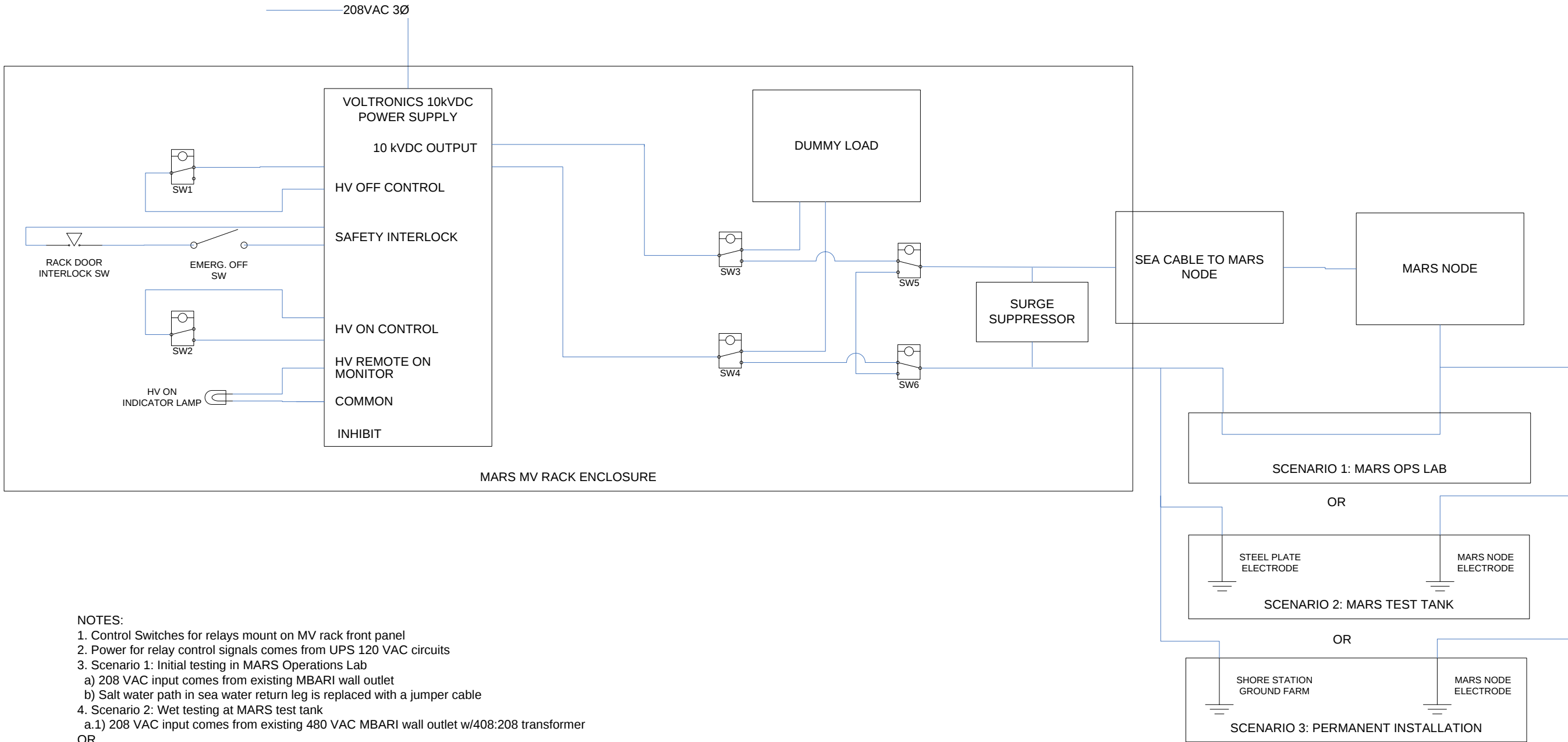




- NOTES:
1. Control Switches for relays mount on MV rack front panel
 2. Power for relay control signals comes from UPS 120 VAC circuits
 3. Scenario 1: Initial testing in MARS Operations Lab
 - a) 208 VAC input comes from existing MBARI wall outlet
 - b) Salt water path in sea water return leg is replaced with a jumper cable
 4. Scenario 2: Wet testing at MARS test tank
 - a.1) 208 VAC input comes from existing 480 VAC MBARI wall outlet w/408:208 transformer
 - OR
 - a.2) 208 VAC input comes from exiting sub-panel in lab adjacent to test tank
 - b) 10 kV ground farm is replaced with a steel plate in test tank cabled to MV rack
 5. Scenario 3: Permanent installation
 - a) 208 VAC comes from UPS panel in shore station shown on HBFL drawing E1.2
 6. Only 1 scenario is implemented at a time

CONTRACT NO.		NEPTUNE					
APPROVALS		DATE		TITLE MARS MV LAYOUTs			
DRAWN		GENE M.				06OCT06	
CHECKED							
ENGR							
DESIGN ACTIVITY		SYSTEM ENGR		SCALE	FILE	SHEET 1 OF 6	

0 4 8 16 32 ft
SCALE: 1/16"=1'-0"

0 2 4 8 16 ft
SCALE: 1/8"=1'-0"

0 1 2 4 8 ft
SCALE: 1/4"=1'-0"

0' 1' 2' 3' 6'
SCALE: 1/2"=1'-0"

0' 1' 2' 4'
SCALE: 3/4"=1'-0"

0' 1' 2' 3'
SCALE: 1"=1'-0"

0' 1' 2'
SCALE: 1-1/2"=1'-0"

0' 1' 2'
SCALE: 3"=1'-0"

IF THIS SHEET IS NOT 24" X 36", IT IS A
REDUCED PRINT. SCALE ACCORDINGLY

LIGHT FIXTURE SCHEDULE

FIXTURE NOTES:

- ALL FLUORESCENT LIGHT FIXTURE BALLASTS SHALL BE ELECTRONIC TYPE, 10% TOTAL HARMONIC DISTORTION MAX., 'ADVANCE' MAGNETEK/UNIVERSAL, OR 'MOTOROLA' U.O.N.
- ALL FLUORESCENT LIGHT FIXTURE LAMPS SHALL BE ENERGY SAVING 3500° K, 80 CRI MINIMUM, U.O.N.
- ALL FLUORESCENT BALLASTS (AND ASSOC. FIXTS.) SHALL HAVE MANUFACTURER'S CERTIFICATION OF COMPLIANCE WITH CALIFORNIA ENERGY COMMISSION STANDARDS AND REQUIREMENTS, WHERE SUCH ARE USED IN CONDITIONED SPACES.

TYPE	DESCRIPTION	LAMPS	MANUFACTURER
A	8' LONG X 7' W X 8 3/4" D. SURFACE MOUNTED ACRYLIC WRAPAROUND LENS FLUORESCENT FIXTURE, ELECTRONIC BALLAST, 120V.	(2) T8 T8	DAY-BRITE TV2
B	12 3/4" H X 7 3/4" D. WALL MTD NON-METALLIC, VAPORLIGHT FLUORESCENT FIXTURE, PRISMATIC SMOOTH POLY-CARBONATE GLOBE, NON METALLIC GUARD, HFP BALLAST, GREY COLOR, 120V.	(1) 26W PL	CAILET IPWF26H16-FBGP120V

ELECTRICAL SYMBOLS

SYMBOLS & ABBREVIATIONS SHOWN ARE FOR GENERAL USE DISREGARD THOSE WHICH DO NOT APPEAR ON THE PLANS.

- FLUORESCENT LUMINAIRE - SEE SCHEDULE.
- LUMINAIRE - WALL MOUNTED SEE SCHEDULE.
- \$ SINGLE POLE SWITCH, 48" AFF UON.
- \$ SINGLE POLE SWITCH, 48" AFF UON, 2 = CIRCUIT CONTROLLED.
- CONVENIENCE RECEPTACLE - DUPLEX AT 48" AFF UON.
- PANELBOARD - SURFACE MOUNTED.
- EQUIPMENT PANEL - SURFACE MOUNTED.
- NON-FUSED DISCONNECT SWITCH.
- CIRCUIT BREAKER.
- TRANSFORMER - SEE SINGLE LINE FOR SIZE.
- PULLBOX.
- FIRE ALARM MANUAL PULL STATION.
- WEATHERPROOF FIRE ALARM HORN.
- PHOTOELECTRIC SMOKE DETECTOR.

- FLEX CONDUIT WITH CONNECTION.
- CONDUIT - UP.
- CONDUIT - DOWN.
- CONDUIT - CONCEALED IN WALLS OR CEILING.
- CONDUIT - IN OR BELOW SLAB OR UNDERGROUND, 3/4" MIN.
- CAPED CONDUIT, SUB-OUT.
- CONDUIT CONTINUATION.
- CONDUIT - HOME RUN TO PANEL, TERMINAL CABINET, ETC. RIMS MARKED WITH CROSSHATCHES INDICATE NUMBER OF R/S AND WIRES. WHEN MORE THAN TWO SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE. CROSS HATCHES WITH NUMBER ADJACENT INDICATES WIRE SIZE OTHER THAN #12ANS.
- SHEET NOTE REFERENCE SYMBOL, SEE ASSOCIATED NOTE ON SAME SHEET.
- DETAIL OR SECTION DESIGNATION.

ABBREVIATIONS

A	AMPERE	LTS	LIGHTING
AFF	ABOVE FINISHED FLOOR	LV	LOW VOLTAGE
ARCH	ARCHITECT	MCM	THOUSAND
AWG	AMERICAN WIRE GAUGE	M	CIRCULAR MILS
BKR	BREAKER	MLO	MAIN LUGS ONLY
C	CONDUIT	MECH.	MECHANICAL
CB	CIRCUIT BREAKER	MTD	MOUNTED
CIRC.	CIRCUIT	NTS	NOT TO SCALE
CL	CENTER LINE	OC	ON CENTER
CLS	CELLING	OH	OVERHEAD
CO	CONDUIT ONLY	PA	PUBLIC ADDRESS
CTR	CENTER	PB	PULL BOX
DIM	DIMENSION	PF	POWER FACTOR
DISTR	DISTRIBUTION	PH	OR 3 PHASE
EXIST	EXISTING	PIL	PANEL
EM	EMERGENCY	PVC	POLY VINYL CHLORIDE
ENT	ELECTRICAL METALLIC TUBING	(R)	EXISTING TO BE REMOVED
EQUIP	EQUIPMENT	(R/P)	REMOVABLE POLE
FA	FIRE ALARM	RECP'S	RECEPTACLES
FAOP	FIRE ALARM CONTROL PANEL	REQD	REQUIRED
FIN	FINISH FLOOR	REMTS	REQUIREMENTS(S)
FL	FLOOR	SHT	SHEET
(F)	FUTURE	SN	SWITCH
GFIC	GROUND FAULT INTERRUPTING	SNBD	SWITCHBOARD
GRD	GROUND	TYP	TYPICAL
GRS	GALVANIZED RIGID STEEL	UON	UNLESS OTHERWISE NOTED
HT	HEIGHT	V	VOLT
IC	INTERCOM	W	WIRE
JB	JUNCTION BOX	WP	WEATHERPROOF
KV	KILOVOLT	XFMR	TRANSFORMER
KVA	KILOVOLT AMPERES		
KM	KILOMETER		
LCP	LIGHTING CONTROL PANEL		

HBFL

Holewinski Blewens Fedeleem & Lukes, Architects

380 Main Street
Salinas, California 93901
408/ 757-8001



Richard J. Fedeleem
Thomas R. Lukes

C12891
C8882

Consultants:

Agency Approvals:

Revisions

No.	Description	Date
	OWNER'S REVISIONS	10-12-05



MOSS LANDING FACILITIES
SANDHOLDT ROAD
MOSS LANDING CA. 95039

MARS SHORE STATION

SINGLE LINE DIAGRAM &
LIGHT FIXTURE SCHEDULE

Drawn by: CADD

Checked: E.B.S.

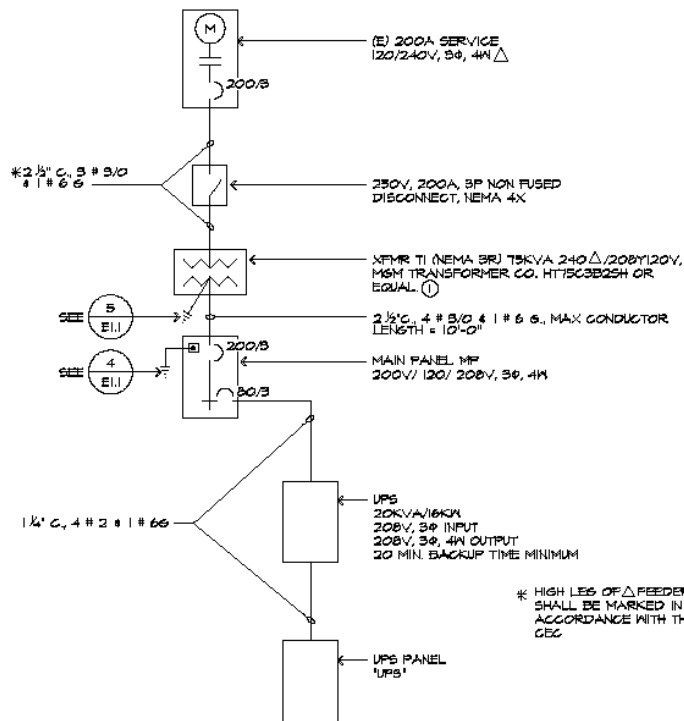
Approved:

Project No. 04010
Date: 8/11/05

Drawing No.

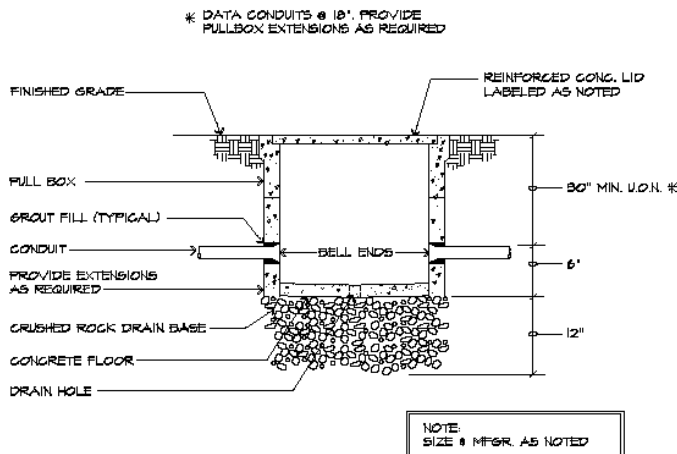
E0.1

① TRANSFORMER SHALL HAVE COPPER
WINDINGS & PREMIUM PAINT SYSTEM.



1 SINGLE LINE DIAGRAM

NO SCALE



2 TYPICAL PULLBOX DETAIL

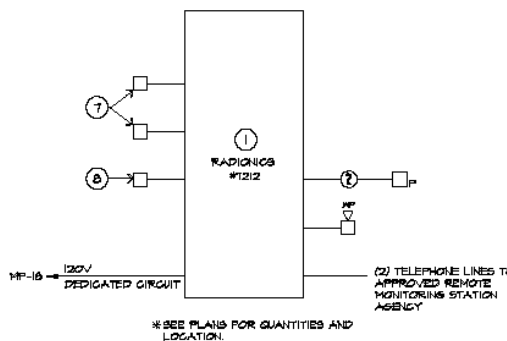
NO SCALE

SEQUENCE OF OPERATION OF THE FIRE ALARM SYSTEM

- ACTIVATION OF ANY INITIATING DEVICE SHALL CAUSE ALL SIGNALS IN BUILDING TO ACTIVATE AND SOUND AND SIMULTANEOUSLY CAUSE AN ALARM TO BE SENT TO THE REMOTE MONITORING AGENCY.
- IN ADDITION, THE ALARM LIGHT ON THE FIRE ALARM CONTROL PANEL CORRESPONDING TO THE ZONE IN ALARM WILL ILLUMINATE.
- SHOULD AN OPEN GROUND OR SHORT OCCUR IN THE WIRING SYSTEM, PANEL WILL DETECT THE MALFUNCTION AND INITIATE A TROUBLE INDICATOR ALONG WITH THE SPECIFIC ZONE TROUBLE LIGHT WILL ILLUMINATE.
- ONCE THE SYSTEM IS BACK TO NORMAL, THE PANEL WILL RESOUND FOR PROPER RESETS.

FIRE ALARM NOTES:

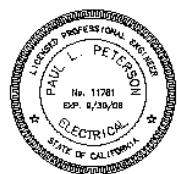
- FIRE ALARM CONTROL PANEL WITH COMMUNICATOR, CHARGER & BATTERIES.
- ALL WIRE SHALL BE MINIMUM #12ANS. ALL WIRING SHALL BE ROUTED IN SURFACE METAL RACEWAY OR CONDUIT.
- SUBMIT COMPLETE FIRE ALARM SYSTEM PLANS INCLUDING, RISKER DIAGRAM, BATTERY CALC., VOLT DROP CALC., WIRING DIAGRAMS, ETC. TO LOCAL FIRE AUTHORITY REVIEW AND APPROVAL PRIOR TO START OF INSTALLATION.
- FINAL CONNECTIONS OF DEVICES AND EQUIPMENT SHALL BE BY A FIRE ALARM CONTRACTOR WHO PERFORMS SUCH WORK ON A REGULAR BASIS.
- PROVIDE MANUALS AND MINIMUM 2-HOURS OPERATING INSTRUCTION TO OWNER.
- PROVIDE BATTERY BACKUP FOR 60 HOURS OF STANDBY & 5 MINUTES OF ALARM.
- MECHANICAL SENSING DEVICE FOR HEAT PUMP/TEMPERATURE MONITORING. SEE MECHANICAL DRAWINGS.
- POWER FAILURE MONITORING C.T.S. ON INCOMING FEEDER & RELAY.



3 TYPICAL FIRE ALARM RISER DIAGRAM

NO SCALE

PLAN CHECK SUBMITTAL



AURUM CONSULTING
ENGINEERS
MONTEREY BAY, INC.

Project No. 25092.00

1000 Garden Road • Suite 120 • Monterey, CA 93940
T:831.648.3530 • F:831.648.3536 • cadd@aurumbay.com

H3FL
Holewinski Blevens Fedeleem & Lukes, Architects

380 Main Street
Salinas, California 93901
408/ 757-8001



Richard J. Fedeleem
Thomas R. Lukes

C12891
CB982

Consultants:

Agency Approvals:

Revisions		
No.	Description	Date
	OWNER'S REVISIONS	10-12-05



MOSS LANDING FACILITIES
SANDHOLDT ROAD
MOSS LANDING CA. 95039

MARS SHORE STATION

ELECTRICAL FLOOR PLAN,
& DETAILS

Drawn by: CADD

Checked: E.B.S.

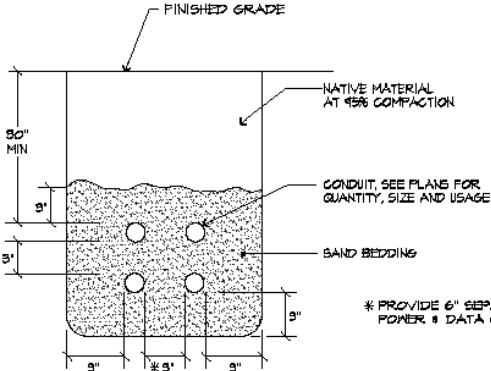
Approved:

Project No. 04010

Date: 8/11/05

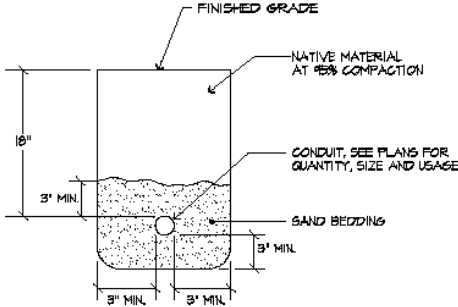
Drawing No.

E1.1



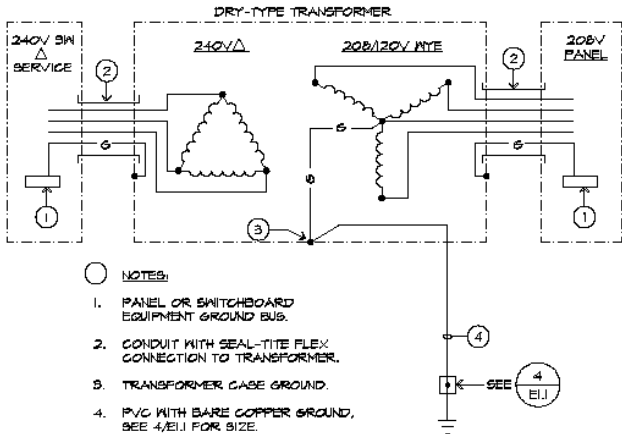
3 TYPICAL TRENCH SECTION

NO SCALE



3A TRENCH SECTION (DATA CONDUIT)

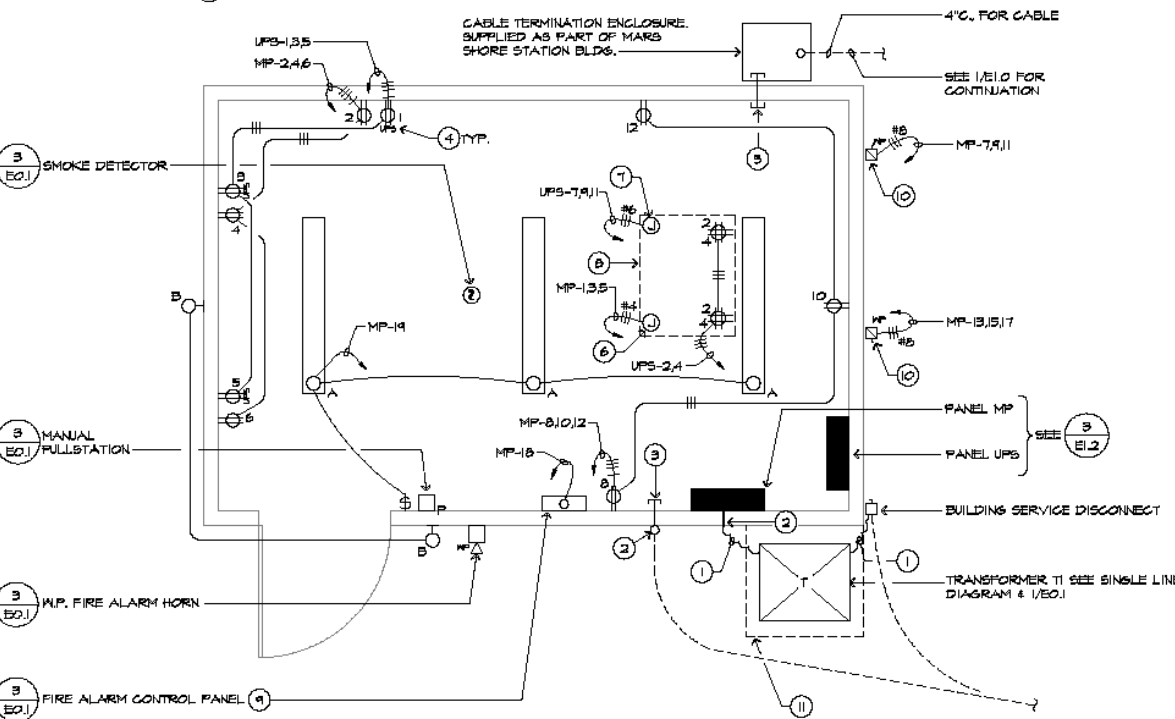
NO SCALE



5 DRY TYPE TRANSFORMER GND. DETAIL

NO SCALE

- DETAIL NOTES:
1. SEAL TITE FLEX.
 2. "LB" CONDUIT FITTING (PVC). SEAL CONDUIT PENETRATION WATER TIGHT. COORDINATE LOCATION TO AVOID MARS STATION ENCLOSURE REINFORCING.
 3. SIMILAR TO NOTE (2) (1) 2" G.O.
 4. RECEPTACLES ON UPS POWER SHALL BE ORANGE COLOR.
 5. 4" G.O. STUB THRU WALL.
 6. UPS.
 7. POWER SUPPLY.
 8. EQUIPMENT RACK.
 9. FIRE ALARM & SYSTEMS MONITORING PANEL. RADIOLOGS #7212 WITH AUTOMATIC DIALER TO MONITOR: TEMPERATURE, POWER FAILURE & INTRUSION.
 10. HEAT PUMP 28.4 FLA, 208/3.
 11. TRANSFORMER PAD SHALL BE CONTIGUOUS WITH BUILDING PAD. SEE 2/E1.1

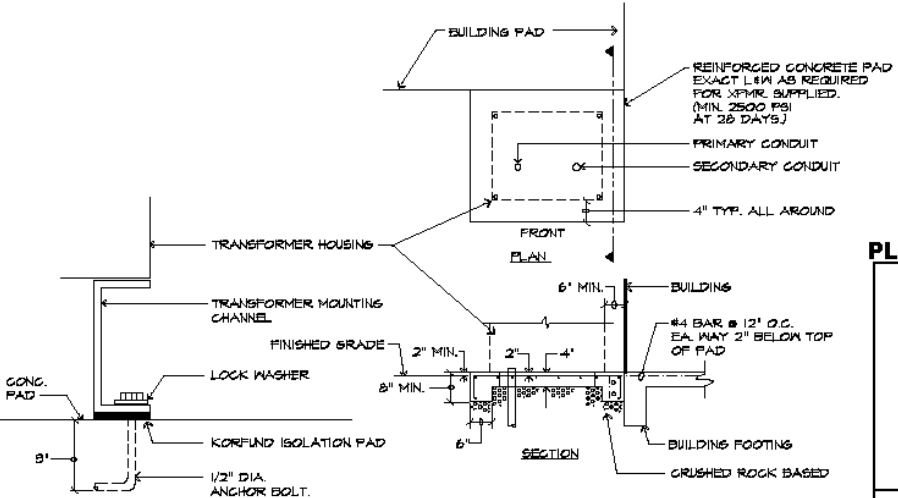


1 POWER & LIGHT FLOOR PLAN

SCALE: 1/2"=1'-0"

4 BUILDING PANEL GROUNDING

NO SCALE



2 DRY TYPE TRANSFORMER MOUNTING DETAIL

NO SCALE

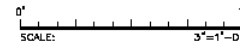
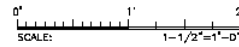
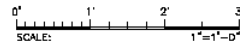
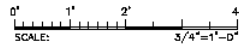
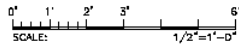
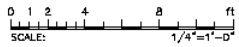
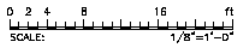
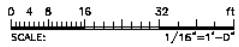
PLAN CHECK SUBMITTAL



AURUM CONSULTING ENGINEERS
MONTEREY BAY, INC.

Project No. 28082.D0

1800 Garden Road • Suite 120 • Monterey, CA 93940
1.831.848.3330 • F.831.848.3338 • cadd@acomb.com



IF THIS SHEET IS NOT 24" X 36", IT IS A
REDUCED PRINT. SCALE ACCORDINGLY

PANELBOARD SCHEDULE

Voltage: 120/208V, 3Ø
Wire: 4M
Type: NEMA 1
Mains: M.L.O.

PANEL UPS

Bussing: 100A
Feed: TOP
Mounting: SURFACE
A.I.C.: 10,000

Load	A	B	C	Brkr	Ckt	abc	Ckt	Brkr	A	B	C	Load
RECEPTACLES	150	150	150	20/1	1	2	20/1	150	150	150	150	RECEPTACLES
POWER SUPPLY				60	7	8	10					SPARE
				9	11	12						

KVA Phase A	-
KVA Phase B	-
KVA Phase C	-

Total Load KVA	-
Total Load Amperes	-

Voltage: 120/208V, 3Ø
Wire: 4M
Type: NEMA 1
Mains: 200A, 3Ø

PANEL MP

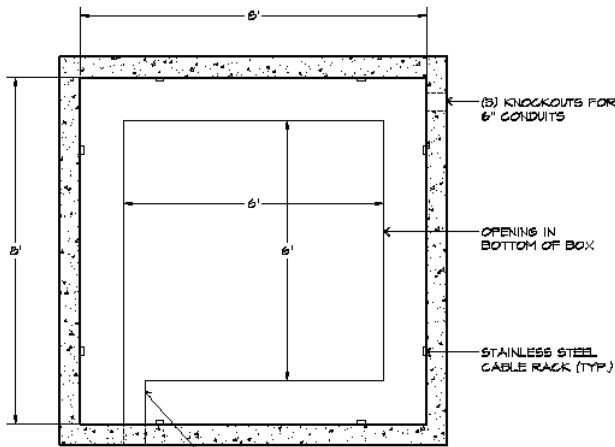
Bussing: 225A
Feed: BOTTOM
Mounting: SURFACE
A.I.C.: 10,000

Load	A	B	C	Brkr	Ckt	abc	Ckt	Brkr	A	B	C	Load
UPS	6670	6670	6670	80	3	4	20/1	150	150	150	150	RECEPTACLES
HEAT PUMP	3400	3400	3400	40	5	6	10	150	150	150	150	
HEAT PUMP	3400	3400	3400	40	7	8	12	150	150	150	150	
LTS	412			20/1	13	14	20/1	150	150	150	150	FIRE ALARM
SPARE				21	15	16	22					SPACE
				23	17	18	24					
				25	19	20	26					
				27	21	22	28					
				29	23	24	30					
	18442	18442	18442						540	540	540	

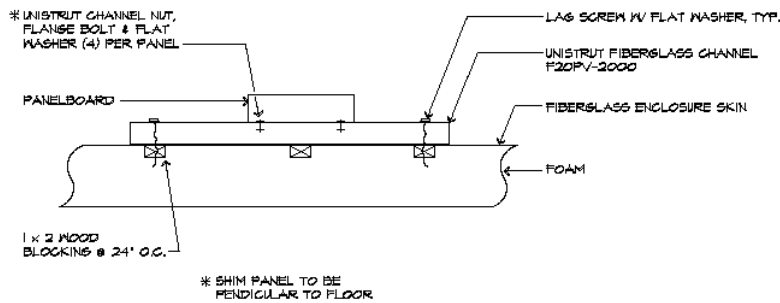
KVA Phase A	14.3
KVA Phase B	14.0
KVA Phase C	14.0

Total Load KVA	42.3
Total Load Amperes	114

① PROVIDE LOCK-ON DEVICE.

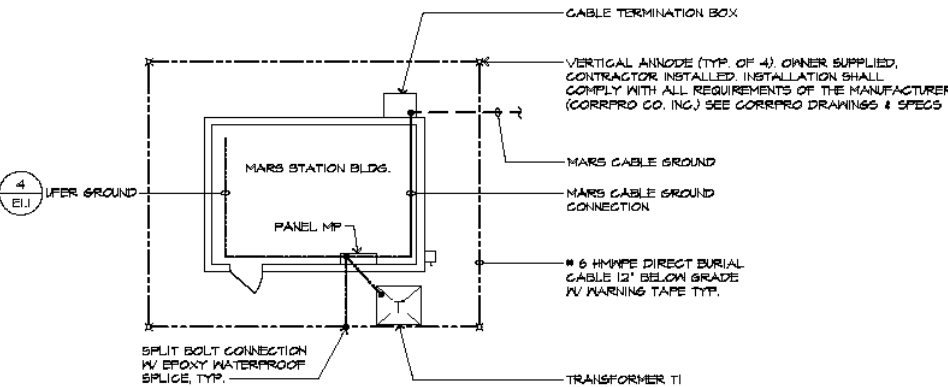


VAULT PLAN



3 PANELBOARD / EQUIPMENT MOUNTING

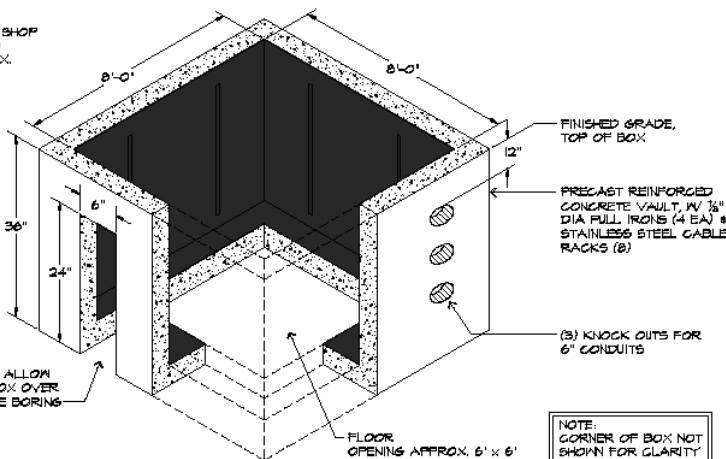
NO SCALE



2 BUILDING GROUNDING

NO SCALE

- 1 COMPACT SOIL BELOW BOX TO 90% COMPACTION.
- 2 SLOUT ALL CONDUIT PENETRATIONS IN WALLS OF VAULT AFTER CONDUIT INSTALLATION.
- 3 BELL ENDS.
- 4 PROVIDE COMPLETE SHOP DRAWINGS PRIOR TO FABRICATION OF BOX.



1 CABLE VAULT

NO SCALE

HBFL

Holewinski Blevens Fedelem & Lukes, Architects

380 Main Street
Salinas, California 93901
408/ 757-8001



Richard J. Fedelem
Thomas R. Lukes

C12691
C8682

Consultants:

Agency Approvals:

Revisions

No.	Description	Date
	OWNER'S REVISIONS	10-12-05



MOSS LANDING FACILITIES
SANDHOLDT ROAD
MOSS LANDING CA. 95039

MARS SHORE STATION

ELECTRICAL DETAILS,
PANELBOARD SCHEDULES

Drawn by: CADD

Checked: E.B.S.

Approved:

Project No. 04010

Date: 8/11/05

Drawing No.

E1.2

PLAN CHECK SUBMITTAL



AURUM CONSULTING
ENGINEERS
MONTEREY BAY, INC.

Project No. 25082.00

1000 Garden Road • Suite 120 • Monterey, CA 93940
T 831.646.3300 • F 831.646.3308 • cadd@aumb.com