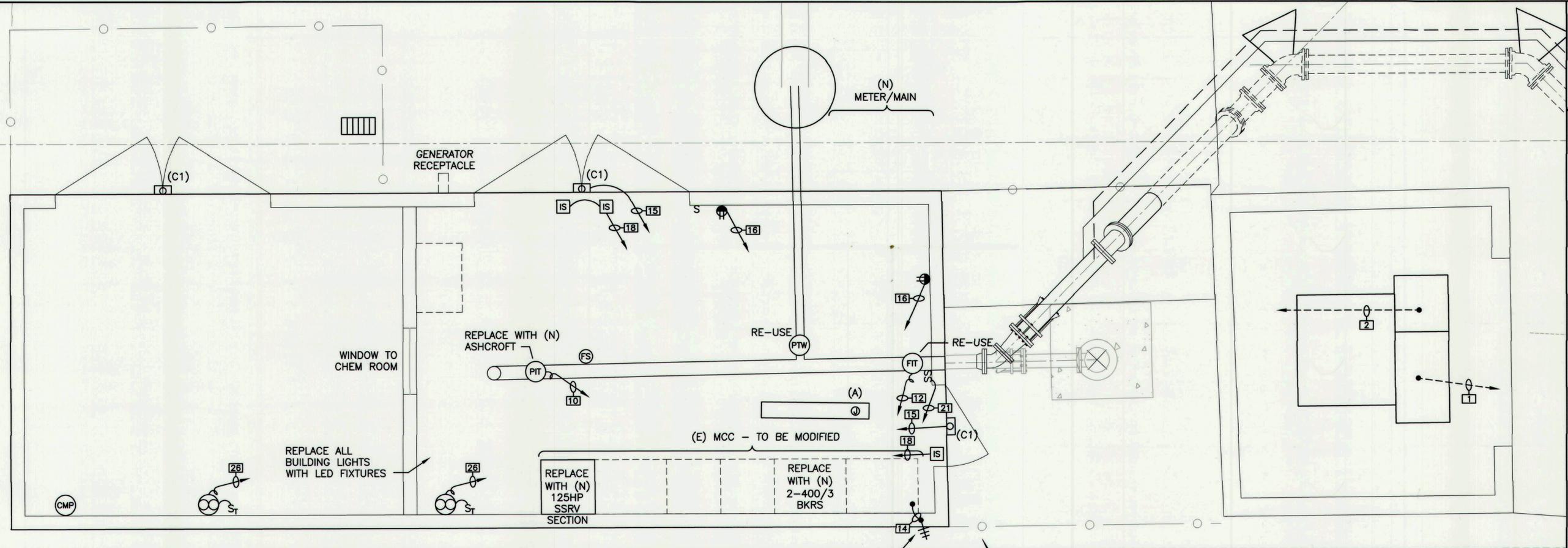


CAD FILE: G:/Projects/City of Morgan Hill/15-3-053/Pump Station/Electrical/030917_boys_ranch/LS174_BR2-BP02.dwg CFG FILE: LSCE2500.PCP_MRG DATE: 03-20-17 3:32pm



REGISTERED PROFESSIONAL ENGINEER
 JOSEPH P. PREVEDAR
 No. 16581
 ELECTRICAL
 STATE OF CALIFORNIA
 DATE: 3/21/17

ELEC. SITE PLAN - BOYS RANCH 2A
 Construction of 2 Pump Stations
 Boys Ranch 2A & Jackson 3A
 City of Morgan Hill
 Morgan Hill, California

LUHDORFF & SCALMANINI
 CONSULTING ENGINEERS
 500 FIRST STREET
 WOODLAND, CALIFORNIA
 PHONE: (530) 661-0109

ELECTRICAL CONSTRUCTION MATERIAL NOTES

ABOVE GRADE - HOT DIPPED GALVANIZED RIGID STEEL CONDUIT TO BE USED FOR ALL EXTERIOR AND INTERIOR LOCATIONS ABOVE GRADE OR ELSEWHERE SHOWN ON PLANS. ALL RIGID CONDUIT AND FITTINGS TO BE THREADED. USE OF SET SCREW OR COMPRESSION TYPE CONNECTOR IS PROHIBITED. MEYERS HUBS TO BE USED ON ALL EXTERIOR PANEL CONNECTIONS.

BELOW GRADE - RIGID PVC NONMETALLIC CONDUIT SCHEDULE 40 TO BE USED FOR ALL UNDERGROUND LOCATIONS AND BELOW VAPOR BARRIER OF SLAB. NO CONDUITS SHALL BE INSTALLED TO REDUCE THE STRUCTURAL INTEGRITY OF FOOTINGS.

CHEMICAL BUILDINGS AND CORROSIVE ATMOSPHERES - RIGID PVC NONMETALLIC CONDUIT SCHEDULE 80 TO BE USED FOR ALL INTERIOR LOCATIONS ABOVE GRADE IN CHEMICAL BUILDINGS AND CORROSIVE ENVIRONMENTS.

THROUGH CONCRETE SLABS AND EXTERIOR CORROSIVE ATMOSPHERES - PVC COATED GALVANIZED RIGID STEEL CONDUIT MINIMUM 40 MIL FACTORY COATING TO BE USED FOR ALL EXPOSED CONDUITS THROUGH CONCRETE SLABS (MINIMUM 12" ABOVE AND BELOW SLAB) AND ALL EXTERIOR LOCATION CORROSIVE ATMOSPHERES. USE MANUFACTURERS' SPECIFIED TOOLS AND PROCEDURES FOR INSTALLATION.

MOTORS AND SENSOR CONNECTIONS - LIQUID TIGHT FLEXIBLE METAL CONDUIT (UV RESISTANT) TO ONLY BE USED ON CONNECTIONS TO MOTORS AND SENSORS OR TO ISOLATE VIBRATION. MAXIMUM LENGTH TO BE 30".

JUNCTION BOXES - MINIMUM SIZE PER NEC. EXPOSED LOCATION, 1 AND 2 GANG TO BE CAST IRON DEVICE BOXES TYPE FS/FD SUITABLE FOR WET LOCATIONS. EXPOSED LOCATION EXTERIOR LARGER SIZES CONTINUOUS HINGE TYPE 4, CORROSIVE LOCATIONS CONTINUOUS HINGE TYPE 4X STAINLESS STEEL.

GROUND CONNECTIONS - GROUND CONNECTIONS TO BE EXOTHERMIC CADWELD (ALL 600 AMP OR LARGER SERVICE) OR BURNDY HYDRAULIC COMPRESSION CONNECTORS. GROUND BUS CONNECTIONS TO BE CRIMP LUG TYPE WITH BOLTED CONNECTION TO GROUND BUS.

480 VOLT AND BELOW POWER WIRING TO BE THWN-2 600 VOLT, ALL POWER CONNECTIONS TO BE TREATED WITH ANTIOXIDANT COMPOUND.

CONTACT EPS TO SCHEDULE AN ELECTRICAL PRECONSTRUCTION MEETING PRIOR TO COMMENCING CONSTRUCTION

WELL SITE CABLE AND CONDUIT SCHEDULE:

NO.	QTY	SIZE	NO. WIRES	WIRE SIZE	IGND/FUNCTION	FROM	TO
1	Per PGE		Per PGE	Per PGE	PGE Primary	(E)Pri. Box	(N)Padmount Tfr
2	Per PGE		Per PGE	Per PGE	PGE Sec	(N)Padmount Tfr	(N) Meter Main
3	2	3"	4	#350 MCM	#10 MCC Main Feed	Meter Main	MCC Main
4					Generator Receptacle	MCC Gen CB	Gen Receptacle
5	1	1"	1	Pullcord	Spare	MCC	Stubout 2'
6	1	3"	3	#4/0	Pump Motor	SSRV	Pump Motor
7	1	3/4"	5	#14	Motor Thermoswitch/Winding HTR	Pump Motor	PLC
8	1	3/4"	2	#12	Pump Lube Solenoid	SSRV	Pump Motor
9	1	3/4"	2	#12	High Pressure Switch	SSRV	HPS
10	1	3/4"	1	#18 TSP	Pump Pressure Transmitter	PLC	PT
11	1	3/4"	6	#14	Pump to Waste Valve	PLC	PTW Valve
12	1	3/4"	2	#18 TSP	Flow 4-20ma/Totalizer	PLC	Flow Transmitter
13	1	1"	1	3/8" Poly	Reactive Air Level Sensor	PLC	Well Sounding Tube
14	1	1"	1	Com Cable	Radio antenna	Radio	Antenna
15	1	3/4"	2	#10	Outside Lighting	LP	Outside Lighting
16	1	3/4"	2	#12	GFI Outlets	LP	GFI Outlets
17	1	3/4"	2	#14	Intrusion Alarm Reset	PLC	Reset PB inside door
18	1	3/4"	2	#14	Intrusion Alarm	PLC	Intrusion Switch on door
19	1	1"	1	Pullcord	Spare	PLC	CI Building
20							
21	1	3/4"	2	#10	#10 Building Lighting	LP	Building Lighting
22							
23					Chlorine Metering Power		
24	1	3/4"	2	#12	#12 Chlorine Metering Pump Enable	PLC-CR	CPP
25	1	3/4"	2	#14	Intrusion Switch	PLC	Intrusion Switch
26	1	3/4"	2	#10	Vent Fan	LP	Vent Fan
27	1	3/4"	2	#8	Heaters	LP	Heater
28	2	3"	1	Pullcord	Spares	MCC	Stubout 2'
29							
30							
31							
32							

BOYS RANCH 2A BUILDING ELECTRICAL PLAN

SYMBOL LEGEND:

- = CONDUIT, EXPOSED; OR CONCEALED IN WALL OR CEILING
- - - = CONDUIT, UNDERGROUND
- IS = INTRUSION SWITCH
- AL = ?
- FS = FLOW SWITCH
- LS = LEVEL SWITCH
- SV = SOLENOID SWITCH
- CMP = CHLORINE METERING PUMP
- FIT = FLOW INDICATING TRANSMITTER
- HPS = HIGH PRESSURE SWITCH - MERCOID DAW SNAP ACTION
- PIT = PRESSURE INDICATING TRANSMITTER
- PTW = PRESSURE TRANSMITTER WASTE VALVE
- ⊕ = YAGI ANTENNA
- ⊕ = DUPLEX OUTLET, 20A, 120V
- ⊕ = DUPLEX OUTLET, GFI, 20A, 120V
- ⊕ = JUNCTION BOX
- ⊕ = EXHAUST/VENT FAN
- ⊕ = LIGHT FIXTURE
- ⊕ = LIGHT FIXTURE
- S = SWITCH, S.P.D.T.
- S_T = SWITCH, THERMAL
- 7 = INDICATES CABLE & CONDUCTOR SCHEDULE NUMBER
- GFI = GROUND FAULT INTERRUPTER ON OUTLET OF CIRCUIT
- (E) = EXISTING
- (F) = FUTURE
- (N) = NEW

LIGHT FIXTURE SCHEDULE

- (A) - 4' LED strip - Dust and moisture tight, rapid start, any temperature, 120V Electronic 4' Lithonia FEM4LED Linear Rough Service, Acrylic clear deep lens, 61 watts, 4100K, with mounting brackets or equal; Holophone EMS4LED 4L IMAFL, Linear Industrial LED, Lens & Gasketed with Stainless Steel Clips, MVOLT, Frosted Acrylic Lens, 4100K
- (C1) - LED Wall Pack Indoor/Outdoor W/ PF, motion detector & override switch Holophone Wallpack IV W4GLED-10C-1000-40K-T3M-MVOLT-PE-BZ, Lithonia TWH LED 10C 1000 40K T3M MVOLT or equal
- (D) - Outdoor Floodlight LED W/ PF, motion detector & override Lithonia DXSF1 LED 2 A530/40K MFL Mvolt DDBXD or equal; American Electric Flood ACP1 LED 3 07A MVOLT 66 4K TG BZ 0463

BOYS RANCH 2A SITE NOTES:

- 1) MODIFICATION OF THE EXISTING MCC CONSISTS OF INSTALLING A NEW HEAVY DUTY 125 HP SOLID STATE REDUCED VOLTAGE STARTER WITH BYPASS IN PLACE OF THE EXISTING MOTOR STARTER WITH ALL ASSOCIATED CONTROLS DEVICES AND CONNECTION TO THE EXISTING TESCO L2000 RTU. THE EXISTING MAIN AND EMERGENCY POWER BREAKERS WILL BE REPLACED WITH NEW 400 AMPERE RATED BREAKERS AND A MECHANICAL INTERLOCK ADDED BETWEEN THEM. THE EXISTING MOTOR STARTER WILL BE TURNED OVER TO THE CITY.
- 2) A NEW PUMP MOTOR WILL BE INSTALLED IN A NEW LOCATION.
- 3) ALL BUILDING LIGHTING WILL BE CHANGED TO LED FIXTURES.

BOYS RANCH 2A

JOE PREVEDAR P.E. CA EE 16581 joe@epsfresno.com GARY OLSEN P.E. CA EE 8283 gary@epsfresno.com

JOB NO.: 15-174 DATE: NOV 2016

FILE: LS174_BR2-BP02

PLOT: 3/30/2017 9:16 AM / 1:1

DSGN: JPP DRWN: CRT

EPS IS RESPONSIBLE FOR ELECTRICAL SYSTEMS DESIGN ONLY. EPS IS NOT RESPONSIBLE FOR ELECTRICAL SAFETY WORK PROCEDURES AND/OR USE OF REQUIRED PERSONAL PROTECTIVE EQUIPMENT. SEE NFPA 70E "STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE" AND OSHA 29 CFR. CONTRACTOR MUST READ SPECIFICATIONS AND INSTALL MATERIAL AS PER SPECIFICATIONS AND/OR PLANS OR AS PER E.P.S. APPROVAL. PLANS AND SPECIFICATIONS ONLY APPLY TO THE PROJECT FOR WHICH THEY WERE CREATED.

ELECTRICAL POWER SYSTEMS INC.
 PROFESSIONAL AND CONSULTING ELECTRICAL ENGINEERING
 4049 N FRESNO ST, FRESNO, CA 93726
 P: (559) 221-7230 F: (559) 221-0507

NO.	DATE	REVISION

DATE: MARCH 2017
 JOB NO.: 15-3-053
 DESIGN BY:
 DRAWN BY:
 CHECKED BY:
 FILE:

SHEET:

E-2

ELECTRICAL CONSTRUCTION MATERIAL NOTES

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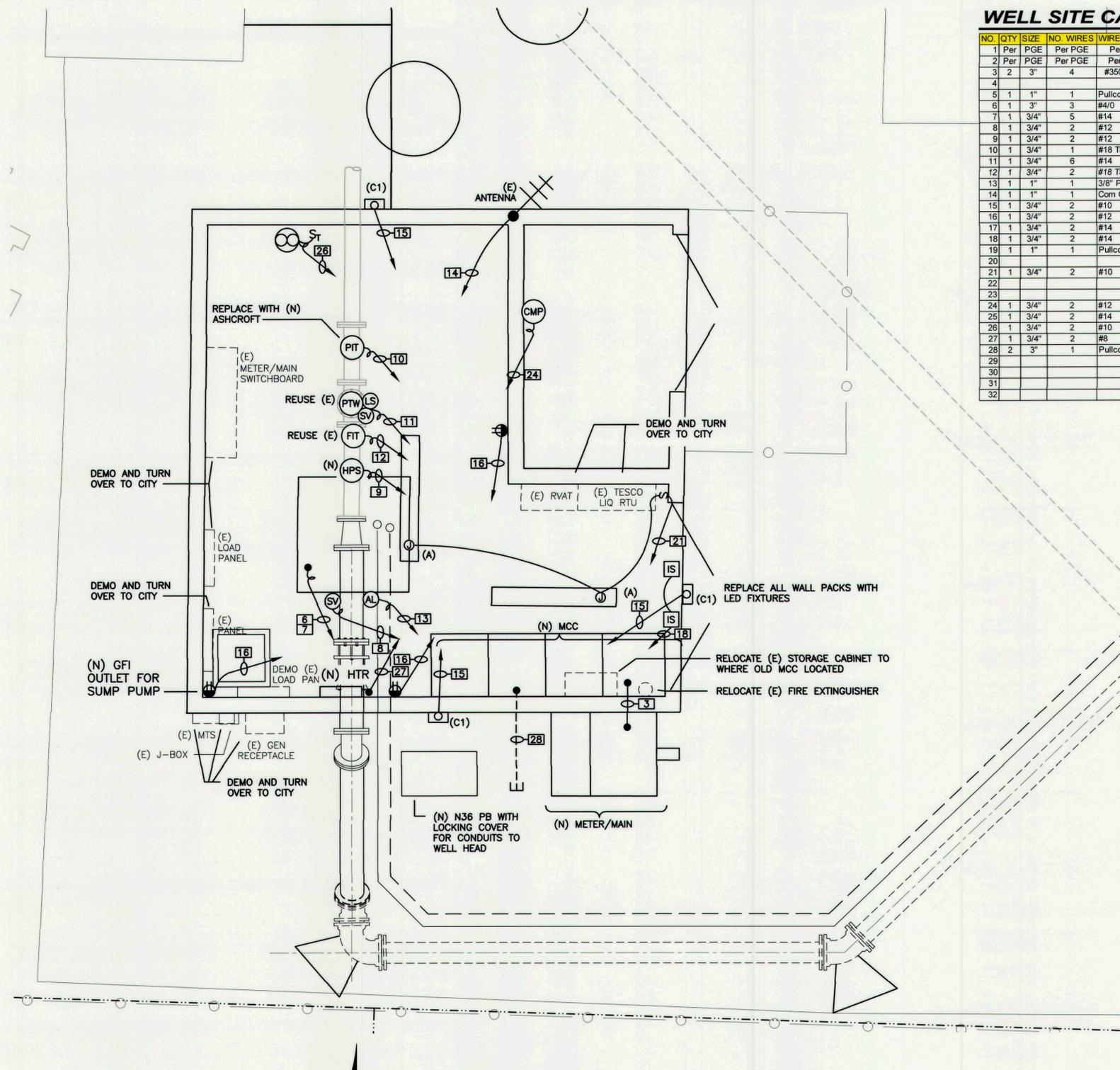
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 --- = CONDUIT, UNDERGROUND

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- [AL] = ?
- [FS] = FLOW SWITCH
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- [SV] = SOLENOID SWITCH
- [CMP] = CHLORINE METERING PUMP
- [FIT] = FLOW INDICATING TRANSMITTER
- [HPS] = HIGH PRESSURE SWITCH - MERCOID DAW SNAP ACTION
- [PIT] = PRESSURE INDICATING TRANSMITTER
- [PTW] = PRESSURE TRANSMITTER WASTE VALVE
- [YAGI] = YAGI ANTENNA
- [DUPL] = DUPLEX OUTLET, 20A, 120V
- [DUPLGFI] = DUPLEX OUTLET, GFI, 20A, 120V
- [JBOX] = JUNCTION BOX
- [EXHAUST] = EXHAUST FAN
- [LIGHT] = LIGHT FIXTURE
- [SW] = SWITCH, S.P.D.T.
- [SWTHERM] = SWITCH, THERMAL
- [CABLE] = INDICATES CABLE & CONDUCTOR SCHEDULE NUMBER
- [GFI] = GROUND FAULT INTERRUPTER ON OUTLET OF CIRCUIT
- (E) = EXISTING
- (F) = FUTURE
- (N) = NEW



JACKSON 3A BUILDING ELECTRICAL PLAN

WELL SITE CABLE AND CONDUIT SCHEDULE:

NO	QTY	SIZE	NO WIRES	WIRE SIZE	GND/FUNCTION	FROM	TO
1	Per	PGE	Per PGE	Per PGE	PGE Primary	(E)Pri. Box	(N)Padmount Tfr
2	Per	PGE	Per PGE	Per PGE	PGE Sec	(N)Padmount Tfr	(N) Meter Main
3	2	3"	4	#350 MCM	#10/ MCC Main Feed	Meter Main	MCC Main
4					Generator Receptacle	MCC Gen CB	Gen Receptacle
5	1	1"	1	Pullicord	Spare	MCC	Stubout 2'
6	1	3/4"	3	#4/0	#4 Pump Motor	SSRV	Pump Motor
7	1	3/4"	5	#14	Motor Themoswitch/Winding HTR	Pump Motor	PLC
8	1	3/4"	2	#12	Pump Lube Solenoid	SSRV	Pump Motor
9	1	3/4"	2	#12	High Pressure Switch	SSRV	HPS
10	1	3/4"	1	#18 TSP	Pump Pressure Transmitter	PLC	PT
11	1	3/4"	6	#14	Pump to Waste Valve	PLC	PTW Valve
12	1	3/4"	2	#18 TSP	Flow 4-20ma/Totalizer	PLC	Flow Transmitter
13	1	1"	1	3/8" Poly	Radio Air Level Sensor	PLC	Well Sounding Tube
14	1	1"	1	Com Cable	Radio antenna	Radio	Antenna
15	1	3/4"	2	#10	Outside Lighting	LP	Outside Lighting
16	1	3/4"	2	#12	GFI Outlets	LP	GFI Outlets
17	1	3/4"	2	#14	Intrusion Alarm Reset	PLC	Reset PB inside door
18	1	3/4"	2	#14	Intrusion Alarm	PLC	Intrusion Switch on door
19	1	1"	1	Pullicord	Spare	PLC	CI Building
20							
21	1	3/4"	2	#10	#10 Building Lighting	LP	Building Lighting
22							
23					Chlorine Metering Power		
24	1	3/4"	2	#12	Chlorine Metering Pump Enable	PLC-CR	CPP
25	1	3/4"	2	#14	Intrusion Switch	PLC	Intrusion Switch
26	1	3/4"	2	#10	Vent Fan	LP	Vent Fan
27	1	3/4"	2	#8	Heaters	LP	Heater
28	2	3"	1	Pullicord	Spare	MCC	Stubout 2'
29							
30							
31							
32							

JACKSON 3A SITE NOTES:

- REPLACEMENT OF THE MCC AND ELECTRICAL SWITCHGEAR SCOPE INCLUDES CONDUIT MODIFICATION AND CABLING OF ALL EXISTING EQUIPMENT TO RECONNECT TO NEW ELECTRICAL PANELS AND REPLACEMENT OF LIGHTS AND OUTLETS (GFI) WITH NEW.
- EQUIPMENT INCLUDES BUT NOT LIMITED TO: CHEMICAL METERING PUMPS, PRESSURE TRANSMITTERS, FLOW TRANSMITTERS, SWITCHES, HEATERS AND FANS.
- THE ELECTRICAL DEMOLITION PLAN SHALL CONSIST OF REMOVAL OF EXISTING METER/MAIN, LOAD PANELS, DISTRIBUTION PANELS, AND DELIVER TO THE CITY'S SELECTED DESTINATION.

LIGHT FIXTURE SCHEDULE

(A) - 4' LED strip - Dust and moisture tight, rapid start, any temperature, 120V Electronic
 4' Lithonia FEM4LED Linear Rough Service, Acrylic clear deep lens, 61 watts, 4100K, with mounting brackets or equal; Holophane EMS4LED 4L IMAFL, Linear Industrial LED, Lens & Gasketed with Stainless Steel Clips, MVOLT, Frosted Acrylic Lens, 4100K

(C1) - LED Wall Pack Indoor/Outdoor W/ PE, motion detector & override switch
 Holophane Wallpack IV W4GLEDD-10C-1000-40K-T3M-MVOLT-PE-BZ, Lithonia TWH LED 10C 1000 40K T3M MVOLT or equal

(D) - Outdoor Floodlight LED W/ PE, motion detector & override
 Lithonia DXSF1 LED 2 A530/40K MFL Mvlt DDBXD or equal; American Electric Flood ACP1 LED 3 07A MVOLT 66 4K TG BZ 0463



DATE: 3-31-17

BLDG ELEC. PLAN - JACKSON NO. 3
 Construction of 2 Pump Stations
 Boys Ranch 2A & Jackson 3A
 City of Morgan Hill
 Morgan Hill, California

LUHDOFF & SCALMANINI
 CONSULTING ENGINEERS
 500 FIRST STREET
 WOODLAND, CALIFORNIA
 PHONE: (530) 661-0109

NO.	DATE	REVISION

DATE: MARCH 2017
 JOB NO.: 15-3-053
 DESIGN BY:
 DRAWN BY:
 CHECKED BY:
 FILE:

JACKSON 3A
 JOE PREVENDAR P.E. CA EE 16581
 GARY OLSEN P.E. CA EE 8283
 joe@epsfresno.com gary@epsfresno.com
 JOB: LS-15-174 DATE: NOV 2016
 FILE: LS174_J-BP02A
 PLOT: 3/30/2017 9:31 AM / 1:1
 DSGN: JPP DRWN: CRT



SHEET:
E-2A

CAD FILE: G:\Projects\City of Morgan Hill\15-3-053\Pump Station\Electrical_030917-Jackson\LS174_J-BP02A.dwg CFG FILE: LSCE2500.PCP_MRG DATE: 03-20-17 3:58pm

BOYS RANCH 2A PUMP STATION MOTOR & LOAD LIST:

Item	Name	ID	Timing	Type	HP	FLA	Voltage	Starter typ	VFD	HOA	Lock	Power on	Running	Fail	ETM	Remarks
1	Well Pump		New	WP1	125	156	460	SSRV	Y	Y	HP	Y	Y	Y	Y	
2	Chemical Pump		New		0.5	10	120				Flow					
3	Vent Fan		New		1	16	120				N	N			Y	
4																
5																
6																

Load Calculations		480V
Item	Name	FLA
1	Well Pump	156
2	25% of largest motor	39
3		
4		
5	Lts. & misc.	10
Total		205
Main Size		600

NAMEPLATE SCHEDULE

Tag	QTY	TYPE	Inscription
1	1	Plate	Main Disconnect
2	1	Plate	TVSS
3	1	Plate	Transformer Primary Disconnect
4	1	Plate	Transformer Secondary Disconnect
5	1	Plate	Panelboard 'LP'
6	1	Plate	Well Bubbler Air System
7	1	Plate	Pump Disconnect (SSRV)
8	1	Plate	Tesco L3000
9	1	Ring	Pump Controls
10	1	Ring	Common Alarm
11	1	Ring	Alarm Acknowledge/Reset
12	1	Ring	Pump Running
13	1	Ring	Intrusion Acknowledge
14	1	Ring	Pump
15	1	Ring	Hand Off Auto
16	1	Ring	Valve
17	1	Ring	Auto Open
18	1	Ring	Pump Manual Start
19	1	Ring	Pump Reset
20	1	Ring	Chlorine Pump
21	1	Ring	Hand Off Auto
22	1	Ring	Chlorine Pump Reset
23	1	Ring	
24	1	Ring	Service Pedestal
25	1	Ring	CT Pedestal
26	1	Ring	Manual Purge
27	1	Ring	Power Monitor

WELL CONTROLS

A. GENERAL

The well pump has 2 modes of operation: Auto and Hand for the VFD and also the SSRV. These modes are selected by a selector switch on the pump starter. The pump starter is a variable frequency drive which varies pump speed to maintain a pressure set point. An emergency backup solid state reduced voltage starter is available.

The startup sequence is as follows:

1. A user adjustable low pressure set point is reached and well level is high enough to pump. An analog pressure transmitter indicates the well discharge pressure.
2. Pre lube solenoid energizes
3. Well pump VFD starts after a user adjustable time delay
4. The pump ramps up to the pressure set point. Pump speed is modulated through a PI controller to maintain pressure. A minimum speed parameter is programmed. The well level is monitored. Pump speed is modulated through a PI controller to slow down as the well level drops to ensure the well does not break suction. All pressure and level set points are user adjustable.

The shutdown sequence is as follows:

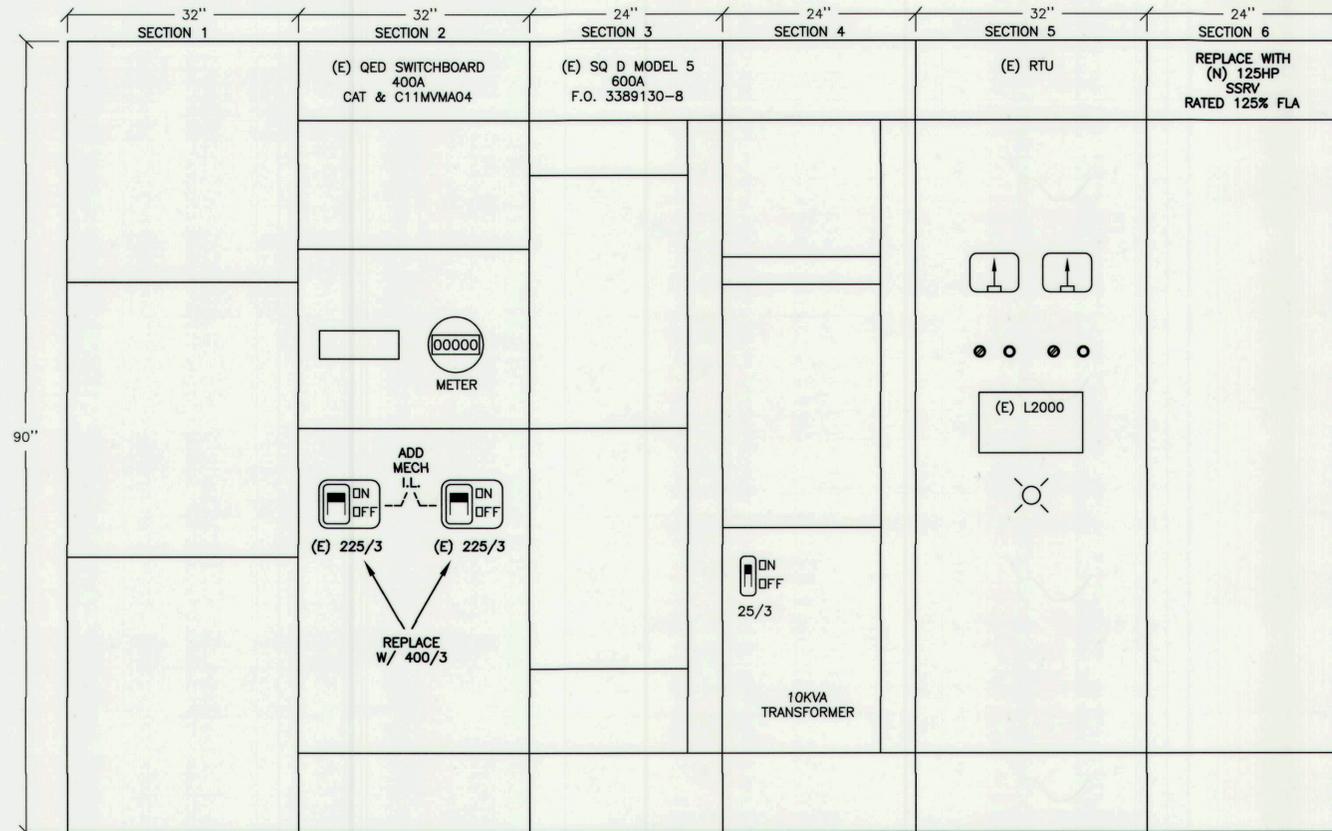
5. Pump will run until an adjustable low flow rate is run at for an adjustable time period or if the pressure switch sees high high pressure or if low well level cutoff is reached.
6. An adjustable backspin timer starts timing on pump shutdown preventing pump restart until the water column has settled.

B. MODES OF OPERATION

1. **Auto Mode:** The auto mode is control using the pressure setpoint to start the pump and modulate speed to control pressure.
2. **Hand Mode:** The hand mode is a maintenance test mode to run the pump locally with a manual potentiometer. No PLC control.
3. A reduced voltage starter backup can be switched to with the selector switch. The well will start on a user adjustable tank level and stop on user adjustable or low well level.

C. CHLORINATION INJECTION

1. **Auto Flow Mode:** Auto injects chemical whenever the well pump motor is running. The rate is ratioed to measured well flow.
2. **Auto Fixed Mode:** Auto injects chemical whenever the well pump motor is running. The rate is manually set.
3. **Jog Mode:** Jog operation is a maintenance test mode that runs the chemical pump when the button is pressed.

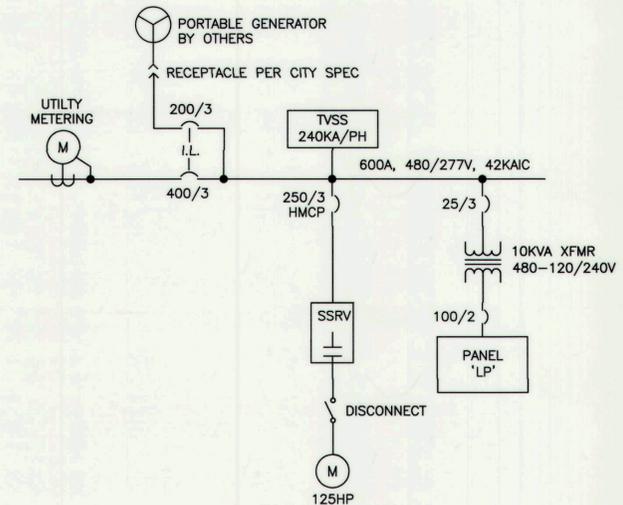


(E) MOTOR CONTROL CENTER ELEVATION - TO BE MODIFIED

NOT TO SCALE

NOTE:

- 1) NEMA 1G ENCLOSURE.



PUMP STATION SINGLE LINE DIAGRAM

SSRV RATED 125% FLA - C-H S811, SQ D ALTISTART, OR A-B SMC FLEX
BOYS RANCH 2A

JOE PREVEDOR P.E. CA EE 16581 joe@epsfresno.com	GARY OLSEN P.E. CA EE 8283 gary@epsfresno.com
JOB: LS-15-174	DATE: NOV 2016
FILE: LS174_BR2-SLO3	
PLOT: 3/30/2017 9:17 AM / 1:1	
DSGN: JPP	DRWN: CRT

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DATE: 3-31-17

SINGLE LINE DIAGRAM
Construction of 2 Pump Stations
Boys Ranch 2A & Jackson 3A
City of Morgan Hill
Morgan Hill, California

LUHDORFF & SCALMANINI
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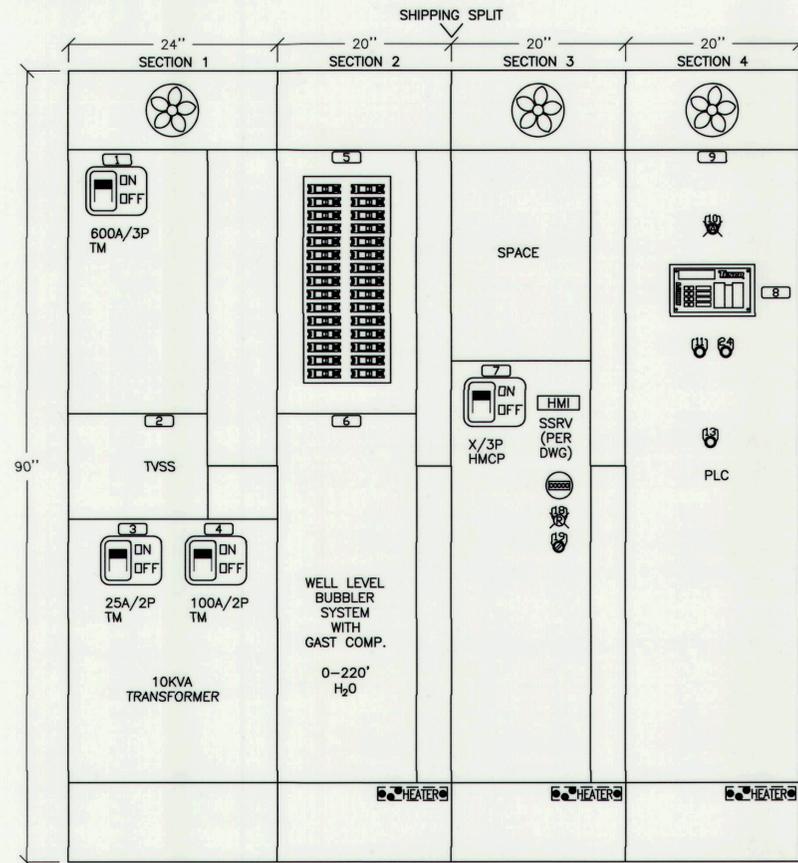
NO.	DATE	REVISION

DATE: MARCH 2017
JOB NO.: 15-3-053
DESIGN BY:
DRAWN BY:
CHECKED BY:
FILE:

SHEET:

CAD FILE: G:/Projects/City of Morgan Hill/15-3-053/Pump Station/Electrical/030917_boys_ranch/LS174_BR2-SLO3.dwg CFG FILE: LSCE2500.PCP_MRC DATE: 03-17-17 9:26am

CAD FILE: G:/Projects/City of Morgan Hill/15-3-053/Pump Station/Electrical/030917-Jackson/LS174-J-SLO3A.dwg CFG FILE: LSCE2500.PCP_MRG DATE: 03-17-17 9:50am



MOTOR CONTROL CENTER ELEVATION

NOT TO SCALE

NOTE:

- 1) NEMA 1G ENCLOSURE.

JACKSON 3A PUMP STATION MOTOR & LOAD LIST:

Item	Name	ID	Timing	Type	HP	FLA	Voltage	Starter typ	VFD	HOA	I-lock	Power on	Running	Fail	ETM	Remarks
1	Well Pump		New	WP1	100	124	460	SSRV	Y	Y	HP	Y	Y	Y	Y	
2	Chemical Pump		New		0.5	10	120			Y	Flow					
3	Vent Fan		New		1	16	120			N	N				Y	
4																
5																
6																

Load Calculations 480V		
Item	Name	FLA
1	Well Pump	124
2	25% of largest motor	31
3		
4		
5	Lts. & misc.	10
Total		165
Main Size		600

NAMEPLATE SCHEDULE

Tag	QTY	TYPE	Inscription
1	1	Plate	Main Disconnect
2	1	Plate	TVSS
3	1	Plate	Transformer Primary Disconnect
4	1	Plate	Transformer Secondary Disconnect
5	1	Plate	Panelboard 'LP'
6	1	Plate	Well Bubbler Air System
7	1	Plate	Pump Disconnect (SSRV)
8	1	Plate	Tesco L3000
9	1	Ring	Pump Controls
10	1	Ring	Common Alarm
11	1	Ring	Alarm Acknowledge/Reset
12	1	Ring	Pump Running
13	1	Ring	Intrusion Acknowledge
14	1	Ring	Pump
15	1	Ring	Hand Off Auto Valve
16	1	Ring	Auto Open
17	1	Ring	Pump Manual Start
18	1	Ring	Pump Reset
19	1	Ring	Chlorine Pump
20	1	Ring	Hand Off Auto Chlorine Pump Reset
21	1	Ring	
22	1	Plate	Service Pedestal
23	1	Plate	CT Pedestal
24	1	Ring	Manual Purge
25	1	Plate	Power Monitor

WELL CONTROLS

A. GENERAL

The well pump has 2 modes of operation: Auto and Hand for the VFD and also the RVAT. These modes are selected by a selector switch on the pump starter. The pump starter is a variable frequency drive which varies pump speed to maintain a pressure set point. An emergency backup solid state reduced voltage starter is available.

The startup sequence is as follows:

1. A user low pressure set point is reached and well level is high enough to pump. An analog pressure transmitter indicates the well discharge pressure.
2. Pre lube solenoid energizes
3. Well pump VFD starts after a user adjustable time delay
4. The pump ramps up to the pressure set point. Pump speed is modulated through a PI controller to maintain pressure. A minimum speed parameter is programmed. The well level is monitored. Pump speed is modulated through a PI controller to slow down as the well level drops to ensure the well does not break suction. All pressure and level set points are user adjustable.

The shutdown sequence is as follows:

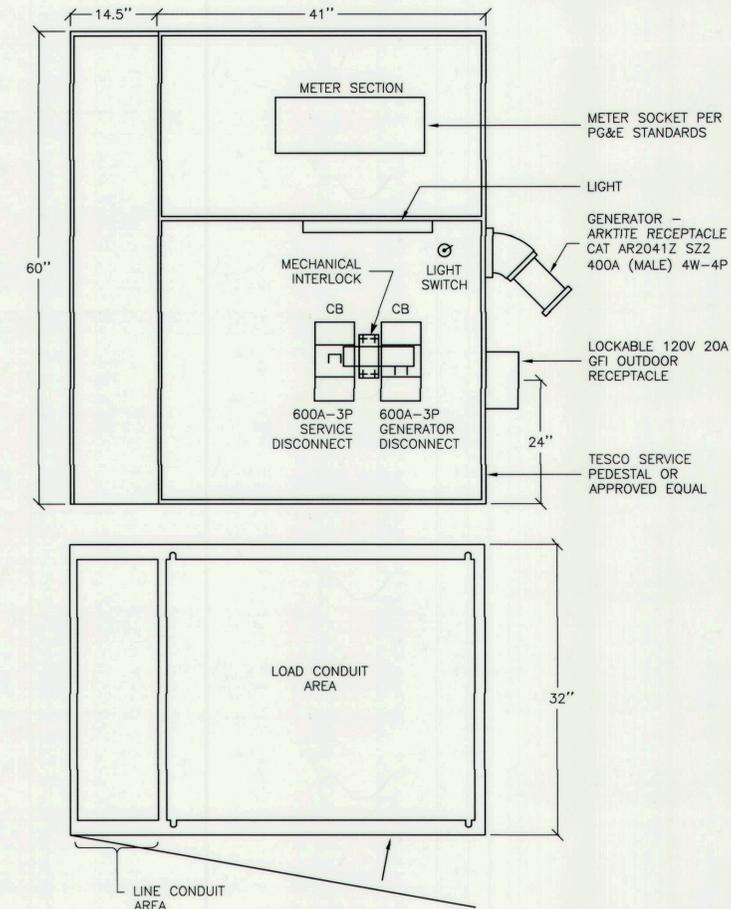
5. Pump will run until an adjustable low flow rate is run at for an adjustable time period or if the pressure switch sees high high pressure or if low well level cutoff is reached.
6. An adjustable backspin timer starts timing on pump shutdown preventing pump restart until the water column has settled.

B. MODES OF OPERATION

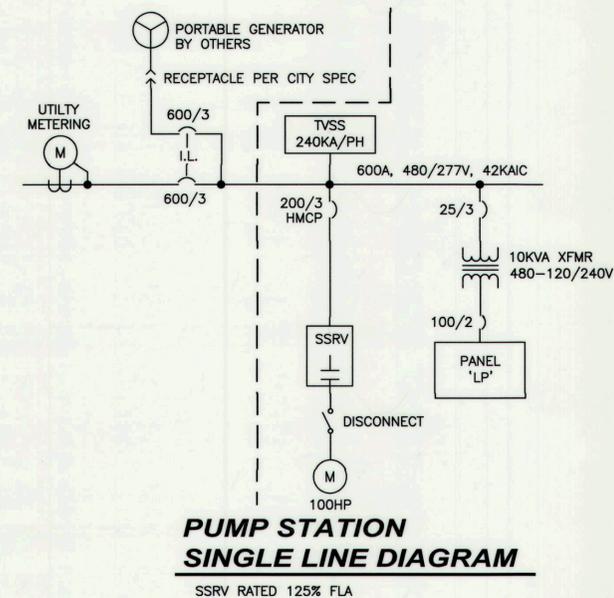
1. Auto Mode: The auto mode is control using the pressure setpoint to start the pump and modulate speed to control pressure.
2. Hand Mode: The hand mode is a maintenance test mode to run the pump locally with a manual potentiometer. No PLC control.
3. A reduced voltage starter backup can be switched to with the selector switch. The well will start on a user adjustable tank level and stop on user adjustable or low well level.

C. CHLORINATION INJECTION

1. Auto Flow Mode: Auto injects chemical whenever the well pump motor is running. The rate is ratioed to measured well flow.
2. Auto Fixed Mode: Auto injects chemical whenever the well pump motor is running. The rate is manually set.
3. Jog Mode: Jog operation is a maintenance test mode that runs the chemical pump when the button is pressed.



UTILITY METERING ELEVATION



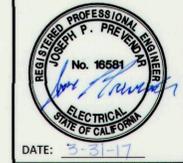
JACKSON 3A

JOE PREVENDAR P.E. CA EE 16581 joe@epsfresno.com	GARY OLSEN P.E. CA EE 8283 gary@epsfresno.com
JOB: LS-15-174	DATE: NOV 2016
FILE: LS174_J-SLO3A	
PLOT: 3/30/2017 9:32 AM / 1:1	
DSGN: JPP	DRWN: CRT

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ELECTRICAL POWER SYSTEMS INC.
PROFESSIONAL AND CONSULTING ELECTRICAL ENGINEERING

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SINGLE LINE DIAGRAM
Construction of 2 Pump Stations
Boys Ranch 2A & Jackson 3A
City of Morgan Hill
Morgan Hill, California

LUHDORFF & SCALMANINI CONSULTING ENGINEERS
500 FIRST STREET
WOODLAND, CALIFORNIA
PHONE: (530) 661-0109

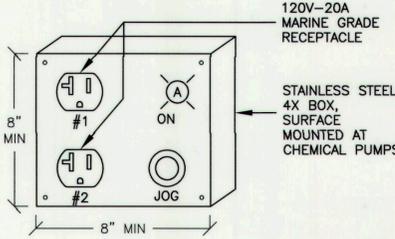
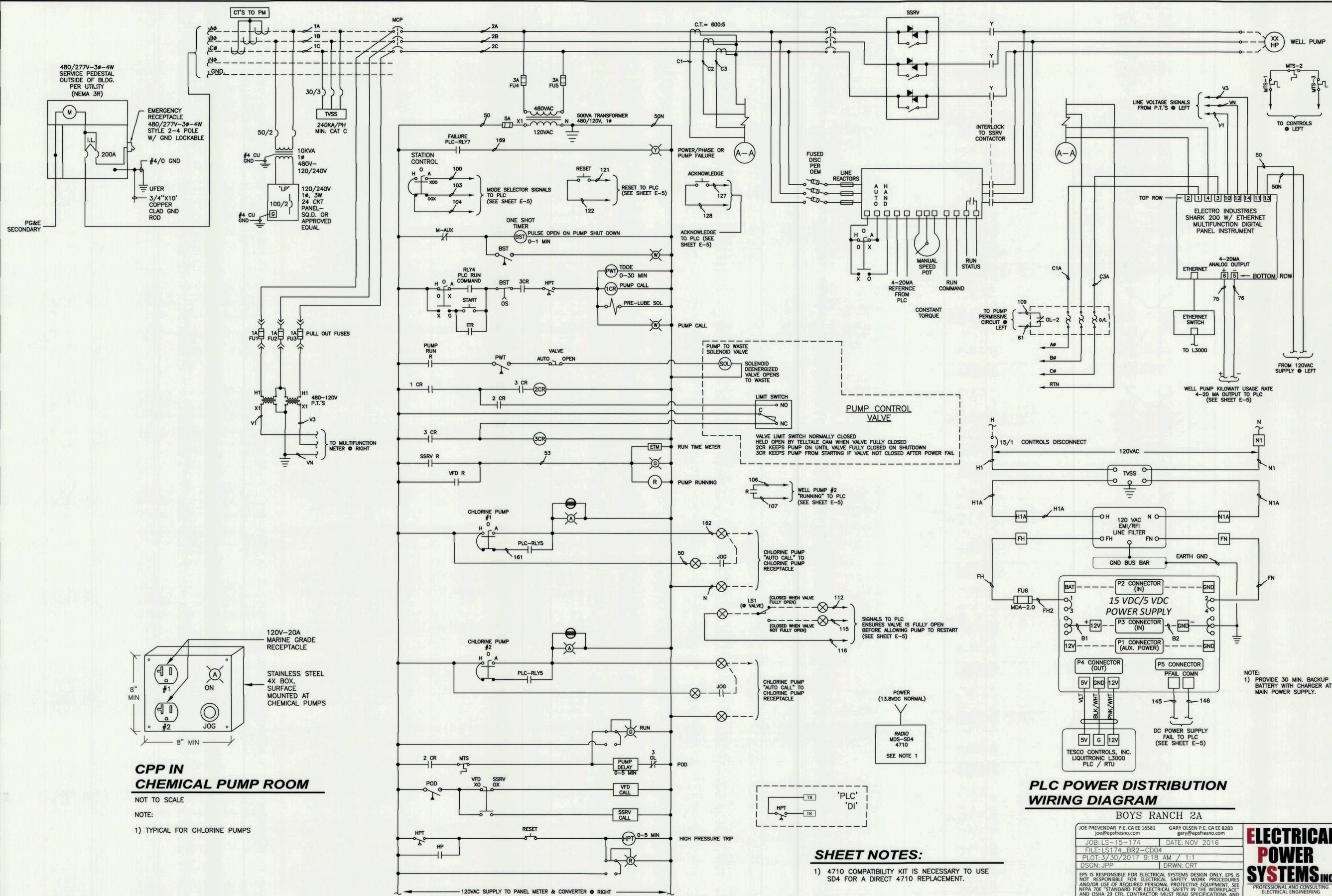
NO.	DATE	REVISIONS

DATE: MARCH 2017
JOB NO.: 15-3-053
DESIGN BY:
DRAWN BY:
CHECKED BY:
FILE:

SHEET:

E-3A

CAD FILE: G:\Projects\City of Morgan Hill\15-3-053\Pump Station\Electrical\030917_boys_ranch\LS174_BR2-CD04.dwg CFG FILE: LSCE2500.PCP_MRG DATE: 03-17-17 9:24am



CPP IN CHEMICAL PUMP ROOM

NOT TO SCALE
NOTE:
1) TYPICAL FOR CHLORINE PUMPS

SHEET NOTES:
1) 4710 COMPATIBILITY KIT IS NECESSARY TO USE SD4 FOR A DIRECT 4710 REPLACEMENT.

PLC POWER DISTRIBUTION WIRING DIAGRAM

BOYS RANCH 2A

DATE: MARCH 2017	NO.:	REVISION
JOB NO.: 15-3-053	DATE:	NOV 2016
DESIGN BY:	FILE:	LS174_BR2-CD04
DRAWN BY:	PLOT:	3/30/2017 9:18 AM / 1:1
CHECKED BY:	DSGN:	JPP
FILE:	DRWN:	CRT

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DATE: 3-17

CONTROL WIRING DIAGRAM
Construction of 2 Pump Stations
Boys Ranch 2A & Jackson 3A
City of Morgan Hill
Morgan Hill, California

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NO.	DATE	REVISION

DATE: MARCH 2017
JOB NO.: 15-3-053
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FILE:

SHEET:

E-4