

SITE HEALTH AND SAFETY PLAN

CYPRESS 'B'
CALTRANS DISTRICT 4
CONSTRUCTION OF STATE HIGHWAY 880
IN ALAMEDA COUNTY IN OAKLAND FROM 0.7 MILE
SOUTH OF 7TH STREET TO 0.2 MILE SOUTH
OF WEST GRAND AVENUE

OGISO REPORT E95151/HSP

June 16, 1995

For

Caltrans District 4
Contract No. 04-192214
CYPRESS 'B'

SITE HEALTH AND SAFETY PLAN

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CALTRANS DISTRICT 4
CONSTRUCTION OF STATE HIGHWAY 880
IN ALAMEDA COUNTY IN OAKLAND FROM 0.7 MILE
SOUTH OF 7TH STREET TO 0.2 MILE SOUTH
OF WEST GRAND AVENUE**

PREPARED FOR:

Mr. Mike Fornen, Senior R.E.
Caltrans District 4
1545 Willow Street
Oakland, CA 94612

PREPARED BY:

OGISO Environmental
150 W Iowa #200
Sunnyvale, California 94086

To all Site Visitors and Personnel:

This plan must be read and signed by all persons wishing access to the Work Area, regardless of identity and intended length of visitation. All changes to workplans and procedures must be communicated to the Site Safety Officer before implementation. Your signature on the sign-in sheet does not entitle you to enter the work zones, and the Site Safety Officer may request your departure at his discretion.

Sincerely,

Hamid Moshtaghi, Ph.D.
Project Manager, OGISO

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APPENDICES

Appendix A: General Safe Work Practices

Appendix B: Construction Safety Orders for Lead, Title 8 CCR 1532.1

Appendix C: Construction Safety Orders for Asbestos, Title 8 CCR 1529

1 BACKGROUND INFORMATION

The California Department of Transportation (Caltrans) is restoring continuity and capacity to the Interstate 880/Cypress where the I-880 link between 18th and 34th Streets in Oakland was destroyed by the Loma Prieta earthquake. The project corridor limits lay within the area bounded by Route I-80 at Powell street in Emeryville and by Route I-80 at Powell Street in Emeryville in the south. Several hazardous waste investigations have been conducted by Caltrans and by property owners during the right-of-way acquisition process for the freeway. Preliminary subsurface investigations initiated in 1992 and 1993 of the soil and groundwater along the freeway corridor indicate both soil and groundwater pollution throughout the proposed project area. Pollutants discovered in the proposed project area include petroleum hydrocarbons, pesticides, heavy metals and asbestos.

The I-880/Cypress restoration project has been divided into seven contracts, A through G. The following Health and Safety Plan will address the concerns of Contract B (Cypress 'B') which extends from 0.7 mile south of 7th Street to 0.2 mile south of West Grand Avenue in Oakland in Alameda County.

It is likely that some of the excavations for the construction of the freeway will need to be dewatered for the work to proceed due to shallow groundwater conditions along the freeway corridor. In such an event the groundwater from these excavations will be pumped into holding tanks to allow for settling of suspended solids and possible reclamation measures prior to discharge into the sewer system or reuse on the construction site.

Areas already identified as contaminated will be excavated, and transported for disposal in landfills according to their waste classification. Areas suspected of contamination will be investigated, delineated and remediated prior to construction in the area. Figure 1 depicts the site vicinity map for Cypress 'B'. Figures 2 through 5 show areas of contamination within the project area of Cypress 'B'.

FIGURE 1
SITE VICINITY MAP

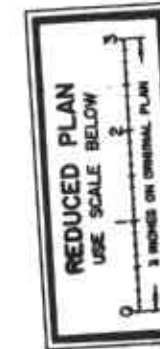
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ER-1505(003)N

DIST	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	32.8/34.2	1	608

**PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY
IN ALAMEDA COUNTY
IN OAKLAND**
**FROM 0.7 MILE SOUTH OF 7TH STREET TO
0.2 MILE SOUTH OF WEST GRAND AVENUE**

To be supplemented by Standard Plans dated July, 1992



INDEX OF SHEETS

Sheet No.	Title and Location Map
1	Title and Location Map
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8-9	Standard Plans List
10	Key Map and Line Index
11-18	Layouts
19-37	Profiles
38-56	Construction Details
57	Contour Grading
58-116	Drainage Plans, Profiles, Details and Quantities
117-131	Sanitary Sewer Plans, Details and Quantities
132-139	Utility Plans
140-154	Stage Construction Plans
155-168	Pavement Delineation Plans and Quantities
169-171	Summary of Quantities
172-178	Sign Plans, Details and Quantities
179-201	Retaining Wall
202-231	Sound Wall
232-277	Electrical Plans
278	Revised Standard Plans
279	New Standard Plans

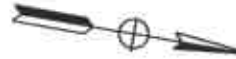
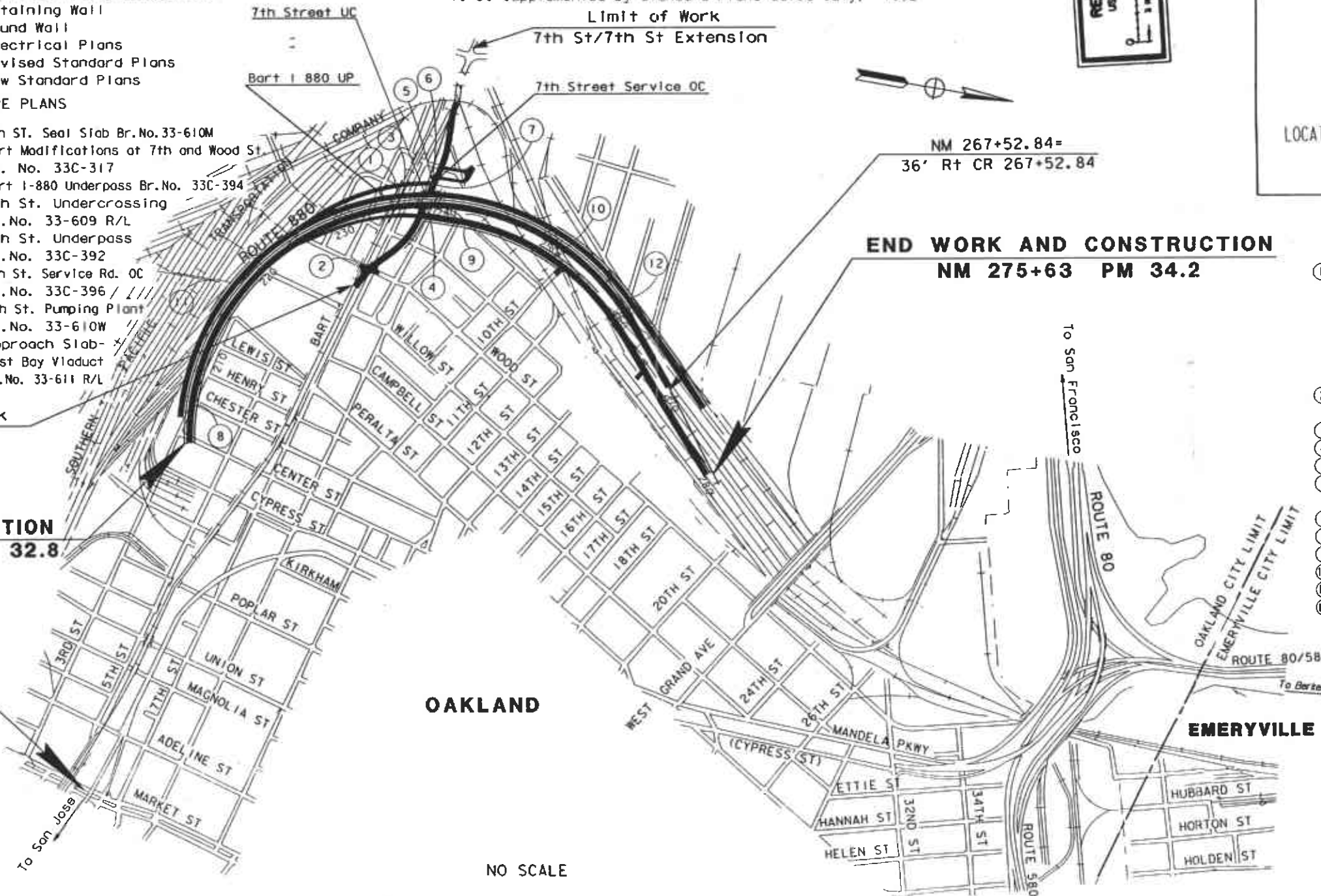
STRUCTURE PLANS

280-369	7th St. Seal Slab Br.No.33-610M
370-413	Bart Modifications at 7th and Wood St. Br. No. 33C-317
414-452	Bart I-880 Underpass Br.No. 33C-394
453-493	7th St. Undercrossing Br.No. 33-609 R/L
494-535	7th St. Underpass Br.No. 33C-392
536-566	7th St. Service Rd. OC Br.No. 33C-396 /
567-604	7th St. Pumping Plant Br.No. 33-610W
605-608	Approach Slab-East Bay Viaduct Br.No. 33-611 R/L

Limit of Work
Sta 4+00

BEGIN CONSTRUCTION
CR 201+82 PM 32.8

BEGIN WORK
PM 32.1



NM 267+52.84=
36' R+ CR 267+52.84

END WORK AND CONSTRUCTION
NM 275+63 PM 34.2

STRUCTURE LIST

Name	Bridge No
① 7th Street Seal Slab a) 7th Street b) 7th Street On-Ramp c) 7th Street Off-Ramp d) 7th Street/West Grand Connector e) Bay Street	33-610M
② Bart Modification at 7th and Wood Street	33C-317
③ Bart I-880 Underpass	33C-394
④ 7th Street Undercrossing	33-609 R/L
⑤ 7th Street Underpass	33C-392
⑥ 7th Street Service Road Overcrossing	33C-396
⑦ 7th Street Pumping Station	33-610W
⑧ Sound Wall No 1	
⑨ Sound Wall No 2	
⑩ Sound Wall No 3	
⑪ Retaining Wall no 1	
⑫ Retaining Wall No 2	

Approved as to Features Affecting City of Oakland Facilities
2-11-94

Project Engineer
Registered Civil Engineer
5-14-93



June 6, 1994
Plans Approval Date

PROJECT ENGINEER: W.M. SULAY
PROJECT MANAGER: ACE FORSEN
DATE: 6/93

The Contractor shall possess the Class (or Classes) of license as specified in the "Notice to Contractors".

Contract No. **04-192214**

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES

CU 04195

EA 192211

FIGURE 2
LOCATION OF CONTAMINATED MATERIAL

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	32.8/34.2	47	608

J. W. Ross 5-4-93
 REGISTERED CIVIL ENGINEER
 6-6-94
 PLANS APPROVAL DATE

LEGEND

- Archaeologically sensitive areas.
- Enclosed Area is proposed South Prescott neighborhood Park. Entire area will be excavated to 3' bgs except lettered enclosed area.
- Limit of excavation. See table for depth of excavation

SITE REMEDIATION FOR PROPOSED SOUTH PRESCOTT NEIGHBORHOOD PARK

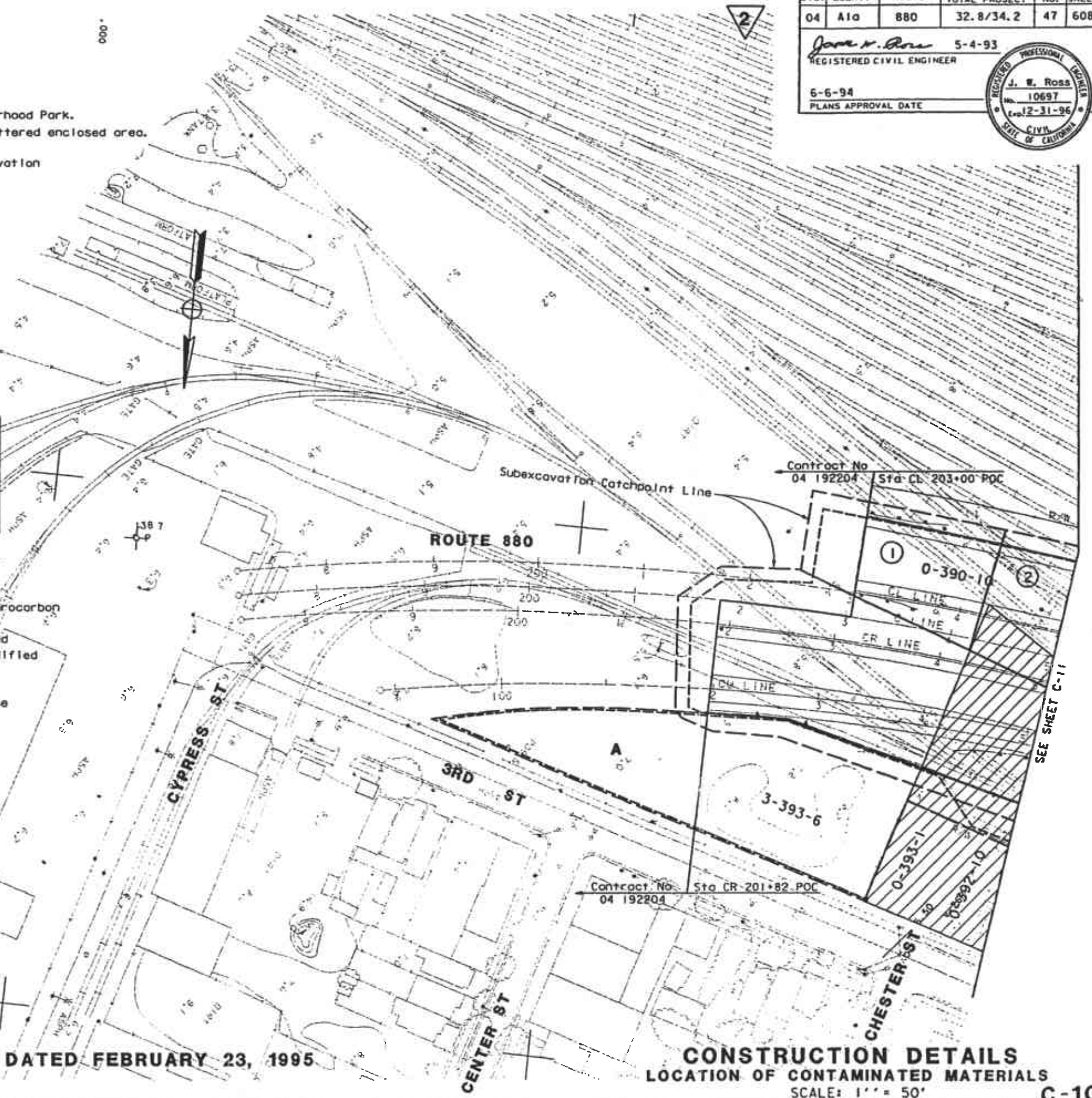
AREA	AVERAGE DEPTH OF EXCAVATION CONT OR HAZ (ft)	CONTAMINATED	HAZARDOUS
A (Bobo's Junkyard)	6' bgs	HC, Pb (950)	Chlordane (2300ppb) DDD (5600ppb) DDE (2300ppb)

ROADWAY EXCAVATION, CONTAMINATED MATERIAL (SPRR-PROPERTY)

AREA	DEPTH OF EXCAVATION CONT OR HAZ (ft)	CONTAMINATED	HAZARDOUS
1	7' Bgs		PB (1900)
2	Full Depth	PB (190), HC (1100)	PB (7.0)
3	4' Bgs	PB (470), HC (510)	PB (6.4)
4	7' Bgs	PB (580), HC (1900)	PB (31.0)

NOTES & ABBREVIATIONS:

bgs: Below ground surface
 Pb: Lead, analyzed by EPA 6010 for metals
 HC: Hydrocarbon, analyzed by EPA 418.1 for Total Recoverable Petroleum Hydrocarbon
 Chlordane, DDD & DDE: Organochlorine Pesticide, analyzed by EPA 8080
 Diesel: Total Petroleum Hydrocarbon as Diesel, analyzed by EPA 8015-modified
 Gasoline: Total Petroleum Hydrocarbon as Gasoline, analyzed by EPA 8015-modified
 VOC: Volatile Organic Compounds, analyzed by EPA 8020
 (>): Values shown are maximum soluble concentration of Lead (PPM)
 (): Values shown are maximum concentrations in PPM, except stated otherwise



REVISED PER ADDENDUM NO. 2 DATED FEBRUARY 23, 1995

CONSTRUCTION DETAILS
 LOCATION OF CONTAMINATED MATERIALS
 SCALE: 1" = 50'
C-10

PROJECT ENGINEER WILFREDO M. SULAY
 PROJECT DEVELOPMENT
 STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 1-AVANTAGE (331) 273-4192/10.DGN: 1

FIGURE 3
LOCATION OF CONTAMINATED MATERIAL

SITE REMEDIATION FOR PROPOSED SOUTH PRESCOTT NEIGHBORHOOD PARK

2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Alameda	880	32.8/34.2	48	608

James R. Ross 5-4-93
 REGISTERED CIVIL ENGINEER
 No. 10697
 Exp. 12-31-96
 CIVIL
 STATE OF CALIFORNIA

6-6-94
 PLANS APPROVAL DATE

AREA	AVERAGE DEPTH OF EXCAVATION CONT OR HAZ (ft)	CONTAMINATED	HAZARDOUS
B	6' bgs	HC(1930)	Pb(5290)
D	6' bgs	HC(19100), Pb(689)	
E	6' bgs	HC(11800), Pb(90)	
F	6' bgs	HC(8400)	Pb(12900)
G	6' bgs	HC(576)	Pb(3030)
H	6' bgs	HC(1780), Pb(200) <1, 2>	
I	6' bgs	HC(77500)	Pb(1640)(18)
J	6' bgs	HC(2150), Pb(633)	
K	6' bgs	HC(6110)	Pb(1640)
L	6' bgs	HC(35000), Diesel(2250)	Pb(455)(24)
M	6' bgs	HC(11800), Pb, (915)(4, 2)	
N (SMITH'S WRECKING)	6' bgs	HC(100000)	Pb(9400)
PARK AREA (excluding areas shown above)	3' bgs	HC(19200)	Pb(8740)(22)

STRUCTURE EXCAVATION, CONTAMINATED MATERIAL (SPRR - PROPERTY)

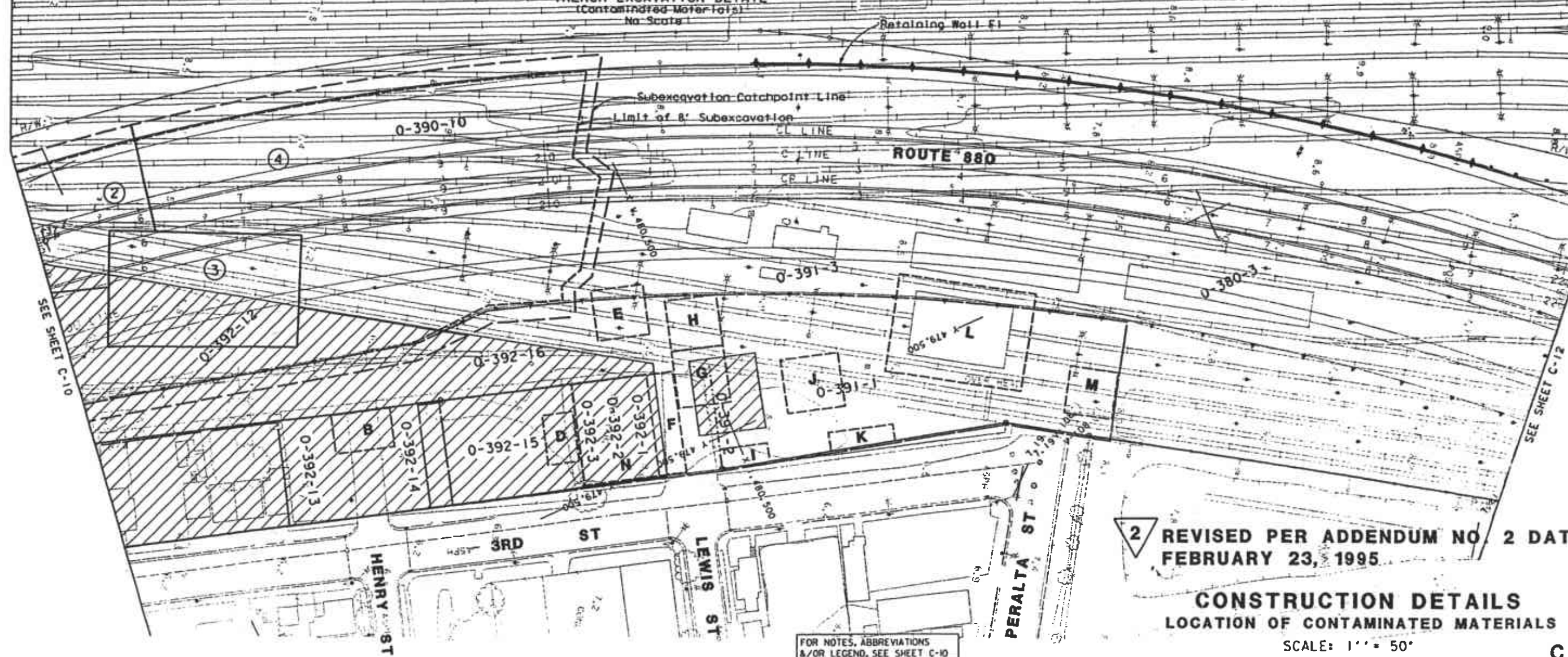
RETAINING WALL	DEPTH OF EXCAVATION, CONT OR HAZ (ft)	HAZARDOUS
P1	Full Depth	Pb
CL 212+00 to 219+00	Full Depth	Pb

TRENCH EXCAVATION, CONTAMINATED MATERIAL (SPRR-PROPERTY)

DRAINAGE PIPE & INLET	DEPTH OF EXCAVATION, CONT OR HAZ (ft)	HAZARDOUS
10' Lt E 209+75 to 10' Lt 210+25	Full Depth	Pb
25' Lt C 210+25 to 202' Rt 210+25	Full Depth	Pb
115' Rt C 210+25 to 92' Rt CR 211+40	Full Depth	Pb

NOTE: For Limit of excavation, See Trench Excavation Detail on C-11

TRENCH EXCAVATION DETAIL (Contaminated Material) No Scale



2 REVISED PER ADDENDUM NO 2 DATED FEBRUARY 23, 1995

**CONSTRUCTION DETAILS
 LOCATION OF CONTAMINATED MATERIALS**

SCALE: 1" = 50'

C-11

FOR NOTES, ABBREVIATIONS &/OR LEGEND, SEE SHEET C-10

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES

USERNAME => mikes1
 DGN FILE => /usr/mikes1/P1/419221g1

EA 1

DATE REVISION BY DATE REVISION

CALCULATED/DESIGNED BY CHECKED BY

PROJECT ENGINEER WILFREDO M. SULAY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
TRANS PROJECT DEVELOPMENT

LINE PLOTTED BY 17-F16-1995 15129

FIGURE 4
LOCATION OF CONTAMINATED MATERIAL

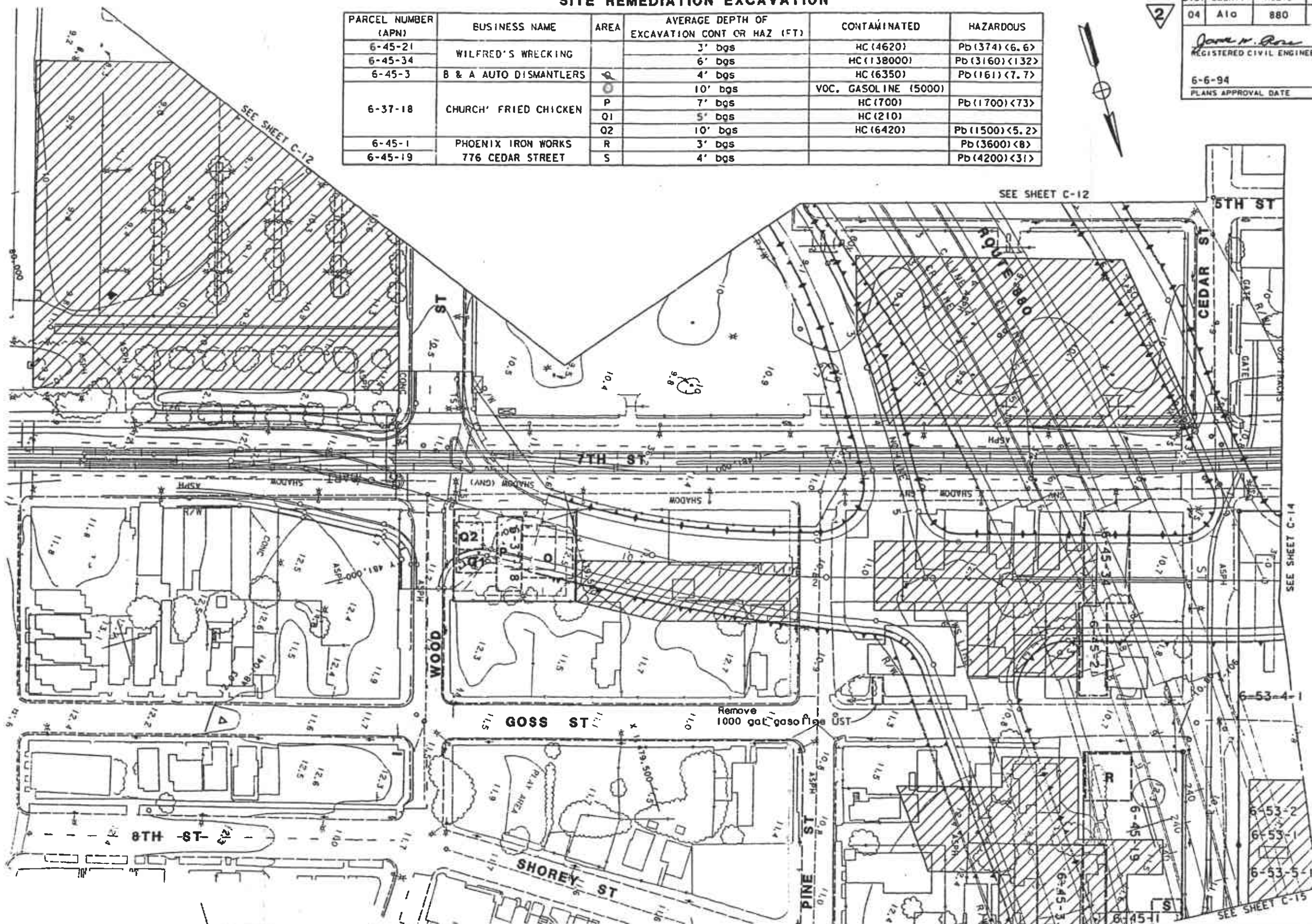
SITE REMEDIATION EXCAVATION

PARCEL NUMBER (APN)	BUSINESS NAME	AREA	AVERAGE DEPTH OF EXCAVATION CONT OR HAZ (FT)	CONTAMINATED	HAZARDOUS
6-45-21	WILFRED'S WRECKING		3' bgs	HC (4620)	Pb (374) <6.6>
6-45-34			6' bgs	HC (138000)	Pb (3160) <132>
6-45-3	B & A AUTO DISMANTLERS		4' bgs	HC (6350)	Pb (161) <7.7>
6-37-18	CHURCH' FRIED CHICKEN		10' bgs	VOC, GASOLINE (5000)	
		P	7' bgs	HC (700)	Pb (1700) <73>
		Q1	5' bgs	HC (210)	
		Q2	10' bgs	HC (6420)	Pb (1500) <5.2>
6-45-1	PHOENIX IRON WORKS	R	3' bgs		Pb (3600) <8>
6-45-19	776 CEDAR STREET	S	4' bgs		Pb (4200) <31>

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	AlO	880	32.8/34.2	50	608

J. W. Ross 5-7-93
 REGISTERED CIVIL ENGINEER
 6-6-94
 PLANS APPROVAL DATE

PROJECT ENGINEER: WILFREDO M. SULAY
 CALCULATED/DESIGNED BY: []
 CHECKED BY: []
 DATE REVISED BY: []
 DATE REVISED: []



FOR NOTES, ABBREVIATIONS &/OR LEGEND, SEE SHEET C-10

2 REVISED PER ADDENDUM NO. 2 DATED FEBRUARY 23, 1995

CONSTRUCTION DETAILS
 LOCATION OF CONTAMINATED MATERIALS
 SCALE: 1" = 50'
 C-13

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES

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TIME PLOTTED -> 12-JUN-1994 09:02

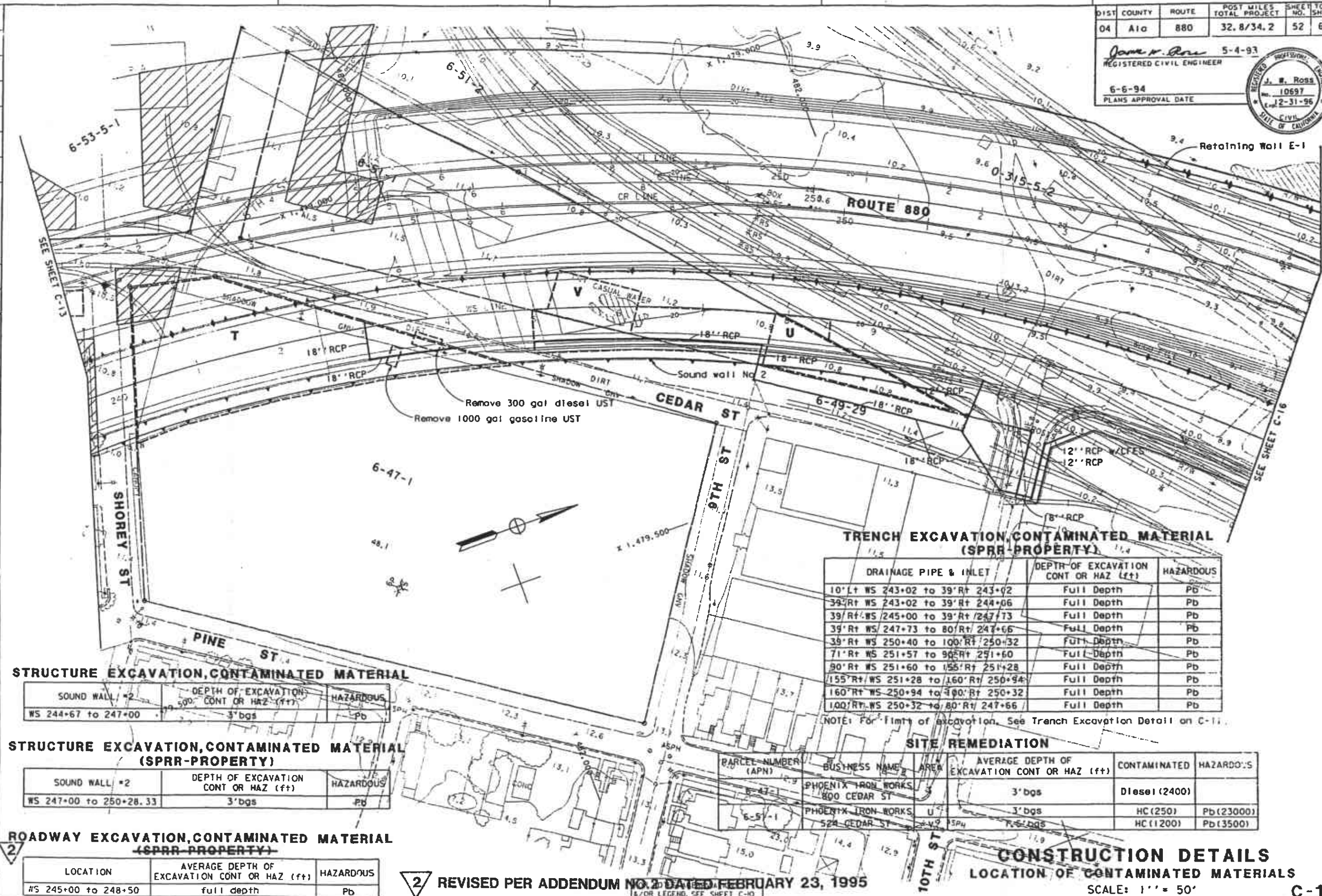
FIGURE 5
LOCATION OF CONTAMINATED MATERIAL

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	32.8/34.2	52	608

James R. Ross 5-4-93
REGISTERED CIVIL ENGINEER

6-6-94
PLANS APPROVAL DATE

J. W. Ross
No. 10697
Exp. 12-31-96
CIVIL
STATE OF CALIFORNIA



TRENCH EXCAVATION, CONTAMINATED MATERIAL (SPRR-PROPERTY)

DRAINAGE PIPE & INLET	DEPTH OF EXCAVATION CONT OR HAZ (ft)	HAZARDOUS
10' Lt WS 243+02 to 39' Rt 243+02	Full Depth	Pb
39' Rt WS 243+02 to 39' Rt 244+06	Full Depth	Pb
39' Rt WS 245+00 to 39' Rt 247+73	Full Depth	Pb
39' Rt WS 247+73 to 80' Rt 247+66	Full Depth	Pb
39' Rt WS 250+40 to 100' Rt 250+32	Full Depth	Pb
90' Rt WS 251+57 to 90' Rt 251+60	Full Depth	Pb
90' Rt WS 251+60 to 155' Rt 251+28	Full Depth	Pb
155' Rt WS 251+28 to 160' Rt 250+94	Full Depth	Pb
160' Rt WS 250+94 to 100' Rt 250+32	Full Depth	Pb
100' Rt WS 250+32 to 80' Rt 247+66	Full Depth	Pb

NOTE: For limits of excavation, see Trench Excavation Detail on C-11.

STRUCTURE EXCAVATION, CONTAMINATED MATERIAL

SOUND WALL #2	DEPTH OF EXCAVATION CONT OR HAZ (ft)	HAZARDOUS
WS 244+67 to 247+00	3' bgs	Pb

STRUCTURE EXCAVATION, CONTAMINATED MATERIAL (SPRR-PROPERTY)

SOUND WALL #2	DEPTH OF EXCAVATION CONT OR HAZ (ft)	HAZARDOUS
WS 247+00 to 250+28.33	3' bgs	Pb

ROADWAY EXCAVATION, CONTAMINATED MATERIAL (SPRR-PROPERTY)

LOCATION	AVERAGE DEPTH OF EXCAVATION CONT OR HAZ (ft)	HAZARDOUS
WS 245+00 to 248+50	full depth	Pb

SITE REMEDIATION

PARCEL NUMBER (APN)	BUSINESS NAME	AREA	AVERAGE DEPTH OF EXCAVATION CONT OR HAZ (ft)	CONTAMINATED	HAZARDOUS
6-47-1	PHOENIX IRON WORKS	800 CEDAR ST	3' bgs	Diesel (2400)	
6-51-1	PHOENIX IRON WORKS	524 CEDAR ST	3' bgs	HC(250)	Pb(23000)
			7.5' bgs	HC(1200)	Pb(3500)

CONSTRUCTION DETAILS

LOCATION OF CONTAMINATED MATERIALS
SCALE: 1" = 50'

2 REVISED PER ADDENDUM NO. 2 DATED FEBRUARY 23, 1995

PROJECT ENGINEER
WILFREDO M. SULAY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT

DATE	REVISOR	DATE
DATE	CHECKED BY	DATE
DATE	DESIGNED BY	DATE

2 SITE SAFETY AUTHORITY

Site Name: Caltrans Cypress 'B'
Owner: California Department of Transportation
Contract Administrator: Frank Cannizzaro (510) 286-0670
Contractor: OGISO Environmental
Contractor Contacts: Clement I. Okoh, Ph.D. (408) 245-9801
pager: (408) 485-3179

Project Manager: Hamid Moshtaghi, Ph.D. (408) 245-9801
pager: (510) 810-1226

Site Safety Officer: Hamid Moshtaghi, Ph.D.

2.1 Duties of Site Safety Officer

The Site Safety Officer (SSO) has the responsibility for onsite implementation of the Site Health and Safety Plan. The Site Safety Officer's responsibilities include, but are not limited to, the following:

- Verify that appropriate personal protective equipment is available and is properly used by the contractor and subcontractor personnel
- Verify that Contractor and Subcontractor personnel are aware of hazardous materials protection procedures and have been instructed in proper work practices and emergency procedures
- Monitor the activities of contractor and subcontractor personnel to verify that the required safe work practices are employed
- Conduct daily safety meetings prior to commencing operations. Meetings will cover:
 1. Expected site conditions
 2. Daily activities
 3. Safety deficiencies previously observed
 4. Any changes in emergency procedures

- Perform breathing zone air monitoring in potentially contaminated areas to assess the need for contractor and subcontractor personnel to wear respiratory protection equipment
- Maintain an onsite medical surveillance and emergency medical treatment program and assist in on- and off-site emergencies
- Maintain contractor and subcontractor records related to the site Health and Safety Plan, including, but not limited to, the documentation of compliance with training and medical monitoring requirements and attendance at protection/safety procedure update meetings as necessary
- Assist the Site Field Coordinator/Supervisor to establish command posts and work zones as necessary
- Maintain site entry records

2.2 Contractor

OGISO Environmental has been retained by Caltrans as the contractor for this project. Subcontractors retained by OGISO will include CEECON, Blue Water, and Moore Trucking and shall comply with this Health and Safety Plan throughout the Cypress B project. Subcontractors' names, contact persons and telephones are listed below.

<u>Subcontractor</u>	<u>Contact Person/ Site Supervisor</u>	<u>Telephone</u>
CEECON	Michael Hodges	(415) 738-1115
Blue Water	Chris Kirschenheuter	(510) 638-8384
Moore Trucking	Loyal Moore	(510) 533-8031

2.3 Visitors

Visitors brought onsite by OGISO, Kasler, CEECON, Caltrans and its agents and subcontractors, and all State and local regulatory agencies are responsible for compliance with the requirements of this Health and Safety Plan. Visitors may not come on the site unless the SSO is satisfied with their compliance with the Health and Safety Plan and all OSHA requirements. Permission to be onsite may be revoked at any time by the SSO.

3 JOB HAZARD ANALYSIS

3.1 Chemical Hazards

A number of chemical hazards have been identified according to site investigations conducted within the Cypress 'B' alignment. The chemical hazards associated with this site result from potential exposure to petroleum hydrocarbons (HC), volatile organic compounds (VOC's), total petroleum hydrocarbons as gasoline and diesel (TPHG & TPHD), chlordane, DDD, DDE, lead, and asbestos. The hazardous chemicals for Areas A through V are listed in the tables below and their locations are depicted in Figures 2 through 5.

LOCATION MAXIMUM LEVEL OF CONTAMINANTS

AREA	HC*	Lead	TPHD	TPHG	Chlordane	DDD	DDE
A		950			23	5.6	2.3
B	3930	5290					
D	19100	689					
E	11800	90					
F	8400	12900					
G	576	3030					
H	1780	200					
I	77500	1640 (18)					
J	2150	633					
K	6110	1640					
L	35000	455 (24)	2250				
M	11800	915 (4.2)					
N	100000	9400					

All Concentrations Are in Part Per Million (ppm)

Numbers In () Are Soluble Threshold Limit Concentrations (STLC)

All Other Numbers Are Total Threshold Limit Concentrations (TTLC)

HC* = Hydrocarbon

LOCATION MAXIMUM LEVEL OF CONTAMINANTS

AREA	HC*	Lead	Diesel	Gasoline	Chlordane	DDD	DDT
WW*	138000	3160(132)					
B&A*	6350	161 (7.7)					
O				5000			
P	700	1700(73)					
Q1	210						
Q2	6420	1500 (5.2)					
R		3600 (8)					
S		4200 (31)					
T			2400				
U	250	23000					
V	1200	3500					

All Concentrations Are in Part Per Million (ppm)

Numbers In () Are Soluble Threshold Limit Concentrations (STLC)

All Other Numbers Are Total Threshold Limit Concentrations (TTLC)

HC* = Hydrocarbon

WW* = Wilfred's Wrecking

B&A* = B & A Auto Dismantlers

In addition to the contaminants listed above, asbestos containing material has been identified throughout the fire station building at 727 pine street at the corner of Pine and Goss (Figure 4). Asbestos was identified in floor tiles and mastic, joint compound in the walls and sealant on the roof. The remediation of these tiles will be conducted by a registered asbestos abatement contractor with workers who have been appropriately trained and certified to provide the abatement. Potential exposure to asbestos is not anticipated to other workers on this project site.

3.2 Routes of Exposure

Hydrocarbons, Diesel and VOC's

Routes of entry for hydrocarbons, diesel and VOC's include inhalation, ingestion and skin contact:

Inhalation may cause headache, lightheadedness, nausea and vomiting.

Ingestion may cause irritation of the eyes, nose and throat.

Skin contact will cause cracking and drying of the skin.

Lead

Routes of entry for lead are through ingestion and inhalation of lead-carrying dust particles. Lead poisoning can result from accumulation of lead in the blood .

Chlordane

Routes of entry for chlordane include inhalation, skin absorption and ingestion:

Inhalation may cause blurred vision and confusion.

Chlordane can readily be absorbed through skin contact and may cause coughing

Ingestion may cause stomach pain, nausea and vomiting.

DDD and DDE

Routes of entry for DDD and DDE include inhalation, ingestion, and skin absorption which may cause irritation of the eyes and skin; prickling sensation of the tongue, lips and face; dizziness, headache and fatigue. These compounds may be absorbed through intact skin.

Asbestos

The main route of entry for asbestos is through inhalation which may cause asbestosis or lung cancer. Skin contact may cause irritation of the eyes.

3.3 Physical Hazards

The possible physical hazards present at this site are summarized below:

Slips and Falls Due to the moderate pace of work and the well-graded surface, the threat of injury from slips and falls is low.

Engulfment The threat of engulfment during excavation may exist in areas where depths of excavation exceed four feet. Workers should stay clear of all the excavation rims and be vigilant of operating equipment that may result in their plunging into the excavation.

Acoustical Hazards Acoustical hazard may exist in proximity to operating machinery and truck traffic. Regardless of the source(s) of the noise, the employees should resort to use of ear plugs.

Electrical Hazards Electrocutation hazard from striking power lines or conduits is possible during excavation and hauling of contaminated material in the Cypress B project. Underground Service Alert will have to be contacted to mark the underground utilities prior to commencing operation in the area. Care should be exercised in operating equipment and machinery in and around power lines, underground utilities, and suspect underground conduits.

Mechanical Hazards Mechanical hazards to the body specially eyes, head, hands, and feet exist in the potential for injurious contact with sharp objects, flying materials, and heavy equipments. Of prime concern are excavation and earthmoving equipments and trucks. Workers should remain vigilant of all operating equipments on the site and maintain a safe working distance from them. Wearing of goggles, gloves and boots will prevent potential injuries from contact with sharp or flying materials and objects.

Solar Radiation Sunburn is a threat that may be mitigated by protective creams and adequate clothing.

Heat Stress Heat stress is not expected to be a significant problem because temperatures at the site are not expected to be higher than the seventies and eighties during the remediation. In the event of a surprise heat wave, the signs and symptoms of heat stress are described below:

- Heat rashes may result from continuous exposure to heat or humid air
- Heat cramps are caused by heavy sweating with inadequate electrolyte replacement; symptoms include:
 - muscle spasms
 - pain in hands, feet, and abdomen
- Heat exhaustion can result from increased stress on various body organs. There may be inadequate blood circulation due to cardiovascular insufficiency or dehydration. Symptoms include:
 - pale, cool, moist skin
 - heavy sweating
 - dizziness
 - nausea
 - fainting
- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Symptoms include:
 - red, hot, usually dry skin
 - lack of or reduced perspiration
 - nausea
 - dizziness and confusion
 - strong, rapid pulse, and finally
 - coma

Heat stress may be prevented by using work-rest cycles and replenishing body fluids lost through sweating.

3.4 Fire

The threat of fires at Cypress B is moderate due to the presence of ignitable materials (e.g., wood scraps, used tires, and dry brush and vegetation) at certain locations throughout the site.

4 HAZARD PREVENTION PROCEDURES

This section describes specific procedures that will be utilized by employees at the site to mitigate the hazards identified in the previous section.

4.1 Worker OSHA Training

Workers involved in onsite contact with hazardous materials have been trained as required by Cal-OSHA in CCR Title 8, Section 5192, and in 29 CAR 1910.120. Additionally workers will be informed of the chemical and physical hazards on the site and will be briefed on the health and safety measures required for each specific site.

4.2 Chemical Hazards Prevention

Wind Direction Ribbons or flags will be used on the site to determine wind direction and velocity.

Air Monitoring Periodic personal air sampling will be conducted to evaluate worker exposure to airborne lead, hydrocarbons, and VOC's. This will help determine whether additional dust control and/or air purifying respirators with organic vapor cartridges or HEPA filters are required in maintaining airborne exposure levels below the permissible exposure limits as summarized in the table below and provided in CCR Title 8, Construction Safety Orders, Section 1529.

Air monitoring will also be conducted for organic vapors, oxygen, and lower explosive level (LEL) before and during excavation of all areas in addition to those identified as containing contaminated materials.

If breathing conditions during excavation, piling, loading, and other related activities are judged to be hazardous, the Site Safety Officer will require onsite persons to use respirators with combination organic vapor and high-efficiency particulate filters. Respirator use will be discontinued if air monitoring indicates that the levels of airborne contaminants are consistently below the PEL.

<u>Expected Site Contaminants</u>	<u>STEL (ppm)</u>	<u>PEL (ppm)</u>	<u>Level of Protection</u>
Benzene	5	1	D: HH/SG/SS/GL
Ethylbenzene	125	100	D: HH/SG/SS/GL
Toluene	150	100	D: HH/SG/SS/GL
Xylene	150	100	D: HH/SG/SS/GL
Gasoline	500	100	D: HH/SG/SS/GL
Chlordane		300	D: HH/SG/SS/GL
DDD		0.5 mg/m ³	D: HH/SG/SS/GL
DDE		1 mg/m ³	D: HH/SG/SS/GL
Lead		50 µg/m ³	D: HH/SG/SS/GL
Asbestos	1.0 fiber/cm ³	0.1 fiber/cm ³	D: HH/SG/SS/GL/R

Protection = Hard Hat (HH), Safety Glasses (SG), Safety Shoes (SS), Gloves (GL), Respirator (R), Protective Clothing (PC), Permissible Exposure Limit (PEL), Short Term Exposure Limit (STEL), ppm = parts per million

Dust Control Air monitoring for dust will be conducted at the beginning of each day and, if necessary, at hourly intervals. Dust control measures will be implemented continuously through spraying of water over the areas where excavation, stockpiling, and loading operations are in progress.

Skin Absorption Chemical absorption through the skin will be prevented by using level D protection as itemized above. If significant contamination is encountered (e.g., at levels above TLV or PEL), Level C protection shall be used as presented in Section 6. Contaminated skin will be washed as frequently as possible.

Ingestion Accidental Ingestion will be prevented by prohibiting eating, drinking, smoking or application of cosmetics on the work site. Ingestion will be further prevented by establishing work zones as discussed in section 7, following recommended

decontamination procedures as itemized in Section 8, and general safe work practices (Section 9).

Injection Chemical absorption by accidental injection or puncturing of the skin can be prevented by the use of protective clothing and gloves as necessary (Level D or C as appropriate) and by observing safe work practices.

4.3 Physical Hazards

Procedures to mitigate the major physical hazards are listed below.

Acoustical Hazards Hearing protection, such as ear muffs or ear plugs, will be worn because of potential exposures to noisy activities, such as drilling, pumping, or operation of heavy machinery.

Confined Space This project does not plan any entry into excavations or confined spaces. Soil samples shall be obtained in stainless steel sleeves using hand-held augers and core samplers.

Electrical Hazards If the work becomes unavoidably close to buried or overhead lines, workers shall have power turned off, with circuit breaker locked and tagged

All electrical equipment must be properly grounded

Workers must not stand in moisture, water, or rain when operating electrical equipment

Splices should be a last resort; if equipment must be connected by splicing wires, verify that all connections are properly taped

Workers shall be familiar with specific operating instructions for each piece of equipment

Mechanical Hazards All surfaces that a person could reasonably contact should be free of splinters, nails, or protrusions that might cause injury or falls

All contractor personnel and equipment shall be kept out of traffic lanes and access ways

Workers shall not stand near rigs, trucks, or earthmoving equipment

Workers/Operators shall verify that all equipment is in good condition

Workers must be mindful of onsite equipment at all times

Heat Stress The temperature will be monitored hourly. If the ambient temperature exceeds 90° F, a work/rest cycle of 45-50 min work/10-15 min rest will be instituted. In addition, heat stress will be avoided by replenishing electrolytes and fluids lost through perspiration and training workers to recognize heat stress symptoms. Individual recognition is crucial to effective mitigation of heat stress because individuals differ in their ability to tolerate heat stress and in the length of time required to acclimate to heat stress conditions.

Workers will be instructed to be aware of performance-related effects of heat, which in the early states can cause rashes, cramps, discomfort, and drowsiness, resulting in impaired function. These effects will precipitate heat stress if left unattended.

4.4 Fire

Workers and visitors should refrain from smoking and other fire-causing activities throughout the site.

5 EXPOSURE MONITORING PLAN

The principal stressors on this project are listed below together with monitoring plans:

5.1 Air Contamination

During remediation, air contaminant levels will be monitored at the beginning of the workday and at regular intervals, as necessary, using personnel monitors and dust samplers.

All monitoring equipment will be calibrated at the beginning of the workday. Any instrument will also be re-calibrated and "re-spanned" whenever it "pegs" (or the contaminant concentration exceeds the current span setting). Portable instrument powerpacks (batteries) will be inspected first thing in the morning and again after the lunch break. Batteries will be kept charged.

Petroleum Hydrocarbon Contamination Periodic personal air sampling will be conducted to evaluate worker exposure to hydrocarbons, and VOCs. A photon ionic detector (PID) will be used in petroleum hydrocarbon contaminated sites to detect VOCs and check for compliance with the Air Quality Management District guidelines. Air monitoring will also be conducted for organic vapors, oxygen, and lower explosive level (LEL) before and during excavation of all areas in addition to those identified as containing contaminated materials.

Asbestos Contamination The OSHA permissible exposure limit (PEL) for asbestos fibers is an 8-hour time weighted average (TWA) airborne concentration of 0.1 fiber per cubic centimeter of air as determined by phase contrast microscopy.

TWA air samples will be collected in asbestos-contaminated areas during remediation of the affected sites. Asbestos abatement workers will be equipped with HEPA filtered respirators during the abatement process. The asbestos containing material will be abated according to Cal OSHA and Bay Area Air

Quality Management District (BAAQMD) regulations.

Lead Contamination An initial lead exposure assessment (TWA site air monitoring) will be conducted for each site. personal air samples (TWA) will be collected daily during remediation of the lead contaminated locations. The results of the daily lead monitoring will be used to determine the level of employee's protection required on the site. Airborne concentrations of lead will be maintained under 30 $\mu\text{g}/\text{m}^3$. Spraying water on the lead-contaminated sites and working upwind of the contamination will help minimize worker exposure to airborne lead. A lead compliance program will be initiated if worker lead exposure is a possibility.

5.2 Heat

Heat stressor effects will be monitored by measuring ambient temperature using a sling psychrometer, observing workers and monitoring personal body temperature if necessary (if ambient temperature exceeds about 85° F). Also, the SSO and onsite workers will observe the symptoms discussed in Sections 3.3 and 4.3. Heat stress treatment is discussed in Section 4.3.

5.3 Seasonal Effects

The possibility of rainfall is low during this project, and flooding is not anticipated. Nonetheless, the Safety Officer will evaluate workplace and weather conditions for potential flooding, puddling, or mud. Mud and pooled water must be prevented since they constitute physical hazards and potential chemical hazards due to leaching of soil contaminated with petroleum hydrocarbons, lead, and asbestos. To prevent leaching by rainfall, excavated soil will be placed in trucks or containers and taken to a disposal site at the earliest possible opportunity.

6 PERSONAL PROTECTIVE EQUIPMENT

Because of potential chemical and physical hazards at the Cypress B site, it is anticipated that Level C protection may be necessary during remedial work on this site. Level D will suffice for the sampling work. The decision to use Level C will be made on-site. The corresponding levels of protection are listed in the following:

Level D Protection

- Steel-toed/shanked boots with latex overboots or steel-toed rubber boots
- Uncoated Tyvek coveralls or work overalls
- Nitrile/neoprene gloves with latex undergloves (if necessary)
- Hard hats
- Safety glasses/goggles (as necessary)
- Ear plugs

Level C Protection

- Air-purifying respirator (e.g., Half-face) with HEPA filters, organic vapor cartridges, dust filters or other appropriate cartridges/filters
- Steel-toed/shanked boots with latex overboots or steel-toed rubber boots
- Tyvek coveralls taped over boots (disposable light chemical clothing)
- Neoprene gloves (taped at wrist) with latex undergloves
- Hard hats
- Safety glasses/goggles
- Ear plugs

In addition to these measures, orange work vests must be worn to increase visibility.

7 WORK ZONES AND SITE SECURITY

The site work zones and security measures presented in this section are intended to prevent the transfer of contaminants offsite by workers and visitors and by equipment used in site operations. The measures are also intended to prevent unprotected workers, visitors, and the general public from entering contaminated areas.

The initial work zone designation considers the entire lane closure area and cordoned-off sampling area as an exclusion zone. The zones will be re-established as required onsite.

7.1 Exclusion Zone (Contaminated Zone)

The exclusion zone is based on the amount of area needed to perform the work safely. This includes all loading operations, open excavations, contaminated soil stockpiles, swing radii for equipment, remediation operations, cleaning operations, loading operations of bulk soils, and areas where soil contamination is suspected. Within the exclusion zones, Level C or D protective clothing and equipment must be worn by all workers and visitors. The appropriate level of protective clothing will be determined daily by the SSO. The zones will be set at the beginning of the workday and changed as required by activities and wind direction. At the onset, the entire cordoned-off sampling area is considered an exclusion zone.

7.2 Contamination Reduction Zone

The Contamination Reduction Zone (CRZ) is the buffer zone immediately adjacent to the exclusion zones. The CRZ is between the contaminated (exclusion) zone and the uncontaminated zone. The zone thickness will depend on wind direction if there is a significant threat of wind-borne contamination (e.g., elevated dust levels) and will be determined regularly by the SSO. Personnel and equipment decontamination occur within the CRZ. This zone basically provides areas to reduce or prevent the transfer of hazardous materials that may have been picked up by personnel or equipment in the exclusion zones.

7.3 Support Zone

The support zone consists of all uncontaminated and inactive areas of the site, where protective clothing and equipment are not required. This zone will be used for staging and storage; the zone's exact width and shape will be determined onsite by the SSO.

7.4 Security Measures

Traffic control measures, such as lights, signs, barricades, interim striping, flagmen, or other devices/installations required for public safety, will be employed as appropriate and in collaboration with Caltrans. Entry to the worksite will be controlled by fencing and caution tape, as required, and the site access shall be visually monitored by the SSO and onsite contractor/subcontractor personnel.

The only persons authorized to enter the exclusion zone are:

- Representatives of OGISO Environmental or subcontractors
- Authorized Caltrans representatives
- Authorized visitors

Visitors to the work site, including any inspectors from regulatory agencies, are required to abide by the health and safety requirements specified in the Health and Safety Plan. Onsite personnel and subcontractors shall require that visitors have received proper training and have proper personal protective equipment prior to any activities that may require entering the exclusion zone.

No one is permitted in the exclusion zone or contamination reduction zone without clearance from the site safety officer. Clearance may be revoked at any time by the site safety officer.

8 DECONTAMINATION PROTOCOLS

Decontamination protocols are established to prevent transfer of contaminated materials across the CRZ into the uncontaminated zones.

8.1 Equipment Decontamination

For Level D work, tools, equipment, and safety boots should be scrubbed with long-handled scrub brushes and high-phosphate solution (e.g., Alconox or TSP). Boots should be rinsed off with water (repeat rinse as often as necessary). The rinsate will be disposed of along with the contaminated material.

Following remediation, contaminated soil will be removed from equipment by scraping and brushing (with misting to eliminate dust). The scraped spoils will be combined with excavated contaminated soils and stored for disposal. Respirators may be necessary, and contaminated disposable clothing, respirator cartridges, tools, brushes, and other contaminated disposable items will be stored in labeled drums on site prior to disposal.

8.2 Personnel Decontamination

Decontamination and removal of any contaminated protective clothing will take place at the perimeter of the exclusion zones. The contaminated items will be contained in lined drums for proper disposal.

All personnel should shower as soon as possible after leaving the site. Onsite cleaning equipment will include washbasins, plastic drop cloths, high phosphate detergent solution (e.g., TSP or Alconox), rinse water, scrub brushes, benches or stools, and towels.

**9 GENERAL SAFE WORK PRACTICES AND STANDARD SAFE OPERATION
PROCEDURES**

General safe work practices are presented in Appendix A. Accident report form, sampling logs, respirator care instructions and confined space regulations are also included in Appendix A.

10 SANITATION

OGISO staff will make use of the sanitary facilities onsite provided by Caltrans and/or the prime contractor. OGISO will provide its staff with bottled (cold) drinks to replenish liquid loss and water for washing of hands and face. OGISO staff will make use of nearby eating establishments or will eat outside of the work area.

11 TRAINING REQUIREMENTS

All workers involved in the onsite cleanup, as well as all visitors to the exclusion zone or contamination reduction zone, must have received the OSHA 40-hr training (as per 29 CAR 1910.120). Operators of heavy equipment, specialized equipment, and special instruments will also be certified for that equipment. Information regarding exposure to lead (Appendix D) should also be provided to employees. Employees involved in penetration or disturbance of soil judged to contain or potentially contain more than 5 mg/l soluble lead shall have received 24 hr of training covering site safety plans; safe work practices; nature of anticipated hazards; handling emergencies and self-rescue; rules and regulations for vehicle use; safe use of field equipment; handling, storage, and transportation of hazardous materials; employee rights and responsibilities; and use, care, and limitations of personal protective clothing and equipment.

12 MEDICAL SURVEILLANCE

Medical surveillance in the form of preproject and postproject medical tests may be conducted depending on the level and type of likely exposure by the employees to the contaminants in the air.

13 EMERGENCY RESPONSE/CONTINGENCY PLAN

Onsite emergencies will be indicated by a horn blast. Upon hearing this emergency signal, all workers will stop work and proceed to a designated point.

In the event of an unpredicted occurrence or accident while site investigation personnel or visitors are onsite, OGISO and subcontractor personnel will evaluate the incident and site response capabilities and proceed with the appropriate emergency response actions such as informing the contractor and contract administrator, contacting local public emergency officials, terminating work activities if imminent hazards exist, and summoning emergency medical care. An accident investigation report as presented in Appendix A will be filled out for each accident/employee.

Four types of unpredictable events may occur that would require implementing the emergency action plan: fire, physical injury, chemical exposure, or natural catastrophe such as an earthquake.

Only in the case of minor injuries or exposures will it be considered suitable to transport the injured persons to a medical clinic. In all other cases, an ambulance will be summoned by calling 911.

13.1 Fire

In the event of any fire caused by onsite activities or in close proximity to site activities, work will cease and the site will be evacuated. The fire department will be summoned by dialing 911.

EMERGENCY RESOURCES AND TELEPHONE NUMBERS

<u>DEPARTMENTS/RESOURCES</u>	<u>Emergency Telephone Numbers</u>
Fire Department/Police Dept	911
Ambulance or Lifeline	911
Hospital - Summit Medical Center	(510) 655-4000
Cal OSHA	(415) 557-1677
OGISO Environmental (Dr. Clement Okoh)	(408) 245-9801/485-3179 pager
Caltrans - Mr. Victor Salazar	(510) 286-1366
Industrial Hygienists: B. Cohersen	(415) 775-1105
Alameda County Department of Health	(510) 437-4369 567-6700
National Response Center	(800) 424-8802
TSCA Hotline	(800) 424-9065
Poison Control Center	(800) 962-1253
Alameda County Department of Health	(510) 567-6700

13.2 Physical Injuries

For physical injuries, emergency medical assistance will be summoned by calling 911. The route map to Summit Medical Center is shown in Figure 6.

13.3 Exposure to Chemicals

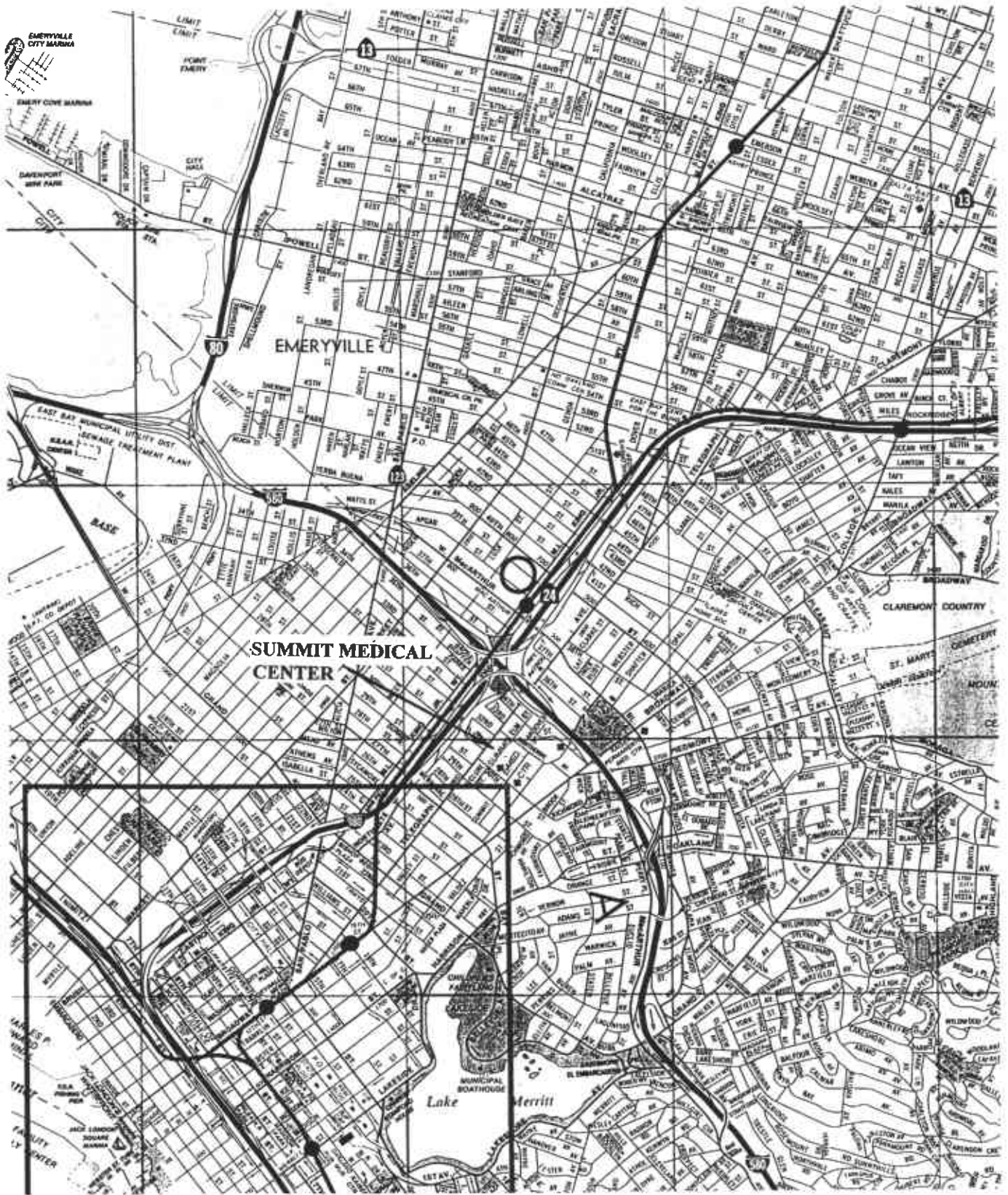
No chemicals, other than those discussed previously, are expected to be present at the site. However, should unexpected chemicals be encountered that result in chemical exposure, the following protocol will be followed:

- Precautions should be taken to avoid exposing other individuals to the chemical
- If necessary, the victim should be transported to the nearest hospital or medical center. An ambulance will be called to transport the victim.
- All chemical exposure incidents sustained by employees must be reported in writing to

the Site Safety Officer

- Steps will be taken to determine the identity and extent of the unknown chemical: First, a sample of the chemical shall be taken in an air-tight bottle to a forensic testing laboratory (CKY Labs of Torrance) for fingerprinting. After identifying the chemical, appropriate onsite screening will be used to determine the extent of site contamination by the chemical. Finally, confirmatory samples will be taken to ensure that the spatial extent of the chemical has been accurately delineated. Workers will not be permitted to reenter the area of concern until the material has been identified and specific safety procedures adopted.

FIGURE 6: ROUTE MAP TO SUMMIT MEDICAL CENTER



13.4 Earthquakes or Other Catastrophic Events

In the event of a major earthquake or similar catastrophe, all OGISO and Caltrans personnel will meet at a predesignated point selected by the SSO to account for each person known to be onsite., First aid will be administered or emergency medical aid summoned, as necessary.

APPENDIX A
GENERAL SAFE WORK PRACTICES

APPENDIX B
CONSTRUCTION SAFETY ORDERS
FOR LEAD TITLE 8 CCR 1532.1

APPENDIX C

**CONSTRUCTION SAFETY ORDERS
FOR ASBESTOS, TITLE 8 CCR 1529**