CONDUIT AND CABLE SCHEDULE

CKT #	DESCRIPTION	FROM	TO	CONDUIT TYPE	CONDUIT SIZE	CABLE SIZE	REMARKS
P-01	POWER CIRCUIT	PANEL-OSG	PLC CONTROLLER	RGS	3/4"	SEE ELEC CONNECTION SCHEDULE	
P-02	POWER CIRCUIT	PANEL-OSG	XFMR 111	RGS	1 1/4"	SEE ELEC CONNECTION SCHEDULE	
P-03	POWER CIRCUIT	PANEL-LP3	DILUTION PANEL PUMP P-201	RGS	3/4"	SEE ELEC CONNECTION SCHEDULE	
P-04	POWER CIRCUIT	PLC CONTROLLER	BLR-202	RGS	3/4"	(3) #12, #14 GND	
P-05	POWER CIRCUIT	PLC CONTROLLER	BLR-201	RGS	3/4"	(3) #12, #14 GND	
P-06	POWER CIRCUIT	PLC CONTROLLER	BLR 101	RGS	3/4"	(3) #12, #14 GND	
P-07	POWER CIRCUIT	PANEL-OSG	VFD-301	RGS	3/4"	SEE ELEC CONNECTION SCHEDULE	
P-08	POWER CIRCUIT	PANEL-OSG	VFD-302	RGS	3/4"	SEE ELEC CONNECTION SCHEDULE	
P-09	POWER CIRCUIT	PANEL-OSG	VFD-303	RGS	3/4"	SEE ELEC CONNECTION SCHEDULE	
C-01	DIGITAL OUTPUT	PLC CONTROLLER	SV 001	RGS	3/4"	(2) # 18	
C-02	(2) ANALOG INPUT	PLC CONTROLLER	LT 001, LIT 001	RGS	3/4"	(2) #18 TSP	
C-03	DIGITAL OUTPUT	PLC CONTROLLER	SV 103	RGS	3/4"	(2) # 18	
C-04	ANALOG OUTPUT	PLC CONTROLLER	P-101 BRINE PUMP MICROPUMP	RGS	3/4"	#18 TST	
C-05	DIGITAL OUTPUT	PLC CONTROLLER	P-101 BRINE PUMP MICROPUMP	RGS	3/4"	(2) # 18	
C-06	DIGITAL OUTPUT	PLC CONTROLLER	SV-102	RGS	3/4"	(2) # 18	
C-07	(2) ANALOG INPUT	PLC CONTROLLER	FIT 101, TIT 101	RGS	3/4"	(1) #18 TST, (1) #18 TSP	
C-08	ANALOG INPUT	PLC CONTROLLER	H2 DETECTOR CONSPEC CN06	RGS	3/4"	#18 TSP	
C-09	(2) DIGITAL INPUT	PLC CONTROLLER	LS 101, TS 101	RGS	3/4"	(6) # 18	
C-10	(2) DIGITAL INPUT	PLC CONTROLLER	LS 102, TS 102	RGS	3/4"	(6) # 18	
C-11	(2) DIGITAL INPUT	PLC CONTROLLER	LS 103, TS 103	RGS	3/4"	(6) # 18	
C-12	(2) DIGITAL INPUT	PLC CONTROLLER	LS 104, TS 104	RGS	3/4"	(6) # 18	
C-13	DIGITAL INPUT	PLC CONTROLLER	LS 105, TS 105	RGS	3/4"	(4) # 18	
C-14	ANALOG INPUT	PLC CONTROLLER	LS 105, TT 105	RGS	3/4"	#18 TSP	
C-15	(4) DIGITAL OUTPUT, DIGITAL INPUT	PLC CONTROLLER	XFMR 111	RGS	3/4"	(10) # 18	
C-16	ANALOG INPUT	PLC CONTROLLER	XFMR 111	RGS	3/4"	#18 DUAL TSP	
C-17	DIGITAL INPUT	PLC CONTROLLER	FS 101	RGS	3/4"	(2) # 18	
C-18	DIGIAL OUTPUT	PLC CONTROLLER	H2 DILUTION BLOWER 101	RGS	3/4"	(2) # 18	
C-19	DIGITAL INPUT	PLC CONTROLLER	FS 201	RGS	3/4"	(2) # 18	
C-20	ANALOG INPUT	PLC CONTROLLER	LT 201	RGS	3/4"	#18 TSP	
C-21	ANALOG INPUT	PLC CONTROLLER	LT202	RGS	3/4"	#18 TSP	
C-22	ANALOG INPUT	PLC CONTROLLER	LT 203	RGS	3/4"	#18 TSP	
C-23	DIGITAL OUTPUT	PLC CONTROLLER	H2 DILUTION BLOWER 201	RGS	3/4"	(2) # 18	
C-24	DIGITAL OUTPUT	PLC CONTROLLER	H2 DILUTION BLOWER 202	RGS	3/4"	(2) # 18	
C-25	DIGITAL OUTPUT, (2) DIGITAL INPUT	EXISTING PLANT PLC	PUMP CONTROLLER	RGS	3/4"	(8) # 14	
C-26	ANALOG OUTPUT	EXISTING PLANT PLC	PUMP CONTROLLER	RGS	3/4"	#16 TSP	
C-27	DIGITAL OUTPUT, (2) DIGITAL INPUT	EXISTING PLANT PLC	PUMP CONTROLLER	RGS	3/4"	(8) # 14	
C-28	ANALOG OUTPUT	EXISTING PLANT PLC	PUMP CONTROLLER	RGS	3/4"	#16 TSP	
C-29	DIGITAL OUTPUT, (2) DIGITAL INPUT	EXISTING PLANT PLC	PUMP CONTROLLER	RGS	3/4"	(8) # 14	
C-30	ANALOG OUTPUT	EXISTING PLANT PLC	PUMP CONTROLLER	RGS	3/4"	#16 TSP	
C-31	NETWORK CONNECTION	PLC CONTROLLER	EXISTING PLANT PLC	RGS	3/4"	CAT-6	1
C-32	NETWORK CONNECTION	EXISTING PLANT PLC	HYPOCLORITE DILUTION PANEL	RGS	3/4"	(2) # 18	

REMARKS:
1. CONNECT HYPOCHLORITE SKID PLC TO AVAILABLE PORT IN INDUSTRIAL NETWORK SWITCH IN PLANT PLC CABINET.

ELECTRICAL CONNECTION SCHEDULE FOR PROCESS EQUIPMENT

EQUIP ID.	EQUIPMENT NAME	LOCATION	VOLTAGE	PHASE	FLA	MCA	MOCP	CIRCUIT	CB	CONDUIT	WIRE (SIZES BASED ON CU, UON)	DISCONNECT	NOTES
PLC-01	CONTROL PANEL	PROCESS ROOM	480	3	10.5	-	20/3	OSG-1/3/5	30/3	3/4" RGS	(3)#10 AWG, #12GND	-	
TR-111	XFRMR/RECTIFIER	PROCESS ROOM	480	3	80A		80/3	OSG-2/4/6	80/3	1 1/4" RGS	(3) #4 AWG, #8 GND	-	
BLR-101	HYDROGEN DILUTION BLOWER	PROCESS ROOM	240	1	2.1	5.9	15/2	-	20/2	3/4" RGS	(3) #12 AWG,#12 GND	30A 3P NONFUSED HD DISCONNECT	
P-201	DILUTION PANEL PUMP	PROCESS ROOM	120	1	-	-	15/1	LP3-12	20/1	3/4" RGS	(3) #12 AWG,#12 GND	-	
BLR-201	H2 DILUTION BLOWER	PROCESS ROOM	240	1	2.1	5.9	15/2	-	20/2	3/4" RGS	(3) #12 AWG,#12 GND	30A 3P NONFUSED HD DISCONNECT	
BLR-202	H2 DILUTION BLOWER	PROCESS ROOM	240	1	2.1	5.9	15/2	-	20/2	3/4" RGS	(3) #12 AWG,#12 GND	30A 3P NONFUSED HD DISCONNECT	
VFD-301	METERING PUMP VFD	PUMP CONTROL ROOM	480	3	2.1	-	15/3	OSG-7/9/11	20/3	3/4" RGS	(3) #12 AWG,#12 GND	30A 3P NONFUSED HD DISCONNECT	
VFD-302	METERING PUMP VFD	PUMP CONTROL ROOM	480	3	2.1	-	15/3	OSG-13/15/17	20/3	3/4" RGS	(3) #12 AWG,#12 GND	30A 3P NONFUSED HD DISCONNECT	
VFD-303	METERING PUMP VFD	PUMP CONTROL ROOM	480	3	2.1	-	15/3	OSG-8/10/12	20/3	3/4" RGS	(3) #12 AWG,#12 GND	30A 3P NONFUSED HD DISCONNECT	
	ACID CLEANING CART	PROCESS ROOM	120	1	-	-	15/1	LP3-24	20/1	3/4" RGS	(3) #12 AWG,#12 GND	-	

EXISTING PANEL SCHEDULE

PANEL NAME: **(E) LP3** VOLTAGE: 208/120 NEMA RATING: 1 MOUNTING: WALL NOTES:
MAINS RATING: 225 A MCB PHASE: 3 AIC RATING: LOCATION: ELECTRICAL ROOM
BUS RATING: 225 A WIRE: 4 DEMAND FACTOR: STD

CKT NO.	USE	DESCRIPTION	BKR SIZE	CKT KVA	CKT AMPS	WIRE SIZE	WIRE LENGTH (FT)	VOLTAGE DROP %	PHASE	VOLTAGE DROP %	WIRE LENGTH (FT)	WIRE SIZE	CKT AMPS	CKT KVA	BKR SIZE	DESCRIPTION	USE	CKT NO.
1			15/3	0.90	7.50				A				15.00	1.80	30/3			2
3		*CL2 STORAGE ROOM HEATER*	15/3	0.90	7.50				B				15.00	1.80	30/3	*CL2 ROOM HEATER*		4
5			15/3	0.90	7.50				C				15.00	1.80	30/3			6
7		*CL2 ROOM NOMINAL VENT FAN*	15/1	0.90	7.50				A				7.50	0.90	15/1	*CL2 RM EMERGENCY VENT FAN*		8
9		*PUMP RM & CL2 CHLORINATION RM LIGHTS*	15/1	0.90	7.50				B				7.50	0.90	15/1	*CL2 SUPPLY CONTROL POWER*		10
11		*EMERGENCY LIGHTS*	15/1	0.90	7.50				C				7.50	0.90	15/1	*CHLORINATOR B*		12
13		*CL2 RM GFI OUTLET FOR GAS HEATER*	15/1	0.90	7.50				A				7.50	0.90	15/1	*INDUSTRIAL CHLORINATOR*		14
15		*CL2 RM OUTLET*	15/1	0.90	7.50				B				7.50	0.90	15/1	*CL2 TANK RM FAN*		16
17			40/3	2.40	20.00				C				10.00	1.20	20/1	*CL2 TANK RM LIGHTS*		18
19		*CHLORINE BOOSTER PUMP #2*	40/3	2.40	20.00				A				10.00	1.20	20/1	*CL2 TANK RM LIGHTS*		20
21			40/3	2.40	20.00				B				10.00	1.20	20/1	*CL2 BLDG OUTSIDE LIGHTS*		22
23		*SPARE*	20/1						C				20.00	2.40	40/3			24
25		*CL2 CYLINDER STORAGE HOIST*	20/1	1.20	10.00				A				20.00	2.40	40/3	*CHLORINE BOOSTER PUMP #1*		26
27		*SPARE*	20/1						B				20.00	2.40	40/3			28
29		*SPARE*	20/1						C						20/1	*SPARE*		30
31		*SPARE*	20/1						A						20/1	*SPARE*		32
33		*SPARE*	20/1						B						20/1	*SPARE*		34
35		*SPARE*	20/1						C						20/1	*SPARE*		36
37		*SPARE*	20/1						A						20/1	*SPARE*		38
39		*SPARE*	20/1						B						20/1	*SPARE*		40
41		*SPARE*	20/1						C						20/1	*SPARE*		42

CONNECTED KVA	DEMAND KVA	DEMAND AMPS
PHASE A: 13.5	13.5	112.5
PHASE B: 12.3	12.3	102.5
PHASE C: 10.5	10.5	87.5

STD DEMAND LOAD BASED ON 125% OF THE LARGEST MOTOR AND 100% OF THE REMAINING MOTORS, 125% OF CONTINUOUS LOADS, 100% OF NONCONTINUOUS LOADS, AND 50% OF RECEPTACLE LOADS BEYOND THE FIRST 10KVA

USE LEGEND

ID	LOAD TYPE	ASSUMED PF
H	HVAC	0.85
L	LIGHTING	0.80
M	MOTOR	0.85
R	RECEPTACLE	0.80
P	PANEL	0.85
O	OTHER	0.85

VOLTAGE DROP CALCULATION

VOLTAGE DROP IS BASED ON THE IEEE RED BOOK AND 2011 NEC CHAPTER 9 TABLE 9 FORMULA:
VD = I * (R * PF + X * SIN(ACOS(PF)) * L
WITH AN ADDITIONAL MULTIPLIER OF 2 FOR SINGLE PHASE AND 1.732 FOR 3-PHASE LOADS

R AND X VALUES ARE TAKEN FROM 2011 NEC CHAPTER 9 TABLE 9.

ASSUMPTIONS:

POWER FACTOR	VARIED BY LOAD TYPE
CONDUIT TYPE	RGS
WIRE MATERIAL	CU

ISSUE FOR BID

No.	Issue	Checked	Approved	Date
A	BID ADDENDUM #2	NS	NS	11/1/2024
0	ISSUE FOR BID	NS	NS	9/30/2024

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Bar is one inch on original size sheet
0 1"

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Client: HUMBOLDT BAY MUNICIPAL WATER DISTRICT
Project: OSHG INSTALLATION AND INTEGRATION

Title: PANEL AND CONDUIT SCHEDULES 1

Project No. 12616149 | Date 11/1/2024 | Scale AS SHOWN

Size: ANSI D

Sheet No: E-601

Sheet 16 of 17

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