i>							
298-	1722.2 30.0	1724.7 20.5	1725.3 17.5	1726.1 14.0	1727.1 15.5	1727.1 16.5	1725.3 24.0	

25

Research No. 00258  
Work Order No. 13NN26

Loadometer Station No. 61  
Road XI-S.D-2-C

DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE:

LOCATION: Loadometer Station No. 61, road XI-S.D-2-C; is 2.5 miles north of the north city limits of Oceanside. The station is immediately north of the bridge across the Santa Margarita River. The section selected for test is from 0.5 to 0.75 mile south of the Loadometer Station and from 1.75 to 2.0 miles north of the north city limits.

LENGTH: The section is established between Station "C" 117+50 and Station "C" 127+50, a total length of 1000 feet. Roadway at the section is a four lane undivided highway with a double traffic stripe between the north and south bound traffic lanes. Section is established in the two left (southbound traffic) lanes.

SURFACE:

Type: Asphaltic plant mixed surfacing blanket over old asphaltic concrete. At the south end of the section, portland cement concrete was found below the asphaltic concrete.

Width: Outer lane is 11 feet in width between Sta. 117+50 and Sta. 120+00 and is 10 feet in width from Sta. 120+20 through Sta. 127+50.

Loadometer Station No. 61  
Road XI-S.D-2-C

ROADWAY STRUCTURE:

**SURFACE:**

Width: Inner lane is 10 feet in width throughout the  
(Continued) section.

Thickness: Plant mixed surfacing varies from 2-1/4" to  
2-1/2" in thickness.

Asphaltic concrete varies from 8-3/8" to 10 1/4"  
in thickness.

P.C.C. pavement (where found) varies from 4-1/2"  
to 6" in thickness.

Total pavement thickness varies from 10-5/8"  
to 18-1/2" in thickness.

**BASE:**

Type and Thickness: Coarse clayey sand and gravel probably selected  
material from roadway excavation south of the  
section. Thickness varies from 17-1/2" to 27".

Soil Classification: A-1-b, A-2-4 or A-4

**SIDE DITCH  
DRAINAGE:**

On the roadway, which is in thorough fill,  
gutters parallel the pavement at a distance of  
from 6.5 to 8.5 feet. Gutters and the berms  
which are located outside of them are paved with  
P.M.S. Gutters are from 0.2 to 0.6 feet lower  
in elevation than the adjacent pavement edges,  
and the berms vary from 0.2 to 0.7 feet higher  
than the gutters.

Loadometer Station No. 61  
Road XI-S.D-2-C

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:  
(Continued)

Roadway and gutter drainage is from the north end (Sta. 127°50) toward the south end (Sta. 117+50) of the section. Paved side drains and also C.M.P. down drains as listed on the Roadway Condition Survey Cards intercept side drainage and lead it to the toe of the fill slope.

Section has a profile grade of +0.2%, and drainage on the roadway is from north to south. Beyond the R/W fence on the left of the section is a small air strip, now a part of the Marine Corps' Camp Pendleton. Between this former air strip and the toe of the fill there is a more or less clearly defined ditch. Concrete pipes carry side drainage under seldom used roads into this air strip. At several points, there are vertical concrete pipes which appear to be part of the drainage system around the air strip. On the right side of the roadway fill, from Sta. 121+00 to the end of the section, there is a bench in the fill slope, varying in width from 6.0 to 10.5 feet. Down drains on the right side of the roadway empty onto this bench, and from there the water flows to point approximately midway between roadway fill and the fill which

Loadometer Station No. 61  
Road XI-S.D-2-C

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:  
(Continued)

carries the A.T. & S.F. R.R. tracks.

Drainage water, carried from the roadway to the toe of fill slope, drains north toward the Santa Margarita River.

There are no bridges or culverts under the roadway fill within the limits of the section.

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (1) Areas of Alligator Cracking: There are no areas of alligator cracking within the section.
- (2) Areas of Raveling: There are no areas of raveling within the section.
- (3) Areas of Shoving or Creeping: There are no areas within the section showing indications of shoving or creeping.

The present plant mixed surfacing segregated badly during placing and there are many areas which have a marked "coarse" appearance and many which appears "rich" and heavy with fines. The coarse areas in this surfacing show a very definite "pumping" action under traffic, after a rain. Apparently the surface water collects in these coarse areas, the dense pavement below and the fine areas around will not allow the

Loadometer Station No. 61  
Road XI-S.D-2-C

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (3) Areas of Shoving or Creeping: (Continued) water to percolate through them, and the water is forced to the surface under traffic action. Several areas were noted within the section which "pumped" in this manner for as much as two days after a storm. The fine areas show many pulled places, some of which appear to be increasing in severity. Both the coarse and fine areas show some severe cracks.
- (4) Patches: There are no patched areas within the limits of the section.
- (5) Roadway Section: As noted previously, the entire section is in fill. Roadway fill carries the traveled way from a low ridge on the south across a flat adjacent to the Santa Margarita River to the bridge across the river. Traveled way is from 7.5 ft. to 9.0 ft. above the surrounding area.
- (6) Shoulders: Shoulder and drainage conditions are noted previously under "Roadway Structure".

ROUGHNESS  
MEASUREMENTS:

Bench Marks and Levels: This particular section offered no suitable area in which pipe bench marks could be established, nor were there culvert headwalls adjacent

Loadometer Station No. 61  
Road XI-S,D-2-C

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:  
(Continued)

to the section in which points could be established. Two heavy spikes were used as bench marks. The spikes were driven into 6" x 6" telegraph poles. The poles are located to the right (east) of the roadway, between the roadway and the A.T. & S.F. R.R. fill. Listed below are the number, location and elevation of the of the two bench marks established by the field crew:

<u>B.M.</u> <u>No.</u>	<u>Location</u>	<u>Elevation</u>
1	60.5' rt. Sta. 116+00, in north face of telegraph pole. Stake nailed to pole above bench, marked "Lab. Bench Mark No. 1".	12.500 (Assumed)
2	62.5' rt. Sta. 126+17, in west face of telegraph pole. Stake nailed to pole above bench, marked "Lab. Bench Mark No. 2".	

Three lines of permanent reference pins were established; one line in the double stripe separating north and southbound traffic, one line 10.0 ft. from the first, approximately on the traffic stripe between the two left lanes. The third line of pins was set 0.5' into the outer lane from the edge of pavement. Between

Loadometer Station No. 61  
Road XI-S,D-2-C

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels  
(Continued)

Sta. 117+50 and Sta. 120+00, the outer line of pins was set 10.5 ft. from the middle pin line and from Sta. 120+20 through Sta. 127+50 it was set 9.5 ft. from the middle pin line.

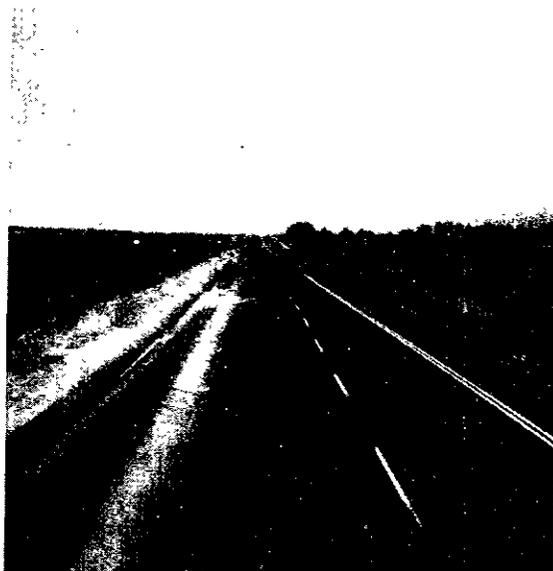
Profilograph  
Records:

Transverse: The permanent reference points for levels also serve as permanent markers for transverse profiles of the pavement surface. Using the machine developed for this purpose, transverse Profilograph records of the traveled way surface in each lane were made at 20 foot intervals throughout the section.

Longitudinal: By means of the Profilograph, records were made of the longitudinal profiles of each lane of the traveled way surface. Record of the outer lane was made with recording wheel 30" into the lane from the outer edge. Record of the inner lane was made with the recording wheel 30" into the lane from the double traffic stripe. All profilograph records have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 61

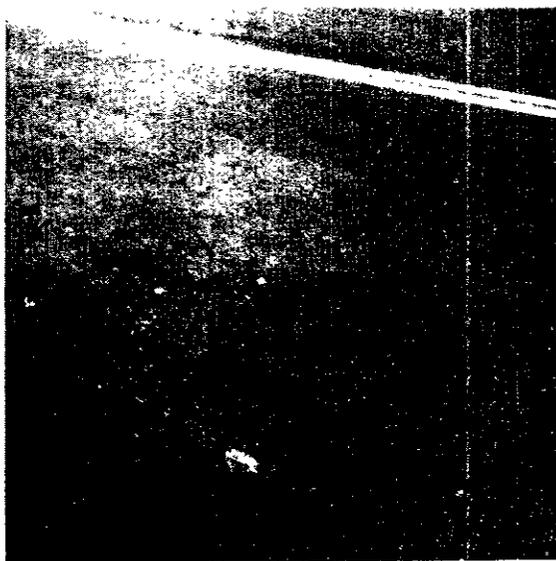
XI-S.D-2-C



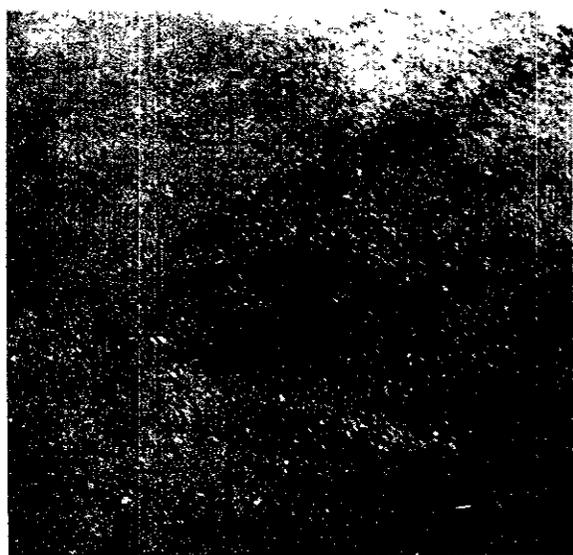
Ahead on Line from  
Station 117+50



Moisture Flushed to  
Surface by Traffic



Moisture Flushed to  
Surface by Traffic



Pitted Surface

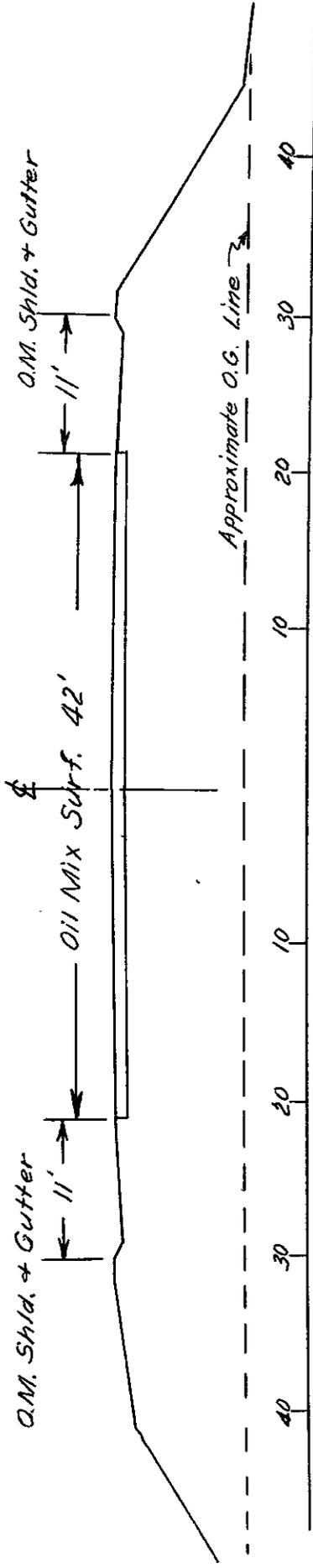
State of California, Div. of Highways  
 Materials & Research Department  
 Research No. 00258, W.O. No. 13NN26

Loadometer Station No. AX 61  
 XI-S.D-2-0

ROADWAY CONDITION SURVEY

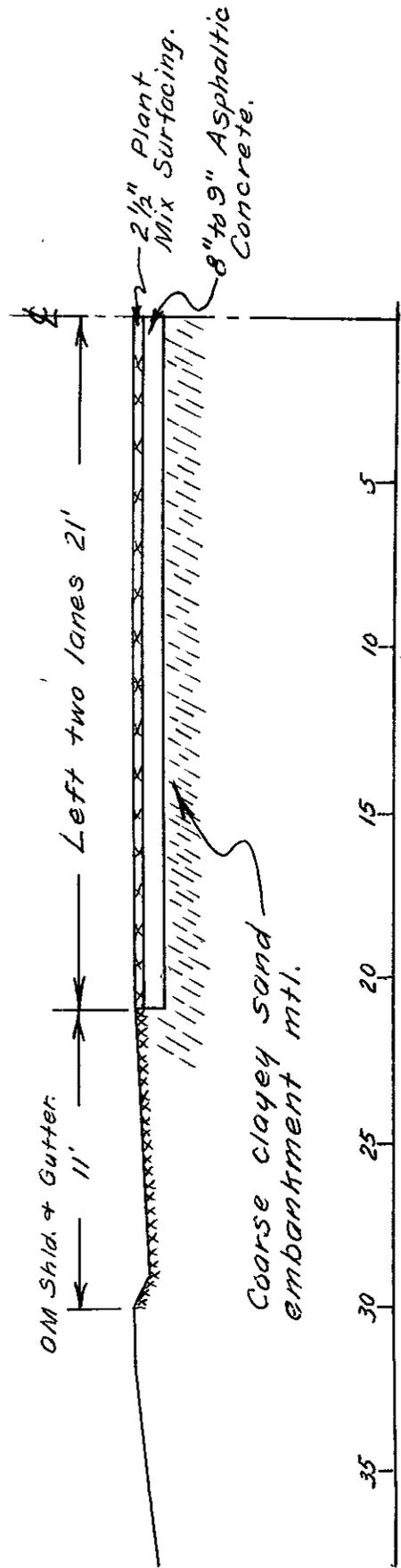
TYPICAL ROADWAY SECTION

Scale: 1" = 10'

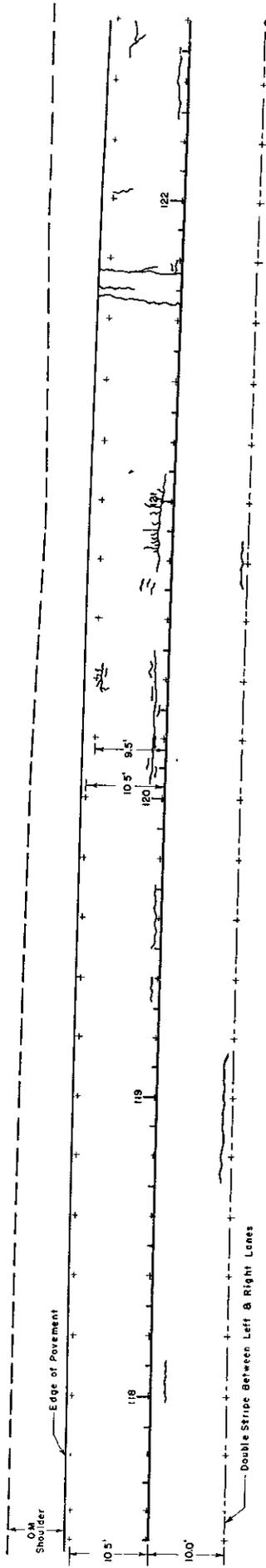


TYPICAL STRUCTURAL SECTION

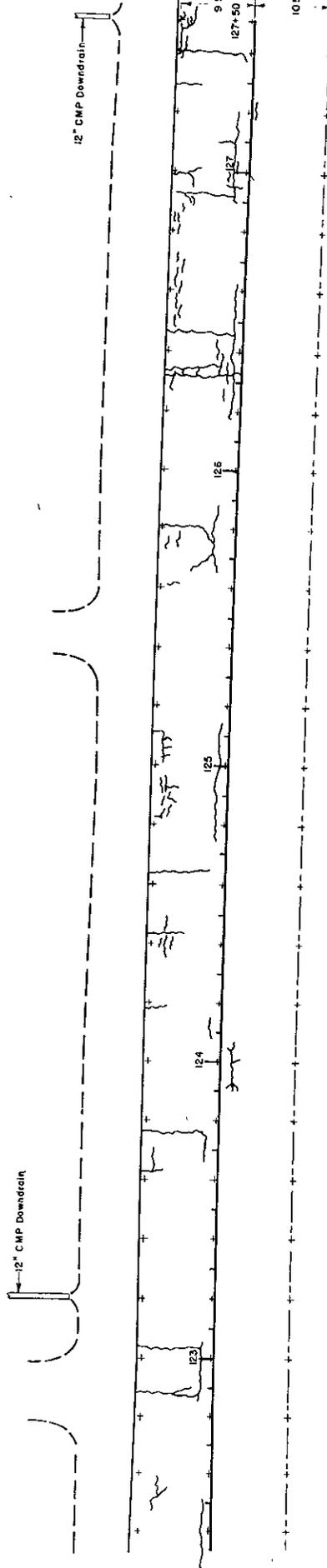
Scale: 1" = 5'



← To Oceanside (Both Lanes)



← 12" CMP Downdrain



To San Clemente →

### PAVEMENT LOCATION AND CONDITION CHART

#### LEGEND

-  Alligator Cracking
  -  Failure
  -  Block Cracking
  -  Shoving
  -  Patch
- ⊕ Location of Sample Hole + Location of Permanent Reference Points

LOADOMETER STA. NO: 61  
XI-S.D-2-C

TEST RESULTS SUMMARY

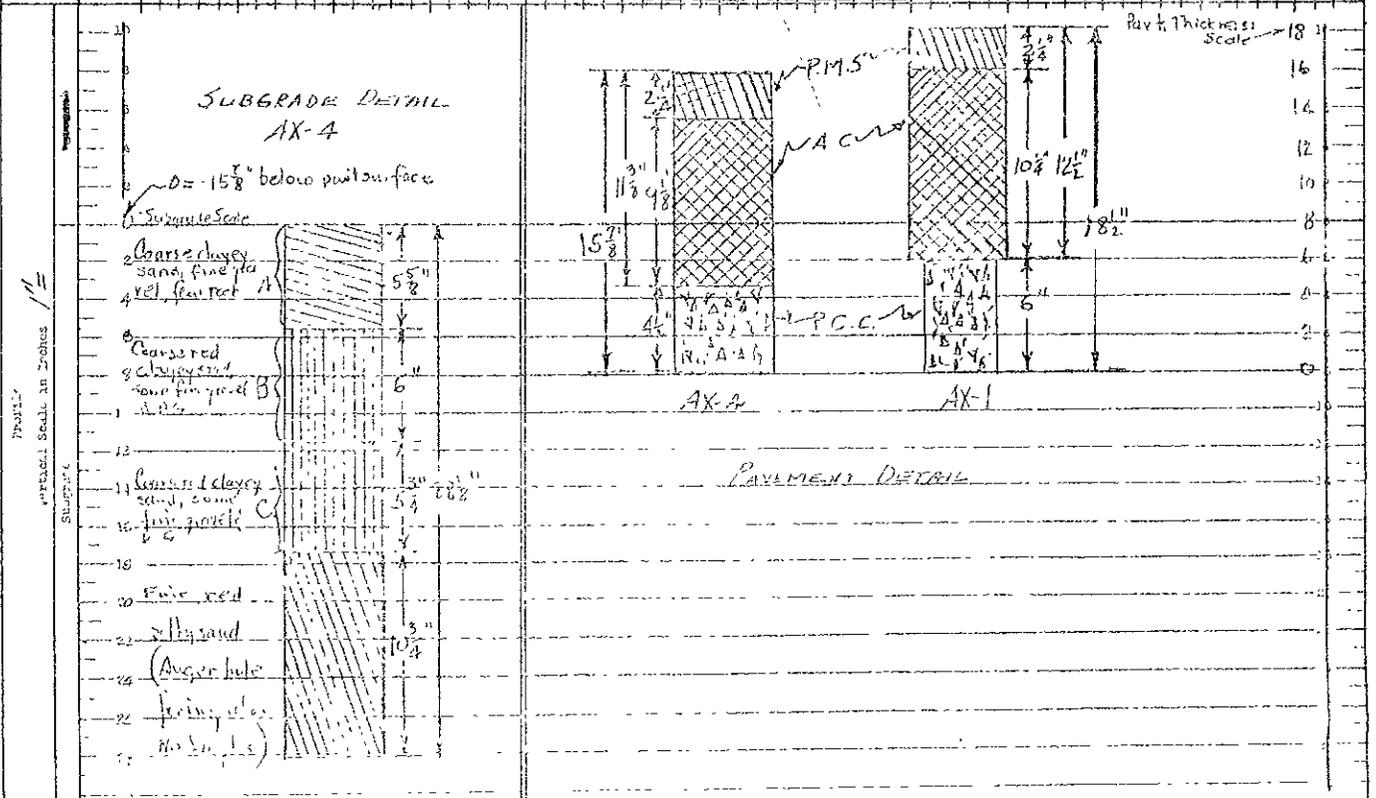
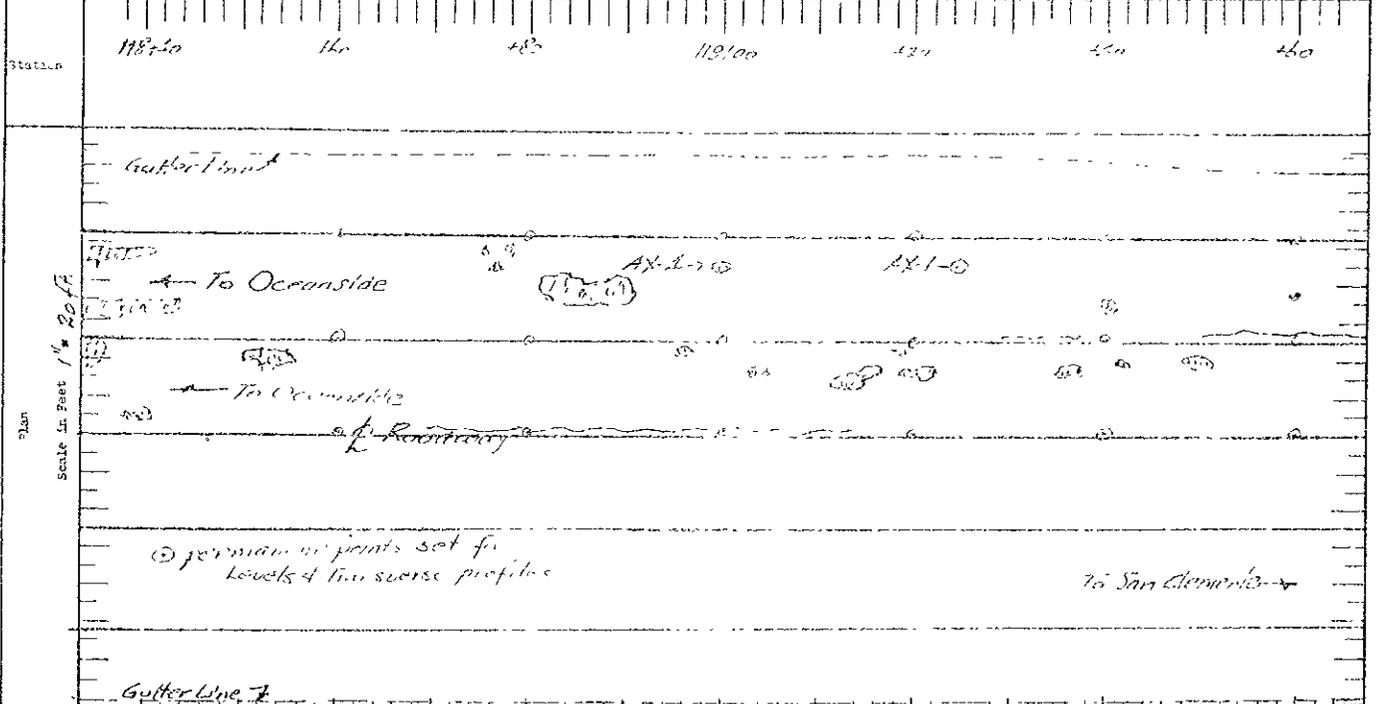
Load. Sta. No. 61  
 XI-S.D=2-C

Line	Sample No.		Sample Hole Location		Pavement		Soil Samples	
	Field	Lab.	Station	Position	Type	Thick-ness	Depth below Btm. Pav't.	Layer Des-cription
1	AX-2-A	51-1020	126+08	3' from lt. out- E.P. in outside	OM AC	2 1/2" 9 1/2"	0 - 12-1/4"	Basement
2	AX-2-B	51-1020A	126+08	wheel track Same	OM AC	2 1/2" 9 1/2"	12 1/4 - 23 1/2"	Basement
3	AX-3-A	51-1021	122+48	3' from lt. outer E.P. in	OM AC	2 1/4" 8-3/8"	0 - 6-1/2"	Basement
4	AX-3-B	51-1021A	122+48	outside wheel track	OM AC	2 1/4" 8-3/8"	6-1/2" - 13-1/8"	Basement
5	AX-3-C	51-1021B	122+48	Same	OM AC	2 1/4" 8-3/8"	13-1/8 - 18-7/8"	Basement
6	AX-4-A	51-1022	119+00	3' from lt. outer E.P. in	OM AC	2 1/4" 9-1/4"	0 - 5-5/8"	Basement
7	AX-4-B	51-1022A	119+00	outside wheel track	PCC Same	4-1/2"	5-5/8 - 11-5/8"	Basement
8	AX-4-C	51-1022B	119+00	Same	Same	Same	11-5/8 - 17-3/8"	Basement

Line	In Place Test Data			Lab. Test Data		HRB Soil	Specific Gravity	
	Moist.	Density	% Rel. Comp.	Optimum Moisture	Maximum Density	Classification	Pass. #	Ret. #
1	7	130	97	8	134	A-2-4	2.67	
2	7	136	102	8	133	A-2-4	2.64	
3	8	135	100	8	136	A-2-4	2.64	
4	7	127	95	8	134	A-2-4	2.65	
5	7	136	102	9	134	A-1-b	2.64	
6						A-1-b	2.65	
7	8	130	96	8	135	A-2-4	2.63	
8	11	120	94	10	128	A-4	2.62	

Line	Sieve Analysis - Percent Passing										Atterberg Limits	
	2"	3/4"	4	8	16	30	50	200	270	5M	LL	PL
1	100	99	97	91	76	56	40	22	20	11	23	16
2	100	100	97	91	74	55	38	22	21	12	24	15
3	100	99	97	91	80	61	45	26	24	12	19	16
4	100	100	99	94	77	54	37	22	20	11	24	17
5	100	100	97	89	72	52	37	20	19	12	23	18
6	100	96	88	81	65	48	34	17	15	8	25	19
7	100	100	95	88	73	58	43	26	24	11	22	17
8	100	100	100	95	87	73	58	39	37	14	25	17

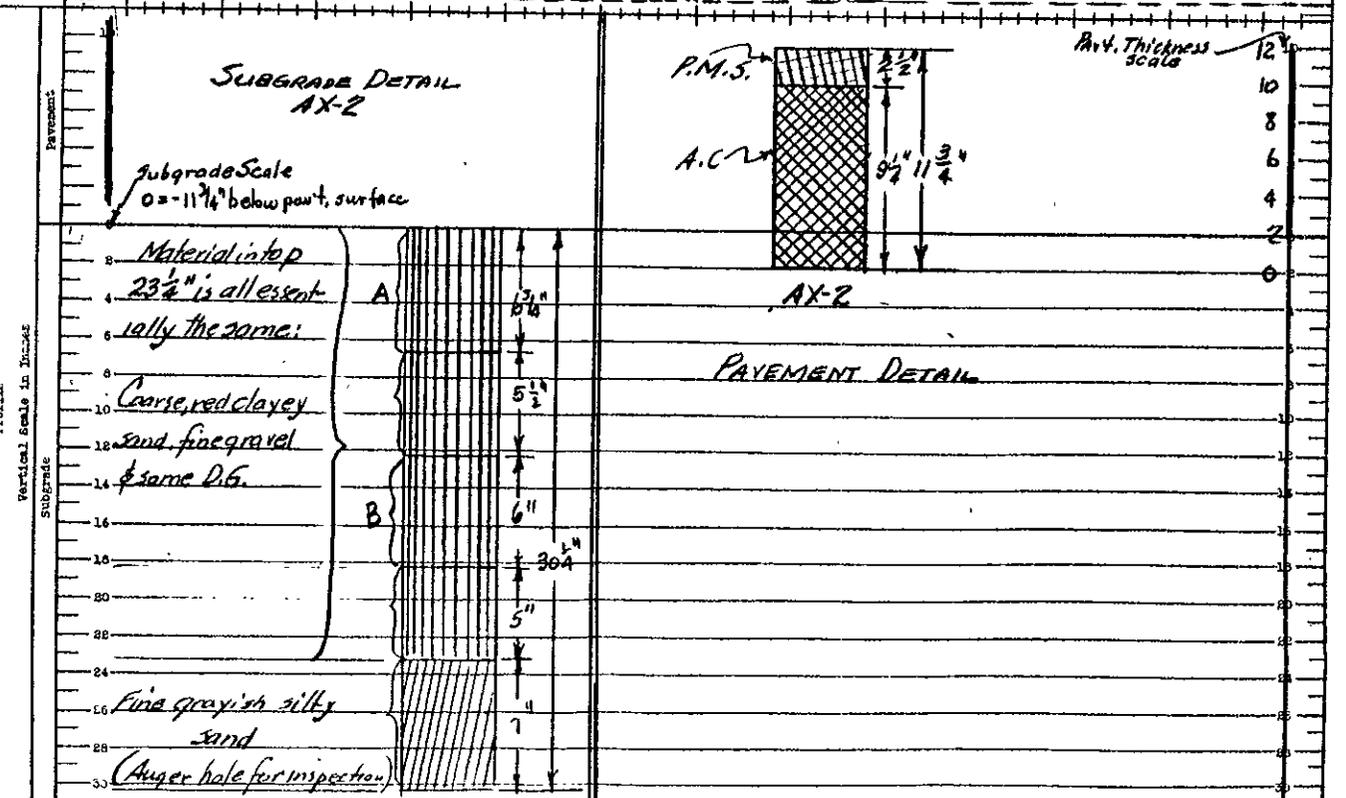
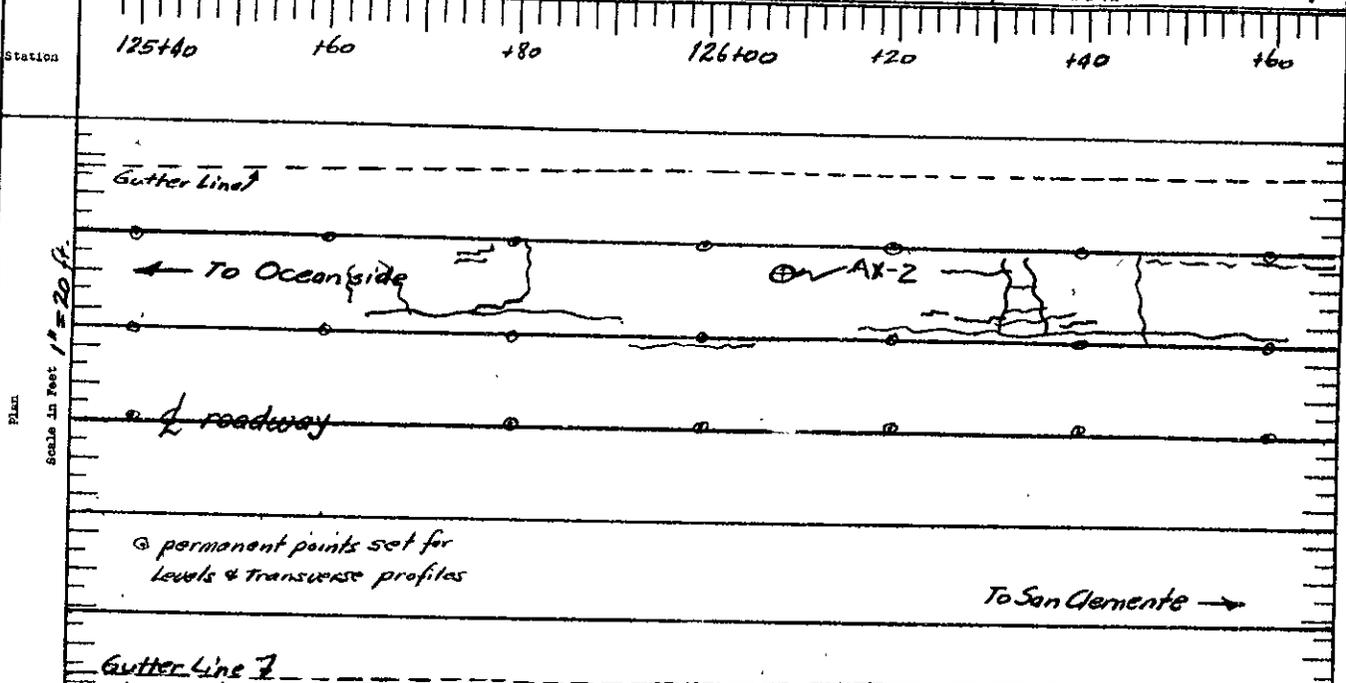
Dist. No.	Sta.	Sec.	Outlet No.	Date of Constr.	Test Note
1	118+70	300'	200'	1957	AX-1
Dist. No.	Sta.	Sec.	Outlet No.	Date of Constr.	Test Note
1	118+70	300'	200'	1957	AX-2
Dist. No.	Sta.	Sec.	Outlet No.	Date of Constr.	Test Note
1	118+70	300'	200'	1957	AX-3
Dist. No.	Sta.	Sec.	Outlet No.	Date of Constr.	Test Note
1	118+70	300'	200'	1957	AX-4
Dist. No.	Sta.	Sec.	Outlet No.	Date of Constr.	Test Note
1	118+70	300'	200'	1957	AX-5
Dist. No.	Sta.	Sec.	Outlet No.	Date of Constr.	Test Note
1	118+70	300'	200'	1957	AX-6
Dist. No.	Sta.	Sec.	Outlet No.	Date of Constr.	Test Note
1	118+70	300'	200'	1957	AX-7
Dist. No.	Sta.	Sec.	Outlet No.	Date of Constr.	Test Note
1	118+70	300'	200'	1957	AX-8
Dist. No.	Sta.	Sec.	Outlet No.	Date of Constr.	Test Note
1	118+70	300'	200'	1957	AX-9
Dist. No.	Sta.	Sec.	Outlet No.	Date of Constr.	Test Note
1	118+70	300'	200'	1957	AX-10



Material for better exposure for 11 1/2" (A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z) ...

STATE OF CALIFORNIA DEPARTMENT OF PUBLIC WORKS DIVISION OF HIGHWAYS MATERIALS AND RESEARCH DEPARTMENT

Dist. <i>XL</i> Co. <i>SD</i> Rta. <i>2</i> Sec. <i>C</i>	Contract No. <i>—</i>	Date of Constr. <i>1936</i>	Test Hole No. <i>AX-2</i>
Fill <input checked="" type="checkbox"/> Approx. Height <i>7'40.9'</i> Dist. from End of Fill <i>1000'</i> <i>1300'</i>	No. of Lanes <i>4-undivided</i>	Traffic <i>heavy</i>	No. <i>—</i>
Cut <input type="checkbox"/> Approx. Depth <i>—</i> Dist. from End of Cut <i>—</i>	Sigs Ditches <i>Along toe of fill - 740' below roadway grade</i>	Depth <i>0.5' to 1.0'</i>	Date of Sampling <i>3-5-51</i>
Roadside Use, Left <i>Undeveloped</i>		Right <i>A.T. &amp; S.F. Railway R/W</i>	Grade <i>0.2%</i> Up <i>→</i>



Remarks: *Below - 30 1/4" mat'l. is a micaceous silty sand, with considerable clayey sand.*

Party: *Reynor*  
*Bohme*  
*Clawson*

Drawn by: *Clawson*

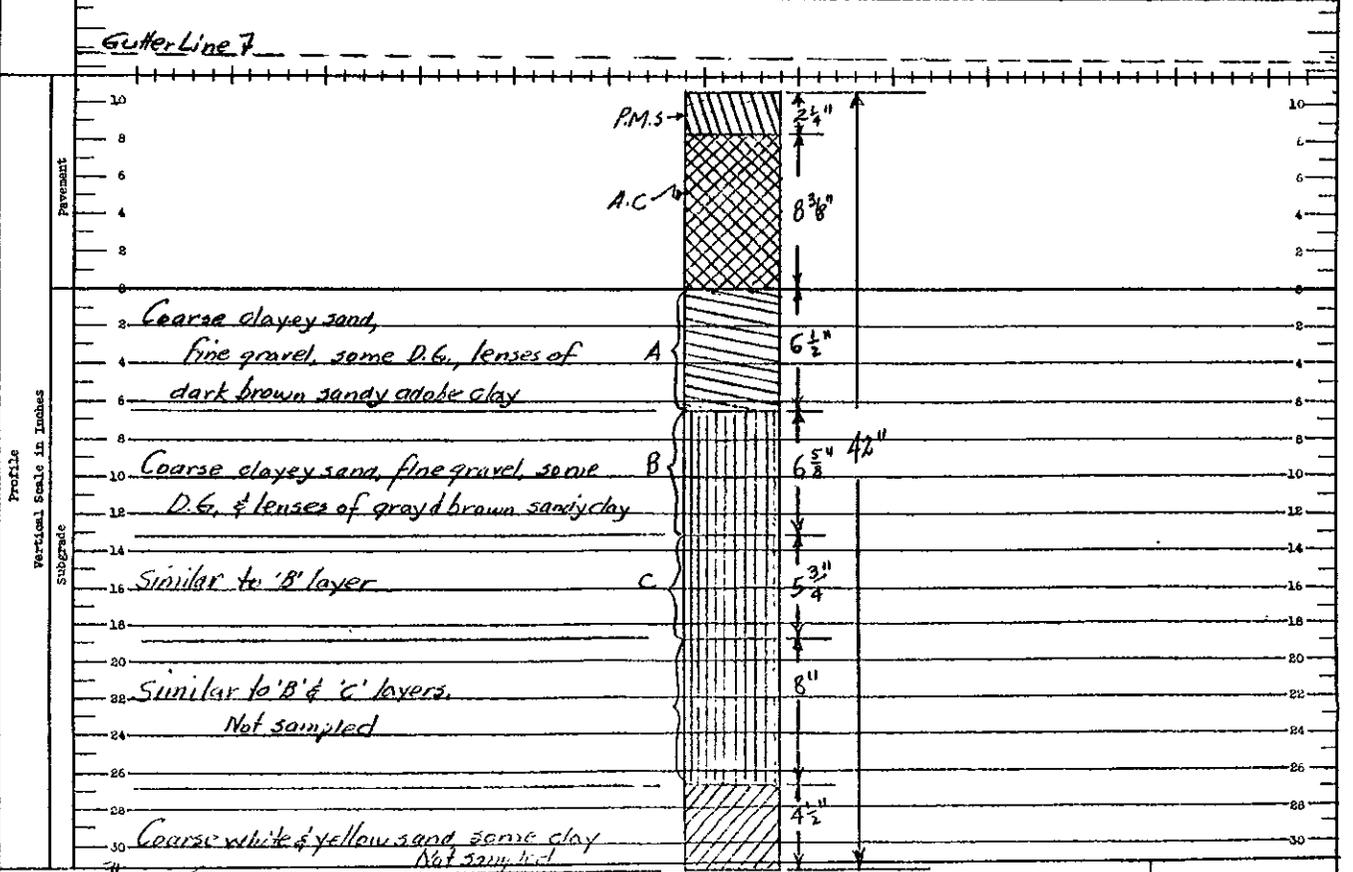
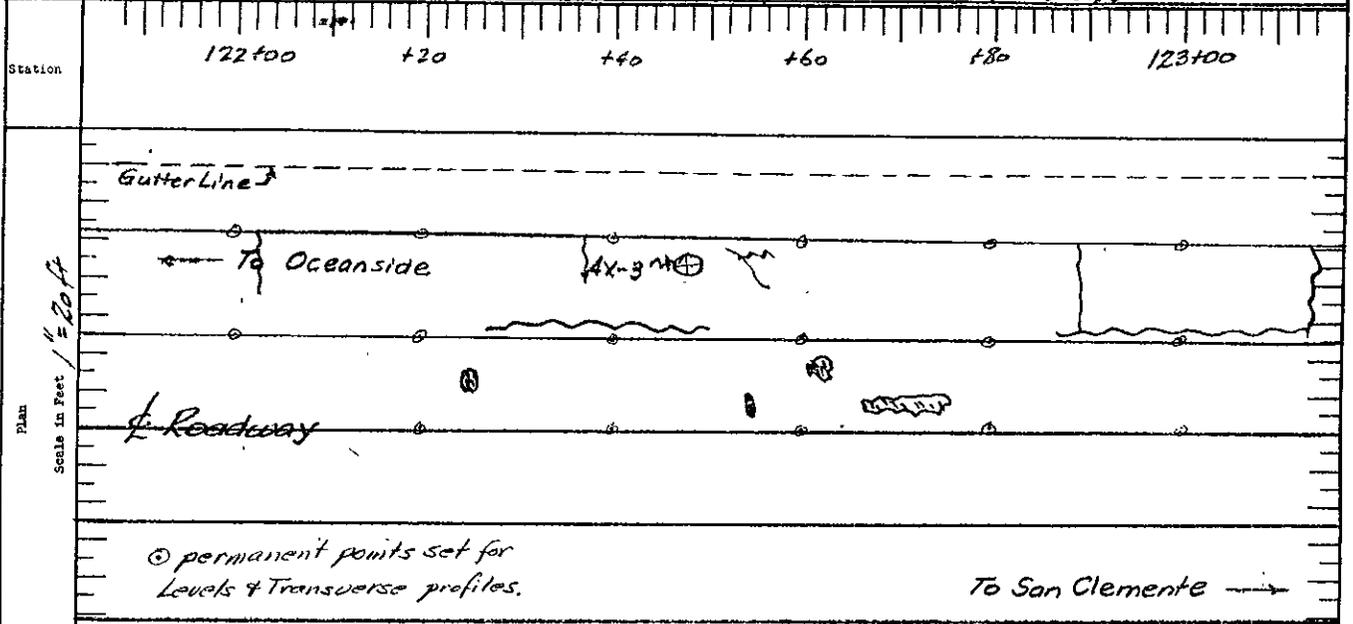
STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

LOCATION AND PROFILE SKETCH

FAVORITE INVESTIGATION

RESEARCH NO. 00258

Dist. <b>II</b>	Co. <b>50</b>	Rte. <b>2</b>	Sec. <b>C</b>	Contract No.	Date of Constr. <b>1926</b>	Test Hole No. <b>AX-3</b>
Fill <input checked="" type="checkbox"/>	Approx. Height <b>7'69"</b>	Dist. from End of Fill <b>650'</b>	<b>1650'</b>	No. of Lanes <b>4-undivided</b>	Traffic <b>Heavy</b>	No.
Cut <input type="checkbox"/>	Approx. Depth	Dist. from End of Cut		Side Ditches <b>Along toe of fill - 7' to 9' below roadway grade</b>	Depth <b>25' to 60'</b>	Date of Sampling <b>3-5-51</b>
Roadside Use, left <b>Undeveloped</b>		Right <b>A.T. &amp; S.F. Railway R/W</b>			Grade <b>0.250</b>	Up <b>→</b>



Remarks: Below -31 3/8" below bottom of part materials a fine, silty micaceous sand with many lumped lenses of clay

Material from bottom of part to -26 3/8" is essentially the same, with varying amounts of sandy clay. Probably from a non-uniformly cemented.

Party: **Reyer**, **Bourne**, **Cainson**

Drawn by **Cainson**

STATE OF CALIFORNIA  
DIVISION OF HIGHWAYS  
DEPARTMENT OF PUBLIC WORKS  
MATERIALS AND RESEARCH DEPARTMENT

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. CO158  
 W.O. No. 15NN46  
 Job Number \_\_\_\_\_

Load. Sta. No. 61  
 Dist. VI Co. D. Rte. 2 Sec. C  
 Loc. Design AX  
 Sta. 116100 to 121400  
 Sheet No. 1 of 3

*Drainage & use sections*  
 ROADWAY CONDITION SURVEY

	Left of Roadway						Right of Roadway						
	Top of Filled Slope	Edge of Filled Slope	Top of Berm Outside	Top of Berm Inside	Gutter Line	Edge of Pavt.	Edge of Pavt.	Gutter Line	Top of berm inside	Top of Berm outside	Top of Filled Slope	Ditch Line	
121~	8.8 55.0	16.7 44.0		17.6 48.5	16.6 41.0	17.5 41.0	17.6 41.5	17.0 47.5	17.7 49.5	17.3 32.0	11.1 43.5	9.4 49.5	
	<p>Note: Top of berm, left, becomes indistinguishable from filled area outside at 121~. Top of berm, inside, designates top of slope of paved gutter, not berm, from here to end of ...</p>												
120~	9.3 55.0	16.7 41.5		17.5 30.0	17.5 29.0	16.9 28.0	17.4 41.0	17.4 41.5	17.2 23.0	17.7 29.5	17.4 31.0	10.0 44.5	8.9 54.5
+84	<p>CMP Down drain Rt. 332 ft. &amp; Flowline Elev. end of pipe 15.8. Down drain set below gutter line. Gutter 28.5 ft. Elev 17.5</p>												
119400	9.3 55.5	16.0 42.0		17.1 30.5	17.1 29.5	16.5 28.5	16.1 41.0	17.1 41.5	16.8 29.5	11.5 30.5	17.1 32.0	9.6 45.5	8.6 55.5
+25	<p>Down drain Rt. Open ditch paved with P.M.S. 29.0 ft. Flowline Elev 15.6</p>												
118~	8.1 55.0	15.9 41.0		16.7 31.0	16.7 29.5	16.3 28.5	16.8 21.0	17.0 22.5	16.8 29.0	17.3 31.0	16.9 32.5	9.6 44.5	8.5 55.5
+53	<p>CMP Down drain Right Inlet 32.5 from &amp; Flowline Elev 15.9</p>												
117450	8.1 53.0	15.2 40.0		16.1 33.0	16.6 30.5	16.0 29.5	16.7 20.5	11.0 22.5	16.6 24.5	17.0 31.5	16.7 33.5	10.3 43.5	9.5 53.5
116100	<p>EM #1 60.5 Rt. Sta. 116100. Elevation (assumed) of 12.500 feet. Spike in North face of telegraph pole.</p>												

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. CO252  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 61  
 Dist. XI Co. SD Rte. 2 Sec. C  
 Loc. Design AX  
 Sta. 122+00 to 124+98  
 Sheet No. 2 of 3

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

	Left of Roadway							Right of Roadway							
	Top of Fill Slope	Edge of Fill Slope		Top of Berm outside	Top of Berm inside	Gutter Line	Edge of Pavt	Edge of Pavt.	Gutter Line	Top of Berm inside	Top of Berm outside	Top of Fill Slope	Tic of Fill Slope	Ditch Line	
198															
									CMP Down drain, right Gutter is 28.0 ft. Elev. 17.8 CMP is 28.0 ft. Elev. 17.3						
124~	9.0 55.0	16.5 42.0		11.7 29.0	11.6 26.0	18.1 20.3	18.2 21.5	17.8 28.0	18.3 29.5	17.8 31.0	10.4 43.0	10.2 50.3	10.4 54.0	9.3 73.0	
126		16.5 40.0		17.5 29.5	17.4 28.0	18.0 20.3									
									CMP Down drain, left Flow Line CMP 16.9 28.5						
123~	10.0 53.5	16.7 40.5		17.6 29.0	17.5 28.0	12.9 20.5	18.0 21.5	17.6 28.0	18.1 29.5	17.5 31.0	11.3 42.5	11.0 49.5	9.4 56.0	8.7 65.5	
190									E of road, left, into Marine Corps Reservation. No change in side slopes or elevation Road is seldom used. Ditch drainage carried under this road in a concrete pipe						
122~	9.6 54.0	16.9 41.5		17.7 29.0	17.5 28.0	17.7 21.0	18.0 21.5	17.4 27.5	17.9 29.5	17.4 32.0	11.4 43.5	10.3 50.5	9.3 60.0		
									Note: Sta. 121+00 is beginning of bench in fill slope, right, called 0 <sup>o</sup> section						

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00258  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 61  
 Dist. XI Co. S.D. Rte. 2 Sec. C  
 Loc. Design AX  
 Sta. 125+00 to 127+50  
 Sheet No. 3 of 3

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

Station	Left of Roadway						Right of Roadway						
	Toe of Fill Slope	Edge of Fill Slope		Top of Begin inside	Gutter Line	Edge of Pavt.	Edge of Pavt.	Gutter Line	Toe of Berm inside	Top of Berm outside	Reach in Fill Slope in side	Toe of Fill Slope	Ditch Line
127+50	9.4 56.0	17.2 41.0		18.6 29.0	18.3 27.5	18.7 20.0	18.8 21.5	18.3 28.0	18.8 29.5	18.1 31.5	116.162 425.510	9.6 56.0	8.6 65.0
127+50	CMP Down drain, left, outlet 28.5 left of $\&$ . Elev. 17.7						CMP Down drain, right, inlet 28.5 right of $\&$ . Elev. = 18.0						
127-	9.7 55.0	18.2 41.0		18.5 29.5	18.3 25.0	18.7 20.0	18.7 21.0	18.3 28.0	18.8 30.5	18.4 31.5	115.114 425.530	8.9 50.5	8.2 63.5
+17	Lab BM. #2 625' RT of Elevation = 11.722 ft. Spike in west face telegraph pole.												
126+00	9.8 54.0	17.6 41.5		18.3 29.0	18.0 28.0	18.5 20.0	18.6 21.5	18.1 28.5	18.6 30.0	18.1 32.5	114.119 445.515	9.1 57.5	8.4 64.5
+40	$\&$ of Road into Marine Corps Reservation. Practically unused. No changes in slopes or Elevations. Main roadway side drainage is carried under side road in Concrete pipe												
125+00	9.9 53.5	17.5 41.5		18.0 29.0	17.8 27.5	18.2 20.0	18.4 21.5	17.8 28.0	18.3 29.5	17.8 33.5	110.112 455.575	10.1 54.0	10.1 63.0

26

DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE

LOCATION: Loadometer Station No. 91, located on road XI-S.D-2-F, is 1.2 miles south of the south city limits of Chula Vista. The loadometer pit is located approximately midway in the section selected for test opposite section, Station 292+10.

LENGTH: Between test section Sta. "F" 287+50 and "F" 298+50, a total length of 1100 feet.

SURFACE:

Type: Plant mixed surfacing, constructed in 1946. In the central 20 foot section of the roadway, this present surfacing overlies asphaltic concrete and portland cement concrete. On either side of this central 20 foot section are sections approximately 8 feet in width, where the plant mixed surfacing overlies crusher run base, as noted below.

Width: Present plant mixed surfacing of the roadway varies from a total width of 36.0 feet to 39.0 feet. The left (southbound) lane varies from 18.3 to 19.6 feet, traffic stripe to edge of pavement. The right (northbound) lane varies from 17.7 to 19.5 feet, traffic stripe to edge of pavement.

Loadometer Station No. 91  
Road XI-S.D-2-F

ROADWAY STRUCTURE

SURFACE:

Thickness: Plant mixed surfacing is from 2-1/2" to 3-1/2" thick over the outer 8 foot sections and is from 2-1/4" to 2-3/4" thick over the central 20 foot section of the roadway. Asphaltic concrete in the central 20 foot section varies from 4-1/2" to 12" in thickness. P.C.C. in this central section varies from 4-1/2" to 6" in thickness.

Total pavement thickness in the central 20 foot section varies from 12-1/4" to 19-1/4", as shown on the attached Location and Profile Sketches.

BASE:

Type and  
Thickness:

(A) Central 20 foot section of roadway  
There is no imported base or subbase material under the central 20 foot section of roadway, or under the base material in the "shoulder" areas. Within the central 20 foot section P.C.C. pavement is laid directly on the original ground, and the base material under the surfacing in the "shoulder" areas is likewise laid directly on the original ground, which is a reddish brown, sandy adobe clay.

Loadometer Station No. 91  
Road XI-S.D-2-F

ROADWAY STRUCTURE

BASE:

Soil Clas-  
sifications:

A-4

Type and  
Thickness:

(B) Outer 8 foot sections

Material under the surfacing in "shoulder" sections is a crusher run base or creek run gravel and varies in thickness from 4-1/2" to 5-1/2".

SIDE DITCH  
DRAINAGE:

Roadway in the section is a slight fill. Side ditches parallel the edges of pavement at distances of from 35.0 to 43.5 feet from roadway centerline and are from 1.5 ft. to 2.1 ft. below pavement elevation. Drainage is from the south (Sta. 287+50) toward the north (Sta. 298+50). Roadway has a 0.25% profile grade. On the left, there is no definite arrangement to handle side drainage from the gutter at the north end of the section. It appears that drainage water finds its way into the outlet ditch from the culvert at the north end of the section. On the right, drainage water runs north in the gutter line, under a side road (Orange St.) in a 12" concrete pipe culvert, then in a short ditch to the inlet end of an 18" concrete pipe culvert, a ditch takes the water south to an

Loadometer Station No. 91  
Road XI-S.D.2-F

ROADWAY STRUCTURE

SIDE DITCH  
DRAINAGE:  
(Continued)

angle point opposite test section Sta. 297+13, where the ditch turns west, draining towards San Diego Bay.

The two culverts mentioned above are the only culverts or drainage structures within the limits of the section.

ROADWAY CONDITION

GENERAL:

It should be noted that, for practically the entire length of the section, there are longitudinal cracks, at or near, the location of the edge of the old pavement. There are several transverse cracks, some of them completely across the central 20 ft. section of the roadway, and some of them running for only a short distance. All transverse cracks noted, however, are quite pronounced and severe.

SPECIAL  
CONDITIONS:

(1) Areas of  
Alligator  
Cracking:

Areas of alligator cracking are shown graphically on the plan diagram and are listed below for convenience:

Left Lane:

Sta. 288+91 to 288+98, 14.5' to 17.0' lt. &  
2.5 ft. wide, severe

Loadometer Station No. 91  
Road XI-S.D-2-F

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (1) Areas of Alligator Cracking:  
(Continued)
- Sta. 289+40 to Sta. 289+65, 10.0' to 13.0' lt. centerline, 3.0' wide, fairly severe
- Sta. 291+67 to Sta. 291+80.5, 10.0' to 14.5' lt. centerline, 2.5 to 4.0' ft. wide, fairly severe
- Sta. 292+24 to Sta. 292+53, 10.0' to 14.0' lt. centerline, 2.5 to 4.0 ft. wide, not severe
- Sta. 293+17 to Sta. 293+23, 10.5' to 18.5' lt. centerline, 7.5 to 8.0 ft. wide, fairly severe
- Sta. 295+70 to Sta. 295+74, 10.5' to 18.5' lt. centerline 7.5 to 8.0 ft. wide, severe
- Sta. 296+08 to Sta. 296+11, 10.5' to 18.5' lt. centerline, 8.0 ft. wide, fairly severe
- Sta. 297+56.5 to Sta. 297+69, 14.5 to 18.5' lt. centerline, 3.0 to 4.0 ft. wide, not severe

Right Lane

Sta. 291+46 to Sta. 294+63, 10.0' to 18.5' rt. centerline 7.5' to 8.0' wide. Area is generally not severely cracked, except between Sta. 291+57 and Sta. 291+82. Latter area shows worst alligator cracking in the section, and has been partially sealed with asphalt. Between Sta. 293+60 and Sta. 294+00 is another area of severe alligator cracking.

Sta. 295+34 to Sta. 295+45, 11.5' to 18.0' rt. centerline 7.0 ft. wide, fairly severe

Sta. 296+17 to Sta. 296+54, 11.5' to 18.0' rt. centerline 6.5' to 7.0' ft. wide, not severe

Sta. 297+35 to Sta. 297+90, 10.0 to 17.5 ft. rt. centerline, 7.0' to 8.0' wide, severe. Partially sealed with asphalt.

Loadometer Station No. 91  
Road XI-S,D-2-F

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (1) Areas of Alligator Cracking:  
(Continued) Sta. 298+40 to 3rd of section and 200 ft. beyond, 14.5' to 18.5' rt. centerline, 3.5' to 4.5' wide, fairly severe.  
In connection with these alligator crackings, it should be noted that all of them are located in the outer sections of the roadway, and that none of them are within the central 20 foot section of pavement which overlies the old pavement.
- (2) Areas of Raveling: There are no areas of raveling within the limits of the section.
- (3) Areas of Shoving and Creeping: There are no areas within the section which show evidences of creeping or shoving of the surface.
- (4) Patches: There is only one patch within the limits of the section, from Sta. 291+80.5 to Sta. 291+82.5. Apparently a trench excavation was made at some time for utilities, and has been backfilled and patched to bring it back up to the grade of adjacent pavement.
- (5) Roadway Section: As previously noted, the roadway within the section is a slight fill. It seems questionable whether the original P.C.C. pavement was much, if any, higher in elevation than the surrounding

Loadometer Station No. 91  
Road XI-S.D-2-F

ROAD CONDITION

SPECIAL  
CONDITIONS:

(5) Roadway  
Section:

fields. Side slopes from the edges of the pavement to the gutter line were bladed out, and that was apparently the extent of the original grading. Present pavement is from 0.1 ft. to 1.8 ft. higher than the fields on either side of the roadway.

(6) Shoulders:

When the present plant mixed surfacing was constructed, two outer sections of from 8.0 ft. to 9.5 ft. in width were added to the then existing pavement. These outer sections were designed to serve as paved shoulders. However, with the type pavement constructed, the entire roadway is used as traveled way, frequently carrying four cars abreast. As a result of this practice, there are no improved shoulders on the section. Side slopes are bladed by Maintenance and serve as shoulders, but have no treatment to improve them.

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels:

Bench marks were established by the field crew at both ends of the section and on the P.C.C. runways to the Loadometer Pit, opposite Sta.

Loadometer Station No. 91  
Road XI-S.D-2-F

ROADWAY CONDITION

Bench Marks  
and Levels:

291+82.5 and Sta. 292+40. Bench Mark No. 1 is a pin in a pipe cap, left of Sta. 287+95. A length of 1" pipe was driven 3.5 feet into the ground and the cap was screwed onto this pipe. All other bench marks are 1/4" diameter Ramset pins. Listed below are bench mark number, location, description and elevation of all bench marks established:

B.M. No.	Location	Description	Elevation
1	39' lt. roadway centerline, opposite Sta. 287+95	Ramset pin set into pipe cap. Pipe driven into ground 3.5 feet	60.000 (Assumed)
1a	22.5' rt. of roadway $\bar{A}$ , opposite Sta. 291+82.5	1/4" diameter pin set near the south end of the inner PCC runway to Loadometer Pit	60.193
1b	29.0' rt. of roadway $\bar{A}$ , opposite Sta. 298+51	1/4" diameter pin set near the north end of the outer P.C.C. runway to Loadometer Pit	60.144
2	46.3' rt. of roadway $\bar{A}$ , opposite Sta. 298+51	1/4" diameter pin set in head-wall (PCC) at inlet end of 18" x 94' concrete pipe culvert under roadway	58.089

Loadometer Station No. 91  
Roadway XI-S.D-2-F

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels  
(Continued)

<u>B.M. No.</u>	<u>Location</u>	<u>Description</u>	<u>Elevation</u>
3	47.3' lt. of roadway cen- terline opposite Sta. 298+44	1/4" diameter pin set in PCC headwall at outlet end of 18" x 94' con- crete pipe cul- vert under roadway ,	47.351

This particular section of road presented an extreme width of the pavement. The central section of the roadway was laid out in a section 12.6' wide, 6.3' on either side of the traffic stripe, and lines of permanent reference pins were set at these distances from centerline. On the left side of the roadway, the outer line of pins was placed 11.5' from the pin marking the left edge of the central section. On the right side of the roadway, the outer line of pins was placed 11.0' from the pin marking the right edge of the central section. In general, the left outer pin row is 17.8' from the traffic stripe, which was taken as the centerline of the roadway.

Loadometer Station No. 91  
Road XI-S.D-2-F

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Profilograph  
Records;

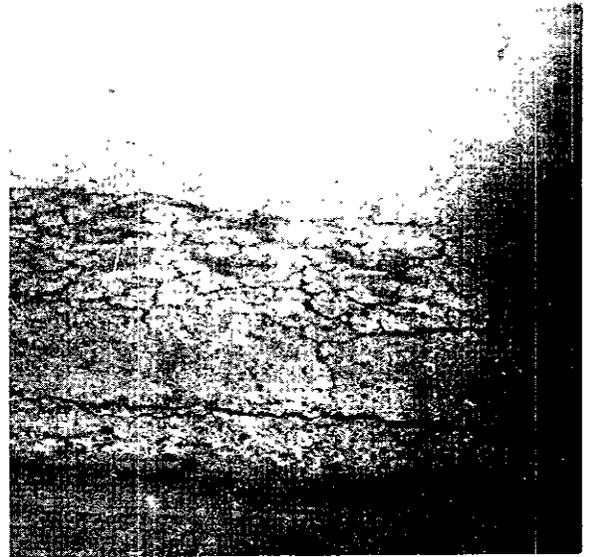
- Transverse: Pins established in the pavement as permanent reference points for levels, also serve as permanent markers for transverse profiles. Using the machine developed by the Laboratory for this purpose, transverse profilograph records of the three sections established were taken, at 20 foot intervals throughout the section.
- Longitudinal: By means of the Profilograph, records were made of the longitudinal profiles of the traveled way surface at four locations. Records of the outer sections were made with the outer wheels of the machine just inside the outer pin lines. Records of the central section were made with the recording wheel running along the lines of the pins marking the edges of the central section. All profilograph records have been labeled and are on file at the Materials and Research Dept. for future use.

Loadometer Sta. No. 91

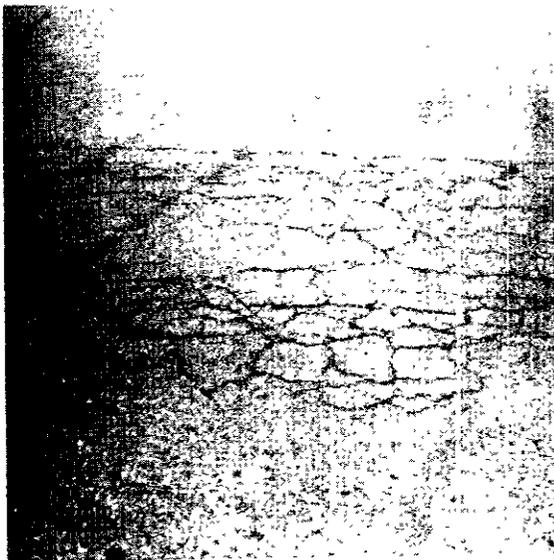
XI-S.D-2-F



Sealed cracks Station  
288+20 to Sta. 288+40



Severe Alligator Crack-  
ing Rt. lane Sta. 291+80



Severe Alligator Crack-  
ing Rt. lane Sta. 298+50



Back on line from Sta.  
298+50

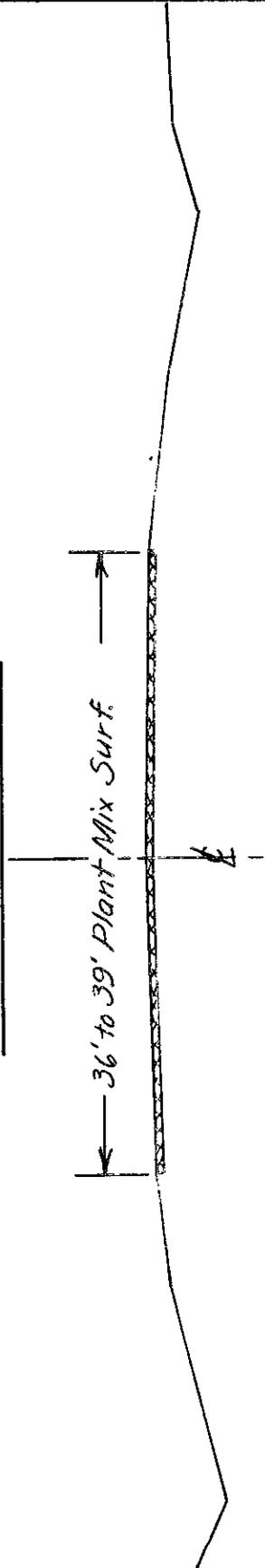
State of California, Div. of Highways  
Materials & Research Department  
Research No. 00258, W.O. No. 13NN26

Loadometer Station No. AY 91  
XI-S.D-2-F

R O A D W A Y   C O N D I T I O N   S U R V E Y

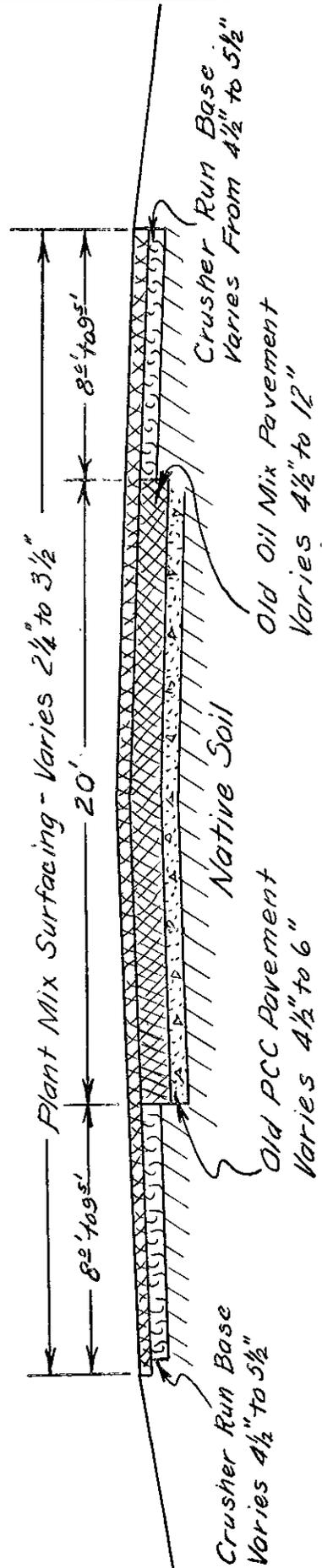
Scale: 1" = 10'

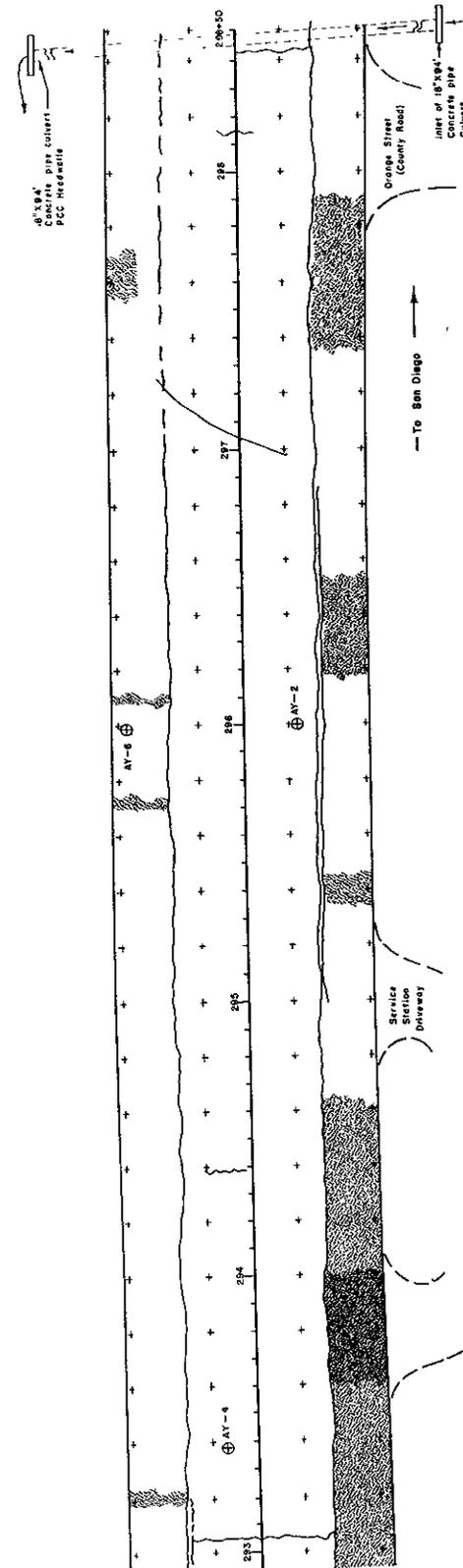
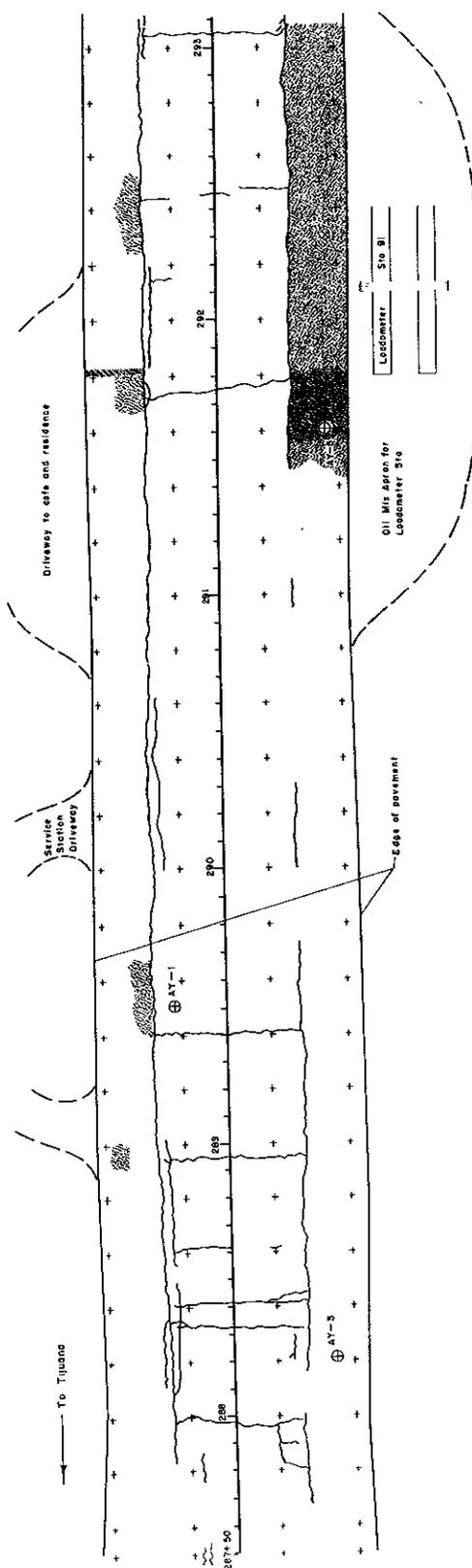
TYPICAL ROADWAY SECTION



Scale: 1" = 5'

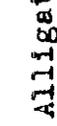
TYPICAL STRUCTURAL SECTION





PAVEMENT LOCATION AND CONDITION CHART

LEGEND

-  Alligator Cracking
-  Location of Sample Hole
-  Failure
-  Block Cracking
-  Shoving
-  Patch

⊕ Location of Permanent Reference Points LOADOMETER STA. NO. 91  
 XI-S.D-2-F

TEST RESULTS SUMMARY

Load. Sta. No. 91  
XI-S.D-2-F (Part I)

Line	Sample No.		Sample Hole Location		Pavement		Soil Samples	
	Field	Lab.	Station	Position	Type	Thick-ness	Depth below Btm. Pav't.	Layer Des-cription
1	AY-1-A	51-1245	289+51	7.8' lt. of roadway	OM AC	2 1/4" 4 1/2"	0 - 6-7/8"	Basement
2	AY-1-B	51-1245A	289+51	Same	PCC	6"	6-7/8-14-5/8	Basement
3	AY-2-A	51-1246	295+99	7.5' rt. of roadway	OM AC	2-3/4" 12"	0 - 6"	Basement
4	AY-2-B	51-1246A	295+99	Same	PCC	4 1/2"	6 - 13-1/2"	Basement
5	AY-3-A	51-1247	288+21	14.7' rt. of roadway	OM	2 1/2"	0 - 5-1/2"	Base
6	AY-3-B	51-1247A	288+21	Same	OM	2 1/2"	5 1/2 - 11-3/8"	Basement
7	AY-3-C	No Lab. Number	288+21	Same	OM	2 1/2"	11-3/8 - 18"	Basement

Line	In Place Test Data			Lab. Test Data		HRB Soil	Specific Gravity	
	Moist.	Density	% Rel. Comp.	Optimum Moisture	Maximum Density	Classification	Pass. 4	Ret. 4
1	9	124	92	9	134	A-4	2.65	
2	10	109	82	9	133	A-4	2.65	
3	8	121	92	9	131	A-4	2.65	
4	8	106	81	9	131	A-4	2.67	
5	4	138	99	7	139	A-1-a	2.67	2.66
6	10	115	89	11	130	A-4	2.63	
7	13	109	84	11	130			

Line	Sieve Analysis - Percent Passing										Atterberg Limits		
	2"	3/4"	4	8	16	30	50	200	270	5M	LL	PL	
1			100	99	97	91	79	49	44	14	N	P	
2			100	99	98	93	82	51	46	14	N	P	
3			100	99	98	93	81	50	44	12	N	P	
4			100	99	97	92	79	45	42	11	N	P	
5	100	83	43	37	31	24	16	7	6	4	N	P	
6		100	98	96	92	82	67	42	37	18	22	15	
7	Material same as AY-3-B. No sack sample taken												

TEST RESULTS SUMMARY

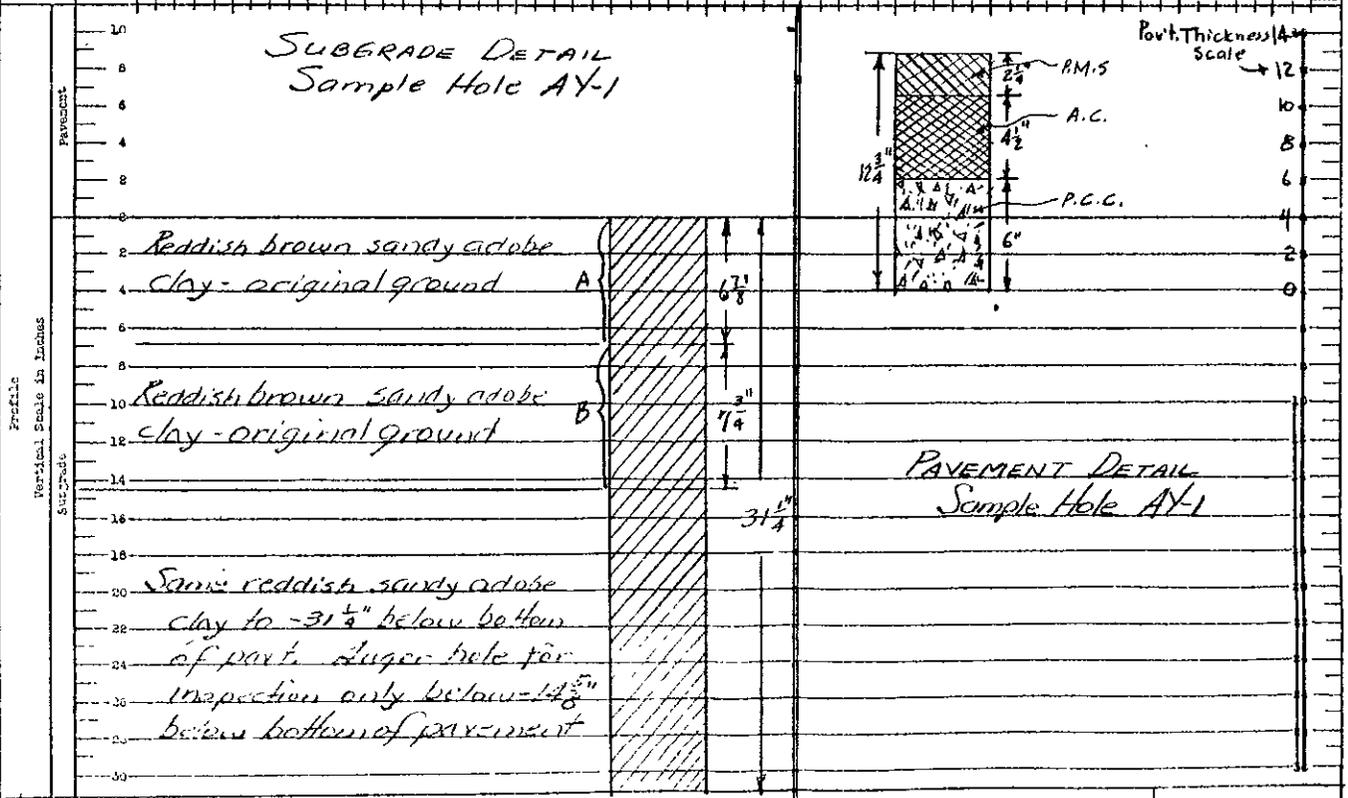
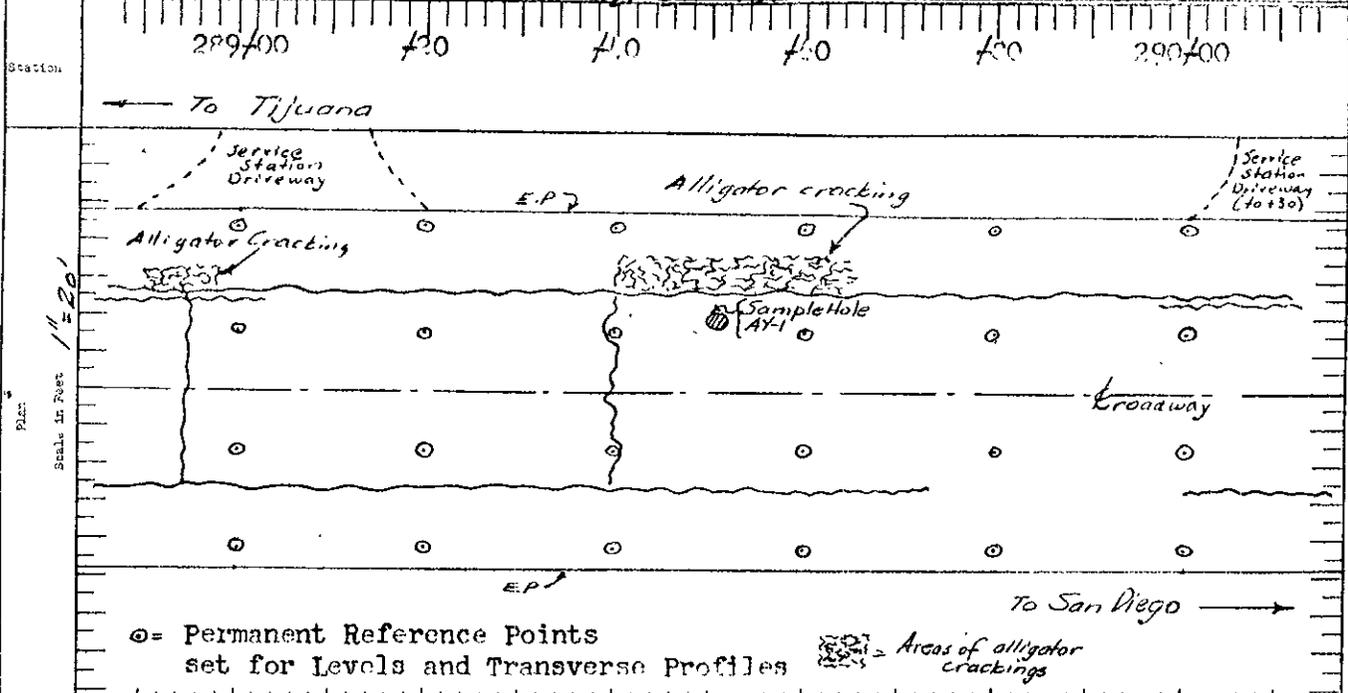
Load. Sta. No. 91  
 XI-S.D-2-F (Part II)

Line	Sample No.		Sample Hole Location		Pavement		Soil Samples	
	Field	Lab.	Station	Position	Type	Thick-ness	Depth below Btm. Pav't.	Layer Description
8	AY-4-A	51-1709	293+38	4.3' left of roadway	OM AC	2 1/4" 5"	0 - 7-1/4"	Basement
9	AY-4-B	51-1709A	293+38	same	PCC	5"	7 1/4 - 13-3/4"	Basement
10	AY-5-A	51-1710	291+66	15.3' rt. of roadway	OM	3"	0 - 4-3/4"	Base
11	AY-5-B	51-1710A	291+66	Same	OM	3"	4-3/4 - 10 1/2"	Basement
12	AY-5-C	51-1710B	291+66	Same	OM	3"	10 1/2 - 17"	Basement
13	AY-6-A	51-1711	295+985	16.4' lt. of roadway	OM	3 1/2"	0 - 4-1/2"	Base
14	AY-6-B	51-1711A	295+985	Same	OM	3 1/2"	4 1/2 - 10 1/4"	Basement
15	AY-6-C	51-1711B	295+985	Same	OM	3 1/2"	10 1/4 - 16-3/4"	Basement

Line	In Place Test Data			Lab. Test Data		HRB Soil	Specific Gravity	
	Moist.	Density	% Rel. Comp.	Optimum Moisture	Maximum Density	Classification	Pass. 4	Ret. 4
8	7	116	91	9	128	A-4	2.62	
9	10	105	81	10	129	A-4	2.67	
10	4	148	111	6	133	A-2-6	2.61	2.65
11	13	123	97	10	127	A-4	2.65	
12	19	113	94	13	120	A-6	2.61	
13	3	130	94	7	139	A-1-a	2.63	2.65
14	14	110	88	12	125	A-6	2.59	
15	8	113	86	8	131	A-4	2.61	2.61

Line	Sieve Analysis - Percent Passing										Atterberg Limits	
	2"	3/4"	4	8	16	30	50	200	270	5M	LL	PL
8				100	99	94	84	53	48	13	N	P
9				100	99	94	85	55	50	15	17	15
10	100	77	22	16	13	10	7	5	5	4	30	16
11			100	98	94	87	75	48	44	20	27	14
12			100	99	98	94	85	58	55	32	39	16
13	100	77	43	35	29	21	14	6	6	4	22	19
14			100	99	97	92	84	62	57	34	32	15
15	100	98	94	91	86	77	63	40	37	14	22	16

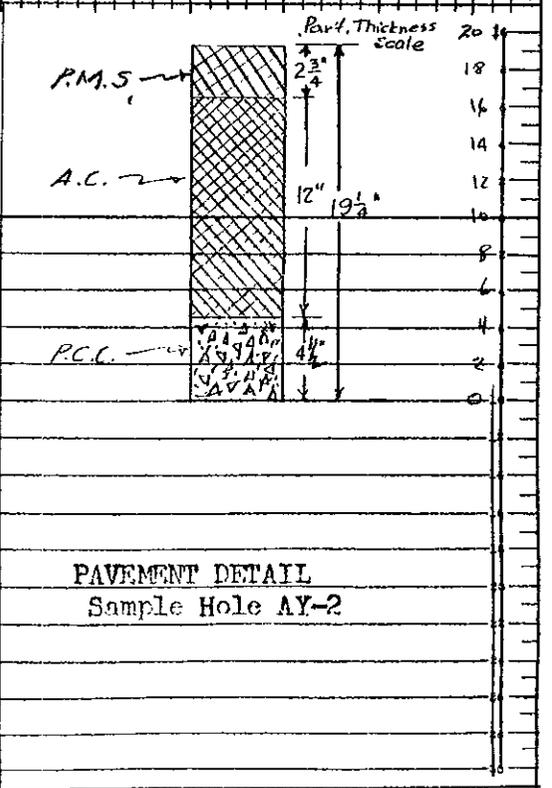
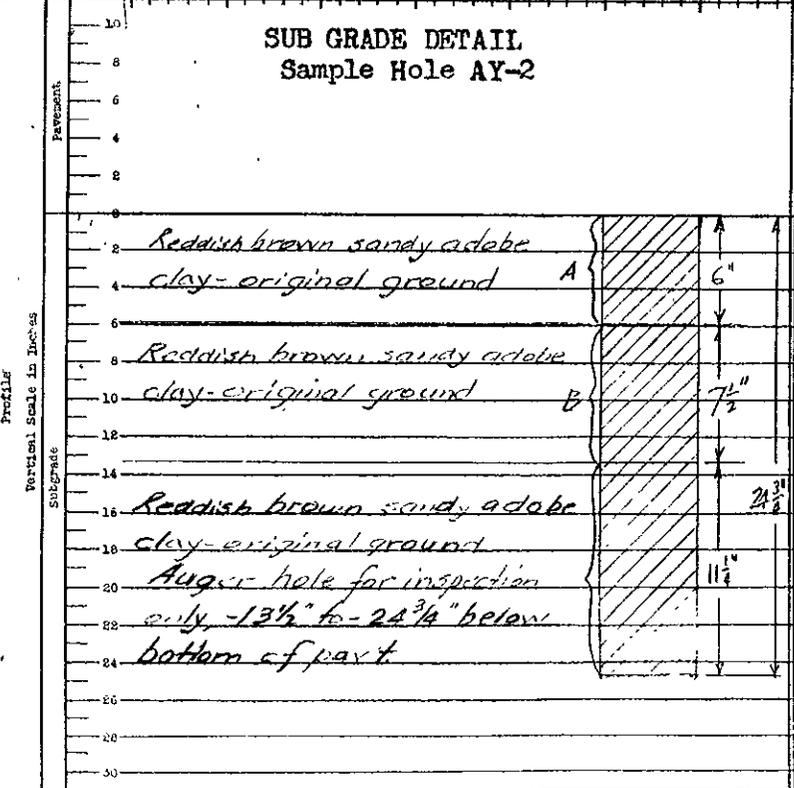
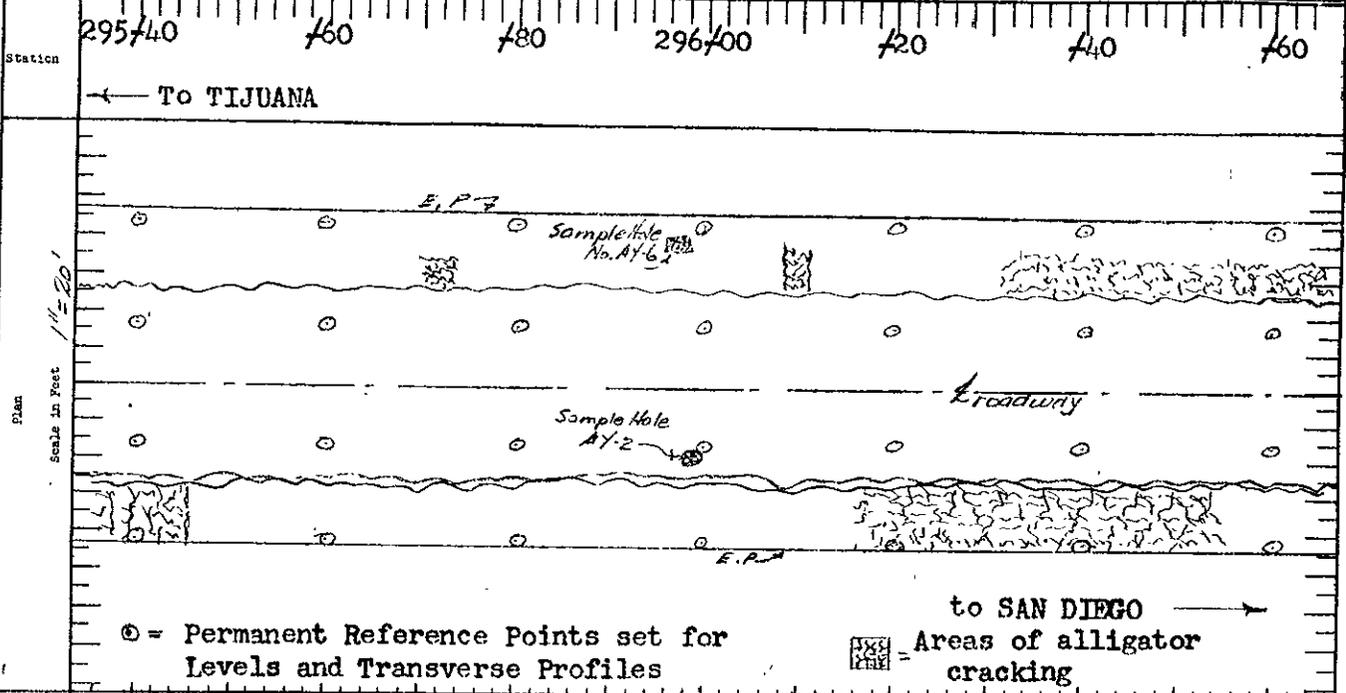
Dist. XI	Co. S.D.	Dist. No. 2	Sec. F	Contract No.	Date of Constr. 935, 1946	Post Mile No. AY-1
Fill X	Address 7 - 1 1/2	Dist. from End of Fill		No. of Lanes 2	Traffic Light	
Out	Address	Dist. from End of Out		Side Ditches Right & Left	Depth 0.5-1'	Date of Report 3/27/57
Name of Loc. Service Sta., Cafe &			Right	Service Station, Agricultural		Grade 0.3



STATE OF CALIFORNIA, DEPARTMENT OF PUBLIC WORKS, DIVISION OF HIGHWAYS, MATERIALS AND RESEARCH DIVISION

Revised by: Clayton  
 Date: 3/27/57  
 Checked by: Clayton

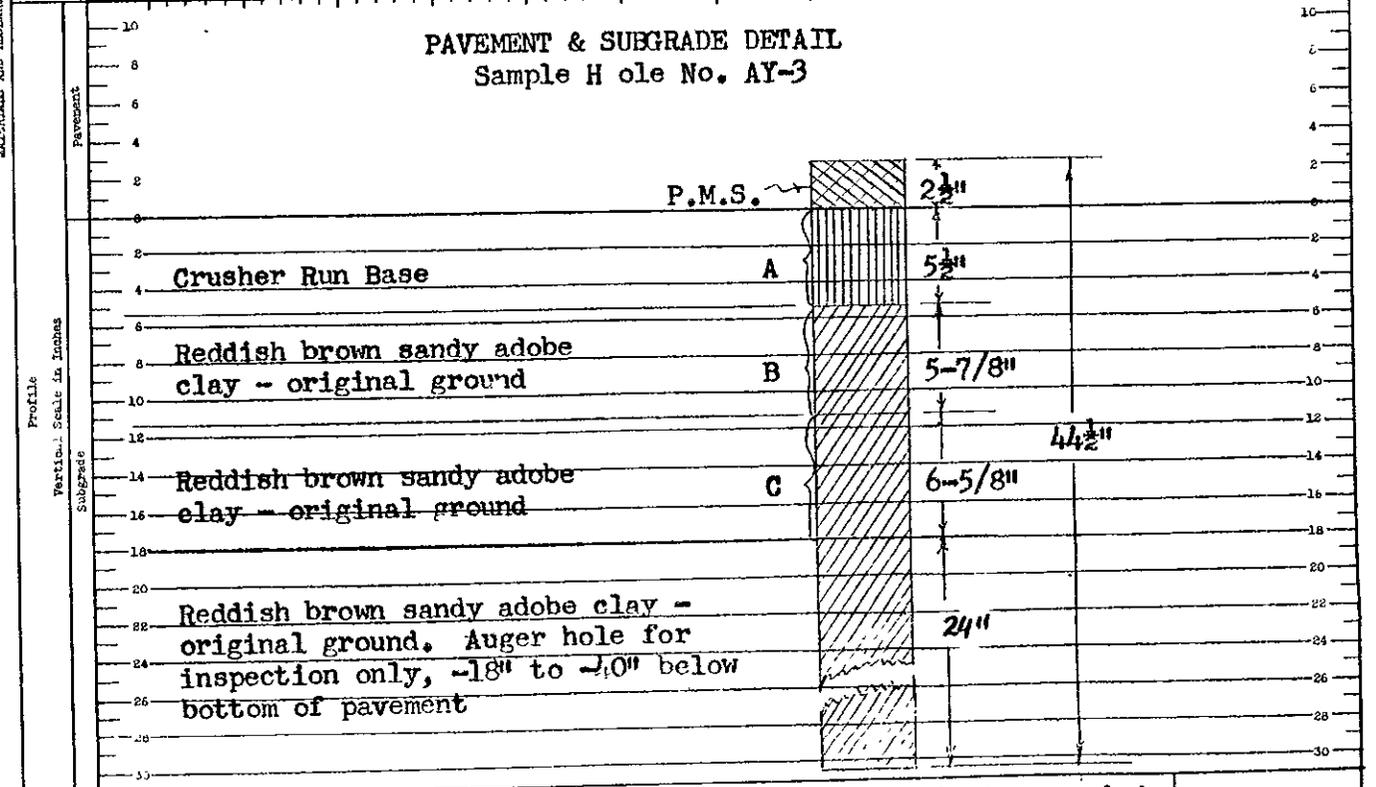
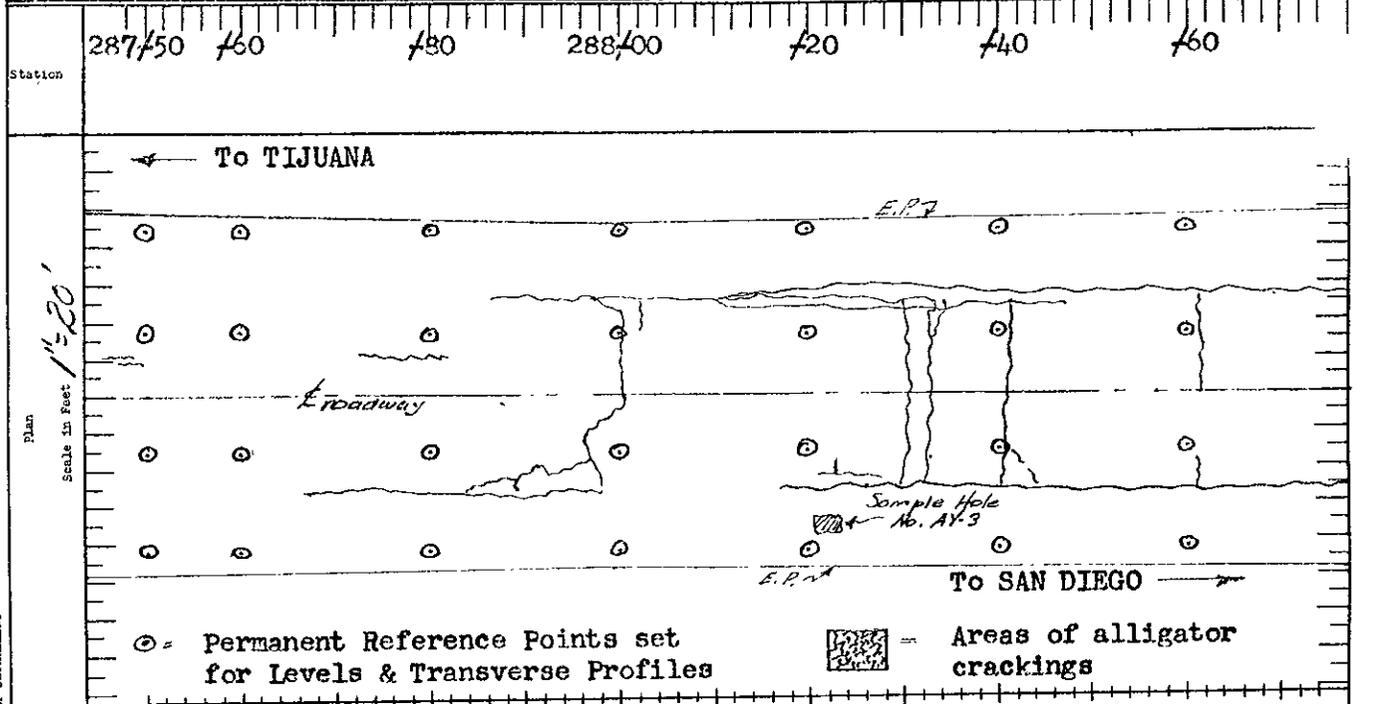
Dist. <b>XI</b>	Co. <b>SD</b>	Rte. <b>2</b>	Sec. <b>F</b>	Contract No. <b>—</b>	Date of Constr. <b>1935, 1946</b>	Post Hole No. <b>AY-2</b>
Fill <b>X</b>	Approx. Height <b>1-1 1/2'</b>	Dist. from End of Fill <b>←</b>	No. of Lanes <b>2</b>	Traffic <b>Light</b>		
Cut <b>—</b>	Approx. Depth <b>—</b>	Dist. from End of Cut <b>←</b>	Side Ditches <b>Right &amp; left</b>	Depth <b>0.5-1'</b>	Date of Sampling <b>3/28/51</b>	
Roadside Use, left <b>Agricultural</b>		Right <b>Ser. Sta., agricultural</b>			Grade <b>0.3%</b>	Up <b>←</b>



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC ACCES  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

Remarks:	Reymer
	Bourne
	Party Clawson
	Drawn By Clawson

Dist. VI Co. SD Int. 2	Sec. 17	Contract No.	Date of Constr. 1935, 1946	Test Hole No. AY-3
Fill X	Approx. Elevation 1-1 1/2'	Dist. from End of Fill	No. of Lanes 2	Traffic Light
Cut	Approx. Depth	Dist. from End of Cut	Side Ditches Right & Left	Depth 0.5-1'
Roadside Use, Left Ser. Sta., & Agricultural			Right Agricultural	Grade 0.3% Up



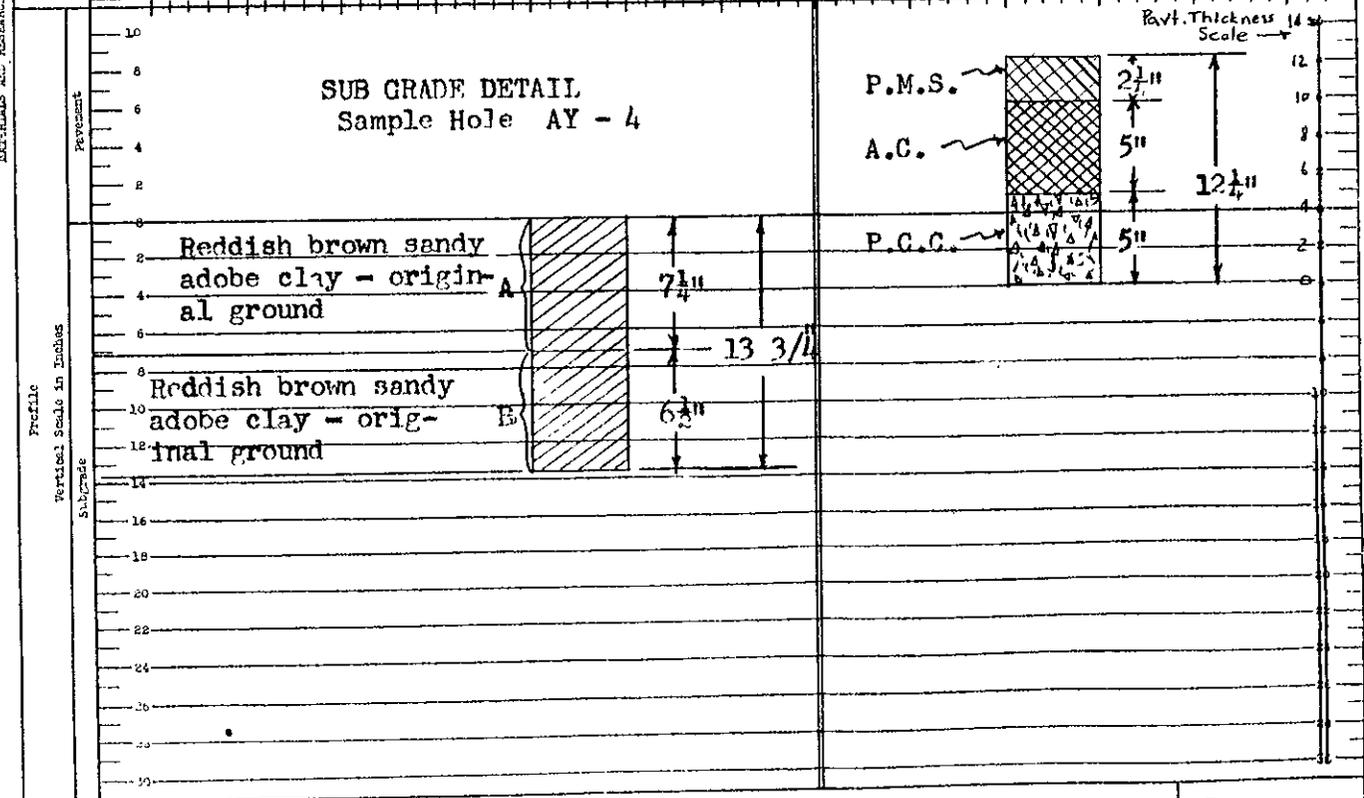
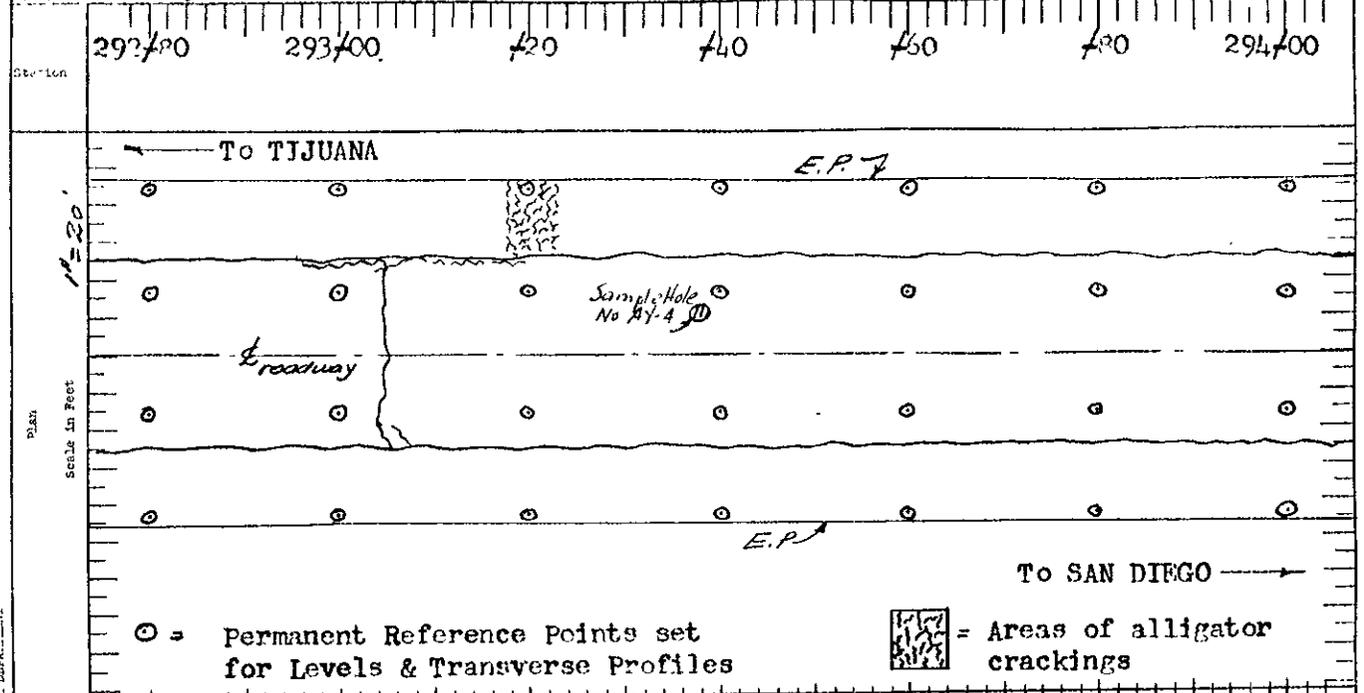
STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

Note: Sample hole in what was intended to be "right shoulder" area, but which is actually used as a "right outer lane" by traffic. Headquarters design dept. requested "shoulder" samples in addition to regular samples under the travelled way.

Party: Reyner Bourne, Clawson

Drawn By: Clawson

Dist. No. XI	Co. SD	Sec. 2	Tract No. F	Date of Constr. 1935, 1946	Post Hole No. AY-4
Dist. from East of Fill	Dist. from East of Cut	No. of Lanes 2	Traffic Right	Depth 0.5-1.1	Date of Sample 3 May 1951
Left Agricultural			Right Agricultural		
Grade 0.3%			Up		



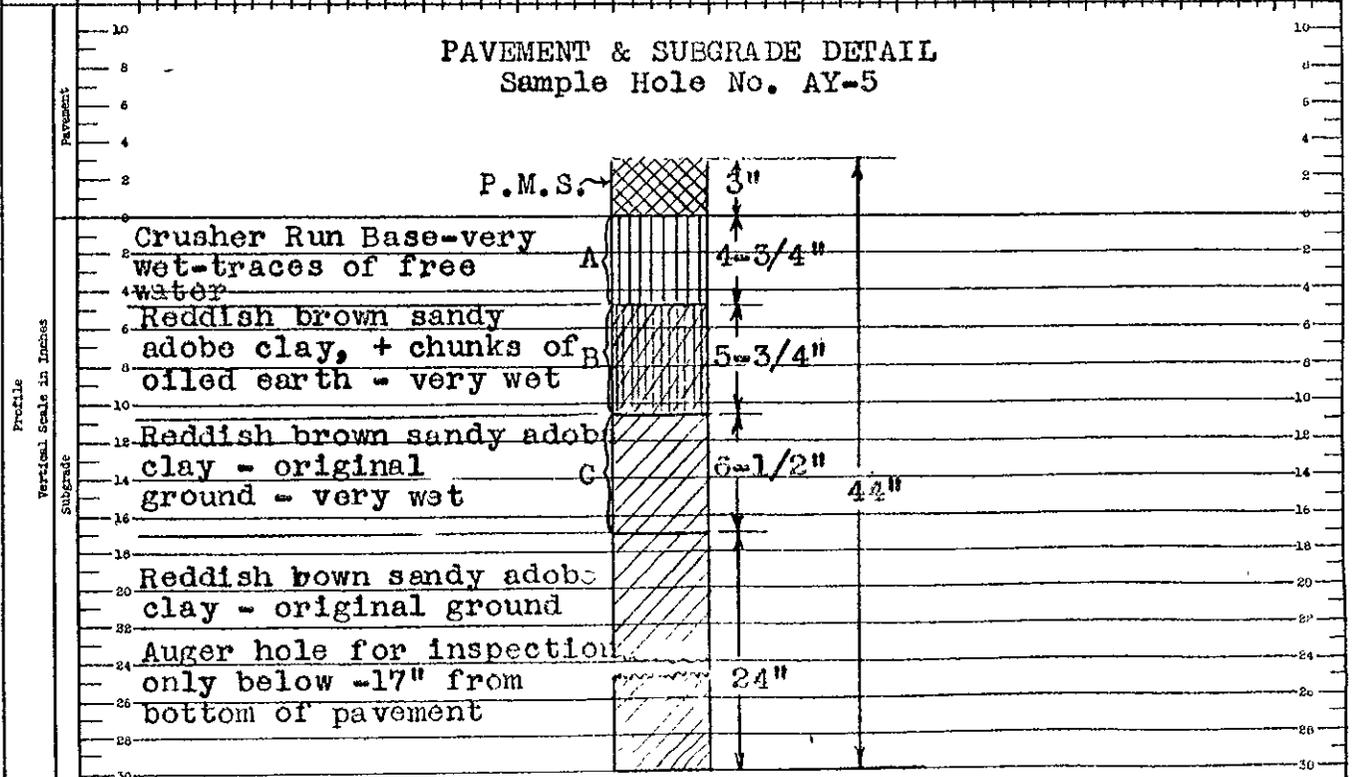
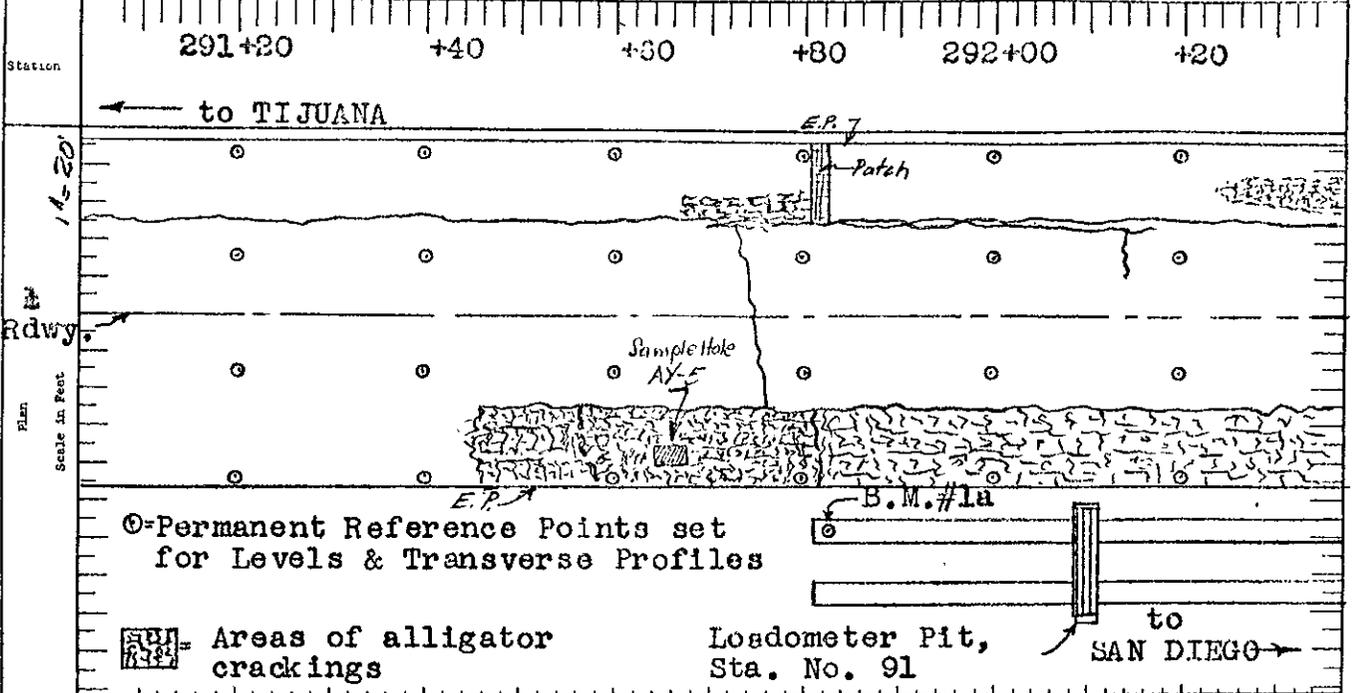
STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC ADMS  
 MATERIALS AND RESEARCH DEPARTMENT

Reynor  
Clayson

forty

CLAYSON

Dist. <b>YI</b>	Co. <b>SD</b>	nte. <b>2</b>	Sec. <b>F</b>	Contract No.	Rate of Contr. <b>1035, '46</b>	Test Hole No. <b>AY-5</b>
Fill <b>2'</b>	Approx. Sight <b>1-1 1/2'</b>	Dist. from End of Fill	Dist. from End of Cut	No. of Lanes <b>2</b>	Traffic <b>Light</b>	Date of Sampling <b>5/2/51</b>
Cut	Approx. Depth	Dist. from End of Cut	Side Ditches <b>Right &amp; Left</b>	Depth <b>0.5-1'</b>	Grade <b>0.5%</b>	Up ←
Roadside Use, Left <b>Residences &amp; Cafe</b>			Right <b>Agricultural</b>			



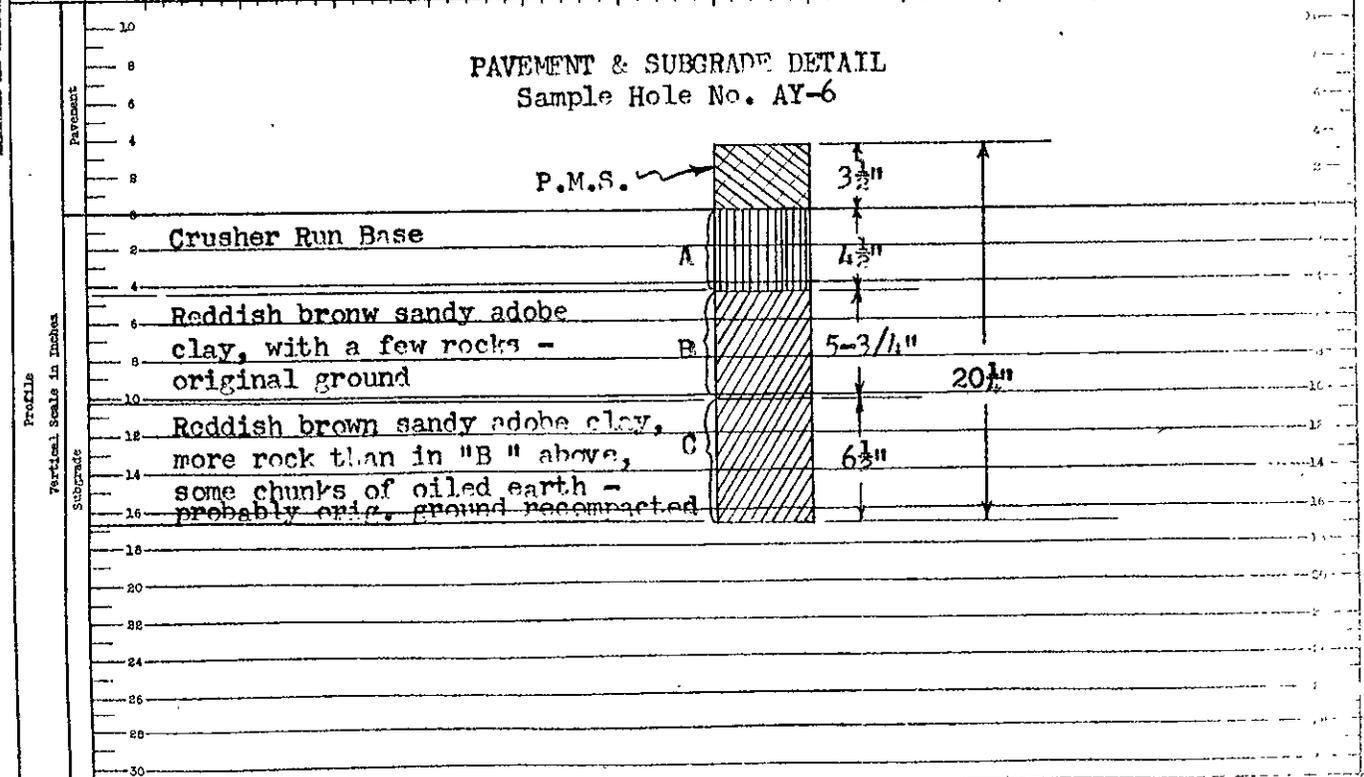
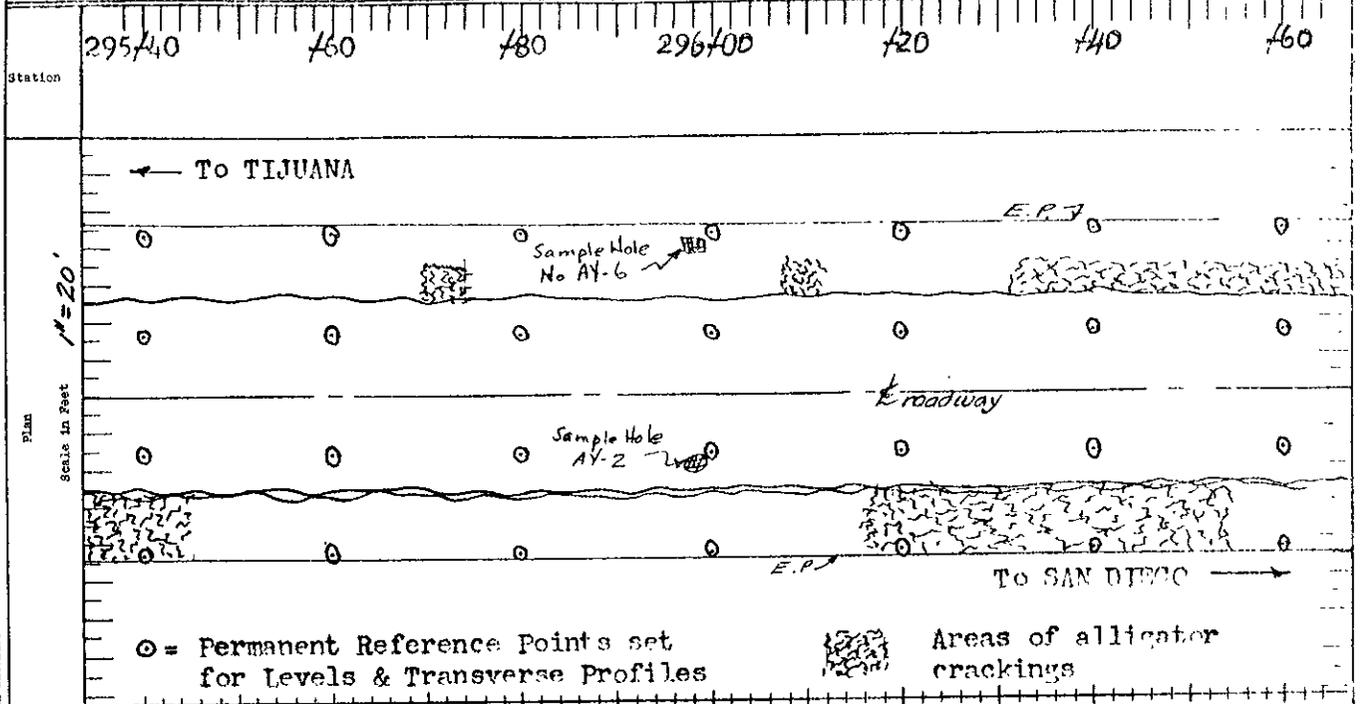
Notes: Sample taken in worst area of alligator cracking on Test Section. Crusher Run Base and material to a depth of 18" below the Base were very wet, with some free water in the Crusher Run Base and the adobe clay subbase just below it.

Reyner Clawson

Clawson

STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

Dist. XI	Co. SD	R'n. 2	Sec. F	Contract No.	Date of Cont. 1935, 1946	Job No. AY-6
Pill X	App'x. width 1-1 1/2'	Dist. from End of Pill	No. of Lanes 2	Traffic Light	(& AY-2)	
Cut	App'x. Depth	Dist. from End of Cut	Side Ditches Right & Left	Depth 0.5-1'	3 May '51	
Remsite 27, left Agricultural			RIGHT Ser. Sta. & Agricultural		Grade 0.3	



Remarks: Sample hole in what was intended to be "left shoulder" area, but which is actually used as a "left outer lane" by traffic. Headquarters Design Dept. requested "shoulder" samples in addition to regular samples under the travelled way.

STATE OF CALIFORNIA  
DIVISION OF HIGHWAYS  
DEPARTMENT OF PUBLIC WORKS  
MATERIALS AND RESEARCH DEPARTMENT

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 00208  
 W.O. No. 13NN26  
 Job Number \_\_\_\_\_

Load. Sta. No. 91  
 Dist. VI Co. S.D. Rte. 2 Sec. E  
 Loc. Design AV  
 Sta. 287+50 to 295+00  
 Sheet No. 1 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

*E. Rdy. - Traffic Strips*

	Left of Roadway						Right of Roadway							
	Field Beyond Top of Cut	Top of Cut	Gutter Line	Brack in slope of Dirt Shldr.	Dirt Shldr. at edge Pav't.	Extreme Edge of Pav't.	Extreme Edge of Pav't.	Dirt Shldr. at Edge of Pav't.	Edge Road Apron	Top fill for Load Pit	Cutter Line	Top of Cut	Field Beyond Top of Cut	
295~	57.6 47.8	57.4 41.3	56.9 39.8		58.7 26.6	57.2 19.0	59.3 18.8	59.3 17.7					57.8 50.7	
294~	57.6 52.8	57.8 42.8	56.7 41.3			57.1 20.3	59.4 18.6	59.4 18.2	59.1 23.7				58.6 53.7	
+120														
293~	58.0 50.8	58.0 41.3	57.0 39.8			59.5 19.0	59.6 18.6	59.6 18.8		59.4 21.2	59.2 31.2	57.8 38.2	59.0 41.7	59.5 41.0
140		58.5 43.8	57.4 42.3			59.7 20.1	59.8 19.6	59.9 17.7		59.9 20.7	59.6 32.7	58.0 39.7	59.3 41.2	59.8 50.0
292~		58.5 55.8	57.9 41.6			59.8 19.2	59.9 19.0	60.0 18.9		59.9 20.7	59.6 32.7	58.5 39.2	59.2 41.2	60.0 51.0
+80														
291~		58.7 51.3	58.2 38.3			60.0 18.8	60.1 18.4	60.3 18.4		60.2 25.6	59.7 30.7	58.8 37.7	59.3 40.7	60.1 51.0
+90														
290~		59.2 50.8	59.0 36.8			60.7 19.0	60.8 18.8	61.0 19.1	60.9 19.3			59.1 37.7	59.8 41.1	60.5 48.0
289~		59.5 47.3	59.1 35.8			61.3 19.4	61.3 19.2	61.3 19.4	61.2 19.6			59.5 37.7	60.2 39.7	60.8 46.0
288~		59.8 43.8	59.7 37.8			61.5 19.3	61.6 18.6	61.6 18.9	61.6 19.1			59.9 37.7	60.9 46.7	61.4 50.0
287+50		59.9 44.8	59.5 40.3			61.8 19.7	61.8 19.5	61.8 19.5	61.6 19.7			60.1 37.4	60.9 40.7	61.3 48.2

*Beginning of Test Section*

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. 07253  
 W.O. No. 1511126  
 Job Number \_\_\_\_\_

Load. Sta. No. 91  
 Dist. VI Co. D Rte. 2 Sec. F  
 Loc. Design AV  
 Sta. 296+00 to 298+50  
 Sheet No. 2 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

*& Below Traffic Slope*

Station	Left of Roadway						Right of Roadway						
	Top of Cut	Gutter Line		Break in slope of left shoulder	Dist. Edge of Pavt.	Extreme Edge of Pavt.	Extreme Edge of Pavt.	Dist. Edge of Pavt.	Break in slope of right shoulder	Gutter Line	Top of cut	Dist. Beyond Top of Cut	
+51													
	<i>End of Test Section</i>						<i>No gutter right. Area is bus. loading zone.</i>						
293+50	57.4	56.3		57.7	58.2	58.3	58.3	57.8			57.7	58.1	
	44.8	38.5		26.3	18.8	18.3	18.2	27.7			39.2	40.2	
+425	<i>Outlet end of 18" x 94" concrete pipe culvert under roadway. Elevation of Flowline 55.3. Outlet 47.3' from L. Roadway.</i>												
+32							<i>End of 12" x 41" concrete pipe culvert under Orange St. Elev. of Flowline 55.9. 46.2' right of L. Rdwy.</i>						
298	55.6	56.4	56.3	57.7	58.2	58.4	58.4	58.3	<i>No gutter. side road right. Elev. Pavt. on side road 41.4</i>		57.6		
	46.8	43.0	38.8	25.8	19.0	18.5	18.2	21.7			41.4		
+91	<i>Flowline of outlet ditch Lt.</i>						<i>Beginning of 12" x 41" pipe culvert (concrete) under side road Orange St. right. Elev. of Flowline 56.0, 45.6' Rt. of L. Rdwy.</i>						
+60							<i>Beginning of inlet ditch to culvert under side road, right. Elev. of Flowline 56.0</i>						
+13	<i>Angle in outlet ditch from culvert under roadway, 298+51 Rt. to 298+41 Lt. Elev. of Flowline ditch at angle point 55.3. 48.8' Lt. of L. Rdwy.</i>												
297+	56.4	56.4		58.1	58.6	58.7	58.7	58.5	57.7	56.5	57.7		57.8
	54.8	43.3		26.0	18.3	13.5	17.7	19.2	27.2	37.2	39.1		49.2
	<i>Driveway into local business, left</i>												
296+	57.2	56.4		55.2	58.1	58.9	58.9	58.7	57.7	56.6	57.9		58.2
	40.3	38.3		25.3	18.8	18.6	17.7	18.7	28.2	37.7	42.2		51.2

27

DATA OF SECTION SELECTED FOR TEST

ROADWAY STRUCTURE

LOCATION: Loadometer Station No. 62 is 6 miles east of El Cajon, Station 302 to Station 303.

The section selected for test is adjacent to the Loadometer Station.

LENGTH: Section is established between Station 299+00 and Station 309+00, a length of 1000 feet. Roadway is a 2-lane highway. The section includes both lanes of roadway.

SURFACE:

Type: Oil mix surfacing over old (1916) 15 ft. PCC pavement and newer (1932) 5 ft. PCC widening strip.

Width: Two 10 ft. lanes, traveled way is 20 ft. wide. Oil mix surfacing has been carried out over shoulders so that there is actually 33 to 35 ft. of pavement width.

Thickness: Variable. Oil mix surfacing varies from 2-3/4" to 5". P.C.C. varies from 4-1/4" (1916) to 6-1/2" (1932).

All old P.C.C. pavement has been blanketed with oil mix surfacing several times until present thickness varies from 2-3/4" over the 1916 P.C.C. to 5" over the 1932 P.C.C. Total pavement thickness varies from 7" to 12-1/2".

Loadometer Station No. 62  
Road XI-S.D-12-C

ROADWAY STRUCTURE

BASE AND SUBBASE:

Type and  
Thickness:

All pavements have been placed over native material. There is no imported material used as a base or subbase.

Native material is a silty sand and fine gravel with some D.G. in it. Material was sampled to depths of from 12-1/4" to 13-1/4" below the bottom of the pavement.

Soil Clas-  
sification:

A-2-4 or A-4

SIDE DITCH  
DRAINAGE:

Entire section is in a "grade" section. The roadway has a profile grade of +1.0%. Drainage is back along the section from the east to the west.

There are slight ditches beyond the paved shoulders on either side of the road. Ditches are not clearly defined but average a few tenths of a foot lower in elevation than the pavement on the left and from 0.9' to 1.2' lower on the right.

There are no culverts or bridges within the section.

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (1) Areas of  
Alligator  
Cracking:

Refer to Plan Diagram. All areas of alligator crackings are outside the actual 10 ft. traveled way lanes.

Left Lane:

Sta. 299+00 to 299+10, 10.0' to 12.5' lt.  $\pm$ ,  
2.5 ft. wide, severe

Sta. 302+38 to 302+43, 10.5' to 12.0' lt.  $\pm$ ,  
1.5 ft. wide, completely failed

Sta. 302+60 to 302+65, 10.0' to 12.5' lt.  $\pm$ ,  
2.5 ft. wide, completely failed

Sta. 304+07 to 307+14, 10.0' to 12.0' lt.  $\pm$ ,  
2.0 ft. wide, fairly severe

Sta. 304+36 to 304+45, 10.0' to 13.0' lt.  $\pm$ ,  
3.0 ft. wide, fairly severe

Sta. 304+69 to 304+81, 10.0' to 13.0' lt.  $\pm$ ,  
3.0 ft. wide, severe

Sta. 304+87 to 305+68, 12.5' to 14.0' lt.  $\pm$ ,  
1.5 ft. wide, on shoulder at edge of area of  
shoving, not severe

Sta. 305+81 to 305+99, 10.0' to 12.5' lt.  $\pm$ ,  
2.5 ft. wide, fairly severe

Sta. 307+16 to 307+23, 10.0' to 13.0' lt.  $\pm$ ,  
3.0 ft. wide, fairly severe

Sta. 307+34 to Sta. 307+46, 10.0' to 12.5' lt.  
 $\pm$ , 2.5 ft. wide, severe

Sta. 307+91 to 308+12, 10.0' to 12.5' lt.  $\pm$ ,  
2.5 ft. wide, severe

Sta. 308+20 to 308+34, 10.0' to 12.5' lt.  $\pm$ ,  
2.5 ft. wide, severe

Loadometer Station No. 62  
Road XI-S.D-12-C

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (1) Areas of Alligator Cracking: (Continued)
- Right Lane:  
Sta. 308+03 to 308+76, 10.0' to 12.5' rt. & 2.5 ft. wide, severe  
Sta. 308+03 to 308+76, 15.0' to 17.0' rt. & 2.0 ft. wide on shoulder, not too severe
- (2) Areas of Raveling: There are no areas of raveling within the section.
- (3) Areas of Shoving or Creeping: Refer to Plan Diagram. All areas of shoving are outside the actual 10 ft. traveled way lanes.

Left Lane:

Sta. 299+10 to 302+15, 10.0' to 13.0' lt. & 3.0' wide, severe  
Sta. 302+76 to 303+32, 10.0' to 12.5' or 13.0' lt. & 2.5 ft. to 3.0 ft. wide, severe  
Sta. 304+87 to 305+68, 10.0' to 12.5' lt. & 2.5 ft. wide, severe

Right Lane:

There are no areas of shoving in the right lane.

- (4) Patches: There are four patches in the section. All are small and appear to be over the 1932 P.C.C. widening strip.

Sta. 300+25, 4.0' to 10.0' lt. & patch has an average width of 2.0 ft.

Sta. 301+42, 5.0' to 10.8' lt. & patch has an average width of 1.0 ft.

Sta. 302+60, 5' lt. & patch is 0.5' wide

Loadometer Station No. 62  
Road XI-S.D-12-C

ROADWAY CONDITION

SPECIAL  
CONDITIONS:

- (4) Patches: Sta. 304+11, 6' lt.  $\pm$ , patch is 0.5' wide.  
(Continued)
- (5) Roadway Section: Section roadway is a grade section. Existing pavement is only slightly (0.2 to 0.4 ft.) above the surrounding areas in elevation.
- (6) Shoulders: Asphaltic mix shoulders are from 7.0 to 9.0 ft. wide on the left of the traveled way and from 6.0 to 7.5 ft. wide on the right of traveled way. Shoulders are actually a continuation of the asphaltic mix blanket over the traveled way. Shoulders are in uniformly poor condition.

ROUGHNESS  
MEASUREMENTS:

Bench Marks and Levels: Bench marks were established by the field crew near the ends of the section and outside the section limits.

<u>B.M. No.</u>	<u>Location</u>	<u>Description</u>	<u>Elevation</u>
1	38' rt. $\pm$ , Sta. 298+33	1/4" diam. steel pin in P.C.C. H/W	600.00 (Assumed)
2	40' lt. $\pm$ Sta. 298+33	Same as above	601.390
3	35' rt. $\pm$ Sta. 314+00	Same as above	617.379
4	35' rt. $\pm$ Sta. 314+00	Same as above	617.844

Loadometer Station No. 62  
Road S.D-12-C

ROADWAY CONDITION

ROUGHNESS  
MEASUREMENTS:

Bench Marks  
and Levels  
(Continued)

Three lines of permanent reference pins were set in this section. One line was on the traffic stripe and each of the other lines were placed on the shoulders, 12.5 ft. left and right of the first pin line.

Profilograph  
Records:

Transverse:

The permanent reference points for levels also serve as permanent markers for transverse profiles of the pavement surface. Using the machine developed for this purpose, transverse profilograph records of the traveled way surface in each lane were made at 20 ft. longitudinal intervals throughout the section.

Longitudinal:

By means of the Profilograph, records were made of the longitudinal profiles of each lane of the traveled way. Records were made with the recording wheel 36" into each lane from the outer pin lines.

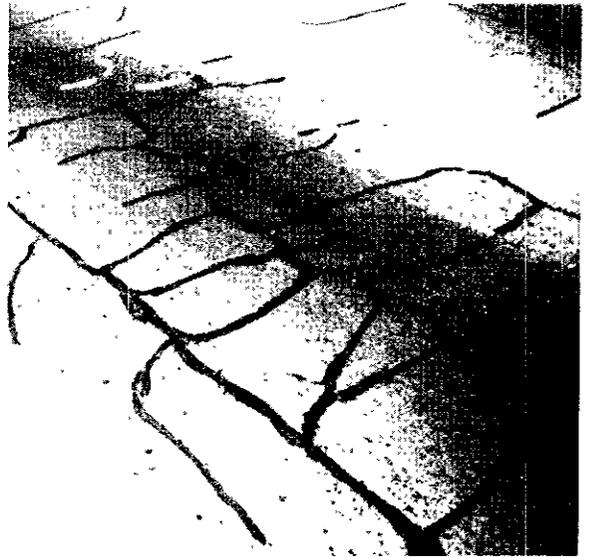
All profiles have been labeled and are on file at the Materials and Research Department for future use.

Loadometer Sta. No. 62

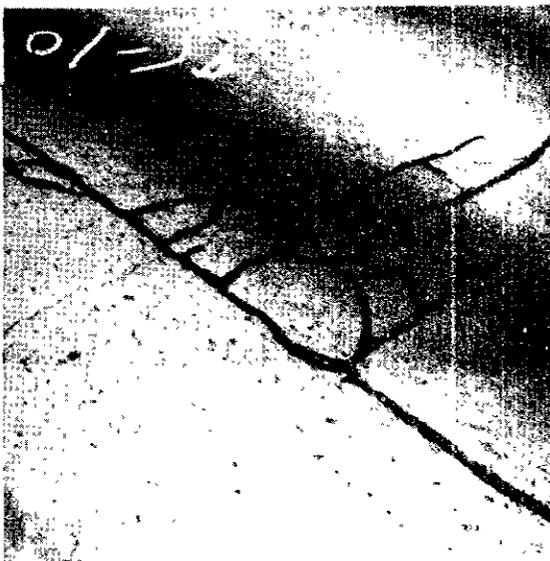
XI-S.D-12-C



Sealed Cracks in Right Lane  
Sta. 299+80 to Sta. 299+90



Severe Cracking Vicinity  
of Sta. 300+50



Sealed Cracks in Right  
Lane Sta. 304+90



Sealed Cracks in Right Lane  
Sta. 308+10 to Sta. 308+22

Loadometer Sta. No. 62

XI-S.D-12-C



Sealed Cracks  
Station 308+40



Sealed Cracks in Right  
Lane Sta. 308+60



Sealed Cracks Along Right  
Shoulder Sta. 308+80 to Sta. 309+00



Back on line From  
Station 309+00

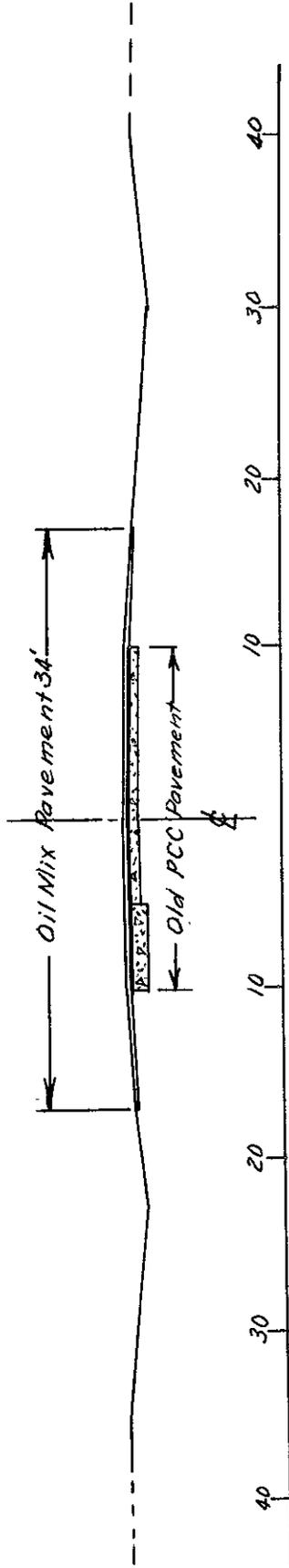
State of California, Div. of Highways  
Materials & Research Department  
Research No. 00258, W.O. No. 13NN26

Loadometer Station No. BH 62  
XI-S.D-12-C

ROADWAY CONDITION SURVEY

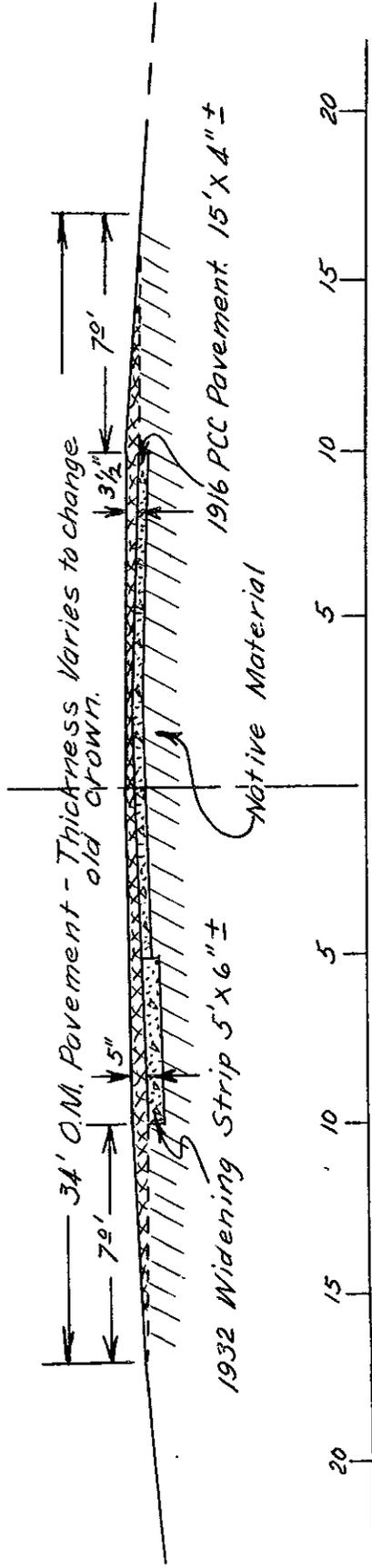
Scale: 1" = 10'

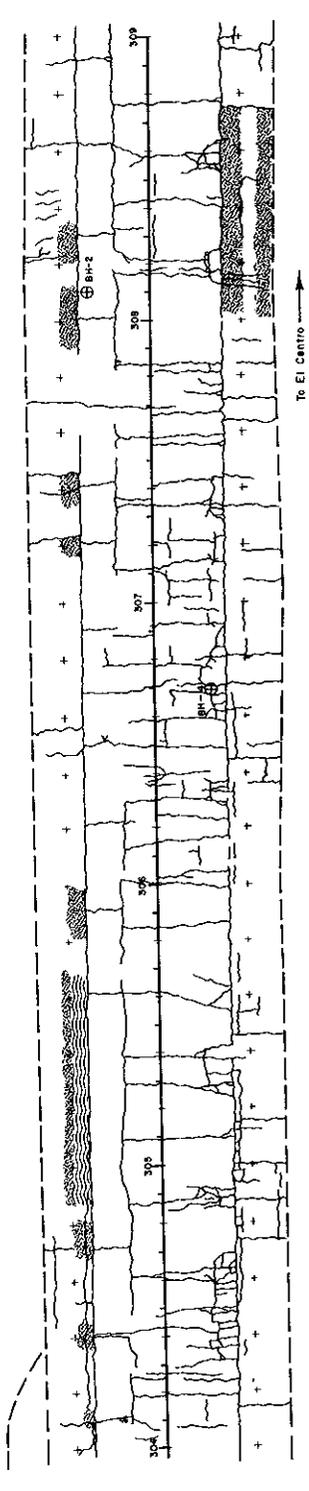
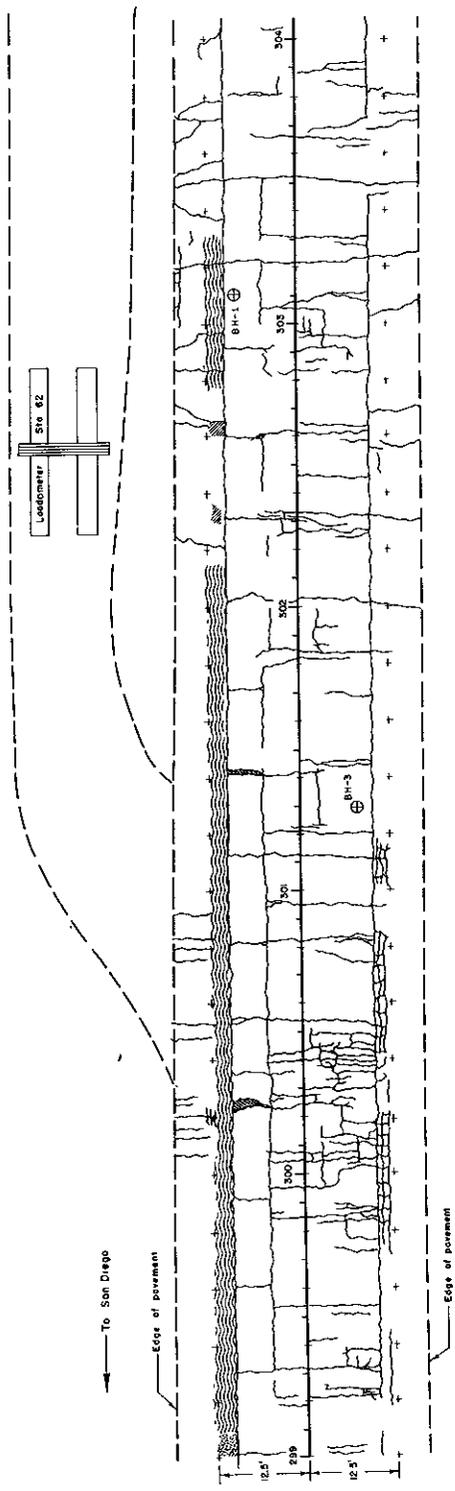
TYPICAL ROADWAY SECTION



Scale: 1" = 5'

TYPICAL STRUCTURAL SECTION





PAVEMENT LOCATION AND CONDITION CHART

LEGEND

-  Alligator Cracking
-  Failure
-  Block Cracking
-  Shoving
-  Patch

⊕ Location of Sample Hole + Location of Permanent Reference Points  
 LOADOMETER STA. NO. 62  
 XI-S.D-12-C

TEST RESULTS SUMMARY

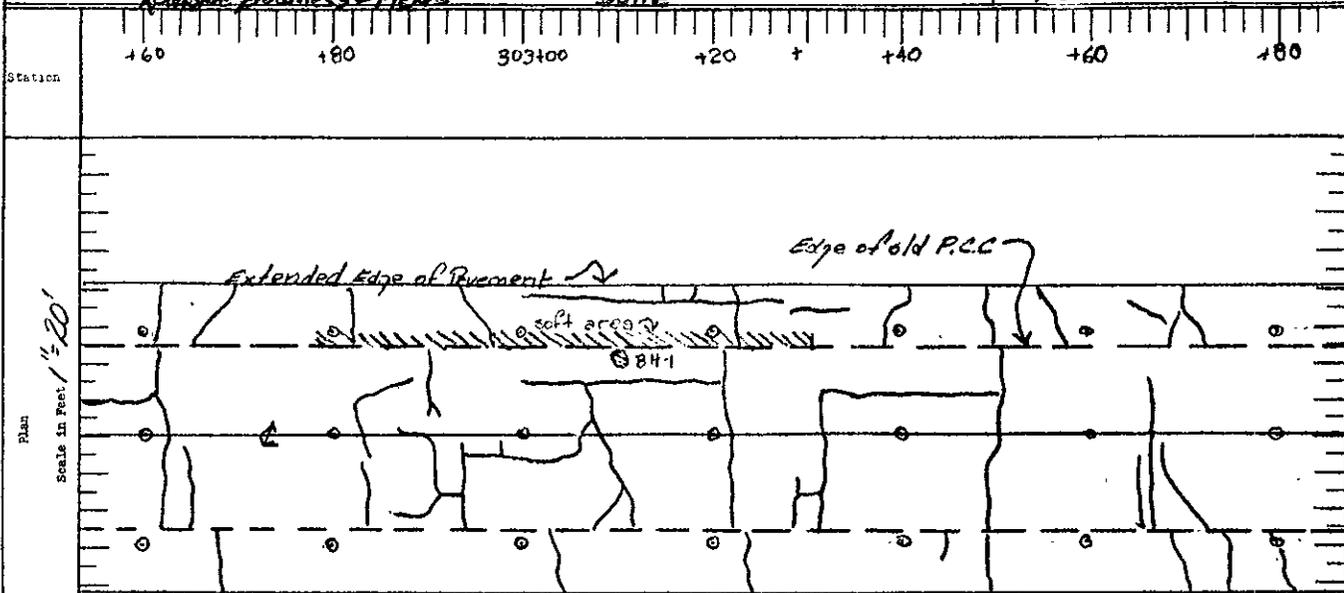
Load. Sta. No. 62  
XI-S.D-12-C

Line	Sample No.		Sample Hole Location		Pavement		Soil Samples	
	Field	Lab.	Station	Position	Type	Thick-ness	Depth below Btm. Pav't.	Layer Des-cription
1	BH-1-A	51-2498	3064.05	8.4" right of roadway	OM PCC	5" 6 1/2"	0 - 6-3/4"	Basement
2	BH-1-B	51-2499	3064.05	Same	OM PCC	5" 6 1/2"	6-3/4 - 14 1/4"	Basement
3	BH-2-A	51-2500	3064.05	8.5" right of roadway	OM PCC	5" 6-3/8"	0 - 5-7/8"	Basement
4	BH-2-B	51-2500	3064.05	Same	OM Same	5" Same	5-7/8 - 13-1/8"	Basement
5	BH-3-A	51-2501	3064.29	8.0" right of roadway	OM PCC	5" 4-3/4"	0 - 6-1/2"	Basement
6	BH-3-B	51-2503	3064.29	Same	Same	Same	6 1/2 - 12-3/4"	Basement
7	BH-4-A	51-2504	3064.70	8.3" right of roadway	OM PCC	4-3/4" 4-3/4"	0 - 7"	Basement
8	BH-4-B	51-2505	3064.70	Same	Same	Same	7 - 13-1/4"	Basement

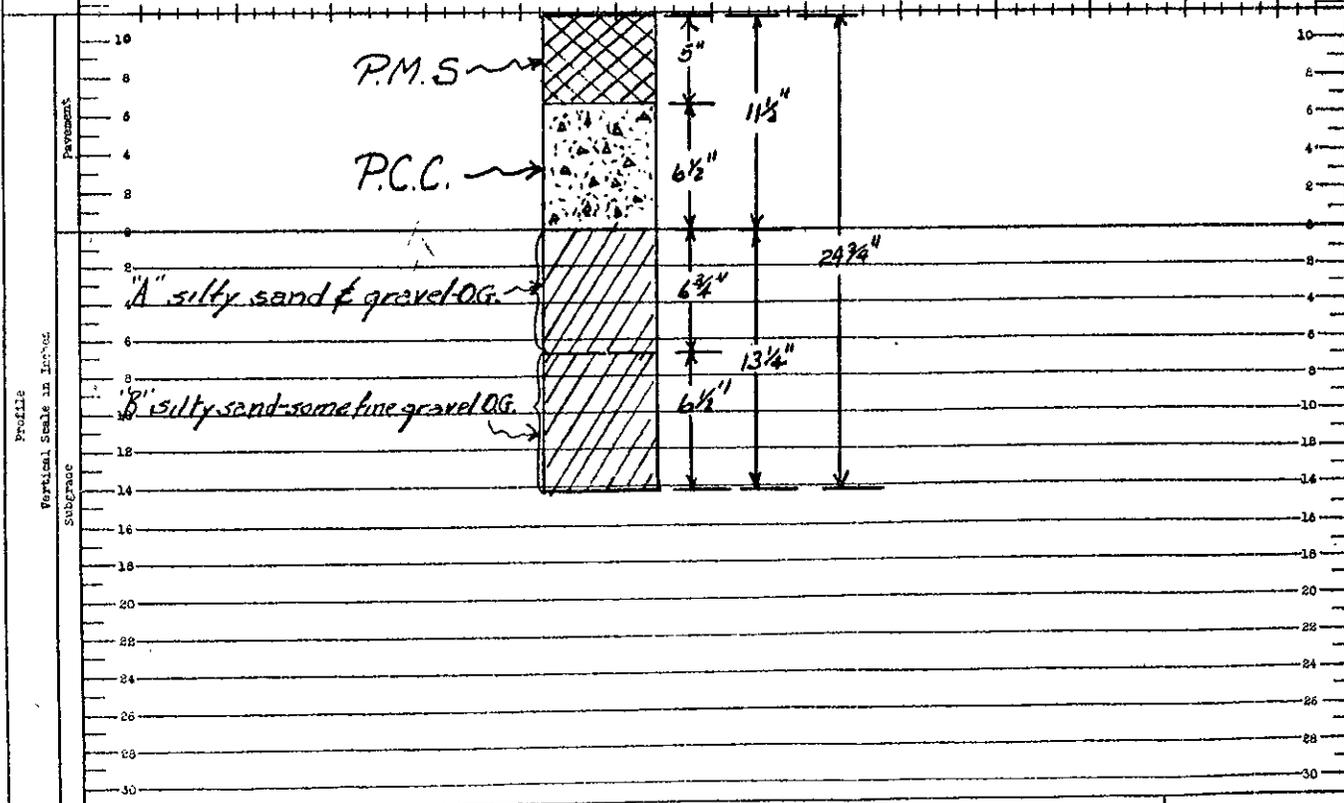
Line	In Place Test Data			Lab. Test Data		HRB Soil	Specific Gravity	
	Moist.	Density	% Rel. Comp.	Optimum Moisture	Maximum Density	Classification	Pass. 4	Ret. 4
1	5	120	80	8	132	A-2-4	2.73	
2	6	119	89	10	132	A-2-4	2.74	
3	5	122	91	10	132	A-2-4	2.74	
4	5	120	84	10	132	A-2-4	2.73	
5	8	122	93	10	132	A-4	2.72	
6	9	125	92	10	132	A-4	2.71	
7	7	128	97	10	132	A-2-4	2.74	
8	7	129	92	10	132	A-4	2.73	

Line	Sieve Analysis - Percent Passing										Atterberg Limits	
	2"	3/4"	4	8	16	30	50	200	270	5M	LL	PL
1	100	100	100	97	93	83	67	35	25	8	N	P
2	100	100	100	98	94	84	74	42	30	8	N	P
3	100	100	100	97	93	83	67	35	25	8	N	P
4	100	100	100	98	94	84	74	42	30	8	N	P
5	100	100	100	98	94	84	74	42	30	8	N	P
6	100	100	100	99	95	86	76	44	32	8	N	P
7	100	100	100	97	93	83	67	35	25	8	N	P
8	100	100	100	98	94	84	74	42	30	9	N	P

Dist. <b>XI</b>	Co. <b>S.D.</b>	Rte. <b>12</b>	Sec. <b>C</b>	Contract no. <b>—</b>	Date of Constr. <b>1916 &amp; 1932</b>	Test Hole No. <b>BH-1</b>
Fill <b>Ingrade</b>	Approx. Height <b>—</b>	Dist. from End of Fill <b>—</b>	No. of Lanes <b>2</b>	Traffic <b>light</b>	Depth <b>—</b>	Date of Drilling <b>7-3-51</b>
Cut <b>—</b>	Approx. Depth <b>—</b>	Dist. from End of Cut <b>—</b>	Side Ditches <b>not clearly defined</b>	Grade <b>1.0 %</b>	Up <b>—</b>	
Roadside Use, Int. <b>Roadside Business &amp; Fields</b>				Right <b>Same</b>		



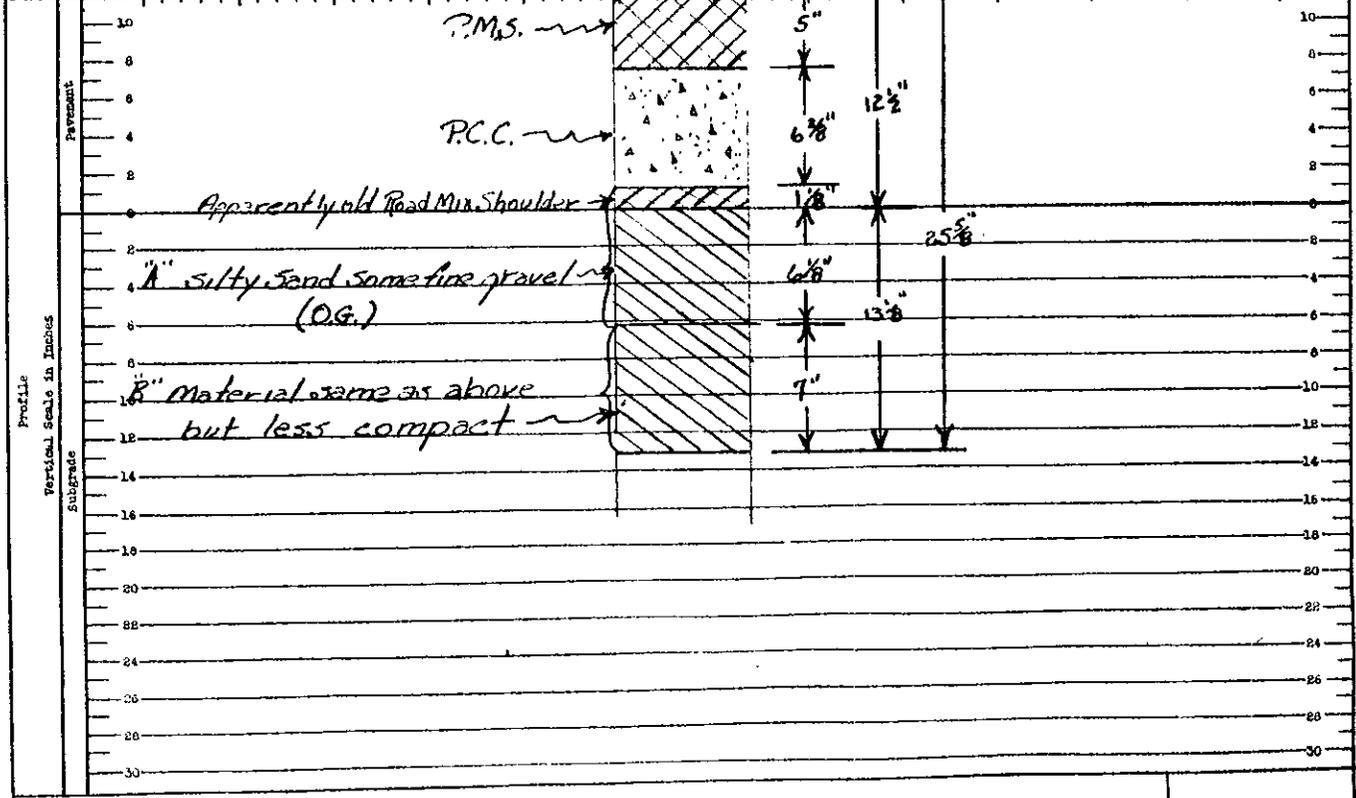
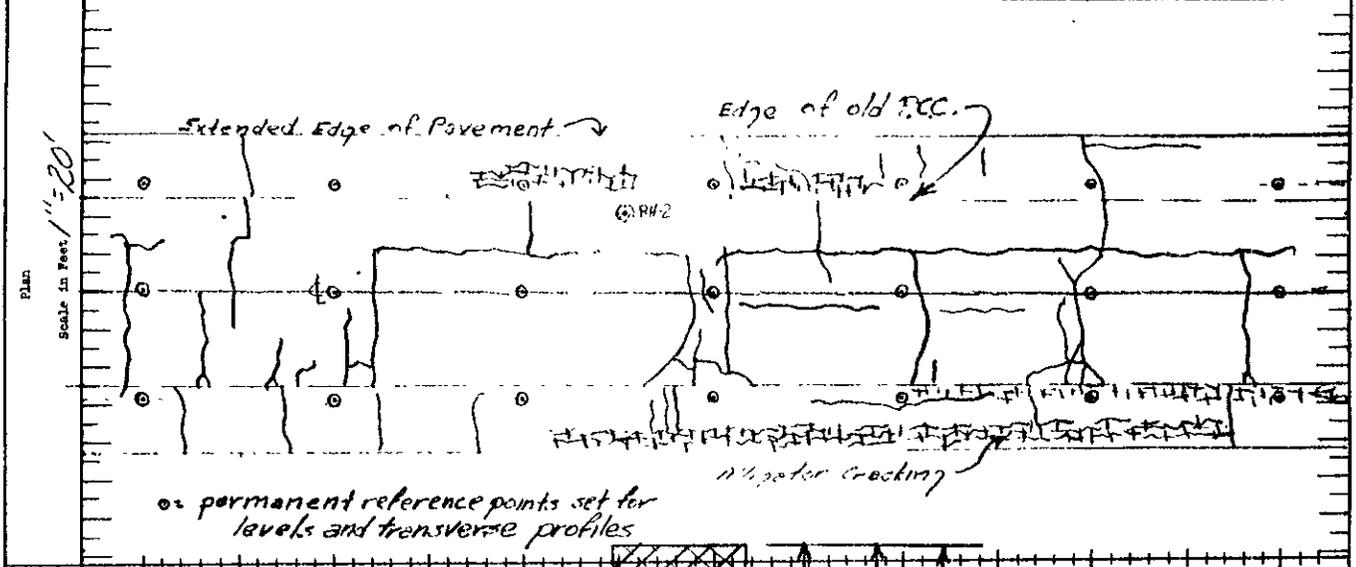
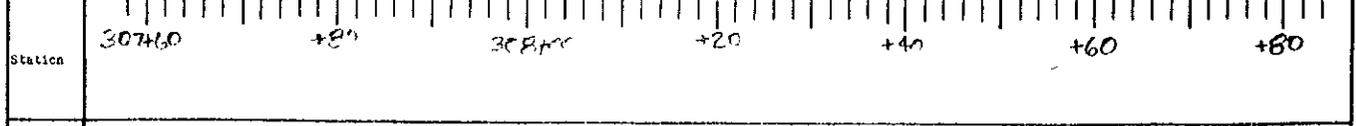
⊗ = permanent reference points set for levels and transverse profiles



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
MATERIALS AND RESEARCH DEPARTMENT

Drawn by <b>C. J. RAYSON</b>	Party <b>C. J. RAYSON</b>
	<b>REYNOLDS</b>
	Drawn by <b>C. J. RAYSON</b>

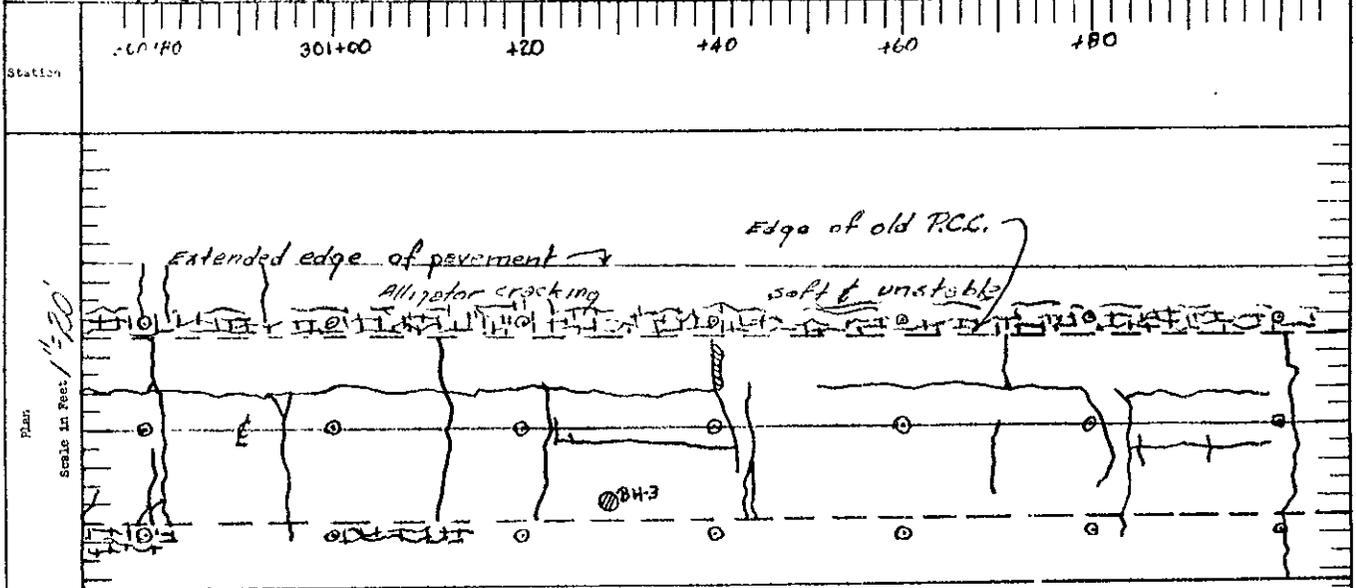
Dist. <b>XI</b> Co. <b>SD</b> Rte. <b>12</b> Sec. <b>C</b>	Tract No.	Date of Constr. <b>1916-1933</b>	Post Hole No. <b>BH-2</b>
Fill <b>In grade</b>	Approx. Height	Dist. from End of Fill	No. of Lanes <b>2</b>
Cut	Approx. Depth	Dist. from End of Cut	Traffic <b>light</b>
Roadside Use, Int. <b>Roadside Business</b>		Right <b>Fields</b>	Grade <b>1.0</b> % Up <b>→</b>
Side Ditches <b>Not Clearly Defined</b>		Date of Sampling <b>7-3-51</b>	



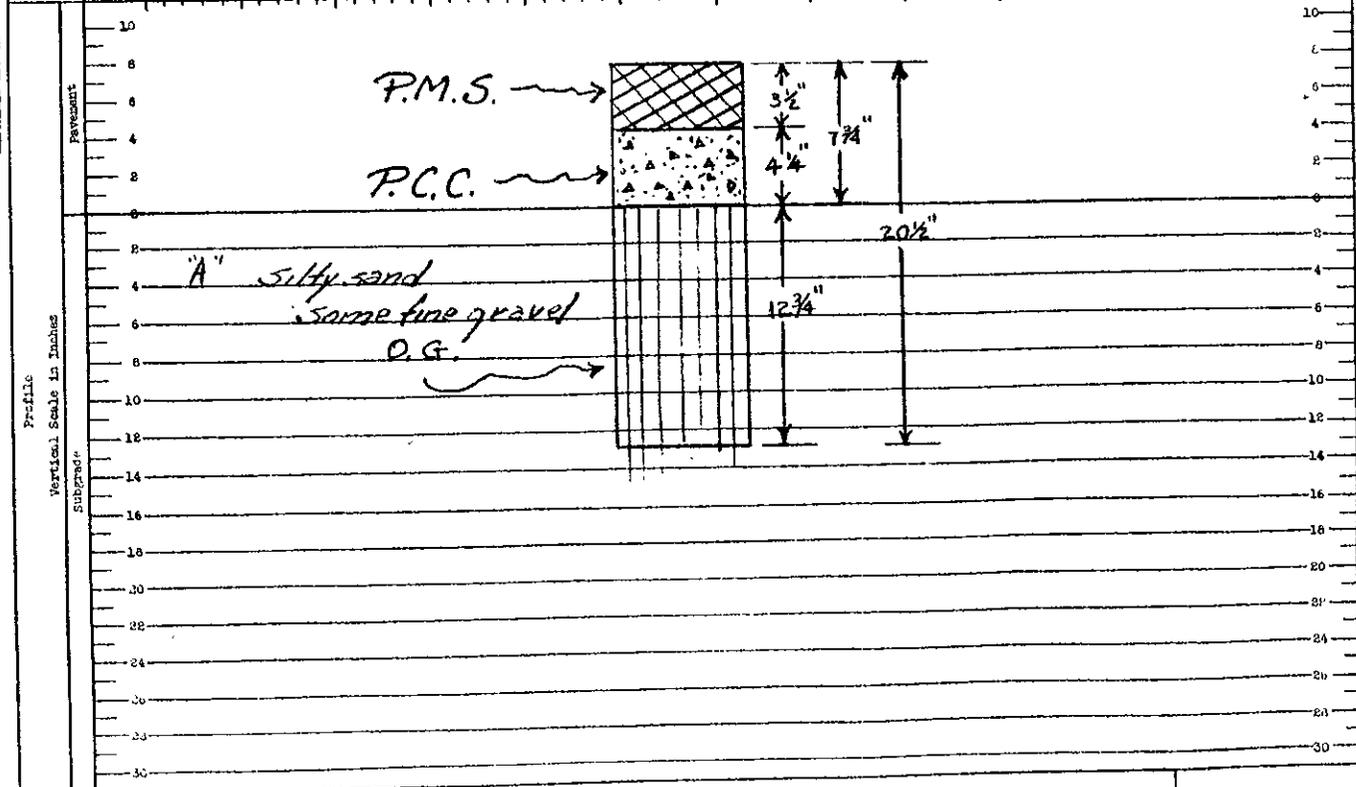
STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

Party **Clauson**  
**Reynier**  
 Drawn By **Coak**

Dist. <b>VI</b> Co. <b>SD.</b> Hte. <b>12</b> Sec. <b>C</b>	Dist. No.	Date of Construction <b>1916 &amp; 1932</b>	Test Hole No. <b>BH-3</b>
Site <b>in grade</b>	List. Pict. End of Fill	No. of Lanes <b>2</b>	Traffic <b>light</b>
Cut	Av. F. X. Depth	Dist. from End of Cut	Side Ditches <b>Not clearly defined</b>
Road side <b>Right</b> <b>Same</b>			Grade <b>1.0</b> Up <b>→</b>



○ = permanent reference points set for levels and transverse profiles

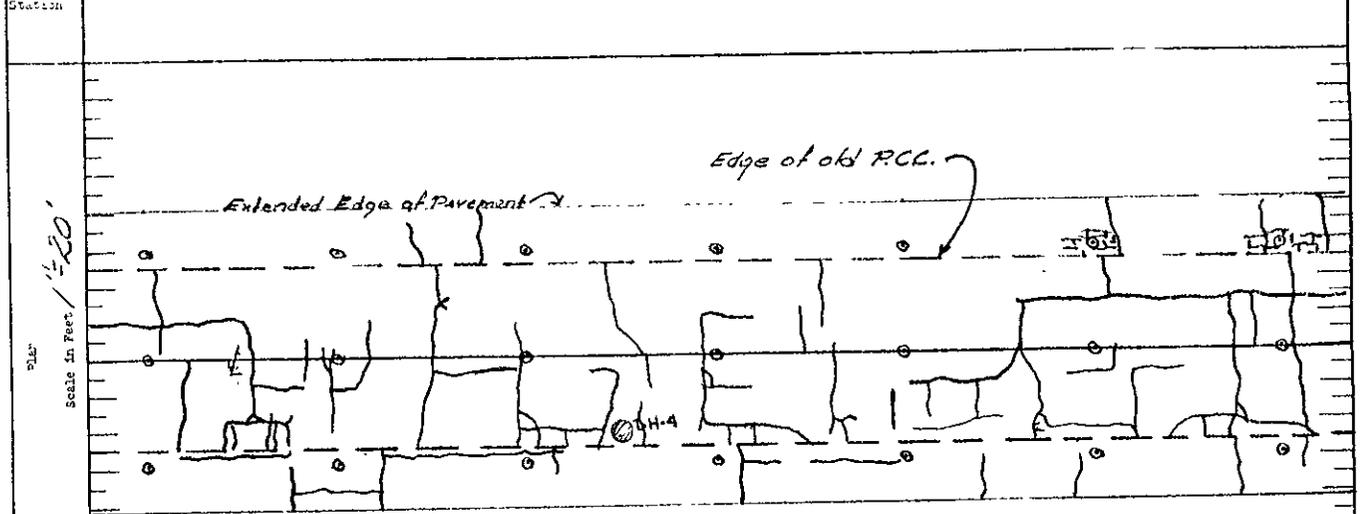


STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF HIGHWAYS  
 MATERIALS AND RESEARCH DEPARTMENT

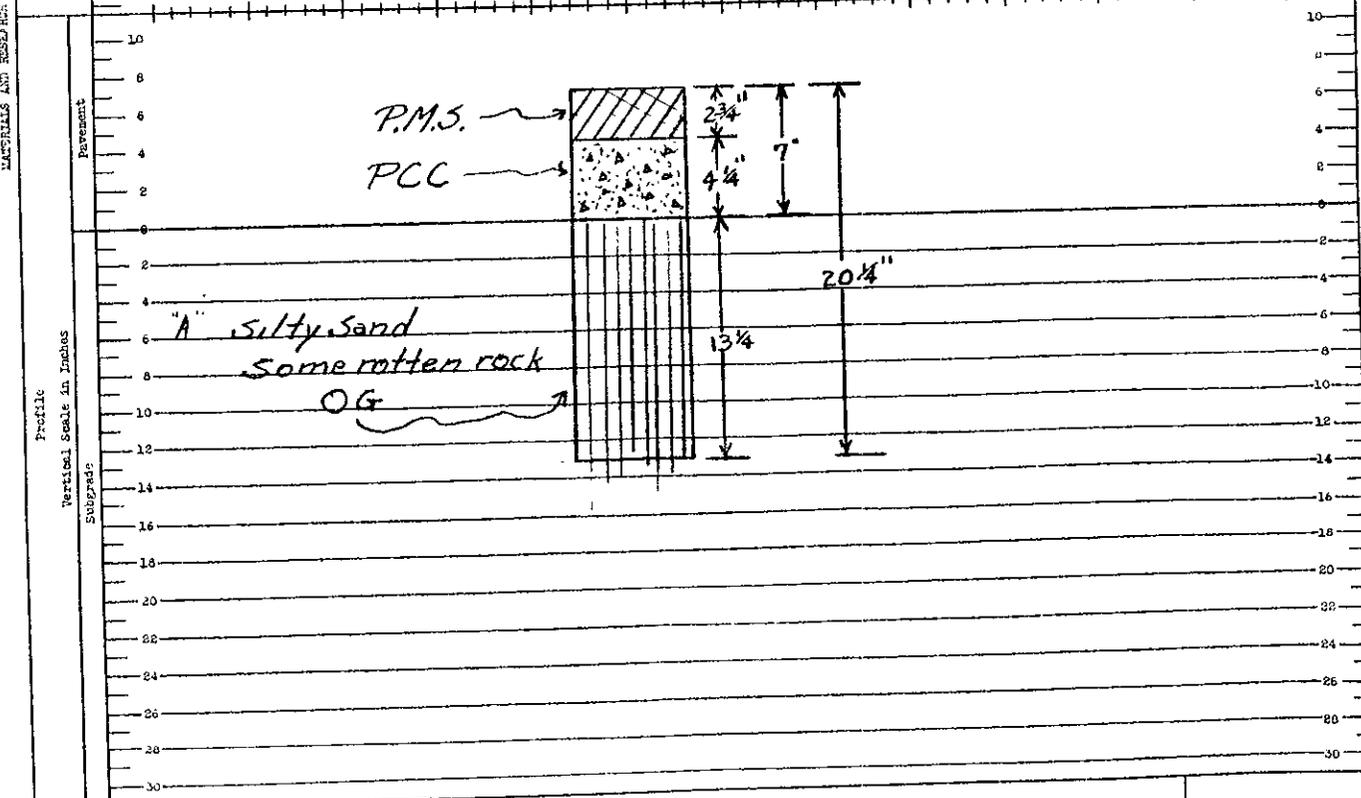
Party **Clawson**  
**Hoyer**

DESIGNED BY **C. J. ...**

Dist. No. <b>SI</b>	Sto. <b>SD</b>	No. <b>12</b>	Sec. <b>C</b>	Contract No. <b>-</b>	Date of Constr. <b>1916 &amp; 1932</b>	Test Hole No. <b>BH-4</b>	
Dist. From <b>Ingrate</b>	Dist. From <b>Light</b>	Dist. From <b>End of Fill</b>	Dist. From <b>End of Out</b>	No. of Lanes <b>2</b>	Traffic <b>left</b>	Depth <b>7-5-51</b>	
Dist. From <b>Light</b>	Dist. From <b>End of Fill</b>	Dist. From <b>End of Out</b>	Dist. From <b>End of Out</b>	Side Ditches <b>Not clearly defined</b>	Depth <b>-</b>	Grade <b>10</b>	
Roadside Business & Fields <b>Same</b>						Grade <b>10</b>	Up <b>-&gt;</b>



o = permanent reference points set for levels and transverse profiles



STATE OF CALIFORNIA  
DIVISION OF HIGHWAYS  
DEPARTMENT OF PUBLIC WORKS  
LABORATORIES AND RESEARCH DEPARTMENT

Party **Clawson**  
**Hayner**  
Drawn By **COAN**

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. CO. 58  
 W.O. No. 13NNC6  
 Job Number \_\_\_\_\_

Load. Sta. No. 62  
 Dist. XI Co. D Rte. 16 Sec. C  
 Loc. Design BH  
 Sta. 299+00 to 303+00  
 Sheet No. 1 of 2

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

	Left of Roadway							Right of Roadway						
					Side Ditch	Extreme Edge Pav't.	Old P.C.C.	± Pav't.	Old P.C.C.	Extreme Edge Pav't.	Side Ditch			
303-	Fill for Loadometer Pit													
	605.3	604.8	605.1	605.1	604.4	604.7	605.05	605.09	605.04	604.8	604.0	604.5		
	46.5	45.0	43.0	23.0	20.0	17.0	10.0	0.0	10.0	17.0	29.0	40.5		
302-	Fill for Loadometer Pit													
	604.0	602.5	604.2	604.2	603.5	603.6	603.84	603.91	603.90	603.7	602.9	603.7		
	46.5	45.5	40.0	26.0	21.0	17.0	10.0	0.0	10.0	17.0	33.0	40.5		
301-			603.6	601.6	602.6	602.6	602.91	602.96	602.86	602.47	601.7	602.4		
			48.0	45.5	39.5	18.0	10.0	0.0	10.0	17.0	31.0	39.5		
300-			602.5	601.2	601.2	601.9	602.23	602.28	602.19	601.9	601.1	601.9		
			47.5	46.5	42.0	18.0	10.0	0.0	10.0	16.5	30.5	40.0		
299-			601.4	600.7	601.5	601.90	602.04	601.44	601.7	601.0	602.1			
			35.1	36.0	18.5	10.0	0.0	10.0	16.5	28.0	36.5			

State of Calif., Div. of Highways  
 Materials & Research Dept.  
 Research No. CC 55  
 W.O. No. LNN&E  
 Job Number \_\_\_\_\_

Load. Sta. No. 6  
 Dist. XI Co. D Rte. 17 Sec. 1  
 Loc. Design BH  
 Sta. 304+00 to 309+00  
 Sheet No. 4 of 4

*Drainage Cross Sections*  
 ROADWAY CONDITION SURVEY

Sta.	Left of Roadway						Right of Roadway							
	Sub. St.	Extreme edge Pavt.	Old P.C.C.	± Pavt.	Old P.C.C.	Extreme edge Pavt.	Side Vitch	Sub. St.	Extreme edge Pavt.	Old P.C.C.	± Pavt.	Old P.C.C.	Extreme edge Pavt.	Side Vitch
309-	Driveway to House													
		611.5	611.0	611.5	611.78	611.88	611.72	611.2	609.6	609.3				
	44.0	42.0	17.0	10.0	0.0	10.0	17.5	36.0	44.0					
308-		610.5	610.2	610.4	610.78	610.82	610.60	610.0	608.6	609.0				
		38.0	24.5	17.5	10.0	0.0	10.0	17.0	35.5	41.0				
307-		609.2	608.9	609.2	609.65	609.77	609.63	609.2	608.6	609.2				
		40.5	23.5	17.0	10.0	0.0	10.0	18.0	28.5	42.5				
306-		608.5	607.8	608.3	608.58	608.67	608.63	608.3	607.6	607.5				
		38.0	23.0	17.0	10.0	0.0	10.0	17.0	25.5	38.5				
305-		607.4	606.8	607.0	607.34	607.46	607.35	607.0	606.4	607.1				
		33.5	23.0	17.0	10.0	0.0	11.0	17.0	27.5	37.5				
304-		606.4	605.8	605.9	606.4	606.37	606.48	606.0	605.2	605.8				
		32.0	18.5	16.5	10.0	0.0	10.0	17.0	30.0	4.0				