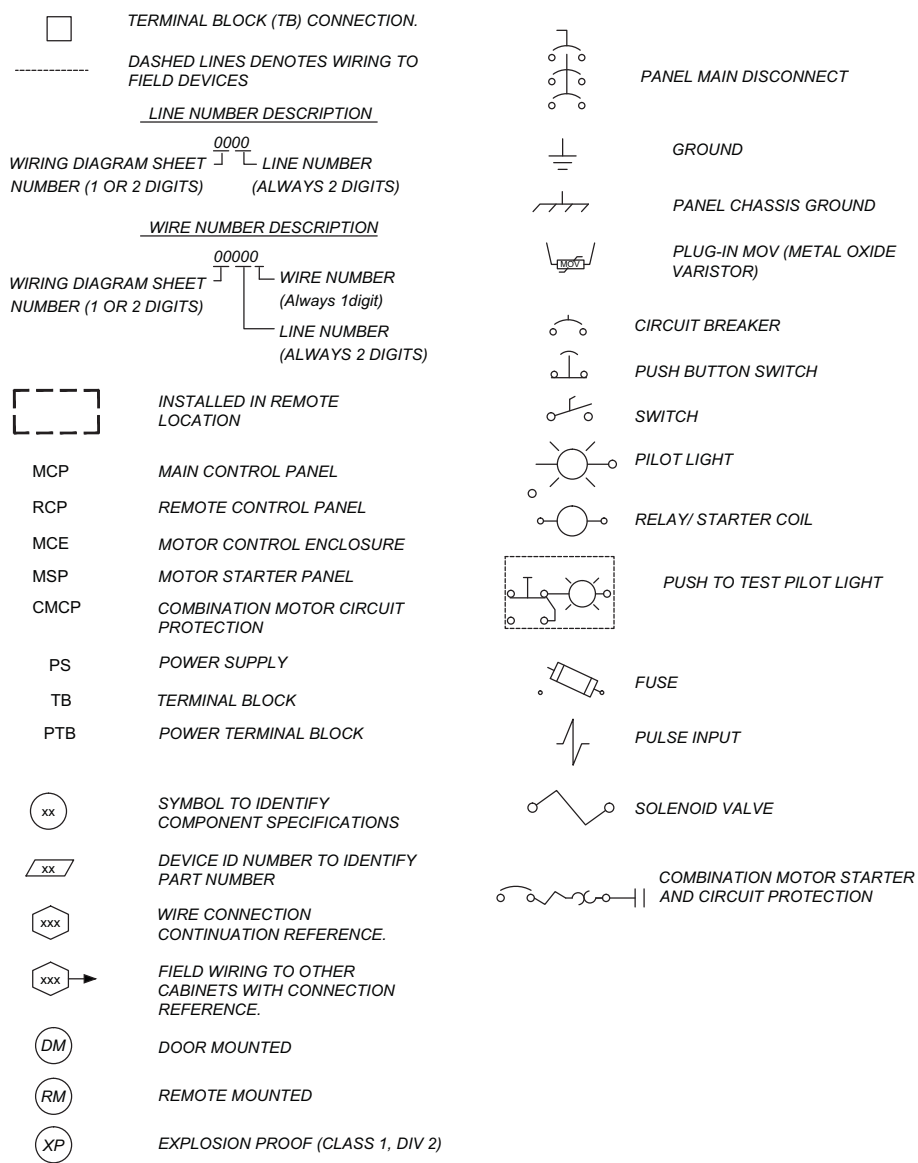


PANEL SPECIFICATIONS AND NOTES:

1. THE PANEL MANUFACTURER SHALL HAVE A MINIMUM OF 5 YEARS EXPERIENCE MANUFACTURING SYSTEMS SPECIFICALLY FOR WASTEWATER APPLICATIONS.
2. THE CONTROL PANEL SHALL BE MANUFACTURED AND FABRICATED BY A UL 508A LISTED INDUSTRIAL CONTROL PANEL MANUFACTURER AND SHALL MEET UL 508A SAFETY STANDARDS.
3. ENCLOSURES SHALL BE UL LISTED, NEMA TYPE 4, PROPERLY SIZED TO CONTAIN THE REQUIRED COMPONENTS WITH ADDITIONAL 35% FREE SPACE UNLESS OTHERWISE INDICATED ON THE WIRING DIAGRAM. ENCLOSURES MOUNTED INSIDE VAULT SHALL BE CONSTRUCTED OF 316 STAINLESS STEEL BODY AND DOOR WITH CONTINUOUS HINGE (NEMA 4X).
4. ENCLOSURE ACCESSORIES, WHERE APPLICABLE, SHALL INCLUDE THE FOLLOWINGS:
 - INNER SWING PANEL TO MOUNT OPERATOR DEVICES, INNER PANEL SIZE SHALL COVER THE ENTIRE OPENING OF THE ENCLOSURE.
 - CONDENSATE HEATER, MINIMUM OF 100WATT, 120VAC WITH ADJUSTABLE THERMOSTAT
 - WORK LIGHT, 12-INCH FLUORESCENT WITH A SAFETY LENS SHALL BE MOUNTED INSIDE THE TOP OF THE ENCLOSURE WITHOUT PENETRATING THE OUTSIDE OF THE PANEL. THE LIGHT SHALL BE OPERATED WITH A SWITCH ATTACHED TO THE DOOR THAT TURNS ON THE LIGHT WHEN THE DOOR IS OPEN.
7. ALL DEVICES WITHIN THE PANEL SHALL BE UL LISTED AND/ OR RECOGNIZED WHERE APPLICABLE AND SHALL BE MOUNTED AND WIRED IN ACCORDANCE WITH THE MOST CURRENT EDITION OF UL508 AND NFPA.
8. THE CONTROL PANEL SHALL BE FULLY TESTED BY THE FACTORY PRIOR TO SHIPMENT. IT SHALL INCLUDE TESTING OF BOTH POWER AND CONTROL DEVICES AS WELL AS ALL CONTROL FUNCTIONS.
9. IT IS THE PANEL BUILDER RESPONSIBILITY TO PROVIDE PANEL LAYOUT, BILL OF MATERIAL, AND SUBMIT TO ARCADIS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
10. REFER TO CONTROL TRANSFORMER NAMEPLATE FOR CONNECTIONS OF PRIMARY AND SECONDARY LEADS.
11. CABINET WITH VFDs SHALL HAVE COOLING FAN, LOUVER WITH REMOVABLE FILTER ACCESSIBLE TO OPERATOR WITHOUT OPENING PANEL DOOR. COOLING FAN SIZE SHALL BE ADEQUATE TO PREVENT VFD FROM OVERHEATING. ENCLOSURE SHALL BE CARBON STEEL NEMA 3R. ALTERNATIVELY, CABINET INSTALLED INSIDE VAULT THAT CONTAINS VFDs SHALL BE 316 SS NEMA4X WITH SIDE MOUNTED AIR CONDITIONING UNIT.
12. FOR COMBINATION MOTOR CONTROLLER WITH MOTOR CIRCUIT PROTECTION, FOLLOW MANUFACTURER'S INSTRUCTION FOR SELECTING CURRENT ELEMENTS AND SETTING THE INSTANTANEOUS TRIP CIRCUIT BREAKER.
13. FIELD WIRING CONNECTIONS SHALL BE ONLY TO TERMINALS PROVIDED.
14. SIGNAL WIRES SHALL NOT BE PLACED WITH NON-SIGNAL WIRES AFTER ENTRY INTO THE CABINET.
15. INCOMING WIRES SHALL STAY OUTSIDE AREAS OF POWER AND WHERE CONTROL COMPONENTS ARE PLACED, AND SHALL NOT BE ROUTED IN WIRE CHANNELS.
16. GROUNDING SHALL COMPLY WITH LOCAL REQUIREMENT AND NEC ARTICLE 250, GROUNDING AND BONDING.
17. OPERATOR CONTROL DEVICES SHALL BE 22MM, NEMA AND UL LISTED FOR TYPES 1, 12, 3R, 4 AND 4X. CONTACT BLOCKS SHALL BE COLOR CODED RATED AT 10AMP. CONNECTION SHALL BE SUITABLE FOR TWO 14AWG CONTROL WIRES.
18. CONTROL RELAYS AND TIME DELAY RELAYS SHALL BE DPDT RATED 10A@120VAC SOCKET MOUNT TYPE.
19. ALL COMPONENTS MOUNTED ON THE DOOR SHALL HAVE FINGER PROOF TERMINALS, OTHERWISE, THEY SHALL BE WIRED WITH INSULATED CONNECTORS TO PREVENT ACCIDENTAL SHOCK HAZARDS.
20. SELF ADHESIVE VINYL CLOTH PRINTED WIRE MARKERS SHALL BE PLACED AT BOTH ENDS OF EVERY WIRE. ALL COMPONENTS ON THE BACKPANEL SHALL BE IDENTIFIED INCLUDING RATING AND SIZE.
21. COMPONENTS ON THE DOOR OF THE ENCLOSURE SHALL BE IDENTIFIED WITH CUSTOM ENGRAVED PLASTIC LEGEND PLATES.
22. VOLTAGE IDENTIFICATION AND WARNING LABELS SHALL BE INSTALLED ON THE CABINET DOOR.

LEGEND



MAJOR COMPONENTS SPECIFICATION:

- 1 UL 498 RATED MOLDED CASE CIRCUIT BREAKER, SIZE AS INDICATED, 600VAC, 3POLE, WITH THERMAL MAGNETIC TRIP.
- 2 DOOR MOUNTED HANDLE, NFPA 79 COMPLIANT.
- 3 POWER DISTRIBUTION BLOCK TO ALLOW INDIVIDUAL BRANCH DISCONNECT AND SHORT CIRCUIT PROTECTION TO HAVE A UL INTERRUPTING RATING OF 14KA AT 480 VAC.
- 4 INCOMING SERVICE GROUND LUG. ADDITIONAL GROUND LUGS TO BE INSTALLED FOR EACH MOTOR.
- 5 SINGLE PHASE, NON-VENTILATED AUTOMATION TRANSFORMER, MOUNTED ON SIDE OF PANEL. TRANSFORMER SHALL BE STAINLESS STEEL, UL LISTED. 1KVA: SOLA CATALOG NUMBER "HSS1F1BS" 1.5KVA: SOLA CATALOG NUMBER "HSS1F1.5AS" 2KVA: SOLA CATALOG NUMBER "HSS1F2AS"
- 6A MANUAL MOTOR STARTER WITH MAGNETIC SHORT CIRCUIT PROTECTION, AND OVERLOAD. MOTOR STARTER SHALL NOT HAVE AN AMPACITY LESS THAN 125% OF THE MOTOR FLA.
- 6B COMBINATION MOTOR STARTER WITH MAGNETIC SHORT CIRCUIT PROTECTION, OVERLOAD, CONTACTOR AND (2) N.O. AUXILIARY CONTACT. MOTOR STARTER SHALL NOT HAVE AN AMPACITY LESS THAN 125% OF THE MOTOR FLA.
- 7 FEED THROUGH UL LISTED TERMINAL BLOCK, RATED 600VAC, 100KA SCCR RATING, DIN RAIL MOUNT, SCREW CONNECTION, FOR COPPER WIRE. BLOCK SIZE AND COLOR TO MATCH MINIMUM CIRCUIT REQUIREMENT.
- 8A IEC MINIATURE 4 POLE CONTROL RELAY, (2) N.O. AND (2) N.C. CONTACTS.
- 8B IEC MINIATURE 4 POLE CONTROL RELAY, (4) N.O. CONTACTS.
- 9 500VA UPS WITH ALARM RELAY (PHOENIX CONTACT OR APPROVED EQUAL).
- 10 24VDC POWER SUPPLY, NEC CLASS 2 COMPLIANCE. SIZE AS INDICATED.
- 11 HAND SWITCH POSITION SHALL HAVE SPRING-RETURN MECHANISM FOR MOMENTARY OPERATION.

[illegible]

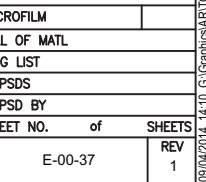
TOPOCK GROUNDWATER REMEDIATION PROJECT

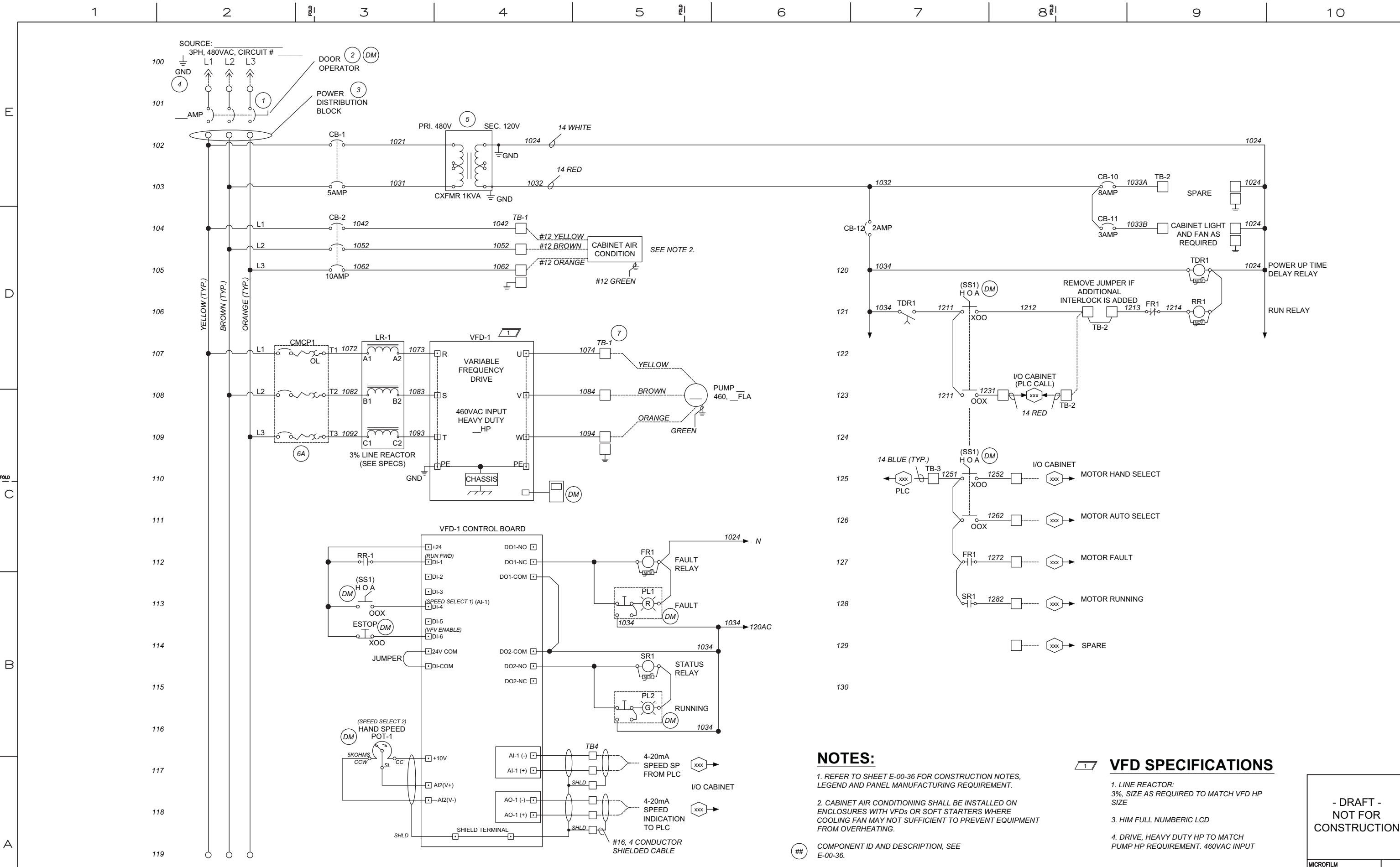
**ELECTRICAL PANEL
FABRICATION NOTES**

GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

- DRAFT -
NOT FOR
CONSTRUCTION

MICROFILM		
BILL OF MATL		
DWG LIST		
SUPSDS		
SUPSD BY		
SHEET NO.	of	SHEETS
E-00-36		REV 1





NOTES:

- 1. REFER TO SHEET E-00-36 FOR CONSTRUCTION NOTES, LEGEND AND PANEL MANUFACTURING REQUIREMENT.
- 2. CABINET AIR CONDITIONING SHALL BE INSTALLED ON ENCLOSURES WITH VFDs OR SOFT STARTERS WHERE COOLING FAN MAY NOT SUFFICIENT TO PREVENT EQUIPMENT FROM OVERHEATING.

COMPONENT ID AND DESCRIPTION, SEE E-00-36.

VFD SPECIFICATIONS

- 1. LINE REACTOR: 3%, SIZE AS REQUIRED TO MATCH VFD HP SIZE
- 3. HIM FULL NUMERIC LCD
- 4. DRIVE, HEAVY DUTY HP TO MATCH PUMP HP REQUIREMENT. 460VAC INPUT

- DRAFT -
NOT FOR
CONSTRUCTION



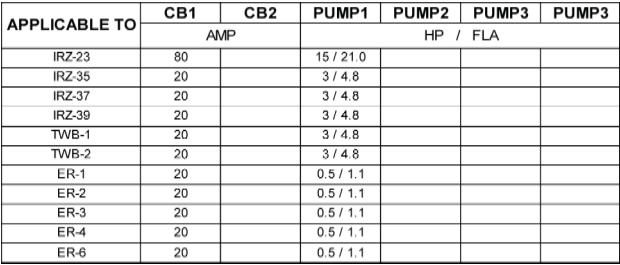
REVISIONS										REVISIONS									
NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD	BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD	BY	NO.	DATE
1	09/08/14	PRE-FINAL (90%) DESIGN																	
0	04/05/13	INTERMEDIATE (60%) DESIGN																	

APPROVED BY		SO	
JEF		SUPV	JPB
		DSGN	JMS
		DWN	MMS
		CHKD	JPB
		OK	JEF
DATE		09/08/14	
SCALE		AS NOTED	

TOPOCK GROUNDWATER REMEDIATION PROJECT
MOTOR ELECTRICAL PANEL EP2
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

MICROFILM			
BILL OF MATL			
DWG LIST			
SUPSDS			
SUPSD BY			
SHEET NO.	of	SHEETS	
E-00-38		REV	1





COMPONENT ID AND DESCRIPTION,
SEE E-00-40.

APPLICABLE TO	CB1	CB2	PUMP1	PUMP2	PUMP3	PUMP3
	AMP		HP / FLA			
IRZ-23	80		15 / 21.0			
IRZ-35	20		3 / 4.8			
IRZ-37	20		3 / 4.8			
IRZ-39	20		3 / 4.8			
TWB-1	20		3 / 4.8			
TWB-2	20		3 / 4.8			
ER-1	20		0.5 / 1.1			
ER-2	20		0.5 / 1.1			
ER-3	20		0.5 / 1.1			
ER-4	20		0.5 / 1.1			
ER-6	20		0.5 / 1.1			

- DRAFT -
NOT FOR
CONSTRUCTION

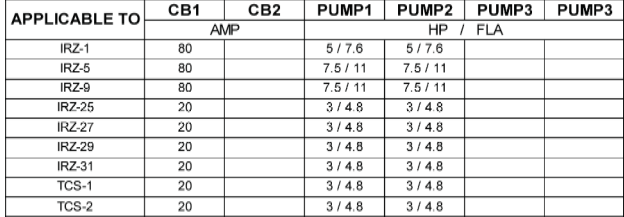
MICROFILM		
BILL OF MATL		
DWG LIST		
SUPSDS		
SUPSD BY		
SHEET NO.	of	SHEET
E-00-41		REV 1



ARCADIS

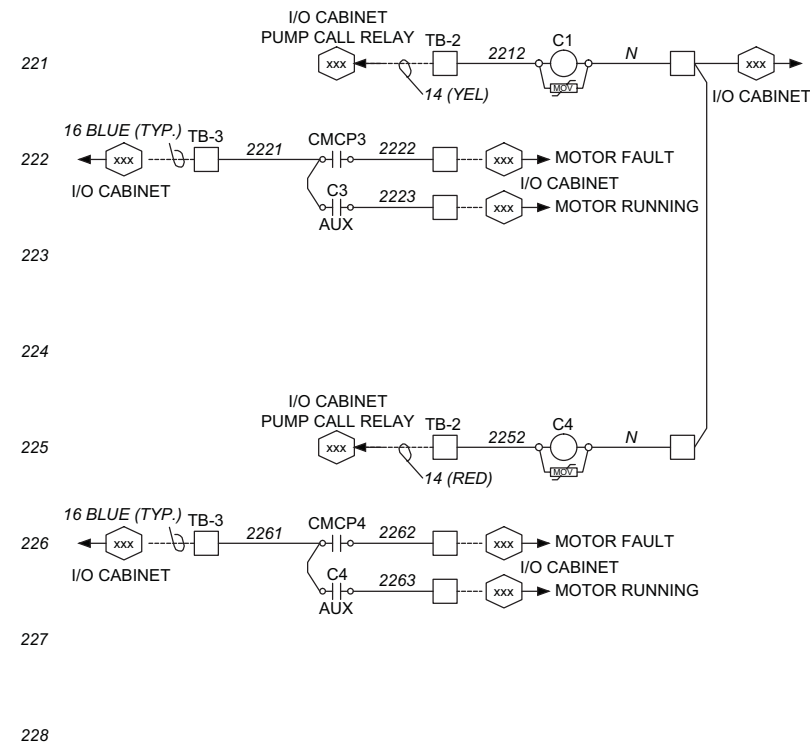
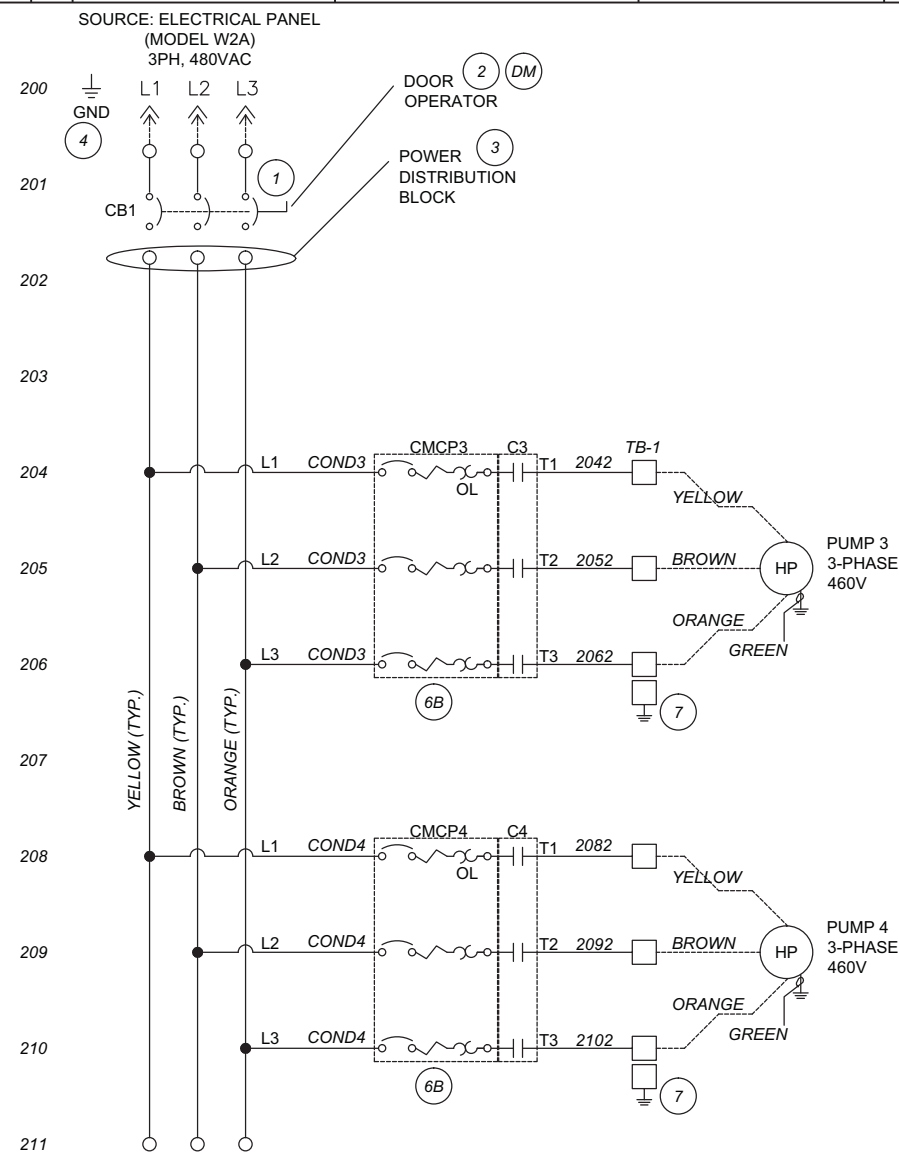
[illegible]

TOPOCK GROUNDWATER REMEDIATION PROJECT
VAULT ELECTRICAL PANEL
W1
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA



COMPONENT ID AND DESCRIPTION,
SEE E-00-40.

[illegible]



APPLICABLE TO	CB1	CB2	PUMP1	PUMP2	PUMP3	PUMP3
	AMP		HP / FLA			
IRZ-11B	20				3 / 4.8	3 / 4.8
IRZ-13B	20				3 / 4.8	3 / 4.8
IRZ-15B	20				3 / 4.8	3 / 4.8
IRZ-16B	20				3 / 4.8	3 / 4.8
IRZ-17B	20				3 / 4.8	3 / 4.8
IRZ-19B	20				3 / 4.8	3 / 4.8
IRZ-20B	20				3 / 4.8	3 / 4.8
IRZ-21B	20				3 / 4.8	3 / 4.8

NOTE:

REFER TO SHEET E-00-40 FOR
CONSTRUCTION NOTES, LEGEND AND
PANEL MANUFACTURING REQUIREMENT.

COMPONENT ID AND DESCRIPTION,
SEE E-00-40.

[illegible]

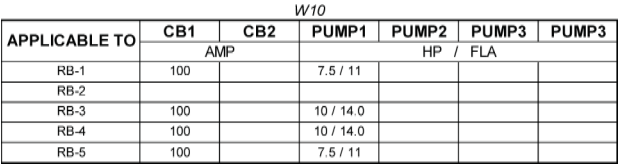
TOPOCK GROUNDWATER REMEDIATION PROJECT

**VAULT ELECTRICAL PANEL
W2B**

**GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA**

- DRAFT -
NOT FOR
CONSTRUCTION

MICROFILM		
BILL OF MATL		
DVG LIST		
SUPSDS		
SUPSD BY		
SHEET NO.	of	SHEETS
E-00-44		REV 1



MICROFILM		
BILL OF MATL		
DWG LIST		
SUPSDS		
SUPSD BY		
SHEET NO.	of	SHEETS
E-00-45		REV 1

E

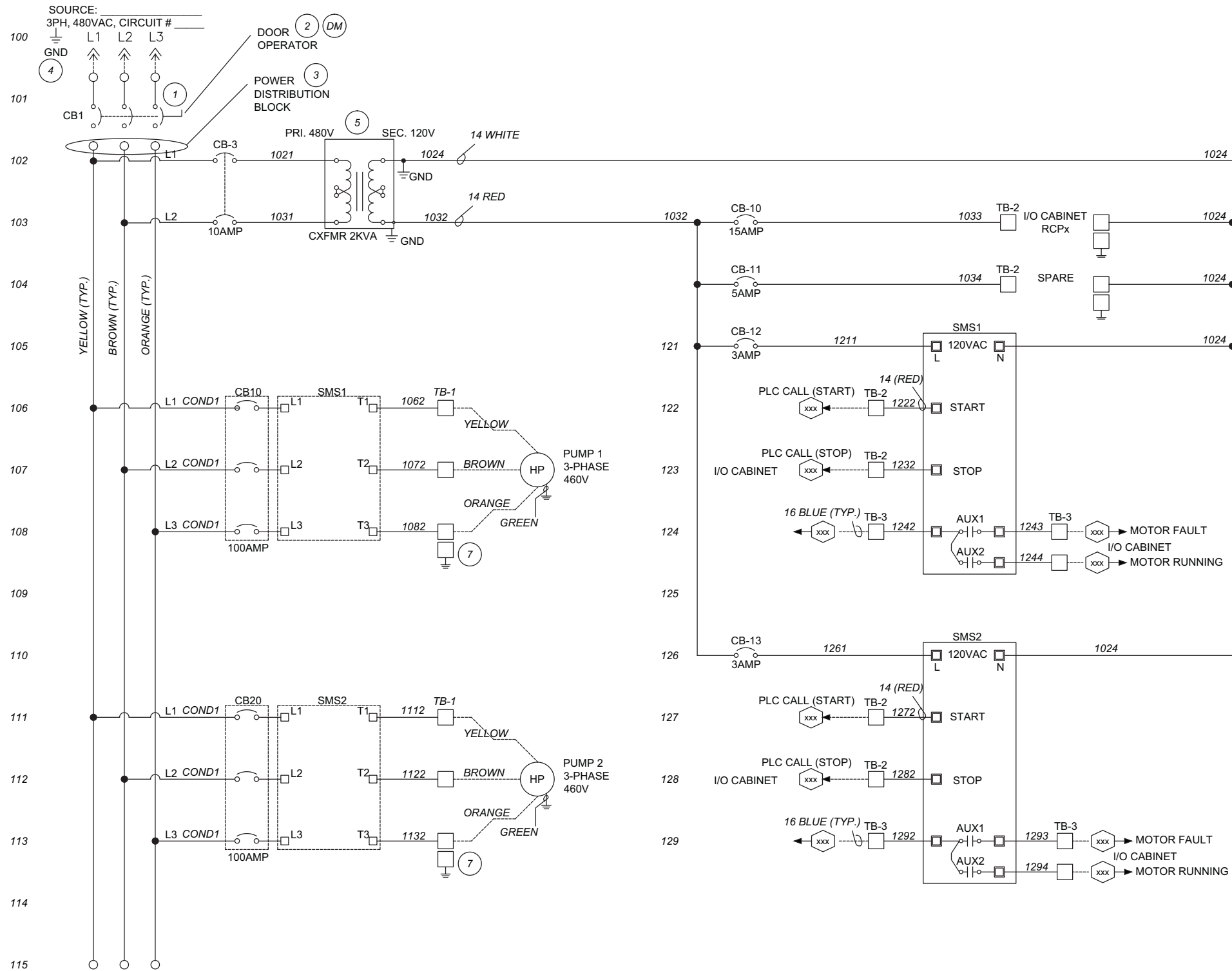
D

FOLD

C

B

A



NOTE:

REFER TO SHEET E-00-40 FOR
CONSTRUCTION NOTES, LEGEND AND
PANEL MANUFACTURING REQUIREMENT.

COMPONENT ID AND DESCRIPTION,
SEE E-00-40.

APPLICABLE TO	CB1	CB2	PUMP1	PUMP2	PUMP3	PUMP3
	AMP			HP / FLA		
IRL-4	125		30 / 40.0	30 / 40.0		



REVISIONS										REVISIONS									
NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	DATE	SCALE	AS NOTED	
1	09/08/14	PRE-FINAL (90%) DESIGN																	
0	04/05/13	INTERMEDIATE (60%) DESIGN																	

APPROVED BY	SO
JEF	SUPV JPB
	DSGN JMS
	DWN MMS
	CHKD JPB
	OK JEF
	DATE 09/08/14
	SCALE AS NOTED

TOPOCK GROUNDWATER REMEDIATION PROJECT
VAULT ELECTRICAL PANEL W30
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

- DRAFT -
NOT FOR
CONSTRUCTION

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO. of SHEETS	
E-00-47	REV 1

08/27/2014, 14:17, C:\Graphics\ART\TOPOCK-01\Post 90%\VAULT_E-00-40-47.DWG, Tab: W30