

INFORMATION HANDOUT

MATERIALS INFORMATION

ASBESTOS AND LEAD-CONTAINING
PAINT SURVEY REPORT

FOUNDATION REPORT
EAST REDDING SEPARATION (WIDEN)
BRIDGE No. 06-0126L

FOUNDATION REPORT ADDENDUM
WESTBOUND CONNECTOR UC (WIDEN)
BRIDGE No. 06-0127L

REU ELECTRIC SERVICE WORK ORDER

ROUTE: 02-Sha-05-R14.9/R16.2

ASBESTOS AND LEAD-CONTAINING PAINT SURVEY



PREPARED FOR:

**CALIFORNIA DEPARTMENT OF TRANSPORTATION
DISTRICT 2
P.O. BOX 496073
REDDING, CALIFORNIA 96049**



PREPARED BY:

**GEOCON CONSULTANTS, INC.
3160 GOLD VALLEY DRIVE, SUITE 800
RANCHO CORDOVA, CALIFORNIA 95742**



**GEOCON PROJECT NO. S9300-06-90
TASK ORDER NO. 90, EA NO. 02-3C0001
CONTRACT NO. 03A1368**

JUNE 2009



Project No. S9300-06-90
June 22, 2009

Tom Graves, Task Order Manager
Caltrans – District 2
1657 Riverside Drive
Redding, California 96049

Subject: HIGHWAY 44/5 INTERCHANGE PROJECT
REDDING, CALIFORNIA
CONTRACT NO. 03A1368
TASK ORDER NO. 90, EA NO. 02-3C0001
ASBESTOS AND LEAD-CONTAINING PAINT SURVEY REPORT

Dear Mr. Graves:

In accordance with California Department of Transportation Contract No. 03A1368 and Task Order No. 90, we have performed an asbestos and lead-containing paint survey of the subject bridges in Redding, California. The scope of services included surveying two bridges for suspect asbestos-containing materials and lead-containing paint, collecting bulk samples, and submitting the samples to a laboratory for analyses.

The accompanying report summarizes the services performed and laboratory analysis.

The contents of this report reflect the views of Geocon Consultants, Inc., who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

Please contact us if you have questions concerning the contents of this report or if we may be of further service.

Sincerely,

GEOCON CONSULTANTS, INC.

David A. Watts, CAC
Senior Project Scientist

John E. Juhrend, PE, CEG
Project Manager

DAW:JEJ:jaj

(4 + 2 CDs) Addressee

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- 2. Site Plan

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- A. Analytical Laboratory Report and Chain-of-custody Documentation

ASBESTOS AND LEAD-CONTAINING PAINT SURVEY REPORT

1.0 INTRODUCTION

This asbestos and lead-containing paint (LCP) survey report was prepared by Geocon Consultants, Inc. under Caltrans Contract No. 03A1368, Task Order No. 90 (TO-90).

1.1 Project Description

The project consists of two bridges (06-0126L and 06-0127L) at the Highway 44/5 interchange in Redding, California. Caltrans proposes to demolish or renovate the bridges. We performed an asbestos and LCP survey at the project location. The project location is depicted on the Vicinity Map, Figure 1, and Site Plan, Figure 2.

1.2 General Objectives

The primary purpose of the scope of services outlined in TO-90 was to determine the presence and quantity of asbestos and LCP at the project location prior to interchange improvement activities. The information obtained from this investigation will be used by Caltrans for waste profiling, determining California Occupational Safety and Health Administration (Cal/OSHA) applicability, and coordinating asbestos and LCP disturbance activities.

It was not Geocon's intent during this inspection to conduct an evaluation of lead-based paint hazards in accordance with U.S. Department of Housing and Urban Development (HUD) guidelines. HUD protocol generally requires a very extensive sampling strategy that includes sampling of paint on each surface type (e.g., wall, ceiling, window sill, window frame, door frame, molding, etc.) in each room.

2.0 BACKGROUND

2.1 Asbestos

The *Code of Federal Regulations (CFR)*, 40 CFR 61, Subpart M, National Emissions Standards for Hazardous Air Pollutants (NESHAP) and Federal Occupational Safety and Health Administration (FED OSHA) classify asbestos-containing material (ACM) as any material or product that contains *greater than 1%* asbestos. Nonfriable ACM is classified by NESHAP as either Category I or Category II material defined as follows:

- **Category I** – asbestos-containing packings, gaskets, resilient floor coverings, and asphalt roofing products.
- **Category II** – all remaining types of nonfriable asbestos-containing material not included in Category I that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Regulated asbestos-containing material (RACM), a hazardous waste when friable, is classified as any manufactured material that contains *greater than 1%* asbestos by dry weight *and* is:

- Friable (can be crumbled, pulverized, or reduced to powder by hand pressure); or
- Category I material that has become friable; or
- Category I material that has been subjected to sanding grinding, cutting or abrading; or
- Category II nonfriable material that has a high probability of becoming crumbled, pulverized, or reduced to a powder during demolition or renovation activities.

Activities that disturb materials containing *any* amount of asbestos are subject to certain requirements of the Cal/OSHA asbestos standard contained in Title 8, CCR Section 1529. Typically, removal or disturbance of more than 100 square feet of material containing more than 0.1% asbestos must be performed by a registered asbestos abatement contractor, but associated waste labeling is not required if the material contains 1% or less asbestos. When the asbestos content of a material exceeds 1%, virtually all requirements of the standard become effective.

Materials containing more than 1% asbestos are also subject to NESHAP regulations (40 CFR Part 61, Subpart M). RACM (friable ACM and nonfriable ACM that will become friable during demolition operations) must be removed from structures prior to demolition. Certain nonfriable ACM and materials containing 1% or less asbestos may remain in structures during demolition; however, there are waste handling/disposal issues and Cal/OSHA work requirements that may make it cost ineffective to do so. Contractors are responsible for segregating and characterizing waste streams prior to disposal.

With respect to potential worker exposure, notification, and registration requirements, Cal/OSHA defines asbestos-containing construction material (ACCM) as construction material that contains more than 0.1% asbestos (Title 8, CCR 341.6).

2.2 Lead Paint

Construction activities (including demolition) that disturb materials or paints containing *any* amount of lead are subject to certain requirements of the Cal/OSHA lead standard contained in Title 8, CCR, Section 1532.1. Deteriorated paint is defined by Title 17, CCR, Division 1, Chapter 8, §35022 as a surface coating that is cracking, chalking, flaking, chipping, peeling, non-intact, failed, or otherwise separating from a component. Demolition of a deteriorated LCP component would require waste characterization and appropriate disposal. Intact LCP on a component is currently accepted by most landfill facilities; however, contractors are responsible for segregating and characterizing waste streams prior to disposal.

For a solid waste containing lead, the waste is classified as California hazardous when: 1) the total lead content equals or exceeds the respective Total Threshold Limit Concentration (TTLC) of 1,000 milligrams per kilogram (mg/kg); or 2) the soluble lead content equals or exceeds the respective Soluble Threshold Limit Concentration (STLC) of 5 milligrams per liter (mg/l) based on the standard Waste Extraction Test (WET). A waste has the potential for exceeding the lead STLC when the waste's total lead content is greater than or equal to ten times the respective STLC value since the WET uses a 1:10 dilution ratio. Hence, when total lead is detected at a concentration greater than or equal to 50 mg/kg, and assuming that 100 percent of the total lead is soluble, soluble lead analysis is required. Lead-containing waste is classified as "Resource, Conservation, and Recovery Act" (RCRA) hazardous, or Federal hazardous, when the soluble lead content equals or exceeds the Federal regulatory level of 5 mg/l based on the Toxicity Characteristic Leaching Procedure (TCLP).

The above regulatory criteria are based on chemical concentrations. Wastes may also be classified as hazardous based on other criteria such as ignitability; however, for the purposes of this investigation, toxicity (i.e., lead concentrations) is the primary factor considered for waste classification since waste generated during the construction activities would not likely warrant testing for ignitability or other criteria. Waste that is classified as either California hazardous or RCRA hazardous requires management as a hazardous waste.

Potential hazards exist to workers who remove or cut through LCP coatings during demolition. Dust containing hazardous concentrations of lead may be generated during scraping or cutting materials coated with lead-containing paint. Torching of these materials may produce lead oxide fumes. Therefore, air monitoring and/or respiratory protection may be required during the demolition of materials coated with LCP. Guidelines regarding regulatory provisions for construction work where workers may be exposed to lead are presented in the Title 8, CCR, Section 1532.1.

2.3 Architectural Drawings and Previous Survey Activities

Architectural drawings or previous survey reports for the project were not available for our review.

3.0 SCOPE OF SERVICES

Mr. David Watts, a California-Certified Asbestos Consultant (CAC), certification No. 98-2404 (expiration September 16, 2009), and Certified Lead Paint Inspector/Assessor and Project Monitor with the California Department of Public Health (DPH), certification numbers I-1734 and M-1734 (expiration December 4, 2009), performed the asbestos and LCP survey at the project location on May 20, 2009.

3.1 Asbestos

Suspect ACM were grouped into homogeneous areas with representative samples randomly collected from each. In addition, each potential ACM was evaluated for friability. A total of ten bulk asbestos samples representing four suspect materials were collected.

Our procedures for inspection and sampling in accordance with TO-90 are discussed below:

- Collected bulk asbestos samples after first wetting friable material with a light mist of water. The samples were then cut from the substrate and transferred to a labeled container. Note that when multiple samples were collected, the sampling locations were distributed throughout the homogeneous area (spaces where the material was observed).
- Relinquished bulk asbestos samples to EMSL Analytical, Inc., a California-licensed and Caltrans-approved subcontractor, for asbestos analysis in accordance with United States Environmental Protection Agency (EPA) Test Method 600/R-93/116 using polarized light microscopy (PLM) under chain-of-custody protocol. EMSL Analytical, Inc. is a laboratory accredited by the National Institute of Standards and Technology National Voluntary Laboratory Accreditation Program (NIST-NVLAP) for bulk asbestos fiber analysis. The laboratory analyses were requested on a 10-workday turn-around-time.

Sample group identification numbers, material descriptions, approximate quantities, friability assessments, and photo references are summarized on Table 1. Approximate sample locations are presented on Figure 2. Materials represented by the samples collected are shown in the attached photographs.

3.2 Lead Paint

We observed no suspect LCP during the survey. Consequently, we collected no LCP samples.

4.0 INVESTIGATIVE RESULTS

Chrysotile asbestos at a concentration of 3% was detected in samples representing approximately 4 square feet of nonfriable thread compound used on the barrier rail systems of both bridges (06-0126L and 06-0127L).

Chrysotile asbestos at a concentration of 80% was detected in samples representing approximately 20 square feet of nonfriable sheet packing used as shims on the barrier rail systems of Bridge 06-0126L.

No asbestos was detected in samples of the remaining suspect materials collected during our survey. A summary of the analytical laboratory test results for asbestos is presented on Table 1. Reproductions of the laboratory report and chain-of-custody documentation are presented in Appendix A.

5.0 RECOMMENDATIONS

NESHAP regulations do not require that asbestos-containing sheet piling or thread compound (Category I nonfriable/nonhazardous materials) identified during our survey be removed prior to demolition or be treated as hazardous waste. However, the disturbance of these materials is still covered by the Cal/OSHA asbestos standard (Title 8, CCR Section 1529). We recommend that a licensed contractor registered with Cal/OSHA for asbestos-related work perform any activities that would disturb the materials. Contractors are responsible for informing the landfill of the contractor's intent to dispose of asbestos waste. Some landfills may require additional waste characterization. Contractors are responsible for segregating and characterizing waste streams prior to disposal.

Geocon also recommends the notification of contractors (that will be conducting renovation or related activities) of the presence of asbestos in their work areas (i.e., provide contractor[s] with a copy of this report and a list of asbestos removed during subsequent activities). Contractors not trained for asbestos work should be instructed not to disturb asbestos during their activities.

Written notification to U.S. EPA Region IX and the California Air Resources Board is required ten working days prior to commencement of *any* demolition activity (whether asbestos is present or not). In accordance with Title 8, CCR 341.9, written notification to the nearest Cal/OSHA district office is required at least 24 hours prior to certain asbestos-related work.

6.0 REPORT LIMITATIONS

This asbestos and LCP survey was conducted in conformance with generally accepted standards of practice for identifying and evaluating asbestos and LCP in structures. The survey addressed only those structures identified in Section 1.1. Due to the nature of structure surveys, asbestos and LCP use, and laboratory analytical limitations, some ACM or LCP at the project location may not have been identified. Spaces such as cavities, voids, crawlspaces, and pipe chases may have been concealed to our investigator. Previous renovation work may have concealed or covered spaces or materials or may have partially demolished materials and left debris in inaccessible areas. Additionally, renovation activities may have partially replaced ACM with indistinguishable non-ACM. Asbestos and/or LCP may exist in areas of the structures that were not accessible or sampled in conjunction with this TO.

During renovation or demolition operations, suspect materials may be uncovered which are different from those accessible for sampling during this assessment. Personnel in charge of renovation/demolition should be alerted to note materials uncovered during such activities that differ substantially from those included in this or previous assessment reports. If suspect ACM and/or LCP are found, additional sampling and analysis should be performed to determine if the materials contain asbestos or lead.

This report has been prepared exclusively for Caltrans. The information contained herein is only valid as of the date of the report and will require an update to reflect additional information obtained.

This report is not a comprehensive site characterization and should not be construed as such. The findings as presented in this report are predicated on the results of the limited sampling and laboratory testing performed. In addition, the information obtained is not intended to address potential impacts related to sources other than those specified herein. Therefore, the report should be deemed conclusive with respect to only the information obtained. We make no warranty, express or implied, with respect to the content of this report or any subsequent reports, correspondence or consultation. Geocon strived to perform the services summarized herein in accordance with the local standard of care in the geographic region at the time the services were rendered.

The contents of this report reflect the views of the author who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification or regulation.

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FIGURES

1. Vicinity Map
2. Site Plan

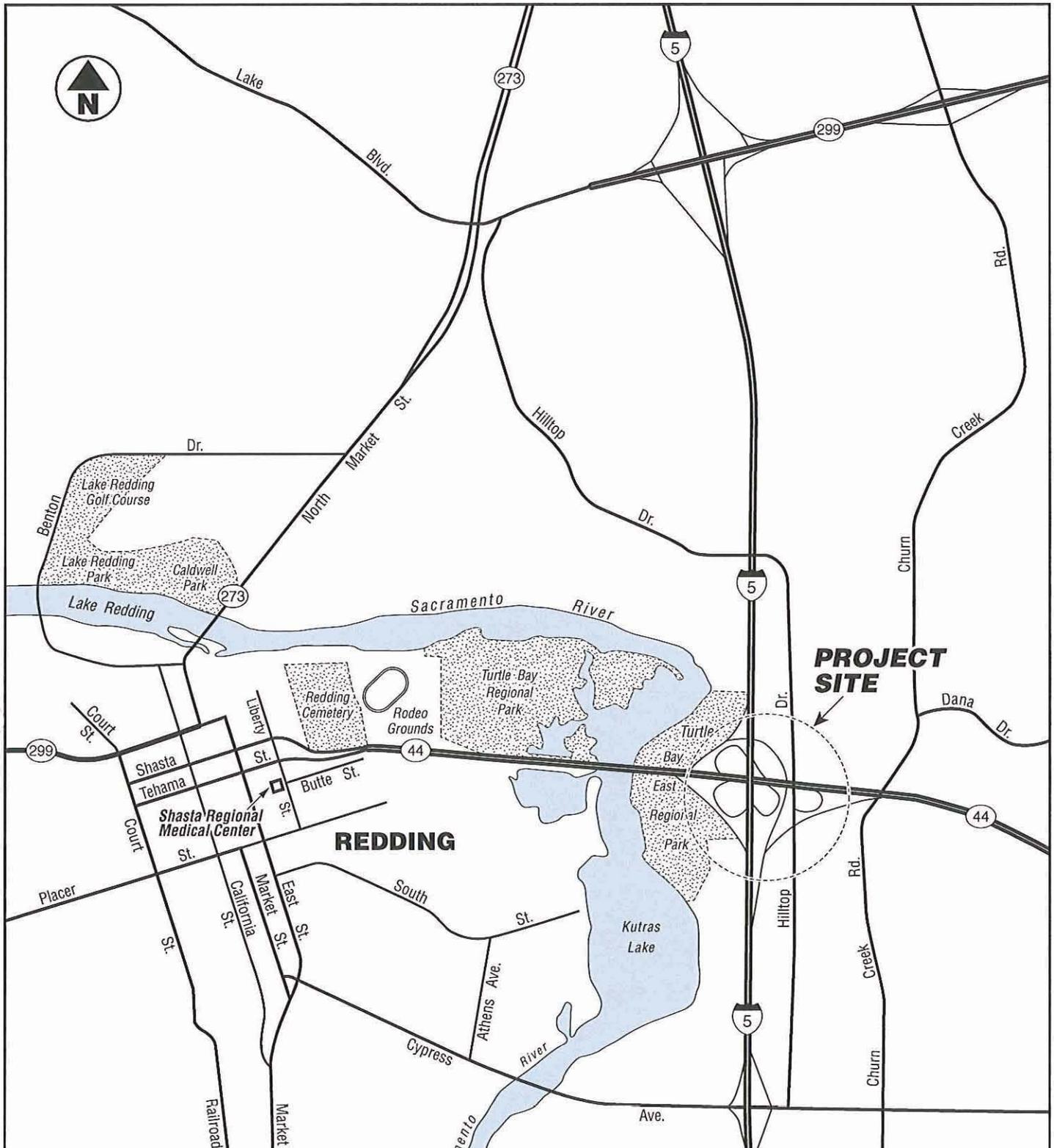
PHOTOGRAPHS (1 through 9)

TABLE

1. Summary of Asbestos Analytical Results

APPENDIX

- A. Analytical Laboratory Report and Chain-of-custody Documentation



GEOCON
CONSULTANTS, INC.

3160 GOLD VALLEY DR. - SUITE 800 - RANCHO CORDOVA, CA. 95742
PHONE 916 852-9118 - FAX 916 852-9132

Highway 44/5 Interchange

Redding,
California

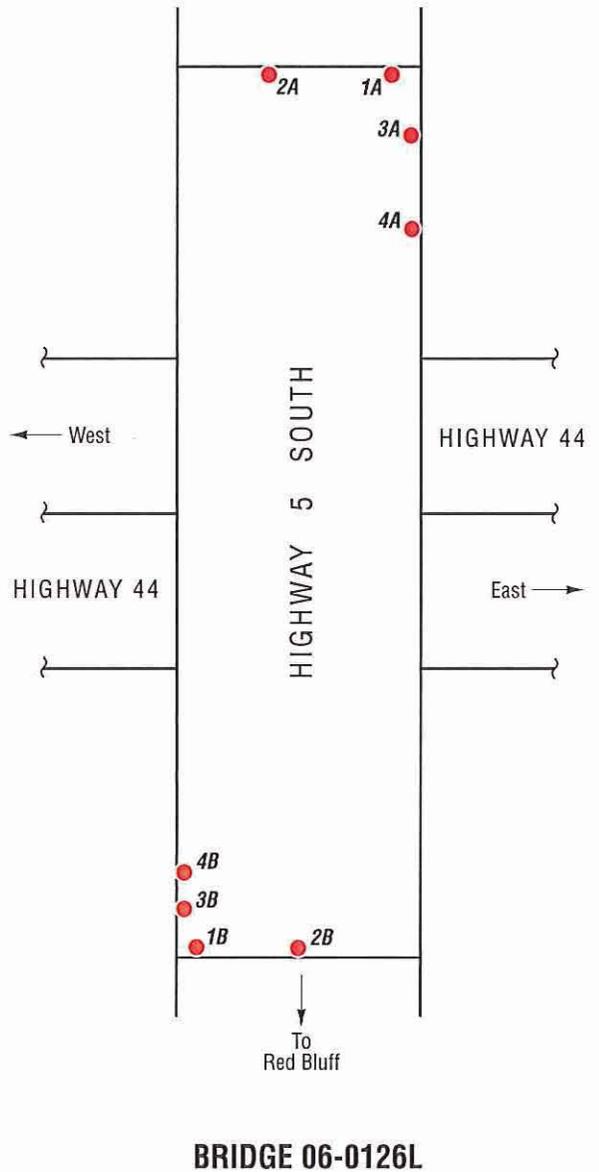
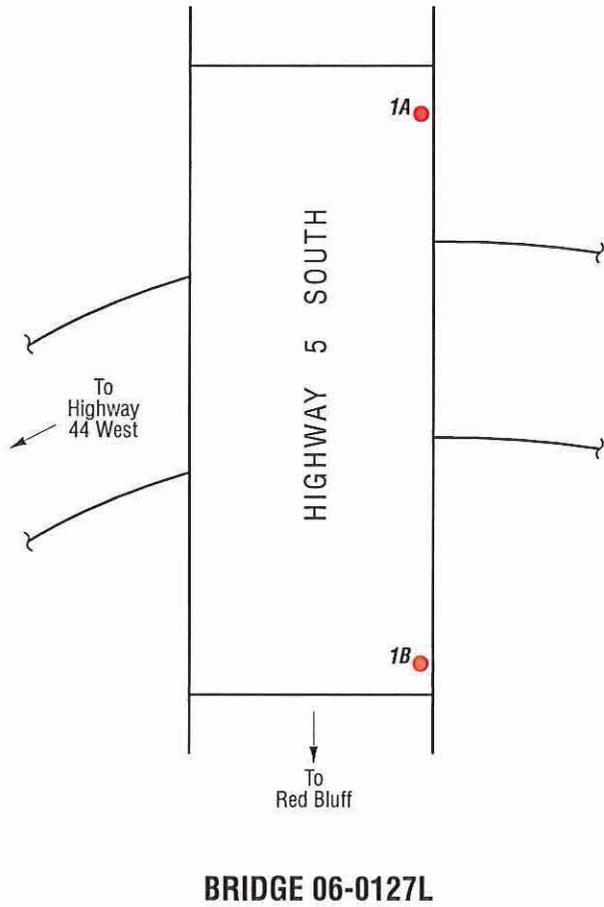
VICINITY MAP

GEOCON Proj. No. S9300-06-90

Task Order No. 90, EA 02-3C0001

June 2009

Figure 1



NO SCALE

LEGEND:

- Approximate Asbestos Sample Location



GEOCON
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PHONE 916 852-9118 - FAX 916 852-9132

Highway 44/5 Interchange

Redding,
California

SITE PLAN

GEOCON Proj. No. S9300-06-90

Task Order No. 90, EA 02-3C0001

June 2009

Figure 2



Photo 1 – Bridge 06-0127L in Redding, California



Photo 2 – Bridge 06-0127L abutment and concrete girders



Photo 3 – Bridge 06-0127L deck joint seal (non-suspect)



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CONSULTANTS, INC.

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PHOTOGRAPHS 1, 2, & 3

Highway 44/5 Interchange
Redding, California

S9300-06-90

Task Order No. 90

June 2009



Photo 4 – Bridge 06-0127L span joint (non-suspect)



Photo 5 – Bridge 06-0127L barrier rail assembly



Photo 6 – Bridge 06-0126L



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PHOTOGRAPHS 4, 5, & 6

Highway 44/5 Interchange
Redding, California

S9300-06-90

Task Order No. 90

June 2009



Photo 7 – Bridge 06-0126L abutment joint, concrete girders, and drainpipe



Photo 8 – Bridge 06-0126L deck joint seal (non-suspect)



Photo 9 – Bridge 06-0126L barrier rail assembly



GEOCON
CONSULTANTS, INC.

3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

PHOTOGRAPHS 7, 8, & 9

Highway 44/5 Interchange
Redding, California

S9300-06-90

Task Order No. 90

June 2009

TABLE 1
 SUMMARY OF ASBESTOS ANALYTICAL RESULTS
 HIGHWAY 44/5 INTERCHANGE
 CALTRANS CONTRACT 03A1638, TASK ORDER NO. 90, EA 02-3C0001
 REDDING, CALIFORNIA

Polarized Light Microscopy (PLM) - EPA Test Method 600/R-93/116

Bridge No.	Sample Group No.	Description of Material	Approximate Quantity	Friable	Site Photo	Asbestos Content
06-0127L	0127L-1	Thread compound	2 square feet	No	5	3%
	0126L-1	Expansion joint fill material	NA	NA	7	ND
06-0126L	0126L-2	Drainpipe	NA	NA	7	ND
	0126L-3	Thread compound	2 square feet	No	9	3%
	0126L-4	Asbestos sheet packing (barrier rail shims)	20 square feet	No	9	80%

Notes:

NA = Not applicable (no asbestos detected)

ND = Not detected

APPENDIX

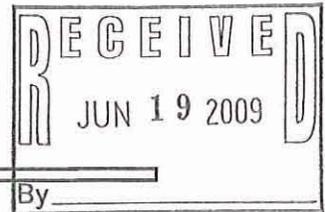
A



EMSL Analytical, Inc

2235 Polvorosa Ave, Suite 230, San Leandro, CA 94577

Phone: (510) 895-3675 Fax: (510) 895-3680 Email: milpitaslab@emsl.com



Attn: David Watts
Geocon Consultants
6671 Brisa Street
Livermore, CA 94550

Customer ID: GECN21
Customer PO: S9300-06-90
Received: 05/26/09 11:00 AM
EMSL Order: 090903995

Fax: (925) 371-5915 Phone: (925) 371-5900
Project: S9300-06-90, Hwy 44/5 IC, Shasta County, CA, Std
03A1368 Contract TAT

EMSL Proj: S9300-06-**
Analysis Date: 6/4/2009

By _____

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
0127L-1A Thread Compound 090903995-0001	Hwy 44/5 IC, Shasta County, CA	Gray Non-Fibrous Homogeneous		97% Non-fibrous (other)	3% Chrysotile
0127L-1B Thread Compound 090903995-0002	Hwy 44/5 IC, Shasta County, CA	Gray Non-Fibrous Homogeneous		97% Non-fibrous (other)	3% Chrysotile
0126L-1A Joint Fill Material 090903995-0003	Hwy 44/5 IC, Shasta County, CA	Black Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (other)	None Detected
0126L-1B Joint Fill Material 090903995-0004	Hwy 44/5 IC, Shasta County, CA	Black Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (other)	None Detected
0126L-2A Drain Pipe 090903995-0005	Hwy 44/5 IC, Shasta County, CA	Black Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (other)	None Detected
0126L-2B Drain Pipe 090903995-0006	Hwy 44/5 IC, Shasta County, CA	Black Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (other)	None Detected

Analyst(s)

Nonette Patron (10)


Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

LAP Lab Code 101048-3



EMSL Analytical, Inc

2235 Polvorosa Ave , Suite 230, San Leandro, CA 94577

Phone: (510) 895-3675 Fax: (510) 895-3680 Email: mlipitaslab@emsl.com

Attn: David Watts
Geocon Consultants
6671 Brisa Street
Livermore, CA 94550

Customer ID: GECN21
Customer PO: S9300-06-90
Received: 05/26/09 11:00 AM
EMSL Order: 090903995
EMSL Proj: S9300-06-**
Analysis Date: 6/4/2009

Fax: (925) 371-5915 Phone: (925) 371-5900
Project: S9300-06-90, Hwy 44/5 IC, Shasta County, CA, Std
03A1368 Contract TAT

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Table with 7 columns: Sample, Description, Appearance, % Fibrous, % Non-Fibrous, Asbestos % Type. Contains 4 rows of sample data.

Analyst(s)

Nonette Patron (10)

Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

NVLAP Lab Code 101048-3

040403945

Change of Form

Project No.: 59300-06-90 Client Name: GEOCON Analyze sample sets until posh. Yes No
 Report Results to: D. WATTS Office Location: LIVERMORE, CA Analytical Fee (per sample): \$ PLM Date(s) Inspected: 20 MAY 2009
 Consultants Ph. #: (925) 371-5900 Consultants Fax #: (925) 371-5900 Other Comments: STD 03A1368 CONTRACT TAT
 Site Name: Hwy 44/5 IC Building No. Site Address: SHASTA County, CA (10-044)

Material Code	Sample Number			Samples Collected													Not Sampled	Material Description
	Site No.	Bldg. No.	Material Link No.	A	B	C	D	E	F	G	H	I	J	K				
		0127L	1	X	X													THREAD Compound
		0126L	1	X	X													EXPANSION JOINT FILL mat'l
			2	X	X													DRAIN PIPE
			3	X	X													THREAD Compound
			4	X	X													SHIMS (BARRIER RAIL)

Relinquished by: Print Name: D. WATTS Received by: Print Name: UPS
 Signature: [Signature] Date/Time: 20 MAY 2009 1630 Signature: [Signature] Date/Time: 20 MAY 2009 1630

Relinquished by: Print Name: Received by: Print Name:
 Signature: Date/Time: 5/26/09 @ 11:00 AM Signature: Date/Time:

- | | | | | | |
|---|--|---|--|---|--|
| Flooring
CFT = Ceramic floor tile grout/mastic (M)
F = Floor material-Generic (M)
FMAS = Floor mastic (M)
FT = Vinyl composite tile floor (M)
FS = Vinyl composite sheet floor (M)
FLC = Floor leveling compound (M)
TERR = Terrazzo flooring (M) | Wall/Ceiling/Other
ACOU = Textured acoustical (sprayed) (S)
BBM = Baseboard mastic (M)
CM = Ceiling (unspecified type) (M)
CS = Ceiling (unspecified type) (S)
CP = Ceiling panel - Lay-in (M)
CMAS = Ceiling mastic (M)
CT = Ceiling tile - Splined or nailed (M)
CTG = Ceiling tile - Glued (M)
CWT = Ceramic wall tile grout & mastic (M)
DEBM = Debris (unspecified) (M)
DEBS = Debris (unspecified) (S)
DEBT = Debris (unspecified) (TSI)
DOOR = Door core insulation - Fire door (M) | Plumbing/TSI
OFM = Other friable material (M)
OFS = Other friable material (S)
ONFM = Other nonfriable material (M)
ONFS = Other nonfriable materials (S)
PL = Plaster (wall or ceiling) (S)
SIIR = Sheetrock (no joint compound) (M)
SIIRJC = Sheetrock with joint compound (M)
STUC = Stucco (S)
FP = Structural fireproofing (S)
TRAN = Transite panel (M)
TX = Surface texturing on walls/ceiling (S)
WM = Wall (unspecified type) (M)
WS = Wall (unspecified type) (S)
WT = Wall tile - Splined or nailed (M)
WTG = Wall tile - Glued on (M) | Roofing
RFL = Roofing material (M)
RFAG = Asphalt and gravel (M)
RFAT = Asphalt roof tile (M)
RFFLS = Flashing (M)
RFFLT = Felt material (M)
RFFMAS = Penetration mastic (M)
RFROL = Rolled sheet type (M)
RTRAN = Transite shingle (M) | Mech. equipment
MGSKT = Mech. equipment-Gasket (M)
MTANK = Mech. equipment-Tank insulation (TSI)
PI = Pipe insulation (type not specified) (TSI)
PICHIW = Pipe insulation-Chilled water system (TSI)
PICON = Pipe insulation-Condensate (TSI)
PIDCW = Pipe insulation-Domestic cold water (TSI)
PIDHW = Pipe insulation-Domestic hot water (TSI)
PIHHW = Pipe insulation-Heating hot water (TSI)
PISTM = Pipe insulation-Sicam (TSI)
PTRAN = Pipe-Transite (M) | Miscellaneous material
(M) = Miscellaneous material
(S) = Surfacing material
(TSI) = Thermal System Insulation |
|---|--|---|--|---|--|

10

M e m o r a n d u m

*Flex your power!
Be energy efficient!*

To: JOEY AQUINO
Senior Project Engineer, Branch 3
Division of Engineering Services
Structure Design – Mail Station 9-4/6F
Office of Bridge Design North

Date: May 13, 2009
File: 02-SHA-5-PM R15.43
East Redding Separation
(widen)
Bridge No. 06-0126L
EA 02-3C0001

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

Subject: Foundation Report

Introduction and Project Location

Per your request, the Office of Geotechnical Design North (OGD-N) has prepared this Foundation Report for the proposed widening on Interstate 5. This report includes review and evaluation of the existing East Redding Separation (Bridge No. 06-0126 R/L), As-Built bridge files and Borings R-08-001 and R-08-002. Data are shown on the “Log of Test Borings” (LOTB), which will be forwarded when complete.

The East Redding Separation has a Right and Left Structure. The right structure is 201 feet (ft) 8 inch long, and the left structure is 198 ft long. The structures are both four spans. These structures are located in the city of Redding, in Shasta County and were built in 1965 and the right structure was widened in 2000. The structures span over Highway 44.

The East Redding Separation widening is proposed to be constructed in the median to widen the southbound lanes of Interstate 5. It is proposed that the structure be supported on spread footings at all supports.

Elevations used in this report are based on the NAVD 88 vertical datum. The “As-Built” elevations were converted from NAVD 29 to NAVD 88 by using a conversion factor of +2.637 ft for this project.

Summary of Site Geology and Subsurface Conditions

Based on the Geologic Map of California, Redding Sheet (Jenkins, 1977), the site consists of Pleistocene nonmarine sedimentary deposits of well rounded boulders and gravel within a tan to brick-red iron-stained matrix of sand and some clay of the Red Bluff Formation (Qc).

Borings R-08-001 and R-08-002 were drilled in June 2008. The borings were drilled to an elevation of approximately 486.2 ft. Based on the subsurface investigation, earth materials consist of very stiff and hard gravelly lean clay, sandy lean clay with gravel, lean clay with gravel, silty sand, gravel, and cobbles.

Groundwater Evaluation

Groundwater was measured in R-08-002 at 551.194 ft on June 16, 2008 and 549.594 ft on October 28, 2008. However, groundwater elevations may fluctuate with seasonal precipitation.

Scour

Scour is not an issue at this site because the bridge is not in a water course.

Corrosion Evaluation

Based on soil samples collected throughout the project site, native soil beneath the site is non-corrosive.

Table 1. Soil Corrosion Test Summary.

Location	SIC Number	Minimum Resistivity (Ohm-Cm)	pH	Chloride Content (ppm)	Sulfate Content (ppm)
East Redding Separator	C726845	6148	6.01	n/a	n/a
East Redding Separator	C 726846	4770	6.31	n/a	n/a

Note: Caltrans currently considers a site to be corrosive to foundation elements if one or more of the following conditions exist: 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.

Seismicity

Based on the Caltrans California Seismic Hazard Map 1996, the controlling fault is the Battle Creek Fault with a maximum credible earthquake moment magnitude of $M_w=6.5$, and is located about 15.5 miles south of the site. The Peak Horizontal Bedrock Acceleration, based on the above map is estimated to be 0.2g. The potential for surface rupture at the site due to fault movement is considered insignificant since there are no known faults projecting towards or passing directly through the project site. The potential for liquefaction is considered minimal.

Based on the recent LOTB, a final Caltrans Seismic Design Criteria Acceleration Response Spectrum (ARS) curve corresponding to soil Profile Type C is recommended for design, (see Figure 1). Liquefaction potential is considered to be insignificant.

As-Built Foundation Data

According to the amended Foundation Memo dated December 19, 1960 by R. F. Hager and T. Sommers of Caltrans, "Spread footings are recommended for structure support. Footings designed for 5.0 TSF and founded at or below elevation 572.6 are recommended at bent locations. Abutment footings with design loads up to and including 2.5 TSF may be founded at or below elevation 573.6."

The right structure was widened in the year 2000. Abutment 1 and 5 are founded on spread footings and Bents 2, 3, and 4 are founded on 2 ft (600 mm) diameter CIDH piles.

According to the General Plan and Foundation Plan, dated June 10, 1963, the existing bridge is founded on spread footings at Abutments 1 and 5 and Bents 2, 3, and 4. The following table shows the locations and elevations of the original spread footings.

Table 2. As-Built Spread Footing Elevations for Bridge No. 06-0126R

Location	Foundation Type	Bottom of Footing Elevation (ft)
Abutment 1	Spread Footing	572.6
Bent 2 Left	Spread Footing	555.6
Bent 2 Right	Spread Footing	556.6
Bent 3 Left	Spread Footing	555.6
Bent 3 Right	Spread Footing	556.6
Bent 4 Left	Spread Footing	555.6
Bent 4 Right	Spread Footing	556.6
Abutment 5	Spread Footing	572.6

Table 3. As-Built Spread Footing Elevations for Bridge No. 06-0126L

Location	Foundation Type	Bottom of Footing Elevation (ft)
Abutment 1	Spread Footing	572.6
Bent 2 Left	Spread Footing	559.6
Bent 2 Right	Spread Footing	560.6
Bent 3 Left	Spread Footing	559.6
Bent 3 Right	Spread Footing	560.6
Bent 4 Left	Spread Footing	559.6
Bent 4 Right	Spread Footing	560.6
Abutment 5	Spread Footing	572.6

The right structure was widened in the year 2001. Abutment 1 and 5 are founded on spread footings and Bents 2, 3, and 4 are founded on 2 ft diameter CIDH piles.

The following Pile Data Table is from the "Addendum to Final Foundation Recommendations" dated September 14, 1999 by Bogdan Komorniczak of Caltrans for the widening of the right structure.

Table 4. As-Built 1999 As-Built Foundation Data Table for Bridge Number 06-0126R
Widen^{1,2}

Location	Foundation Type	Design Load (ksf)	Nominal Resistance (kips)		Bottom of Footing Elevation or Design Tip Elevation (ft)	Specified Tip Elevation (m)
			Compression	Tension		
Abutment 1	Spread Footings	2.5	N/A	N/A	568.9	N/A
Bent 2	2.0 ft CIDH	N/A	32.5	12.0	520.0 (1) 530.8 (2)	520.0 (1)
Bent 3	2.0 ft CIDH	N/A	32.5	12.0	520.0 (1) 530.8 (2)	520.0 (1)
Bent 4	2.0 ft CIDH	N/A	32.5	12.0	520.0 (1) 530.8 (2)	520.0 (1)
Abutment 5	Spread Footings	2.5	N/A	N/A	568.9	N/A

Pile Tip is controlled by (1) Compression (2) Tension.

The bottom of the pile cap for Bents 2, 3, and 4 is at elevation 555.1 ft.

Foundation Recommendations

The following foundation recommendations are based on the General Plan dated May 29, 2008, conversations with Mr. Joey Aquino and Mufeed Khalaf from the Division of Structure Design and the subsurface investigations conducted at the site. Spread footing foundations are recommended at all support locations.

The nominal bearing resistance of the soil underlying the footings was calculated using the formulation provided by AASHTO Bridge Design Specification, Section 10.6.3.1.2a.

**Table 5. Foundation Design Recommendations for Spread Footings, Bridge No. 06-0126
 Left.^{1,2}**

Support Location	Footing Size (ft)		Bottom of Footing Elevation (ft)	Minimum Footing Embedment Depth (ft)	WSD (LRFD Service-I Limit State Load)		LRFD		
	B	L			Permissible Gross Contact Stress (Ksf)	Allowable Gross Bearing Capacity (ksf)	Service	Strength $\phi = 0.45$	Extreme Event $\phi = 1.0$
							Net Permissible Contact Stress, (ksf)	Factored Gross Nominal Bearing Resistance, (ksf)	Factored Gross Nominal Bearing Resistance, (ksf)
Abut 1	6.5	27.8	572.6 ³	4.38	3.5	5	N/A	N/A	N/A
Bent 2	8.0	8.0	558.0	6.0	N/A	N/A	7.0	24.75	55.0
Bent 3	8.0	8.0	558.0	5.5	N/A	N/A	7.0	24.75	55.0
Bent 4	8.0	8.0	558.0	9.0	N/A	N/A	7.0	24.75	55.0
Abut 5	6.5	27.8	572.6 ³	8.2	3.5	5	N/A	N/A	N/A

- Notes:
- 1) Recommendations are based on the foundation geometry and the load data provided by the Structure Design in the Foundation Design Data Sheet. The footing contact area is taken as equal to the effective footing area, where applicable.
 - 2) See MTD 4-1 for definitions and applications of the recommended design parameters.
 - 3) The top 2 feet of soil below the bottom of footing at Abutment 1 and Abutment 5 shall be removed and replaced with structural backfill compacted to at least 95% relative compaction.

The footings at Abutment 1 and Abutment 5 are designed to match the footing of the existing bridge. If the existing footings are lower, then the new footings shall be lowered to the same elevation.

Tie downs at Bent 2, Bent 3, and Bent 4 with a force of 36 kips per tie down will require an unbonded length of 20 feet. There will be four tie downs per footing.

GENERAL NOTES TO DESIGNER

1. Support locations are to be plotted on the Log of Test Borings, in plan view, as stated in "Memos to Designers" 4-2. The plotting of the support locations should be made prior to the foundation review.

Construction Considerations

1. Spread Footings

1. If excavations for spread footings expose unsuitable materials for support of the proposed structure foundations, the unsuitable materials shall be removed and replaced with structural backfill compacted to at least 95% relative compaction, or the bottom of footing elevation shall be lowered to undisturbed competent material.
2. Groundwater should not be encountered during footing excavation.
3. Spread footings shall be placed neat against competent materials. All loose materials shall be removed prior to placement of concrete.
4. All footing excavations are to be inspected and approved by this Office or a representative of the Office of Structure Construction, when excavations are completed to the bottom of footing and prior to placement of concrete.
5. The top 2 feet of soil below the bottom of footing at Abutment 1 and Abutment 5 shall be removed and replaced with structural backfill compacted to at least 95% relative compaction.

PROJECT INFORMATION

Standard Special Provisions S5-280, "Project Information," discloses to bidders and contractors a list of pertinent information available for their inspection prior to bid opening. The following is an excerpt from SSP S5-280 disclosing information originating from Geotechnical Services. Items listed to be included in the Information Handout will be provided in Acrobat (.pdf) format to the addressees of this report via electronic mail.

Data and information attached with the project plans are:

- A. *Log of Test Borings for East Redding Separation, Bridge Number 06-0126 L.*

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

- A. *Foundation Report for East Redding Separation, Bridge Number 06-0126 L, dated May 13, 2009.*

Data and information available for inspection at the District Office:

- A. *N/A*

Data and information available for inspection at the Transportation Laboratory:

A. *N/A*

If any conceptual changes are made during final project design, the Office of Geotechnical Design North should review those changes to determine if these foundation recommendations are still applicable. If there are any questions, please contact Joe Kaump at 916 227-1044.


JOSEPH KAUMP, PG 7837
Engineering Geologist
Geotechnical Design - North




REZA MAHALLATI, P.E. 49374
Senior Materials and Research Engineer
Geotechnical Design - North



Attachment: ARS curve

C:

Reid Buell
R.E. Pending
Structure OE (E-copy)
Eskinder Taddese-PCE (E-copy)
Lerose Lane DME (E-copy)
GDN File
GS File

East Redding Sep (Widen)
Bridge No. 06-0126L
02-3C0001

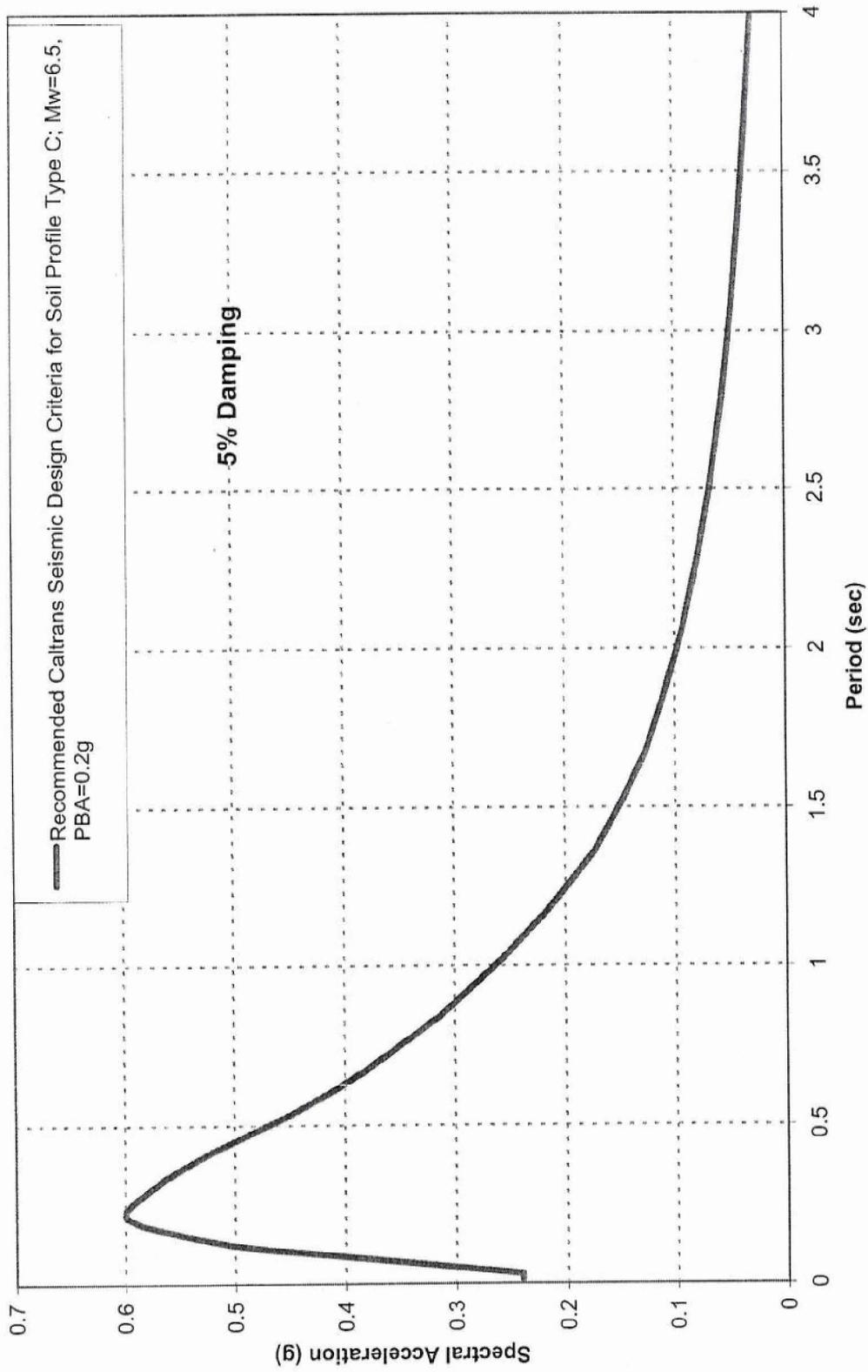


Figure 1. Acceleration Response Spectrum Recommended for Design

Memorandum

*Flex your power!
Be energy efficient!*

To: JOEY AQUINO
Senior Project Engineer, Branch 3
Division of Engineering Services
Structure Design – Mail Station 9-4/6F
Office of Bridge Design North

Date: July 7, 2009

File: 02-SHA-5-PM R15.56
Westbound Connector U.C.
(widen)
Bridge No. 06-0127 L
EA 02-3C0001

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

Subject: Foundation Report Addendum
THIS MEMO SUPERSEDES AND REPLACES THE MEMO DATED May 13, 2009

Introduction and Project Location

Per your request, the Office of Geotechnical Design North (OGD-N) has prepared this Foundation Report for the proposed widening on Interstate 5. This report includes review and evaluation of the existing Westbound Connector Undercrossing (Bridge No. 06-0127 R/L), As-Built bridge files and Borings R-08-001 and R-08-002. Data are shown on the “Log of Test Borings” (LOTB), which will be forwarded when complete.

The Westbound Connector Undercrossing has a Right and Left Structure. The right structure is 131 feet (ft) $\frac{3}{4}$ inch (in) long, and the left structure is 131 ft $\frac{1}{4}$ in long. The structures are both three spans. These structures are located in the city of Redding, in Shasta County and were built in 1965 and the right structure was widened in 2001. The structures span over northbound Interstate 5 exit to westbound Highway 44.

The Westbound Connector Undercrossing widening is proposed to be constructed in the median to widen the southbound lanes of Interstate 5. It is proposed that the structure be supported on spread footings at all supports.

Elevations used in this report are based on the NAVD 88 vertical datum. The “As-Built” elevations were converted from NGVD 29 to NAVD 88 by using a conversion factor of +2.637 ft for this project.

Summary of Site Geology and Subsurface Conditions

Based on the Geologic Map of California, Redding Sheet (Jenkins, 1977), the site consists of Pleistocene nonmarine sedimentary deposits of well rounded boulders and gravel within a tan to brick-red iron-stained matrix of sand and some clay of the Red Bluff Formation (Qc).

Borings R-08-001 and R-08-002 were drilled in June 2008. The borings were drilled to an elevation of approximately 482.5 feet. Based on the subsurface investigation, earth materials consist of very stiff and hard gravelly lean clay, sandy lean clay with gravel, lean clay with gravel, silty sand, gravel, and cobbles.

Groundwater Evaluation

Groundwater was measured at 551.126 ft in R-08-002 on October 28, 2008. However, groundwater elevations may fluctuate with seasonal precipitation.

Scour

Scour is not an issue at this site because the bridge is not in a water course.

Corrosion Evaluation

Based on soil samples collected throughout the project site, native soil beneath the site is non-corrosive.

Table 1. Soil Corrosion Test Summary.

Location	SIC Number	Minimum Resistivity (Ohm-Cm)	pH	Chloride Content (ppm)	Sulfate Content (ppm)
Westbound Connector	C726847	1691	6.99	n/a	n/a
Westbound Connector	C 726848	2345	6.60	n/a	n/a

Note: Caltrans currently considers a site to be corrosive to foundation elements if one or more of the following conditions exist: 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.

Seismicity

Based on the Caltrans California Seismic Hazard Map 1996, the controlling fault is the Battle Creek Fault with a maximum credible earthquake moment magnitude of $M_w=6.5$, and is located about 15.5 miles south of the site. The Peak Horizontal Bedrock Acceleration, based on the above map is estimated to be 0.2g. The potential for surface rupture at the site due to fault movement is considered insignificant since there are no known faults projecting towards or passing directly through the project site. The potential for liquefaction is considered minimal.

Based on the recent LOTB, a final Caltrans Seismic Design Criteria Acceleration Response Spectrum (ARS) curve corresponding to soil Profile Type C is recommended for design, (see Figure 1). Liquefaction potential is considered to be insignificant.

As-Built Foundation Data

According to the General Plan and Foundation Plan, dated June 10, 1963, the existing bridge is founded on spread footings at Abutments 1 and 4 and Bents 2 and 3. The following table shows the locations and elevations of the original spread footings. The elevations in Table 2 and 3 have been corrected to the NAVD 88 datum.

Table 2. As-Built Spread Footing Elevations for Bridge No. 06-0127R

Location	Foundation Type	Bottom of Footing Elevation (ft)
Abutment 1	Spread Footing	574.6
Bent 2 Left	Spread Footing	558.6
Bent 2 Right	Spread Footing	559.6
Bent 3 Left	Spread Footing	562.6
Bent 3 Right	Spread Footing	563.6
Abutment 4	Spread Footing	574.6

Table 3. As-Built Spread Footing Elevations for Bridge No. 06-0127L

Location	Foundation Type	Bottom of Footing Elevation (ft)
Abutment 1	Spread Footing	574.6
Bent 2 Left	Spread Footing	553.6
Bent 2 Right	Spread Footing	554.6
Bent 3 Left	Spread Footing	557.6
Bent 3 Right	Spread Footing	558.6
Abutment 4	Spread Footing	574.6

The right structure was widened in the year 2001. The Abutment 1 and 4 widenings are founded on spread footings and Bents 2 and 4 widenings are founded on 2 ft diameter CIDH piles.

The following table shows the locations and elevations of the widening of the right structure in the year 2001. Abutment 1 and 4 were founded on spread footings and Bent 2 and 3 are founded on CIDH piles with a diameter of 2 feet.

Table 4. As-Built Foundation Data Table for Bridge No. 06-0127R Widen

Location	Foundation Type	Design Load (ksf)	Nominal Resistance (kips)		Bottom of Footing Elevation or Design Tip Elevation (ft)	Specified Tip Elevation (ft)
			Compression	Tension		
Abutment 1	Spread Footings	4.0	N/A	N/A	574.6	N/A
Bent 2	2 ft CIDH	N/A	330	130	521.7 (1) 534.8 (2)	521.7 (1)
Bent 3	2 ft CIDH	N/A	330	130	521.7 (1) 534.8 (2)	521.7 (1)
Abutment 4	Spread Footings	4.0	N/A	N/A	574.6	N/A

Pile Tip is controlled by (1) Compression (2) Tension.

The bottom of the pile cap for Bent 2 is at elevation 557.1 ft and Bent 3 is at elevation 560.4 ft.

Foundation Recommendations

The following foundation recommendations are based on the General Plan dated March 25, 2008, conversations with Mr. Joey Aquino and Art Herrera from the Division of Structure Design and the subsurface investigations conducted at the site. Spread footing foundations are recommended at all support locations.

The nominal bearing resistance of the soil underlying the footings was calculated using the formulation provided by AASHTO Bridge Design Specification, Section 10.6.3.1.2a.

**Table 5. Foundation Design Recommendations for Spread Footings, Bridge No. 06-0127
 Left.^{1,2}**

Support Location	Footing Size (ft)		Bottom of Footing Elevation (ft)	Minimum Footing Embedment Depth (ft)	WSD (LRFD Service-I Limit State Load)		LRFD		
	B	L			Permissible Gross Contact Stress (ksf)	Allowable Gross Bearing Capacity (ksf)	Service	Strength $\phi = 0.45$	Extreme Event $\phi = 1.0$
							Net Permissible Contact Stress, (ksf)	Factored Gross Nominal Bearing Resistance, (ksf)	Factored Gross Nominal Bearing Resistance, (ksf)
Abut 1	6.0	24.25	571 ⁽³⁾	8.2	4.0	4.0	N/A	N/A	N/A
Bent 2	10.0	19.0	554.5	10.6	N/A	N/A	5.0	21.0	46.0
Bent 3	10.0	19.0	558.5	7.9	N/A	N/A	5.0	21.0	46.0
Abut 4	6.0	24.25	571 ⁽³⁾	8.5	4.0	4.0	N/A	N/A	N/A

- Notes:
- 1) Recommendations are based on the foundation geometry and the load data provided by the Structure Design in the Foundation Design Data Sheet. The footing contact area is taken as equal to the effective footing area, where applicable.
 - 2) See MTD 4-1 for definitions and applications of the recommended design parameters.
 - 3) The top 2 feet of soil below the bottom of footing at Abutment 1 and Abutment 4 shall be removed and replaced with structural backfill compacted to at least 95% relative compaction.

GENERAL NOTES TO DESIGNER

1. Support locations are to be plotted on the **Log of Test Borings**, in plan view, as stated in "Memos to Designers" 4-2. The plotting of the support locations should be made prior to the foundation review.

Construction Considerations

1. Spread Footings

1. If excavations for spread footings expose unsuitable materials for support of the proposed structure foundations, the unsuitable materials shall be removed and replaced with structural backfill compacted to at least 95% relative compaction, or the bottom of footing elevation shall be lowered to undisturbed competent material.
2. Groundwater should not be encountered during footing excavation.
3. Spread footings shall be placed neat against competent materials. All loose materials shall be removed prior to placement of concrete.

4. All footing excavations are to be inspected and approved by this Office or a representative of the Office of Structure Construction, when excavations are completed to the bottom of footing and prior to placement of concrete.
5. The top 2 feet of soil below the bottom of footing at Abutment 1 and Abutment 4 shall be removed and replaced with structural backfill compacted to at least 95% relative compaction.

PROJECT INFORMATION

Standard Special Provisions S5-280, "Project Information," discloses to bidders and contractors a list of pertinent information available for their inspection prior to bid opening. The following is an excerpt from SSP S5-280 disclosing information originating from Geotechnical Services. Items listed to be included in the Information Handout will be provided in Acrobat (.pdf) format to the addressees of this report via electronic mail.

Data and information attached with the project plans are:

- A. *Log of Test Borings for Westbound Connector U.C., Bridge Number 06-0127 L.*

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

- A. *Foundation Report Addendum for Westbound Connector U.C., Bridge Number 06-0127 L, dated July 7, 2009.*

Data and information available for inspection at the District Office:

- A. *N/A*

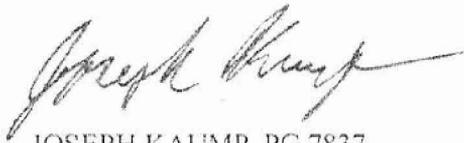
Data and information available for inspection at the Transportation Laboratory:

- A. *N/A*

JOEY AQUINO
July 7, 2009
Page 7

Foundation Report Addendum
Westbound Connector U.C.
Bridge No. 06-0127L
EA 02-3C0001

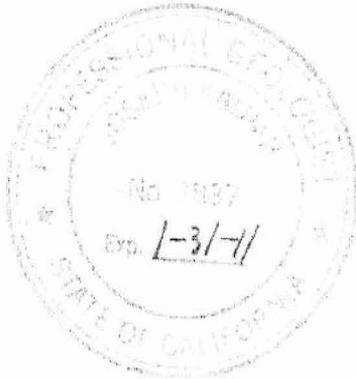
If any conceptual changes are made during final project design, the Office of Geotechnical Design North should review those changes to determine if these foundation recommendations are still applicable. If there are any questions, please contact Joe Kaump at 916 227-1044.



JOSEPH KAUMP, PG 7837
Engineering Geologist
Geotechnical Design - North



REZA MAHALLATI, P.E. 49374
Senior Materials and Research Engineer
Geotechnical Design - North



Attachment: ARS curve

C:

Reid Buell
R.E. Pending
Structure OE (E-copy)
Eskinder Taddese-PCE (E-copy)
Lerose Lane DME (E-copy)
GDN File
GS File

Westbound Connector UC (Widen)
Bridge No. 06-0127L
02-3C0001

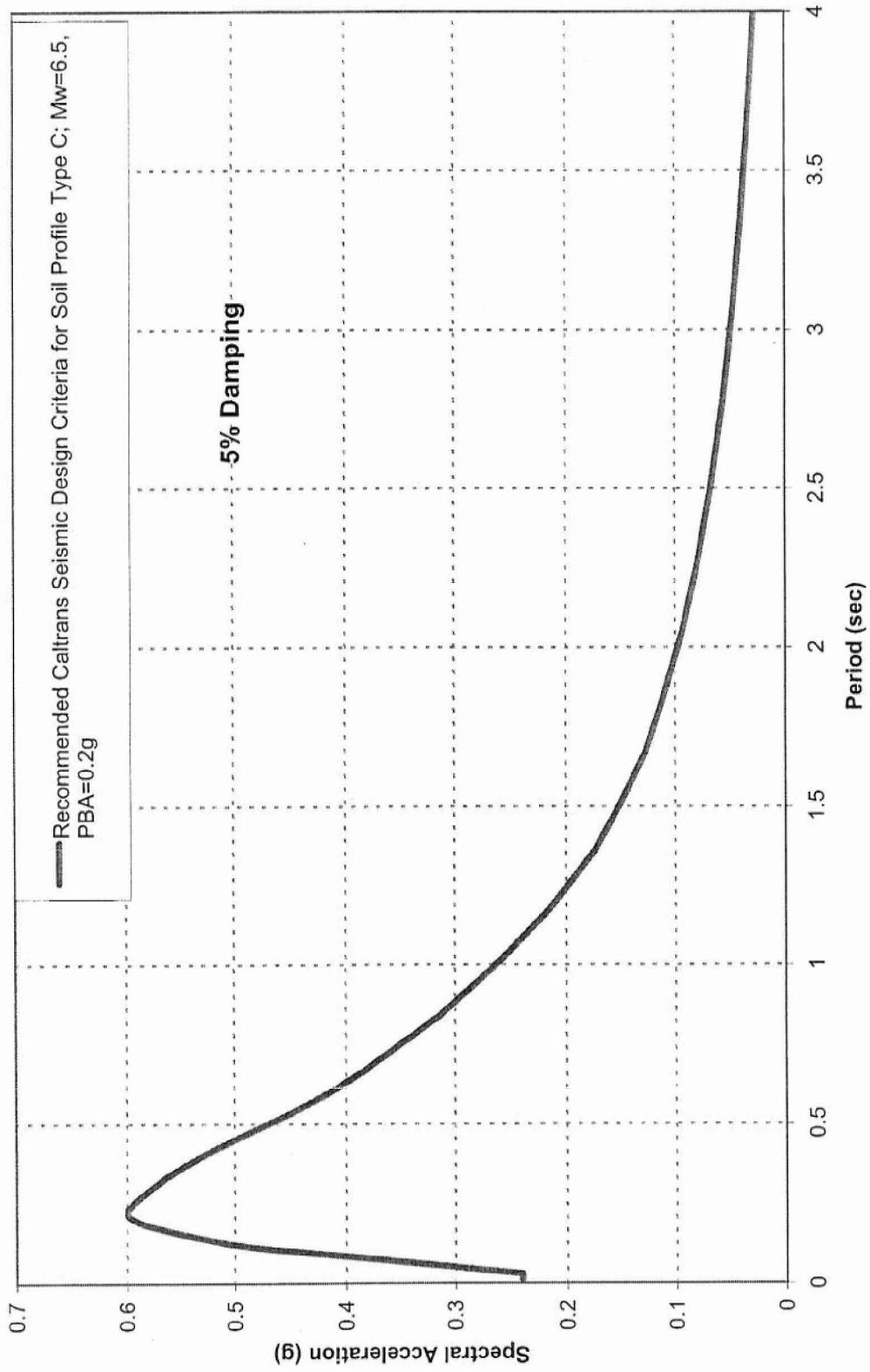


Figure 1. Acceleration Response Spectrum Recommended for Design



July 7, 2009
E-090-080-600

State of California Department of Transportation
Attn: Arturo Robles
P.O. Box 496073
Redding, CA 96049

Subject: Cal Trans Service – Work Order No. 09-083

Dear Mr. Robles,

Redding Electric Utility (REU) is pleased to provide electric utility service to your facility. Included with this letter is a Developer/Customer responsibility sheet that is based on City of Redding Resolution No. 97-83, which is currently in effect. This resolution establishes electric service policy for city residents.

The Developer/Customer must furnish and install all items checked on the enclosed responsibility sheet and coordinate with the building/public works inspectors and REU staff to ensure proper installation. All work shall be performed in accordance with attached Work Order No. 09-083. The installation requirements for these electric supply facilities are shown in the City of Redding Public Works Construction Standards book and are also available online at www.ci.redding.ca.us. From the "City Departments" drop down menu, go to "Electric Utility" and you will find the "Construction Standards" link on the left side of the page. Use the Public Works Reference Dwg. number(s) that are X-marked on the drawing sent to you with this letter. If you have any questions or do not have access to the web, you may call (530) 339-7314 for assistance.

The Developer/Customer responsibility sheet, drawings and costs (if any) are valid for six (6) months from the date of this letter unless City Council action precipitates a change in the City of Redding's electric service policy. After six (6) months, the responsibility sheet, drawings, and costs may need to be revised, but only after the Developer/Customer notifies REU of his continued commitment to complete the subject project and also provides REU new dates for service. If your project is delayed more than six months, ongoing changes in our distribution system may require engineering modifications to the proposed service layout prior to your actual project construction.

Please sign this letter below and return it to REU in the enclosed postage paid envelope as an acknowledgement of receipt and concurrence with the proposed electrical service plan. REU will not take further action on this project until your signed acknowledgement has been received.

We look forward to working with you to fulfill the requirements of this project. If you have any questions concerning the drawings, our service policy, or the proposed point of service, please contact Jack Pingree, the Electric Utility Service Planner for this project, at (530) 339-7328.

Cordially,

Brian King
Assistant Director-Distribution

BK/rg 390
Attachments

Signed:
(Owner or Authorized Agent)

7/8/09
Date

cc: Drawings: REU Power Control Center

**DEVELOPER / CUSTOMER
RESPONSIBILITY SHEET**

- SINGLE FAMILY DWELLING
- MULTIPLE FAMILY DWELLING
- SUBDIVISION--RESIDENTIAL
- SUBDIVISION--COMMERCIAL
- MOBILE HOME PARK
- COMMERCIAL PROJECT

W.O. 09_083
 TITLE: CAL TRANS SERVICE
 LOC: PALISADES AVE 2200' S/O HILLTOP DR

										P	FURNISH CONDUITS
										S	(AS SPECIFIED BY COR)
										P	INSTALL CONDUITS
										S	(AS SPECIFIED BY COR)
										P	FURNISH CONDUCTOR
										S	(AS SPECIFIED BY COR)
										P	INSTALL CONDUCTOR
										S	CONNECT CONDUCTOR
										P	AT PANEL
										S	TRENCH AND BACKFILL
											FURNISH TRANSFORMER PAD
											INSTALL TRANSFORMER PAD
										P	FURNISH PULL BOXES
										S	INSTALL PULL BOXES AND
										P	VAULTS AS REQUIRED
										S	FURNISH AND INSTALL
											MAIN PANEL SWEEP
											INSTALL CONDUIT RISER SWEEP
											AT COR/JOINT POLE
											FURNISH AND INSTALL STREET
											LIGHT STANDARD, FOOTING, ARM,
											LUMINAIRE, AND WIRE
											SUBMIT:
											SITE PLAN
											SINGLE LINE DWG.
											LOAD AND BALANCE CALCULATIONS
											DEDICATE AND RECORD
											REQUIRED EASEMENTS

LEGEND :
 X = REQUIRED BY CUSTOMER/DEVELOPER
 P = PRIMARY
 S = SECONDARY

COMMENTS : _____

Questions? Call J.Pingree at (530) 339-7328

- The Developer/Customer shall perform all trenching and bedding per City of Redding Construction Standards page 620.00 through 624.20 and City of Redding Electric Utility Drawings CS101 and/or CS1010. The Developer/Customer shall furnish and install (unless otherwise shown) all conduits for service lines.
- The Developer/Customer shall provide all required 5' conduits (relative to secondary or service) for primary service locations. All conduits shall be placed on all conduit terminations. All ends must be from the City storage location.
- All conduits installed by the Developer/Customer shall be cleaned by water hoses and/or scrub.
- All conduits without conductors shall have a minimum 1250lb. polyester MULETAPE® or an equal (especially designed for duct purposes) pull line provided & installed by the Developer/Customer.
- All conduit wiring cable shall be installed as well as listed cable insulation. Therefore, Developer/Customer shall use all care.
- All conduit wiring cable shall be installed as well as listed cable insulation. Therefore, Developer/Customer shall use all care.
- Reading Drawing CS1210. Conduits shall be installed in accordance with the manufacturer's instructions. All joints shall be glued per manufacturer's specification and provide a water tight fit.
- Developer/Customer shall furnish and install all low voltage (0-600V) cable. Cable shall be VISE insulated, NEC type U.S.C. Aluminum, unless otherwise specified. Service cables are normally sized to match service panel rating.
- The Developer/Customer shall furnish and install all low voltage (0-600V) cable. Cable shall be VISE insulated, NEC type normally furnished for the service entrance. The City of Redding will normally furnish for the service entrance, 3" x 5' boxes and smaller. The City of Redding will normally furnish for the service entrance, any required boxes larger than 3' x 5'.
- Conduit runs shall be limited to not more than 100 feet. The maximum length of conduit with not more than 270' deflection throughout the conduit run unless shown otherwise on City of Redding Electric Utility approved plans.
- All conduit and wire shall be installed by the Electric Utility Engineering staff.
- If there shall be no splices in low voltage (600V) wire except in City of Redding (City ordinance).
- If new splices over 200 amp rating shall be served by an underground service (City ordinance).
- Developer/Customer shall furnish, install, own and maintain conduit 2 feet from his other building line to the terminating facility. All service conductors shall be terminated by the Developer/Customer at his service entrance panel. All terminations will be by NEMA pad compression lugs except for 200 amp and smaller residential service conductors larger than 4/0 must use NEMA pad compression lugs. All connections will be properly torqued and installed to manufacturer's specifications. Approved corrosion inhibitor will be applied on wire ends at all connections.
- The Developer/Customer shall be responsible for the termination of low voltage wire and conduit due to relocation or increased load shall be the responsibility of the Developer/Customer.
- The City of Redding Electric Utility will determine all points of service. Service points normally shall provide minimum cable lengths and provide accessibility for expansion.
- The neutral conductor of low voltage (500V) triplex cable shall be insulated with a yellow pigmented XIP compound for easy identification. Single conductor cable used for neutral without yellow marking (pigmentation) shall be identified at each splicing point by approved white electrical tape.
- The Developer/Customer shall provide all necessary elements for Electric Supply Facilities as required by the Elec. Dept. of Redding. The Developer/Customer shall furnish and install street light poles, conduit, standard, arm, luminaire, and conductor per City of Redding Construction Standard CS111, CS112.
- It is the responsibility of the Developer/Customer to set all primary boxes so that the box lid is at the same elevation as the lowest final elevation of the adjacent sidewalk, or pavement, or (as the case may be) the ground surface. All secondary boxes will be set at the same elevation and slope of the adjacent sidewalk, or pavement, or (as the case may be) the ground surface. All conduit and substructures to be used by the Electric Utility must be inspected prior to installation. The Developer/Customer shall be responsible for the installation of all buried facilities for an inspection. Call 224-430, 48 hrs in advance. All utility installations shall be scheduled in accordance with the Electric Utility Inspector.
- All utility installations shall be scheduled in accordance with the Electric Utility Inspector.
- This Engineer/Inspector will be responsible for the inspection of all utility installations. The City of Redding will provide all necessary equipment required as a condition of approval of the Developer/Customer project.
- Improvements/alterations to existing utility facilities shall be the responsibility of the Developer/Customer.
- Electric on the line of facilities placed in the trench.
- Developer/Customer shall be responsible to locate and properly place electric utility facilities within utility easements and public right-of-way.

REV. NOTE 5

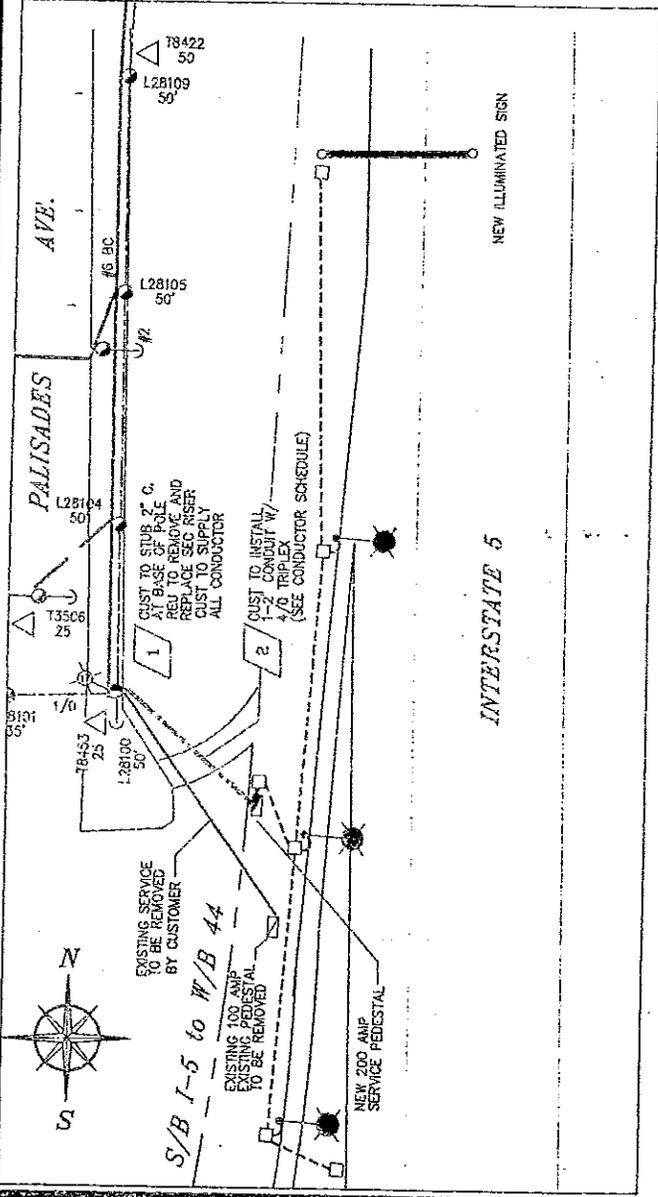
ELECTRIC SERVICE CONSTRUCTION REQUIREMENTS

REV. DATE: 3/7/07
 DRAWN BY: J. PRINSBE
 CHECKED BY: J. PRINSBE
 FIELD BOOK NO: 1-28
 ATLAS NO: 1-28

WORK-ORDER NO. 09-083
 DWG. SIZE C
 SHEET 1 OF 1

CAL TRANS SERVICE
 PALISADES AVE
 2200' S/O HILLTOP DR

REDDING ELECTRIC UTILITY



CUSTOMER TO FURNISH AND INSTALL
 -TRENCH AND BACKFILL
 -ALL 2" CONDUIT
 -ALL SECONDARY CONDUCTORS, PROVIDE ADEQUATE CONDUCTORS FOR RED INSTALLED POLE RISER

REU TO FURNISH AND INSTALL
 RISER ASSEMBLY

SYMBOL	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL PRICE
X	4" CONDUIT (PRIMARY)	121.00	62.00	7,502.00
X	4" CONDUIT (SECONDARY)	32.00	62.00	1,984.00
X	1" PIG	53.00	62.00	3,286.00
X	1" PIG	31.00	54.00	1,674.00
X	3" PIG	21.00	34.00	714.00
X	60A PADIANT SWITCH W/VALVE	1	119.00	119.00
X	VALVE (P/RT/4/30)	1	224.00	224.00
X	SPACE BOX (7x5)	1	342.00	342.00
X	SPACE BOX (6x4/2/2)	1	324.00	324.00
X	SPACE BOX (2)	1	24.00	24.00
X	LIGHT W/ST. L. SHALL BE NOTED OTHERWISE	1	24.00	24.00
X	SERVICE STR W/CAP	1	52.00	52.00
X	SERVICE	1	52.00	52.00
X	PROPOSED POLE W/RISER	1	507.00	507.00
X	ELECTRIC MOWER	1	342.00	342.00
X	CONDUIT CAP	1	-	-
X	EXISTING POLE, ONLY IF JOINTLY OWNED	1	-	-
X	EXISTING OVERHEAD TRANSMISSION	1	-	-

SYMBOL	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL PRICE
3-300	PARALLEL 3-300 XIP-USE	1	7.05	7.05
3-300	TRIPLEX 3-300 & 1-20 XIP-USE	1	7.05	7.05
3-300	TRIPLEX 2-300 & 1-1/0 XIP-USE	1	7.05	7.05
4/0	TRIPLEX 2-4/0 & 1-2/0 XIP-USE	1	7.05	7.05
1/0	TRIPLEX 2-1/0 & 1/2 XIP-USE	1	7.05	7.05
#6	TRIPLEX 2-#6 XIP-USE	1	7.05	7.05

DESIGN BY: J. PRINSBE
 DRAWN BY: J. PRINSBE
 CHECKED BY: J. PRINSBE
 FIELD BOOK NO: 1-28
 ATLAS NO: 1-28

DATE: 7/31/08

SCALE: 1"=100'

APPROVED BY: ASSISTANT DIRECTOR-DISTRIBUTION
 [Signature]

VERIFY SCALE: BAR IS ONE INCH ON ORIGINAL DRAWING
 IF NOT ONE INCH ON THIS DRAWING, SCALES ACCORDINGLY.