

INFORMATION HANDOUT

**For Contract No. 06-0N2004
At Route 99**

**Identified by
Project ID 0600020447**

MATERIALS INFORMATION

Geotechnical Design Report

Memorandum

*Flex your power!
Be energy efficient!*

To: MR. DAVID FRANKE
Design Manager, Branch G
Office of Design I
Project Development Division

Attention: George Panos

Date: March 12, 2013

File: 06-MAD-99
PM 20.2/22.7
EA 06-0N2001
ID 0600020447
Overhead Signs

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES – MS 5

Subject: Geotechnical Design Report

Introduction

This Geotechnical Design Report (GDR) has been prepared to provide recommendations for three overhead signs to be constructed as part of the Fairmead Median Barrier project. The project is located along State Route (SR) 99, approximately 12 miles north of the City of Madera in Madera County. A Vicinity Map is presented on **Plate No 1**.

Existing Facilities and Proposed Improvements

Within the project limits, SR 99 is a six lane divided highway that travels in a general northwest/southeast direction. The highway has 12 foot wide travel lanes, 10 foot wide inside and outside shoulders and a 45 foot wide median. **Table 1** lists the existing structures within the project area.

Table 1. Existing Structures

Structure	STA (ft)	Foundation Type
Ave 21 ½ OC	466+00	HP Piles
Ave 21 ½ OH	466+00	HP piles, driven concrete piles
N99/W152 Conn. Sep.	564+00	Spread footings, CIDH piles
CMS	491+80	CIDH pile (60 inch diameter, 23 ft length)
Overhead Sign (5)	Various	CIDH piles (60 inch diameter, 23 ft length)

All structures within the project limits appear to be performing favorably.

The Fairmead Median Barrier project will construct a median barrier along SR 99 at two locations between Avenue 21 and SR 152. As part of the project, three overhead signs are proposed. Design data for the proposed overhead signs is presented in **Table 2**. A Site Plan is presented on **Plate No 2**.

Table 2. Design Data for Proposed Overhead Signs

Sign No.	STA (ft)	Direction	Post Type	Pile Type	Pile Diam. (in)	Pile Length (ft)	Ground Condition
1-A	510+65	FNBT	VI-S	CIDH	60	27' 10"	Level
2-D	533+00	FNBT	V-S	CIDH	60	26' 3"	Level
4-A	554+71	FNBT	V-S	CIDH	60	26' 3"	Level

FNBT: Facing north bound traffic.

Pertinent Reports and Investigations

The following publications were reviewed to assist in the assessment of site conditions:

- Project Plans and Details, D6 Design.
- As-Built Log-of-Test-Borings, Ave 21½ OC, Br. No. 41-0071.
- As-Built Log-of-Test-Borings, Ave 21½ OH, Br. No. 41C-0060.
- As-Built Log-of-Test-Borings, N99-W152 Conn. Separation, Br. No 41-0043G.
- California Department of Water Resources (DWR) Water Well Data.

Geotechnical Conditions

Subsurface Soils

Subsurface conditions were determined from the as-built LOTB for bridges in the project area. Subsurface conditions and estimated soil properties are presented in **Table 3**.

Table 3. Soil Properties from As-Built LOTB

Structure	Soil Type	Density / Consistency	Avg. soil unit weight, γ (pcf)	Avg. soil friction angle, ϕ (deg)
Ave 21 ½ OC	Silty to clayey sand, sandy silt, sandy clay	Loose to very dense, very stiff	122	34
Ave 21 ½ OH	Silty to clayey sand, sandy to clayey silt, sandy clay	Very loose to very dense, very stiff to hard	121	32
N99/W152 Conn. Sep.	Sand to sand with silt, silt	Medium dense to very dense, hard	126	35

Groundwater

Groundwater data was determined from the as-built LOTB for bridges in the project area and DWR water well records and is presented in **Table 4** and **Table 5**, respectively.

Table 4. As-Built LOTB Groundwater Data

Structure	Date	Ground Water Elev. (ft)	Ground Water Depth (ft)
Ave 21½ OC	1/15/2004	176	76
Ave 21½ OH	1/22/2004	180	74
N99/W152 Conn. Sep.	10/21/1998	Not encountered to elev. 150 ft (depth of 98 ft)	

Note: Average ground surface elevation from as-built LOTB's is approximately 250 feet.

Table 5. DWR Groundwater Data

Well Number	Date	Ground Water Elev. (ft)	Ground Water Depth (ft)
10S16E11G001M	12/8/1961	198.5	51.5
10S16E10C001M	1/26/1976	145.3	98.7
10S16E10N001M	2/21/1991	163.6	163.1

Note: Average ground surface elevation of DWR wells is approximately 243 feet.

Groundwater is not anticipated during drilling of the CIDH piles. However, ground water conditions can be expected to fluctuate in response to seasons, storm events, and other factors. Localized saturated conditions or perched groundwater conditions near the ground surface should be anticipated during and following periods of heavy precipitation.

Geotechnical Recommendations

The following recommendations are based on project plans provided by D06 Design, a review of existing structures within the project area, and subsurface conditions as determined from as-built boring data for existing structures within the project area.

A review of the as-built boring data indicates that the soil conditions satisfy the current standard plan requirements for the proposed overhead signs. Additionally, the existing overhead sign structures and CMS within the project area appear to be performing favorably.

Based on the reviews described above, it is recommended that the proposed overhead signs be constructed on standard plan CIDH foundations per Caltrans Standard Plans.

Construction Considerations

1. All earthwork should conform to current CT Standard Specifications.
2. According to as-built boring data, layers of loose granular material may be encountered while drilling the CIDH piles. As such, temporary casing may be needed to control caving. To develop the required pile capacity, the temporary must be removed during concrete placement.

3. Ground water is not anticipated during construction of the CIDH piles. However, localized saturated conditions or perched groundwater conditions near the ground surface should be anticipated during and following periods of heavy precipitation.

Project Information

“Project Information,” discloses to bidders and contractors a list of pertinent information available for their inspection prior to bid opening. The following is information originating from Geotechnical Services.

Data and information attached with the project plans are:

- A. None.

Data and Information included in the Information Handout provided to the bidders and Contractors are:

- A. Geotechnical Design Report for EA 06-0N2001, dated 3/12/2013.

Data and Information available for inspection at the District Office:

- A. None.

Data and Information available for inspection at the Transportation Laboratory are:

- A. None.

Mr. David Franke
March 12, 2013
Page 6

Geotechnical Design Report
06-MAD-99 PM 20.2/22.7
EA 06-0N2001, ID 0600020447

The recommendations contained in this report are based upon subsurface conditions determined from as-built borings and our current understanding of proposed project. We have judged that the information obtained from our limited subsurface exploration is representative of subsurface conditions throughout the site. If the scope of the proposed project changes from that described in this report, the recommendations should be re-evaluated by this Office.

If there are any questions or comments in regards to this report, please contact Ben Barnes at 916-227-1039.



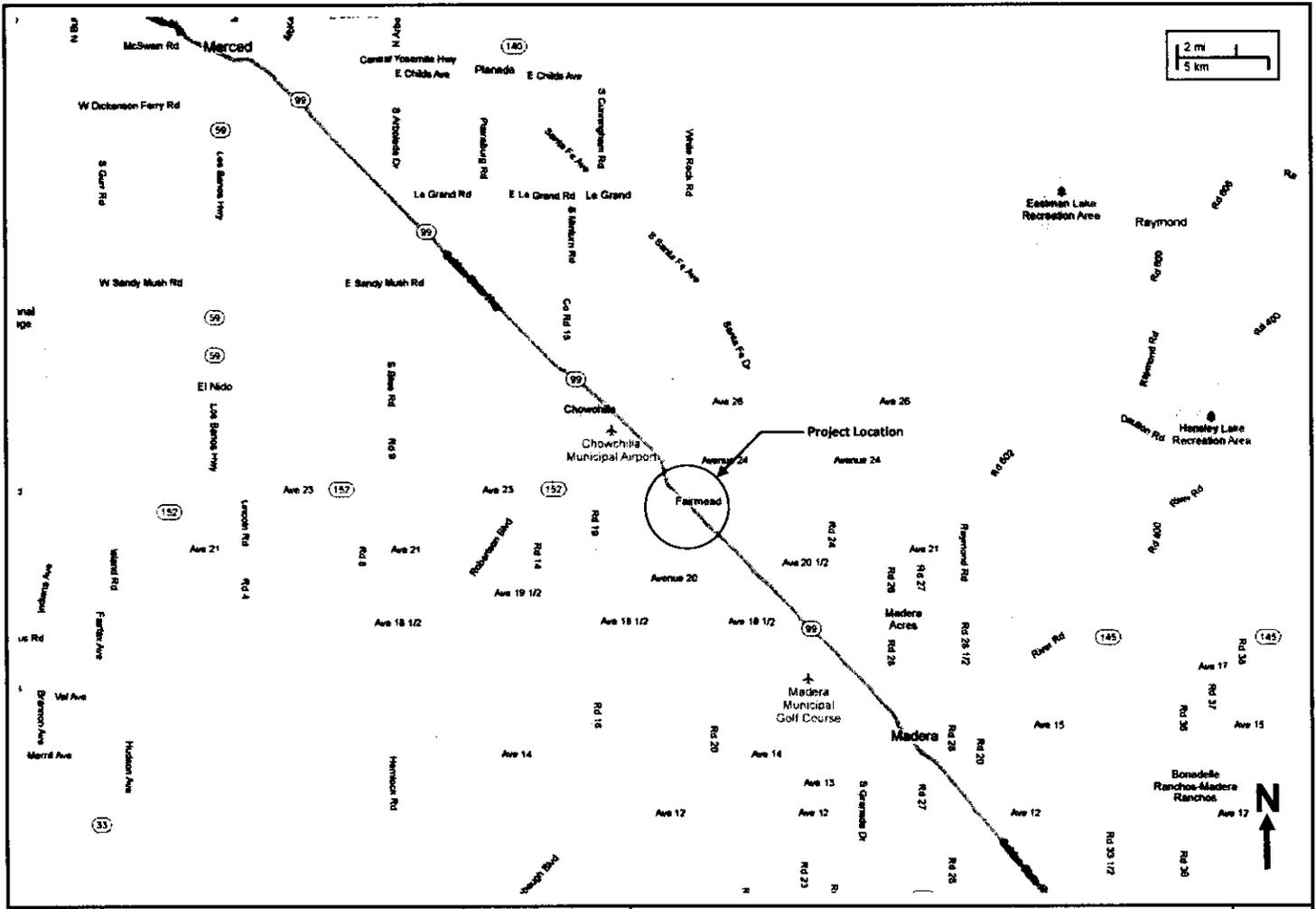
BENJAMIN M. BARNES, PE
Transportation Engineer
Office of Geotechnical Design North
Branch E



Attachments:

Plate No. 1: Vicinity Map
Plate No. 2: Site Plan
Appendix A: As-Built LOTB

c: Qiang Huang (Geotechnical Services, OGDN-E)
Bob Hull (D6 Project Manager)
Shira Rajendra (Geotechnical Services, Corporate Unit)
District Construction R.E. Pending
Ted Mooradian (D6 District Materials Engineer)

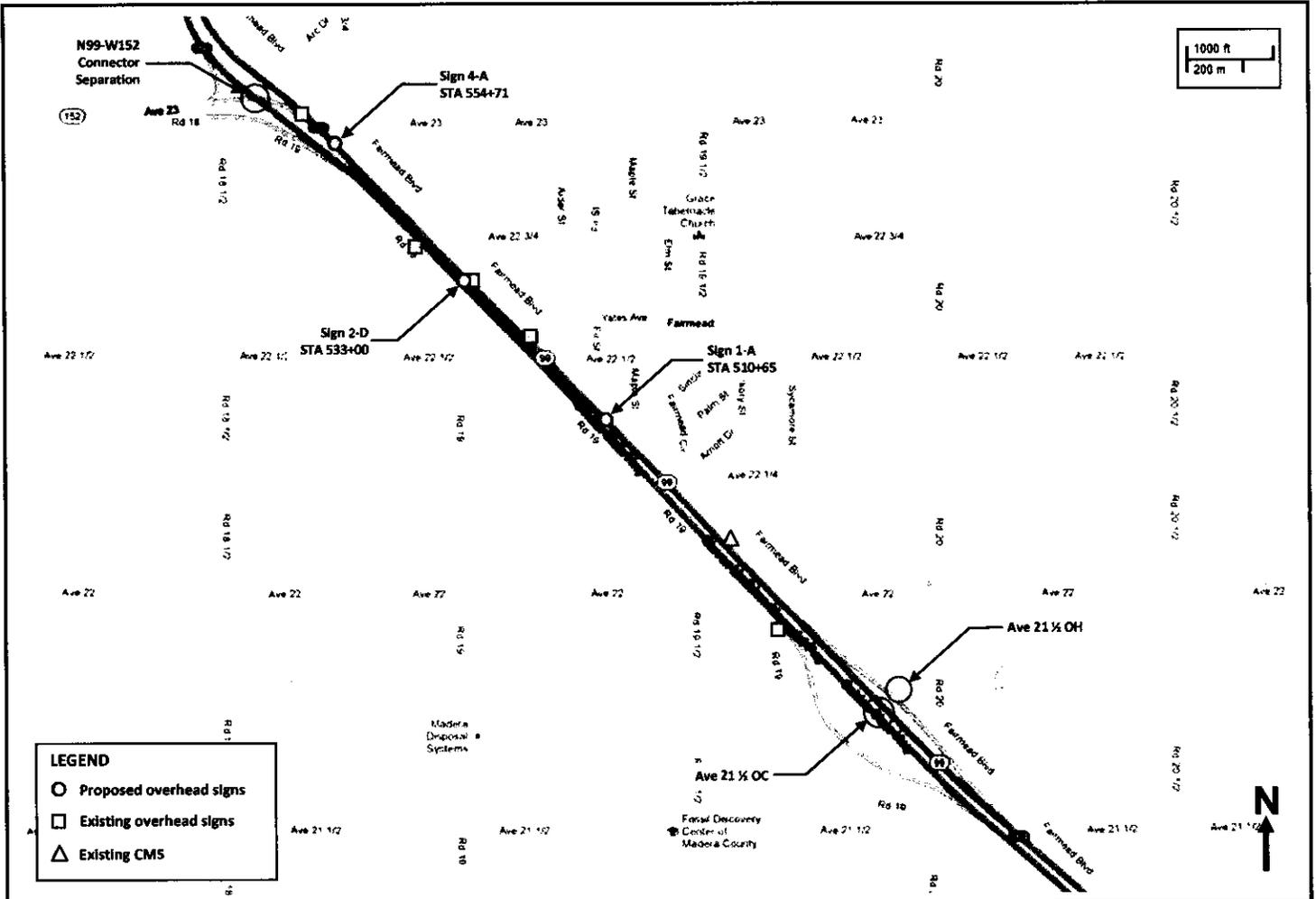


Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - North

ID 0600020447
 EA 06-0N2001

VICINITY MAP
 06-MAD-99 PM 20.2/22.7

Plate
 No. 1



LEGEND	
○	Proposed overhead signs
□	Existing overhead signs
△	Existing CMS



Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - North

ID 0600020447

EA 06-0N2001

SITE PLAN

06-MAD-99 PM 20.2/22.7

Plate
 No. 2

APPENDIX A

As-Built LOTB

<u>Bridge</u>	<u>Bridge No.</u>
Ave 21½ OC	41-0071
Ave 21½ OH	41C-0060
N99-W152 Connector Separation	41-0043G

LOG OF TEST BORINGS

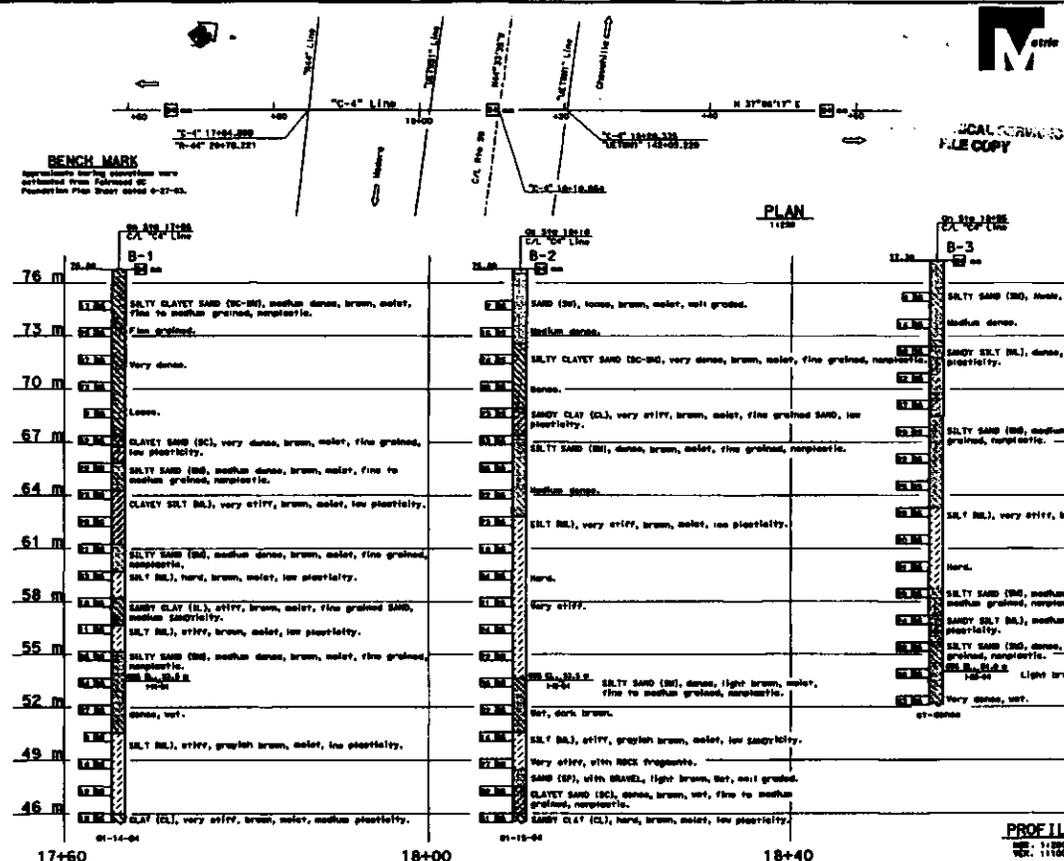
DATE: 11/20/55
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]

LEGEND

1. [Symbol] SAND (SP)
 2. [Symbol] SILTY SAND (SM)
 3. [Symbol] SANDY SILT (SMI)
 4. [Symbol] SILT (ML)
 5. [Symbol] SILTY CLAY (MLC)
 6. [Symbol] CLAY (CL)
 7. [Symbol] SILTY CLAY SAND (SC)

NOTES

1. All borings were made with a 4" diameter auger.
 2. The soil was moist at the time of sampling.
 3. The soil was tested in the laboratory for plasticity and liquid limit.



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

PROJECT NO. 11200
 SHEET NO. 33.7

LOG OF TEST BORINGS

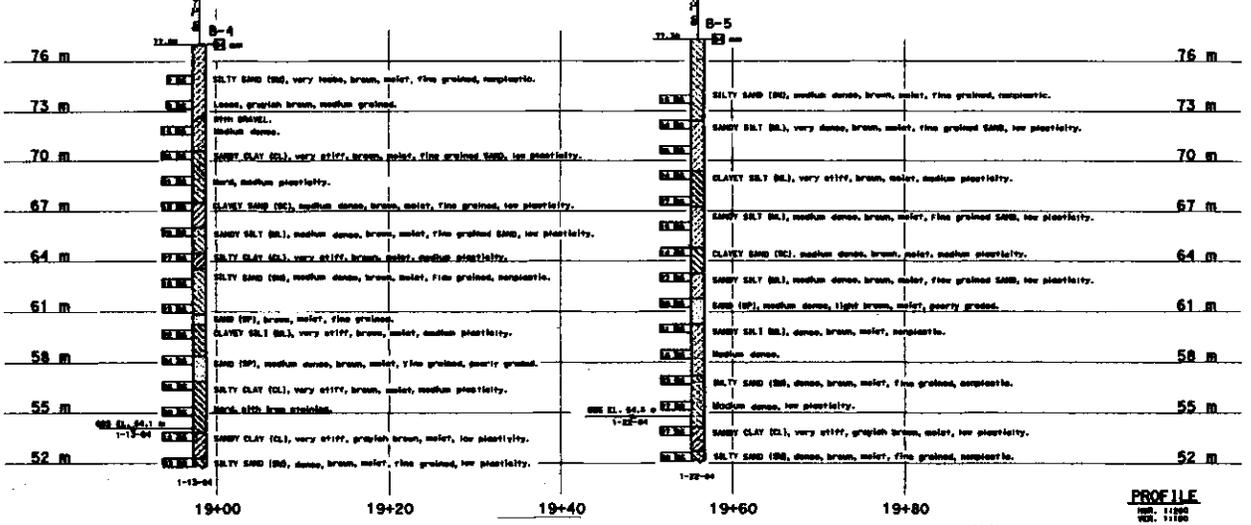
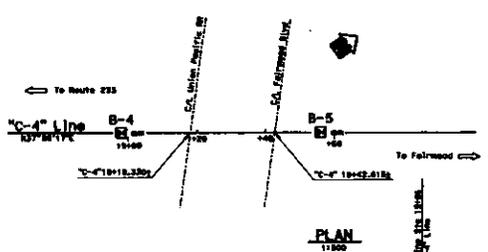
DATE: 11/20/55
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ENGINEERING SERVICES	GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	SYSTEMS OF STRUCTURES STRUCTURE DESIGN	AVENUE 21 1/2 OVERCROSSING LOG OF TEST BORINGS
DESIGNED BY: F. Sigurdson, C.E.	DESIGNED BY: M. Engstrom	PROJECT NO. 11200	SHEET NO. 33.7	DATE: 11/20/55



DATE	COUNTY	ROUTE	WORK	PROJECT	SECTION
06	Mod	99			
AUTHENTICATED BY: <i>[Signature]</i> AUTHENTICATED DATE: 2-28-99 PLANS APPROVAL DATE: 2-28-99 THE STATE OF CALIFORNIA OR ITS OFFICERS OR EMPLOYEES SHALL NOT BE RESPONSIBLE FOR THE CORRECTNESS OR COMPLETENESS OF INFORMATION SUPPLIED BY THE USER OF THESE PLANS.					

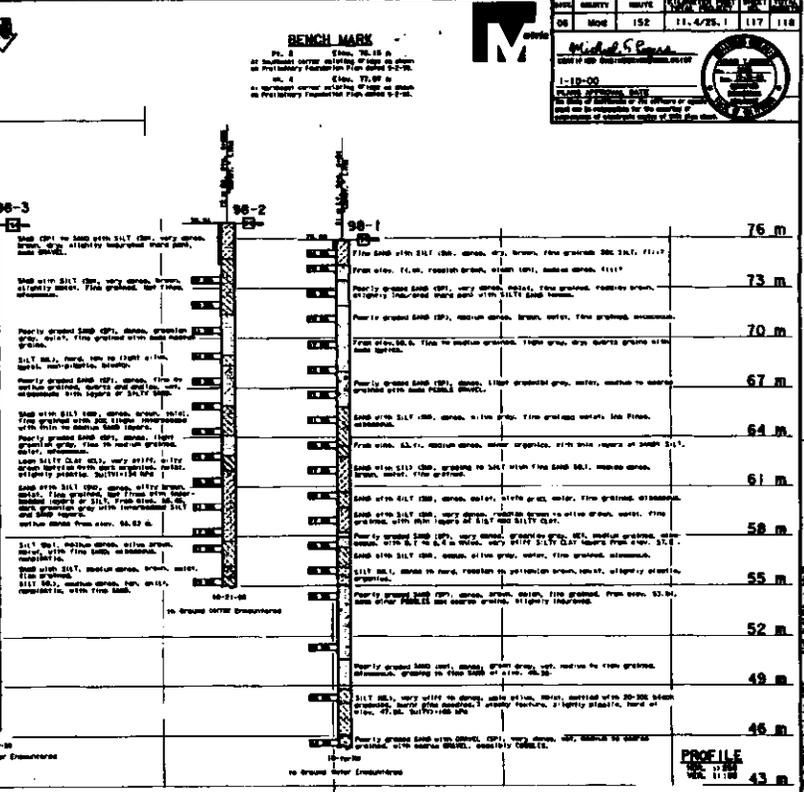
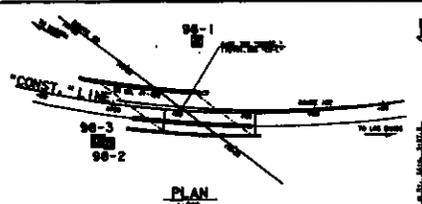
BENCH MARK
 Approx borings elevations were referenced from Fairwood Overhead Foundation Plan sheet dated 1/22/94.



TESTS PERFORMED

NO. TEST	DATE	RESULTS
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50	1-22-94	1-22-94

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	FILE INFORMATION BY:	STATE OF CALIFORNIA	DIVISION OF STRUCTURES	PROJECT NO. 7-0071	AVENUE 21 1/2 OVERHEAD OC
DESIGNED BY: B. Tong 02/94	DESIGNED BY: B. Tong 02/94	DATE: 2-28-99	DEPARTMENT OF TRANSPORTATION	STRUCTURE DESIGN	DATE: 2-28-99	LOG OF TEST BORINGS
CHECKED BY: S. Eng 02/94	CHECKED BY: S. Eng 02/94	SCALE: AS SHOWN	STATE OF CALIFORNIA	FILE NO. CA 10301	DESIGNED BY: [Signature]	DATE: 2-28-99



BENCH MARK
 PL. 2 Elev. 75.15 m
 at National Center Building at base of main
 at Preliminary Foundation Plan dated 8-2-78.
 No. 1 Elev. 75.00 m
 at National Center Building at base of main
 at Preliminary Foundation Plan dated 8-2-78.

DATE	REVISED	BY	NO.
08	MO	152	11, 4/25, 1
117	118		

1-119-00
 STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS

NO.	DESCRIPTION
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ENGINEERING SERVICE CENTER	STRUCTURE FOUNDATIONS	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	ROUTE 152/99 SEPARATION (WIDEN) LOG OF TEST BORINGS 1 OF 2
DATE: 11/25	BY: M. JONES	PROJECT NO. 152/99	DATE: 11/25