FOR CONTRACT NO.: 03-2C8444

INFORMATION HANDOUT

WATER QUALITY

MATERIALS INFORMATION

FOUNDATION REPORT
ASBESTOS CLEARANCE REPORTS TITLED "TEM FINAL AIR SAMPLE RESULTS"
LEAD PAINT SAMPLE RESULTS
LEAD DUST WIPE SAMPLE RESULTS

ROUTE: 03-Sac-5501

State of California
Department of Transportation

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: **MR. SEAN SAMUEL**
Branch Chief
Structural Design Branch 2
Office of Transportation Architecture

Date: May 8, 2007

File: Translab Phase 4
03-2C8441

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

Subject: Foundation Report for Folsom Translab Phase 4

Introduction

Per your request dated January 8, 2007, we are providing this Foundation Report in support of the two new proposed buildings, which are part of the Folsom Translab Phase 4 project. These new buildings consist of a Storage Building and a Repair Shop. The proposed buildings will replace existing buildings ("A" buildings) that are to be demolished. Plate No. 1 shows the approximate location of the site. This report summarizes our investigations and provides our recommended geotechnical design parameters.

Existing Facilities and Proposed Improvements

The proposed building sites are located towards the western end of the Folsom Translab, owned by the California Department of Transportation. The location of the proposed Storage Building is currently occupied by a long building that is being used for storage and a workshop. A few small storage buildings and a parking area currently occupy the location of the proposed Repair Shop. The existing buildings will be removed prior to the foundation construction for the proposed new buildings.

It is our understanding that both buildings will be single story structures. One of the buildings will be used mainly for storage while the other building will be used primarily as a repair shop. The footprint of the proposed Storage Building is approximately 300 feet by 80 feet and the footprint of the proposed Repair Shop is approximately 141 feet by 60 feet as shown on Plate No. 2. The support for structural loading will be obtained from continuous perimeter strip footings and spread footings supporting pre-engineered columns. The buildings will also have a slab placed on grade that will support loads from

equipment and materials placed inside the buildings.

Physical Setting

The physical setting of the project site and surrounding area was reviewed to provide climate, topography and drainage, man-made and natural features, and geology to aid in project design and construction planning. The following is a discussion of this information gathered during our review:

Climate

According to the Western Regional Climate Center for 1941-2005, the average annual precipitation at the Sacramento WSO, located approximately 4 miles to the north west and at a comparable elevation of the project site, is about 17.31 inches. The majority of this precipitation (over 96 percent) falls between October and May. The average annual air temperature is approximately 60.9° F with the highest average daily maximum of 92.8° F in July and the lowest average daily minimum of 37.9° F in January.

Topography and Drainage

A map was viewed at http://topozone.com/ to determine the topographic features in the region of the project area. The site is located in the Great Valley geomorphic province of California. The general terrain is flat with an elevation of approximately 34 feet above sea level at the project site. Within 1 mile of the project site the elevations range from 27 feet to 49 feet above sea level. Most of the localized drainage is generally trending to the west. The topography can be seen on Plate No. 3.

Regional Geology

The California Department of Conservation, Division of Mines and Geology Geologic Map of California, Sacramento Sheet, 1981, was used to determine the geologic formations at the project location. A section from this map showing the project location is attached as Plate No. 4. The project location is mapped as being in an area of alluvium of the Riverbank Formation (Qr), consisting of poorly sorted stream and basin deposits ranging from clay to boulders. This formation occurred during the Quaternary Period of the Cenozoic Era, between 10 thousand and 1.6 million years ago.

The State of California, Air Resources Board (ARB) Map of California Showing Principal Asbestos Deposits has been reviewed to determine the potential that asbestos deposits will be encountered in the project area. According to this map, the project site is not located in an area of naturally occurring asbestos.

Subsurface Investigation Program

On March 6 and March 7, 2007 a subsurface exploration program, consisting of five borings, was performed. Borings B-1 and B-4 were drilled to depths of 31.5 feet, Borings B-2 and B-5 were drilled to depths of 26.5 feet, and Boring B-3 was drilled to a depth of 30.3 feet for the purpose of the building foundations. Plate No. 5 shows the approximate locations of the borings.

The borings were drilled using a truck mounted Acker drill rig. The borings were advanced using a 6-inch diameter hollow stem auger. Soil samples were recovered from these borings by driving a 1.375-inch inner diameter split spoon sampler 1.50 feet into the subsurface with a 140-pound automatic and safety hammer dropped 2.50 feet. The number of hammer blows required to drive the sampler the last 12 inches into the ground was recorded on the log of borings. Samples recovered from the spilt spoon sampler were used to classify the subsurface soils. The logs of test borings (LOTB) have been submitted to the Geotechnical Services, Office of Geotechnical Support, Branch D – Contracts, Graphics, and Records and will be forwarded when completed. Mr. Craig Hannenian of the Contracts, Graphics, and Records branch may be contacted directly at (916) 227-7055 for further information on the LOTB.

In addition to the five borings performed at the project site, five subsurface exploratory cone penetration tests (CPT) were also performed. On April 10, 2007 personnel from the Geotechnical Services, Office of Geotechnical Support, Branch E - Geotechnical Instrumentation performed the CPT to depths ranging from 11 feet to 24 feet. The CPT were abandoned at these depths due to the inability of the CPT to advance through the very dense gravelly soil layers as seen in the soil borings. A full sized LOTB sheet for the CPT is also being prepared by the Contracts, Graphics and Records branch.

Subsurface Conditions

Based on the subsurface investigation, the foundation material at the site consists of clay, silt, sand, gravel, and mixtures thereof ranging from soft and loose to very stiff and very dense. The soft and loose soil layers were typically located within 15 feet of the ground surface. Bedrock and groundwater were not encountered in the borings during our investigation. Complete boring logs are presented in Appendix A, numbered 1 through 7.

Laboratory Testing

Laboratory testing was performed to verify the classification of the soil, determine corrosiveness, and to determine if the soil is adequate for recompaction, at the project location. The following laboratory tests were performed on selected samples obtained from the borings:

Mechanical Analysis – CTM 203
Plasticity Index – CTM 204
Corrosion – CTM 643
Sulfates – CTM 417
Chlorides – CTM 422
Compaction Curve – CTM 216

Corrosion

The Department currently defines a corrosive area as an area where the soil contains more than 500 ppm of chlorides, or more than 2000 ppm of sulfates, or has a pH of 5.5 or less. With the exception of MSE walls, chloride and sulfate tests are not required if the minimum resistivity is greater than 1000 ohm-cm. Based on the lab results, the soil in the project area is considered non-corrosive. The corrosion test results are summarized in Table 1 below.

Table 1: Corrosion Test Results

Sample No.	Depth (ft)	pH	Minimum Resistivity (ohm-cm)	Sulfate Content (ppm)	Chloride Content (ppm)
B2-2	2.5-5.0	7.15	4200	N/A	N/A
B4-2	2.5-5.0	7.31	4600	N/A	N/A

Compaction

Laboratory compaction tests were conducted and are summarized in Table 2 below. The compaction curves are also included in Appendix A.

Table 2: Compaction Test Results

Sample No.	Soil Type	Depth (ft)	Maximum Dry Density (pcf)	Optimum Mositure Content (%)
B3-2	Clayey Sand (SC)	2.5-7.5	131.7	8.8
B5-2	Silty Clay (CL)	2.5-7.5	123.2	11.2

Seismicity

We reviewed the Department's California Seismic Hazard Map dated 1996. The map indicates that the controlling fault is the Coast Ranges-Sierran Block (CSB, reverse, including thrust), which is located approximately 29.8 miles southwest of the project location. The fault is expected to be capable of producing a Maximum Credible Earthquake (MCE) moment magnitude of M_w = 7.00. The peak horizontal bedrock acceleration at this site, based on Caltrans California Seismic Hazard Map is estimated to be 0.2g. The potential for surface rupture at this site due to fault movement is considered insignificant since there are no known faults projecting toward or passing directly through the project site.

According to the 1997 edition of the Uniform Building Code (UBC) this structure is located in Seismic Zone 3 (UBC Figure 16-2) and the geology corresponds to Soil Profile Type S_D (UBC Table 16-J). Based on the maximum moment magnitude and the slip rate

of 0.06 in/yr (1.5 mm/yr), the seismic source is Type B (UBC 16-U). At this site, the near-source acceleration factor, N_a, equals 1.0 (UBC Table 16-S), and the near source velocity factor, N_v, equals 1.0 (UBC Table 16-T). The Seismic Coefficients are $C_a = 0.36$ (UBC Table 16-Q) and $C_v = 0.54$ (UBC Table 16-R). Using equations from Figure 16-3 of the UBC the control periods are $T_s = 0.6$ seconds and $T_o = 0.12$ seconds. Plate No. 6 presents the recommended UBC 1997 acceleration response spectrum to be used for design.

Conclusions and Recommendations

The following recommendations are based on our subsurface investigation, review of information relevant to the project physical setting, and information forwarded by your Office.

The existing ground conditions are suitable for shallow perimeter strip footings and square footings provided that the following recommendations are used for design. It was assumed, based on the foundation plans forwarded by your Office and telephone conversations with Ms. Thi Moniz, that the strip footing will have a width of 1.5 feet and the square footings will have sides of 7 feet. Both of the footing types will be embedded at least 3 feet below the lowest adjacent finish grade. If the following recommendations are met, the foundations may be designed using an allowable bearing capacity of 2000 psf. (Please note that after telephone conversations with Ms. Thi Moniz the allowable bearing capacity was lowered from 3000 psf to 2000 psf).

The upper 2 feet of native soils below the bottom of the proposed strip and square footings shall be removed and recompacted to at least 95% relative compaction as seen on Plate No. 7. The soil should be placed in lifts not exceeding 8 inches and moistened (or dried) to obtain near optimum moisture content. The lifts should then be compacted to 95% relative compaction before the addition of the next lift. The top 8 inches of soil under the reinforced concrete slab should be scarified, brought to near optimum moisture content, and also compacted to at least 95% relative compaction.

Assuming that a bearing pressure of 2000 psf (or less) is planned for the 1.5 feet wide strip footings and 7 feet wide square footings, our investigations indicate that a total settlement of less than 0.5 inches with a differential settlement of less than 0.25 inches is expected.

Since the building is located on flat ground, the lateral forces on either side of the footing will be equal. However, if conditions warrant the need for a retaining structure, an active equivalent fluid weight of 43 lb/ft^3 and a passive equivalent fluid weight of 332 lb/ft^3 are recommended. A sliding coefficient of 0.35 is recommended between concrete and soil.

Water was not encountered at the time of drilling and it is not anticipated that the water table will rise or be drawn up to the bottom of the concrete slab. However, where moisture is not desired, a moisture barrier should be used. A vinyl membrane with a minimum thickness of 0.25 inches should be placed overlying 4 inches of washed sand or crushed rock. The membrane should be covered by 3 inches of sand to aid in uniform curing of the concrete. Care should be taken not to puncture the membrane.

Construction Considerations

As previously mentioned, the ground water was not encountered during the subsurface investigation. Hence, groundwater should not affect the planned construction activities.

The laboratory results indicate that some of the native soils will be over the optimum moisture content. As such, the additional effort to dry the material will likely be required to facilitate proper compaction. We recommend that removal and recompaction of the soil occur during the summer as the soil is expected to be at its lowest moisture content.

Project Information

Standard Special Provision 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 addressee(s) of this report via electronic mail.

Data and information attached with the project plans are:

A. *Log of Test Borings, Soil Borings, performed in March 2007.*
B. *Log of Test Borings, Cone Penetration Test, performed in April 2007.*

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

A. Foundation Report for Folsom Translab Phase 4 dated May 8, 2007.

Data and Information available for inspection at the District Office:

A. None

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

A. None

We recommend that we be provided the opportunity for a general review of the geotechnical aspects of the PS&E package to check that the geotechnical recommendations are properly interpreted and implemented.

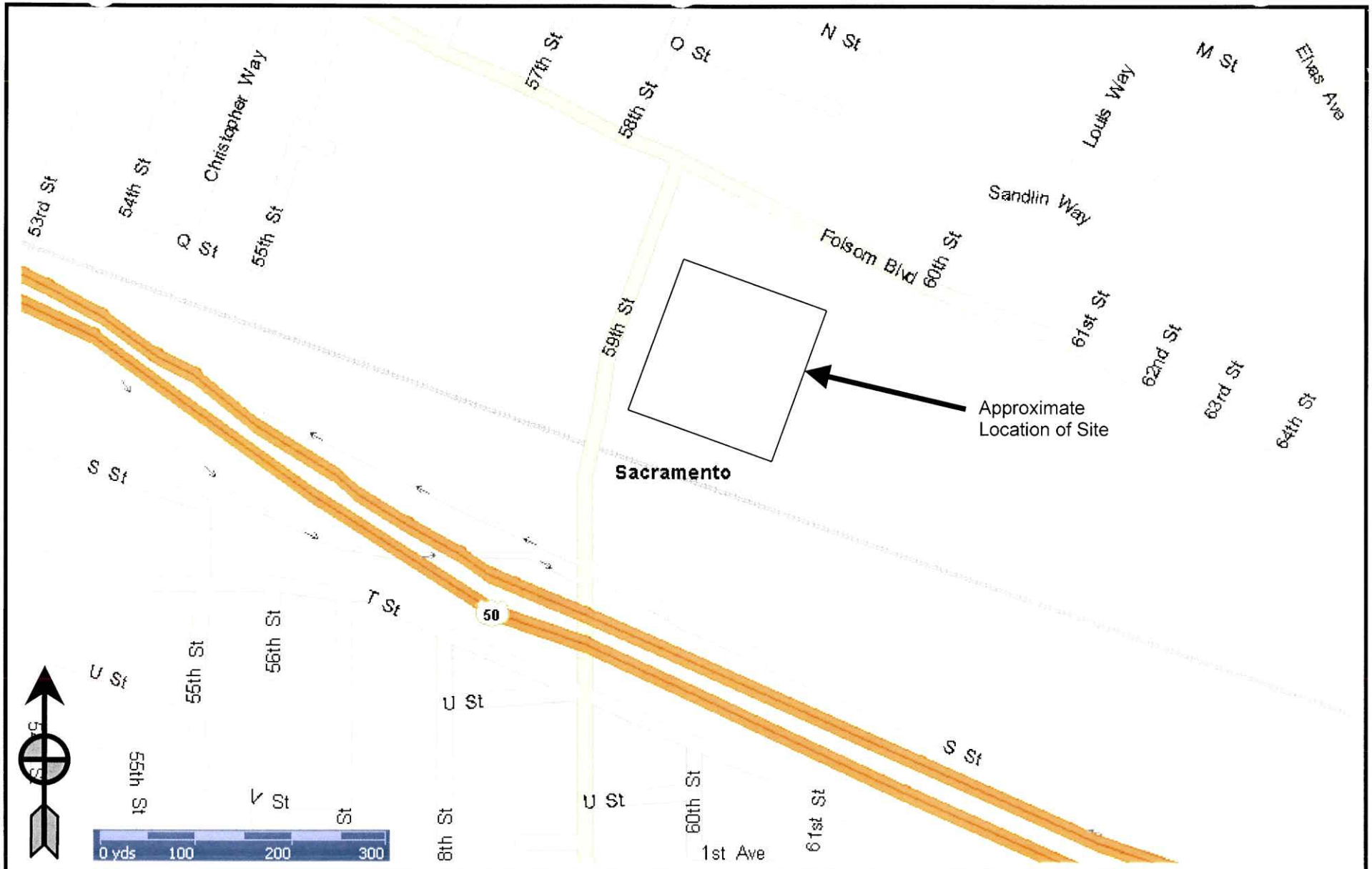
If you have any questions or comments, please call me at (916) 227-7153.

MICHAEL ENGELMANN, PE
Transportation Engineer
Office of Geotechnical Design – North
Branch E

REZA MAHALLATI, PE
Senior Materials and Research Engineer
Office of Geotechnical Design – North

Attachments

c: John Huang
R.E. Pending
Structure OE (E-copy)
Eskinder Taddese (E-copy)
Joe Peterson (E-copy)
GDN File
GS File Room



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

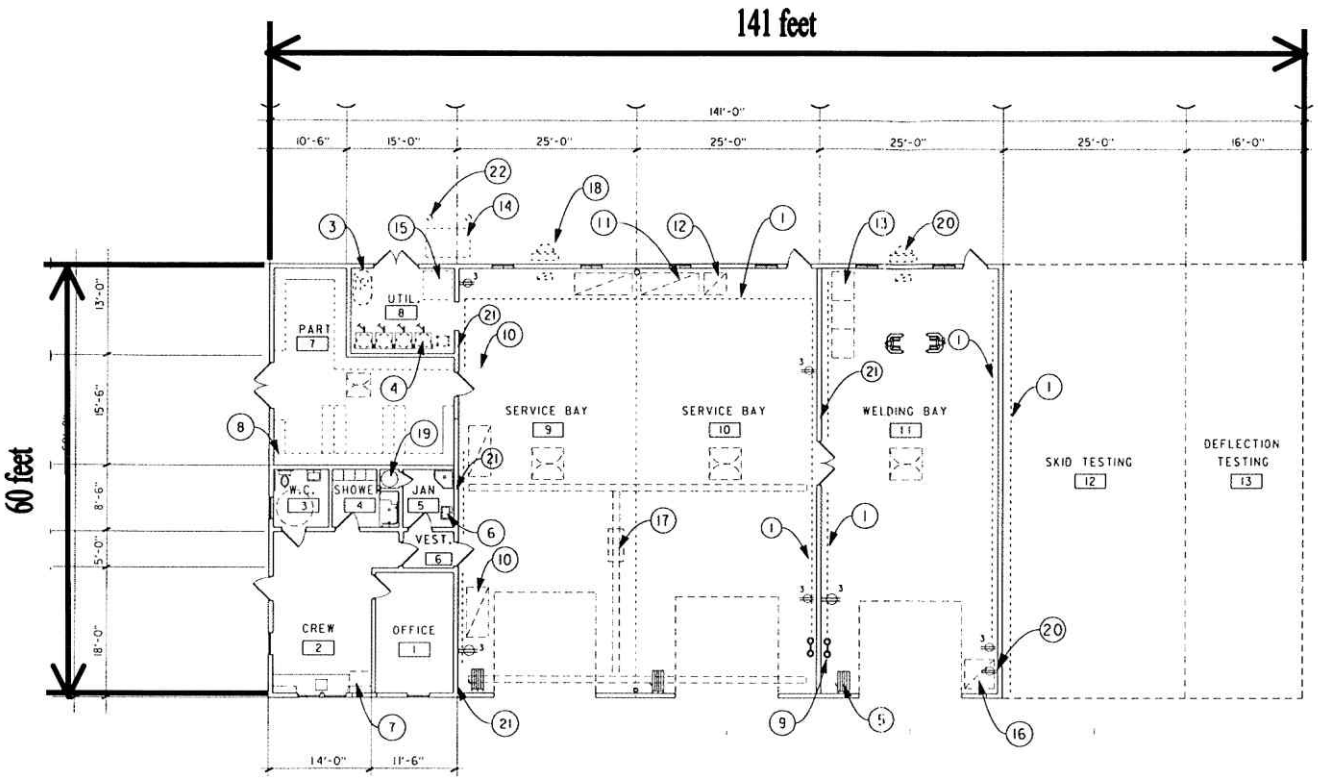
EA: 03-2C8441

Date: April 2007

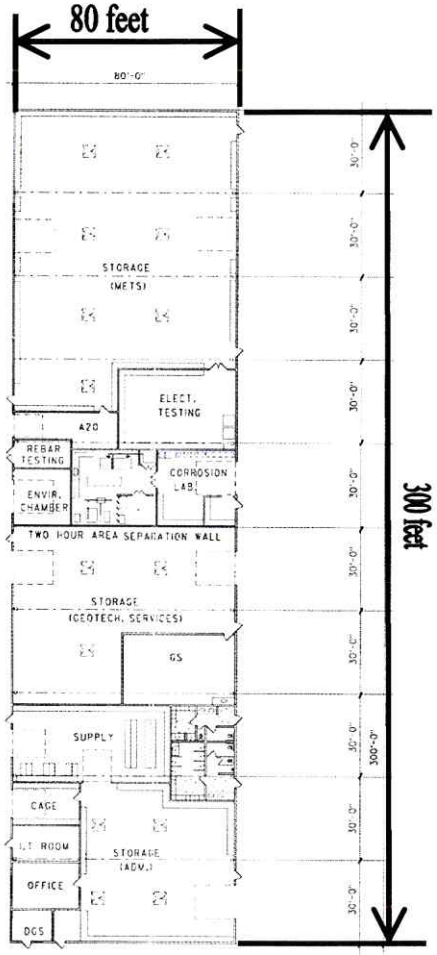
LOCATION MAP

Plate No. 1

FOLSOM TRANSLAB PHASE 4
FOUNDATION INVESTIGATION REPORT



Repair Shop



Storage Building

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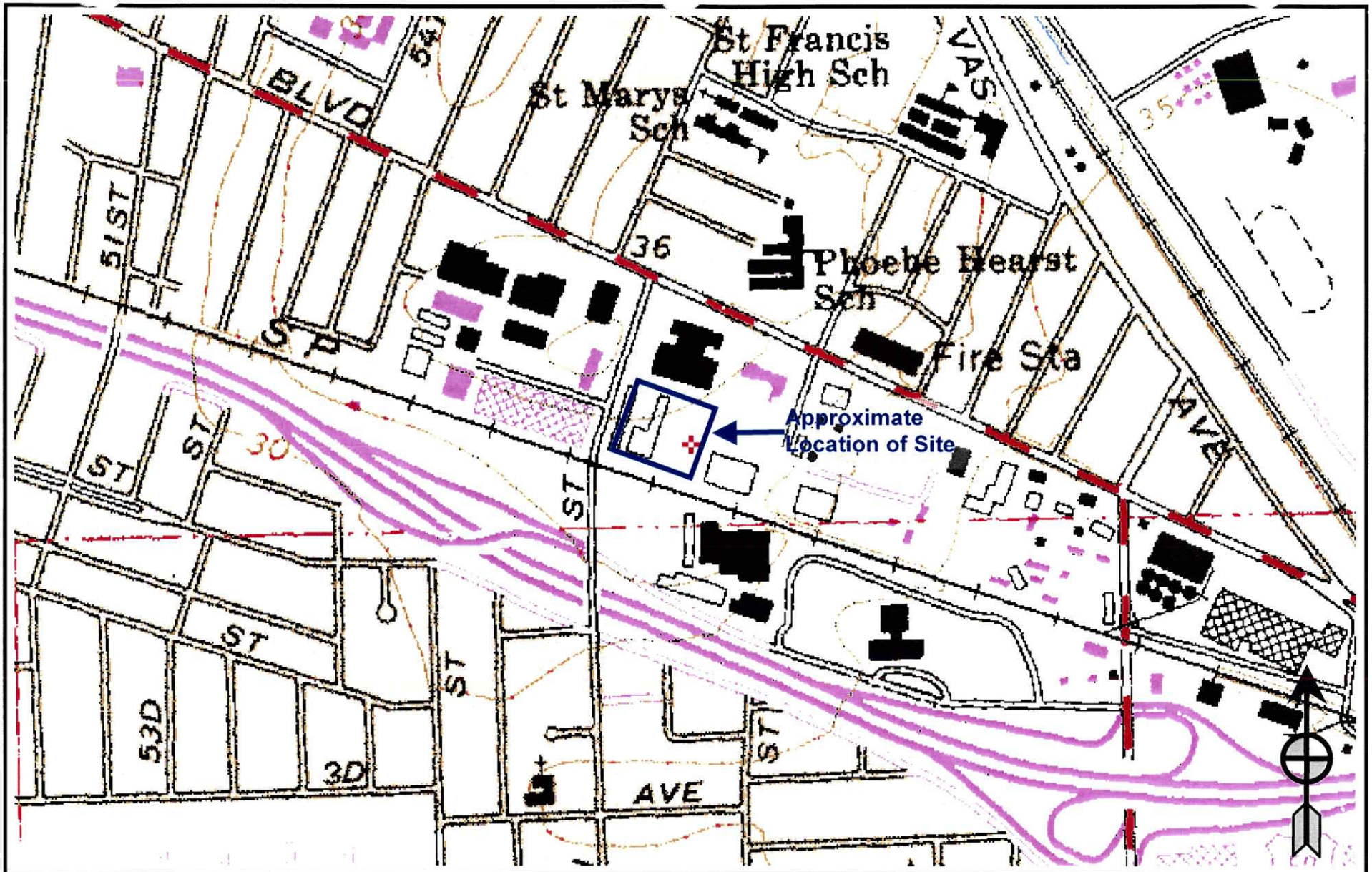
Date: April 2007

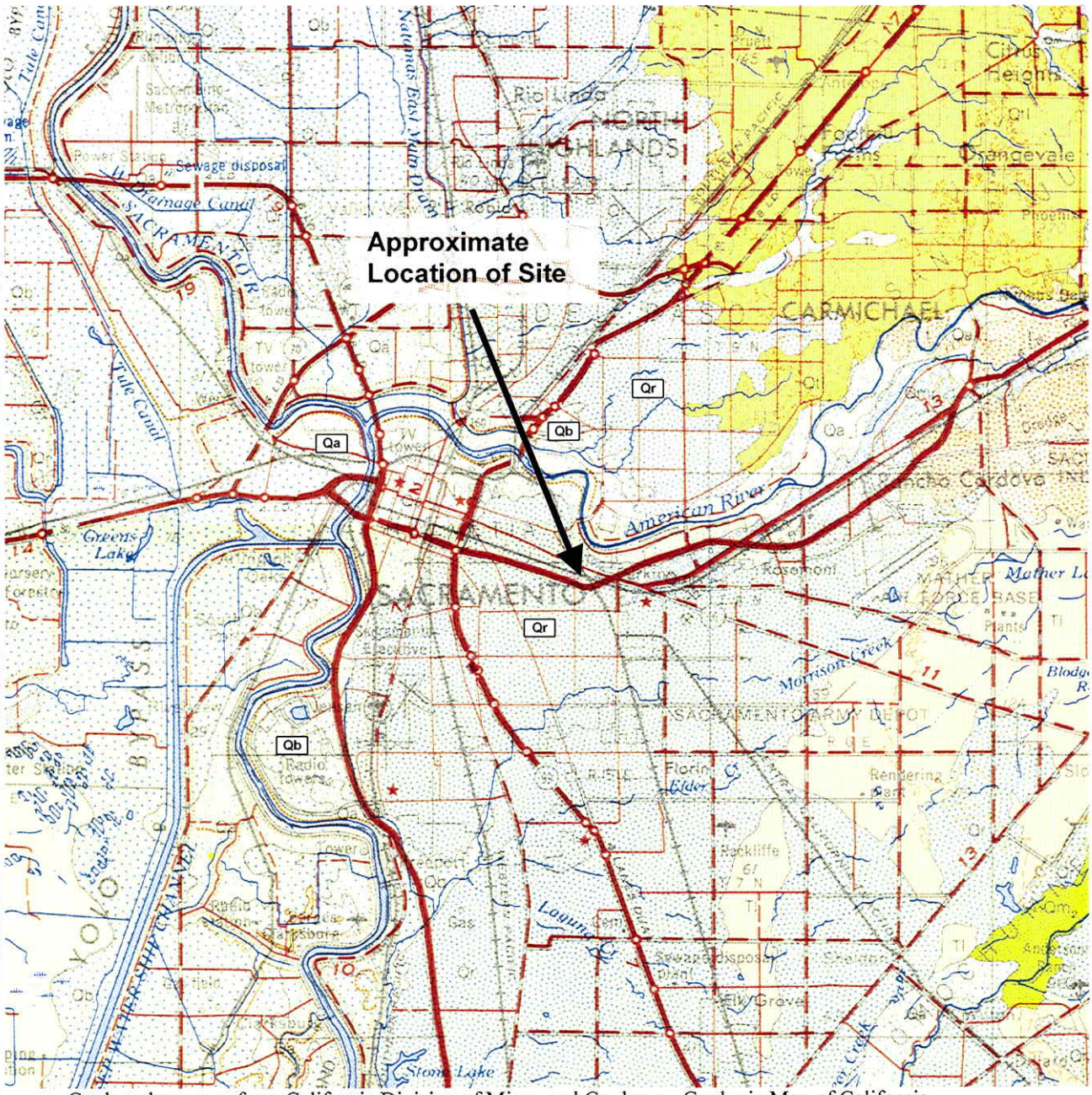
BUILDING LAYOUT MAP

Plate No. 2

FOLSOM TRANSLAB PHASE 4
FOUNDATION INVESTIGATION REPORT



CALTRANS Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 03-2C8441 Date: April 2007	**TOPOGRAPHIC MAP**	Plate No. 3
	FOLSOM TRANSLAB PHASE 4 FOUNDATION INVESTIGATION REPORT		



Geology base map from California Division of Mines and Geology – Geologic Map of California, Sacramento Sheet, 1981

Explanation of Relevant Formations:

Qr – Riverbank Formation – Alluvium, poorly sorted stream and basin deposits; clay to boulder size.

Qa – Natural Levee and Channel Deposits – Alluvium, poorly sorted stream and basin deposits; clay to boulder size.

Qb – Basin Deposits – Alluvium, poorly sorted stream and basin deposits; clay to boulder size.

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Date: April 2007

GEOLOGY MAP

FOLSOM TRANSLAB PHASE 4
FOUNDATION INVESTIGATION REPORT

Plate No. 4

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EA: 03-2C8441

Date: April 2007

BORING LOCATION MAP

Plate No. 5

FOLSOM TRANSLAB PHASE 4
FOUNDATION INVESTIGATION REPORT

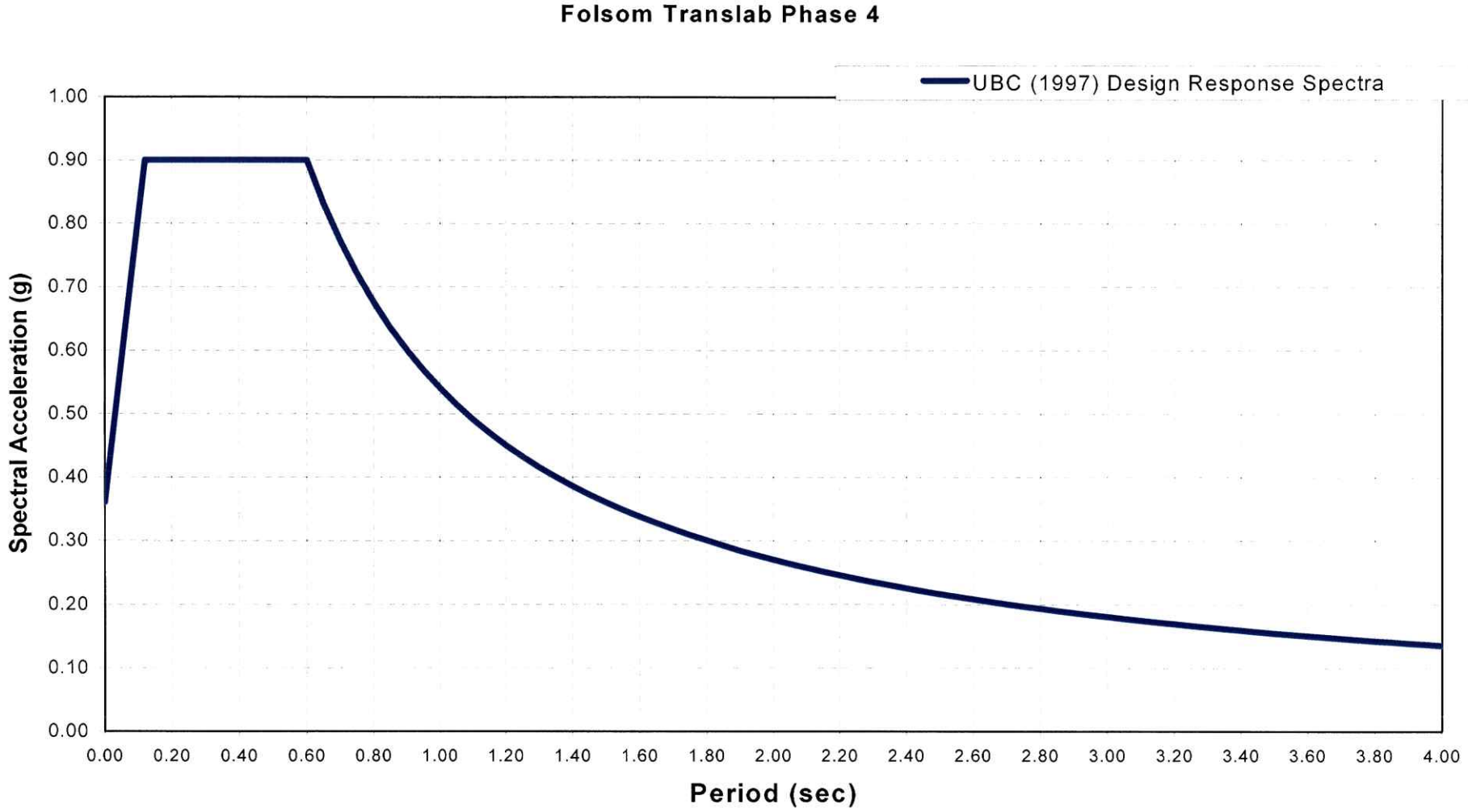
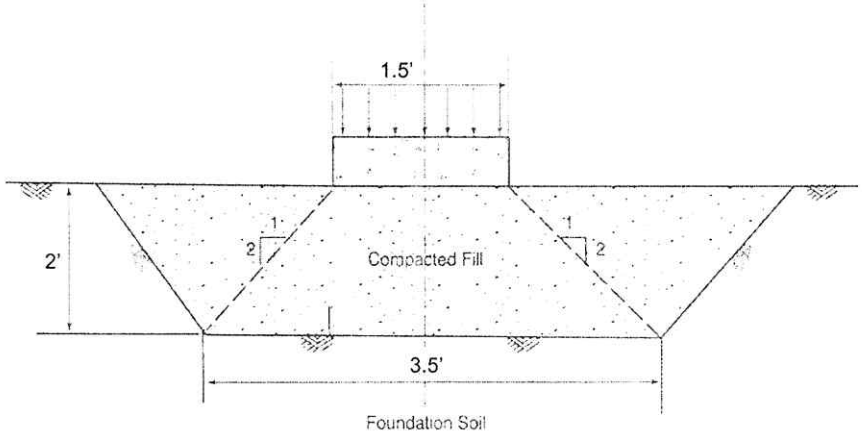
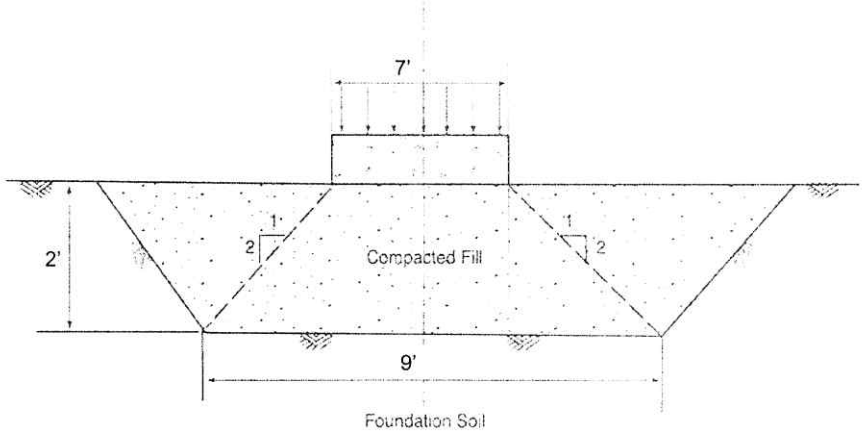


Plate No. 6 Acceleration Response Spectrum Recommended for Design

CALTRANS Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 03-2C8441 Date: April 2007	**ACCELERATION RESPONSE SPECTRUM RECOMMENDED FOR DESIGN**	Plate No. 6
		FOLSOM TRANSLAB PHASE 4 FOUNDATION INVESTIGATION REPORT	



Strip Footing



Square Footing

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Date: May 2007

COMPACTION DETAIL SHEET

Figure No. 7

FOLSOM TRANSLAB PHASE 4
FOUNDATION INVESTIGATION REPORT

APPENDIX A

Logs of Test Borings
Compaction Curves

GRAPHIC SYMBOLS


Bulk Sample


Rock Core


Modified California Sampler


Standard Penetration Sampler


Shelby Tube


Vane Shear


Auger


Diamond Core


Rotary


California Sampler


Water Level - 1st Reading

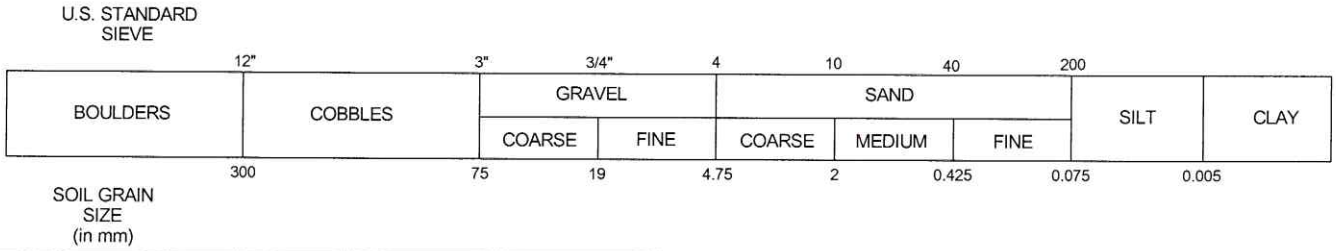

Water Level - 2nd Reading


Water Level - 3rd Reading

TESTING

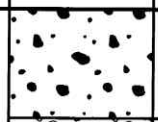
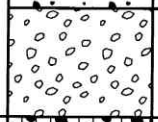
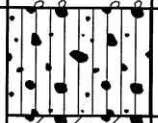
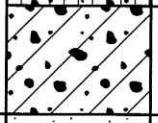
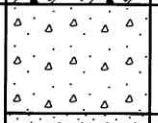
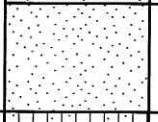
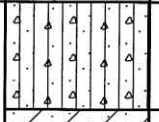
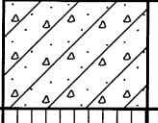
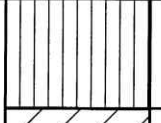
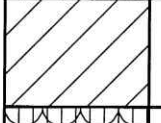
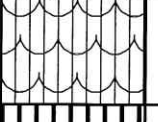
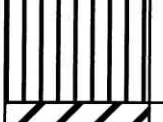
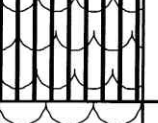
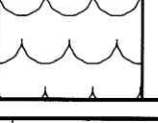
CONS	Consolidation (Cal Test 219)	RQD	Rock Quality Designation (ASTM D6032)
UU	Unconsolidated Undrained Triaxial (Cal Test 230)	CP	Compaction Test (Cal Test 216)
CU	Consolidated Undrained Triaxial (Cal Test 230)	PERM	Permeability (Cal Test 220)
DS	Direct Shear (ASTM D3080)	COR	Corrosivity Testing (Cal Test 532/643)
UC	Unconfined Compression (Cal Test 221)	GRAD	Gradation Analysis (Cal Tests 202/203)
LL	Liquid Limit-% (Cal Test 204)	EP	Expansion Pressure (Cal Test 354)
PI	Plasticity Index-% (Cal Test 204)	OC	Organic Content-% (ASTM D2974)
PP	Pocket Penetrometer	SE	Sand Equivalent (Cal Test 217)
TV	Pocket Torvane		

SOIL GRAIN SIZE



GENERAL NOTES

1. Logs represent general subsurface conditions observed at the point of exploration on the date indicated.
2. In general, USCS designations presented on logs were established by visual methods only; therefore, actual designations (based on laboratory tests) may vary.
3. No warranty is provided as to the continuity of soil conditions between individual sample locations.
4. Lines separating strata on the logs represent approximate boundaries only; actual transitions may be different or gradual.
5. Pocket penetrometer values reported on the logs under shear strength are actual values as recorded in the field. (To be used in analysis, the pocket penetrometer value should be divided by two)

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

Equipment:	Station/KP:	Boring ID.:
Acker		B-1
Hammer:	Offset Distance/Line:	Date Completed:
Automatic Hammer		3-6-07
Drilling Method:	North/East:	Hole Diameter:
6-inch hollow stem auger		6in
Sampling Method:	Ground Surface Elevation:	Total Depth:
SPT, Bulk Bag	~34.0ft	31.5ft
Notes:	Depth to GW/date measured:	Logged By:
	none encountered on 3-6-07	M. Engelmann

ELEVATION (m)	DEPTH (m)	DEPTH (ft)	Graphic Log	Description	Sample Type	Sample Number	Sample Blows	Blows per Foot	Recovery (%)	RQD (%)	w/c (%)	Dry Density (pcf)	Shear Strength (tsf)	Drilling Method/ Casing	Remarks
10.06	0.30	1		ASPHALT CONCRETE											The SPT values on the boring logs are values recorded in the field. An automatic hammer with average hammer efficiency ratio of approx. 84% was used. An energy correction factor of 1.4 should be applied to the SPT values presented in the boring logs.
9.75	0.61	2		SILTY CLAY (CL): soft, brown, moist, low plasticity, with trace SAND.											
9.45	0.91	3				1	1 1 1	2			14.9				
9.14	1.22	4													
8.84	1.52	5				2									
8.53	1.83	6		becomes stiff.		3	3 4 4	8			12.9				
8.23	2.13	7				4									
7.92	2.44	8		becomes firm.		5	1 2 4	6							
7.62	2.74	9													
7.32	3.05	10													
7.01	3.35	11		SILTY SAND (SM): loose, brown, moist, fine sand, with trace coarse GRAVEL.		6	2 2 2	4							
6.71	3.66	12													
6.40	3.96	13													
6.10	4.27	14													
5.79	4.57	15													
5.49	4.88	16		Poorly graded SAND with GRAVEL (GP/SP): very dense, grayish brown, moist, medium sand, coarse gravel.		7	9 21 15	36							
5.18	5.18	17													
4.88	5.49	18													
4.57	5.79	19													
4.27	6.10	20													
3.96	6.40	21				8	31 42 21	63							
3.66	6.71	22													
3.35	7.01	23													
3.05	7.32	24													
2.74	7.62	25													
2.44	7.92	26		SILTY SAND (SM): medium dense, brown, moist, fine sand.		9	6 7 6	13							
2.13	8.23	27													
1.83	8.53	28													
1.52	8.84	29													
1.22	9.14	30													
0.91	9.45	31		CLAYEY SILT (ML): very stiff, grayish brown, moist, medium plasticity.		10	4 7 9	16							
0.61	9.75	32		Bottom of Hole at 9.60 m (31.5 ft) on 3-6-07											
0.30	10.06	33													
0.00	10.36	34													
-0.30	10.67	35													

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

EA:	03-2C8441
Date:	4-30-07
Drafted By:	M. Engelmann

B-1

03-SAC

Structure Foundation Report

Equipment:	Station/KP:	Boring ID.:
Acker		B-2
Hammer:	Offset Distance/Line:	Date Completed:
Automatic Hammer		3-6-07
Drilling Method:	North/East:	Hole Diameter:
6-inch hollow stem auger		6in
Sampling Method:	Ground Surface Elevation:	Total Depth:
SPT, Bulk Bag	~33.5ft	26.5ft
Notes:	Depth to GW/date measured:	Logged By:
	none encountered on 3-6-07	M. Engelmann

ELEVATION (m)	DEPTH (m)	DEPTH (ft)	Graphic Log	Description	Sample Type	Sample Number	Sample Blows	Blows per Foot	Recovery (%)	RQD (%)	w/c (%)	Dry Density (pcf)	Shear Strength (tsf)	Drilling Method/ Casing	Remarks
9.91	0.30	1		ASPHALT CONCRETE											The SPT values on the boring logs are values recorded in the field. An automatic hammer with average hammer efficiency ratio of approx. 84% was used. An energy correction factor of 1.4 should be applied to the SPT values presented in the boring logs.
9.60	0.61	2		SILTY CLAY (CL): firm, brown, moist, low plasticity, with trace SAND.											
9.30	0.91	3				1	1 2 2	4			11.0				
8.99	1.22	4													
8.69	1.52	5				2									
8.38	1.83	6				3	2 2 2	4							
8.08	2.13	7													
7.77	2.44	8				4	3 3 3	6							
7.47	2.74	9		Poorly graded SAND (SP): loose, brown, moist, fine sand.											
7.16	3.05	10													
6.86	3.35	11				5	2 2 2	4							
6.55	3.66	12													
6.25	3.96	13													
5.94	4.27	14													
5.64	4.57	15													
5.33	4.88	16		SILTY SAND (SM): very dense, grayish brown, moist, medium sand, with coarse GRAVEL.		6	16 36 31	67			5.0				
5.03	5.18	17													
4.72	5.49	18													
4.42	5.79	19													
4.11	6.10	20													
3.81	6.40	21		Poorly graded SAND (SP): dense, brown, moist, fine sand.		7	7 9 14	23							
3.51	6.71	22													
3.20	7.01	23													
2.90	7.32	24													
2.59	7.62	25													
2.29	7.92	26		becomes medium dense, grayish brown.		8	5 7 8	15							
1.98	8.23	27		Bottom of Hole at 8.08 m (26.5 ft) on 3-6-07											
1.68	8.53	28													
1.37	8.84	29													
1.07	9.14	30													
0.76	9.45	31													
0.46	9.75	32													
0.15	10.06	33													
-0.15	10.36	34													
-0.46	10.67	35													

Equipment:	Station/KP:	Boring ID.:
Acker		B-3
Hammer:	Offset Distance/Line:	Date Completed:
Safety semi-automatic drop (140#/ 30")		3-7-07
Drilling Method:	North/East:	Hole Diameter:
6-inch hollow stem auger		6in
Sampling Method:	Ground Surface Elevation:	Total Depth:
SPT, Bulk Bag	~34.0ft	30.3ft
Notes:	Depth to GW/date measured:	Logged By:
	none encountered on 3-7-07	M. Engelmann

ELEVATION (m)	DEPTH (m)	DEPTH (ft)	Graphic Log	Description	Sample Type	Sample Number	Sample Blows	Blows per Foot	Recovery (%)	RQD (%)	w/c (%)	Dry Density (pcf)	Shear Strength (tsf)	Drilling Method/ Casing	Remarks
10.06	0.30	1		ASPHALT CONCRETE											
9.75	0.61	2		CLAYEY SAND (SC): loose, brown, moist, low plasticity.											
9.45	0.91	3				1	4 2 3	5							
9.14	1.22	4													
8.84	1.52	5				2									
8.53	1.83	6		becomes medium dense.		3	12 9 6	15			8.4				
8.23	2.13	7		SILTY SAND (SM): loose, brown, moist, fine sand, with trace GRAVEL.		4									
7.92	2.44	8													
7.62	2.74	9				5	7 11 9	20							
7.32	3.05	10													
7.01	3.35	11		becomes very dense.		6	21 20 35	55							
6.71	3.66	12													
6.40	3.96	13													
6.10	4.27	14													
5.79	4.57	15													
5.49	4.88	16		Poorly graded SAND with GRAVEL (GP/SP): very dense, brown, moist, medium sand, coarse gravel.		7	38 50 45	95							
5.18	5.18	17													
4.88	5.49	18		Well-graded GRAVEL with CLAY and SAND (GW-GC): very dense, brown, moist, coarse gravel, medium sand.											
4.57	5.79	19													
4.27	6.10	20				8	50+								
3.96	6.40	21													
3.66	6.71	22													
3.35	7.01	23													
3.05	7.32	24													
2.74	7.62	25													
2.44	7.92	26				9	44 50+				4.8				
2.13	8.23	27													
1.83	8.53	28													
1.52	8.84	29													
1.22	9.14	30													
0.91	9.45	31				10	50+								
0.61	9.75	32		Bottom of Hole at 9.22 m (30.3 ft) on 3-7-07											
0.30	10.06	33													
0.00	10.36	34													
-0.30	10.67	35													

Equipment:	Station/KP:	Boring ID.:
Acker		B-4
Hammer:	Offset Distance/Line:	Date Completed:
Safety semi-automatic drop (140#/ 30")		3-7-07
Drilling Method:	North/East:	Hole Diameter:
6-inch hollow stem auger		6in
Sampling Method:	Ground Surface Elevation:	Total Depth:
SPT, Bulk Bag	~33.3ft	31.5ft
Notes:	Depth to GW/date measured:	Logged By:
	none encountered on 3-7-07	M. Engelmann

ELEVATION (m)	DEPTH (m)	DEPTH (ft)	Graphic Log	Description	Sample Type	Sample Number	Sample Blows	Blows per Foot	Recovery (%)	RQD (%)	w/c (%)	Dry Density (pcf)	Shear Strength (tsf)	Drilling Method/ Casing	Remarks
9.83	0.30	1		ASPHALT CONCRETE SILTY CLAY (CL): firm, brown, moist, low plasticity, with trace SAND.											
9.52	0.61	2													
9.22	0.91	3				1	4 2 3	5							
8.92	1.22	4													
8.61	1.52	5				2									
8.31	1.83	6				3	1 2 3	5			13.0				
8.00	2.13	7													
7.70	2.44	8				4	4 5 12	17							
7.39	2.74	9		SILTY SAND (SM): medium dense, brown, moist, fine sand.											
7.09	3.05	10													
6.78	3.35	11				5	7 8 8	16			5.4				
6.48	3.66	12		with trace coarse GRAVEL.											
6.17	3.96	13													
5.87	4.27	14													
5.56	4.57	15													
5.26	4.88	16		Poorly graded SAND (SP): dense, grayish brown, moist, medium sand, with trace coarse GRAVEL.		6	10 22 19	41							
4.95	5.18	17													
4.65	5.49	18													
4.34	5.79	19													
4.04	6.10	20													
3.73	6.40	21		becomes very dense, without GRAVEL.		7	30 29 37	66							
3.43	6.71	22													
3.12	7.01	23													
2.82	7.32	24													
2.51	7.62	25													
2.21	7.92	26		with coarse GRAVEL.		8	50+								
1.90	8.23	27													
1.60	8.53	28													
1.30	8.84	29													
0.99	9.14	30													
0.69	9.45	31		Poorly graded GRAVEL with SAND (GP/SP): very dense, grayish brown, moist, coarse gravel, medium sand.		9	50+								
0.38	9.75	32		Bottom of Hole at 9.60 m (31.5 ft) on 3-7-07											
0.08	10.06	33													
-0.23	10.36	34													
-0.53	10.67	35													

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

EA:	03-2C8441
Date:	4-30-07
Drafted By:	M. Engelmann

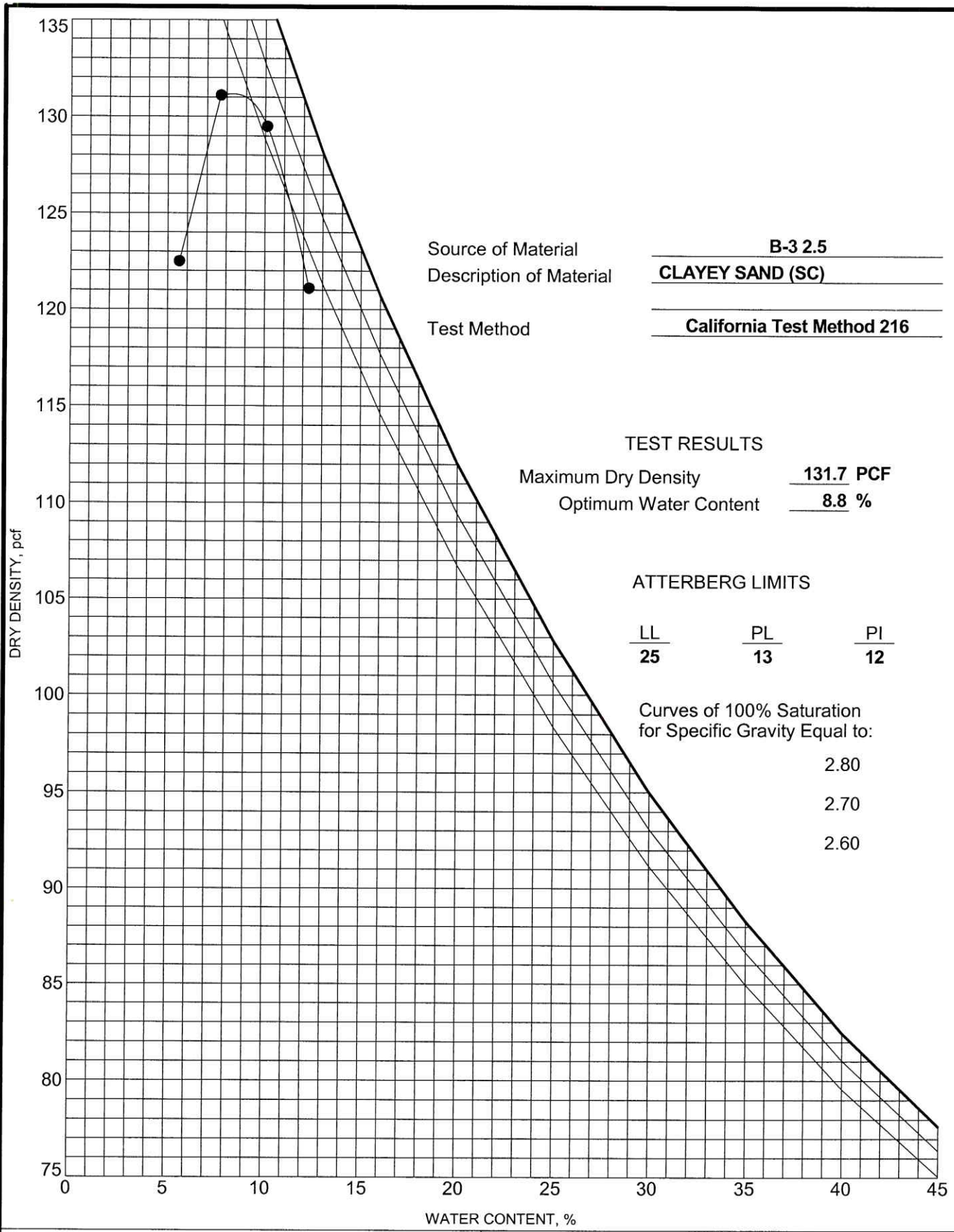
B-4

03-SAC

Structure Foundation Report

Equipment:	Station/KP:	Boring ID.:
Acker		B-5
Hammer:	**Offset Distance/Line:**	**Date Completed:**
Automatic Hammer		3-7-07
Drilling Method:	**North/East:**	**Hole Diameter:**
6-inch hollow stem auger		6in
Sampling Method:	**Ground Surface Elevation:**	**Total Depth:**
SPT, Bulk Bag	~32.8ft	26.5ft
Notes:	**Depth to GW/date measured:**	**Logged By:**
	none encountered on 3-7-07	M. Engelmann

ELEVATION (m)	DEPTH (m)	DEPTH (ft)	Graphic Log	Description	Sample Type	Sample Number	Sample Blows	Blows per Foot	Recovery (%)	RQD (%)	w/c (%)	Dry Density (pcf)	Shear Strength (tsf)	Drilling Method/ Casing	Remarks
9.68	0.30	1		ASPHALT CONCRETE											The SPT values on the boring logs are values recorded in the field. An automatic hammer with average hammer efficiency ratio of approx. 84% was used. An energy correction factor of 1.4 should be applied to the SPT values presented in the boring logs.
9.37	0.61	2		SILTY CLAY (CL): soft, brown, moist, low plasticity, with trace SAND.											
9.07	0.91	3			X	1	1 1 2	3			11.6				
8.76	1.22	4													
8.46	1.52	5			X	2									
8.15	1.83	6		becomes firm.	X	3	2 3 2	5			15.4				
7.85	2.13	7			X	4									
7.54	2.44	8			X	5	1 3 3	6			13.2				
7.24	2.74	9													
6.93	3.05	10													
6.63	3.35	11		becomes stiff.	X	6	4 4 5	9							
6.32	3.66	12													
6.02	3.96	13													
5.71	4.27	14													
5.41	4.57	15													
5.11	4.88	16		Poorly graded SAND with GRAVEL (GP/SP): very dense, brown, moist, medium sand, coarse gravel.	X	7	34 50+								
4.80	5.18	17													
4.50	5.49	18													
4.19	5.79	19													
3.89	6.10	20													
3.58	6.40	21		Poorly graded SAND (SP): medium dense, brown, moist, medium sand, with trace coarse GRAVEL.	X	8	9 6 6	12							
3.28	6.71	22													
2.97	7.01	23													
2.67	7.32	24													
2.36	7.62	25													
2.06	7.92	26		becomes loose, fine SAND, without GRAVEL.	X	9	5 4 2	6							
1.75	8.23	27		Bottom of Hole at 8.08 m (26.5 ft) on 3-7-07											
1.45	8.53	28													
1.14	8.84	29													
0.84	9.14	30													
0.53	9.45	31													
0.23	9.75	32													
-0.08	10.06	33													
-0.38	10.36	34													
-0.69	10.67	35													



Source of Material: **B-3 2.5**

Description of Material: **CLAYEY SAND (SC)**

Test Method: **California Test Method 216**

TEST RESULTS

Maximum Dry Density: **131.7 PCF**

Optimum Water Content: **8.8 %**

ATTERBERG LIMITS

LL	PL	PI
25	**13**	**12**

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

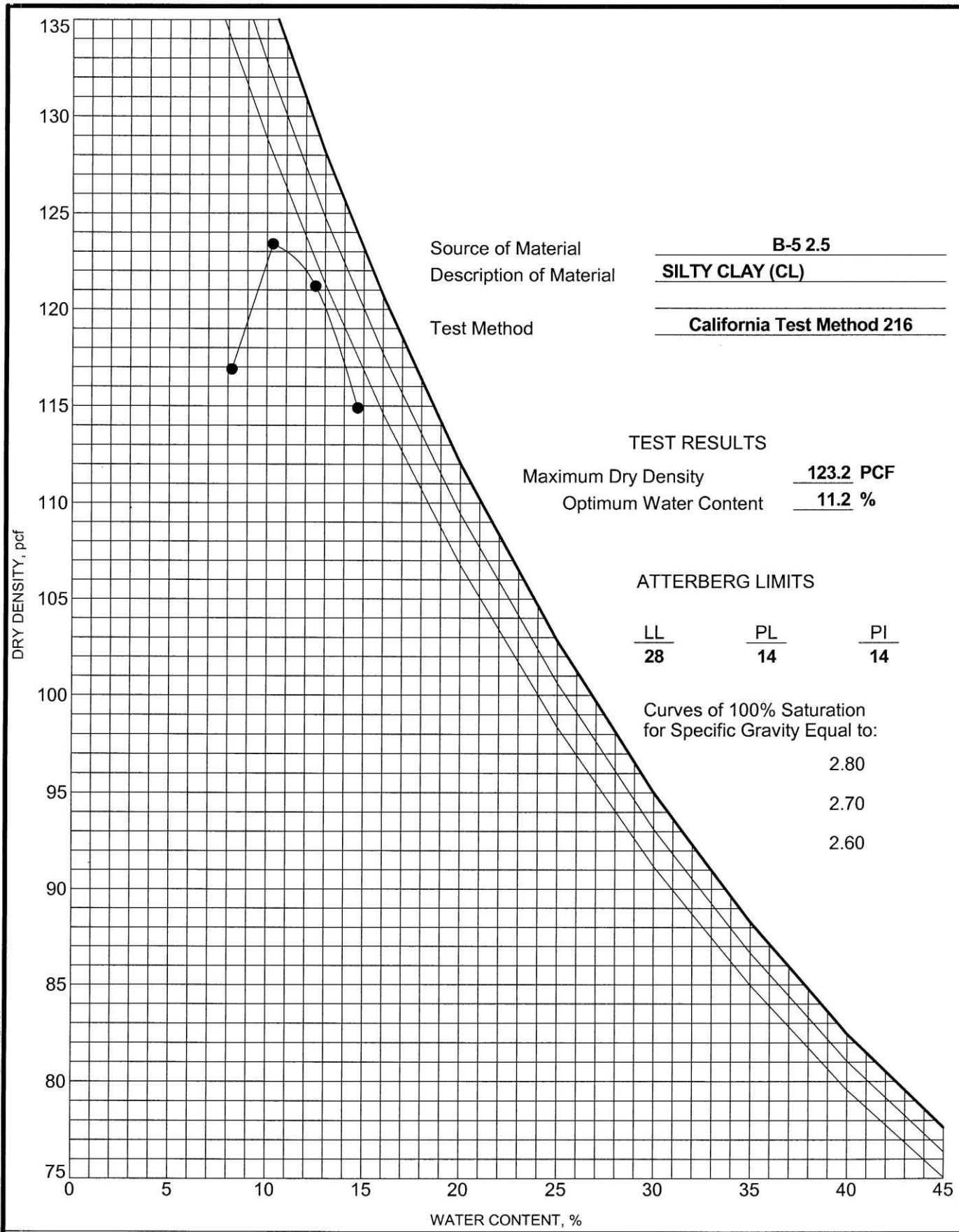
Department of Tranportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design

MOISTURE-DENSITY RELATIONSHIP

03-SAC

Folsom Translab Phase 4

US_COMPACTION_TRANSLAB PHASE 4.GPJ US_LAB.GDT 4/27/07



Source of Material: **B-5 2.5**

Description of Material: **SILTY CLAY (CL)**

Test Method: **California Test Method 216**

TEST RESULTS

Maximum Dry Density: **123.2 PCF**

Optimum Water Content: **11.2 %**

ATTERBERG LIMITS

LL	PL	PI
28	**14**	**14**

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

Department of Tranportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design

MOISTURE-DENSITY RELATIONSHIP

03-SAC

Folsom Translab Phase 4

US COMPACTION TRANSLAB PHASE 4.GPJ US LAB.GDT 4/27/07

Wildhaber Consulting
PO Box 1413
Carmichael, CA 95609

TEM Final Air Sample Results

To: **Caltrans / Trans-Lab Renovation** **December 25, 2008**
Attn: Mr. William Brook
5900 Folsom Blvd.
Sacramento, CA 95819

From: **Earl "Duke" Wildhaber, CAC**
Wildhaber Consulting.

RE: Final TEM[1] air sampling project # 03-2C8434 Phase IV

Sampled area:

1. **A-56 Supply Building**

Dear Mr. Brook:

On December 23rd 2008 final TEM[1] air sampling was performed in the above referenced area. The results indicated no asbestos structures detected in the samples collected from the A-56 supply building. The area of completed asbestos related work is adjacent and connected to the A-56 supply building, removal of the sheetrock, floor tile and floor tile mastic have been completed. These samples were collected after the completion of the abatement activities and final TEM[1] aggressive air sampling performed in that area (see attachment A building floor plan with sample site locations and work area)(see attachment B summary of results, laboratory analysis report # 7047 and chain of custody form.

The requested turnaround time for these samples was same day rush. Upon receipt of the results, via phone call from Asbestech, Earl "Duke" Wildhaber of Wildhaber Consulting on December 23rd 2008, called Mr. Richard Barnard with the results.

CERTIFIED ASBESTOS CONSULTANT
EARL WILDHABER
CA #03-3283
NV #IJPM0824
4/23/09
EXPIRES

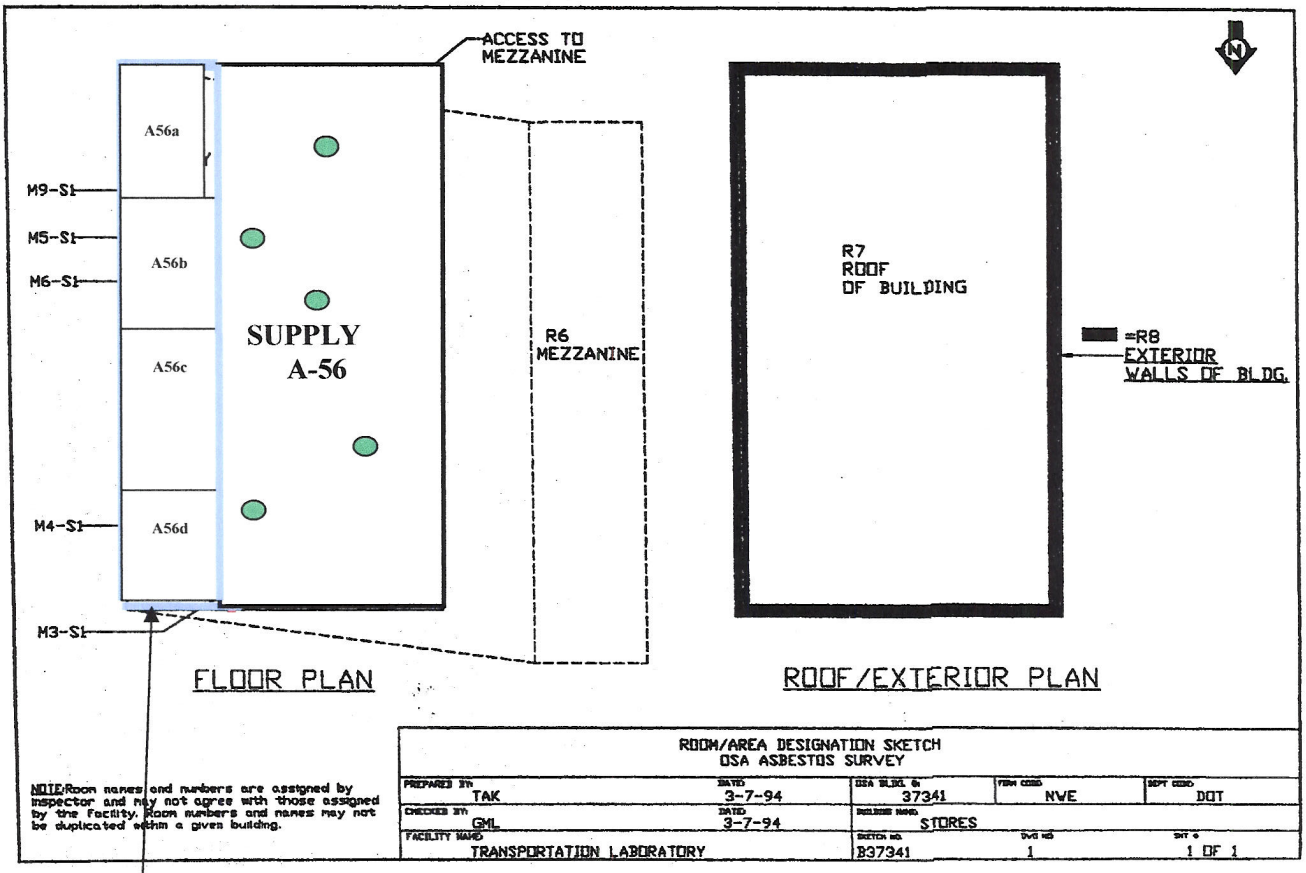
[1] (TEM) Transmission Electron Microscopy

Phone: (916) 715-3807 / Fax: (866) 451-2062 / dukefungi@hotmail.com

Attachment A

PHASE IV BUILDING A-56 SUPPLY (37341)

FINAL TEM[1] AIR SAMPLING 12/23/2008 **COMPLETED ABATEMENT ACTIVITIES**



TEM[1] SAMPLE SITE LOCATIONS

TEM[1]- Transmission Electron Microscopy

Completed removal area A-56a, b, c, &d

***Demolition Activities were being performed during Sampling activities**

Attachment B

ASBESTECH

6825 Fair Oaks Blvd., Suite 103, Carmichael, CA 95608 Tel. (916) 481-8902

TEM Air Filter Analysis Summary Form

Asbestech Lab # 7047 **Date Received** 12/24/08

Client Wildhaber Consulting **Date Analyzed** 12/24/08

Client Job # 03-2C8434

Job Site Cal Trans Lab Renovation Phase IV, 5900 Folsom Blvd., Sacramento, Ca

TEM Method AHERA Method

Sample ID	Sample Volume	# of Structures	# of Grid Openings	Analytical Sensitivity	Structures per mm^2	Structures per CC
BI41-2866	1273	0	9	0.0048	**<15.76**	**<0.0048**
BI41-3223	1260	0	9	0.0048	**<15.76**	**<0.0048**
BI41-3114	1266	0	9	0.0048	**<15.76**	**<0.0048**
BI41-3367	1260	0	9	0.0048	**<15.76**	**<0.0048**
BI41-3272	1270	0	9	0.0048	**<15.76**	**<0.0048**

Average Structures per mm^2 **<15.76** **Average Structures per CC** **<0.0048**

Lab Director: TOM CONLON **Analyst: JIM JUNGLES**

ASBESTECH

6825 Fair Oaks Blvd., Ste. 103, Carmichael, CA 95608 Tel.(916)481-8902

Wildhaber Consulting
PO Box 1413
Carmichael, CA 95609
PHONE #: (916) 715-3807
Fax #: (916) 451-2062
ATTENTION: Duke Wildhaber

Job Site:
Cal Trans Lab Renovation Phase IV, 5900 Folsom Blvd., Sacramento, Ca

Job #:
03-2C8434

Login #	7047
Date Received	12/24/08
Report Date	12/24/08
Total Samples	5

AHERA TEM ANALYTICAL REPORT

Method "40 CFR Part 763", Appendix A to Subpart E, Friday October 30, 1987

Client #
BI41-2866
Lab ID #
7047-01
Location/Description:
Post SR/JC/FT removal in adjoining A-56 (a)(b)(c), A-56 supply bldg., OWA 12/23/08

CALCULATED ASBESTOS STRUCTURE CONCENTRATION

Per mm² ≤5 µm	Per mm² ≥5 µm	TOTAL Per mm²	TOTAL Per CC
<15.8	<15.8	**<15.8**	**<0.0048**

Per cc ≤5 µm	Per cc ≥5 µm
<0.0048	<0.0048

AIR SAMPLING DATA

Total Time	134	min
Ave. LPM	9.5	
Sample Volume	1273	Liters

FILTER DATA

Type	MCE	
Diameter	25	mm
Area	385	mm²
Pore Size	0.45	µm

TEM OPERATING PARAMETERS

Magnification	20,000X	
G. O. Area	0.00705	mm²
G. O. Counted	9	
Effective Scan Area	0.0635	mm²

ANALYTICAL SENSITIVITY

0.0048 Structures/cc

ASBESTIFORM STRUCTURE COUNT

	<5µm	>5µm		<5µm	>5µm
Chrysotile	0	0	Actinolite	0	0
Amosite	0	0	Tremolite	0	0
Crocidolite	0	0	Anthophyllite	0	0

COMMENTS:

No asbestos structures detected.

KEY:
> (Greater than or Equal)
G.O - Grid Opening

Analyst: JIM JUNGLES **Lab Director: TOM CONLON**

NVLAP #101442

ASBESTECH

6825 Fair Oaks Blvd., Ste. 103, Carmichael, CA 95608 Tel.(916)481-8902

Wildhaber Consulting
PO Box 1413
Carmichael, CA 95609
PHONE #: (916) 715-3807
Fax #: (916) 451-2062
ATTENTION: Duke Wildhaber

Job Site:
Cal Trans Lab Renovation Phase IV, 5900 Folsom Blvd., Sacramento, Ca

Job #:
03-2C8434

Login #	7047
Date Received	12/24/08
Report Date	12/24/08
Total Samples	5

AHERA TEM ANALYTICAL REPORT

Method "40 CFR Part 763", Appendix A to Subpart E, Friday October 30, 1987

Client #
BI41-3223
Lab ID #
7047-02
Location/Description:
Post SR/JC/FT removal in adjoining A-56 (a)(b)(c), A-56 supply bldg., OWA 12/23/08

AIR SAMPLING DATA

Total Time	134	min
Ave. LPM	9.4	
Sample Volume	1259.6	Liters

FILTER DATA

Type	MCE	
Diameter	25	mm
Area	385	mm^2
Pore Size	0.45	µm

TEM OPERATING PARAMETERS

Magnification	20,000X	
G. O. Area	0.00705	mm^2
G. O. Counted	9	
Effective Scan Area	0.0635	mm^2

ANALYTICAL SENSITIVITY

0.0048 Structures/cc

CALCULATED ASBESTOS STRUCTURE CONCENTRATION

Per mm^2 ≤5 µm	Per mm^2 ≥5 µm	TOTAL Per mm^2	TOTAL Per CC
<15.8	<15.8	**<15.8**	**<0.0048**

Per cc ≤5 µm	Per cc ≥5 µm
<0.0048	<0.0048

ASBESTIFORM STRUCTURE COUNT

	<5µm	>5µm		<5µm	>5µm
Chrysotile	0	0	Actinolite	0	0
Amosite	0	0	Tremolite	0	0
Crocidolite	0	0	Anthophyllite	0	0

COMMENTS:

No asbestos structures detected.

KEY:
> (Greater than or Equal)
G.O - Grid Opening

Analyst: JIM JUNGLES **Lab Director: TOM CONLON**

NVLAP #101442

ASBESTECH

6825 Fair Oaks Blvd., Ste. 103, Carmichael, CA 95608 Tel.(916)481-8902

Wildhaber Consulting
PO Box 1413
Carmichael, CA 95609
PHONE #: (916) 715-3807
Fax #: (916) 451-2062
ATTENTION: Duke Wildhaber

Job Site:
Cal Trans Lab Renovation Phase IV, 5900 Folsom Blvd., Sacramento, Ca

Job #:
03-2C8434

Login #	7047
Date Received	12/24/08
Report Date	12/24/08
Total Samples	5

AHERA TEM ANALYTICAL REPORT

Method "40 CFR Part 763", Appendix A to Subpart E, Friday October 30, 1987

Client #
BI41-3114
Lab ID #
7047-03

Location/Description:
Post SR/JC/FT removal in adjoining A-56 (a)(b)(c), A-56 supply bldg., OWA 12/23/08

CALCULATED ASBESTOS STRUCTURE CONCENTRATION

Per mm² <5 µm	Per mm² >5 µm	TOTAL Per mm²	TOTAL Per CC
<15.8	<15.8	**<15.8**	**<0.0048**

Per cc <5 µm	Per cc >5 µm
<0.0048	<0.0048

AIR SAMPLING DATA

Total Time	134	min
Ave. LPM	9.45	
Sample Volume	1266.3	Liters

FILTER DATA

Type	MCE	
Diameter	25	mm
Area	385	mm²
Pore Size	0.45	µm

TEM OPERATING PARAMETERS

Magnification	20,000X	
G. O. Area	0.00705	mm²
G. O. Counted	9	
Effective Scan Area	0.0635	mm²

ANALYTICAL SENSITIVITY

0.0048 Structures/cc

ASBESTIFORM STRUCTURE COUNT

	<5µm	>5µm		<5µm	>5µm
Chrysotile	0	0	Actinolite	0	0
Amosite	0	0	Tremolite	0	0
Crocidolite	0	0	Anthophyllite	0	0

COMMENTS:

No asbestos structures detected.

KEY:
> (Greater than or Equal)
G.O - Grid Opening

Analyst: JIM JUNGLES **Lab Director: TOM CONLON**

NVLAP #101442

ASBESTECH

6825 Fair Oaks Blvd., Ste. 103, Carmichael, CA 95608 Tel.(916)481-8902

Wildhaber Consulting
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Carmichael, CA 95609
PHONE #: (916) 715-3807
Fax #: (916) 451-2062
ATTENTION: Duke Wildhaber

Job Site:
Cal Trans Lab Renovation Phase IV, 5900 Folsom Blvd., Sacramento, Ca

Job #:
03-2C8434

Login #	7047
Date Received	12/24/08
Report Date	12/24/08
Total Samples	5

AHERA TEM ANALYTICAL REPORT

Method "40 CFR Part 763", Appendix A to Subpart E, Friday October 30, 1987

Client #
BI41-3367
Lab ID #
7047-04
Location/Description:
Post SR/JC/FT removal in adjoining A-56 (a)(b)(c), A-56 supply bldg., OWA 12/23/08

AIR SAMPLING DATA

Total Time	134	min
Ave. LPM	9.4	
Sample Volume	1259.6	Liters

FILTER DATA

Type	MCE	
Diameter	25	mm
Area	385	mm^2
Pore Size	0.45	µm

TEM OPERATING PARAMETERS

Magnification	20,000X	
G. O. Area	0.00705	mm^2
G. O. Counted	9	
Effective Scan Area	0.0635	mm^2

ANALYTICAL SENSITIVITY

0.0048 Structures/cc

CALCULATED ASBESTOS STRUCTURE CONCENTRATION

Per mm^2 <5 µm	Per mm^2 >5 µm	TOTAL Per mm^2	TOTAL Per CC
<15.8	<15.8	**<15.8**	**<0.0048**

Per cc <5 µm	Per cc >5 µm
<0.0048	<0.0048

ASBESTIFORM STRUCTURE COUNT

	<5µm	>5µm		<5µm	>5µm
Chrysotile	0	0	Actinolite	0	0
Amosite	0	0	Tremolite	0	0
Crocidolite	0	0	Anthophyllite	0	0

COMMENTS:

No asbestos structures detected.

KEY:
> (Greater than or Equal)
G.O - Grid Opening

Analyst: JIM JUNGLES **Lab Director: TOM CONLON**

NVLAP #101442

ASBESTECH

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Wildhaber Consulting
PO Box 1413
Carmichael, CA 95609
PHONE #: (916) 715-3807
Fax #: (916) 451-2062
ATTENTION: Duke Wildhaber

Job Site:
Cal Trans Lab Renovation Phase IV, 5900 Folsom Blvd., Sacramento, Ca

Job #:
03-2C8434

Login #	7047
Date Received	12/24/08
Report Date	12/24/08
Total Samples	5

AHERA TEM ANALYTICAL REPORT

Method "40 CFR Part 763", Appendix A to Subpart E, Friday October 30, 1987

Client #
BI41-3272
Lab ID #
7047-05
Location/Description:
Post SR/JC/FT removal in adjoining A-56 (a)(b)(c), A-56 supply bldg., OWA 12/23/08

AIR SAMPLING DATA

Total Time	133	min
Ave. LPM	9.55	
Sample Volume	1270.15	Liters

FILTER DATA

Type	MCE	
Diameter	25	mm
Area	385	mm^2
Pore Size	0.45	µm

TEM OPERATING PARAMETERS

Magnification	20,000X	
G. O. Area	0.00705	mm^2
G. O. Counted	9	
Effective Scan Area	0.0635	mm^2

ANALYTICAL SENSITIVITY

0.0048 Structures/cc

CALCULATED ASBESTOS STRUCTURE CONCENTRATION

Per mm^2 <5 µm	Per mm^2 >5 µm	TOTAL Per mm^2	TOTAL Per CC
<15.8	<15.8	**<15.8**	**<0.0048**

Per cc <5 µm	Per cc >5 µm
<0.0048	<0.0048

ASBESTIFORM STRUCTURE COUNT

	<5µm	>5µm		<5µm	>5µm
Chrysotile	0	0	Actinolite	0	0
Amosite	0	0	Tremolite	0	0
Crocidolite	0	0	Anthophyllite	0	0

COMMENTS:

No asbestos structures detected.

KEY:
> (Greater than or Equal)
G.O - Grid Opening

Analyst: JIM JUNGLES **Lab Director: TOM CONLON**

NVLAP #101442

1

7047

ASBESTECH
6825 FAIR OAKS BLVD.,STE 103
CARMICHAEL, CA 95608

TEL. (916) 481-8902
FAX 481-3975

AIR MONITOR LOG / SAMPLE ANALYSIS REQUEST / CHAIN OF CUSTODY

CLIENT/ CONTACT PERSON: Wildhaber Consulting
ADDRESS: P.O Box 1413, Carmichael, CA 95609
PHONE: (916) 715-3807
SPECIAL INSTRUCTIONS/TURNAROUND TIME: SAME DAY RUSH CALL DUKE WITH RESULTS

JOB #: 03-208434 CALTRANS LAB RENOVATION PHASE IV
JOB LOCATION: 5900 Folsom Blvd SAC, CA
☐ PERSONALS ☑ AREAS
☐ PCM (NIOSH 7400 A) ☑ TEM AHERA ☐ LEAD (NIOSH 7082)

SAMPLE #	IWA OWA	LOCATION	ACTIVITY	PUMP #	RESPIRATOR TYPE	WORKER NAMES	SAMPLE DATE	TIME ON/OFF	TOTAL TIME	FLOW ON/OFF	AIR VOLUME	FIBERS	FIELDS	FIBERS/ CC
BI41 2866	IWA (OWA)	A-56 SOPD/4 BUILDING	POST SR/JC/FT REMOVAL IN ADJOINING A56 RM(S)	5			12/23/08	3:31 / 5:45	134	9.5 / 9.6	1273			
BI41 3223	IWA (OWA)	〃	〃	9			12/23/08	3:32 / 5:46	134	9.5 / 9.3	1260			
BI41 3114	IWA (OWA)	〃	〃	10			12/23/08	3:34 / 5:48	134	9.5 / 9.4	1266			
BI41 3367	IWA (OWA)	〃	〃	2			12/23/08	3:35 / 5:49	134	9.5 / 9.3	1260			
BI41 3272	IWA (OWA)	〃	〃	4			12/23/08	3:37 / 5:50	133	9.5 / 9.6	1270			
BI41 2869	IWA (OWA)	FIELD BLANK @ #9					12/23/08							
BI41 3410	IWA (OWA)	FIELD BLANK @ #4		HOLD			12/23/08							
BI41 2857	IWA (OWA)	SEALED BLANK					12/23/08							

HOLD

CHAIN OF CUSTODY:

WHITE: LABORATORY
YELLOW: FIELD

SEALED BY: [signature] DATE/TIME: 12/23/08 6:15 PM
RECEIVED BY: [signature] DATE/TIME: 12-24-08
RECEIVED BY: _____ DATE/TIME: _____

Wildhaber Consulting
PO Box 1413
Carmichael, CA 95609

TEM Final Air Sample Results

To: **Caltrans / Trans-Lab Renovation** **December 25, 2008**
Attn: Mr. William Brook
5900 Folsom Blvd.
Sacramento, CA

From: **Earl "Duke" Wildhaber, CAC**
Wildhaber Consulting.

RE: Final TEM[1] air sampling project # 03-2C8434 Phase IV

Sampled areas:

1. **A-56a, A-56b, A-56c, A-56d Containment**

Dear Mr. Brook:

On December 23rd 2008 final TEM[1] aggressive air clearance sampling was performed in the above referenced area. The results indicated no asbestos structures detected in the samples collected from the containment area. The area of asbestos related work and sampling is adjacent and connected to the supply area where removal of the sheetrock, floor tile and floor tile mastic have been completed. These samples were collected after the completed abatement activities (see attachment A building floor plan with sample site locations and area of containment)(see attachment B summary of results, laboratory analysis report # 7048 and chain of custody form.

The requested turnaround time for these samples was same day rush. Upon receipt of the results, via phone call from Asbestech, Earl "Duke" Wildhaber of Wildhaber Consulting on December 23rd 2008, called Mr. Richard Barnard with the results.

CERTIFIED ASBESTOS CONSULTANT
EARL
WILDHABER
CA #03-3283
NV #IJPM0824
4/23/09
EXPIRES

[1] (TEM) Transmission Electron Microscopy

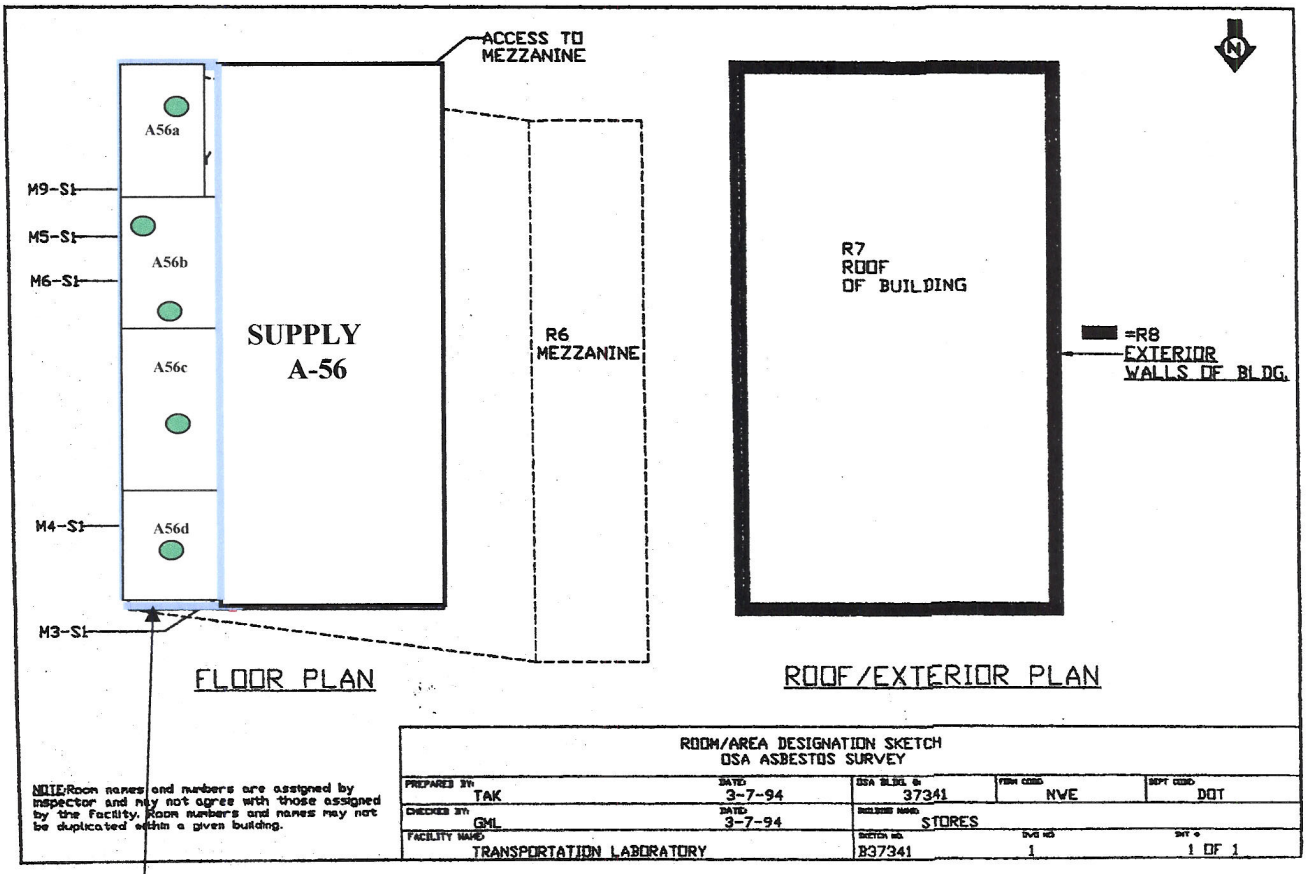
Phone: (916) 715-3807 / Fax: (866) 451-2062 / dukefungi@hotmail.com

Attachment A

PHASE IV BUILDING (37341) OFFICES A-56a, A-56b ,A-56c, A-56d

FINAL TEM[1] AIR SAMPLING 12/23/2008

COMPLETION OF SHEETROCK, FLOOR TILE, AND FLOOR TILE MASTIC



POST REMOVAL TEM[1] SAMPLE SITE LOCATIONS

TEM[1]- Transmission Electron Microscopy

Completed removal area A-56a, b, c, &d

***Demolition Activities being performed during Removal and Sampling activities**

Attachment B

ASBESTECH

6825 Fair Oaks Blvd., Suite 103, Carmichael, CA 95608 Tel. (916) 481-8902

TEM Air Filter Analysis Summary Form

Asbestech Lab # 7048 **Date Received** 12/24/08

Client Wildhaber Consulting **Date Analyzed** 12/24/08

Client Job # 03-2C8434

Job Site Cal Trans Lab Renovation Phase IV, 5900 Folsom Blvd., Sacramento, Ca

TEM Method AHERA Method

Sample ID	Sample Volume	# of Structures	# of Grid Openings	Analytical Sensitivity	Structures per mm^2	Structures per CC
BI41-2861	1316	0	9	0.0046	**<15.76**	**<0.0046**
BI41-3187	1330	0	9	0.0046	**<15.76**	**<0.0046**
BI41-2851	1332	0	9	0.0046	**<15.76**	**<0.0046**
BI41-3174	1339	0	9	0.0045	**<15.76**	**<0.0045**
BI41-3382	1342	0	9	0.0045	**<15.76**	**<0.0045**

Average Structures per mm^2 **<15.76** **Average Structures per CC** **<0.0046**

Lab Director: TOM CONLON

Analyst: JIM JUNGLES

ASBESTECH

6825 Fair Oaks Blvd., Ste. 103, Carmichael, CA 95608 Tel.(916)481-8902

Wildhaber Consulting
PO Box 1413
Carmichael, CA 95609
PHONE #: (916) 715-3807
Fax #: (916) 451-2062
ATTENTION: Duke Wildhaber

Job Site:
Cal Trans Lab Renovation Phase IV, 5900 Folsom Blvd., Sacramento, Ca

Job #:
03-2C8434

Login #	7048
Date Received	12/24/08
Report Date	12/24/08
Total Samples	5

AHERA TEM ANALYTICAL REPORT

Method "40 CFR Part 763", Appendix A to Subpart E, Friday October 30, 1987

Client #
BI41-2861
Lab ID #
7048-01
Location/Description:
TEM air post SR/JC/FT removal, containment phase IV demo A-56 (a)(b)(c), IWA 12/23/08

CALCULATED ASBESTOS STRUCTURE CONCENTRATION

Per mm² ≤5 µm	Per mm² ≥5 µm	TOTAL Per mm²	TOTAL Per CC
<15.8	<15.8	**<15.8**	**<0.0046**

Per cc ≤5 µm	Per cc ≥5 µm
<0.0046	<0.0046

AIR SAMPLING DATA

Total Time	140	min
Avc. LPM	9.4	
Sample Volume	1316	Liters

FILTER DATA

Type	MCE	
Diameter	25	mm
Area	385	mm²
Pore Size	0.45	µm

TEM OPERATING PARAMETERS

Magnification	20,000X	
G. O. Area	0.00705	mm²
G. O. Counted	9	
Effective Scan Area	0.0635	mm²

ANALYTICAL SENSITIVITY

0.0046 Structures/cc

ASBESTIFORM STRUCTURE COUNT

	<5µm	>5µm		<5µm	>5µm
Chrysotile	0	0	Actinolite	0	0
Amosite	0	0	Tremolite	0	0
Crocidolite	0	0	Anthophyllite	0	0

COMMENTS:

No asbestos structures detected.

KEY:
≥ (Greater than or Equal)
G.O - Grid Opening

Analyst: JIM JUNGLES **Lab Director: TOM CONLON**

NVLAP #101442

ASBESTECH

6825 Fair Oaks Blvd., Ste. 103, Carmichael, CA 95608 Tel.(916)481-8902

Wildhaber Consulting
PO Box 1413
Carmichael, CA 95609
PHONE #: (916) 715-3807
Fax #: (916) 451-2062
ATTENTION: Duke Wildhaber

Job Site:
Cal Trans Lab Renovation Phase IV, 5900 Folsom Blvd., Sacramento, Ca

Job #:
03-2C8434

Login #	7048
Date Received	12/24/08
Report Date	12/24/08
Total Samples	5

AHERA TEM ANALYTICAL REPORT

Method "40 CFR Part 763", Appendix A to Subpart E, Friday October 30, 1987

Client #
BI41-3187
Lab ID #
7048-02

Location/Description:
TEM air post SR/JC/FT removal, containment phase IV demo A-56 (a)(b)(c), IWA 12/23/08

CALCULATED ASBESTOS STRUCTURE CONCENTRATION

Per mm^2 ≤5 µm	Per mm^2 >5 µm	TOTAL Per mm^2	TOTAL Per CC
<15.8	<15.8	**<15.8**	**<0.0046**

Per cc ≤5 µm	Per cc >5 µm
<0.0046	<0.0046

AIR SAMPLING DATA

Total Time	140	min
Ave. LPM	9.5	
Sample Volume	1330	Liters

FILTER DATA

Type	MCE	
Diameter	25	mm
Area	385	mm^2
Pore Size	0.45	µm

TEM OPERATING PARAMETERS

Magnification	20,000X	
G. O. Area	0.00705	mm^2
G. O. Counted	9	
Effective Scan Area	0.0635	mm^2

ANALYTICAL SENSITIVITY

0.0046 Structures/cc

ASBESTIFORM STRUCTURE COUNT

	<5µm	>5µm		<5µm	>5µm
Chrysotile	0	0	Actinolite	0	0
Amosite	0	0	Tremolite	0	0
Crocidolite	0	0	Anthophyllite	0	0

COMMENTS:

No asbestos structures detected.

KEY:
> (Greater than or Equal)
G.O - Grid Opening

Analyst: JIM JUNGLES **Lab Director: TOM CONLON**

NVLAP #101442

ASBESTECH

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PO Box 1413
Carmichael, CA 95609
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Fax #: (916) 451-2062
ATTENTION: Duke Wildhaber

Job Site:
Cal Trans Lab Renovation Phase IV, 5900 Folsom Blvd., Sacramento, Ca

Job #:
03-2C8434

Login #	7048
Date Received	12/24/08
Report Date	12/24/08
Total Samples	5

AHERA TEM ANALYTICAL REPORT

Method "40 CFR Part 763", Appendix A to Subpart E, Friday October 30, 1987

Client #
BI41-2851
Lab ID #
7048-03
Location/Description:
TEM air post SR/JC/FT removal, containment phase IV demo A-56 (a)(b)(c), IWA 12/23/08

AIR SAMPLING DATA

Total Time	141	min
Ave. LPM	9.45	
Sample Volume	1332.45	Liters

FILTER DATA

Type	MCE	
Diameter	25	mm
Area	385	mm^2
Pore Size	0.45	µm

TEM OPERATING PARAMETERS

Magnification	20,000X	
G. O. Area	0.00705	mm^2
G. O. Counted	9	
Effective Scan Area	0.0635	mm^2

ANALYTICAL SENSITIVITY

0.0046 Structures/cc

CALCULATED ASBESTOS STRUCTURE CONCENTRATION

Per mm^2 <5 µm	Per mm^2 >5 µm	TOTAL Per mm^2	TOTAL Per CC
<15.8	<15.8	**<15.8**	**<0.0046**

Per cc <5 µm	Per cc >5 µm
<0.0046	<0.0046

ASBESTIFORM STRUCTURE COUNT

	<5µm	>5µm		<5µm	>5µm
Chrysotile	0	0	Actinolite	0	0
Amosite	0	0	Tremolite	0	0
Crocidolite	0	0	Anthophyllite	0	0

COMMENTS:

No asbestos structures detected.

KEY:
> (Greater than or Equal)
G.O - Grid Opening

Analyst: JIM JUNGLES **Lab Director: TOM CONLON**

NVLAP #101442

ASBESTECH

6825 Fair Oaks Blvd., Ste. 103, Carmichael, CA 95608 Tel.(916)481-8902

Wildhaber Consulting
PO Box 1413
Carmichael, CA 95609
PHONE #: (916) 715-3807
Fax #: (916) 451-2062
ATTENTION: Duke Wildhaber

Job Site:
Cal Trans Lab Renovation Phase IV, 5900 Folsom Blvd., Sacramento, Ca

Job #:
03-2C8434

Login #	7048
Date Received	12/24/08
Report Date	12/24/08
Total Samples	5

AHERA TEM ANALYTICAL REPORT

Method "40 CFR Part 763", Appendix A to Subpart E, Friday October 30, 1987

Client #
BI41-3174
Lab ID #
7048-04

Location/Description:
TEM air post SR/JC/FT removal, containment phase IV demo A-56 (a)(b)(c), IWA 12/23/08

AIR SAMPLING DATA

Total Time	141	min
Ave. LPM	9.5	
Sample Volume	1339.5	Liters

FILTER DATA

Type	MCE	
Diameter	25	mm
Area	385	mm^2
Pore Size	0.45	µm

TEM OPERATING PARAMETERS

Magnification	20,000X	
G. O. Area	0.00705	mm^2
G. O. Counted	9	
Effective Scan Area	0.0635	mm^2

ANALYTICAL SENSITIVITY

0.0045 Structures/cc

CALCULATED ASBESTOS STRUCTURE CONCENTRATION

Per mm^2 ≤5 µm	Per mm^2 ≥5 µm	TOTAL Per mm^2	TOTAL Per CC
<15.8	<15.8	**<15.8**	**<0.0045**

Per cc ≤5 µm	Per cc ≥5 µm
<0.0045	<0.0045

ASBESTIFORM STRUCTURE COUNT

	<5µm	>5µm		<5µm	>5µm
Chrysotile	0	0	Actinolite	0	0
Amosite	0	0	Tremolite	0	0
Crocidolite	0	0	Anthophyllite	0	0

COMMENTS:

No asbestos structures detected.

KEY:
> (Greater than or Equal)
G.O - Grid Opening

Analyst: JIM JUNGLES **Lab Director: TOM CONLON**

NVLAP #101442

ASBESTECH

6825 Fair Oaks Blvd., Ste. 103, Carmichael, CA 95608 Tel.(916)481-8902

Wildhaber Consulting
PO Box 1413
Carmichael, CA 95609
PHONE #: (916) 715-3807
Fax #: (916) 451-2062
ATTENTION: Duke Wildhaber

Job Site:
Cal Trans Lab Renovation Phase IV, 5900 Folsom Blvd., Sacramento, Ca

Job #:
03-2C8434

Login #	7048
Date Received	12/24/08
Report Date	12/24/08
Total Samples	5

AHERA TEM ANALYTICAL REPORT

Method "40 CFR Part 763", Appendix A to Subpart E, Friday October 30, 1987

Client #
BI41-3382
Lab ID #
7048-05
Location/Description:
TEM air post SR/JC/FT removal, containment phase IV demo A-56 (a)(b)(c), IWA 12/23/08

CALCULATED ASBESTOS STRUCTURE CONCENTRATION

Per mm² <5 µm	Per mm² >5 µm	TOTAL Per mm²	TOTAL Per CC
<15.8	<15.8	**<15.8**	**<0.0045**

Per cc <5 µm	Per cc >5 µm
<0.0045	<0.0045

AIR SAMPLING DATA

Total Time	142	min
Ave. LPM	9.45	
Sample Volume	1341.9	Liters

FILTER DATA

Type	MCE	
Diameter	25	mm
Area	385	mm²
Pore Size	0.45	µm

TEM OPERATING PARAMETERS

Magnification	20,000X	
G. O. Area	0.00705	mm²
G. O. Counted	9	
Effective Scan Area	0.0635	mm²

ANALYTICAL SENSITIVITY

0.0045 Structures/cc

ASBESTIFORM STRUCTURE COUNT

	<5µm	>5µm		<5µm	>5µm
Chrysotile	0	0	Actinolite	0	0
Amosite	0	0	Tremolite	0	0
Crocidolite	0	0	Anthophyllite	0	0

COMMENTS:

No asbestos structures detected.

KEY:
> (Greater than or Equal)
G.O - Grid Opening

Analyst: JIM JUNGLES **Lab Director: TOM CONLON**

NVLAP #101442

ASBESTECH
6825 FAIR OAKS BLVD.,STE 103
CARMICHAEL, CA 95608

TEL. (916) 481-8902
FAX 481-3975

704B

AIR MONITOR LOG / SAMPLE ANALYSIS REQUEST / CHAIN OF CUSTODY

CLIENT/ CONTACT PERSON: Wildhaber Consulting
ADDRESS: P.O. Box 143 C, Carmichael, CA 95609
PHONE: (916) 715-3807
SPECIAL INSTRUCTIONS/TURNAROUND TIME: SAME DAY RUSH CALL DUKE WITH RESULTS

JOB #: 03-2C8434 CALTRONS LAB RENOVATION PHASE II
JOB LOCATION: 5900 Folsom Blvd Sac, CA
☐ PERSONALS ☒ AREAS
☐ PCM (NIOSH 7400 A) ☒ TEM AHERA ☐ LEAD (NIOSH 7082)

SAMPLE #	IWA / OWA	LOCATION	ACTIVITY	PUMP #	RESPIRATOR TYPE	WORKER NAMES	SAMPLE DATE	TIME ON/OFF	TOTAL TIME	FLOW ON/OFF	AIR VOLUME	FIBERS	FIELDS	FIBERS/ CC
BI41 2861	IWA / OWA	CONTAINMENT Phase II D5410 A-56(a)(b)(c)	SR/JC & FT Removal Post TEM AIR SAMPLING POST SHEETROCK/Finish REMOVAL	1	North Wall ①		12/23/08	3:15 / 5135	140	9.5 / 9.3	1316			
BI41 3187	IWA / OWA			8	②		12/23/08	3:16 / 5136	140	9.5 / 9.5	1330			
BI41 2851	IWA / OWA			3	③		12/23/08	3:17 / 5138	141	9.5 / 9.4	1332			
BI41 3174	IWA / OWA			6	④		12/23/08	3:18 / 5139	141	01.5 / 9.5	1339			
BI41 3382	IWA / OWA			7	South Wall ⑤		12/23/08	3:19 / 5141	142	9.5 / 9.4	1341			
BI41 3340	IWA / OWA	FIELD BLANK @ #1					12/23/08							
BI41 3001	IWA / OWA	FIELD BLANK @ #7					12/23/08							
BI41 2830	IWA / OWA	SEALED BLANK					12/23/08							

CHAIN OF CUSTODY:

WHITE: LABORATORY
YELLOW: FIELD

SEALED BY: [signature] RECEIVED BY: [signature] RECEIVED BY:
DATE/TIME: 12/23/08 6:00 PM DATE/TIME: 12-24-8 DATE/TIME:

Wildhaber Consulting
PO Box 1413
Carmichael, CA 95609

Lead (Pb) Paint Sample Results

To: **Caltrans / Trans-Lab Renovation** **October 5, 2009**
Attn: Mr. William Brook
5900 Folsom Blvd.
Sacramento, CA 95819

From: **Earl "Duke" Wildhaber, CAC,CDPH**
Wildhaber Consulting

RE: Lead (Pb) Paint Sampling Supply Building A-56 / # 03-2C8434

Dear Mr. Brook:

On September 30th 2009, Lead (Pb) paint sampling was performed in the above referenced structure. These samples were delivered to Asbestech Laboratories in Sacramento, California for analysis. The turn around time for these samples was 2 days. The laboratory results indicated Lead (Pb) present in the five (5) samples collected. Two of the five samples collected are defined as "Lead Based Paint" (see Exhibit I laboratory results report #7963).

Also included in this report are the following:

- Facility Site Plan (Exhibit II)
- Sample Location Plan (Exhibit III)
- Summary of Title 8 CCR Section 1532.1 (Exhibit IV)
- Article 1. Definitions Summary of Title 17 CCR Division 1, Chapter 8 (Exhibit V)

STATE OF CA DEPARTMENT OF PUBLIC HEALTH
EARL
WILDHABER
LEAD PROFESSIONAL
#5109
9/23/10
EXPIRES

Phone: (916) 331-0326 / Fax: (916) 331-0329 / duke@wildhaberconsulting.com

Exhibit I

ASBESTECH
6825 Fair Oaks Blvd., Suite 103
Carmichael, California 95608
Tel (916) 481-8902
Fax (916) 481-3975

FLAME ATOMIC ABSORPTION SPECTROMETRY
LEAD (Pb) IN PAINT SAMPLES
METHOD SW846-3050B-7420

CLIENT:
Wildhaber Consulting
PO Box 1413
Carmichael, CA 95609

CA DOHS ELAP#1153
ELPAT#101801

JOB I.D.: 03-2C8434, Cal Trans, 5900 Folsom Blvd., Sacramento, Ca

DATE RECEIVED: 9/30/09

DATE ANALYZED: 10/1/09

LAB JOB NO: 7963

DATE REPORTED: 10/1/09

SAMPLE DATE	SAMPLE NUMBER	DESCRIPTION	PPM	RESULT IN WT%	RL	Q.C. BATCH
9/30/09	PC-1	Off white paint, interior walls	1000	0.10	0.010%	163
9/30/09	PC-2	Gray/ green paint, exterior front door	1400	0.14	0.010%	163
9/30/09	PC-3	Gray paint, interior I beam	340000	34	0.010%	163
9/30/09	PC-4	Gray paint, interior stair tread	6000	0.60	0.010%	163
9/30/09	PC-5	Light gray paint, exterior side door	1600	0.16	0.010%	163

LABORATORY DIRECTOR: TOM CONLON

ANALYST: JIM JUNGLES

BULK SAMPLE - ANALYSIS REQUEST

7963

P.O. NUMBER

ASBESTECH
6825 FAIR OAKS BLVD.,STE 103
CARMICHAEL, CA 95608
TEL. (916) 481-8902 FAX (916) 481-3975

NAME OF COMPANY	SAMPLE COLLECTED BY	DATE COLLECTED
Wildwater Consulting	DUKE	9-30-09
MAILING ADDRESS: P.O. BOX 1443 CARMICHAEL, CA	SPECIAL INSTRUCTIONS/TURNAROUND TIME: 48 hrs	
	JOB ID#: 03-2C8434	
TELEPHONE NO: 715-3807	JOB SITE: 5700 Folsom Blvd	

☐ PLM ASBESTOS ☐ POINT COUNT ☐ CARB 435 ☐ TEM ASBESTOS ☒ AA LEAD PAINT ☐ AA LEAD SOIL/TTLC ☐ LEAD STLC ☐ LEAD TCLP

SAMPLE NUMBER	SAMPLE DESCRIPTION	SAMPLE LOCATION 9163
PC-1	Off White Paint	INTERIOR WALLS 1000/.10
PC-2	GRAY/GREEN PAINT	EXTERIOR FRONT DOOR 1400/.1
PC-3	GRAY PAINT	INTERIOR I-BEAM 340 002/3
PC-4	GRAY PAINT	INTERIOR STAIR TREAD 6000/.6
PC-5	LIGHT GRAY PAINT	EXTERIOR SIDE DOOR 1600/.
	Building A-56	

CHAIN OF CUSTODY

RELINQUISHED BY: [signature] RELINQUISHED BY: _____ RELINQUISHED BY: _____

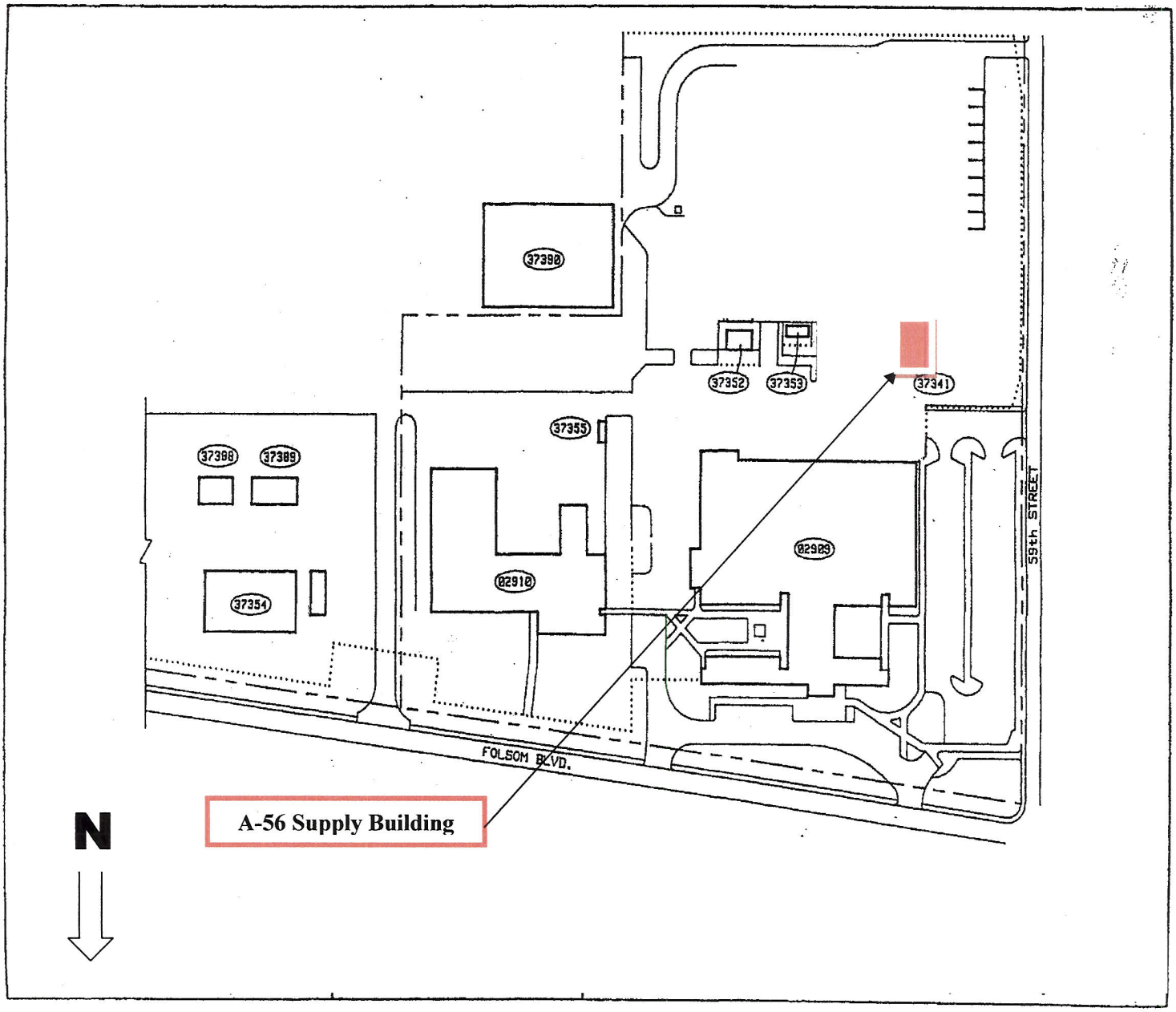
DATE/TIME: 9/30/09 9:45AM DATE/TIME: _____ DATE/TIME: _____

RECEIVED BY: [signature] RECEIVED BY: _____ RECEIVED BY: _____

DATE/TIME: 9-30-9 945 DATE/TIME: _____ DATE/TIME: _____

Exhibit II

Facility Site Plan

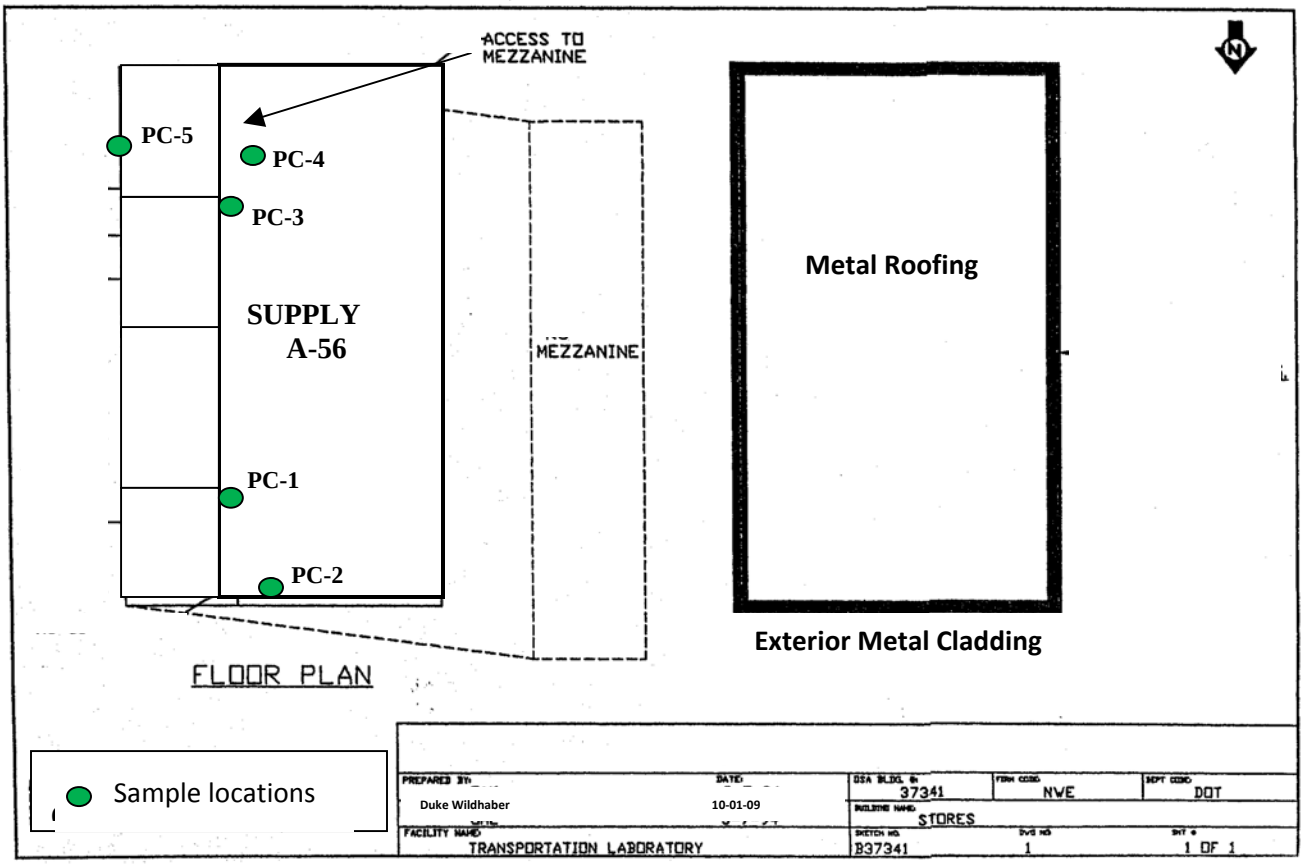


5900 FOLSOM BLVD. SACRAMENTO, CA 95819

Exhibit III

BUILDING A-56 SUPPLY (37341)

Lead (Pb) Paint Chip Sampling 9/30/2009



	Sample Description	Paint Condition
PC-1	Off White Paint- Wall	Intact – Good Condition
PC-2	Gray/Green Paint- Entrance Door	Intact - Chalking
PC-3	Gray Paint- I-Beam	Intact - Good Condition
PC-4	Gray Paint- Stair Tread	Intact - Good Condition
PC-5	Light Gray Paint- Exterior Door	Intact - Good Condition

Exhibit IV

Cal/OSHA CONSTRUCTION SAFETY ORDERS, LEAD SECTION 1532.1, amended March 6, 2007

Title 8 California Code of Regulations

Reprinted by the Occupational Lead Poisoning Prevention Program,
California Department of Public Health, May 2008

Sec. 1532.1. Lead

(a) Scope.

This section applies to all construction work where an employee may be occupationally exposed to lead. All construction work excluded from coverage in the general industry standard for lead by section 5216(a)(2) is covered by this standard. Construction work is defined as work for construction, alteration and/or repair, including painting and decorating. It includes but is not limited to the following:

(1) Demolition or salvage of structures where lead or materials containing lead are present;

(2) Removal or encapsulation of materials containing lead;

(3) New construction, alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead, or materials containing lead;

(4) Installation of products containing lead;

(5) Lead contamination/emergency cleanup;

(6) Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed, and

(7) Maintenance operations associated with the construction activities described in this subsection.

(b) Definitions.

Action level means employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air (30 $\mu g/m^3$) calculated as an 8-hour time-weighted average (TWA).

Chief means the Chief of the Division of Occupational Safety and Health or designee.

Lead means metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds.

NIOSH means the National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, or designee.

Supervisor means one who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them. Supervisors shall be trained, as required by this section, and, when required, be certified consistent with section (l)(3).

(c) Permissible exposure limit.

(1) The employer shall assure that no employee is exposed to lead at concentrations greater than fifty micrograms per cubic meter of air (50 $\mu g/m^3$) averaged over an 8-hour period.

(2) If an employee is exposed to lead for more than 8 hours in any work day the employees' allowable exposure, as a time weighted average (TWA) for that day, shall be reduced according to the following formula:

Allowable employee exposure (in $\mu g/m^3$) = 400 divided by hours worked in the day.

(3) When respirators are used to limit employee exposure as required under subsection (c) and all the requirements of subsections (e)(1) and (f) have been met, employee exposure may be considered to be at the level provided by the protection factor of the respirator for those periods the respirator is worn. Those periods may be averaged with exposure levels during periods when respirators are not worn to determine the employee's daily TWA exposure.

(d) Exposure assessment.

(1) General.

(A) Each employer who has a workplace or operation covered by this standard shall initially determine if any employee may be exposed to lead at or above the action level.

Safety&Health Fact Sheet

CONSULTATION CAL OSHA SERVICE

March 2002

Cal/OSHA Consultation Service
California Department of Industrial Relations
P. O. Box 420603 • San Francisco, CA 94142-0603

Lead in Construction

Special Emphasis Program

Cal/OSHA is conducting a Special Emphasis Program to reduce the hazard from **lead in construction** affecting workers, their families and the public.

Why a Special Emphasis Program now?

Cal/OSHA is particularly concerned about lead in construction because of:

- Recognition of significant risk to children from take-home lead, even at very low levels of exposure.
- A boom in housing and public works renovation and rehabilitation projects that disturb lead paint.
- The need for greater protection for workers, their families and the public through a focused inspection and consultation effort.

What are the goals of this program?

Significantly reduce lead exposures for workers, their families and the public by:

- Increased enforcement and consultation to get the word out to contractors, workers, and owners of buildings and other structures that lead is a significant hazard in the construction business.
- Informing employers of regulations they must follow when lead may be present on a construction job.
- Informing workers of the hazards of lead on the job, and to their families, especially children, from lead carried into vehicles or homes on their bodies, shoes or clothing.

What steps do I take to comply with the Cal/OSHA regulation for lead in construction?

Section 1532.1 in Title 8 of the California Code of Regulations makes construction employers responsible, by law, for basic steps in compliance.

Step 1—Recognize the hazard. Lead can be present in a wide range of materials including paints and other coatings, lead mortars, and base metals to be welded on or treated with abrasive blasting. Look at the age of the building or structure, the presence of coatings and other materials that may contain lead, and information from the property owner.

Send samples of materials to be disturbed to a laboratory for lead analysis. Laboratories accredited by the U.S. Environmental Protection Agency National Lead Laboratory Accreditation Program are listed at www.leadlisting.org. Testing methods for lead must meet requirements of Title 8 Section 1532.1(d)(9).

Step 2—On all construction jobs where lead is present the following is required:

- **Housekeeping.** Lead dust on surfaces, especially in eating areas, must be controlled by HEPA vacuuming, wet clean-up, or other effective methods.
- **Hand and face washing.** Workers must have washing facilities with soap and clean water.
- **Training.** Workers must receive training on lead hazards and how to protect themselves.
- **A written compliance program** to assure control of hazardous lead exposures.
- **Exposure determination.** Employers must assess the amounts of lead breathed by workers. This is usually done by employee breathing-zone air sampling. Air sampling results are used to determine if the protective measures in Step 4 must be taken, as well as the type of respirator that must be worn for protection.

Step 3—For certain highly hazardous tasks, called trigger tasks, special protective measures must be taken—including specified respirators—until the employer determines that worker airborne exposures to lead are below levels specified in Section 1532.1.

- **Level 1 trigger tasks**

Any of the following with lead-containing coatings or materials: spray painting, manual demolition, manual scraping or sanding, use of heat gun, power tool cleaning with dust collection system.

Minimum required respirator: half-mask respirator with N-100, R-100 or P-100 filters.

- **Level 2 trigger tasks**

Any of the following with lead-containing coatings or materials: using lead-containing mortar, lead burning, rivet busting, power tool cleaning without dust collection system, clean-up activities using dry expendable abrasives, abrasive blasting enclosure movement or removal.

Cal/OSHA Consultation Service Offices

For telephone assistance and to request a no-cost consultation at your workplace:

Fresno 559-454-1295	San Bernardino 909-383-4567
Oakland 510-622-2891	San Diego 619-767-2060
Sacramento 916-263-0704	Santa Fe Springs 562-944-9366
	Van Nuys 818-901-5754

Or toll-free **1-800-963-9424**

Minimum required respirator: air-supplied hood or helmet, or loose fitting hood or helmet powered air-purifying respirator with N-100, R-100 or P-100 filters.

■ **Level 3 trigger tasks**

Abrasive blasting, welding, cutting, or torch burning on structures where lead-containing coatings or materials are present.

Minimum required respirator: half-mask supplied air respirator operated in a positive pressure mode.

Pre-job notification is required for jobs involving all trigger tasks. Written notification must reach the nearest Cal/OSHA district office or be made online at www.dir.ca.gov/dosh/Permits.html at least 24 hours before the job starts. See Section 1532.1(p) for details on required information and types of jobs covered.

Protective measures required for all trigger tasks until worker airborne exposures are shown to be below levels specified in Section 1532.1:

- Respirators, protective equipment and clothing.
- Clothing change areas.
- Initial blood testing for lead and zinc protoporphyrin.
- Basic lead hazard, respirator, and safety training.

Also, Section 1532.1(i)(6) requires regulated areas with warning signs for all trigger tasks.

In addition to the specific trigger tasks, whenever there is reason to believe that any other task may cause a hazardous lead exposure, the above protective measures must be taken until the exposure is shown to be below the airborne Permissible Exposure Limit (PEL).

Step 4—Where air sampling shows employee exposures above the PEL from any operation, the following controls are required in addition to those for trigger tasks: respirators appropriate to the levels of exposure measured, clean areas for eating and clothing change, showers, full worker training, and medical monitoring with routine blood testing for lead and zinc protoporphyrin (ZPP).

Certification. On jobs at residential and public access buildings, workers exposed to lead above the PEL—and their supervisors—must receive state-approved training and be certified by the California Dept. of Health Services. **[TIP: Information on lead worker certification—phone 800-597-LEAD—or go to www.childlead.com and click on "Prevention"]**

What's in it for me?

Consider the alternatives to compliance: fines up to $70,000 per violation, medical removal payments to workers with high blood lead levels, and costly job shutdowns.

Some companies find that following the Cal/OSHA regulation increases their business because clients want jobs that are safe for both workers and the environment.

Where can I get help?

The Cal/OSHA Consultation Service helps employers at no cost. Employers can request an industrial hygienist to come to a construction job site, show how air sampling is done and assist in employee training. The Consultation Service is independent of Cal/OSHA's Enforcement Unit.

Questions frequently asked

Q. Before starting work on a job that involves disturbance of paint or other coatings, am I required to have a sample of the paint analyzed for lead content?

A. This is the best way to begin assessing the lead hazard at the jobsite. While not specifically required by the Cal/OSHA regulation, material sampling—combined with knowledge of the tasks being done—is the best indicator of the chance of high airborne lead levels, and can help guide the air sampling and exposure control efforts and the choice of required respirators.

Q. If I'm already doing air monitoring and protecting workers with respirators during tasks with high exposures, why do I also need to do blood lead and ZPP monitoring?

A. Blood lead and ZPP monitoring are tools that help assess workers' total exposure to lead—including through ingestion, unmonitored operations, and lead contamination in the vehicle and home. It is the most important benchmark for answering the question: "Am I protecting my workers from the hazards of lead on the job?"

Q. How do I get started with a lead medical monitoring program and where do I find a physician to do this?

A. The Department of Health Services Occupational Lead Poisoning Prevention Program listed below can help you get started with this program.

— More resources —

- At the Cal/OSHA website you can find all Title 8 regulations, including Section 1532.1 for lead in construction: **www.dir.ca.gov/dosh**
- California Department of Health Services Occupational Lead Poisoning Prevention Program website: www.dhs.ca.gov/ohb/olppp phone: 510-622-4332
- Painting and Decorating Contractors of America website: www.pdca.org • phone: 703-383-0800
- SSPC: Society for Protective Coatings website: www.sspc.org • phone: 412-281-2331
- The National Lead Service Providers' Listing System website: www.leadlisting.org

Exhibit V

Title 17, California Code of Regulations, Division 1, Chapter 8

Accreditation, Certification, and Work Practices For Lead-Based Paint and Lead Hazards

Article 1. Definitions.

§35014. Component.

"Component" means a structural element or fixture, such as a wall, floor, ceiling, door, window, molding, trim, trestle, tank, stair, railing, cabinet, gutter, or downspout.

§35027. Industrial Building.

"Industrial building" means a structure that is used primarily for industrial activity, which is generally not open to the public, including but not limited to, warehouses, factories, and storage facilities. "Industrial building" does not include any structure which fits the definition of a public building or a residential building.

§35032. Lead Activities.

"Lead activities" means abatement, lead hazard evaluation, lead-related construction work, or any activity which disturbs lead-based paint, presumed lead-based paint, or creates a lead hazard.

§35033. Lead-Based Paint.

"Lead-based paint" means paint or other surface coatings that contain an amount of lead equal to, or in excess of:

(a) one milligram per square centimeter (1.0 mg/cm_2); or

(b) half of one percent (0.5%) by weight.

§35037. Lead Hazard.

"Lead hazard" means deteriorated lead-based paint, lead contaminated dust, lead contaminated soil, disturbing lead-based paint or presumed lead-based paint without containment, or any other nuisance which may result in persistent and quantifiable lead exposure.

§35038. Lead Hazard Evaluation.

"Lead hazard evaluation" means the on-site investigation, for compensation, of lead-based paint or lead hazards for public and residential buildings, but does not include:

(a) activities intended to determine adequacy of containment; or

(b) air monitoring for lead, as specified in Title 8, California Code of Regulations, section 1532.1, and Title 17, California Code of Regulations, sections 70100 and 70200; or

(c) testing components removed from a residential or public building for lead to determine the applicability of hazardous waste requirements specified in Title 22, California Code of Regulations, Division 4.5, Chapters 10, 11, 12, 13, and 18, and California Health and Safety Code, section 25163, subdivision (c).

§35039. Lead Inspection.

"Lead inspection" means a surface by surface investigation to determine the presence of lead-based paint as described in Chapter 7: Lead-Based Paint Inspection, "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing," U.S. Department of Housing and Urban Development, 1997 Revision.

§35040. Lead-Related Construction Work.
"Lead-related construction work" means any construction, alteration, painting, demolition, salvage, renovation, repair, or maintenance of any residential or public building, including preparation and cleanup, that, by using or disturbing lead-containing material or soil, may result in significant exposure of adults or children to lead.

§35045. Public Building.
"Public building" means a structure, or part of a structure, and its land, which is generally accessible to the public, including but not limited to, schools, daycare centers, museums, airports, hospitals, stores, convention centers, government facilities, office buildings and any other building which is not an industrial building or a residential building.

Wildhaber Consulting
PO Box 1413
Carmichael, CA 95609

Lead (Pb) Dust Wipe Sample Results

To: **Caltrans / Trans-Lab Renovation** **October 5, 2009**
Attn: Mr. William Brook
5900 Folsom Blvd.
Sacramento, CA 95819

From: **Earl "Duke" Wildhaber, CAC,CDPH**
Wildhaber Consulting

RE: Lead (Pb) Dust Wipe Sampling Supply Building A-56 / # 03-2C8434

Dear Mr. Brook:

On September 28th 2009, Lead (Pb) dust wipe sampling was performed in the above referenced structure. These samples were sent via FedEx to Forensic Analytical Laboratories in Hayward, California for analysis. The turn around time for these samples was 3 days. The laboratory results indicated Lead (Pb) Dust levels above the current clearance levels for floors of 40 µg/ft² and interior horizontal surfaces of 250 µg/ft². (See exhibit I laboratory results report # M106066).

A total of eight (8) wipe samples were collected which included one (1) control sample .Sample number A-3 was collected from a non-conforming surface, desk top, and was below the 250 µg/ft² baseline level used for the clearance testing of the contents from the sea container contents tested post cleaning. Sample A-6 was also below 250 µg/ft, and the tested unit would meet the definition of an interior horizontal surface.

Also included in this report are the following:

- Facility Site Plan (Exhibit II)
- Sample Location Plan (Exhibit III)
- Summary of Title 8 CCR Section 1532.1 (Exhibit IV)
- Article 1. Definitions Summary of Title 17 CCR Division 1, Chapter 8 (Exhibit V)

Phone: (916) 331-0326 / Fax: (916) 331-0329 / duke@wildhaberconsulting.com

Exhibit I

Forensic Analytical Laboratories

Final Report

Metals Analysis of HUD Wipes

Wildhaber Consulting
Duke Wildhaber
PO Box 1413

Carmichael, CA 95609

Client ID: L1146
Report Number: M106066
Date Received: 09/29/09
Date Analyzed: 10/01/09
Date Printed: 10/02/09
First Reported: 10/02/09

Job ID / Site: 09-2C8434, Caltrans, 5900 Folsom Blvd., Sac
Date(s) Collected: 09/28/09

FALI Job ID: L1146
Total Samples Submitted: 8
Total Samples Analyzed: 8

Sample Number	Lab Number	Area ft2	Analyte	Result	Result Units	Reporting Limit*	Method Reference
A-1	30357365	1.00	Pb	490	ug/ft2	8	NIOSH 9100/7082
A-2	30357366	1.00	Pb	330	ug/ft2	8	NIOSH 9100/7082
A-3	30357367	1.00	Pb	39	ug/ft2	8	NIOSH 9100/7082
A-4	30357368	1.00	Pb	14000	ug/ft2	800	NIOSH 9100/7082
A-5	30357369	1.00	Pb	1200	ug/ft2	40	NIOSH 9100/7082
A-6	30357370	1.00	Pb	94	ug/ft2	8	NIOSH 9100/7082
A-7	30357371	1.00	Pb	230	ug/ft2	8	NIOSH 9100/7082
A-8	30357372	1.00	Pb	< 8	ug/ft2	8	NIOSH 9100/7082

Note to clients performing work related to the Lead Based Paint Hazard Reduction Act: Sample results for wipes not meeting ASTM E 1792 are not recognized within the National Lead Laboratory Accreditation Program.
Forensic Analytical can not determine whether or not wipes submitted to us for analysis meet the ASTM standard. We recommend to our clients that they document the brand of wipe that they use for each submission on their sample request form.

* The Reporting Limit represents the lowest amount of analyte that the laboratory can confidently detect in the sample, and is not a regulatory level. The Units for the Reporting Limit are the same as the Units for the Final Results.

Dave Sandusky, Laboratory Supervisor, Hayward Laboratory

3777 Depot Road, Suite 409, Hayward, CA 94545 / Telephone: (510) 887-8828 (800) 827-FASI / Fax: (510) 887-4218

Forensic Analytical Laboratories, Inc.

Analysis Request Form (COC)

Client Name & Address:
Wildhaber Consulting
P.O Box 1413
Carmichael, CA 95609

PO / Job#: 03-208434 **Date:** 9/28/09

Turn Around Time: Same Day / 1Day / 2Day / (3Day) / 4Day / 5Day

☐ PCM: ☐ NIOSH 7400A / ☐ NIOSH 7400B ☐ Rotometer

☐ PLM: ☐ Standard / ☐ Point Count 400 / 1000 / ☐ CARB 435

Contact: Duke Wildhaber

Phone: (916) 715-3807 **Fax:** (916) 331-0329

E-mail: Dukefungi@hotmail.com

Site: CALTRANS

Site Location: 5900 Folsom BLVD. SAC

☐ TEM Air: ☐ AHERA / ☐ Yamate2 / ☐ NIOSH 7402
☐ TEM Bulk: ☐ Quantitative / ☐ Qualitative / ☐ Chatfield
☐ TEM Water: ☐ Potable / ☐ Non-Potable / ☐ Weight %
☐ TEM Microvac: ☐ Qual(+/-) / ☐ D5755(str/area) / ☐ D5756(str/mass)

☐ IAQ Particle Identification (PLM LAB) ☐ PLM Opaques/Soot
☐ Particle Identification (TEM LAB) ☐ Special Project

☒ Metals Analysis: Method:

Matrix: WIPE SAMPLE / SQ FT

Analytes: PB

Comments:

Report Via: ☐ Fax ☒ E-Mail ☐ Verbal

Sample ID	Date / Time	Sample Location / Description (Building # A-56)	FOR AIR SAMPLES ONLY: Type (A / P / C)	Time On/Off	Avg. LPM	Total Time	Sample Area / Air Volume
A-1	9/28/09	CARGO SUPPORT BEAM	A P C				1SQ FT
A-2		LOFT FLOOR	A P C				
A-3		TABLE TOP	A P C				
A-4		I BEAM (HOIST)	A P C				
A-5		METAL AC DUCT	A P C				
A-6		WALL HEATER	A P C				
A-7		STAIR LANDING	A P C				
A-8		(CONTROL)	A P C				4
			A P C				
			A P C				

Sampled By: DUKE WILDHABER **Date:** 9-28-09 **Time:**

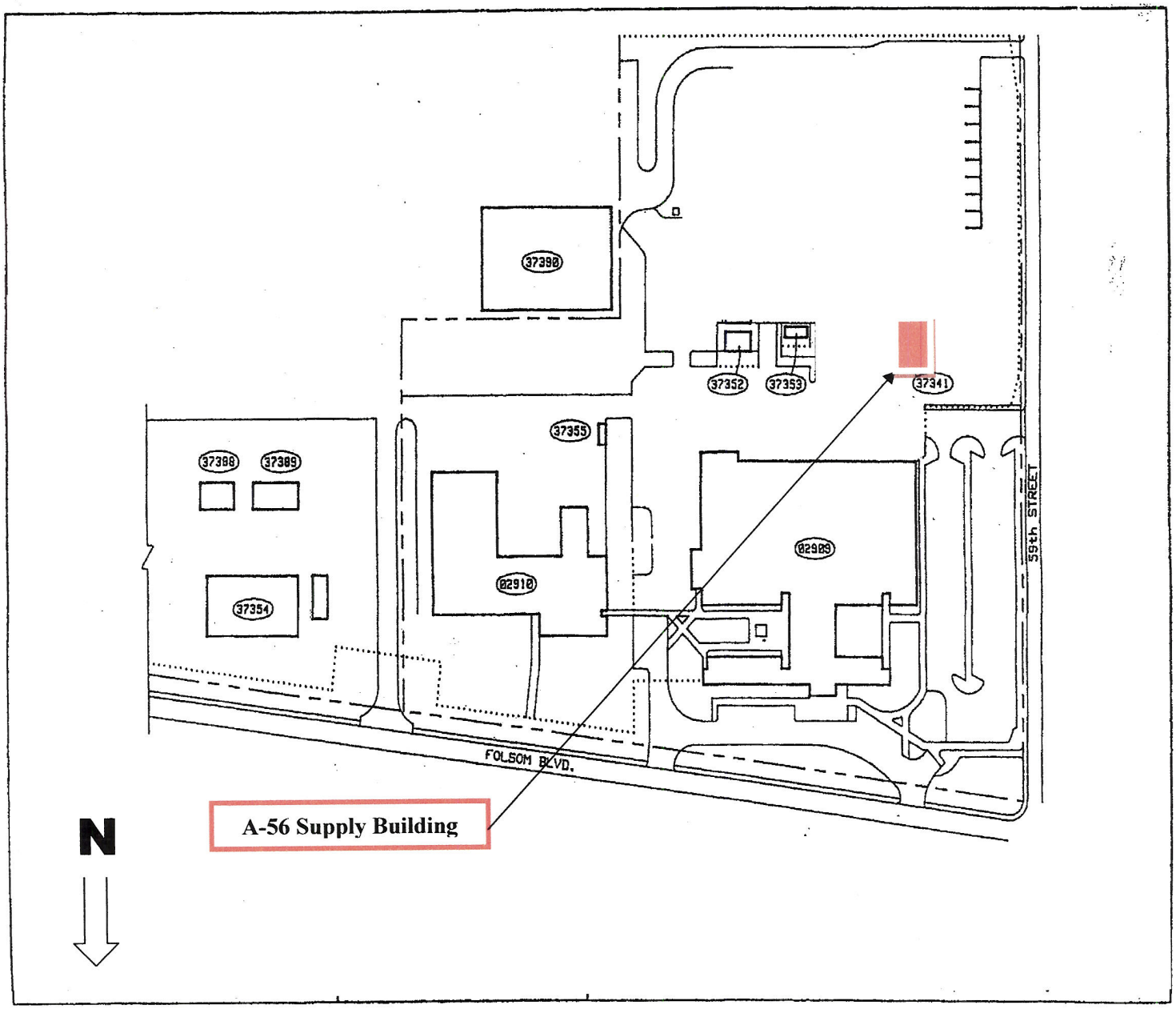
Shipped Via: ☒ Fed Ex ☐ DHL ☐ UPS ☐ US Mail ☐ Courier ☐ Drop Off ☐ Other:

Relinquished By:	Relinquished By:	Relinquished By:
Date / Time: 9/28/09 4:30PM	Date / Time:	Date / Time:
Received By: BP	**Received By:**	**Received By:**
Date / Time: 9/29/9 1030AM FIB	Date / Time:	Date / Time:
Condition Acceptable? ☒ Yes ☐ No	Condition Acceptable? ☐ Yes ☐ No	Condition Acceptable? ☐ Yes ☐ No

San Francisco Office: 3777 Depot Road, Suite 409, Hayward, California 94545-2761 / Ph: (510)887-8828 * (800)827-3274 / Fax: (510)887-4218
Los Angeles Office: 2959 Pacific Commerce Drive, Rancho Dominguez, California 90221 / Ph: (310)763-2374 * (888)813-9417 / Fax: (310)763-8684
Las Vegas Office: 6765 S. Eastern Avenue, Suite 3, Las Vegas, Nevada 89119 / Ph: (702)784-0040 / Fax: (702)784-0030

Exhibit II

Facility Site Plan

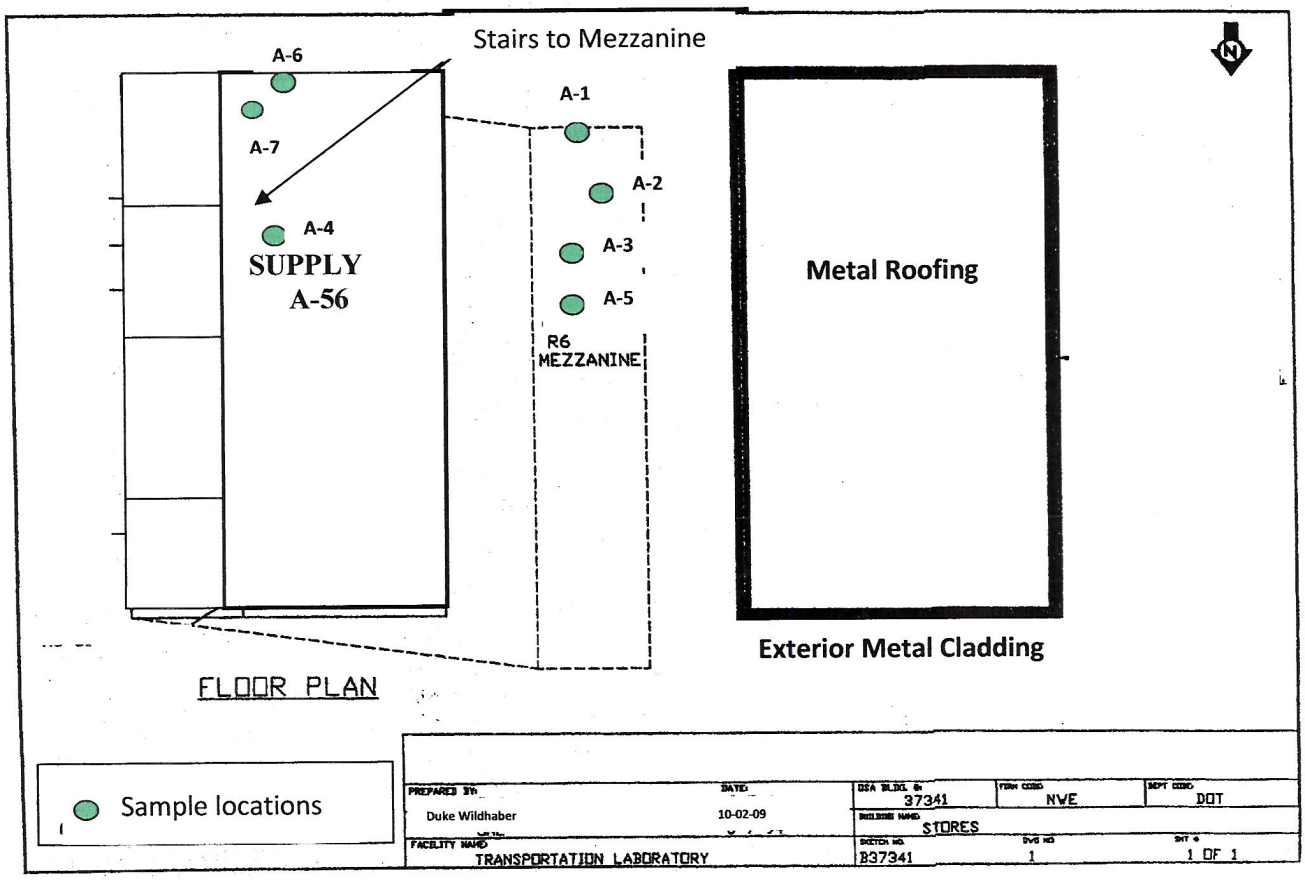


5900 FOLSOM BLVD. SACRAMENTO, CA 95819

Exhibit III

BUILDING A-56 SUPPLY (37341)

Lead (Pb) Dust Wipe Sampling 9/28/2009



A-1 Lateral Support Beam

A-2 Loft Floor

A-3 Table Top

A-4 I-Beam (hoist)

A-5 Metal Air Duct

A-6 Wall Heater (south)

A-7 Stair Landing

A-8 (Control Sample)

Exhibit IV

Cal/OSHA CONSTRUCTION SAFETY ORDERS, LEAD SECTION 1532.1, amended March 6, 2007

Title 8 California Code of Regulations

Reprinted by the Occupational Lead Poisoning Prevention Program,
California Department of Public Health, May 2008

Sec. 1532.1. Lead

(a) Scope.

This section applies to all construction work where an employee may be occupationally exposed to lead. All construction work excluded from coverage in the general industry standard for lead by section 5216(a)(2) is covered by this standard. Construction work is defined as work for construction, alteration and/or repair, including painting and decorating. It includes but is not limited to the following:

(1) Demolition or salvage of structures where lead or materials containing lead are present;

(2) Removal or encapsulation of materials containing lead;

(3) New construction, alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead, or materials containing lead;

(4) Installation of products containing lead;

(5) Lead contamination/emergency cleanup;

(6) Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed, and

(7) Maintenance operations associated with the construction activities described in this subsection.

(b) Definitions.

Action level means employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air (30 $\mu g/m^3$) calculated as an 8-hour time-weighted average (TWA).

Chief means the Chief of the Division of Occupational Safety and Health or designee.

Lead means metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds.

NIOSH means the National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, or designee.

Supervisor means one who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them. Supervisors shall be trained, as required by this section, and, when required, be certified consistent with section (l)(3).

(c) Permissible exposure limit.

(1) The employer shall assure that no employee is exposed to lead at concentrations greater than fifty micrograms per cubic meter of air (50 $\mu g/m^3$) averaged over an 8-hour period.

(2) If an employee is exposed to lead for more than 8 hours in any work day the employees' allowable exposure, as a time weighted average (TWA) for that day, shall be reduced according to the following formula:

Allowable employee exposure (in $\mu g/m^3$) = 400 divided by hours worked in the day.

(3) When respirators are used to limit employee exposure as required under subsection (c) and all the requirements of subsections (e)(1) and (f) have been met, employee exposure may be considered to be at the level provided by the protection factor of the respirator for those periods the respirator is worn. Those periods may be averaged with exposure levels during periods when respirators are not worn to determine the employee's daily TWA exposure.

(d) Exposure assessment.

(1) General.

(A) Each employer who has a workplace or operation covered by this standard shall initially determine if any employee may be exposed to lead at or above the action level.

Safety&Health Fact Sheet

CONSULTATION CAL OSHA SERVICE

March 2002

Cal/OSHA Consultation Service
California Department of Industrial Relations
P. O. Box 420603 • San Francisco, CA 94142-0603

Lead in Construction

Special Emphasis Program

Cal/OSHA is conducting a Special Emphasis Program to reduce the hazard from **lead in construction** affecting workers, their families and the public.

Why a Special Emphasis Program now?

Cal/OSHA is particularly concerned about lead in construction because of:

- Recognition of significant risk to children from take-home lead, even at very low levels of exposure.
- A boom in housing and public works renovation and rehabilitation projects that disturb lead paint.
- The need for greater protection for workers, their families and the public through a focused inspection and consultation effort.

What are the goals of this program?

Significantly reduce lead exposures for workers, their families and the public by:

- Increased enforcement and consultation to get the word out to contractors, workers, and owners of buildings and other structures that lead is a significant hazard in the construction business.
- Informing employers of regulations they must follow when lead may be present on a construction job.
- Informing workers of the hazards of lead on the job, and to their families, especially children, from lead carried into vehicles or homes on their bodies, shoes or clothing.

What steps do I take to comply with the Cal/OSHA regulation for lead in construction?

Section 1532.1 in Title 8 of the California Code of Regulations makes construction employers responsible, by law, for basic steps in compliance.

Step 1—Recognize the hazard. Lead can be present in a wide range of materials including paints and other coatings, lead mortars, and base metals to be welded on or treated with abrasive blasting. Look at the age of the building or structure, the presence of coatings and other materials that may contain lead, and information from the property owner.

Send samples of materials to be disturbed to a laboratory for lead analysis. Laboratories accredited by the U.S. Environmental Protection Agency National Lead Laboratory Accreditation Program are listed at www.leadlisting.org. Testing methods for lead must meet requirements of Title 8 Section 1532.1(d)(9).

Step 2—On all construction jobs where lead is present the following is required:

- **Housekeeping.** Lead dust on surfaces, especially in eating areas, must be controlled by HEPA vacuuming, wet clean-up, or other effective methods.
- **Hand and face washing.** Workers must have washing facilities with soap and clean water.
- **Training.** Workers must receive training on lead hazards and how to protect themselves.
- **A written compliance program** to assure control of hazardous lead exposures.
- **Exposure determination.** Employers must assess the amounts of lead breathed by workers. This is usually done by employee breathing-zone air sampling. Air sampling results are used to determine if the protective measures in Step 4 must be taken, as well as the type of respirator that must be worn for protection.

Step 3—For certain highly hazardous tasks, called trigger tasks, special protective measures must be taken—including specified respirators—until the employer determines that worker airborne exposures to lead are below levels specified in Section 1532.1.

- **Level 1 trigger tasks**

Any of the following with lead-containing coatings or materials: spray painting, manual demolition, manual scraping or sanding, use of heat gun, power tool cleaning with dust collection system.

Minimum required respirator: half-mask respirator with N-100, R-100 or P-100 filters.

- **Level 2 trigger tasks**

Any of the following with lead-containing coatings or materials: using lead-containing mortar, lead burning, rivet busting, power tool cleaning without dust collection system, clean-up activities using dry expendable abrasives, abrasive blasting enclosure movement or removal.

Cal/OSHA Consultation Service Offices

For telephone assistance and to request a no-cost consultation at your workplace:

Fresno 559-454-1295	San Bernardino 909-383-4567
Oakland 510-622-2891	San Diego 619-767-2060
Sacramento 916-263-0704	Santa Fe Springs 562-944-9366
	Van Nuys 818-901-5754

Or toll-free **1-800-963-9424**

Minimum required respirator: air-supplied hood or helmet, or loose fitting hood or helmet powered air-purifying respirator with N-100, R-100 or P-100 filters.

■ **Level 3 trigger tasks**

Abrasive blasting, welding, cutting, or torch burning on structures where lead-containing coatings or materials are present.

Minimum required respirator: half-mask supplied air respirator operated in a positive pressure mode.

Pre-job notification is required for jobs involving all trigger tasks. Written notification must reach the nearest Cal/OSHA district office or be made online at www.dir.ca.gov/dosh/Permits.html at least 24 hours before the job starts. See Section 1532.1(p) for details on required information and types of jobs covered.

Protective measures required for all trigger tasks until worker airborne exposures are shown to be below levels specified in Section 1532.1:

- Respirators, protective equipment and clothing.
- Clothing change areas.
- Initial blood testing for lead and zinc protoporphyrin.
- Basic lead hazard, respirator, and safety training.

Also, Section 1532.1(i)(6) requires regulated areas with warning signs for all trigger tasks.

In addition to the specific trigger tasks, whenever there is reason to believe that any other task may cause a hazardous lead exposure, the above protective measures must be taken until the exposure is shown to be below the airborne Permissible Exposure Limit (PEL).

Step 4—Where air sampling shows employee exposures above the PEL from any operation, the following controls are required in addition to those for trigger tasks: respirators appropriate to the levels of exposure measured, clean areas for eating and clothing change, showers, full worker training, and medical monitoring with routine blood testing for lead and zinc protoporphyrin (ZPP).

Certification. On jobs at residential and public access buildings, workers exposed to lead above the PEL—and their supervisors—must receive state-approved training and be certified by the California Dept. of Health Services. **[TIP: Information on lead worker certification—phone 800-597-LEAD—or go to www.childlead.com and click on "Prevention"]**

What's in it for me?

Consider the alternatives to compliance: fines up to $70,000 per violation, medical removal payments to workers with high blood lead levels, and costly job shutdowns.

Some companies find that following the Cal/OSHA regulation increases their business because clients want jobs that are safe for both workers and the environment.

Where can I get help?

The Cal/OSHA Consultation Service helps employers at no cost. Employers can request an industrial hygienist to come to a construction job site, show how air sampling is done and assist in employee training. The Consultation Service is independent of Cal/OSHA's Enforcement Unit.

Questions frequently asked

Q. Before starting work on a job that involves disturbance of paint or other coatings, am I required to have a sample of the paint analyzed for lead content?

A. This is the best way to begin assessing the lead hazard at the jobsite. While not specifically required by the Cal/OSHA regulation, material sampling—combined with knowledge of the tasks being done—is the best indicator of the chance of high airborne lead levels, and can help guide the air sampling and exposure control efforts and the choice of required respirators.

Q. If I'm already doing air monitoring and protecting workers with respirators during tasks with high exposures, why do I also need to do blood lead and ZPP monitoring?

A. Blood lead and ZPP monitoring are tools that help assess workers' total exposure to lead—including through ingestion, unmonitored operations, and lead contamination in the vehicle and home. It is the most important benchmark for answering the question: "Am I protecting my workers from the hazards of lead on the job?"

Q. How do I get started with a lead medical monitoring program and where do I find a physician to do this?

A. The Department of Health Services Occupational Lead Poisoning Prevention Program listed below can help you get started with this program.

— More resources —

- At the Cal/OSHA website you can find all Title 8 regulations, including Section 1532.1 for lead in construction: **www.dir.ca.gov/dosh**
- California Department of Health Services Occupational Lead Poisoning Prevention Program website: www.dhs.ca.gov/ohb/olppp phone: 510-622-4332
- Painting and Decorating Contractors of America website: www.pdca.org • phone: 703-383-0800
- SSPC: Society for Protective Coatings website: www.sspc.org • phone: 412-281-2331
- The National Lead Service Providers' Listing System website: www.leadlisting.org

Exhibit V

Title 17, California Code of Regulations, Division 1, Chapter 8

Accreditation, Certification, and Work Practices For Lead-Based Paint and Lead Hazards

Article 1. Definitions.

§35014. Component.

"Component" means a structural element or fixture, such as a wall, floor, ceiling, door, window, molding, trim, trestle, tank, stair, railing, cabinet, gutter, or downspout.

§35027. Industrial Building.

"Industrial building" means a structure that is used primarily for industrial activity, which is generally not open to the public, including but not limited to, warehouses, factories, and storage facilities. "Industrial building" does not include any structure which fits the definition of a public building or a residential building.

§35032. Lead Activities.

"Lead activities" means abatement, lead hazard evaluation, lead-related construction work, or any activity which disturbs lead-based paint, presumed lead-based paint, or creates a lead hazard.

§35033. Lead-Based Paint.

"Lead-based paint" means paint or other surface coatings that contain an amount of lead equal to, or in excess of:
(a) one milligram per square centimeter (1.0 mg/cm2); or
(b) half of one percent (0.5%) by weight.

§35037. Lead Hazard.

"Lead hazard" means deteriorated lead-based paint, lead contaminated dust, lead contaminated soil, disturbing lead-based paint or presumed lead-based paint without containment, or any other nuisance which may result in persistent and quantifiable lead exposure.

§35038. Lead Hazard Evaluation.

"Lead hazard evaluation" means the on-site investigation, for compensation, of lead-based paint or lead hazards for public and residential buildings, but does not include:
(a) activities intended to determine adequacy of containment; or
(b) air monitoring for lead, as specified in Title 8, California Code of Regulations, section 1532.1, and Title 17, California Code of Regulations, sections 70100 and 70200; or
(c) testing components removed from a residential or public building for lead to determine the applicability of hazardous waste requirements specified in Title 22, California Code of Regulations, Division 4.5, Chapters 10, 11, 12, 13, and 18, and California Health and Safety Code, section 25163, subdivision (c).

§35039. Lead Inspection.

"Lead inspection" means a surface by surface investigation to determine the presence of lead-based paint as described in Chapter 7: Lead-Based Paint Inspection, "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing," U.S. Department of Housing and Urban Development, 1997 Revision.

§35040. Lead-Related Construction Work.
"Lead-related construction work" means any construction, alteration, painting, demolition, salvage, renovation, repair, or maintenance of any residential or public building, including preparation and cleanup, that, by using or disturbing lead-containing material or soil, may result in significant exposure of adults or children to lead.

§35045. Public Building.
"Public building" means a structure, or part of a structure, and its land, which is generally accessible to the public, including but not limited to, schools, daycare centers, museums, airports, hospitals, stores, convention centers, government facilities, office buildings and any other building which is not an industrial building or a residential building.