

FOR CONTRACT NO.: 04-2G5904

INFORMATION HANDOUT

MATERIALS INFORMATION

GEOTECHNICAL DESIGN REPORT
For Replacement of Signs on Highway 85, 101, 880

PERMITS

STATE OF CALIFORNIA
DEPARTMENT OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT
Underground Classification #'s: C101-085-12T, C102-085-12T & C103-001-12T

ROUTE: Ala/SCI-85,101, 880-19.9,20.8,44.0

Memorandum

*Flex your power!
Be energy efficient!*

To: MR. EDMOND W CHOY
District Branch Chief
Design -East

Date: January 6, 2012

Attention: D. Kao

File: 04-SCL-85 PM 19.9
04-SCL-101 PM 44.0
04-ALA-880 PM 20.8
04-2G5901
Sign Replacement Project

From: *S.A*
SAMUEL AWAD
Transportation Engineer
Office of Geotechnical Design-West
Geotechnical Services
Division of Engineering Services

H. Nikou
HOOSHMAND NIKOUI
Chief, Branch A
Office of Geotechnical Design-West
Geotechnical Services
Division of Engineering Services

Subject: Geotechnical Design Report for Replacement Signs on HWY 85, 101 and 880

1. INTRODUCTION

This memo provides geotechnical design recommendations regarding three proposed overhead signs (OHSs), namely, OHS No. 1 (SB 85-Fremont Ave.), OHS No. 2 (SB 101-Lawrence Expressway), and OHS No. 3 (NB 880-Washington Ave.), for the above reference project on Route 85, 101 and 880 in Santa Clara (SCL) and Alameda (ALA) Counties. Locations are presented on Figure 1, and attached Exhibit A (S-1, S-2 and S-3).

Recommendations contain in this report are based on the submitted layout and cross section plans, field mapping of the site, subsurface exploration, laboratory test results and foundation analysis. This geotechnical report addresses our foundation recommendation for the OHS project. Refer to Table 1 for general OHS information.

Table 1- General OHS information

Sign No.	Direction	Offset-Station	Post Mile	Post Type	Height, ft
1	SB	11' Lt "A" 530+60	19.9	IX	16
2	SB	17' Rt "CM" 256+50	44.0	IX	20
3	NB	12' Rt :W3N" 214+00	20.8	IX	21

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2. PROJECT PURPOSE AND NEED

The purpose of the proposed project is to replace damage overhead signs and to rehabilitate associated lighting that was damaged on the signs. The need for this project is to replace and repair of these signs is required to protect public safety and maintain the transportation corridor.

3. SCOPE OF WORK

The following tasks were performed for the preparation of this Geotechnical Design Report:

- Review of as-built plans;
- Field geotechnical exploration, including drilling 3 borings at the project site;
- Laboratory test results on selected samples;
- Geotechnical design analysis; and
- Preparation of this Geotechnical Design Report.

4. SITE GEOLOGY AND SEISMICITY

3.1 Climate

The two sites located in Santa Clara County are in the city of Mountain View and the site in Alameda County is in the city of San Lorenzo. The site climate is considered Mediterranean, which is warm during summer when temperatures tend to be in the high 60's and cool during winter when temperatures tend to be in the high 40's. Mountain View's warmest months are July/August with an average maximum temperature of 68° Fahrenheit, while the coldest month of the year is December with an average minimum temperature of 48.7° Fahrenheit. In San Lorenzo, September is the warmest month at 65.4° Fahrenheit and January is the coldest at 49.7° Fahrenheit. The annual average precipitation at Mountain View is 15.71 inches with San Lorenzo average being 26.3 inches. Winter months tend to be wetter than summer months. The wettest month of the year is January with rainfall of 3.24, in Mountain View, 4.30 inches and 20, in San Lorenzo. The driest month is in July, and is usually below 0.10 inches. (Data taken from <http://www.idcide.com/weather/ca/mountain-view.htm> and <http://www.idcide.com/weather/ca/san-lorenzo.htm>)

The locations are further described in Table 8 (attached B).

3.2 Site Geology and Seismicity

3.2.1 OHS No. 1 - Southbound PM 19.9

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Geology and Seismicity - The sign is to be installed on Natural Levee Deposits (Holocene)—Loose, moderately-sorted to well-sorted sandy or clayey silt grading to sandy or silty clay. These deposits are porous and permeable and provide conduits or transport of groundwater. Levee deposits border stream channels, usually both banks, and slope away to flatter floodplains and basins.¹ Figure 2-1.

The project site is located approximately 0.27 miles northeast of the Cascade Fault zone, with a MMax of 6.9 and the PBA is 0.52.

Liquefaction - Liquefaction is moderate for this location. However, according to the information from boring RC-11-001 the liquefaction at the OHS site appears to be insignificant. Liquefaction map is presented on Figure 2-2 and also presented in Table 8 (attached Exhibit B).

3.2.2 OHS No. 2- Southbound PM 44.0

Geology and Seismicity - The sign to be installed on “Floodplain Deposits (Holocene)—Medium to dark gray, dense, sandy to silty clay. Lenses of coarser material (silt, sand, and pebbles) may be locally present.² Figure 3-1.

The project site is located approximately 3.35 miles east southeast of the Silver Creek Fault zone and 4.75 miles northeast of the Cascade Fault zone. The Silver Creek Fault zone is the controlling fault with a MMax of 7.1 and the PBA is 0.50.

Liquefaction - Liquefaction is moderate for this location. However, according to the information from boring RC-11-002 the liquefaction at the OHS site appears to be insignificant. Liquefaction map is presented on Figure 3-2 and also presented in Table 8 (attached Exhibit B).

3.2.3 OHS No. 3- Northbound PM 20.8

Geology and Seismicity - The sign is to be installed on Basin Deposits (Holocene)—Very fine silty clay to clay deposits occupying flat-floored basins at the distal edge of alluvial fans adjacent to the bay mud.³ Figure 4-1.

1 Quaternary Geology of Santa Clara Valley, Santa Clara Alameda, and San Mateo Counties, CA: A digital Database, Helley, Et. Al. 1994

2 Ibid

3 Geologic Map and Map Data base of the Oakland Metropolitan Area, Alameda, Contra Costa, and San Francisco Counties, CA: Graymer, R.W., 2000

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The project site is located approximately 1.54 miles west of the Hayward Fault zone (Southern Hayward section), which has a MMax of 7.3 and the PBA is 0.46.

Liquefaction - Liquefaction is moderate for this location. However, according to the information from boring RC-11-003 the liquefaction at the OHS site appears to be insignificant. Liquefaction map is presented on Figure 4-2 and also presented in Table 8 (attached Exhibit B).

4. SUBSURFACE INVESTIGATION

The subsurface exploration was performed by the Office of Geotechnical Design West (OGDW). It consists of a total of 3 mud-rotary borings with Standard Penetration Tests (SPT) and Pocket Penetrometer (PP) Tests. Soil samples were taken every 5 feet from the Standard Penetration Test (SPT) sampling. Laboratory tests were used to update the soil information. All foundation soil classifications were based on Caltrans "Soil and Rock Logging, Classification, and Presentation Manual". Refer to the LOTBs in the Structure Plans. The LOTB sheets will be submitted when they are ready.

5.1 Overhead Sign No. 1 (OHS No.1)

General information of boring drilled near the OHS No.1 site is listed in Table 2.

Table 2 - Summary of Field Boring for OHS No.1

Boring ID	Total Length (ft)	Date of completion	Hammer Efficiency
RC-11-001	41.5	12/6	83%

The boring describes the foundation soils as approximately 9 feet of medium dense well graded sand with clay and gravel over by 15 feet well graded gravel with clay and sand. The remainder of the boring describes the foundation soils as very stiff sandy lean clay.

The SPT blow counts for sandy and gravelly soil ranged from 12 to as high as of 50 blows per foot. Pocket Penetrometer (PP) tests were conducted on soil samples showing apparent cohesion. The unconfined compressive strength of the clayey soil ranged from 2.50 to 4.0 tsf.

Groundwater was encountered in boring (RC-11-001) at 9 feet below the ground surface at the time of drilling. However, groundwater elevations fluctuate seasonally and may be encountered at higher elevations.

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5.2 Overhead Sign No. 2 (OHS No.2)

General information of boring drilled near the OHS No. 2 site is listed in Table 3.

Table 3 - Summary of Field Boring for OHS No.2

Boring ID	Total Length (ft)	Date of completion	Hammer Efficiency
RC-11-002	41.5	12/7/11	83%

The boring describes the foundation soils as medium stiff to very stiff sandy lean clay to the bottom of the boring.

Pocket Penetrometer (PP) tests were conducted on soil samples showing apparent cohesion. The unconfined compressive strength of the clayey soil ranged from 0.50 to 2.0tsf.

Groundwater was encountered in boring (RC-11-002) at 11.5 feet below the ground surface at the time of drilling. However, groundwater elevations fluctuate seasonally and may be encountered at higher elevations.

5.3 Overhead Sign No. 3 (OHS No.3)

General information of boring drilled near the OHS No. 3 site is listed in Table 4.

Table 4 - Summary of Field Boring for OHS No.3

Boring ID	Total Length (ft)	Date of completion	Hammer Efficiency
RC-11-003	41.5	12/13	83%

The boring describes the foundation soils as approximately 10 feet of stiff sandy lean clay over 10 feet of medium dense to dense well graded sand with clay and gravel. The remainder of the boring describes the foundation soils as medium dense well graded gravel with clay and sand.

The SPT blow count values for sandy/gravelly soil ranged from a low of 5 to as high as of 32 blows per foot. Pocket Penetrometer (PP) tests were conducted on soil samples showing apparent cohesion. The unconfined compressive strength of the clayey soil was estimated 1.5 tsf.

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Groundwater was encountered in boring (RC-11-003) at 10 feet below the ground surface at the time of drilling. However, groundwater elevations fluctuate seasonally and may be encountered at higher elevations.

6. GEOTECHNICAL TESTING

6.1 In Situ Testing

For all borings (RC-11-001, Rc-11-002, and RC-11-003), Standard Penetration Test (SPT) was performed at 5-foot interval in soil strata. Pocket Penetrometer (PP) tests were conducted on soil samples showing apparent cohesion. Visual soil classifications were made in the field in accordance with the Unified Soil Classification System. Soil samples were collected at various depths for laboratory testing.

7. CORROSION EVALUATION

Corrosion studies were conducted in accordance with the requirements of California Test Method No. 643. The Department considers the site to be corrosive to foundation elements if one or more of the following conditions exist for the representative soil samples taken at the site:

Chloride concentration is greater than or equal to 500 ppm, sulfate concentration is greater than or equal to 2000 ppm, or the pH is 5.5 or less.

The following tables provide the corrosion test summary:

Table 5-Summary of Corrosion Test for OHS No. 1

<i>Boring</i>	<i>SIC Number</i>	<i>Sample Depth</i>	<i>Resistivity (Ohm-Cm)</i>	<i>pH</i>	<i>Chloride Content (ppm)</i>	<i>Sulfate Content (ppm)</i>
RC-11-001	CSAwd-1	2.5 to 5	6930	8.15	N/A	N/A

Table 6- Summary of Corrosion Test for OHS No. 2

<i>Boring</i>	<i>SIC Number</i>	<i>Sample Depth</i>	<i>Resistivity (Ohm-Cm)</i>	<i>pH</i>	<i>Chloride Content (ppm)</i>	<i>Sulfate Content (ppm)</i>
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RC-11-002	CSAwad-2	3 to 5	2862	7.85	N/A	N/A
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Table 7-Summary of Corrosion Test for OHS No.3

<i>Boring</i>	<i>SIC Number</i>	<i>Sample Depth</i>	<i>Resistivity (Ohm-Cm)</i>	<i>pH</i>	<i>Chloride Content (ppm)</i>	<i>Sulfate Content (ppm)</i>
RC-11-003	CSAwad-3	3 to 5	4140	7.5	N/A	N/A

Based on the test results from the Materials Engineering Testing Services (METS) of Caltrans, the foundation soils at the proposed OH signs are considered non-corrosive. Refer to the Attached Exhibit C for the laboratory test results.

8. FOUNDATION RECOMMENDATION

8.1 Overhead Sign No. 1 (OHS No.1)

Based on the provided plans and cross sections together with the estimated soil parameters from our geotechnical investigation for the OHS No. 1, we recommend that a 5 feet diameter CIDH pile for Type IX post, as specified in May 2006 Caltrans Standard Plans, with a length of 25 ft is suitable for the proposed OHS No. 1.

8.2 Overhead Sign No. 2 (OHS No. 2)

Based on the provided plans and cross sections together with the estimated soil parameters from our geotechnical investigation for the OHS No. 2, we recommend the following:

Due to the soft foundation soil which does not meet the soil criteria specified in the Standard Plans, we recommend that a 5 feet extension to the standard 60-inch CIDH pile for Type IX post should be used. Therefore, the design length of the 60-inch CIDH pile is 30 feet for the proposed OHS No. 2.

8.3 Overhead Sign No. 3 (OHS No.3)

Based on the provided plans and cross sections together with the estimated soil parameters from our geotechnical investigation for the OHS No. 3, we recommend the following:

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Due to the soft foundation soil which does not meet the soil criteria specified in the Standard Plans, we recommend that a 10 feet extension to the standard 60-inch CIDH pile for Type IX post should be used. Therefore, the design length of the 60-inch CIDH pile is 35 feet for the proposed OHS No. 3.

9. CONSTRUCTION CONSIDERATIONS

- CIDH piling shall conform to the provisions in Section 49-4, "Cast-in-Place Concrete Piles," of Standard Specifications.
- Difficult pile installation is anticipated due to the sandy nature of the foundation soil, high groundwater, and possible caving of hole. Thus, the contractor should be prepared.
- The contractor has the option of using full-length temporary casing. The use of temporary casing will require that it be removed while the concrete is being placed in order to develop the expected pile capacity and to facilitate the casing removal.
- Because of the high groundwater level, the contractor may choose to use a closed system using a concrete pump or a tremie tube to place concrete at the bottom of the holes.

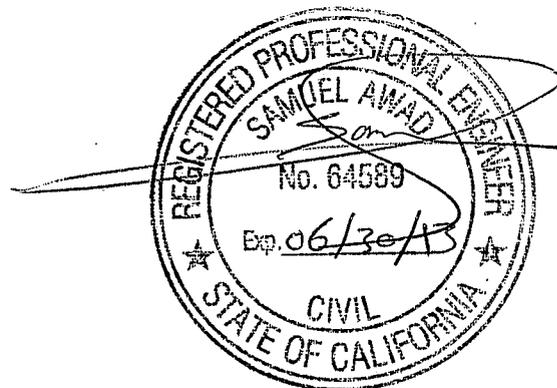


If you have any questions or need additional information, please call Samuel Awad at (510) 622-5443, or Hooshmand Nikoui, Branch Chief at (510) 286-4811.

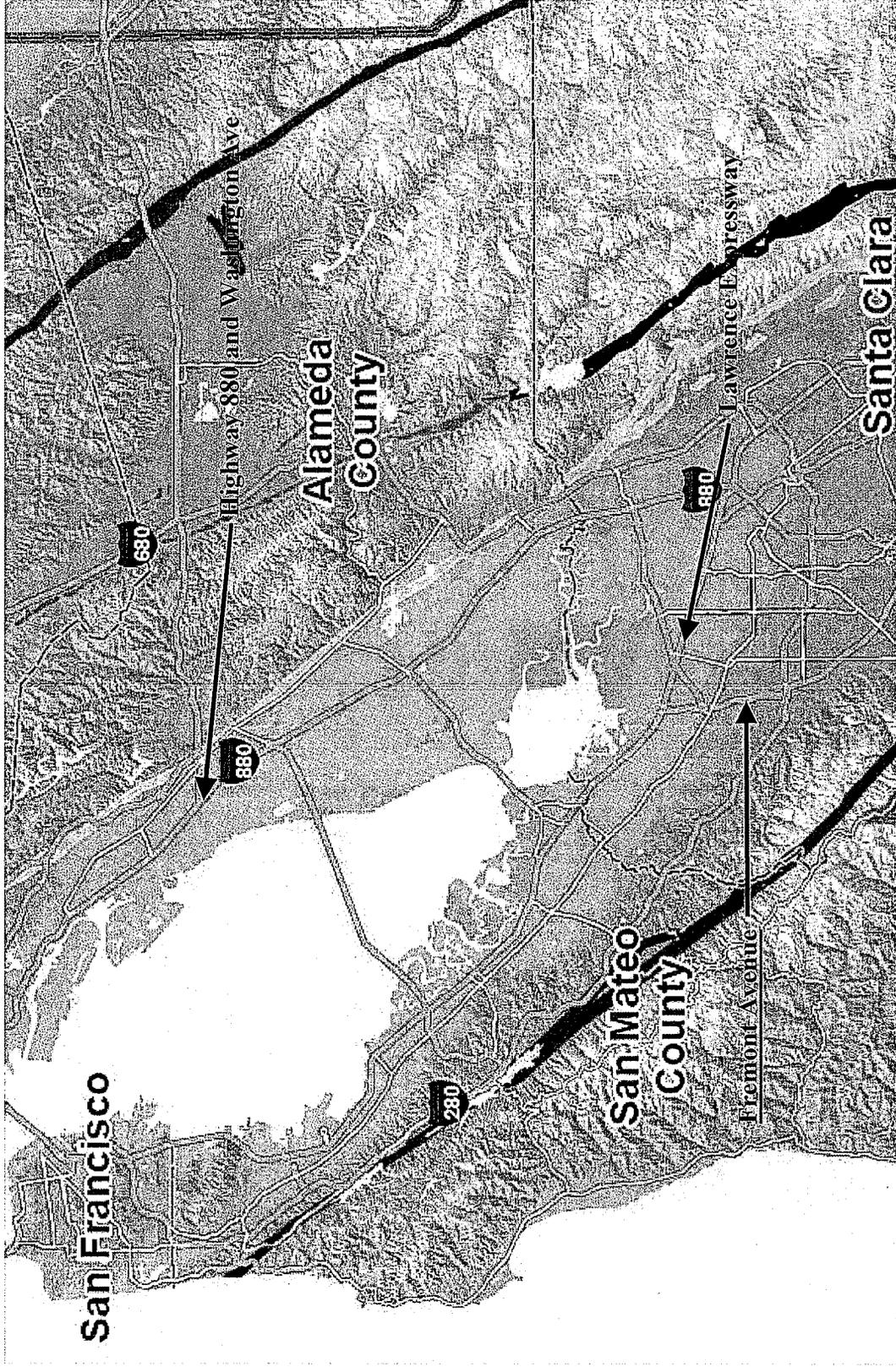
Attachments

c: TPokrywka, HNikoui, SAwad, Daily File, Project File

SAwad /sa/2G5901



FIGURES



MAP TAKEN FROM:
USGS MARE ISLAND QUADRANGLE, 1980

SCALE

Not to Scale

LOCATION MAP

04-SCL-680/85 EFIS 0412000003
ALA 880
PM Varies
JANUARY 2012

FIGURE 1

Engineering Service Center
DIVISION OF ENGINEERING SERVICES
OFFICE OF GEOTECHNICAL SERVICES
GEOTECHNICAL DESIGN BRANCH (WEST) - BRANCH B

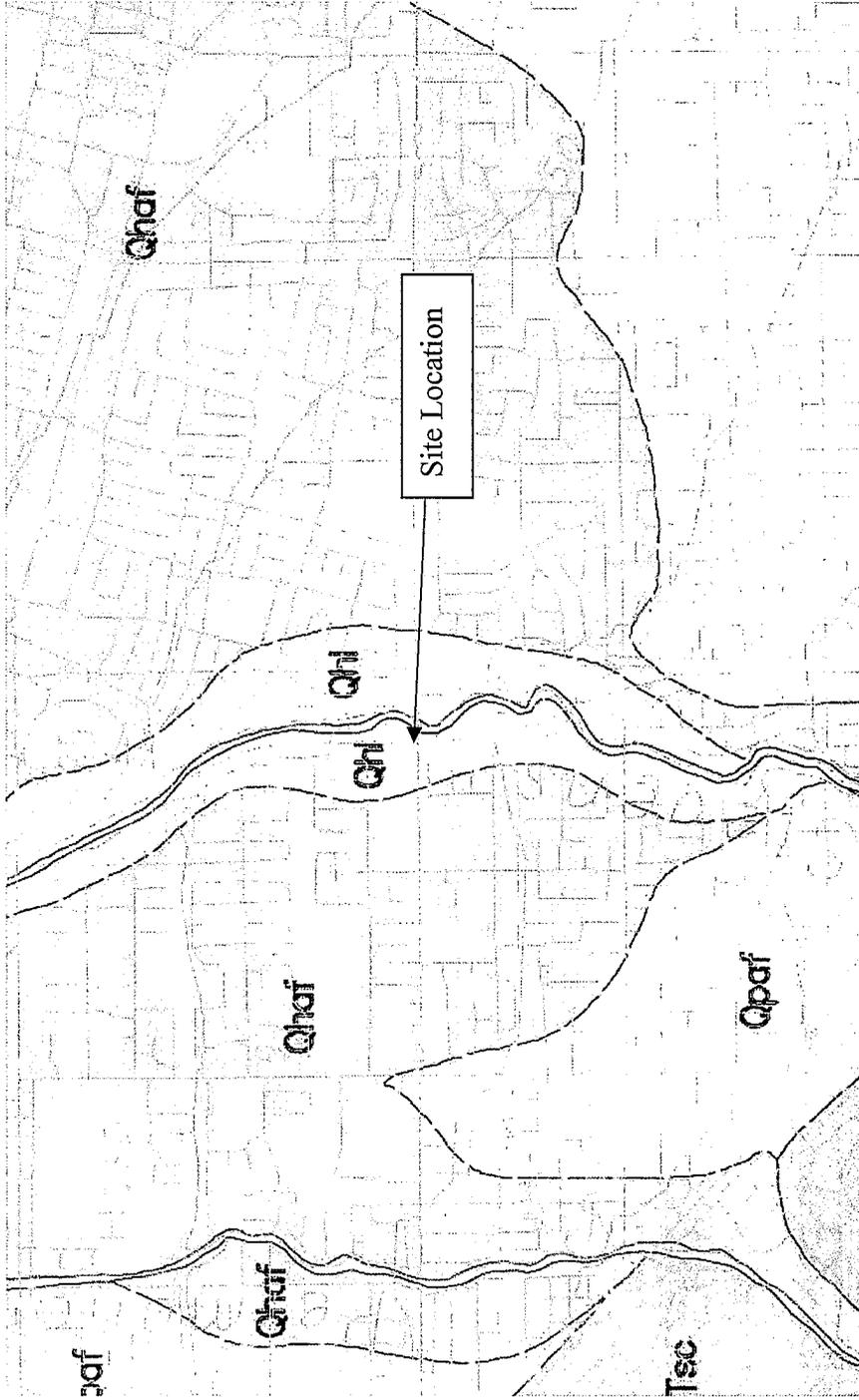


Map taken from: Preliminary Geologic Map of the San Jose 30x60 Quadrangle, CA. Compile by Wentworth, Carl, et. Al. 1999



KEY

-  Qhf2 Older Alluvial fan deposits (HOLOCENE)
-  Qhb Basin deposits (HOLOCENE)
-  Qhl Levee deposits (HOLOCENE)
-  Qpf Alluvial fan deposits (UPPER PLEISTOCENE)



SCALE: Not to Scale



DIVISION OF ENGINEERING SERVICES
 GEOTECHNICAL SERVICES
 Office of GEOTECHNICAL DESIGN - WEST - BRANCH B

GEOLOGIC MAP FREMONT AVENUE

04-SCL-085

EFIS 0412000003

PM 19.9

January 2012

FIGURE 2-1

Liquefaction Susceptibility Map

Susceptibility Level

- Very High
- High
- Moderate
- Low
- Very Low
- Major Roads
- Local Roads



Scale: 1 inch = 0.17 miles

This map is intended for planning use only and is not intended to be site-specific. Rather, it depicts the general hazard level of a neighborhood and the relative hazard levels from community to community. Hazard levels are less likely to be accurate if your neighborhood is on or near the border between two zones. This information is not a substitute for a site-specific investigation by a licensed professional.

This map is available at <http://quake.abag.ca.gov>

Sources:
 This map is based on work by William Lettis & Associates, Inc. and USGS.
 USGS Open-File Report 00-444, Knudsen & others, 2000 and
 USGS Open-File Report 2006-1037, Witter & others, 2006

For more information visit:
<http://pubs.usgs.gov/of/2006/of00-444/>
<http://pubs.usgs.gov/of/2006/1037/>

AMG geotechnical information systems

MAP TAKEN FROM:
 USGS MARE ISLAND QUADRANGLE, 1980

SCALE

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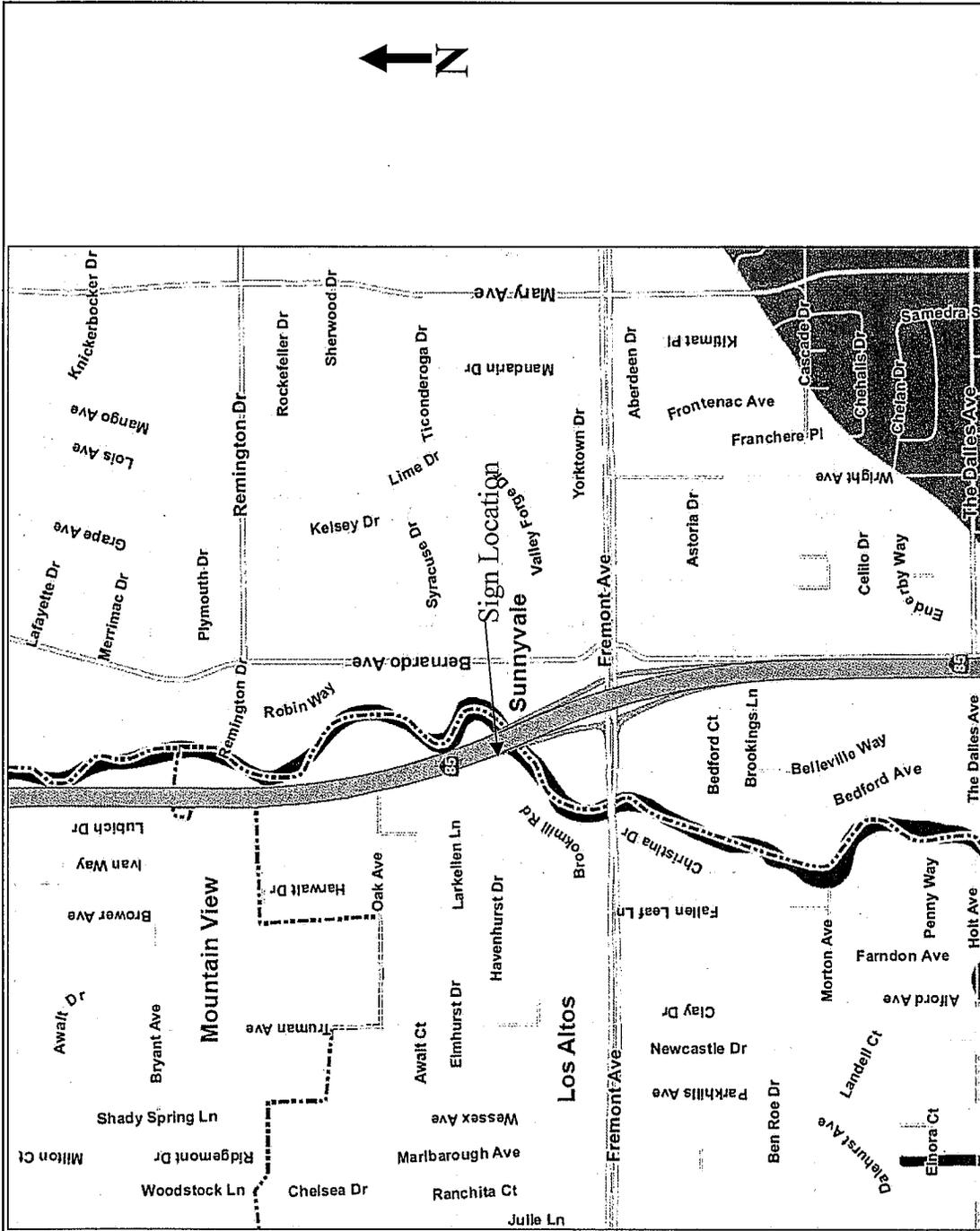
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 GEOTECHNICAL SERVICES
 Office of GEOTECHNICAL DESIGN - WEST - BRANCH B

Fremont Avenue - Liquefaction Map

04-SCL-085
 PM 19.9

EFIS 0412000003
 JANUARY 2012

FIGURE 2-2

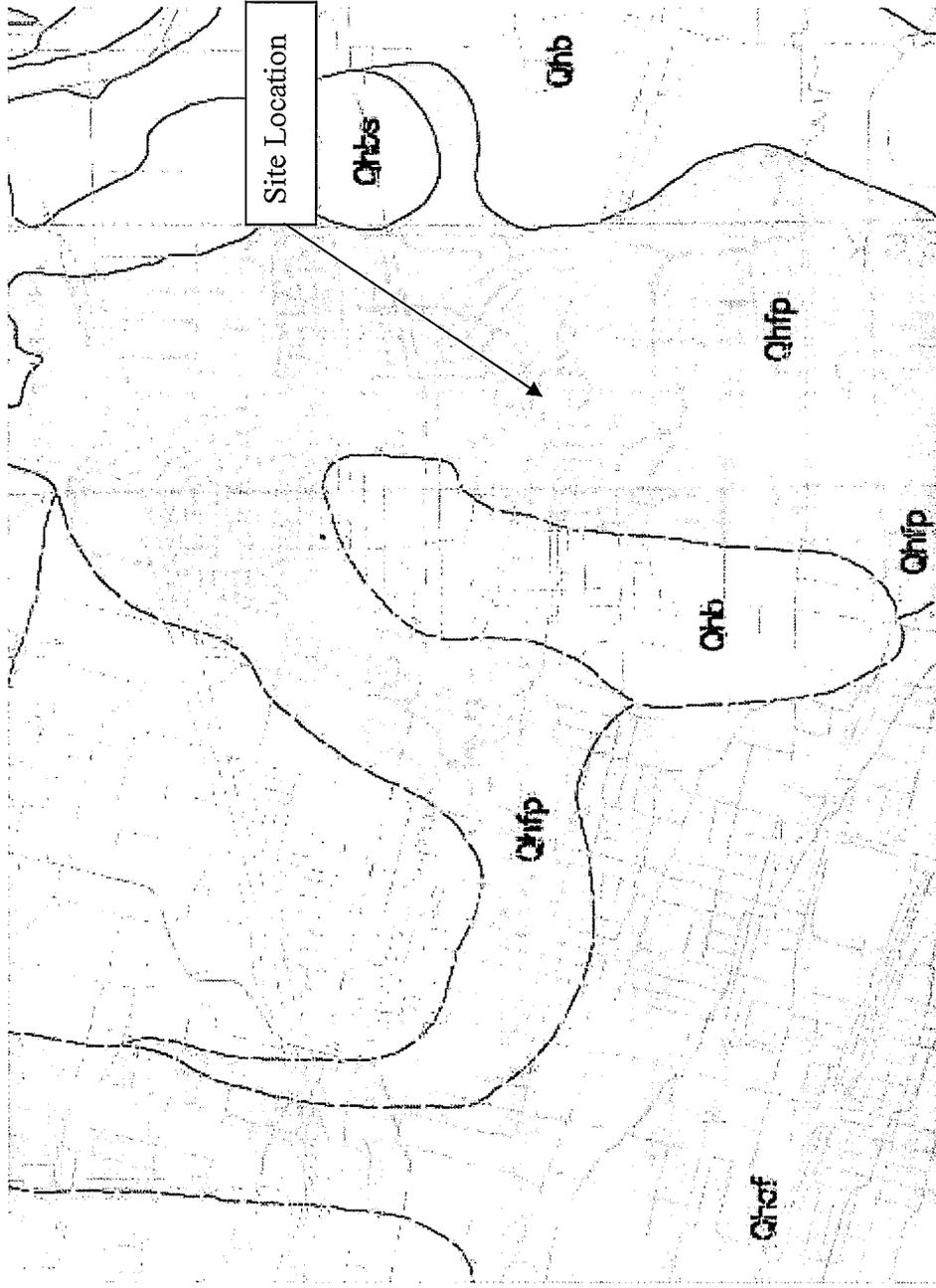


Map taken from: Preliminary Geologic Map of the San Jose 30x60 Quadrangle, CA. Compile by Wentworth, Carl, et. Al. 1999



KEY

-  Qhf2 Older Alluvial fan deposits (HOLOCENE)
-  Qhb Basin deposits (HOLOCENE)
-  Qhl Levee deposits (HOLOCENE)
-  Qpf Alluvial fan deposits (UPPER PLEISTOCENE)



SCALE: Not to Scale



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GEOLOGIC MAP LAWRENCE EXPWY

04-SCL-101

EFIS 0412000003

PM 44.0

JANUARY 2012

FIGURE 3-1

Liquefaction Susceptibility Map

Susceptibility Level

- Very High
- High
- Moderate
- Low
- Very Low
- Major Roads
- Local Roads



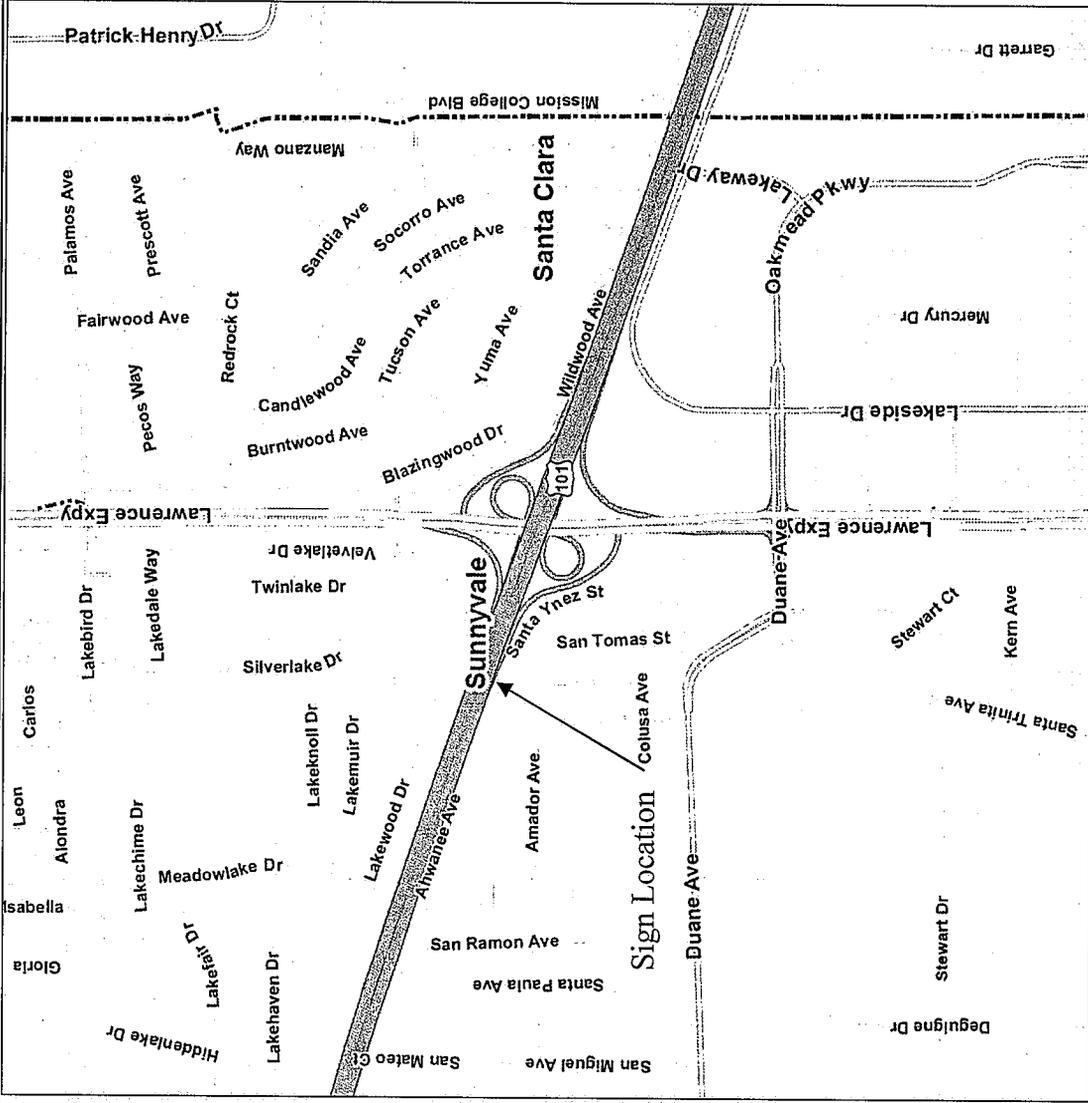
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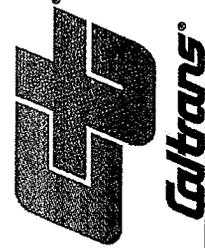
For more information visit:
<http://pubs.usgs.gov/of/2006/of00-444/>
<http://pubs.usgs.gov/of/2006/1037/>



MAP TAKEN FROM:
 USGS MARE ISLAND QUADRANGLE, 1980

SCALE

Not to Scale



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 GEOTECHNICAL SERVICES
 Office of GEOTECHNICAL DESIGN - WEST - BRANCH B

Lawrence Expressway - Liquefaction Map

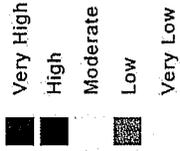
04-SCL-101
 PM 44.0

EFIS 0412000003
 JANUARY 2012

FIGURE 3-2

Liquefaction Susceptibility Map

Susceptibility Level



— Major Roads
— Local Roads



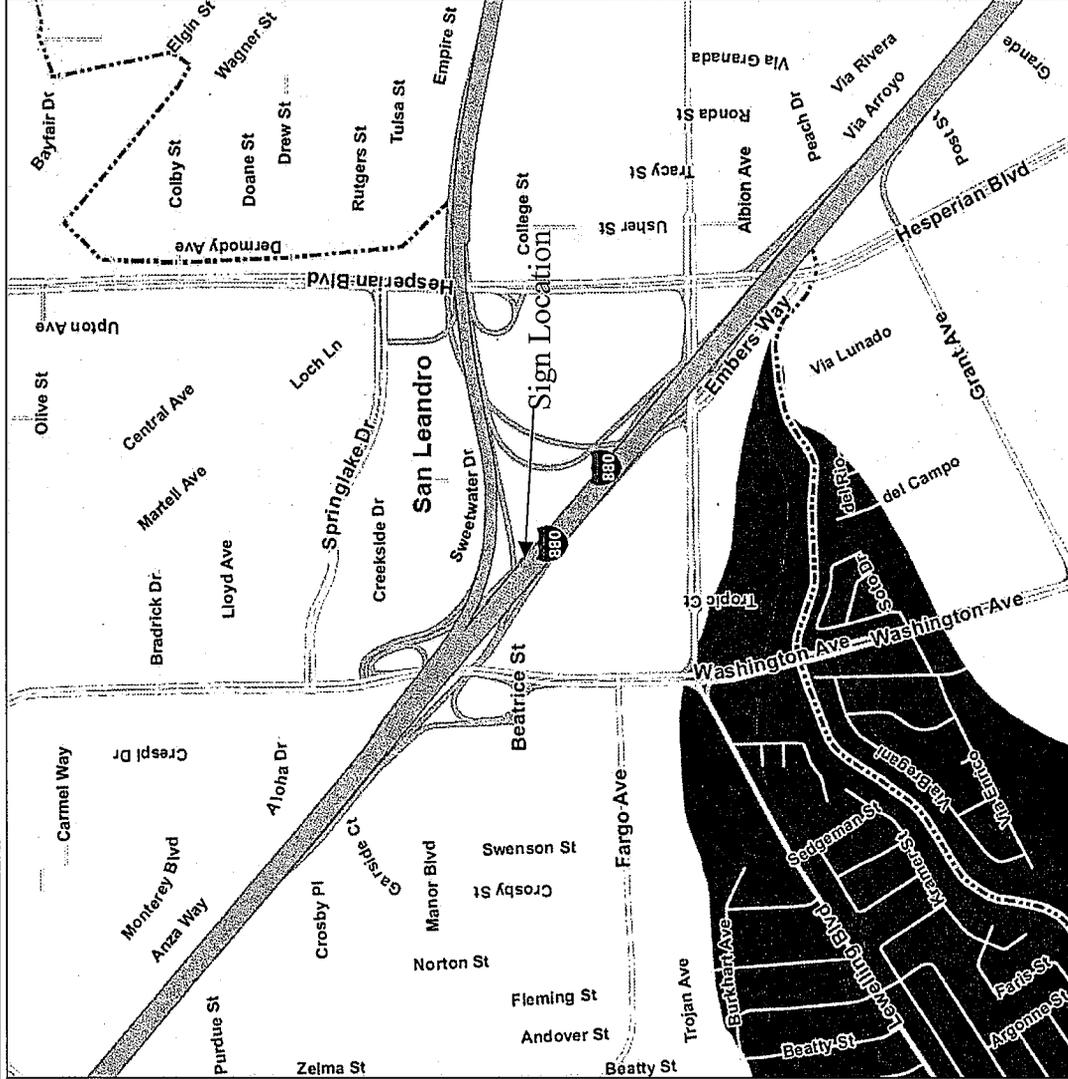
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For more information visit:
<http://pubs.usgs.gov/ofr/2006/ofr00-444/>
<http://pubs.usgs.gov/ofr/2006/1037/>



MAP TAKEN FROM:
USGS MARE ISLAND QUADRANGLE, 1980

SCALE

Not to Scale



DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES
Office of GEOTECHNICAL DESIGN - WEST - BRANCH B

Highway 880 and Washington Ave.-
Liquefaction Map

04-ALA-880
PM 20.8

EFIS 0412000003
JANUARY 2012

FIGURE 4-2

EXHIBIT A
(Sign Plans)

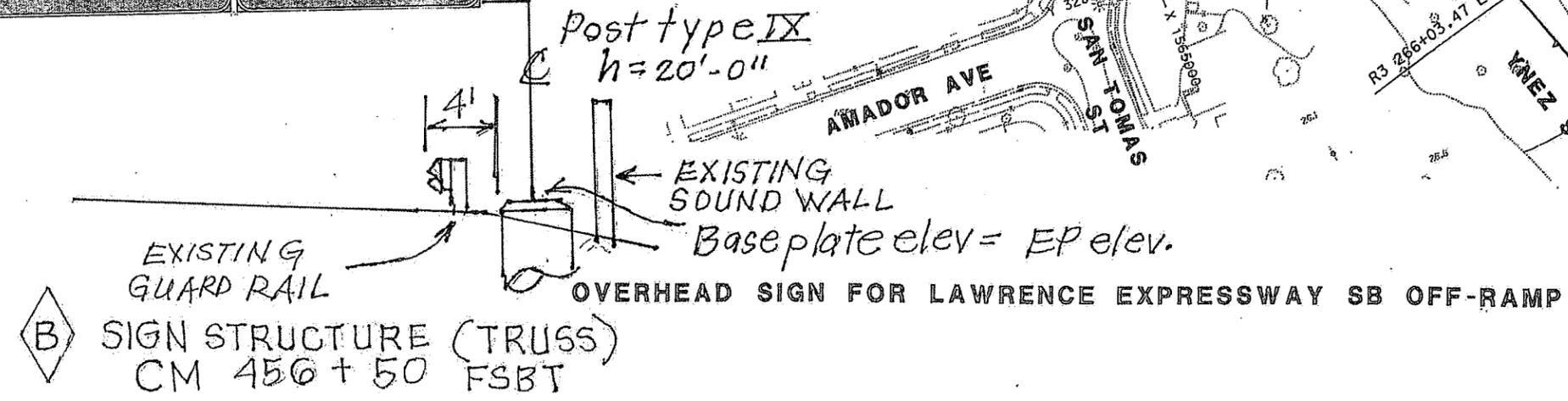
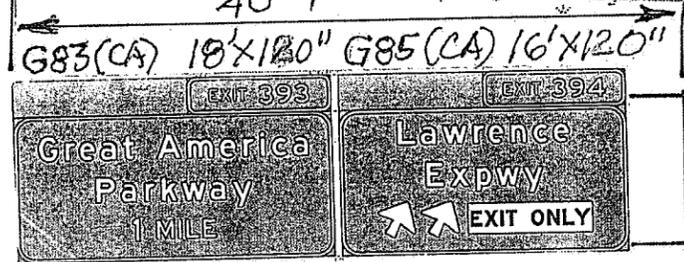
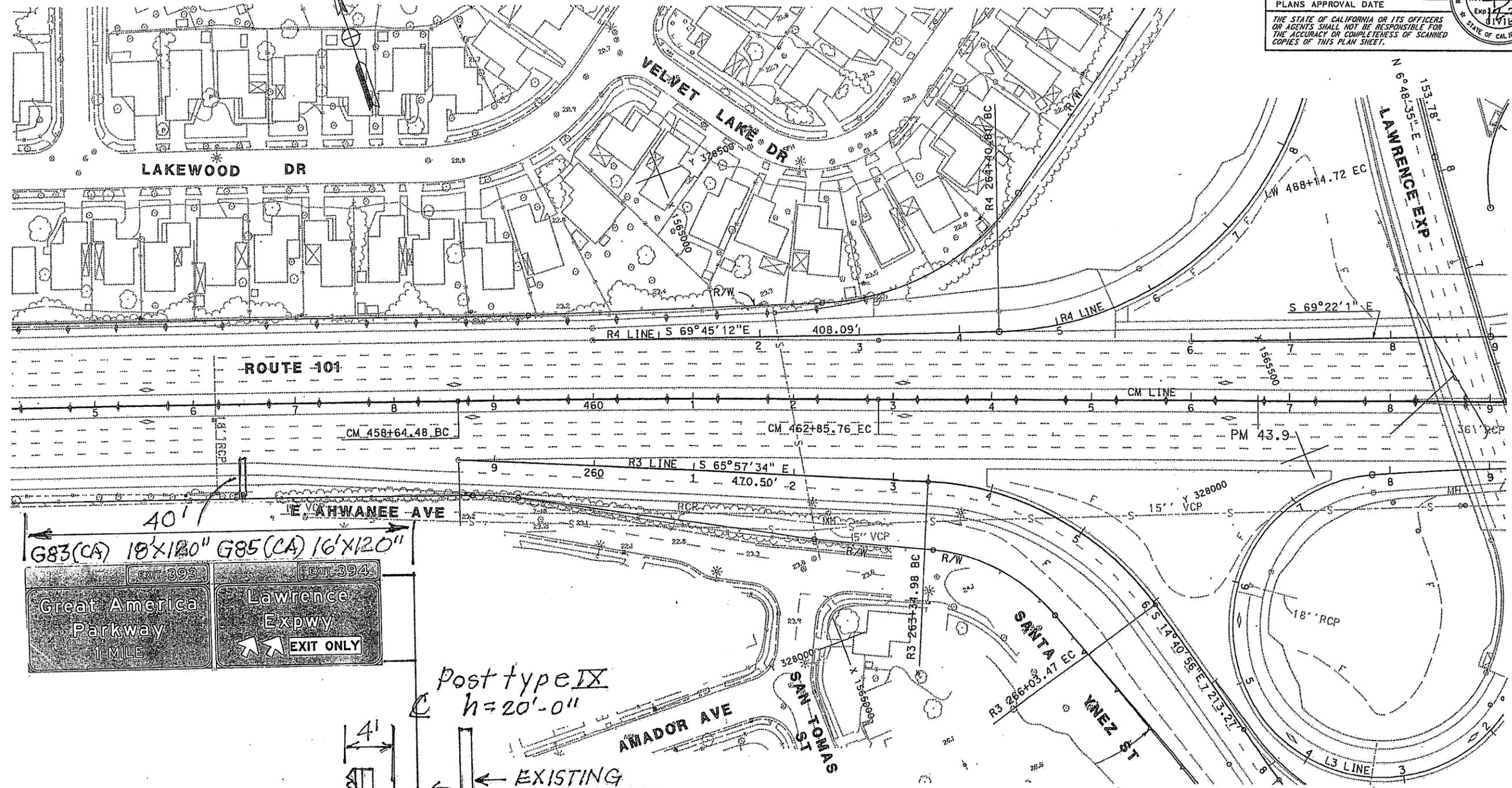
FOR COMPLETE RIGHT OF WAY AND ACCURATE ACCESS DATA, SEE RIGHT OF WAY RECORD MAPS AT DISTRICT OFFICE.

DIST	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET TOTAL No.	TOTAL SHEETS
4	SCL	101	44.0		

REGISTERED CIVIL ENGINEER DATE _____
 PLANS APPROVAL DATE _____
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



SUNNYVALE



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - CALTRANS - TRAFFIC

FUNCTIONAL SUPERVISOR: JERILYN L. STRUVEN

DESIGNED BY: HERMINIO RUIDERA

CHECKED BY: JERILYN L. STRUVEN

REVISED BY: _____ DATE REVISED: _____

LAST REVISION DATE PLOTTED => 19-OCT-2011 00-00-00 TIME PLOTTED => 11:21

SIGN PLAN NO SCALE S-2

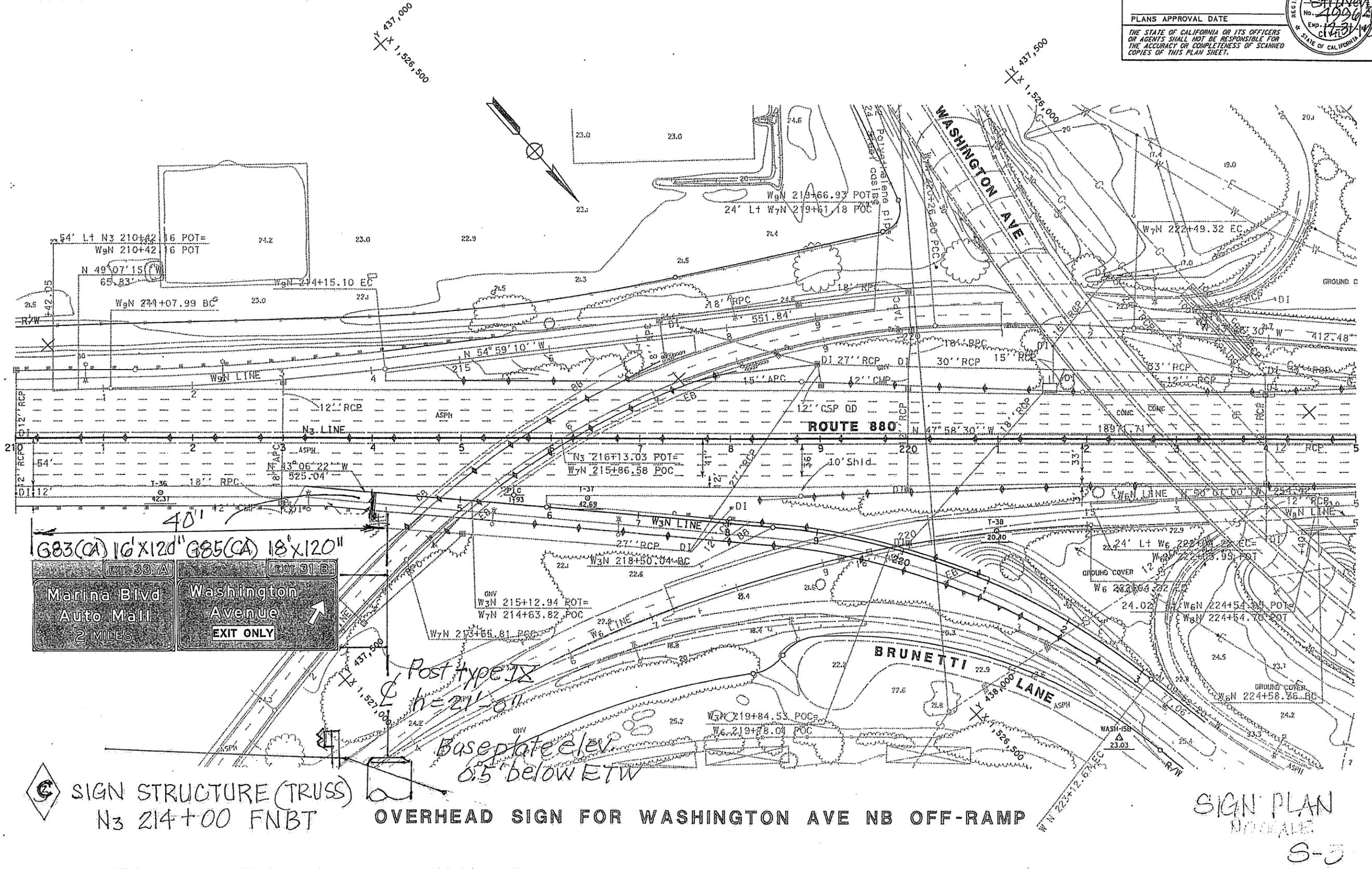
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	ALA	880	20.8		

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

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NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

REVISOR: HERMINIO S. RUIDEPA
 CALCULATED/DESIGNED BY: JERILYN L. STRUVEN
 CHECKED BY:
 FUNCTIONAL SUPERVISOR:
 DEPARTMENT OF TRANSPORTATION
 TRAFFIC



Ⓢ SIGN STRUCTURE (TRUSS)
N3 214+00 FNBT

OVERHEAD SIGN FOR WASHINGTON AVE NB OFF-RAMP

SIGN PLAN
NO SCALE
S-3

EXHIBIT B

(Table 8: OHS Geology Information)

Table 8: Overhead Signs Geologic Information

Serial No.	PM	Geologic Unit(s)	Unit Symble	Surface Material	Soil ⁴	Ground Water	Closest Borehole(s)	Reference	Fault	Distance (km)miles	MMax	Peak Bedrock Acceleration	Liquifaction Susceptibility	Flooding Susceptibility	Landslides
Fremont Avenue	SCL RT 85 19.9	Natural Levee Deposits (Holocene) —Loose, moderately-sorted to well-sorted sandy or clayey silt grading to sandy or silty clay. These deposits are porous and permeable and provide conduits or transport of ground water. Levee deposits border stream channels, usually both banks, and slope away to flatter floodplains and basins. ¹	Qhl	Sandy loam to Sandy clay loam	Urbanland-Landelspark complex	G.W.elevation range is 185.2 ft (BH# B-7) to 184.1 ft (BH # B-8), at creek level, and 176 ft (BH# B-1), 29 ft below grade	BH# B-1 (50 foot boring)	Stevens Creek Bridge Bridge #37 0185 LOTBs 1966 and 1991	Cascade fault	(0.43) 0.27	6.9	0.52	Moderate	No flood hazard (Urbanized)	Near Landslide Zone
Lawrence Expwy	SCL RT 101 44.0	Floodplain Deposits (Holocene) —Medium to dark gray, dense, sandy to silty clay. Lenses of coarser material (silt, sand, and pebbles) may be locally present. ¹	Qhfp	Sandy loam, Sandy clay loam, silty loam, Silty clay loam	Urbanland--Stevenscreek complex and Landelspark complex	G.W.elevation range is 0.0 ft (BH# B-2) to 20 ft (BH # B-1), 24.3 ft and 8 ft below ground surface	Lawrence Expressway OC BH# B-1, (85 foot boring)	Lawrence Expressway OC Bridge # 37 0152 ontract # 04-125724 LOTBs 1998	Silver Creek fault	(5.39) 3.35	7.1	0.50	Moderate	500 yr Flood Zone, or other concern	Flat Land
Washington Avenue	ALA RT 880 20.8	Basin Deposits (Holocene) —Very fine silty clay to clay deposits occupying flat-floored basins at the distal edge of alluvial fans adjacent to the bay mud. ²	Qhb	Loam, Clay loam, Silt Loam	Botella loam	G.W.elevation is 14.4 ft to 18.5 ft 6.0 to 9.8 feet below ground surface	BH# B-2 (70 foot boring)	S880-E238 Connector UC Bridge # 33 0172 AsBuilt Contract # 04-123174 LOTBs 1995	Hayward fault zone (Southern Hayward section)	(2.47) 1.54	7.30	0.46	Moderate	No flood hazard (Urbanized)	Flat Land

1. Quaternary Geology of Santa Clara Valley, Santa Clara Alameda, and San Mateo Counties, CA: A digital Database, Helley, Et. Al. 1994

2. Geologic Map and Map Data base of the Oakland Metropolitan Area, Alameda, Contra Costa, and San Francisco Counties, CA: Graymer, R.W., 2000 □

4. Soil maps can be provided upon request

EXHIBIT C
(Laboratory Test Results)

TEST NO. **7951 1P** DATE RECEIVED **12-9-11** CALC. BY **12/27/11** APPROVED BY **12/27/11**

DISTRICT DIRECTOR TRANS. LAB.
 DIS. MAT. L.S. PAV'T. SECTION
 RESIDENT ENGINEER ACCOUNTING
 CONSTRUCTION

EXPANSION PRESSURE CHART

GRADING ANALYSIS				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED
3				
2 1/2				
2				
1 1/2				
1				
3/4				
1/2				
3/8				
4				
8				
16				
30				
50				
100				
200				
5μ				
1μ				

REPORT OF TESTS ON
Soil - Corrosion

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)

ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D
DATE TESTED				
COMPACTOR FOOT PRESSURE P.S.I.				
INITIAL MOISTURE %				
SOAK WATER ML				
WATER ADDED-ML (TOTAL)				
WATER ADDED %				
MOISTURE AT COMPACTION %				
WET WT. OF BRIQUETTE-GMS				
HEIGHT OF BRIQUETTE-INCHES				
DRY DENSITY OF BRIQ. - # CU. FT.				
STABILOMETER P _H AT 2000 LBS.				
DISPLACEMENT				
R-VALUE BY STABILOMETER				
EXUDATION PRES. P.S.I.				
THICK. BY STAB. FEET				
EXPANSION DIAL READING				
THICK. BY EXP. PRESS. FEET				
R-VALUE BY EXPANSION				

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION

REMARKS: **Dist. by 6930 JLC**
PH = 8.15

EXUDATION PRESSURE

EXPANSION PRESSURE

AT EQUILIBRIUM SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **CSAWad-1**

TL-0101 (REV. 10/97)

FIELD NO. **12/9/11**

DIST. LAB NO.

LOT NO.

P.O. OR REQ. NO.

SHIPMENT NO.

AUTHORIZATION NO.

PRELIMINARY TESTS

PROCESS TESTS

ACCEPTANCE TESTS

INDEPENDENT ASSURANCE TESTS DIST. LAB TRANS. LAB

SAMPLE SENT TO: HDQTRS. LAB BRANCH LAB DIST. LAB

SAMPLE OF **Soil Foundation**

FOR USE IN **Re-11-001 (2.5-5)**

SAMPLE FROM **(CMST) SB-85**

DEPTH

LOCATION OF SOURCE

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS)

AND IS ONE OF A GROUP OF

SAMPLES REPRESENTING (TONS, GALS, BBL'S, STA, ETC)

OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE

TEST RESULTS DESIRED NORMAL PRIORITY

DATE NEEDED

REMARKS **Corrosion test**

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED

BY **S. Awad** TITLE **TE**

DIST, CO, RTE, PM

LIMITS **OK-SEL-85 PM 19.9**

CONT. NO. **OK-2G5901**

FED. NO. **(0412000003)**

RES. ENGR. OR Supt.

ADDRESS **S. Awad (1/1/11)**

CONTRACTOR

DISTRICT 4 LABORATORY
 325 SAN BRUNO AVENUE
 SAN FRANCISCO, CA 94103

MAIL TO SAME DESTINATION AS SAMPLE

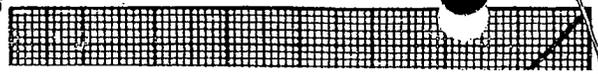
EXUDATION PRESSURE (PSI)

TEST NO. **1951-2P**

DATE RECEIVED **12-9-11**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **12/27/11**

- DISTRICT DIRECTOR
- DIS. MAT. L.S.
- RESIDENT ENGINEER
- CONSTRUCTION
- TRANS. LAB.
- PAV'T. SECTION
- ACCOUNTING

EXPANSION PRESSURE CHART



SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT
3					
2 1/2					
2					
1 1/2					
1					
3/4					
1/2					
3/8					
4					
8					
16					
30					
50					
100					
200					
5μ					
1μ					

REPORT OF TESTS ON **Soil Corrosion**

TEST SPECIMEN	A	B	C
DATE TESTED			
COMPACTOR FOOT PRESSURE P.S.I.			
INITIAL MOISTURE %			
SOAK WATER ML			
WATER ADDED-ML (TOTAL)			
WATER ADDED %			
MOISTURE AT COMPACTION %			
WET WT. OF BRIQUETTE-GMS			
HEIGHT OF BRIQUETTE-INCHES			
DRY DENSITY OF BRIQ. - # CU. FT.			
STABILOMETER P _H AT 2000 LBS.			
DISPLACEMENT			
R-VALUE BY STABILOMETER			
EXUDATION PRES. P.S.I.			
THICK. BY STAB. FEET			
EXPANSION DIAL READING			
THICK. BY EXP. PRESS. FEET			
R-VALUE BY EXPANSION			

GRADING AS USED WAS OBTAINED AS FOLLOWS:
 % BY WT. % BY VOL. TEST NO. DESCRIPTION
Resistivity = 286 Ω-cm

REMARKS:
PH = 7.85
 SURFACE _____
 BASE _____
 SUBBASE _____
 GRAVEL EQUIVALENT FACTOR _____
 TRAFFIC INDEX _____
 EXUDATION PRESSURE _____
 EXPANSION PRESSURE _____
 AT EQUILIBRIUM SPEC. _____
 INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET) _____

TEST RESULTS	SPEC.	SP. GR.	BULK BULK APP
LL. P.L. P.I.			
CV			FIN
AS REC'D.			AS REC'D.
CRUSHED			CRUSHED
COMBINED			REL. COMPACT
GRADE			IN PLAC
100 REV.		DENSITY	
500 REV.		MOISTURE	
D _f		% REL. COMP.	
D _s		SPEC.	
% CRUSHED PARTICLES			

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD CARD NUMBER **C-SAWAD-2**

TL-0101 (REV. 10/97)
 PRELIMINARY TESTS
 PROCESS TESTS
 ACCEPTANCE TESTS
 INDEPENDENT ASSURANCE TESTS
 DIST. LAB
 TRANS. LAB
 SPECIAL TESTS

SAMPLE SENT TO:
 HDQTRS. LAB
 BRANCH LAB
 DIST. LAB
 AUTHORIZATION NO. _____
 SAMPLE FOR USE IN **Soil Foundation**
 SAMPLE FROM **RC-11-002**
 DEPTH **(3'-5')**
 LOCATION OF SOURCE _____

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) _____ AND IS ONE OF A GROUP OF _____ SAMPLES REPRESENTING (TONS, GALS, BBL'S, STA, ETC.) _____
 OWNER OR MANUFACTURER _____
 TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY _____ DATE NEEDED _____
 REMARKS **Corrosion test**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED _____
 BY **S. Awad** TITLE **TE**
 DIST. CO, RTE, PM _____
 LIMITS **04-SCL-101 PM 44.9**
04-2G5901
 CONT. NO. _____
 FED. NO. **(042000003)**
 RES. ENGR. OR SUPT. **(1) (185)**
 ADDRESS _____
 CONTRACTOR **S. Awad**

DISTRICT 4 LABORATORY
 325 SAN BRUNO AVENUE
 SAN FRANCISCO, CA 94103
12/27/11

MAIL TO SAME DESTINATION AS SAMPLE

EXUDATION PRESSURE (PSI)

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
REPORT ON TESTS ON SOILS, BASES & SUBBASES
 TL-0361 (REV. 1/96)

ATTACH FORM DCR-TL-101 HERE FRONT

TEST NO. **7951-3P** DATE RECEIVED **12/14/11** APPROVED BY _____
 CALC. BY **1/6/2011** DATE REPORTED _____
 DIS. MATLS. ENGR. TRANS. LAB
 RESIDENT ENGINEER

GRAVEL ANALYSIS				REPORT OF TESTS													
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS	SOURCE			CHARGE			EXPENDITURE AUTHORIZATION					
75 mm						SPECIAL DESIGNATION (USE WHEN APPLICABLE)			ACTIVITY OR OBJECT			SUBJOB					
						Foundation Soil for Corrosion Resistance											
75 mm																	
63 mm																	
50 mm																	
37.5 mm																	
25.0 mm																	
19.0 mm																	
12.5 mm																	
9.5 mm																	
4.75 mm																	
2.36 mm																	
1.18 mm																	
600 μm																	
300 μm																	
150 μm																	
75 μm																	
5 μm																	
1 μm																	

REMARKS: **RESISTIVITY = 4140**
PH = 7.5

EXUDATION PRES. MPa	
THICK, BY STAB. mm	
EXPANSION DIAL READING-mm	
THICK, BY EXP. PRESS. mm	

TEST RESULTS			SPEC.	SP. GR.	BULK (OVEN DRY)	
LL	P.L	P.I.			<input type="checkbox"/>	<input type="checkbox"/>
CV					<input type="checkbox"/>	APPARENT
	AS REC'D.			AS REC'D		
	CRUSHED			CRUSHED		
	COMBINED					
	REL. COMPACTION DATA					
	GRADE	100 REV.		IN PLACE		OPTIMUM
		500 REV.				
				DENSITY		
				MOISTURE		
				% REL. COMP.		
				SPEC.		
				% CRUSHED PARTICLES		
				% MOISTURE BY O.D.		

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS - m

DISTRICT 4 LABORATORY
 325 SAN BRUNO AVENUE
 SAN FRANCISCO, CA 94103
 1/6/12

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **C 3AWAD-5**
 TL-101 (REV. 10/97)

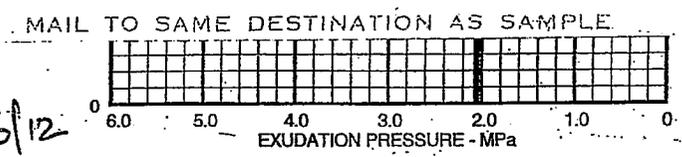
PRELIMINARY TESTS SAMPLE SENT TO: _____
 PROCESS TESTS HOQTRS. LAB _____
 ACCEPTANCE TESTS BRANCH LAB _____
 INDEPENDENT ASSURANCE TESTS DIST. LAB _____
 TRANS. LAB _____
 SPECIAL TESTS

SAMPLE OF **Soil**
 FOR USE IN **Foundation**
 SAMPLE FROM **RC RC-11-003**
 DEPTH **(3-5)**
 LOCATION OF SOURCE **Native soil**

THIS SAMPLE IS SHIPPED IN _____ AND IS ONE OF A GROUP OF _____
 (NO. CONTAINERS) SAMPLES REPRESENTING (IONS, GALS, BBLs, STA. ETC.)
 OWNER OR MANUFACTURER _____
 TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY _____ DATE NEEDED _____

COVER ADDITIONAL INFORMATION WITH LETTER 1
 DATE SAMPLED **12/14/11**
 BY **S. Awad** TITLE **TE**
 DIST. CO, RTE, PM _____

LIMITS _____
 CONT. NO. _____
 FED. NO. _____
 RES. ENGR. OR SUPT. **S. Awad**
 ADDRESS **510-622-5443**
 CONTRACTOR **111 Grand Ave, Oakland CA**



**MOISTURE CONTENT DETERMINATION
(CTM 226)**

County : SCL Route : 85/101 P.M. : _____ E.A. : 04-2G5901 Job No. : 7951-3P
 Limits : _____ R.E. : S.Awad
 Date Received : 12/14/11 Date Calculated : 12/19/11
 Date Reported : _____ By : TN PAGE : 1 of 2

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT		TARE Weight	NET WEIGHT		MOISTURE Weight	% Moisture
				Wet	Dry		Wet	Dry		
RC-11-001	1	5.0'-6.5'	MC	814.6	791.7	100.7	713.9	691.0	22.9	3.3%
	2	10.0'-11.5'	MC	697.6	636.9	101.0	596.6	535.9	60.7	11.3%
	3	15.0'-16.5'	MC	796.9	735.8	100.3	696.6	635.5	61.1	9.6%
	4	20.0'-21.5'	MC	788.4	733.8	99.1	689.3	634.7	54.6	8.6%
	5	25.0'-26.5'	MC	769.6	706.9	101.0	668.6	605.9	62.7	10.3%
	6	30.0'-31.5'	MC	922.4	817.3	99.8	822.6	717.5	105.1	14.6%
	7	35.0'-36.5'	MC	1296.4	1135.5	102.1	1194.3	1033.4	160.9	15.6%
	8	40.0'-41.5'	MC	704.5	652.3	102.1	602.4	550.2	52.2	9.5%
RC-11-002	1	5.0'-6.5'	MC	655.3	562.4	99.8	555.5	462.6	92.9	20.1%
	2	10.0'-11.5'	MC	855.2	764.0	101.0	754.2	663.0	91.2	13.8%
	3	15.0'-16.5'	MC	1012.1	820.9	98.6	913.5	722.3	191.2	26.5%
	4	20.0'-21.5'	MC	1146.4	961.5	101.4	1045.0	860.1	184.9	21.5%
	5	25.0'-26.5'	MC	1149.1	921.1	98.7	1050.4	822.4	228.0	27.7%
	6	30.0'-31.5'	MC	1223.4	999.0	99.9	1123.5	899.1	224.4	25.0%
	7	35.0'-36.5'	MC	1399.8	1139.3	100.0	1299.8	1039.3	260.5	25.1%
	8	40.0'-41.5'	MC	1091.7	890.5	99.3	992.4	791.2	201.2	25.4%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
 MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven

**MOISTURE CONTENT DETERMINATION
(CTM 226)**

County : SCL Route : 85/101 P.M. : _____ E.A. : 04-2G5901 Job No. : 7951-3P
 Limits : _____ R.E. : S.Awad
 Date Received : 12/14/11 Date Calculated : 12/19/11
 Date Reported : _____ By : TN PAGE : 2 of 2

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT		TARE Weight	NET WEIGHT		MOISTURE Weight	% Moisture
				Wet	Dry		Wet	Dry		
RC-11-003	1	5.0' / 6.5'	MC	776.3	714.1	101.7	674.6	612.4	62.2	10.2%
	2	10.0'-11.5'	MC	611.8	539.5	99.3	512.5	440.2	72.3	16.4%
	3	15.0'-16.5'	MC	834.4	739.8	101.1	733.3	638.7	94.6	14.8%
	4	20.0'-21.5'	MC	683.1	607.1	101.4	581.7	505.7	76.0	15.0%
	5	25.0'-26.5'	MC	1085.1	874.6	100.3	984.8	774.3	210.5	27.2%
	6	30.0'-31.5'	MC	<i>MISSING</i>		<i>SAMPLE</i>				
	7	35.0'-36.5'	MC	269.9	229.6	99.8	170.1	129.8	40.3	31.0%
	8	40.0'-41.5'	MC	841.7	709.4	100.5	741.2	608.9	132.3	21.7%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
 MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven



Telephone (916) 574-2540
FAX (916) 574-2542

DEPARTMENT OF INDUSTRIAL RELATIONS
DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT
2211 Park Towne Circle, Suite 2
Sacramento, California 95825

January 27, 2012

Department of Transportation
111 Grand Avenue
Oakland, CA 94612

Attention: Matthew Gaffney (via e-mail: matthew_gaffney@dot.ca.gov)

Subject: Underground Classification #'s: C101-085-12T, C102-085-12T & C103-001-12T
Routes 85 & 880 Sign Replacement Project (Mountain View & San Lorenzo)

Mr. Gaffney:

The information provided to this office relative to the above project has been reviewed. On the basis of this analysis, Underground Classification of "Potentially Gassy with Special Conditions" has been assigned to the shaft(s) identified on your submittal. Please retain the original Classification for your records and deliver a true and correct copy of the Classification to the shaft contractor(s) for posting at the job site.

When the contractor who will be performing the work is selected, please advise them to notify this office to determine if a mandated Prejob Conference with the Division is required prior to commencing any activity associated with drilling of the shaft(s).

Should you have another bore under construction that is not required to have an Underground Classification (i.e.: less than 30 inches in diameter), please contact the Mining and Tunneling Unit prior to any employee entry of such a space.

If you have any questions on this subject, please contact this office at your earliest convenience.

Sincerely,

Douglas Patterson
Senior Engineer

cc: R. Brockman
N. McDougald
File



State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C101-085-12T

DEPARTMENT OF TRANSPORTATION

NAME OF TUNNEL OR MINE AND COMPANY NAME

of

111 Grand Avenue, Oakland, CA 94612

MAILING ADDRESS

at

Routes 85 & 880 Sign Replacement Project (Mountain View & San Lorenzo)

LOCATION

has been classified as

POTENTIALLY GASSY with Special Conditions

CLASSIFICATION

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

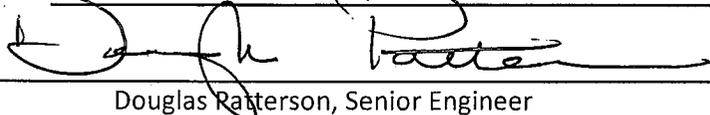
SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 27 feet deep shaft located at the intersection of Fremont Avenue and State Route 85, Mountain View, Santa Clara County.

This classification shall be conspicuously posted at the place of employment.

Date January 27, 2012


Douglas Ratterson, Senior Engineer



State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C102-085-12T

DEPARTMENT OF TRANSPORTATION

NAME OF TUNNEL OR MINE AND COMPANY NAME

111 Grand Avenue, Oakland, CA 94612

MAILING ADDRESS

Routes 85 & 880 Sign Replacement Project (Mountain View & San Lorenzo)

LOCATION

has been classified as

POTENTIALLY GASSY with Special Conditions

CLASSIFICATION

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

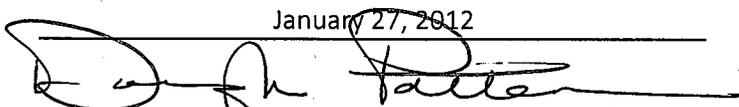
1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 27 feet deep shaft located at the intersection of Lawrence Expressway and Highway 101, Mountain View, Santa Clara County.

This classification shall be conspicuously posted at the place of employment.

Date

January 27, 2012



Douglas Patterson, Senior Engineer



State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C103-001-12T

DEPARTMENT OF TRANSPORTATION

NAME OF TUNNEL OR MINE AND COMPANY NAME

of 111 Grand Avenue, Oakland, CA 94612

MAILING ADDRESS

at Routes 85 & 880 Sign Replacement Project (Mountain View & San Lorenzo)

LOCATION

has been classified as ***POTENTIALLY GASSY with Special Conditions***

CLASSIFICATION

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

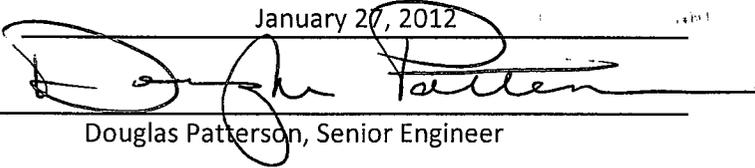
SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 27 feet deep shaft located at the intersection of Washington Avenue and Highway 880, San Lorenzo, Alameda County.

This classification shall be conspicuously posted at the place of employment.

Date January 20, 2012



Douglas Patterson, Senior Engineer