

FOR CONTRACT NO.: 11-294604

INFORMATION HANDOUT

MATERIALS INFORMATION

GEOTECHNICAL DESIGN REPORT

ROUTE: 11-SD-125-10.6/10.9

Memorandum

To: Chris M. Thomas
District 11
Design Engineer

Date: October 13, 2010

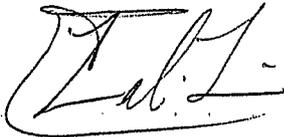
File: 11-SD-125-(PM) 10.6/10.9
EA 11-294601
1100000388

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design – South 2

Subject: Geotechnical Design Report for the ramp widening and construction of retaining walls at State Route 125 south bound off-ramp to Jamacha Road

Pursuant to your request, the Office of Geotechnical Design-South 2 (OGDS2) has prepared this geotechnical report for the ramp widening and construction of retaining walls at State Route 125 south bound off-ramp to Jamacha Road. This report defines the geotechnical conditions as evaluated from field data and used in the development of the geotechnical design. It provides recommendations for project design and construction.

OGDS-2 staff will be available for further assistance. Should you have any questions or comments regarding this report, please contact Ali Lari at (858) 467-6922.



Ali Lari
Transportation Engineer (Civil)
Office of Geotechnical Design – South 2



Attachments

cc: Abbas Abghari
Brian Hinman
Joseph Chua
Mark Willian
Leon Edmonds
Art Padilla
File

BH

1.0 INTRODUCTION

This report has been prepared by the Office of Geotechnical Design-South 2 (OGDS2) to address the geotechnical design considerations for the widening of the south bound State Route 125 (SR-125) Jamacha Road off-ramp.

The geotechnical investigation included: site reconnaissance, research of archived resources, limited subsurface exploration and preparation of this report.

2.0 EXISTING FACILITIES AND PROPOSED IMPROVEMENT

SR-125 is a six-lane freeway, connecting SR-52 and SR-54. South of SR-54, SR-125 continues as a toll road to SR-905 to the US-Mexico border. The existing Jamacha road south bound off-ramp is a one to three lane ramp. Just west of the ramp there is a soundberm approximately 500 feet in length and maximum of eight feet in height. A concrete-lined drainage channel for Spring Valley Creek is located just west of the soundberm and parallel to it.

Based on the preliminary project plans and typical cross sections the project includes cutting the existing soundberm down to the elevation of the ramp and using the area to widen the off-ramp. The project will also include retaining walls with a maximum height of 5 feet to be located along both sides of the proposed off-ramp widening. Please see the site plan and typical cross sections (Attachments 1 and 2).

3.0 PERTINENT REPORTS AND INVESTIGATIONS

The following documents were referred to during preparation of this report:

- 1- Geologic maps prepared by California Division of Mines and Geology
- 2- Ninyo & Moore, (March 26, 1999), Geotechnical Design Report (GDR), 11-SD-125, KP 19.4 to 22.1, 11/Cu 11220/EA 001931
- 3- Preliminary project plans

4.0 EXPLORATION

During a field investigation on 10/22/2009 and 10/26/2009 a total of four hand excavated potholes were made to a depth of about three feet. Two potholes (S-1 and S-2) were excavated along the proposed retaining wall alignment on the existing soundberm and two potholes (R-1 and R-2) were excavated at the off-ramp widening area. The pothole locations are shown in Attachment 1.

The subsurface materials observed in Potholes S-1 and S-2 along the existing soundberm are fills comprised predominantly of hard sandy clay with gravel. Due to hard subsurface conditions it was not possible to advance the potholes more than one foot below the existing ground surface in these locations. However in the Potholes R-1 and R-2 at the proposed widening area approximately three feet of fat clay underlain by sandy materials was encountered. Ground water was not encountered during the potholing operations.

5.0 GEOTECHNICAL ENGINEERING RECOMMENDATIONS

5.1 Expansive Soil/Roadway Subgrade

The subsurface investigation revealed that highly plastic clay is present in the upper three feet of the proposed ramp widening subgrade. These materials are highly expansive. There has been a history of expansive soil problems adversely affecting pavements at the project location. Based on these considerations we recommend that the upper four feet of expansive clay material present in the proposed ramp widening area be excavated and removed. The excavated soil is unsuitable for reuse as engineered fill and should be disposed offsite or used in landscaped areas. A low expansive potential granular fill material should be used to backfill the excavation.

5.2 Corrosion

Laboratory soil tests for corrosion were not performed specifically for this investigation. However the previously referenced GDR dated March 26, 1999 prepared by Ninyo & Moore presents corrosion test data. The test results indicate that the PH of the on-site soils ranged from 8.0 to 9.9. Sulfate contents ranged from 20 ppm to 1140 ppm. Chloride contents ranged from 40 to 1250 ppm. Minimum resistivity ranged from 180 to 1385 ohm-cm. The data thus indicate that the on-site soils are potentially corrosive and this factor should be considered in the design of the project.

5.3 Retaining Walls

Retaining walls are proposed along the eastern and western perimeters of the off ramp. The eastern ramp retaining wall will be about 820 feet long and the western ramp wall will be about 250 feet long. The retaining walls will be about 5 feet high. Based on our subsurface investigations it is anticipated that very stiff to hard, highly plastic clay soil will be encountered at the bottom of the excavation for the walls. These materials are deemed to be competent enough to support the retaining walls. It is recommended that the Caltrans Standard Plan design for spread footing be used for the design and construction of these retaining walls.

6.0 DIFFERING SITE CONDITIONS

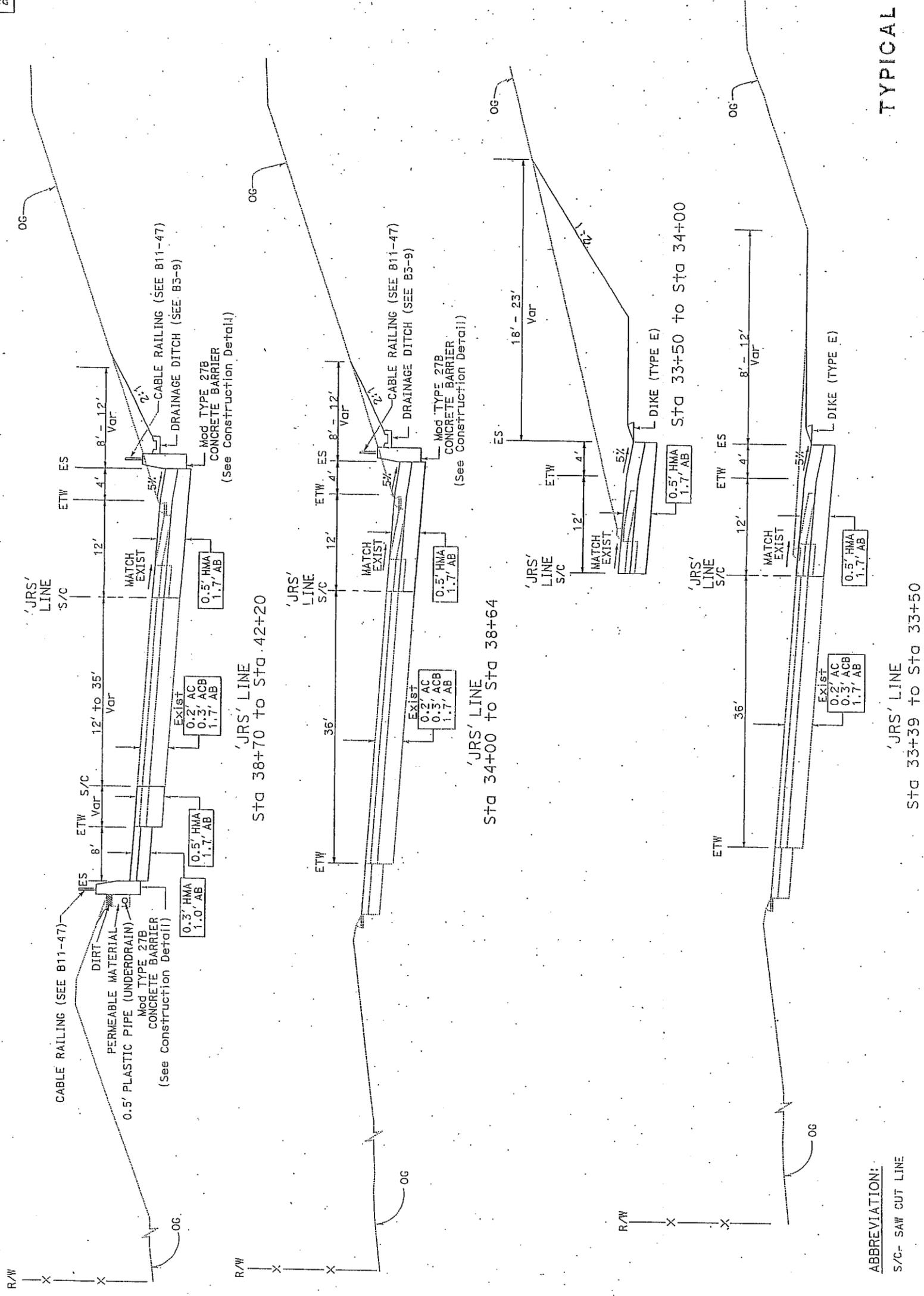
The recommendations contained in this report are based on specific project information regarding structure type and location that have been provided by District 11 Design. If any conceptual changes are made during final project design or if site conditions are encountered during construction that are believed to differ from those conveyed in this report, the OGDS2 should review the project to provide appropriate recommendations. Any questions regarding the above recommendations should be directed to the attention of Ali Lari, (858) 467-6922 or Brian Hinman, (585) 467-4051 at OGDS2.

DESIGN DESIGNATION (ROUTE 125 SB JAMACHA ROAD OFF RAMP)

AM	PM
2007 ADT 18000	695 1732
2027 ADT 22000	900 2100

DISTRICT: COUNTY: ROUTE: 125
 SHEET TOTAL: 16 SHEETS
 PROJECT: 16.6/1 C.S.
 REGISTERED CIVIL ENGINEER: JOSEPH CHUA
 No. 53168
 Exp. 06/30/11
 PLANS APPROVAL DATE: _____
 THE STATE OF CALIFORNIA OR ITS OFFICERS
 AND AGENCIES SHALL NOT BE RESPONSIBLE FOR
 THE ACCURACY OR COMPLETENESS OF ANY
 COPIES OF THIS PLAN SHEET.

- NOTES:
- 1) DIMENSIONS OF THE STRUCTURAL SECTIONS ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
 - 2) SUPERELEVATION AS SHOWN OR AS DIRECTED BY THE ENGINEER.



ABBREVIATION:
S/C- SAW CUT LINE

TYPICAL CROSS SECTIONS
X-1

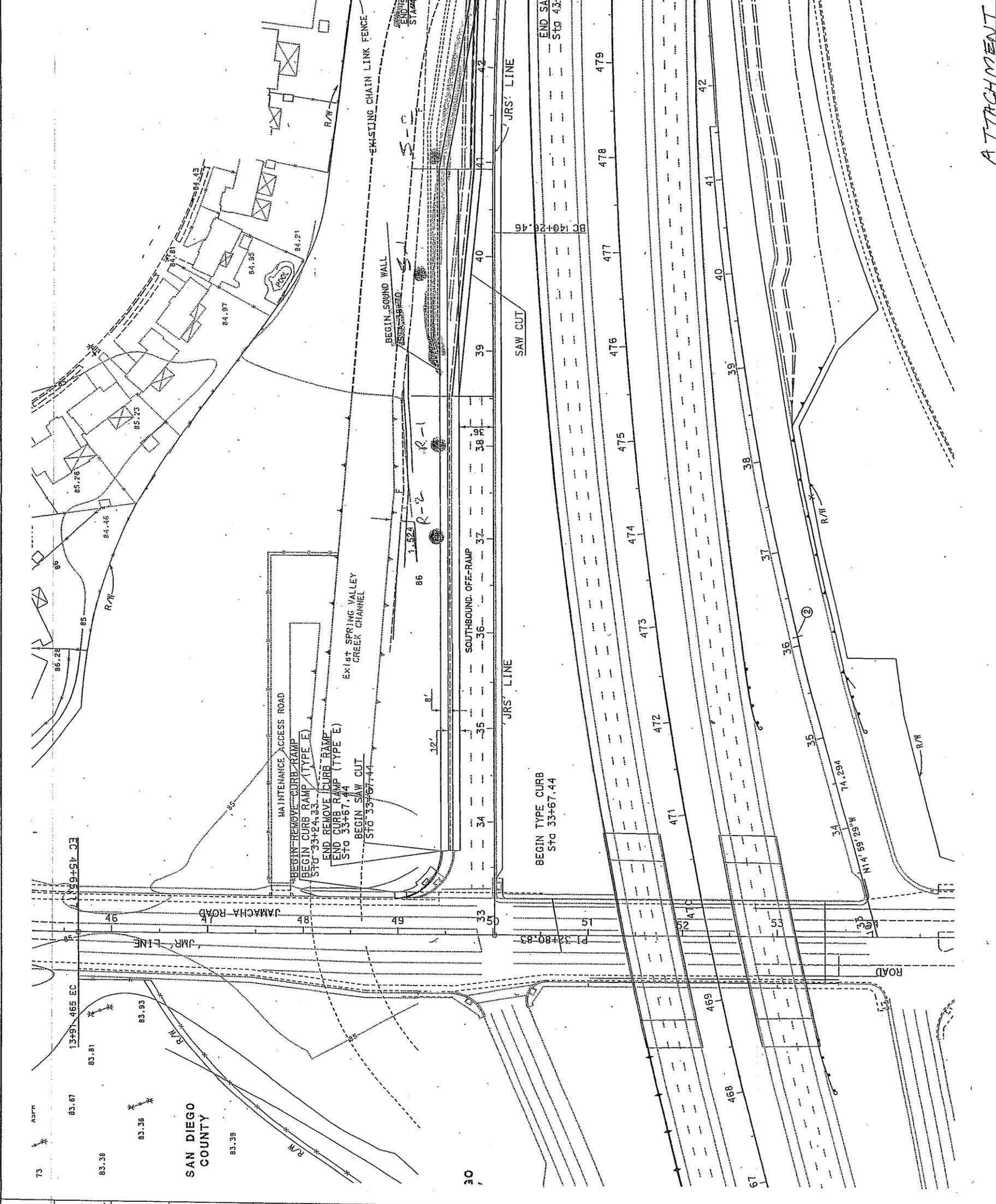
ATTACHMENT 2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL No. SHEETS
11	SD	125	10.6/10.9	

REGISTERED CIVIL ENGINEER	DATE
JOSEPH CHUA	Exp. 06/30/11
No. 53168	CIVIL

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.



LAYOUT L-1

ATTACHMENT

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	REVISOR	DATE REVISOR
ET-Citrus					