CONESTOGA-ROVERS
& ASSOCIATES

5900 Hollis Street, Suite A, Emeryville, California 94608
Telephone: 510-420-0700 Facsimile: 510-420-9170
www.CRAworld.com

May 18, 2009

Reference No. 511000

Mr. Jerry Wickham
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Dear Mr. Wickham:

Re: Transmittal of Dual-Phase Extraction Remedial System Design Plans
Credit World Auto Sales
2345 International Boulevard (Formerly E. 14th Street)
Oakland, California 94601
Fuel Leak Case No. RO0000327
UST Fund Claim No. 15922

On behalf of Messrs. Stanley and Aaron Wong, Conestoga-Rovers & Associates (CRA) presents the attached Dual-Phase Extraction (DPE) Remedial System Design Plans. System operation and monitoring plans for the DPE system will be presented after the system has been constructed. Mr. Stanley Wong and I would like to meet with you to discuss the proposed schedule for system installation and operation.

If you have any questions or comments regarding this report, please call me at (510) 420-3307.

Sincerely,
CONESTOGA-ROVERS & ASSOCIATES

Mark Jonas, P.G.

MJ/aa/4
Encl.

c.c.: Mr. Stanley and Mr. Aaron Wong
Mr. Hasmukh Patel
Mr. Richard S. Cochran

03/09/07

REMEDIAL DESIGN PLANS

CREDIT WORLD AUTO SALES
2345 International Boulevard
Oakland, California

TWO-PHASE EXTRACTION SYSTEM

Prepared for:
Mr. Stanley Wong

Prepared by:
CONESTOGA-ROVERS & ASSOCIATES, INC.

APPROVED
City of Oakland Planning & Zoning
Signature: _____
Date: 5/8/2008

Scope of Work:

The following items define the scope of work to (1) provide two-phase extraction from existing wells MW-1A, MW-2A, RW-1 and proposed wells RW-2 through RW-5, (2) provide treatment for the extracted soil vapors and groundwater from two-phase extraction, and (3) provide discharge of the treated groundwater to the EBMUD sanitary sewer system:

1. Trench from remediation compound to designated wells as shown on Figure 1 and referenced details.
2. Provide and install remediation pipe to designated wells as shown on Figure 1 and referenced details.
3. Trench from remediation compound to utility stub-up locations as shown on Figure 1 and referenced details.
4. Provide and install underground piping / conduit for the utilities as shown on Figure 1 and referenced details.
5. Backfill, compact, and resurface trenches as shown on Figure 4.
6. Provide and install well vaults as shown on Figure 5.
7. Confirm location of existing site sewer lateral using a utility location service. Install discharge pipe as shown on Figures 1 and 6.
8. Construct remediation compound as shown on Figures 1, 2, and referenced details.
9. Provide and install remediation equipment as shown on Figures 2, 3, and referenced details.
10. Provide and install process pipe as shown on Figure 3 and referenced details.
11. Provide and install power pole, conduit, wire, meter panel, and distribution panel for new electrical service as shown on Figures 1, 8, and referenced details
12. Provide and install electrical control panel for water treatment system, controls, and instrumentation as shown on Figures 3 and 8, and referenced details.

Notes:

1. The design of this two-phase extraction system is based on the 1997 UBC, 2005 NEC, and the 1997 UFC, where applicable. Construction is to comply with the design basis and/or local agency requirements, and OSHA regulations.
2. Remedial action is being implemented with the approval of the Alameda County Health Care Services Agency.
3. Treated groundwater is to be discharged to the EBMUD sanitary sewer system under the authorization of the wastewater discharge permit.
4. Soil vapor extraction is to be conducted under the authorization of a Bay Area Air Quality Management District permit-to-operate.

H:\WONG (CREDIT AUTO) - OAKLAND\FIGURES\REMEDIATION\TITLE.AI

Credit World Auto Sales
2345 International Boulevard
Oakland, California

REGISTERED PROFESSIONAL ENGINEER
DANIEL N. LEE
C 70669
EXP. 6/30/09
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TITLE PAGE

CRA
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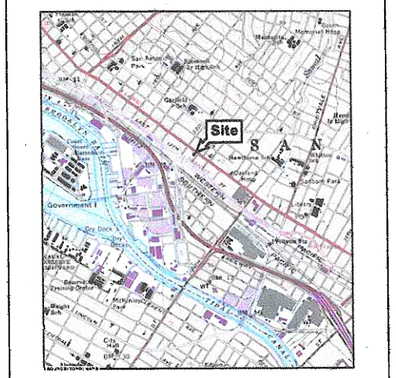

Vicinity Map

1.0 INTRODUCTION

The enclosed drawings and specifications contain information for the construction and installation of a Two-Phase Extraction system (the "System"). The following drawings depicting the System are presented for construction and installation:

Figure No.	Title
A	Title Page
B	Two-Phase Extraction System Specifications
1	Site Plan and Remediation Piping Layout
2	Remediation Compound Equipment Layout
3	Two-Phase Extraction System Process Flow Diagram
4	Two-Phase Extraction System Civil Details - 1
5	Two-Phase Extraction System Civil Details - 2
6	Two-Phase Extraction System Mechanical Details - 1
7	Two-Phase Extraction System Mechanical Details - 2
8	Two-Phase Extraction System Electrical Details - 1
9	Two-Phase Extraction System Electrical Details - 2

This package also contains the following specifications required for construction and installation:

- General
- Excavation/Trenching
- Piping
- Electrical
- Equipment
- Equipment Enclosure
- Construction Schedule
- As-Built Drawings
- Safety/Clean-up
- Change Orders

2.0 SPECIFICATIONS

2.1 General

1. The selected Contractor shall verify all dimensions and site conditions before starting work. The Consultant's Project Manager shall be notified of any discrepancy.

2. All materials used for construction of the system shall be new unless otherwise noted.

3. All necessary construction permits and inspections, including permits for electrical, mechanical and civil construction, shall be obtained by the Contractor. Contractor to pay all the permit fees. Consultant to obtain any required air or process water discharge permits to construct/operate the two-phase extraction system.

4. The Contractor shall restore all excavated surface areas to match existing.

5. All construction areas shall be clearly marked with barricades, cones, plates, or other approved safety markers to restrict access and provide a safe work environment for the Contractor and the site occupants.

6. A pre-construction meeting between the Contractor and the Consultant will be required before any work begins. The meeting will be held at the site.

7. The Contractor shall provide an electrician for one day during start-up of the equipment.

8. The Contractor shall warranty all Contractor-provided materials and construction for a period of not less than one year. All defects shall be corrected at the Contractor's expense.

2.2 Excavation/Trenching

1. All excavated soil shall be monitored by the Consultant in accordance with local regulations for contaminated soil. If hydrocarbon-impacted soil is detected, the soil shall be stockpiled in an area designated by the Consultant and covered with plastic sheets. The Consultant will sample the excavated soil for hydrocarbons and will be responsible for disposal/ treatment of hydrocarbon-impacted soils. The Contractor shall dispose of all hydrocarbon-free soil and construction debris off-site including any pavement and concrete removed during trenching.

2. Where piping is installed below ground, the pipe shall be buried in a trench or excavation at a minimum depth of 12-inches to the top of the pipe, unless otherwise stated. If excavation must remain open after normal work hours, it shall be cordoned off with barricades and caution tape. Contractor shall minimize disruptions to vehicular traffic and access to the buildings on site and shall provide trench plates to cover the excavation/trenches as necessary to facilitate safe vehicular movement and building access.

3. Process piping trenches and excavations shall be backfilled with clean sand from 2-inches below the piping to 2-inches above the piping. Native material shall be used as backfill material from 2-inches above the piping to the bottom of the class II roadbase fill. Thickness of the class II roadbase fill shall match existing. Contractor shall obtain Consultant's authorization prior to importing any fill material, if required, for trench backfilling.

4. The Contractor shall take all necessary precautions to prevent damage to underground utilities, piping and adjoining structures. Contractor shall provide utility line locator prior to start of construction. Contractor shall be responsible for notifying Underground Service Alert prior to conducting any subsurface work. Contractor shall be responsible for repairing/replacing any utilities or other piping damaged during construction at the Contractor's expense.

5. When trenching and excavating through concrete or asphalt surfaces, the following shall be applicable.
- Excavation shall be saw cut to provide a square vertical joint for repaving
- Contractor shall make every effort to utilize existing edges of pavement when saw cutting to reduce unnecessary saw cuts.
- Pavement removed from trenches or other excavations shall be replaced with new material to match existing.
- When resurfacing with concrete, 2,000 psi reinforced concrete shall be used to match existing thickness. Reinforcing shall be No. 4 rebar tied into the existing slab staggered on each side of the trench on 12-inch centers placed at mid-height.
- Contractor shall use Aqua Crete or equivalent sealant to seal the concrete joints.
- Contractor shall return to the site after one week and apply asphalt joint sealer to all areas that were trenched and replaced.

2.3 Piping

1. All underground process piping shall be schedule 40 PVC (unless otherwise indicated) and all aboveground process piping shall be schedule 80 PVC (unless otherwise indicated). Contractor to use low volatile organic compound emitting primers and solvents when installing glued slip fittings.

2. When connecting to or bypassing existing underground piping the Contractor shall verify the existing piping path.

3. Where piping is routed above ground inside the equipment enclosure, the piping shall be supported by uni-strut pipe supports and clamps. The uni-strut support shall be fastened to the wall/fence posts or mounted on a base that is secured to the ground surface.

4. All process lines and conduits shall be free of dirt and debris after installation. The secondary containment lines shall be cleared as necessary prior to the installation of the primary line.

5. All SVE and GW secondary lines shall be pressure tested to 5 psi and installation approved by the Project Engineer prior to backfill. Pressure test GW primary and compressed air lines to 75% of the process line pressure. There shall be no noticeable change in pressure after 1 hour or any visible leak indications. Pressure testing shall be witnessed by a Consultant's representative. No testing will be conducted through instruments or equipment.

6. Whenever possible lateral piping shall be sloped toward wellheads at a ratio of 1:100 (1% grade or greater). If a trench depth of greater than 4 feet is needed to achieve the required slope, then clean-out tees (stubbed up and capped within traffic rated wellhead protection boxes) may be substituted. The clean-out tees shall be installed at low point of piping run.

7. Underground piping can be layered on top of each other as necessary. Sand bedding shall be provided between the pipe layers.

2.4 Electrical

1. The Contractor shall furnish and install all necessary equipment to connect to the local electric service and route the appropriate electric service to the system control panel(s). The Contractor shall also furnish and install all necessary equipment to connect the system control panel(s) to each unit of process equipment requiring electric power. The Contractor shall obtain the electrical permit for operation of the equipment. The Contractor shall verify operation of all electrical equipment upon completion of the work.

2. The Contractor shall acquire all necessary construction permits and pay all associated fees. The Consultant will pay for installation/deposit for power pole, if needed.

3. The electric service shall be equipped with a power meter and weather tight main panel with lockable shut-off switch. The new service billing shall reference Consultant project # 511000. The new service billing shall be in the following name:

Wong Credit World Auto Sales
c/o Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, California 94608

4. All electrical work shall be completed in accordance with the most recent edition of the National Electrical Code (N.E.C.), and the local building and fire department requirements. Any drawings required for permits other than those presented herein will be the responsibility of the Contractor and shall be reviewed by the Consultant prior to use.

5. If necessary, the installation within the equipment enclosure shall comply with a Class 1, Division II environment as per NEC and local codes. All wiring connectors, conduit, and Contractor supplied equipment shall comply with Class 1, Division II requirements, if required by the NEC and local codes.

6. Electrical wiring shall be contained in rigid conduit and routed along the enclosure floor and walls or buried as allowed by local code. The control panel and all necessary components shall be supplied, constructed and installed by Contractor. This includes the sub-control panel, motor starter, relays, switch controls, alarm lighting, etc.

2.5 Equipment

1. Equipment listed below will be supplied by the Consultant or Consultant's suppliers. All other required equipment and parts shall be the responsibility of the Contractor.

- Rotary Claw Blower/Oxidizer (Trailer mounted)
- Two 1,000-pound carbon vessels

2.6 Equipment Enclosure

1. Contractor to install the following signage on all sides of the enclosure(s):

a. No Smoking
b. Proposition 65
c. Others as per local code

2. Contractor to supply and install a fire extinguisher in accordance with local fire codes.

3. Contractor shall construct secondary containment pad for placement of groundwater treatment equipment as shown on Figure 2.

2.7 Construction Schedule

1. The Contractor shall confirm a construction schedule with the Consultant's Project Manager at least 72-hours prior to any work at the site.

2. The proposed construction schedule shall be presented in a time line format showing estimated start date, duration and completion times for each activity. Any deviation from the originally proposed schedule must be communicated to the Consultant's Project Manager within 24-hours.

2.8 As-Built Drawings

1. The Contractor shall provide As-Built record drawings (Red Lines) showing actual installation, details, dimensions and other pertinent features that vary from the original design.

2.9 Safety/Clean-up

1. The Contractor shall provide his own site-specific Health and Safety Plan (HASP). The Contractor (including workers and subcontractors) shall read, sign and abide by the Contractor's HASP prior to beginning any work each day.

2. Prior to departure from the site, the Contractor shall make sure that the work area is clean and orderly.

3. The Contractor shall contain loose debris and store construction material on a daily basis prior to departure from the site to provide a clean and orderly work area.

3.0 Change Orders

1. Any scope of work changes or items which arise during a pre-construction site visit, permitting phase, or construction phase shall be communicated to the respective CRA project engineer within 24 hours. Approval from the respective CRA project engineer shall be obtained before fieldwork is continued unless the delay presents a safety risk. The consultant will use best professional judgement in these cases. A written change order task request with dollar amounts shall be submitted to the CRA project engineer for approval within 3 business days.

TPE SYSTEM	
MANUFACTURER:	CATALYTIC COMBUSTION
TYPE:	ELECTRIC CATALYTIC
FUEL GAS:	N/A
SCFM RATING:	300
BURNER MAX. BTU/HR:	N/A
BURNER RATIO:	N/A
COMBUSTION BLOWER HP:	N/A
PROCESS BLOWER HP:	10
STACK HEIGHT:	10'
ELECTRICAL INFORMATION:	230V, 3Ø, 60Hz, 150 FLA
CONTROL VOLTS:	--

CARBON SYSTEM	
MFG:	SIEMENS WATER TECHNOLOGY
TYPE:	ASC-1,200
VESSEL SIZE:	35 CU FEET
MAX. FLOW RATE:	50 GPM
PRESSURE RATING:	15 PSI
MAX. TEMPERATURE:	140 F
CONTACT TIME:	5 MINUTES
BACK WASH FLOW RATE:	25 GPM
POUNDS GAC:	1,000

WELL ID	WELL SIZE	DEPTH	SCREEN SECTION	SVE	PUMP	GPM	COMMENTS
RW-1	4"	23'	8' - 23'	NO	NO	NA	STINGER
RW-2	4"	22'	8' - 22'	NO	NO	NA	STINGER
RW-3	4"	22'	8' - 22'	NO	NO	NA	STINGER
RW-4	4"	22'	8' - 22'	NO	NO	NA	STINGER
RW-5	4"	22'	8' - 22'	NO	NO	NA	STINGER
MW-1A	4"	35'	10' - 20'	NO	NO	NA	STINGER
MW-2A	4"	18'	8' - 18'	NO	NO	NA	STINGER

Two-Phase Extraction System Specifications

B

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REGISTERED PROFESSIONAL ENGINEER
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building
building
lot
Hotel
Restaurant with Second Floor Apartments
Residence
ALLEY
Grass
INTERNATIONAL BOULEVARD
MW-10
MW-11
MW-2A
A/5
Wellhead detail (typical of 7)
RW-4
RW-3
RW-5
TMW-5
Former USTs
RW-2
Former waste oil UST
A/4
MW-12
MW-3A
garage
Office
MW-1A
MW-1B
RW-1
A/2
Proposed Remediation Equipment Enclosure
Asphalt
Existing power drop for building
Proposed temporary pole and electrical meter location
MW-6
B/4
Proposed joint utility trench
Existing low hanging wires (~8.5' above grade)
A/9
fenceline
Existing gas stub-up
Existing sewer cleanout
SD
A/6
Building
Auto Repair Shop
gate
MW-9
Gate
MW-7
Fire Hydrant
Asphalt
TMW-4A
MW-8
MILLER AVENUE
Existing overhead power line
Proposed overhead power line
Existing PG&E power pole

EXPLANATION

- Proposed two-phase extraction well
- MW-1A — Monitoring well converted to two-phase extraction well
- MW-1 — Monitoring well location
- Electrical line (overhead)
- Electrical line (underground)
- Sanitary sewer
- Gas line
- Phone line
- Proposed remediation piping
- Flow direction
- SD — Storm drain inlet
- Section CallOut
- A/2 — Detail CallOut

Notes:

See detail A/4 for all trench cross-sections.

See detail A/5 for all wellhead connections.

APPROVED
City of Oakland Planning & Zoning
Signature:
Date: 7/8/2008

0 15 30 60
Scale (ft)

Site Plan and Remediation Piping Layout

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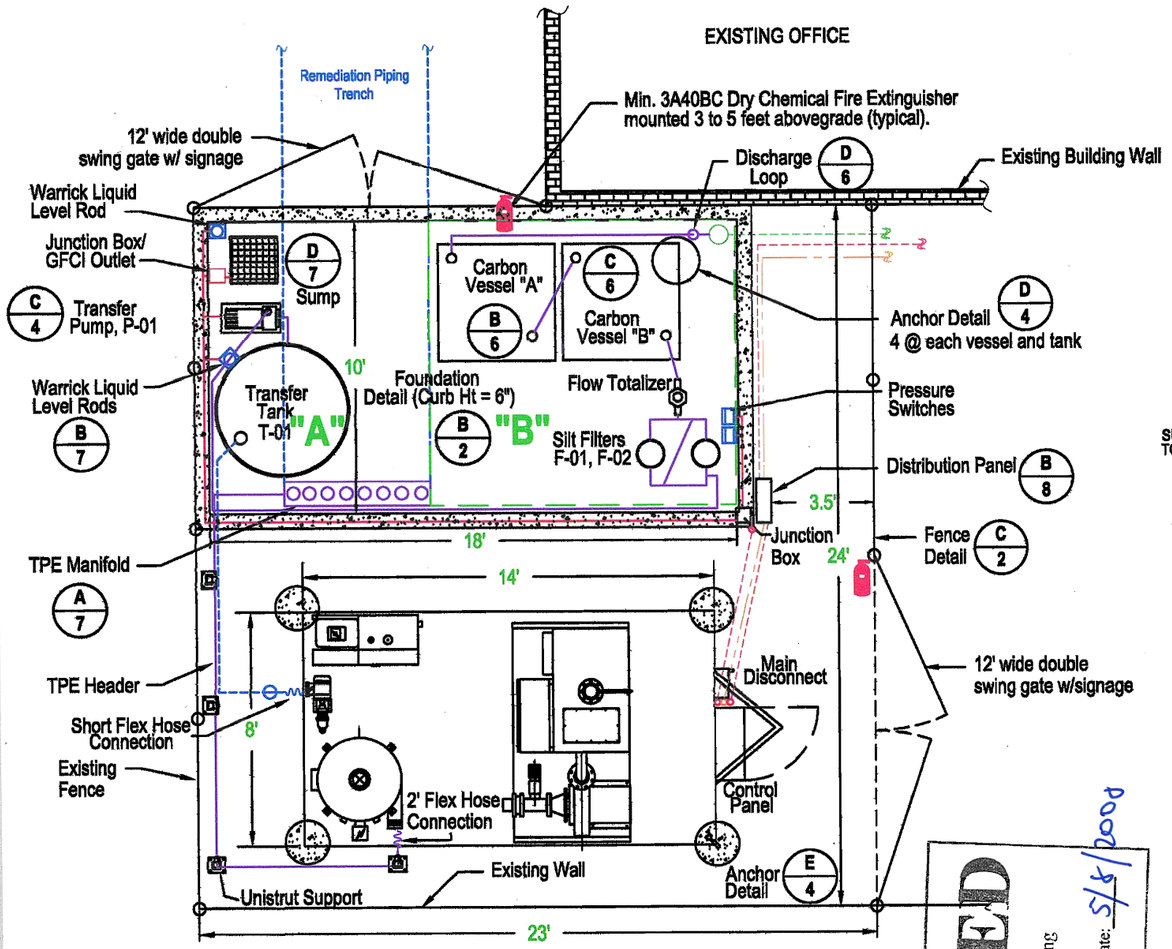
1

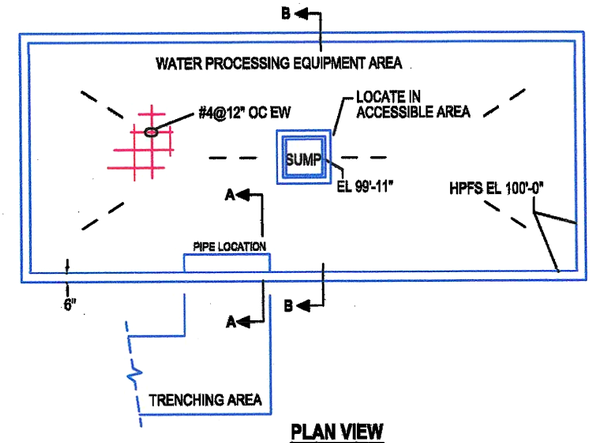


SIGNAGE
1. "No Smoking"
2. CRA Emergency Contact Phone Number
3. Proposition 65 Warning Signs

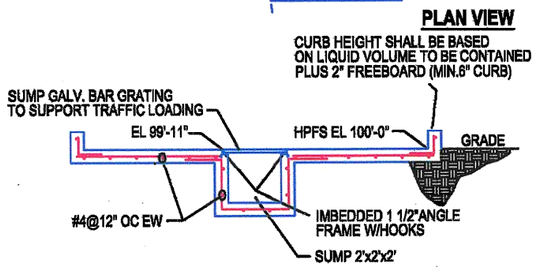
- OVERHEAD ELECTRICAL WIRE
- UNDERGROUND ELECTRICAL CONDUIT
- ABOVEGROUND ELECTRICAL CONDUIT
- UNDERGROUND REMEDIATION TRENCH
- ABOVEGROUND REMEDIATION PIPE (2" Ø SCH 80 PVC PIPE)
- UNDERGROUND SEWER TRENCH/EXISTING LATERAL (3" Ø SDR-35 PIPE)
- TELEPHONE CONDUIT

APPROVED
City of Oakland Planning & Zoning
Date: 5/8/2009
Signature:

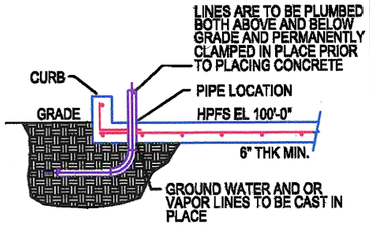
A/2 COMPOUND & EQUIPMENT LAYOUT
Scale : 1" = 5'



PLAN VIEW



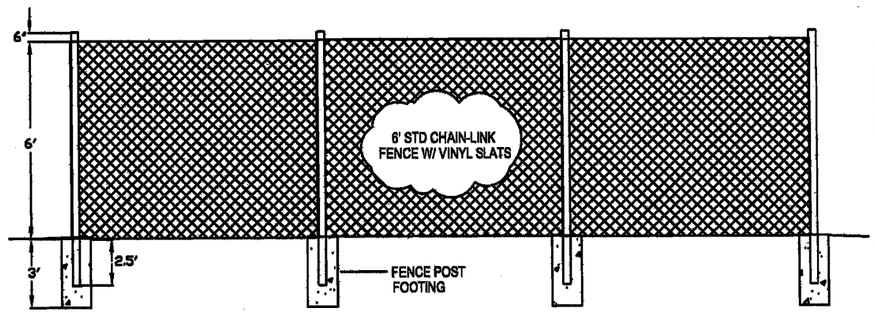
SECTION B-B



SECTION A-A
(@ INLET MANIFOLD)

NOTES:
SHOWN IS A DIAGRAMMATIC COMPOUND FOUNDATION. THE ACTUAL COMPOUND CONFIGURATION SHALL BE DETERMINED BY THE EQUIPMENT LAYOUT AND THE SITE SPECIFIC CONDITIONS. THE GROUNDWATER TREATMENT SECTION SHALL BE CURBED FOR CONTAINMENT.

B/2 Compound Foundation Details
Not to Scale



C/2 PERIMETER FENCE DETAIL
Not to Scale

NOTES:
FENCE SHALL BE TYPICAL 11 GAUGE 2" MESH GAW CHAIN LINK FABRIC
FENCE POSTS SHALL BE 2-7/8" OD STRUCT GRADE GALV STEEL
TOP RAIL SHALL BE 1-5/8" OF 16 GAUGE GALV STEEL
BOTTOM TENSION WIRE SHALL BE AMINIMUM OF 9 GAUGE GALV WIRE
GATE POSTS FOR GATES WIDER THAN 6' SHALL BE 2-7/8" OD SCH40 STEEL

Remediation Compound Equipment Layout

2

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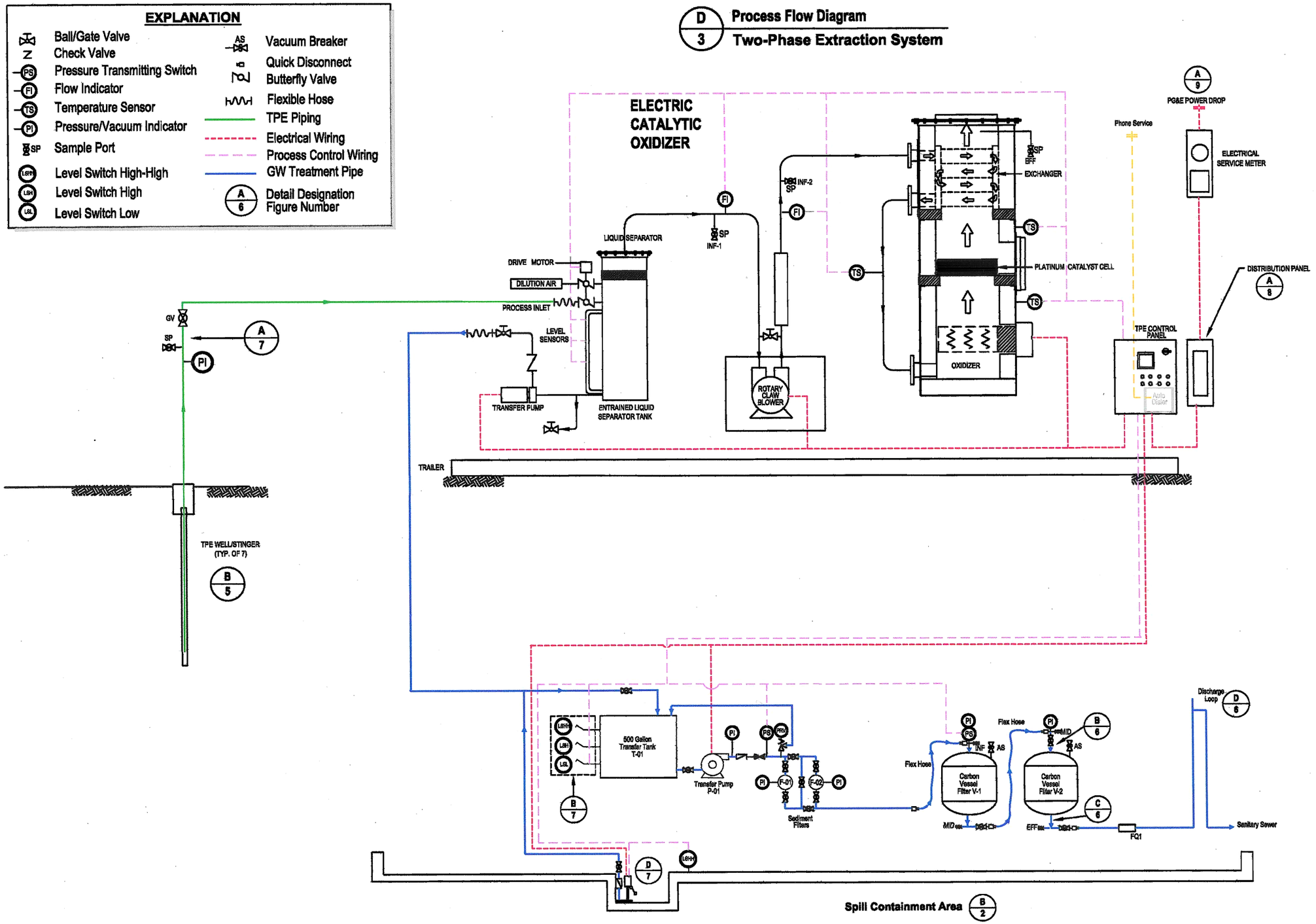
EXPLANATION

- Ball/Gate Valve
- Check Valve
- PS — Pressure Transmitting Switch
- FI — Flow Indicator
- TS — Temperature Sensor
- PI — Pressure/Vacuum Indicator
- SP — Sample Port
- LSHH — Level Switch High-High
- LSH — Level Switch High
- LSL — Level Switch Low
- AS — Vacuum Breaker
- Quick Disconnect
- Butterfly Valve
- Flexible Hose
- TPE Piping
- Electrical Wiring
- Process Control Wiring
- GW Treatment Pipe
- A/6 — Detail Designation / Figure Number

D/3 Process Flow Diagram — Two-Phase Extraction System



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Two-Phase Extraction System
Process Flow Diagram

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3

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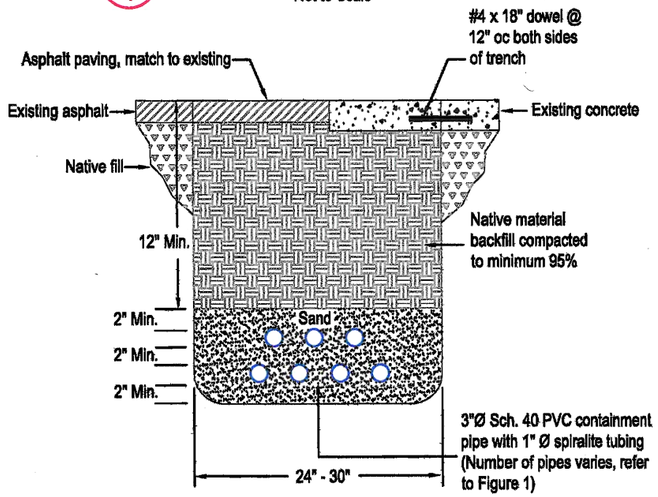
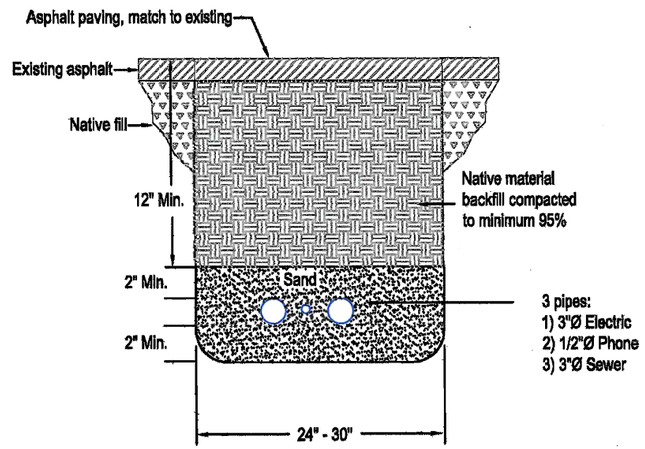
A/4 Remediation Piping Trench

Not to Scale



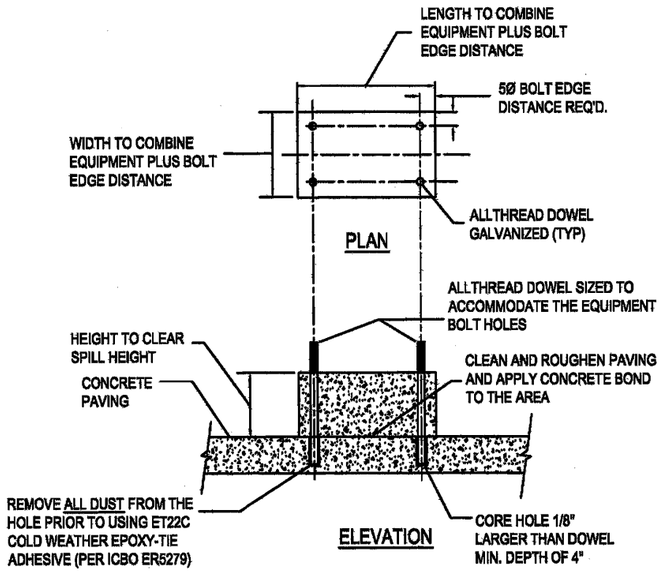
B/4 Utility Trench

Not to Scale



C/4 Equipment Foundation Detail

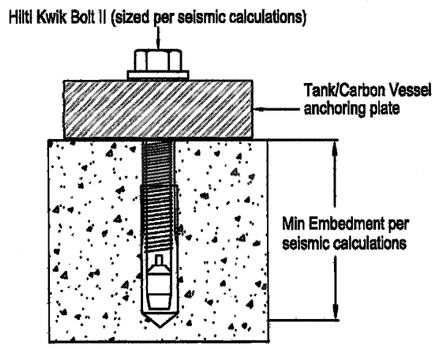
Not to Scale



NOTES:
USE THIS FOUNDATION TO KEEP ELECTRICAL MACHINERY, PUMPS ETC. ABOVE THE FLOOD LINE OF THE REMEDIATION SYSTEM COMPOUND CURBED AREA.

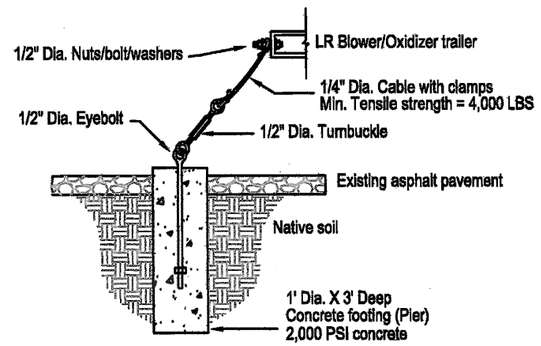
D/4 Anchor Detail

Not to Scale



E/4 FOOTING AND ANCHOR DETAIL FOR TRAILER

Not to Scale



Two - Phase Extraction System
Civil Details - 1

4

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H:\WONG (CREDIT AUTO) - OAKLAND\FIGURES\REMEDIATION\CIVIL DETAILS 1.DWG

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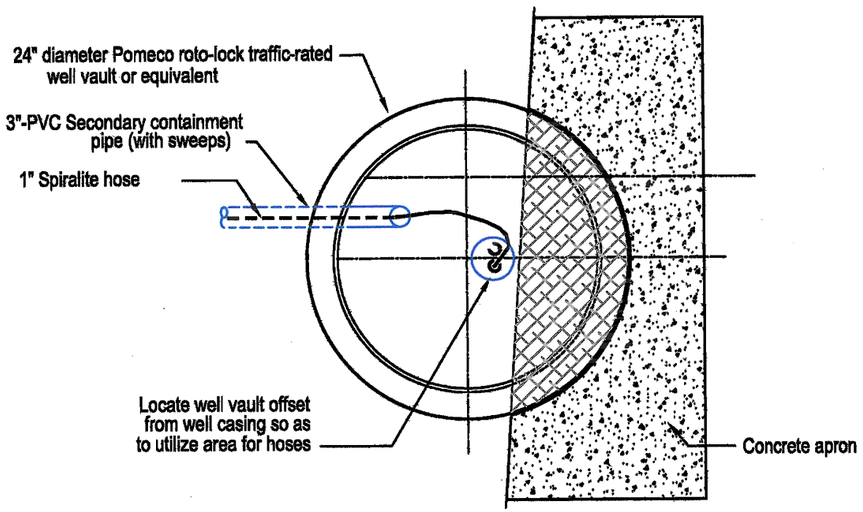
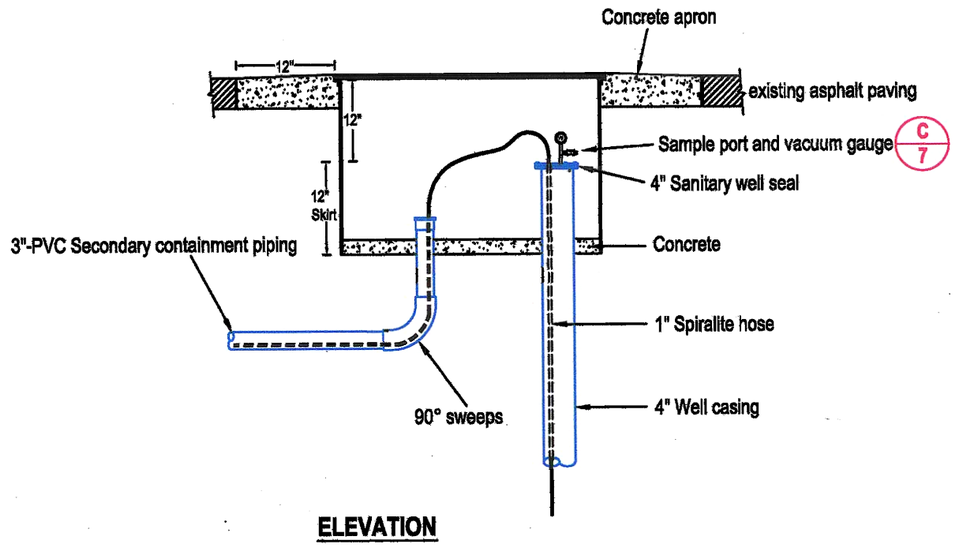
A/5 TPE WELLHEAD DETAIL

Not to Scale



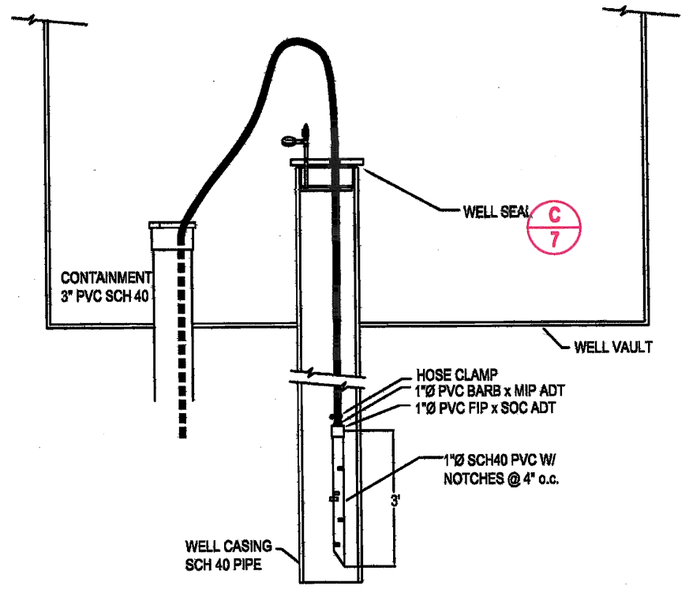
PLAN



ELEVATION

B/5 TPE STINGER DETAIL

Not to Scale



Two - Phase Extraction System
Civil Details - 2

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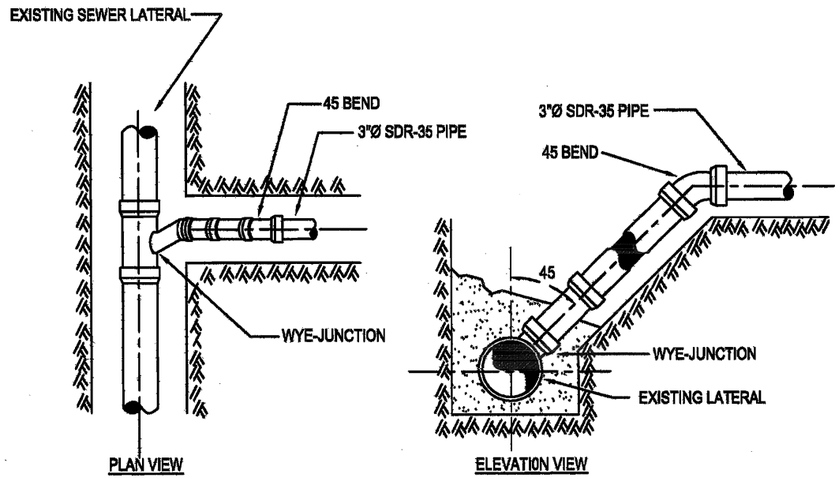
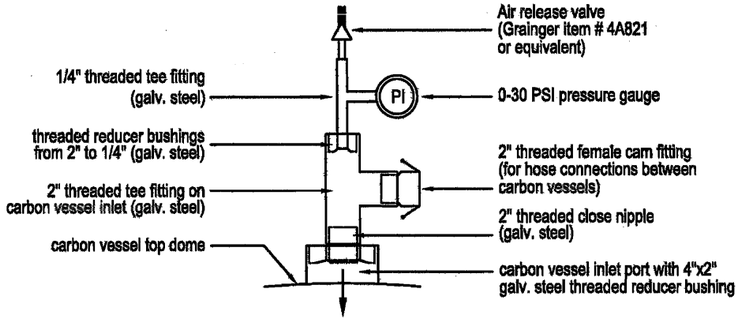


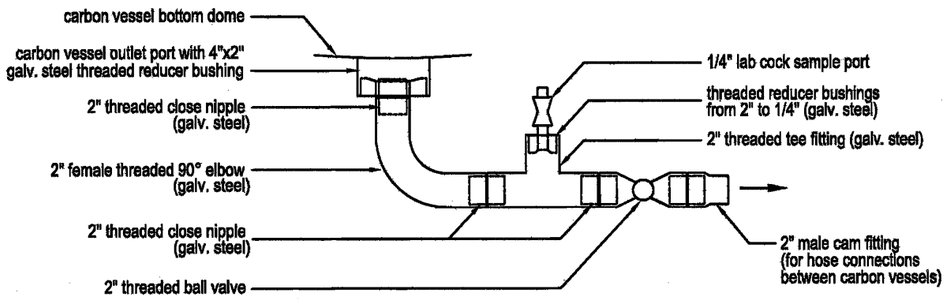
A 6 Sanitary Sewer Connection

Not to Scale



B 6 Carbon Vessel Inlet Detail

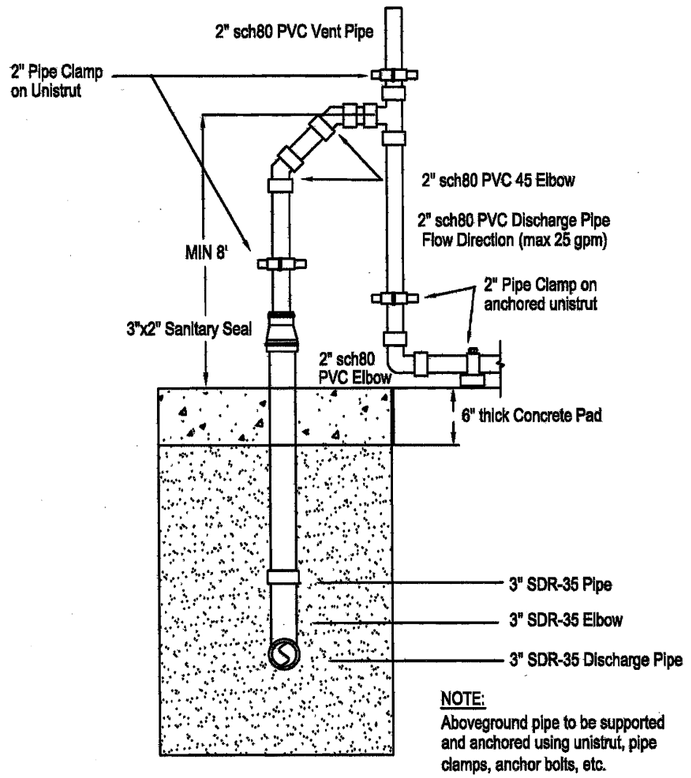
Not to Scale



Note: For carbon vessels with side outlet ports, the portion of the detail after the 90° elbow should be used.

C 6 Carbon Vessel Outlet Detail

Not to Scale



D 6 Discharge Pipe Detail

Not to Scale

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Two-Phase Extraction System
Mechanical Details (1)

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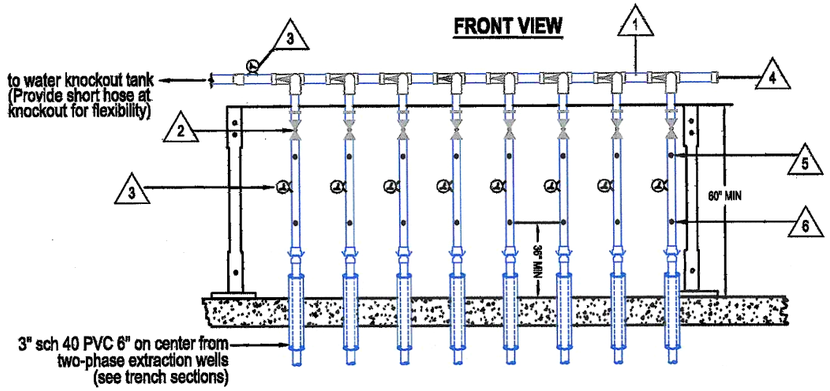
A/7 Manifold System

Not to Scale

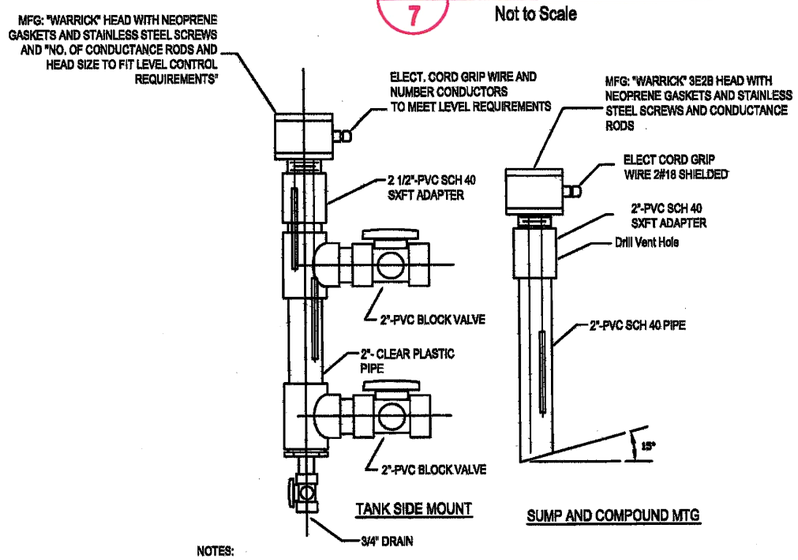


NOTES:

1. 4" DIA SCH. 80 PVC TWO-PHASE EXTRACTION PIPING MANIFOLD, PAINTED
2. 2" DIA SCH. 80 PVC BALL VALVE (TYPICAL)
3. 0-30" Hg VACUUM GAUGE
4. 4" DIA SCH. 80 THREADED CAP
5. 1/4" NPT MALE x HOSE PVC LABCOCK SAMPLE PORT - TYPICAL
6. 1/4" NPT (PLUG) - TYPICAL

B/7 Level Control Detail

Not to Scale



NOTES:

SHOWN ARE TWO INSTALLATIONS OF THE WARRICK 3E STYLE CONDUCTANCE PROBE ASSEMBLIES FOR POINT LIQUID LEVEL DETECTION. THEY ARE USED IN CONJUNCTION W/TH WARRICK 27, 47 OR 67 SERIES CONTROLLERS.

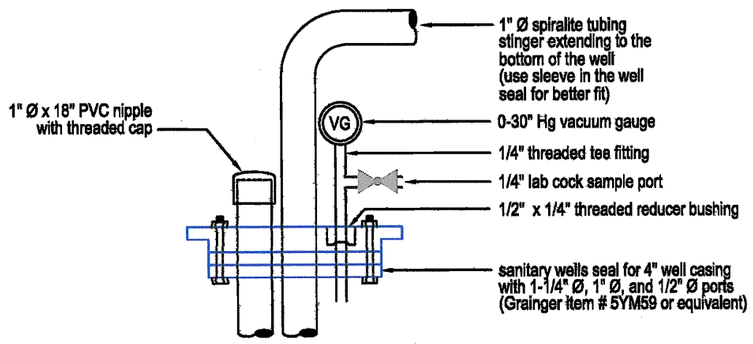
THE SIDE MOUNT INSTALLATION UTILIZES 4 ROD HEADS FOR TANK LOW, HIGH, HIGH/ALARM LEVELS AND REFERENCE GROUND. THE WARRICK CONTROLLER IS TYPICALLY CONFIGURED TO USE THESE LEVEL POINTS FOR PUMP OFF, PUMP ON AND HIGH LEVEL ALARM. THESE CAN BE USED FOR INFLUENT SURGE TANKS AND OWS UNITS.

THE SUMP AND CONTAINMENT COMPOUND INSTALLATIONS UTILIZE THE 2 ROD HEAD FOR SINGLE POINT LEVEL CONTROL. THESE ARE CONFIGURED TO ACT AS SWITCH FOR A HIGH LEVEL ALARM SIGNAL.

ON ALL THE CONDUCTANCE PROBE INSTALLATIONS, THE BOTTOM OF THE ROD ACTS AS THE SPECIFIC LEVEL ACTUATION POINT.

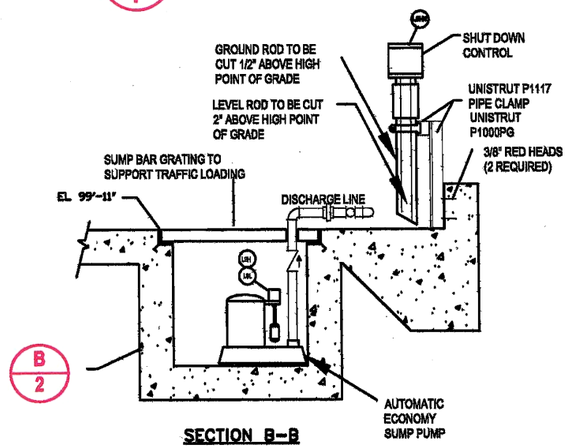
C/7 Well Head Connection Detail

Not to Scale



D/7 Sump and Level Control Detail

Not to Scale



Two-Phase Extraction System Mechanical Details - 2

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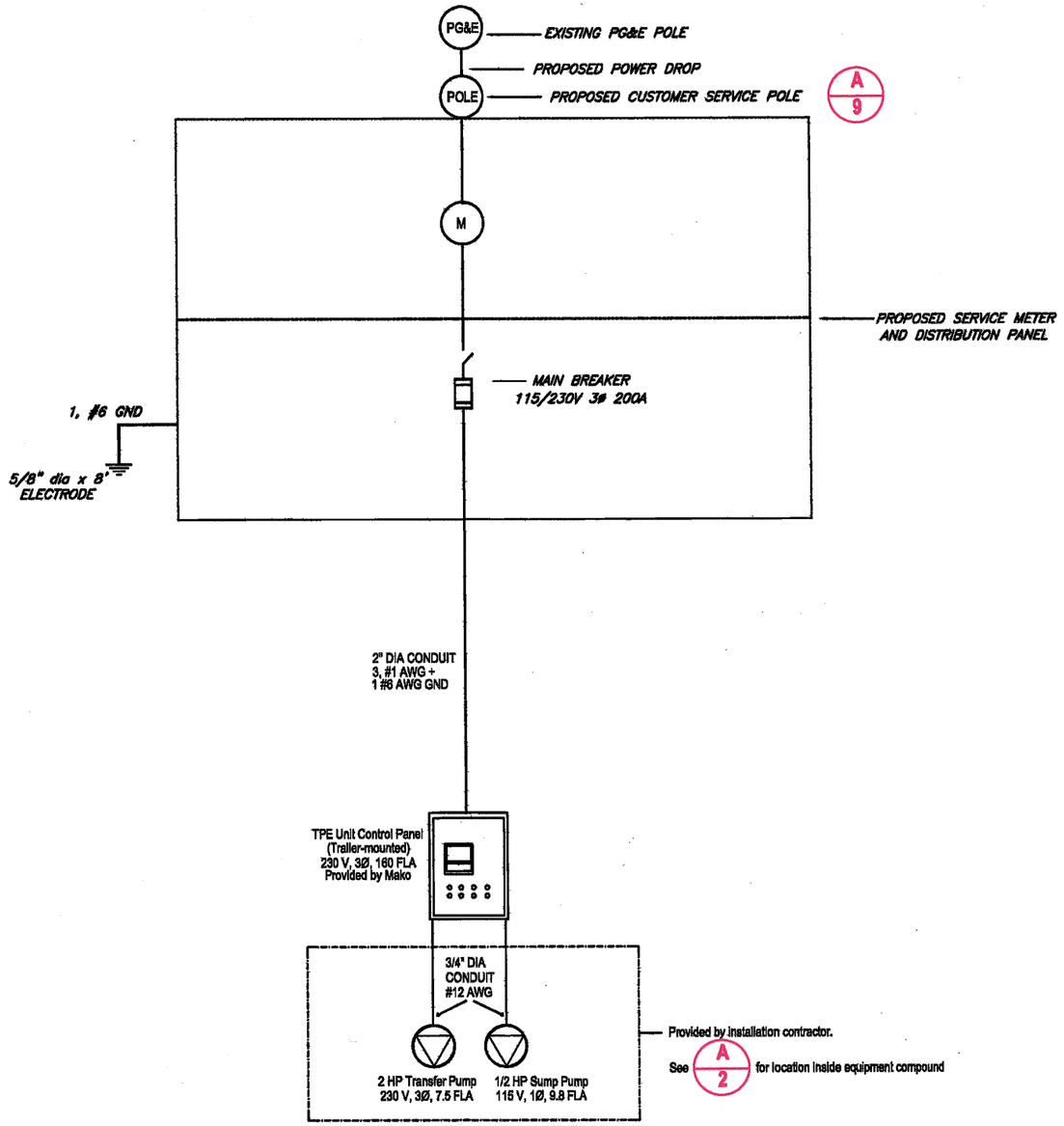
A/8 Single Line Diagram



Notes:

1 - Wire shall be copper stranded with THWN or THHN insulation.
2 - Above ground conduit to be rigid galv. steel or EMT.
3 - Below ground conduit to be sch 40 PVC, concrete encased if required.
4 - All equipment to be U.L. listed.
5 - All work to comply with the local, state and federal codes. All electrical installations at an active fueling facility must comply with article 514 of the 1999 NEC.
6 - Enclosures shall be NEMA 3R or 4 Rated.
7 - All panels shall have a minimum 3-foot clearance per NEC art 110-16(a)

Two-Phase Extraction System
Electrical Details - 1

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Permanent Installations

Notes

1. Locate the guy in line with the service drop. The guy shall be maintained taut.
2. Grounding, by the customer, shall be in accordance with NEC and local ordinances, except that the grounding wire shall be protected against mechanical damage by rigid steel conduit (or #6 AWG minimum armored copper ground wire may be used). The ground rod shall be located no less than 12 inches from the pole surface.
3. Customer's equipment shall not be installed in the climbing space or over the pole brand. See Note 20 on Page 4 for grounding requirements.
4. Increase conductor spacing to 8 inches for spans 151–200 feet, or to 12 inches for spans 201–330 feet.

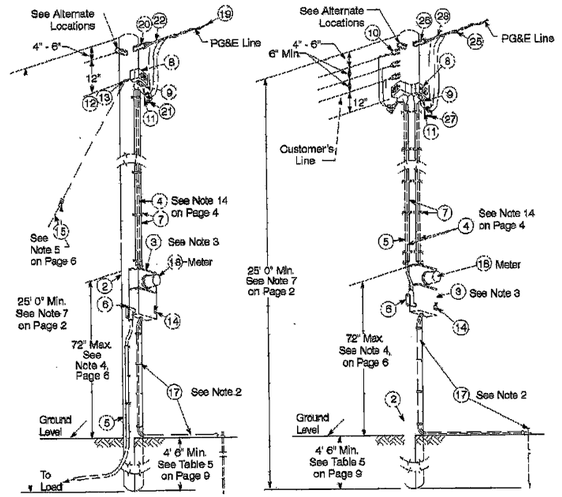
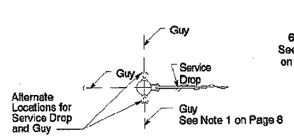


Figure 5
Service Drop Cable to Underground Line

Figure 6
Service Drop Cable to Overhead Line

Permanent Installations (continued)



Detail B
See Figure 5 and Figure 6 on Page 8

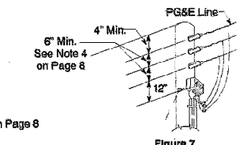


Figure 7
Open Wire Construction
(for use when the load requires a service drop conductor larger than #4/0 Aluminum or #4 Copper.)

Table 5 Pole Setting

Pole Length (feet)	Depth in Firm Soil (feet)
25	4-1/2
30	5
35	5
40	5-1/2

Method of Covering Metal Conduits and Attaching Coverings on Wood Poles

Notes

1. Strap PVC conduit to the pole with pipe straps or galvanized perforated plumber's tape spaced not more than 3 feet apart (see Figure 8).
2. Attach PVC molding to the poles with 1/4" x 2-1/2" galvanized washer-head lag screws.

Figure 8
PVC Conduit
(see Note 1)

Figure 9
PVC Molding
(see Note 2)

Metering Requirements

23. Meters shall be furnished by PG&E.
24. For residential installations, meter sockets without test bypass facilities shall be furnished, installed, and wired by the customer as shown on Page 10.
25. For commercial and industrial applications, meter sockets with PG&E-approved test bypass facilities shall be furnished, installed, and wired by the customer. Excepted from this test-bypass requirement are single-phase installations with a standard delivery voltage less than 300 V and a meter switch rating 200 amps or smaller where short interruptions of service are acceptable to the customer for testing and maintenance of the meter by PG&E. This configuration is limited to temporary power and exclusively nighttime loads such as parking lots, tennis courts, etc.

Table 3 Materials to Be Furnished and Installed by the Customer

Item	Description
1	Pole, 6" x 6" Timber, Class 6 Round, or Equivalent Metal (length as required, see Note 2 on Page 1)
2	Pole, Wood, or Equivalent Metal (see Note 6, Note 7, and Note 8 on Page 2). (See Table 1 on Page 2 for approved list of wood pole suppliers.)
3	Meter Socket, Main Service Switch
4	Conduit, Service (see Note 14 on Page 4)
5	Conduit, Load Side (see Note 14 on Page 4)
6	Conduit Fitting, Threaded, With Cover and Gasket
7 [1]	Covering, PVC Conduit, or PVC Moulding (see Page 9)
8 [1]	Wood Block (4" x 4" x 6" or two 2" x 4" x 6" nailed together)
9	Service Head
10	Service Knob
11	Wire, Insulated (size as required) (18" minimum extension from service head)
12	Eyebolt, 5/8", Length (as required), Galvanized
13	Washer, 2-1/4" Square for 5/8" Bolt Size, Galvanized
14	Padlock, for Main Service Switch
15	Guy Cable, 1/4" Minimum Galvanized Steel or Equivalent, With Guy Strain Insulator (10,000 lbs. minimum), Anchor and Fittings (see Page 10 for details of anchor and brace), and Guy Marker
16	Push Brace, 2" x 4" Minimum Timber (securely bolted to pole)
17	Grounding by Customer (see Pages 8 and 9)

[1] Omit conduit covering, Item 7, and wood block, Item 8, on a metal pole or on a wood pole with plastic conduit (see Note 15 on Page 4).
Exception: The wood block is required for a wood pole with plastic conduit when the service head is metallic and the neutral service entrance conductor is uninsulated (see Note 15 on Page 4).

Table 4 Materials to Be Furnished and Installed by PG&E

Items	Description	Document
18	Meter, Watthour (as required)	–
19	Service Wire (as required)	059626
20	Insulator, for Service Wire (as required)	025202
21	Connectors, Service Sleeve (as required)	029852
22	Preformed Grip, Dead-End (as required)	015009

A/9 PG&E Requirements for Customer Owned Permanent Service Pole

Note:
Install Customer-Owned Permanent Service Pole per PG&E Service Requirements

Dual-Phase Extraction System
Electrical Details (2)

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