OAKLAND COUNTY
WATER RESOURCE COMMISSION

STANDARD LIFT STATION DRAWINGS

SHEET #	DESCRIPTION
	SITE LAYOUT EXAMPLE
4422-23-01	UTILITY POWER AND PUMP WIRING
4422-23-02	120VAC POWER WIRING
4422-23-03	120VAC/24VDC CONTROL WIRING
4422-23-04	24VDC CONTROL POWER
4422-23-05	24VDC CONTROL POWER
4422-23-06	PLC I/O WIRING
4422-23-07	PLC I/O WIRING
4422-23-08	PLC I/O WIRING
4422-23-09	SPARE SHEET
4422-23-10	PLC SUBPLATE LAYOUT
4422-23-11	PLC PANEL LAYOUT

SHEET #	DESCRIPTION
4422-23-12	SCADA PANEL SUBPLATE LAYOUT
4422-23-13	SCADA PANEL ENCLOSURE LAYOUT
4422-23-14	SCADA PANEL BILL OF MATERIAL
4422-23-15	SPARE SHEET
4422-23-16	POWER/PUMP PANEL SUBPLATE LAYOUT
4422-23-17	POWER/PUMP PANEL ENCLOSURE LAYOUT
4422-23-18	POWER/PUMP PANEL BILL OF MATERIAL
4422-23-19	CONTROLS WIRING LEGEND
4422-23-20	ELECTRICAL ONE-LINE EXAMPLE
4422-23-21	EQUIPMENT INSTALLATION DETAILS
4422-23-22	WRC STANDARD DUPLEX PUMP STATION DETAILS

WRC WATER RESOURCES COMMISSIONER

REV	REVISIONS	BY
1/31/23	FOR REVIEW	GB
6/28/23	REVISED	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS
MUNICIPALITY NAME HERE

PANEL NAME:
SEWAGE LIFT STATION
POWER/PUMP CONTROL PANEL

DRAWING TITLE:
DRAWING INDEX

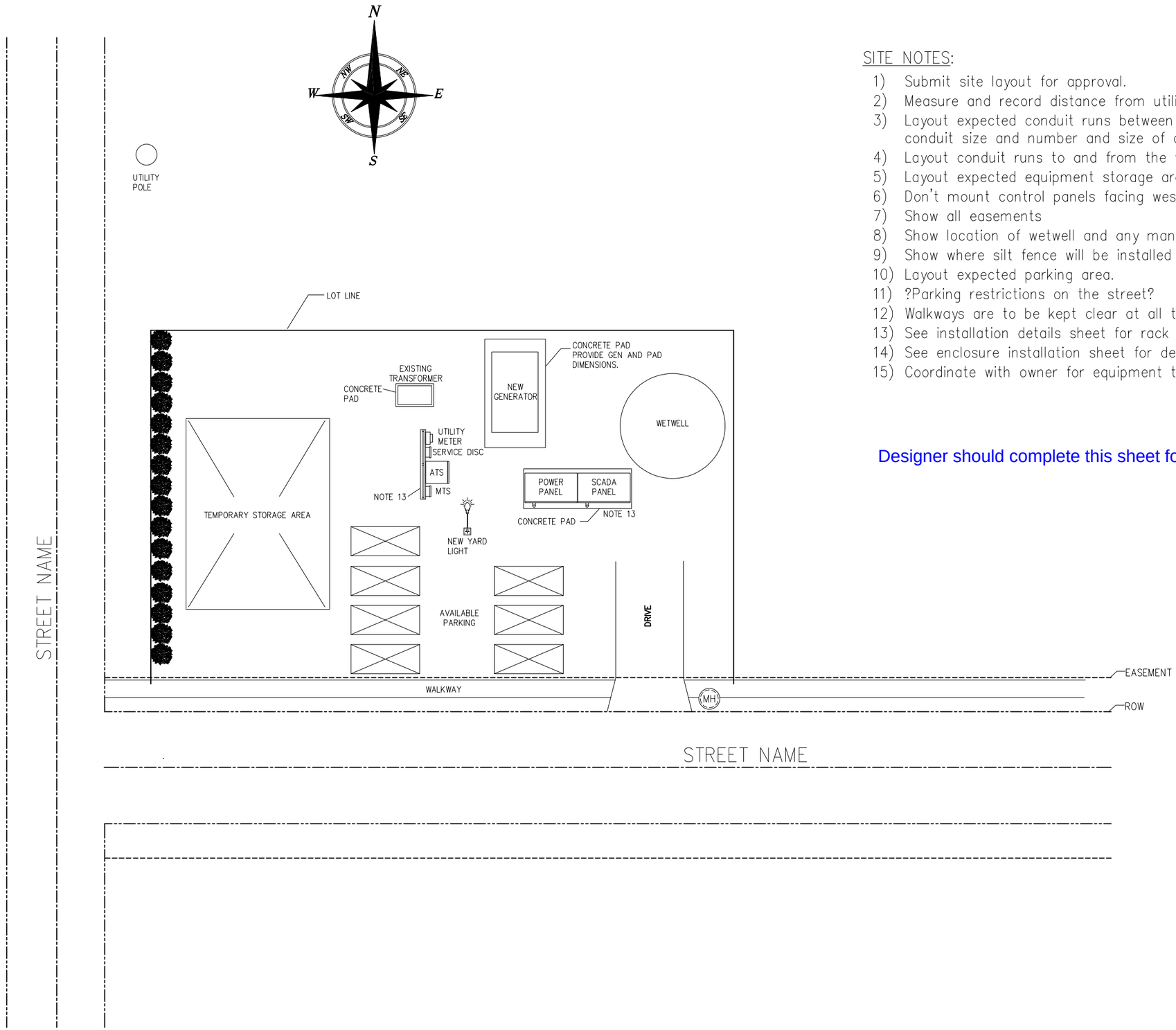
DESIGN BY:
GB

DRAWN BY:
GB

SCALE
NONE

JOB:
4422-23

SHEET:
00 OF 23



SITE NOTES:

1) Submit site layout for approval.
2) Measure and record distance from utility pole to site transformer.
3) Layout expected conduit runs between outdoor equipment. Include conduit size and number and size of conductors.
4) Layout conduit runs to and from the wetwell.
5) Layout expected equipment storage area.
6) Don't mount control panels facing west due to weather issues.
7) Show all easements
8) Show location of wetwell and any manholes.
9) Show where silt fence will be installed to meet local codes.
10) Layout expected parking area.
11) ?Parking restrictions on the street?
12) Walkways are to be kept clear at all times.
13) See installation details sheet for rack details.
14) See enclosure installation sheet for details.
15) Coordinate with owner for equipment to be salvaged and returned.

Designer should complete this sheet for a site specific layout.

WRC WATER RESOURCES COMMISSIONER

REVISIONS	REV	BY
FOR REVIEW AND APPROVAL	4/2/20	GB
REVISED	1/23/23	GB

OAKLAND COUNTY WRC STANDARD DRAWINGS

MUNICIPALITY NAME HERE

PANEL NAME:

SEWAGE LIFT STATION

DRAWING TITLE:

SITE LAYOUT EXAMPLE

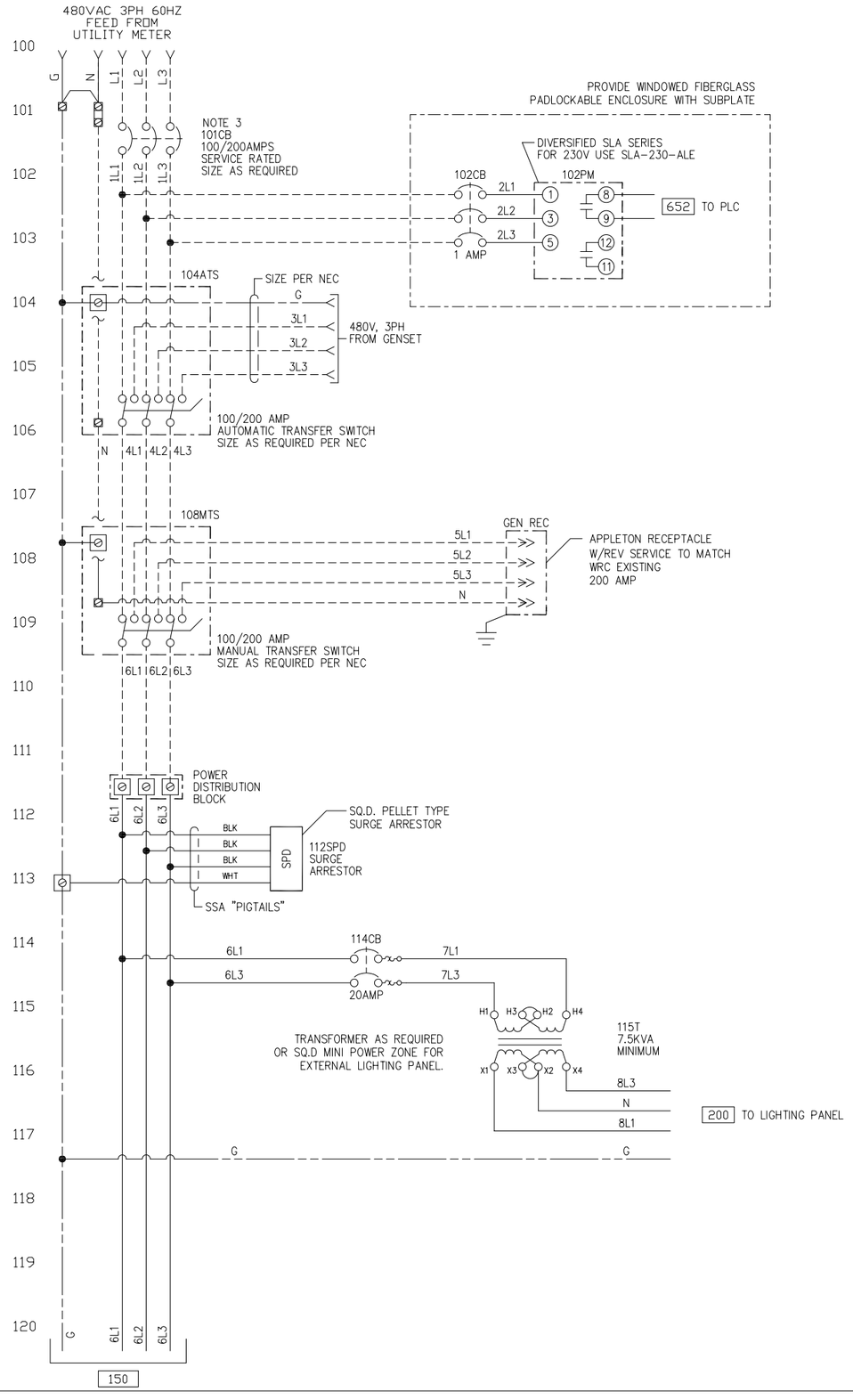
DESIGN BY: GB

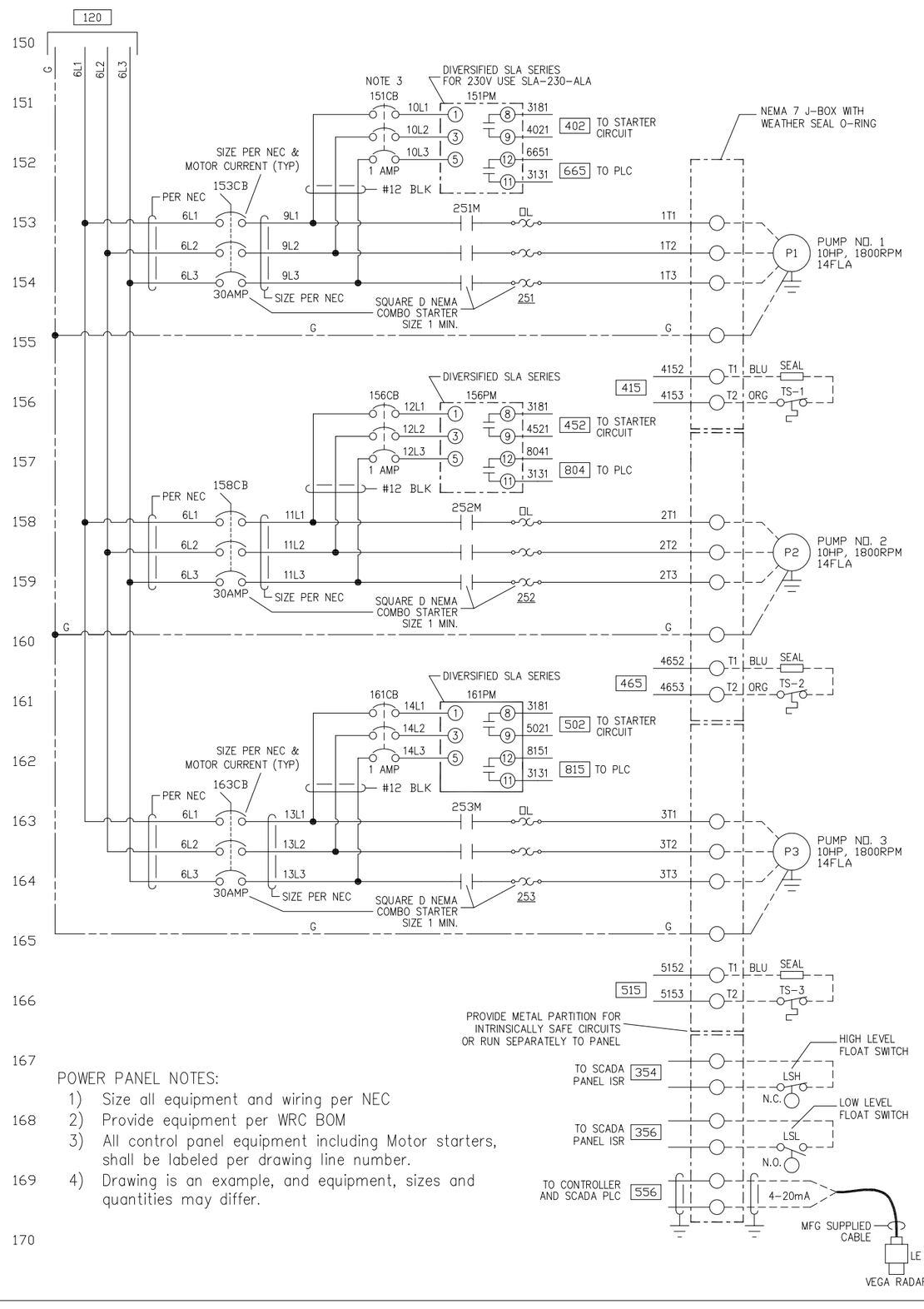
DRAWN BY: GB

SCALE NONE

JOB: 4419-05

SHEET: E-003





POWER PANEL NOTES:

1) Size all equipment and wiring per NEC
2) Provide equipment per WRC BOM
3) All control panel equipment including Motor starters, shall be labeled per drawing line number.
4) Drawing is an example, and equipment, sizes and quantities may differ.

WRC
WATER RESOURCES COMMISSIONER

REV	REVISIONS	BY
4/13/20	FOR REVIEW & APPROVAL	GB
2/12/21	REVISED PER COMMENTS	GB
1/30/23	REVISED PER COMMENTS	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS

MUNICIPALITY NAME HERE

PANEL NAME:

SEWAGE LIFT STATION
PUMP CONTROL PANEL

DRAWING TITLE:

UTILITY POWER AND
PUMP WIRING EXAMPLE

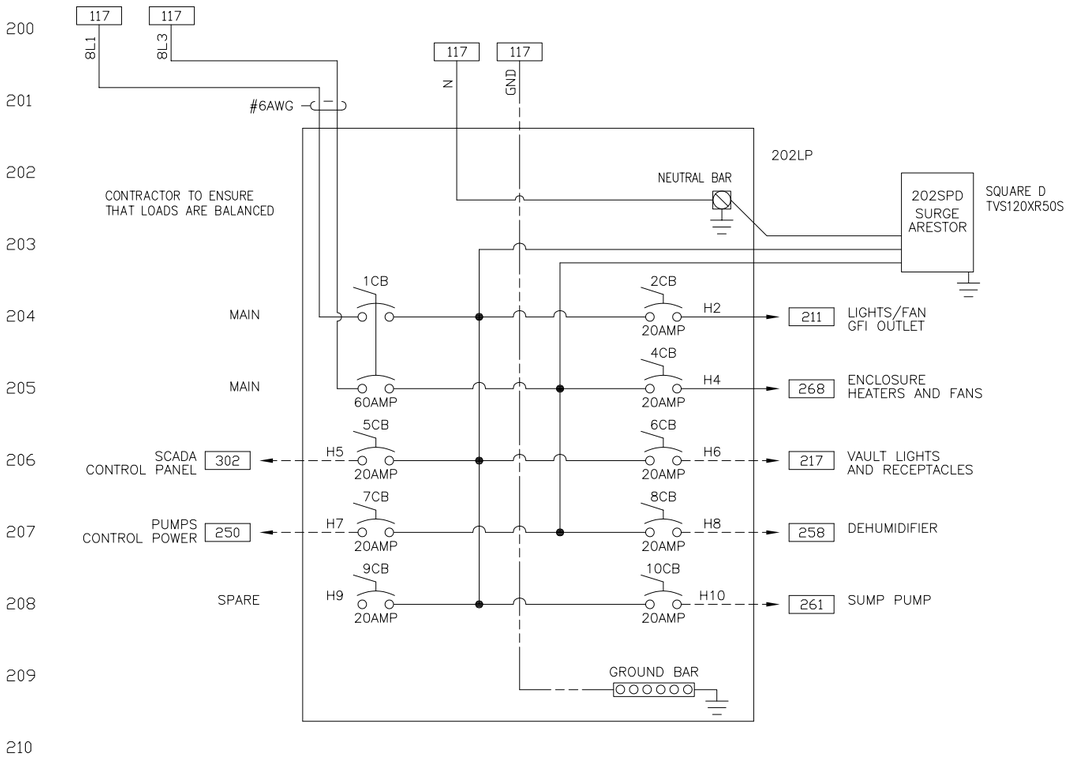
DESIGN BY:
GB

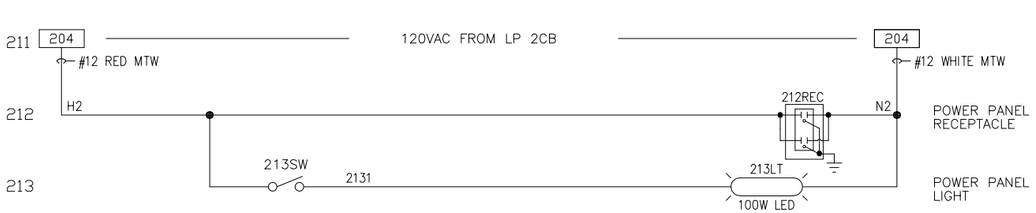
DRAWN BY:
GB

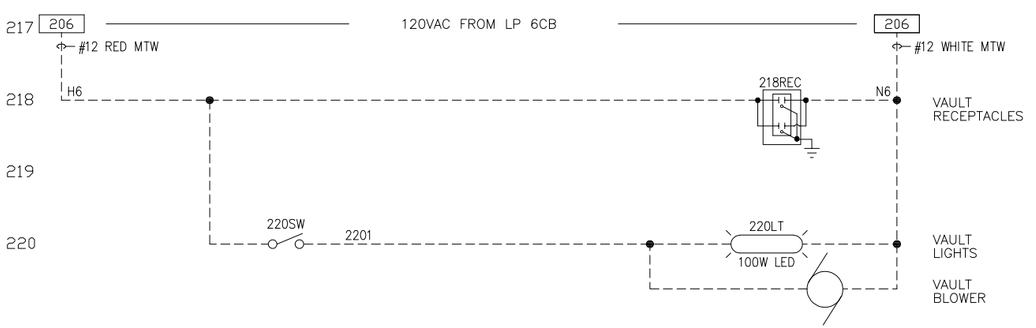
SCALE
NONE

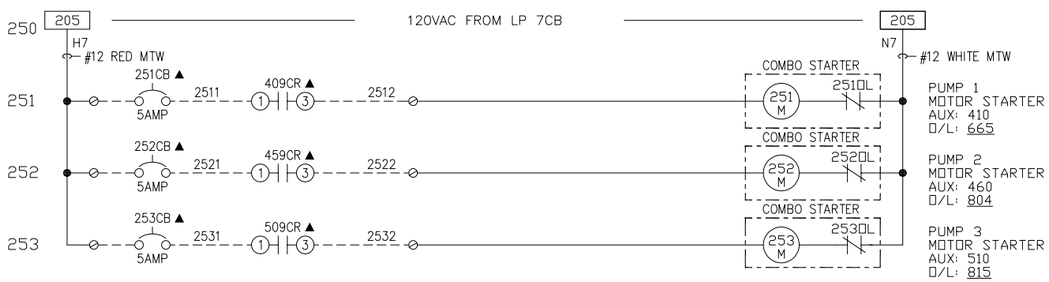
JOB:
4422-23

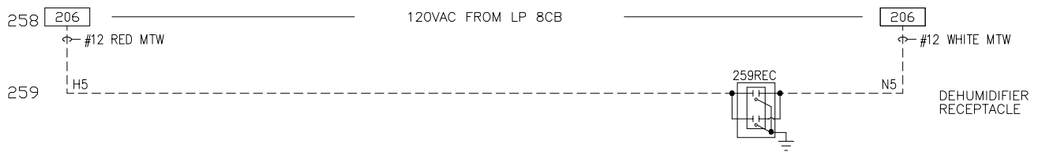
SHEET:
01 OF 21

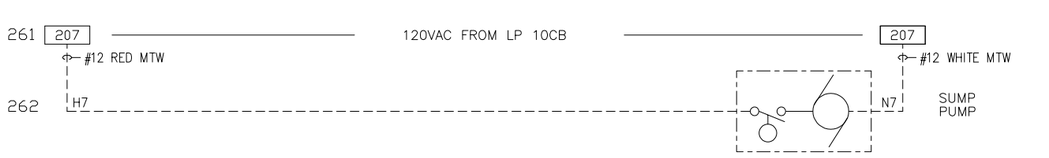






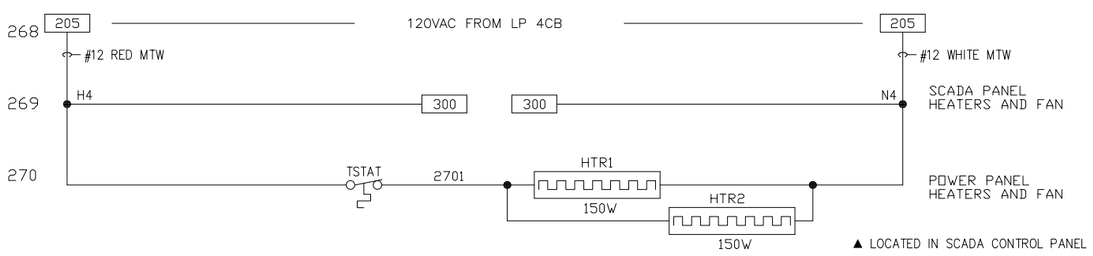






NOTES:

1) Provide equipment per WRC BOM
2) All control panel equipment shall be labeled per drawing line number.
3) Wire numbers shall be derived from line numbers.
4) Drawing is an example and equipment, sizes and quantities may differ.
5) Not all sites have a 3rd pump.



▲ LOCATED IN SCADA CONTROL PANEL

WRC
WATER RESOURCES COMMISSIONER

REV	REVISIONS	BY
4/13/20	FOR REVIEW AND APPROVAL	GB
2/12/21	REVISED PER COMMENTS	GB
1/30/23	REVISED PER COMMENTS	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS
MUNICIPALITY NAME HERE

PANEL NAME:
SEWAGE LIFT STATION
PUMP CONTROL PANEL

DRAWING TITLE:
120V POWER WIRING

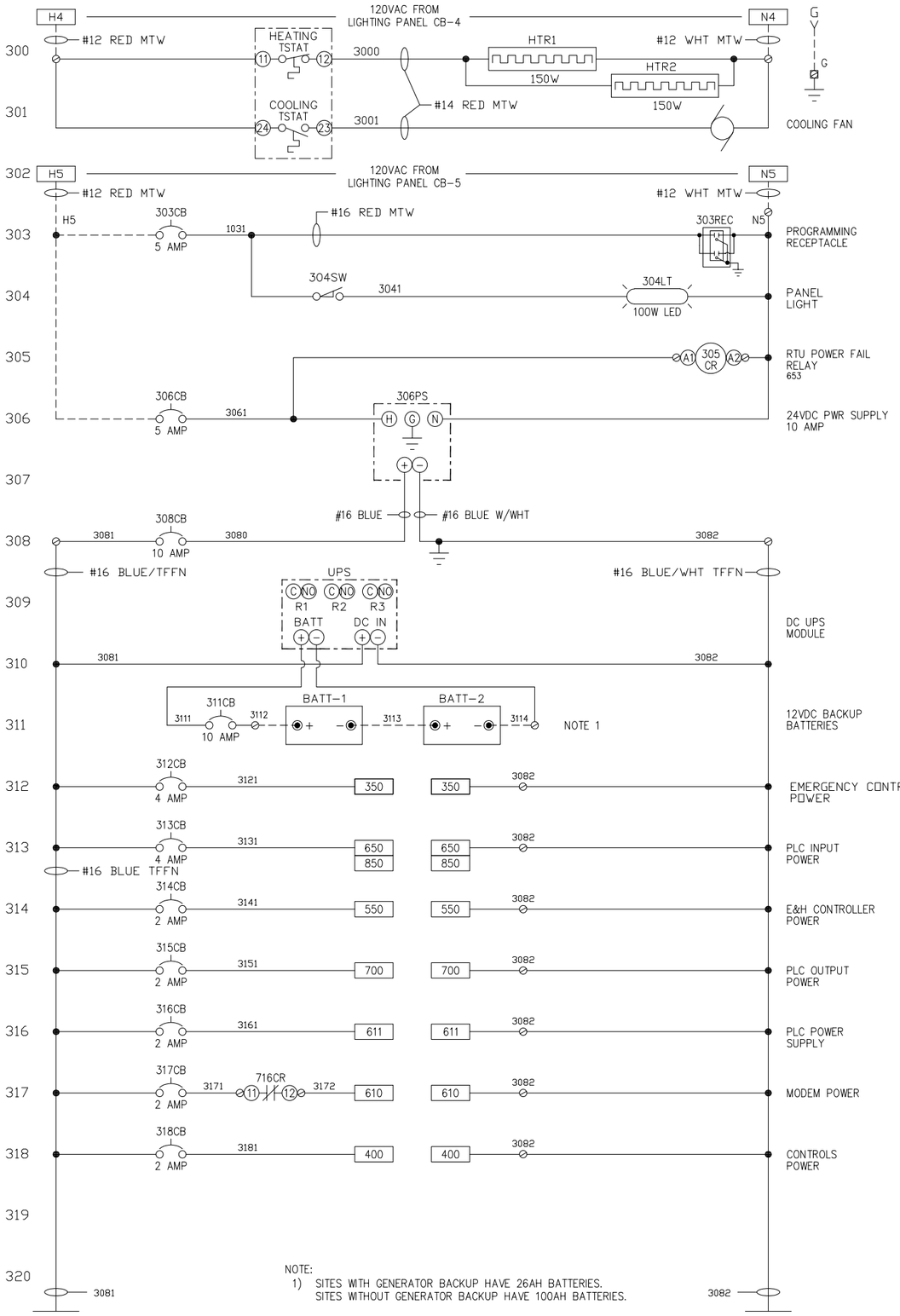
DESIGN BY:
GB

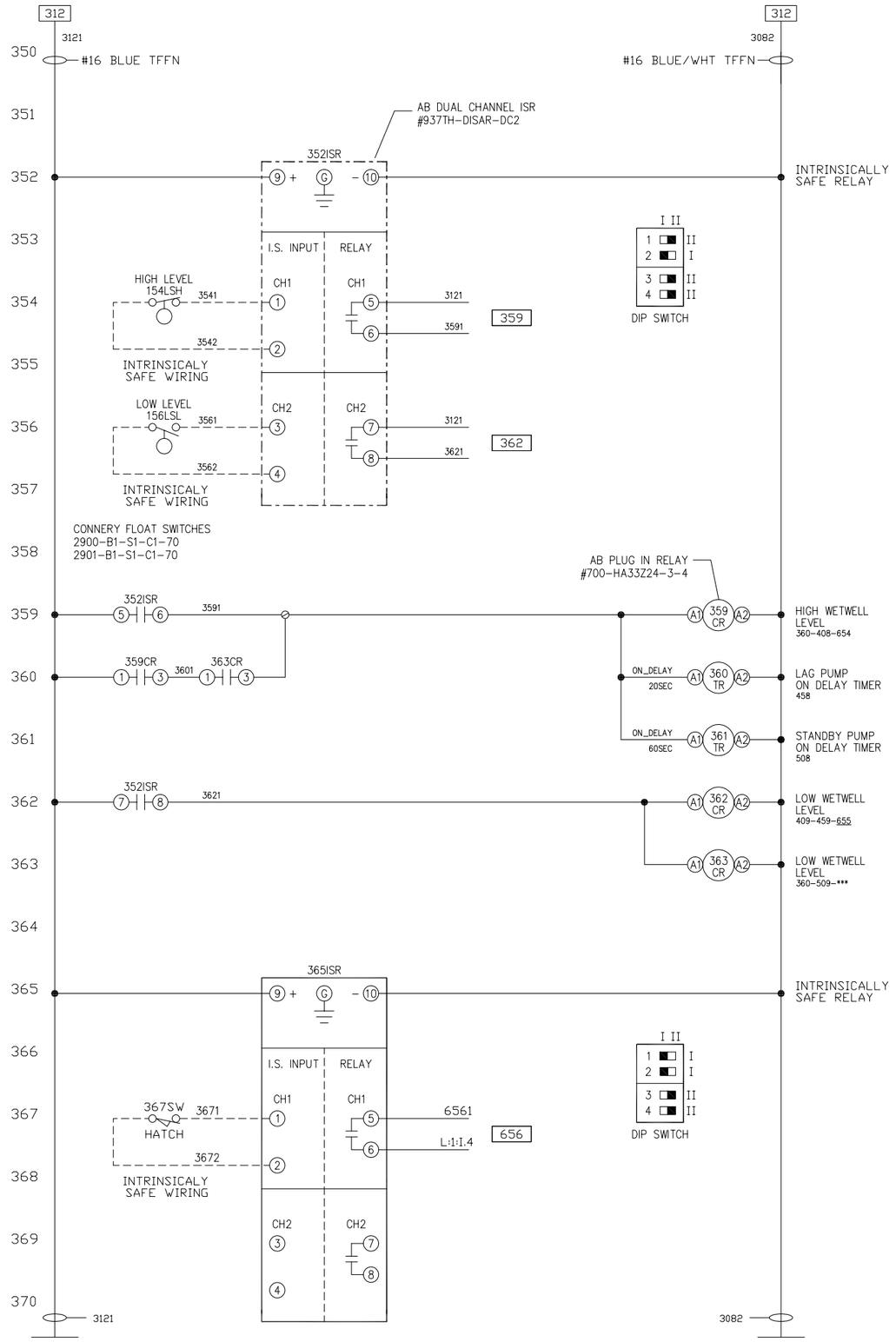
DRAWN BY:
GB

SCALE
NONE

JOB:
4422-23

SHEET:
02 OF 21





REV	REVISIONS	BY
4/6/20	FOR REVIEW AND APPROVAL	GB
1/15/21	REVISED PER COMMENTS	GB
1/30/23	REVISED PER COMMENTS	GB
2/7/23	ADD BATTERY NOTE	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS

MUNICIPALITY NAME HERE

PANEL NAME:

SEWAGE LIFT STATION
SCADA PUMP CONTROL PANEL

DRAWING TITLE:

120VAC/24VDC CONTROL POWER

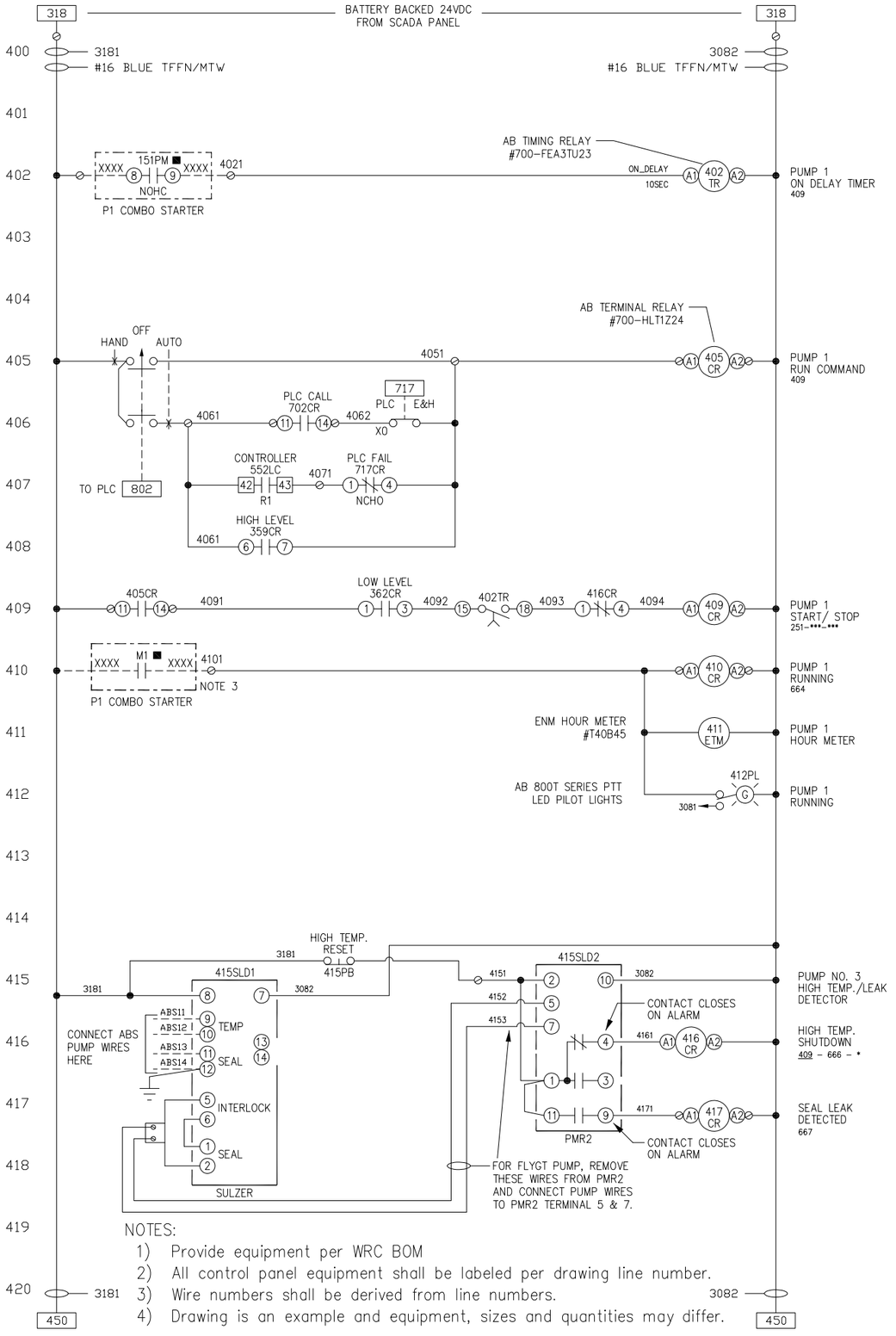
DESIGN BY: GB

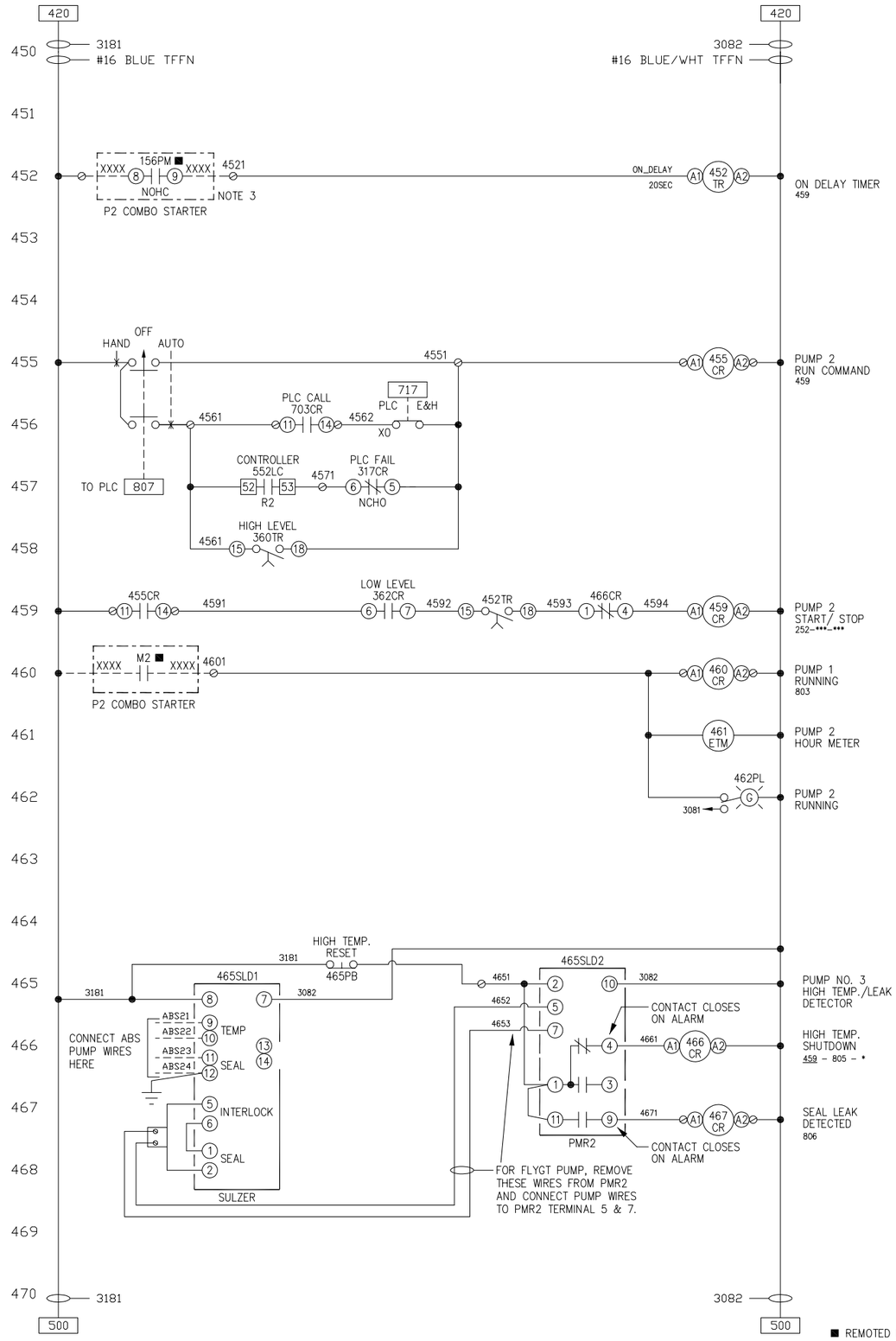
DRAWN BY: GB

SCALE NONE

JOB: 4422-23

SHEET: 03 OF 21





WRC
WATER RESOURCES COMMISSIONER

REVISIONS	REV	BY
FOR REVIEW & APPROVAL	4/13/20	GB
REVISED	1/22/21	GB
REVISED PER COMMENTS	1/30/23	GB
REV HOA & HIGH FLOAT CALL	6/28/23	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS
MUNICIPALITY NAME HERE

PANEL NAME:
SEWAGE LIFT STATION
SCADA PUMP CONTROL PANEL

DRAWING TITLE:
24VDC CONTROL POWER

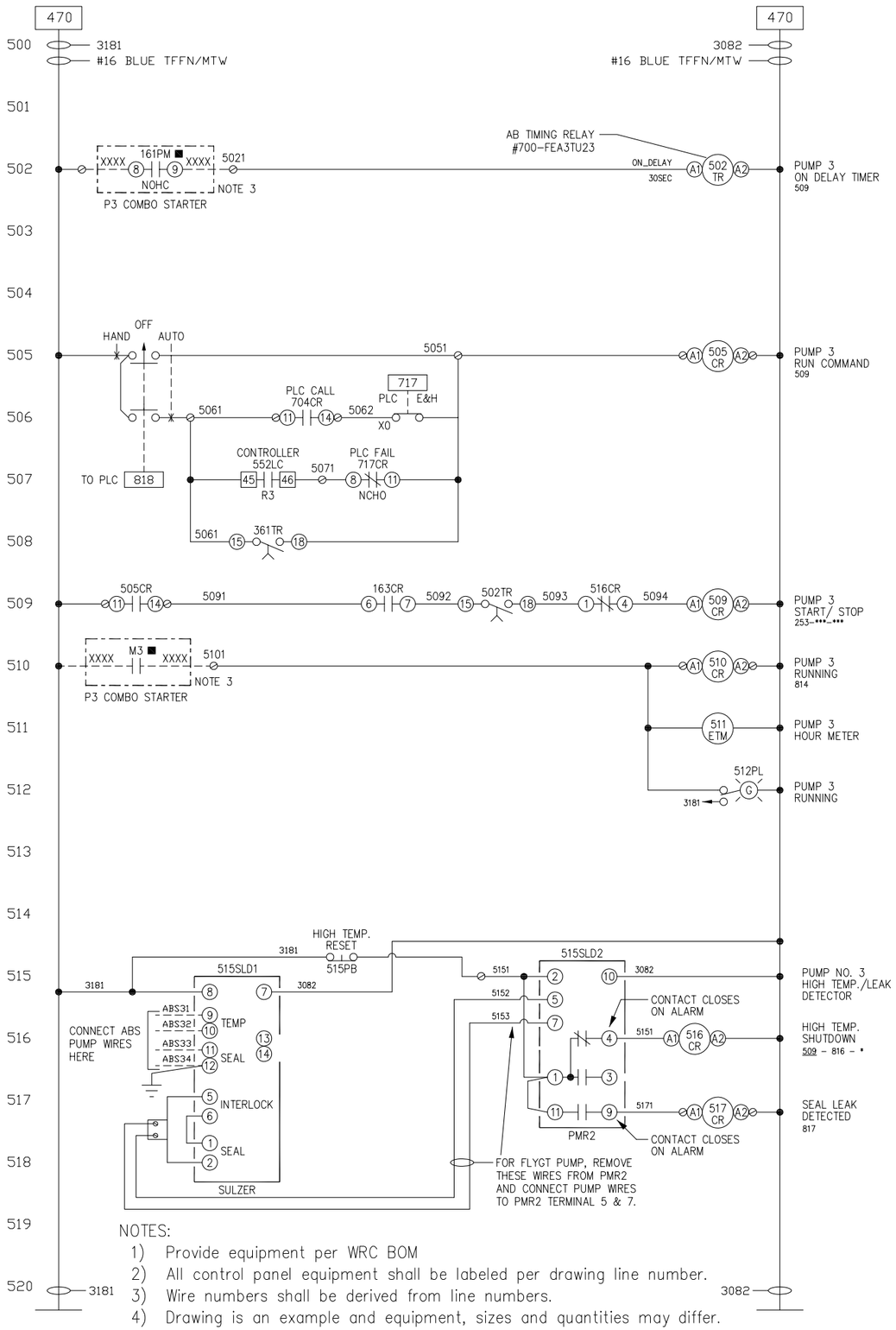
DESIGN BY:
GB

DRAWN BY:
GB

SCALE
NONE

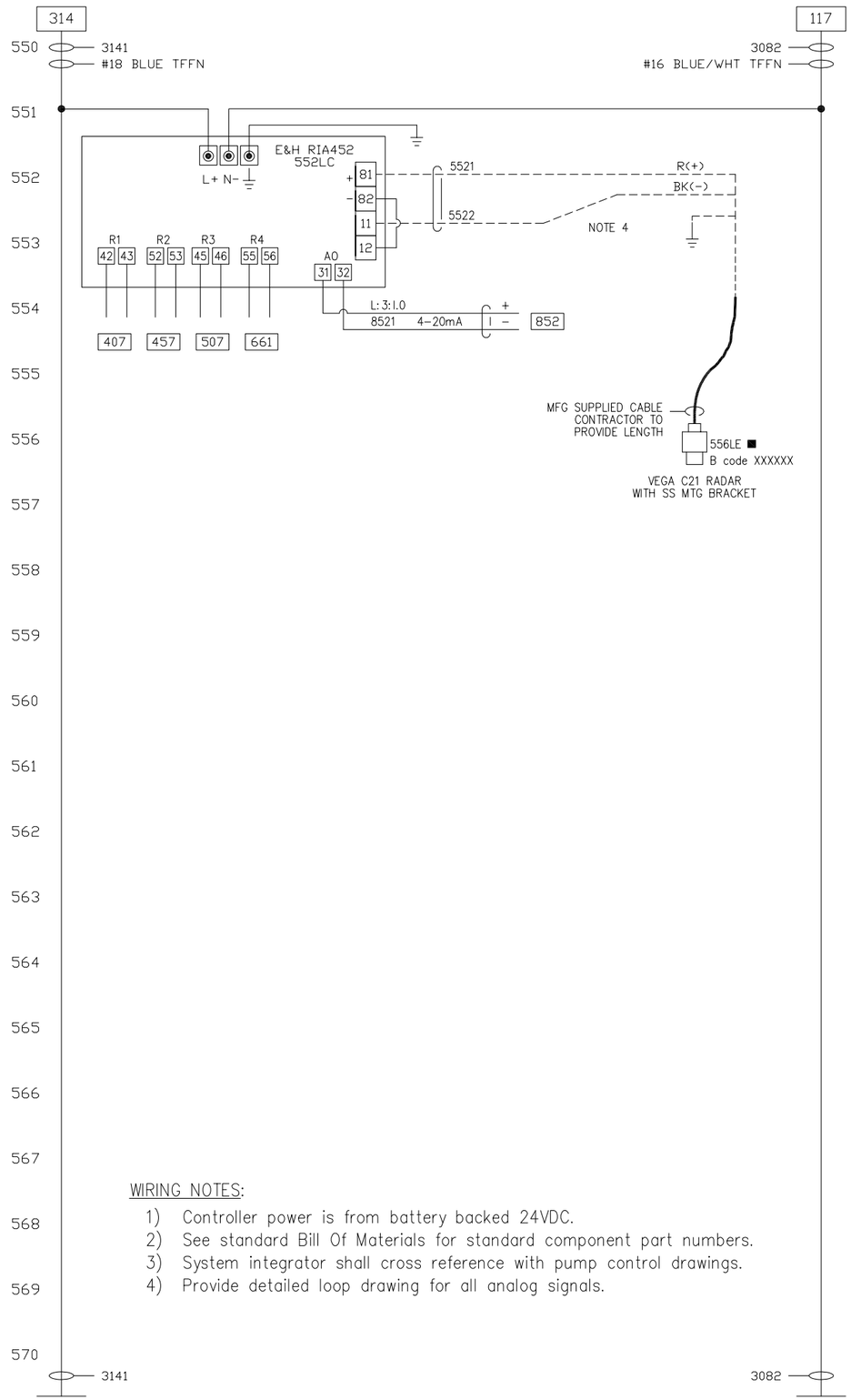
JOB:
4422-23

SHEET:
04 OF 21



NOTES:

1) Provide equipment per WRC BOM
2) All control panel equipment shall be labeled per drawing line number.
3) Wire numbers shall be derived from line numbers.
4) Drawing is an example and equipment, sizes and quantities may differ.



WIRING NOTES:

1) Controller power is from battery backed 24VDC.
2) See standard Bill Of Materials for standard component part numbers.
3) System integrator shall cross reference with pump control drawings.
4) Provide detailed loop drawing for all analog signals.

■ REMOTED MOUNTED

WRC
WATER RESOURCES COMMISSIONER

REVISIONS	REV	BY
REVISED PER COMMENTS	1/30/23	GB
REV HOA & HIGH FLOAT CALL	6/28/23	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS
MUNICIPALITY NAME HERE

PANEL NAME:
SEWAGE LIFT STATION
SCADA PUMP CONTROL PANEL

DRAWING TITLE:
24VDC CONTROL POWER

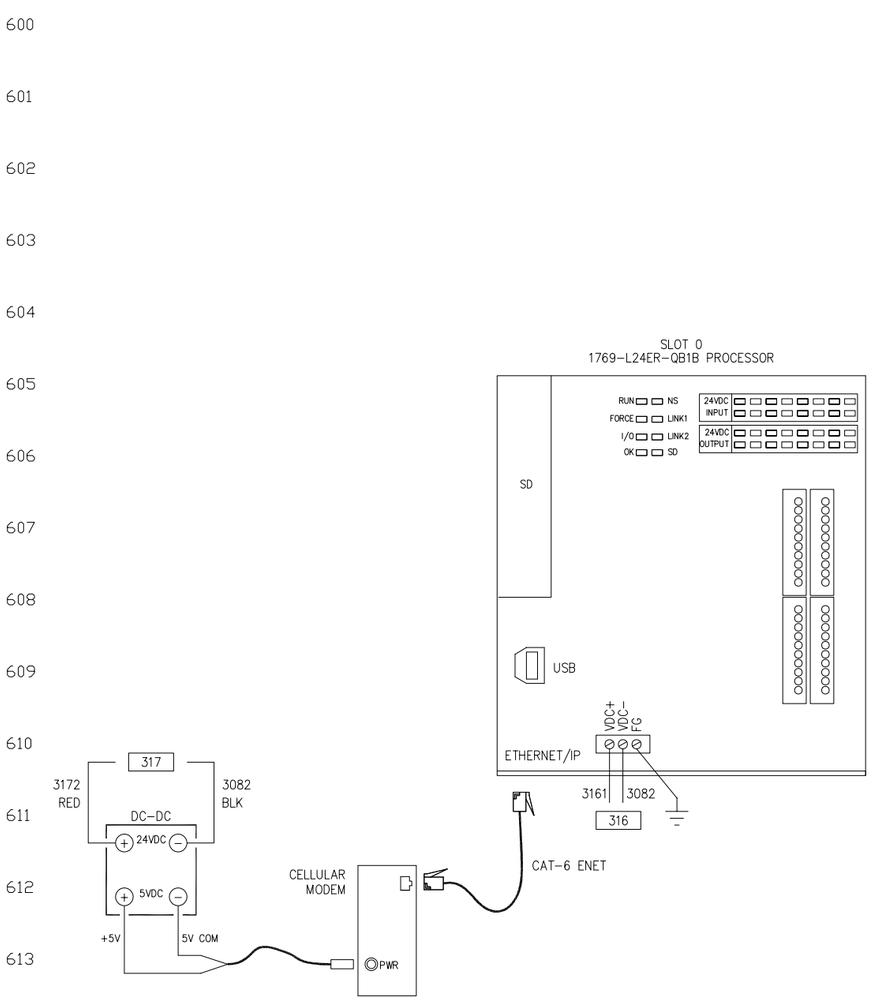
DESIGN BY:
GB

DRAWN BY:
GB

SCALE
NONE

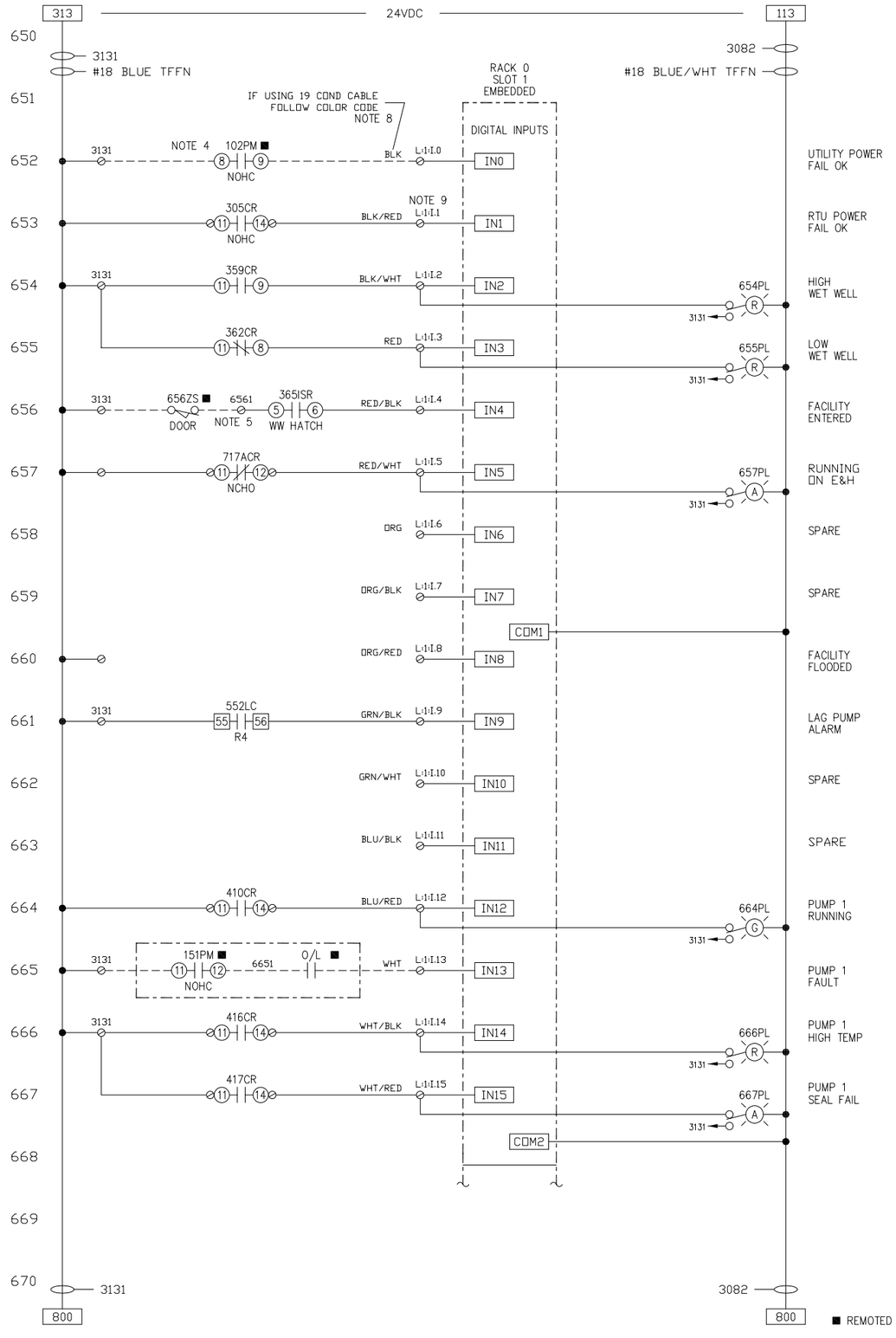
JOB:
4422-23

SHEET:
05 OF 21



SCADA PANEL NOTES:

1) PLC, I/O, and radio/modem power is from battery backed 24VDC.
2) See standard Bill Of Materials for component part numbers.
3) SCADA communications will be cell modem and determined by WRC.
4) There is a separate power monitor on the incoming utility.
5) For any inputs not being used, do not show field wiring.
6) System integrator shall cross reference field contacts with existing control equipment and drawings.
7) All I/O point designations are set and shall not be changed without prior approval of WRC.
8) When using 19 conductor cable, fold back unused wires and tape off each wire separately. This field cable is Belden 8619 18Ga.
9) Wire numbers for PLC I/O shall correspond to PLC address.



WRC
WATER RESOURCES COMMISSIONER

REVISIONS	REV	BY
FOR REVIEW & APPROVAL	3/23/20	GB
REVISED	4/10/20	GB
REVISED PER COMMENTS	1/30/23	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS
MUNICIPALITY NAME HERE
PANEL NAME:
SEWAGE LIFT STATION
SCADA PUMP CONTROL PANEL
DRAWING TITLE:
PLC I/O WIRING

DESIGN BY: GB
DRAWN BY: GB
SCALE NONE
JOB: 4422-23
SHEET: 06 OF 21

SCADA PANEL NOTES:

1) Pump start/stop relays that energize motor starters are standard 3 pole 10Amp rated plug in relays, with 11 pin octal base. Relays that fire other relays or for VFD's can be single pole terminal type relay.
2) The Modem Reboot relay interrupts power to the cell modem.
3) The PLC Failure relay is required on SCADA panels that also control the pumps. It will be held energized by the PLC.
4) Wire numbers for PLC I/O shall correspond to PLC address.

WRC
WATER RESOURCES COMMISSIONER

REVISIONS	REV	BY
FOR REVIEW & APPROVAL	3/23/20	GB
REVISED	4/10/20	GB
REVISED PER COMMENTS	1/22/21	GB
REVISED PER COMMENTS	1/30/23	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS
MUNICIPALITY NAME HERE

PANEL NAME:
SEWAGE LIFT STATION
SCADA PUMP CONTROL PANEL

DRAWING TITLE:
PLC I/O WIRING

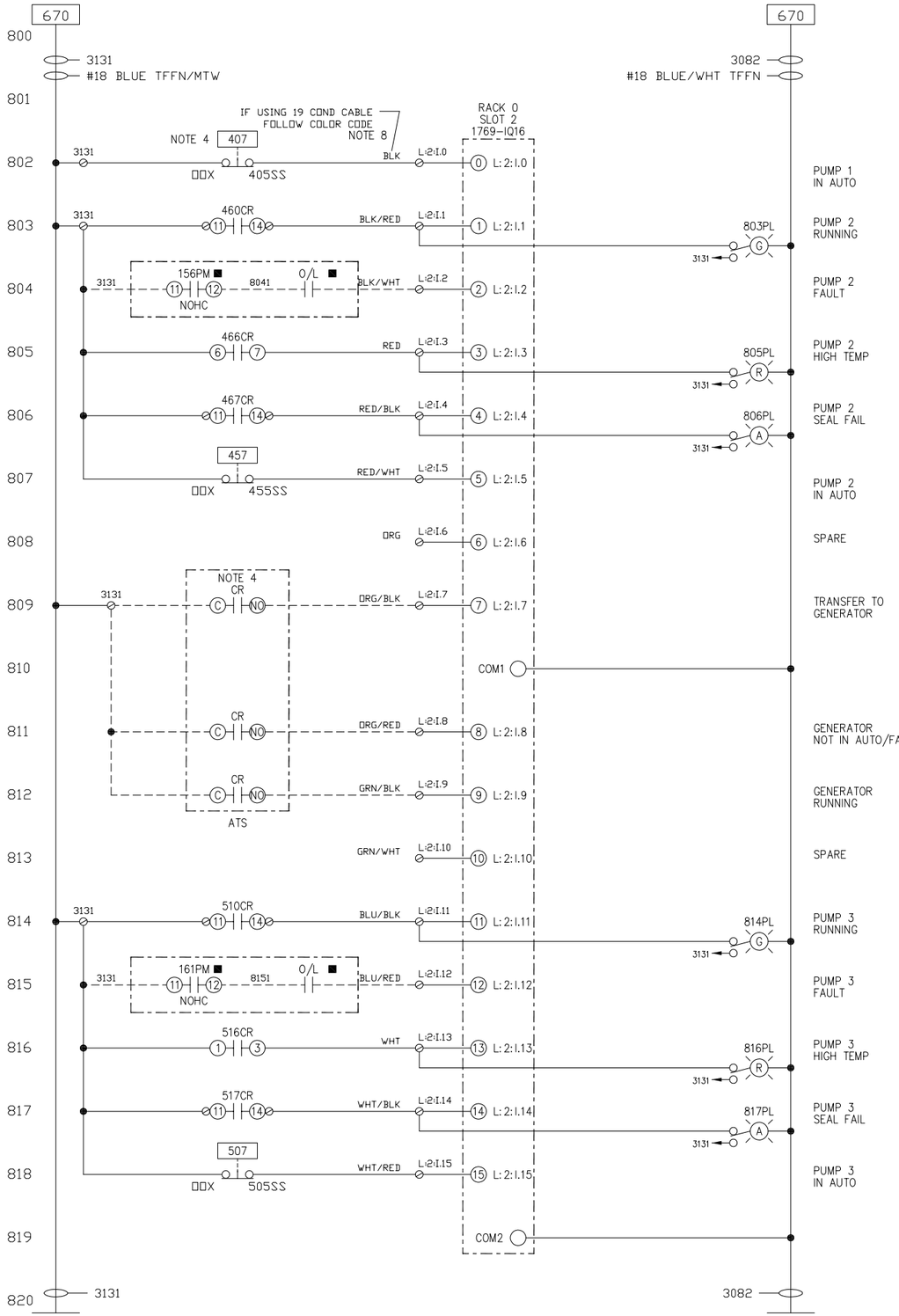
DESIGN BY:
GB

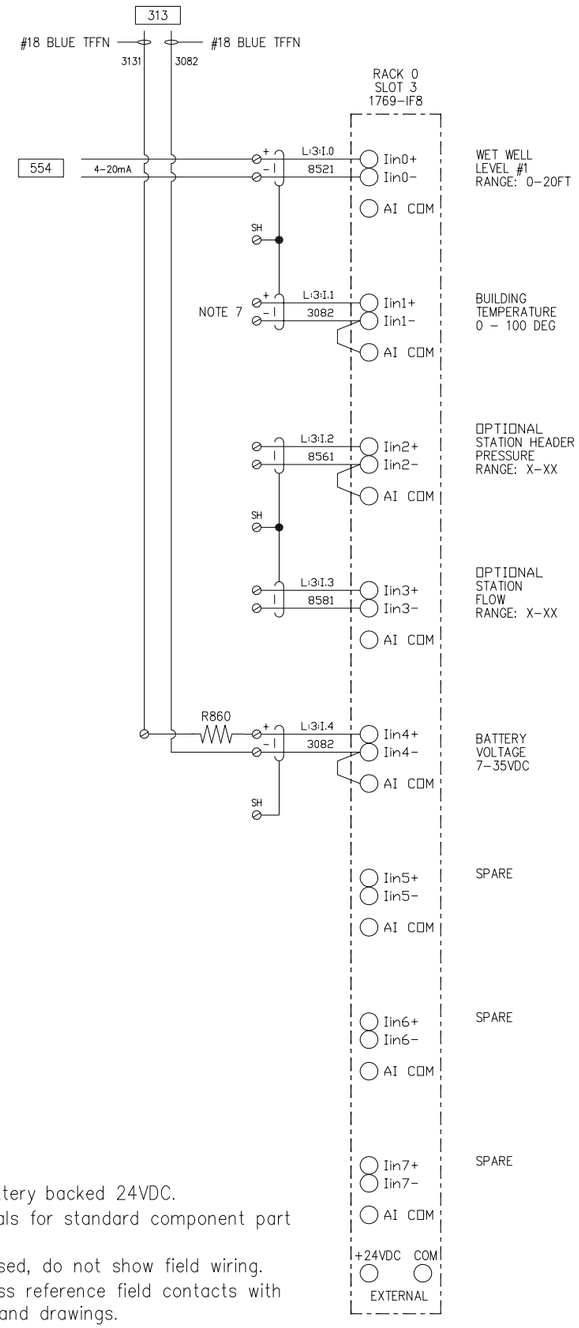
DRAWN BY:
GB

SCALE
NONE

JOB:
4422-23

SHEET:
07 OF 21





SCADA PANEL NOTES:

1) PLC, I/O power is from battery backed 24VDC.
2) See standard Bill Of Materials for standard component part numbers.
3) For any inputs not being used, do not show field wiring.
4) System integrator shall cross reference field contacts with existing control equipment and drawings.
5) All I/O point designations are set and shall not be changed without prior approval of WRC.
6) Provide detailed loop drawing for all analog signals.
7) PLC Panel Temp Transmitter is supplied only on sites where the PLC control panel is in a building.
8) When using 19 conductor cable, fold back unused wires and tape off each wire separately. This field cable is Belden 8619 18Ga.

■ REMOTED MOUNTED

WRC
WATER RESOURCES COMMISSIONER

REV	REVISIONS	BY
3/23/20	FOR REVIEW & APPROVAL	GB
4/10/20	REVISED	GB
1/25/21	REVISED PER COMMENTS	GB
1/30/23	REVISED PER COMMENTS	GB
6/28/23	REV HOA & HIGH FLOAT CALL	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS
MUNICIPALITY NAME HERE
PANEL NAME:
SEWAGE LIFT STATION
SCADA PUMP CONTROL PANEL
DRAWING TITLE:
PLC I/O WIRING

DESIGN BY: GB
DRAWN BY: GB
SCALE NONE
JOB: 4422-23
SHEET: 08 OF 21

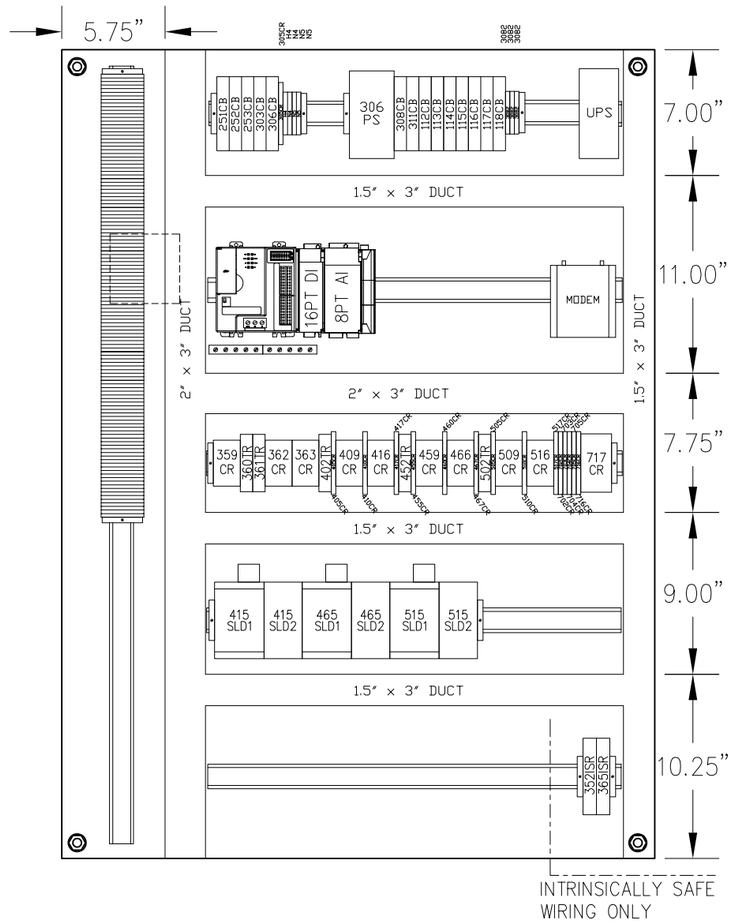
SPARE SHEET

SHEET: 09 OF 21	JOB: 4422-23	SCALE NONE	DRAWN BY: GB	DESIGN BY: GB	OAKLAND COUNTY WRC STANDARD DRAWINGS **MUNICIPALITY NAME HERE** PANEL NAME: **SEWAGE LIFT STATION** SCADA PUMP CONTROL PANEL DRAWING TITLE: SPARE SHEET	REV	REVISIONS / BY

WRC
WATER RESOURCES COMMISSIONER

TB

2512	L:1:I.3	8561
2522	L:1:I.4	L:3:I.3
2532	L:1:I.5	8581
3081	L:1:I.6	3131
3081	L:1:I.7	L:3:I.4
3081	L:1:I.8	3082
3081	L:1:I.9	SH
3082	L:1:I.10	SH
3082	L:1:I.11	SH
3082	L:1:I.12	SPARE
3082	L:1:I.13	SPARE
3121	L:1:I.14	SPARE
3121	L:1:I.15	SPARE
3181	6561	SPARE
3181	SPARE	SPARE
3181	SPARE	SPARE
3181	L:1:O.4	
4021	L:1:O.5	
4051	L:1:O.15	
4061	7171	
4062	3131	
4071	3131	
4101	3131	
4151	3131	
4521	L:2:I.0	
4551	L:2:I.1	
4561	L:2:I.2	
4562	L:2:I.3	
4571	L:2:I.4	
4601	L:2:I.5	
4651	L:2:I.6	
5011	L:2:I.7	
5051	L:2:I.8	
5061	L:2:I.9	
5062	L:2:I.10	
5071	L:2:I.11	
5101	L:2:I.12	
5151	L:2:I.13	
5521	L:2:I.14	
5522	L:2:I.15	
GND	SPARE	
3131	SPARE	
3131	L:3:I.0	
3131	8521	
3131	L:3:I.1	
3131	3082	
3131	SH	
L:1:I.0	SH	
L:1:I.1	SH	
L:1:I.2	L:3:I.2	



SUBPLATE

45" H X 33" W
PAINT: GLOSS WHITE

NOTES:

1) Duct shall be Panduit or equal wide slotted type. Maximum duct wirefill is 50%.
2) Provide components per WRC BOM.
3) All equipment shall be properly labeled to match wiring schematics.
4) Receptacle for programming only.
5) Provide dimensions for mounting equipment and clearances.
6) Provide accurate terminal rotations.
7) Drawing is an example, and equipment, sizes and quantities may differ.

WRC WATER RESOURCES COMMISSIONER

REVISIONS	BY
REVISED	GB
REV HOA & HIGH FLOAT CALL	GB

REV	
1/30/23	
6/28/23	

OAKLAND COUNTY WRC
STANDARD DRAWINGS
MUNICIPALITY NAME HERE

PANEL NAME:
SEWAGE LIFT STATION
SCADA PUMP CONTROL PANEL

DRAWING TITLE:
PLC SUBPLATE LAYOUT

DESIGN BY: GB

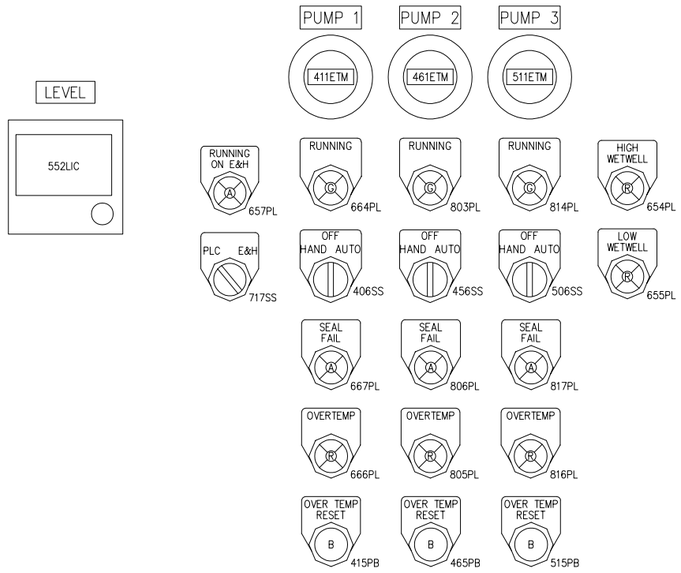
DRAWN BY: GB

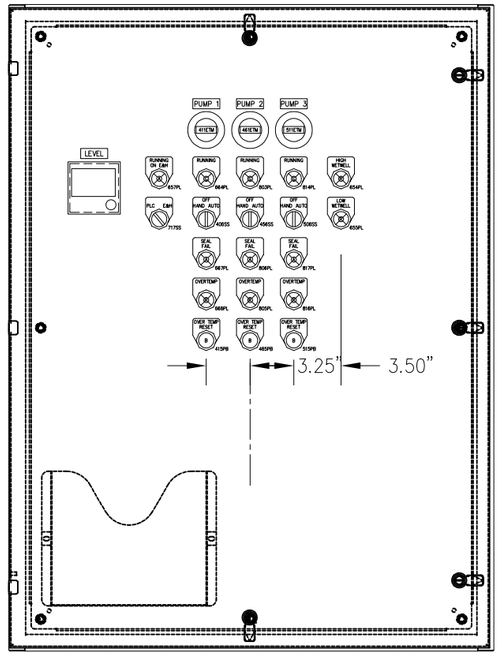
SCALE NONE

JOB: 4422-23

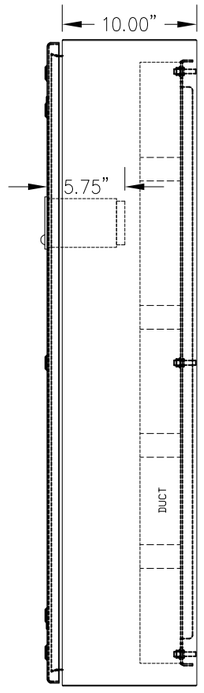
NOTES:

1) Provide components per WRC BOM.
2) Provide dimensions for mounting equipment and clearances.
3) Maintain proper clearance for 552LIC when door is closed.
4) Minimum spacing for pilot devices is 2.5 inches.
5) Drawing is an example, and equipment, sizes and quantities may differ.
9) If Combo Starters are far away from the SCADA control panel, then mount HOA's in the Combo Starters.





NEMA 12 ENCLOSURE
48"H X 36"W X 10"D
PAINT: OUT-ANSI 61
IN-GLOSS WHITE



RT. SIDE

WRC
WATER RESOURCES COMMISSIONER

REVISIONS	REV	BY
FOR REVIEW AND APPROVAL	4/13/20	GB
REVISED PER COMMENTS	1/30/21	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS
MUNICIPALITY NAME HERE

PANEL NAME:
SEWAGE LIFT STATION
SCADA PUMP CONTROL PANEL

DRAWING TITLE:
PANEL LAYOUT

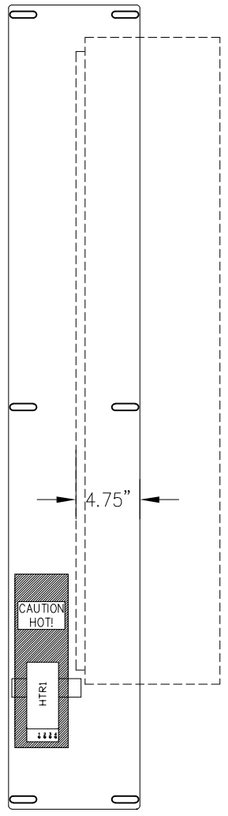
DESIGN BY:
GB

DRAWN BY:
GB

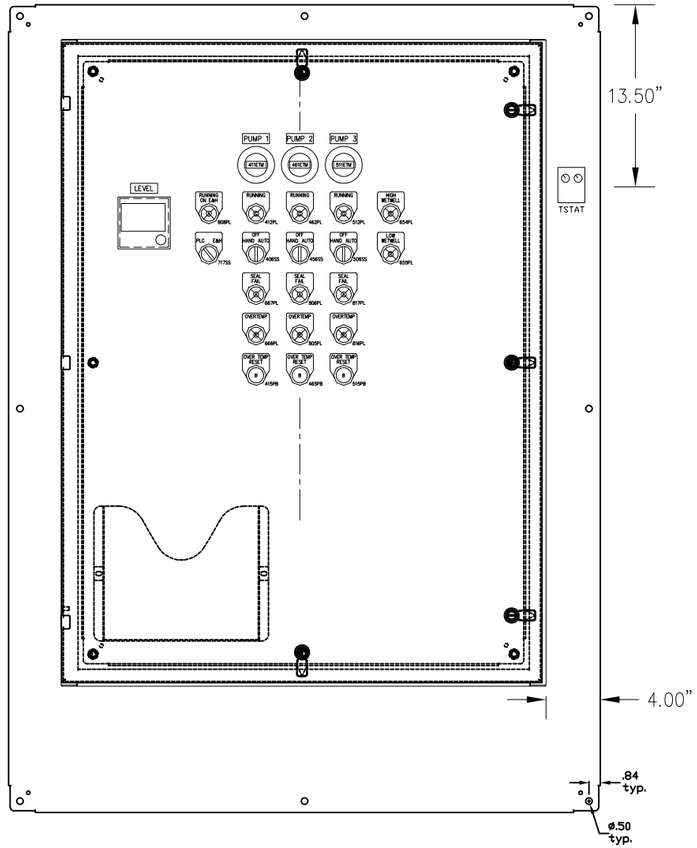
SCALE
NONE

JOB:
4422-13

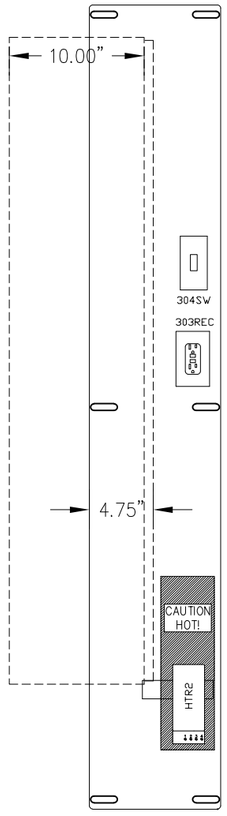
SHEET:
11 OF 21



LFT. SUBPLATE
59.688"H X 9.75"W
PAINT: GLOSS WHITE



SUBPLATE
60" H X 44" W
PAINT: GLOSS WHITE



RT. SUBPLATE
59.688"H X 9.75"W
PAINT: GLOSS WHITE

NOTES:
1) Provide components per WRC BOM.
2) All equipment shall be properly labeled to match wiring schematics.
3) Receptacle shall be GFI.
4) Provide dimensions for mounting equipment and clearances.
5) Mark and dimension all unusable areas.
6) Maintain proper clearances for heaters to prevent damage due to high temps.
7) Ensure proper spacing for internal panels to allow doors to open 110Deg.
8) Drawing is an example, and equipment, sizes and quantities may differ.
9) If Combo Starters are far away from the SCADA control panel, then mount HOA's in the Combo Starters.

WRC
WATER RESOURCES COMMISSIONER

REVISIONS	REV	BY
REVISED PER COMMENTS	1/22/21	GB
REVISED PER COMMENTS	1/30/23	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS
MUNICIPALITY NAME HERE

PANEL NAME:
SEWAGE LIFT STATION
SCADA PUMP CONTROL PANEL

DRAWING TITLE:
SUBPLATE LAYOUT

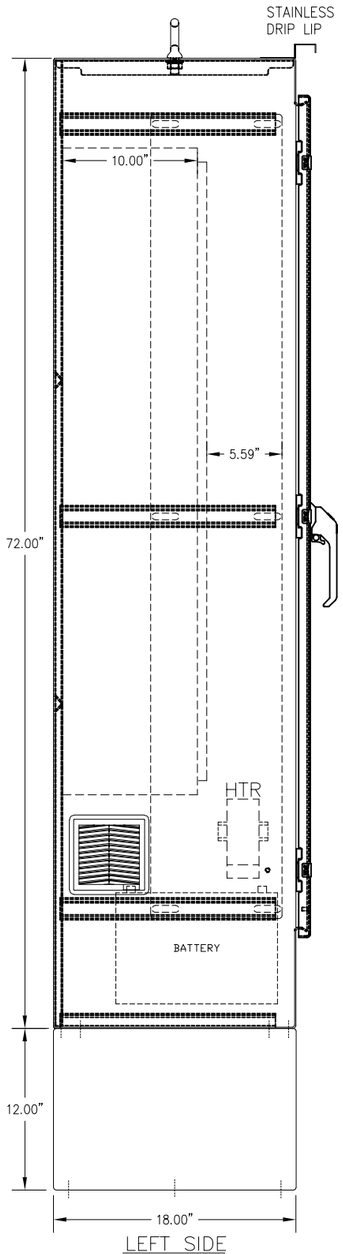
DESIGN BY:
GB

DRAWN BY:
GB

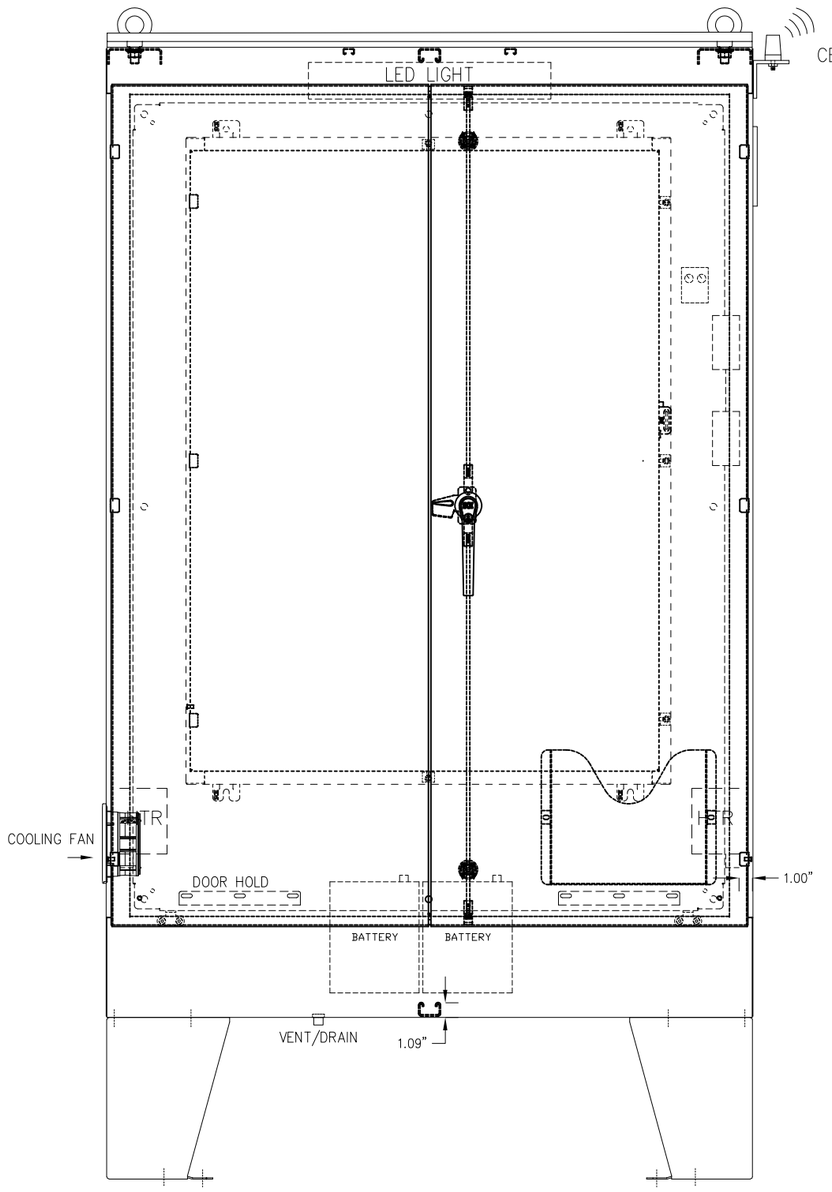
SCALE
NONE

JOB:
4422-13

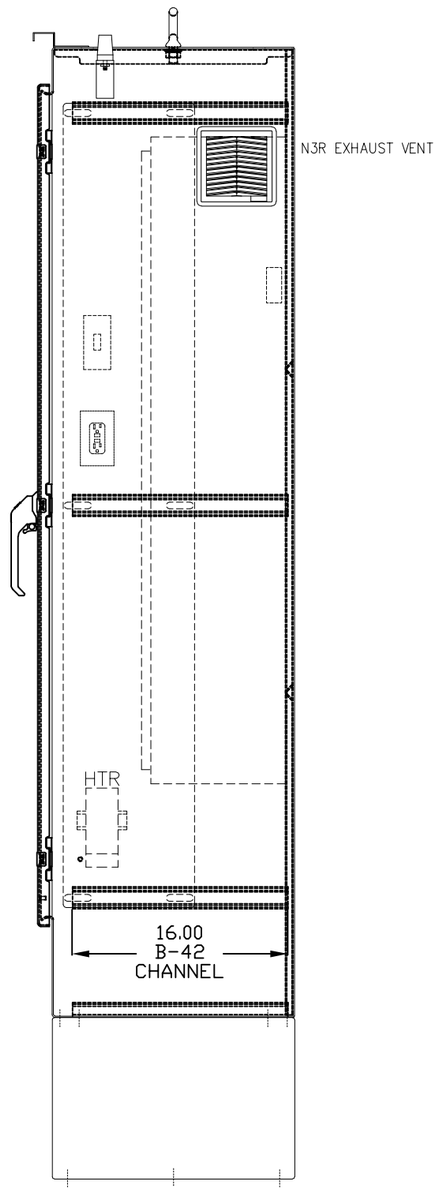
SHEET:
12 OF 21



LEFT SIDE



NEMA 4 ENCLOSURE
72"H X 48"W X 18"D
MAT'L: 316 STAINLESS



ENCLOSURE NOTES:

Closed bottom, overlapping doors, 3pt padlockable handle
Louvered air intake N3R with filtered air exhaust.
Provide full interior insulation 1" thick.
Provide door hold mechanism for each door.

PROVIDE SUBPLATES
BACK PANEL: 60"H x 44"W w/heavy duty mounting rails.
SIDE PANELS: 59.68"H x 9.75"W

WRC
WATER RESOURCES COMMISSIONER

REV	REVISIONS	BY
1/30/23	REVISED PER COMMENTS	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS
MUNICIPALITY NAME HERE

PANEL NAME:
SEWAGE LIFT STATION
SCADA CONTROL PANEL

DRAWING TITLE:
ENCLOSURE LAYOUT

DESIGN BY:
GB

DRAWN BY:
GB

SCALE
NONE

JOB:
4422-23

SHEET:
13 OF 21

BILL of MATERIAL

SYMBOL	QTY.	MANUFACTURER	PART NUMBER	DESCRIPTION
ENCL	1	SAGINAW	SCE-724818SSFSD	NEMA 3R 2 DOOR 316 STAINLESS STEEL ENCLOSURE 72"HX 48"W X 18"D
ENCL	1	SAGINAW	FK1218SS6	ENCLOSURE LEGS 12"H X 18"W 316 STAINLESS STEEL
ENCL	1	SAGINAW	SCE-72FSHDPS	HEAVY DUTY PANEL SUPPORT KIT
ENCL	1	SAGINAW	SCE-DS48SS	48" STAINLESS STEEL DRIP LIP
DOOR STOP	2	SAGINAW	SCE-DSTOPK	DOOR STOP KIT
SUBPLATE	1	SAGINAW	SCE-72P48F1	SUBPLATE 60"H X 44"W GLOSS WHITE
SUBPLATE	2	SAGINAW	SCE-72FP	FILLER PLATE 59.688"H X 9.75"W GLOSS WHITE
CHANNEL NUT	12	ANY	CUSTOM	3/8-16 STRUT CHANNEL NUT WITH SPRING
VENT/DRAIN	1	SAGINAW	SCE-BVKD	ENCLOSURE VENT/ DRAIN
FAN	1	SAGINAW	SCE-N3RFA44	NEMA 3R FILTER FAN KIT
FILTER	1	SAGINAW	SCE-N3RFGA44	EXHAUST FILTER KIT
TSTAT	1	STEGO	011750-01	120VAC 15A DUAL HEATING/COOLING THERMOSTAT
HEATER	2	STEGO	060200-00	120VAC 150 WATT ENCLOSURE HEATER
LIGHT	1	SAGINAW	SCE-LF18NO	18" LED ENCLOSURE LIGHT
304SW	1	RACO	5121-0	120V 10AMP WEATHER PROOF LIGHT SWITCH W/COVER
304SW	2	RACO	5320-0	2"X4" WEATHERPROOF BOX
303REC	1	HUBBELL	GFTRST15Z	15AMP GFI RECEPTACLE
303REC	1	LEVITON	000-80601	GFI RECEPTACLE COVER
PLC ENCL	1	SAGINAW	SCE-48EL3610P	NEMA 12 ENCLOSURE 48"H X 36"W X 10"D
PLC ENCL	1	SAGINAW	SCE-48P36	SUBPLATE 45"H X 33"W GLOSS WHITE
251,252,253, 303,306CB	5	ALLEN BRADLEY	1489-M1C050	120VAC/48VDC 1 POLE CIRCUIT BREAKER 5 AMP
308,311CB	2	ALLEN BRADLEY	1489-M1C100	120VAC/48VDC 1 POLE CIRCUIT BREAKER 10 AMP
312,313CB	2	ALLEN BRADLEY	1489-M1C040	120VAC/48VDC 1 POLE CIRCUIT BREAKER 4 AMP
315,316,317, 318CB	4	ALLEN BRADLEY	1489-M1C020	120VAC/48VDC 1 POLE CIRCUIT BREAKER 2 AMP
306PS	1	MEANWELL	NDR-240-24	120VAC/24VDC 10AMP POWER SUPPLY
UPS	1	MEANWELL	DR-UPS40	24VDC UPS MODULE
305CR	1	ALLEN BRADLEY	700-HLT1U1	120VAC 1 POLE INTERPOSING CONTROL RELAY
PLC	1	ALLEN BRADLEY	1769-L24ER-QB1B	COMPACTLOGIX PLC BRICK WITH E-NET, 16DI, 16DO
PLC	1	ALLEN BRADLEY	1769-IQ16	16 PT. 24VDC DIGITAL INPUT MODULE
PLC	1	ALLEN BRADLEY	1769-IF8	8 PT. ANALOG INPUT MODULE
ENET	1	ANY	CAT-6	ETHERNET CABLE 2FT LENGTH
CELL	1	DIGI TRANS PORT	WR11-M600-DE1-XB	24VDC CELLULAR MODEM
CELL	1	DIGI TRANS PORT	76000976.000000	12-24VDC IN 5VDC OUT POWER ADAPTER
CR	9	ALLEN BRADLEY	700-HA33Z24-3-4	24VDC 3PDT PLUG IN RELAY WITH MAN OPERATOR AND INDICATING LIGHT
CR, SLD	12	ALLEN BRADLEY	700-HN101	11 PIN OCTAL RELAY SOCKET FINGERSAFE
360,361,402, 452,502TR	5	ALLEN BRADLEY	700-FEA3TU23	UNIVERSAL VOLTAGE SPDT ON DELAY TIMING RELAY
TERM CR	14	ALLEN BRADLEY	700-HLT1Z24	24VDC 1 POLE INTERPOSING CONTROL RELAY
TERM CR	1	ALLEN BRADLEY	700-TBJ20G	TERMINAL RELAY JUMPER STRIP 20PT
717CR	1	ALLEN BRADLEY	700-HF34Z24-3-4	24VDC 4PDT PLUG IN RELAY WITH MAN OPERATOR AND INDICATING LIGHT
717CR	1	ALLEN BRADLEY	700-HN264	4 POLE RELAY SOCKET
415,465, 515SD2	3	MPE	PMR2	24VDC SEAL LEAK DETECTOR RELAY
415,465, 515SLD1	3	SULZER	16907007	CA462 24VDC SEAL LEAK DETECTOR RELAY
352,365ISR	2	ALLEN BRADLEY	937TH-DISAR-DC2	2 CHANNEL INTRINSICALLY SAFE RELAY
411,461,511ETM	3	ENM	T40B45	24VDC HOUR METER
411,461,511ETM	3	ENM	B20017	GASKET FOR HOUR METER WITH MOUNTING HARDWARE
405,455,505SS	3	ALLEN BRADLEY	800T-J2A	3 POSITION SELECTOR SWITCH 1NO & 1NC
717SS	1	ALLEN BRADLEY	800T-XA4	2 NC AUX CONTACT BLOCK
717SS	1	ALLEN BRADLEY	800T-H2A	2 POSITION SELECTOR SWITCH WITH 1N.O./N.C.
405,455,505, 717SS	4	ALLEN BRADLEY	800T-XD2	1 AUX CONTACT N.C.
664,803,814PL	3	ALLEN BRADLEY	800T-QTH2G	30MM 24VDC GREEN LED PTT PILOT LIGHT TRANSFORMER TYPE
654,655,666, 805,816PL	5	ALLEN BRADLEY	800T-QTH2R	30MM 24VDC RED LED PTT PILOT LIGHT TRANSFORMER TYPE
657,667,806, 817PL	4	ALLEN BRADLEY	800T-QTH2A	30MM 24VDC AMBER LED PTT PILOT LIGHT TRANSFORMER TYPE
415, 465, 515PB	3	ALLEN BRADLEY	800T-A2A	BLACK PUSH BUTTON WITH 1 N.O./N.C. CONTACT
552LIC	1	ENDRESS HAUSER	RIA452-C212A11A	24VDC I.S. PUMP CONTROLLER WITH 4 RELAY OUTPUTS AND ALTERNATION, ANALOG OUT
TERM	124	ALLEN BRADLEY	1492-J3	600V 25AMP GREY TERMINAL
TERM	3	ALLEN BRADLEY	1492-EBJ3	END BARRIER
TERM	12	ALLEN BRADLEY	1492-EAJ35	END ANCHOR
TERM	2	ALLEN BRADLEY	1492-CJJ5-2	SCREW IN CENTER JUMPER STRIP, 2 POINT
TERM	3	ALLEN BRADLEY	1492-CJJ5-3	SCREW IN CENTER JUMPER STRIP, 3 POINT
TERM	4	ALLEN BRADLEY	1492-CJJ5-4	SCREW IN CENTER JUMPER STRIP, 4 POINT
TERM	1	ALLEN BRADLEY	1492-CJJ5-10	SCREW IN CENTER JUMPER STRIP, 10 POINT
TERM	1	ALLEN BRADLEY	199-DR1	DIN TERMINAL TRACK 3FT (CUT TO FIT)
R860	1	VISHAY DALE	RS02B1K500FE12	1500 OHM 1% 3W PRECISION RESISTOR
GND	1	EATON	GBK10	10 SPACE GROUNDING BAR
BATTERY	2	DURACELL	SLAA12-100C/FR	12VDC 100AH BATTERY
BATTERY	2	DURACELL	DURA12-26NB	12VDC 26AH BATTERY

NOTE 1

NOTE:
1) Sites with generator backup have 26Ah batteries. Sites without generator backup have 100Ah batteries.

WRC
WATER RESOURCES COMMISSIONER

REV	1/31/23	2/7/23	6/28/23		
BY	GB	GB	GB		

REVISIONS
REVISED PER COMMENTS
ADD BATTERY NOTE
REV HOA & HIGH FLOAT CALL

OAKLAND COUNTY WRC
STANDARD DRAWINGS
MUNICIPALITY NAME HERE

PANEL NAME:
SEWAGE LIFT STATIION
SCADA CONTROL PANEL

DRAWING TITLE:
BILL OF MATERIAL

DESIGN BY:
GB

DRAWN BY:
GB

SCALE
NONE

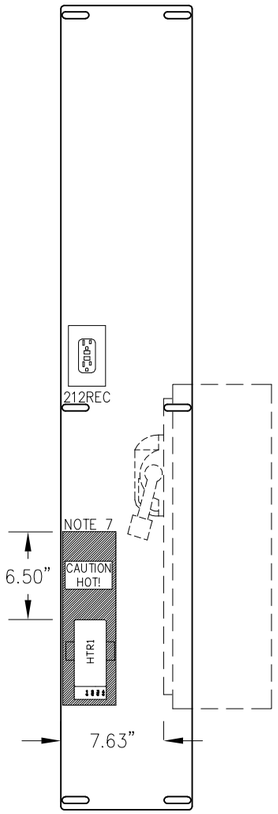
JOB:
4422-23

SHEET:
14 OF 21

SPARE SHEET

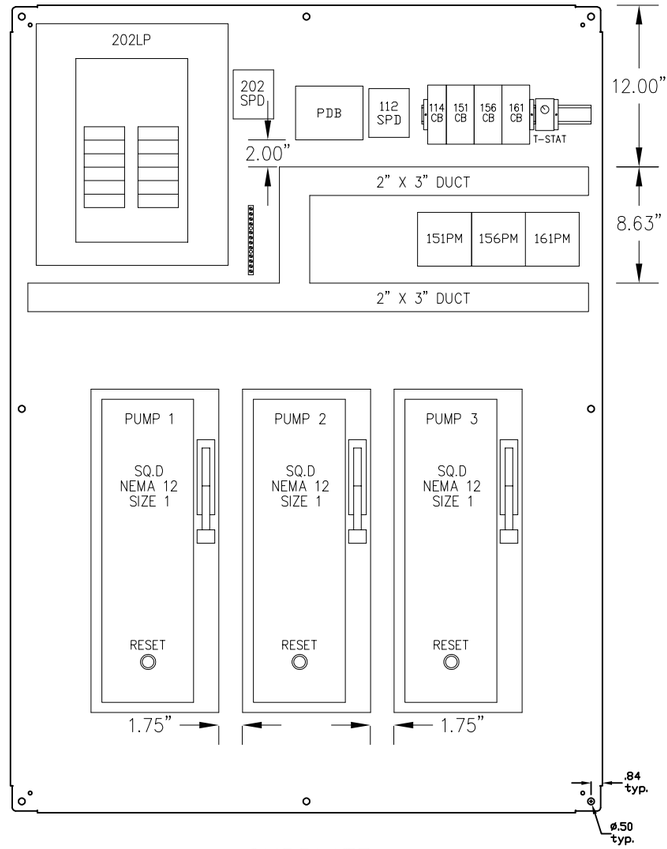
SHEET: 15 OF 21	JOB: 4422-23	SCALE NONE	DRAWN BY: GB	DESIGN BY: GB	OAKLAND COUNTY WRC STANDARD DRAWINGS **MUNICIPALITY NAME HERE** PANEL NAME: **SEWAGE LIFT STATION** SCADA PUMP CONTROL PANEL DRAWING TITLE: SPARE SHEET	REV	REVISIONS / BY

WRC
WATER RESOURCES COMMISSIONER



LEFT SUBPLATE

59.688"H X 9.75"W
PAINT: GLOSS WHITE

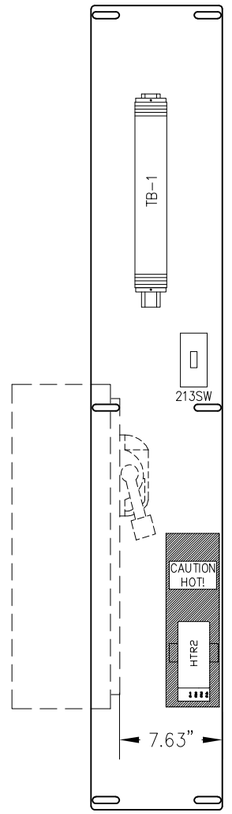


SUBPLATE

60" H X 44" W
12GA STEEL
PAINT: GLOSS WHITE

TB-1

H7
N7
2512
2522
2532
3131
3131
3131
3181
3181
3181
4021
4101
4521
4601
5021
5101
6651
L:1:I.13
8041
L:2:I.2
8151
L:2:I.12
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE



RT SUBPLATE

59.688"H X 9.75"W
PAINT: GLOSS WHITE

NOTES:

1) Duct shall be Panduit or equal wide slotted type. Maximum duct wirefill is 50%.
2) Provide components per WRC BOM.
3) All equipment shall be properly labeled to match wiring schematics.
4) Receptacle shall be GFI.
5) Provide dimensions for mounting equipment and clearances.
6) Mark and dimension all unusable areas.
7) Maintain proper clearances for heaters to prevent damage due to high temps.
8) Ensure proper spacing for internal panels to allow doors to open 110Deg.
9) Drawing is an example based on 460VAC and size 1 starters. Equipment, sizes and quantities may differ.

WRC
WATER RESOURCES COMMISSIONER

REV	REVISIONS	BY
4/13/20	FOR REVIEW AND APPROVAL	GB
1/21/21	REVISED PER COMMENTS	GB
1/30/23	REVISED PER COMMENTS	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS

MUNICIPALITY NAME HERE

PANEL NAME:
SEWAGE LIFT STATION
POWER/PUMP CONTROL PANEL

DRAWING TITLE:
SUBPLATE LAYOUT

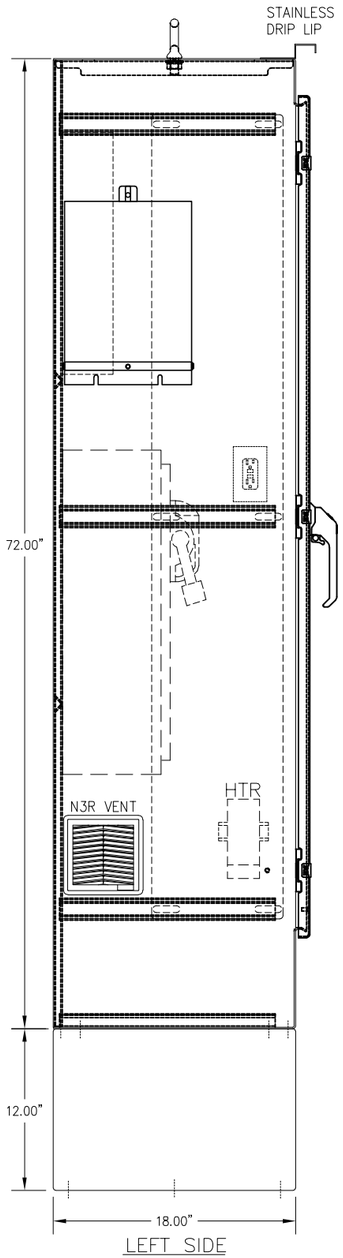
DESIGN BY:
GB

DRAWN BY:
GB

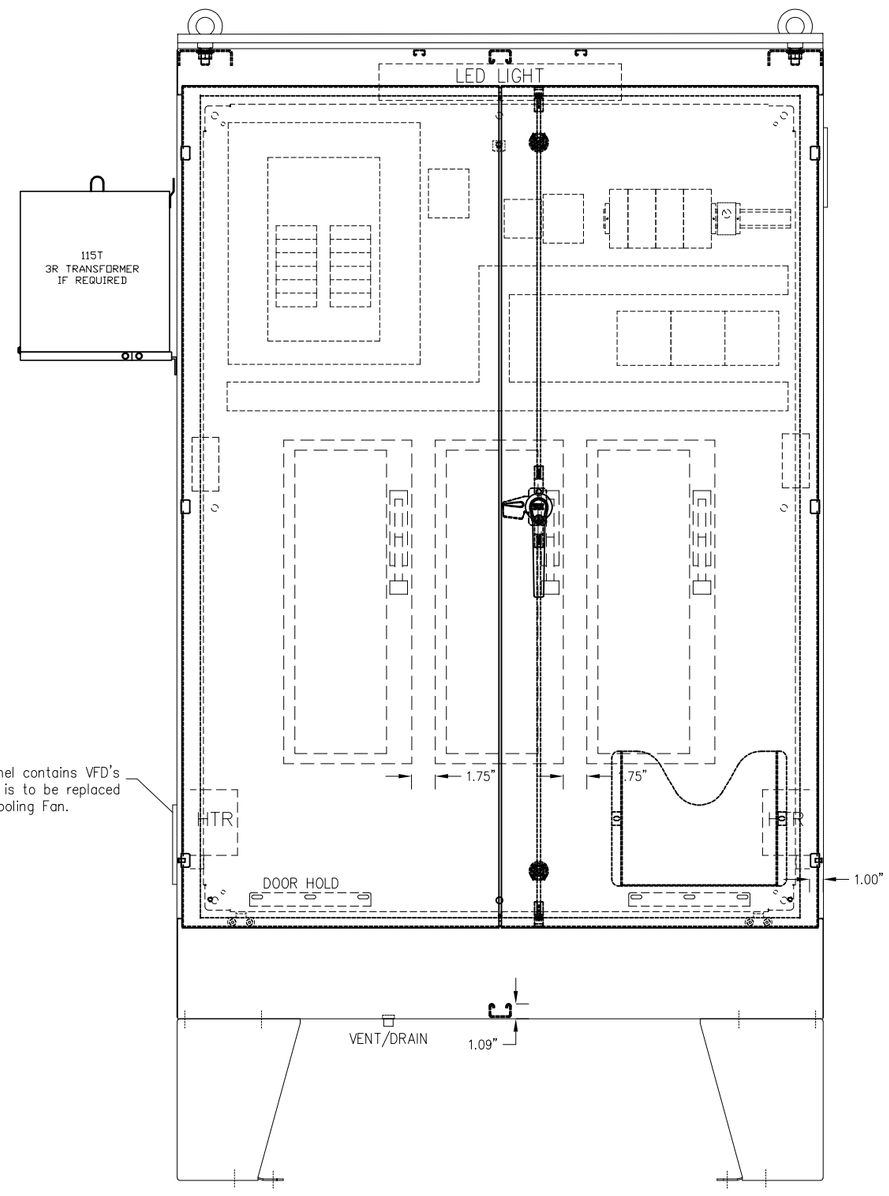
SCALE
NONE

JOB:
4422-23

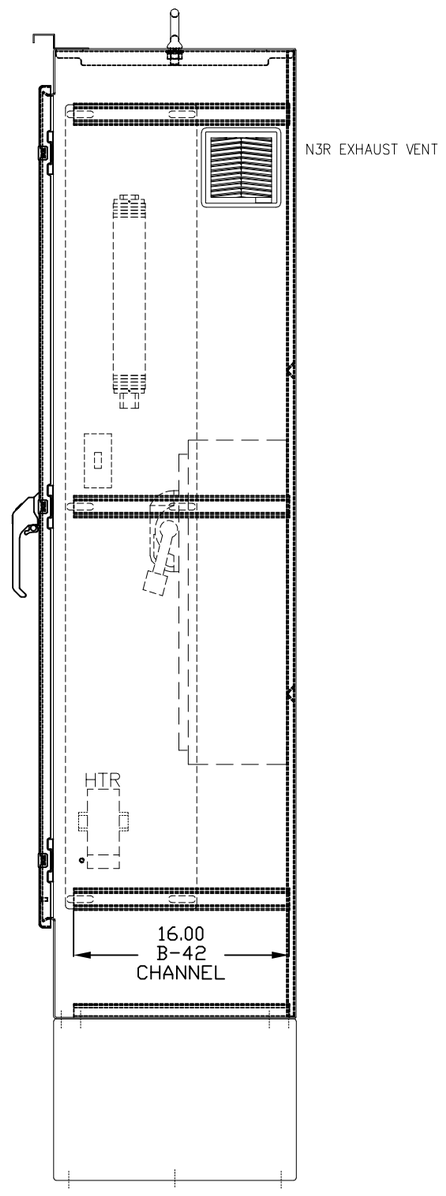
SHEET:
16 OF 21



LEFT SIDE



NEMA 4 ENCLOSURE
72"H X 48"W X 18"D
MAT'L: 316 STAINLESS



ENCLOSURE NOTES:

Closed bottom, overlapping doors, 3pt padlockable handle
Louvered air intake N3R with filtered air exhaust.
No interior insulation required.
Provide door hold mechanism for each door.
PROVIDE SUBPLATES
BACK PANEL: 60"H x 44"W w/heavy duty mounting rails.
SIDE PANELS: 59.68"H x 9.75"W

WRC
WATER RESOURCES COMMISSIONER

REVISIONS	REV	BY
REVISED PER COMMENTS	1/31/23	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS
MUNICIPALITY NAME HERE

PANEL NAME:
SEWAGE LIFT STATION
POWER/PUMP CONTROL PANEL

DRAWING TITLE:
ENCLOSURE LAYOUT

DESIGN BY:
GB

DRAWN BY:
GB

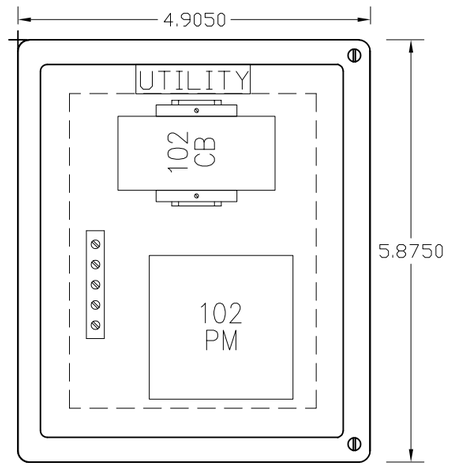
SCALE
NONE

JOB:
4422-23

SHEET:
17 OF 21

UTILITY PHASE MONITOR BILL of MATERIAL

SYMBOL	QTY.	MANUFACTURER	PART NUMBER	DESCRIPTION
PM ENCL	1	SAGINAW	SCE-10086PCW	NEMA 4X ENCLOSURE WITH WINDOW 11.41"H X 9.41"W X 7.39"D OR EQUAL.
PM ENCL	1	SAGINAW	SCE10P8	SUBPLATE 9"H X 7"W
102PM	1	DIVERSIFIED	SLA-440-ALE	480V 3PHASE POWER MONITOR
102CB	1	ALLEN BRADLEY	1489-M3C010	120VAC/48VDC 3 POLE CIRCUIT BREAKER 1 AMP
102CB	2	ALLEN BRADLEY	1492-EAJ35	END ANCHOR
GND	1	EATON	GBK5	5 SPACE GROUNDING BAR



UTILITY PHASE MONITOR
SEE SHEET 1 FOR WIRING

BILL of MATERIAL

SYMBOL	QTY.	MANUFACTURER	PART NUMBER	DESCRIPTION
ENCL	1	SAGINAW	SCE-724818SSFSD	NEMA 3R 316 STAINLESS STEEL ENCLOSURE 72"HX 48"W X 18"D
ENCL	1	SAGINAW	FK1218SS6	ENCLOSURE LEGS 12"H X 18"W 316 STAINLESS STEEL
ENCL	1	SAGINAW	SCE-72FSHDPS	HEAVY DUTY PANEL SUPPORT KIT
ENCL	1	SAGINAW	SCE-DS48SS	48" STAINLESS STEEL DRIP LIP
DOOR STOP	2	SAGINAW	SCE-DSTOPK	DOOR STOP KIT
SUBPLATE	1	SAGINAW	SCE-72P48F1	SUBPLATE 60"H X 44"W GLOSS WHITE
SUBPLATE	2	SAGINAW	SCE-72FP	FILLER PLATE 59.688"H X 9.75"W GLOSS WHITE
CHANNEL NUT	12	ANY	CUSTOM	3/8-16 STRUT CHANNEL NUT WITH SPRING
VENT/ DRAIN	1	SAGINAW	SCE-BVKD	ENCLOSURE VENT/ DRAIN
FILTER	2	SAGINAW	SCE-N3RFGA44	EXHAUST FILTER KIT
TSTAT	1	STEGO	011409-00	120VAC 15 AMP DUAL HEATING THERMOSTAT
HEATER	2	STEGO	060200-00	120VAC 150 WATT ENCLOSURE HEATER
LIGHT	1	SAGINAW	SCE-LF18NO	18" LED ENCLOSURE LIGHT
304SW	1	RACO	5121-0	120V 10AMP WEATHER PROOF LIGHT SWITCH w/cover
304SW	2	RACO	5320-0	2"X4" WEATHERPROOF BOX
303REC	1	HUBBELL	GFTRST15Z	15AMP GFI RECEPTACLE
303REC	1	LEVITON	000-80601	GFI RECEPTACLE COVER
115T	1	SQUARE D	7400-7S40F	480-120/240 7.5KVA NEMA 3R TRANSFORMER
PDB	1	SQUARE D	9080LBA363106	335AMP 3POLE POWER DISTRIBUTION BLOCK 1 LINE, 6 LOAD CONNECTIONS
PDB	1	SQUARE D	9080LB33	3 POLE POWER DISTRIBUTION BLOCK COVER
112SPD	1	SQUARE D	SDSA-3650	600VAC 3 PHASE SURGE PROTECTIVE DEVICE
112SPD	1	SQUARE D	QOSAMK	SDAS MOUNTING BRACKET
202SPD	1	SQUARE D	TVS120XR50S	120/240V 4WIRE SURGE PROTECTIVE DEVICE
202LP	1	SQUARE D	QO112L125PG	120/240V 125A 12SPACE LIGHTING PANEL WITH GROUND BAR KIT
202LP	1	SQUARE D	QOC16US	SURFACE MOUNT COVER
202LP	1	SQUARE D	QO260	2 POLE 60 AMP CIRCUIT BREAKER
202LP	8	SQUARE D	QO120	1 POLE 20 AMP CIRCUIT BREAKER
202LP	1	SQUARE D	PK4MB2LA	2 POLE CIRCUIT BREAKER RETAINING KIT
251,252,253M	3	SQUARE D	8539-SCA54V02S-H311	460VAC NEMA 12 COMBINATION STARTER PANEL, MAG GUARD FLANGE MOUNTED CB DISCONNECT, MINIMUM NEMA SIZE 1 STARTER, 120V COIL, RESET PB DOOR, 1 EXTRA NC O/L CONTACT, AUX RUNNING CONTACT
151,156,161CB	3	ALLEN BRADLEY	1489-M3C010	120VAC/48VDC 3 POLE CIRCUIT BREAKER 1 AMP
151,156,161PM	3	DIVERSIFIED	SLA-440-ALE	480V 3PHASE POWER MONITOR
114CB	1	ALLEN BRADLEY	1489-M2C200	120VAC/48VDC 2 POLE CIRCUIT BREAKER 20 AMP
TERM	29	ALLEN BRADLEY	1492-J3	600V 25AMP GREY TERMINAL
TERM	1	ALLEN BRADLEY	1492-EBJ3	END BARRIER
TERM	5	ALLEN BRADLEY	1492-EAJ35	END ANCHOR
TERM	2	ALLEN BRADLEY	1492-CJJ5-3	SCREW IN CENTER JUMPER STRIP, 3 POINT
GND	1	EATON	GBK10	10 SPACE GROUNDING BAR

WRC
WATER RESOURCES COMMISSIONER

REV	REVISIONS	BY
1/31/23	REVISED PER COMMENTS	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS
MUNICIPALITY NAME HERE

PANEL NAME:
SEWAGE LIFT STATION
POWER/PUMP CONTROL PANEL

DRAWING TITLE:
BILL OF MATERIAL

DESIGN BY:
GB

DRAWN BY:
GB

SCALE
NONE

JOB:
4422-23

SHEET:
18 OF 21

NONFUSED DISCONNECT
XXXDISC
XXAMPS

FUSED DISCONNECT
XXXDISC
XXAMP
XXXFU
XXAMP

BREAKER DISCONNECT
XXXDISC
XXAMP

RECEPTACLE

GFI RECEPTACLE

FLOW SWITCH
XXXFS NORMALLY CLOSED
XXXFS NORMALLY OPEN

PRESSURE SWITCH
XXXPS NORMALLY CLOSED
XXXPS NORMALLY OPEN

PILOT LIGHT
XXXPL H(+) N(−) XXXX PUSH TO TEST
XXXPL H(+) A N(−) STANDARD

XXXCB
XXAMP
CIRCUIT BREAKER 1 POLE

XXXCB
XXAMP
CIRCUIT BREAKER 2 POLE

XXXCB
XXAMP
CIRCUIT BREAKER 3 POLE

STARTER CONTACTS
XXXM OL

STARTER COIL
XXX M OL

PROXIMITY SWITCH
XXXPRX NORMALLY CLOSED
XXXPRX NORMALLY OPEN

TOGGLE SWITCH
XXXSW (SPST)
XXXSW (SPDT)

SELECTOR SWITCH
OFF ON
XXXSS
OFF HAND AUTO
(XOO) (OOX)
XXXSS

PUSHBUTTON
START XXXPB NORMALLY OPEN
RESET XXXPB NORMALLY CLOSED
E-STOP XXXPB EMERGENCY STOP

XXXFU
XXAMP
FUSE 1 POLE

XXXFU
XXAMP
FUSE 2 POLE

XXXFU
XXAMP
FUSE 3 POLE

LIMIT SWITCH
XXXZS NORMALLY CLOSED
XXXZS NORMALLY OPEN
XXXZS NOHC NORMALLY OPEN HELD CLOSED
XXXZS NCHO NORMALLY CLOSED HELD OPEN

TEMP SWITCH
XXXTS NORMALLY CLOSED (HEATING)
XXXTS NORMALLY OPEN (COOLING)

SOLENOID
XXXSOL

ALARM HORN
XXXAH

SOLAR PANEL
+ −

ALARM BEACON
XXXAL

FUSED TERMINAL
XXXFU
X_AMP

TRANSFER SWITCH
N L1 L2 L3
ATS/MTS
2L1
2L2
2L3
N
N 1L1 1L2 1L3

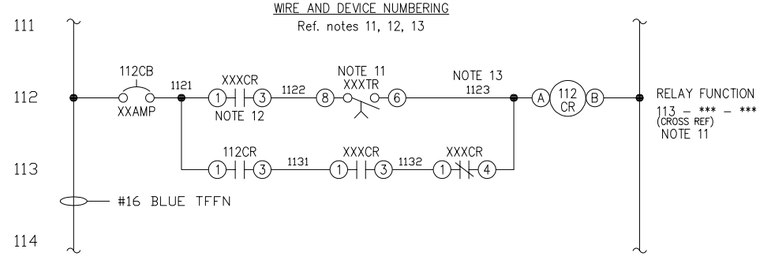
GENERATOR RECEPTACLE
GEN_REC
XXX AMP

PLUG IN RELAY
A XXX CR B
RELAY FUNCTION
*** – *** – ***
(CROSS REF)

INDUSTRIAL RELAY
XXX CR
RELAY FUNCTION
*** – *** – ***
(CROSS REF)

CONNECTIONS
CONNECTED
NOT CONNECTED
NOT CONNECTED

WIRE AND DEVICE NUMBERING
Ref. notes 11, 12, 13



SOCKET TERMINAL NUMBER TYP.
XXXCR NORMALLY CLOSED
XXXCR NORMALLY OPEN
XXXCR NOHC NORMALLY OPEN HELD CLOSED

XXXCR NORMALLY CLOSED
XXXCR NORMALLY OPEN

TRANSFORMER
PRIMARY
H1 H3 H2 H4
X1 X3 X2 X4
SECONDARY
XXXT
XXXVA

TRANSFORMER
480VAC
H1 H3 H2 H4
X1 X2
120VAC
XXXT
XXXVA

OFF DELAY RELAY
OFF_DELAY
XX_SET-PT
delay time.
2 XXX TR 7
FUNCTION
__***
(CROSS REF)
XXXTR NORMALLY CLOSED
XXXTR NORMALLY OPEN

ON DELAY RELAY
ON_DELAY
XX_SET-PT
delay time.
2 XXX TR 7
FUNCTION
__***
(CROSS REF)
XXXTR NORMALLY CLOSED
XXXTR NORMALLY OPEN

POWER DISTRIBUTION BLOCK

CURRRENT TRANSFORMER

SURGE PROTECTIVE DEVICE (SPD)
BLK
BLK
BLK
WHT
SPD
SPD "PIGTAIL"

PHASE MONITOR
XXXPM
L1 1 8
L2 3 9
L3 5 11
12

TWISTED PAIR SHIELD GROUNDED

TWISTED PAIR

LEVEL SWITCH
XXXLSH NORMALLY CLOSED
XXXLSL NORMALLY OPEN

T1
T2
T3
G
P1
3PH PUMP MOTOR
PUMP NO. 1
XXHP, XXXXRPM
XXFLA

1PH MOTOR
XXHP
XXFLA

BATTERY
+ −

BATTERY
+ −

POTENTIOMETER

HOUR METER
XXX ETM

MOVISTOR

DIODE

RESISTOR

NOTES:

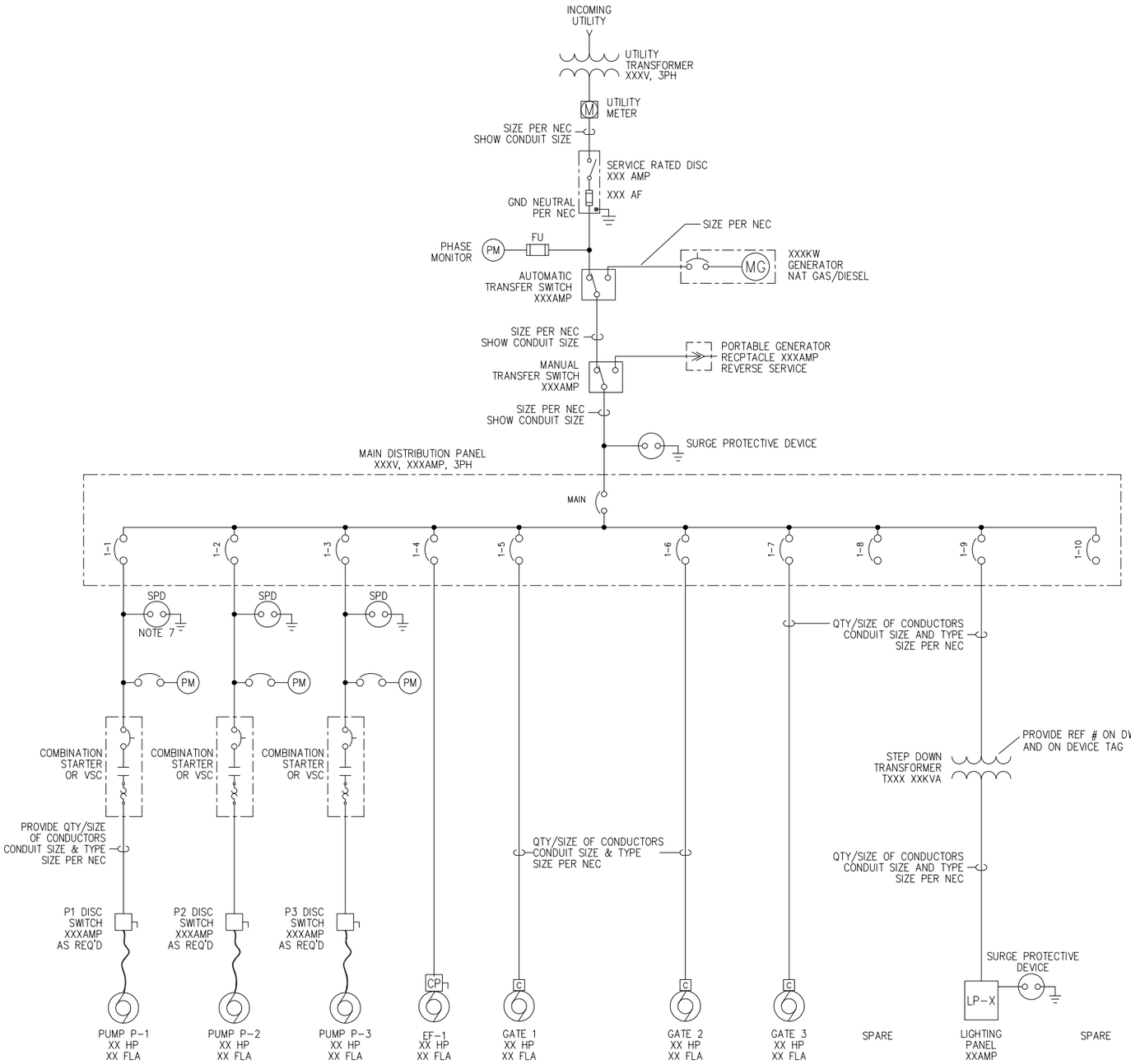
1) Standard symbols sheet must be submitted to WRC for approval.
2) Provide amperage rating for overcurrent protective devices consistent with NEC.
3) Drawings shall show all wire sizes and colors.
4) Manual transfer switch (MTS) shall be located between the ATS and the Pump control panel.
5) Generator receptacle shall be reverse service and be per WRC standard.
6) Transformers shall be sized for the load and include primary and secondary overcurrent protection.
7) Surge Protective Devices shall be provided at the incoming utility, and at the 120V lighting panel. Devices shall be per WRC standard.
8) Phase/power monitors shall be provided at each pump, and at the incoming utility.
9) Drawings shall include motor Hp, RPM and FLA per nameplate data.
10) Control panels outdoors, or in wet locations, shall utilize GFI receptacle.
11) All control panel equipment including Motor starters, Relays, Timers, and pilot devices shall be labeled per drawing line number and include cross referencing for all contacts.
12) All plug in relay and timer contacts shall include socket terminal numbers.
13) All wire numbers shall be derived from, and correspond to, drawing sheet/line numbers.
14) All field equipment shall be labeled per drawing line number.
15) Field wiring shall be shown as dashed lines.

WATER RESOURCES COMMISSIONER

REV	REVISIONS	BY
3/23/20	FOR REVIEW & APPROVAL	GB
4/2/20	REVISED PER COMMENTS	GB

OAKLAND COUNTY WRC STANDARD DRAWINGS
MUNICIPALITY NAME HERE
PROJECT SITE/PANEL NAME:
SEWAGE LIFT STATION
DRAWING TITLE:
CONTROLS WIRING LEGEND

DESIGN BY: GB
DRAWN BY: GB
SCALE NONE
JOB: 4422-23
SHEET: 19 OF 21



NOTE:

1) All equipment and aperatus wiring shall comply with NEC and WRC standard.
2) Generator receptacle to be per WRC standard.
3) Provide quantity and size of wires for each device.
4) Provide conduit size required for each powered device.
5) All mechanical disc switches and means shall be lever operator type. No rotary mechanisms.
6) All field devices shall be identified & referenced to drawings.
7) Variable Speed Controllers shall include SPD.

MAIN 3PH DISTRIBUTION PANEL DP-X

CIRCUIT	BREAKER	CIRCUIT NAME	CIRCUIT NAME	BREAKER	CIRCUIT
1	XXXA	MAIN	PUMP 1	XXXA	2
3	XXXA	PUMP 2	EXHAUST FAN	XXXA	4
5	XXXA	GATE 1	GATE 2	XXXA	6
7	XXXA	GATE 3	SPARE	XXXA	8
9	XXXA	LP-X TRANSFORMER	SPARE	XXXA	10

1PH LIGHTING PANEL LP-X

CIRCUIT	BREAKER	CIRCUIT NAME	CIRCUIT NAME	BREAKER	CIRCUIT
1	60A	MAIN	VAULT RECEPTACLES	20A	2
3		MAIN	PANEL HEATERS	20A	4
5	20A	PUMPS CONTROL PANEL	PANEL LIGHTS & RECEPTACLES	20A	6
7	20A	GEN ENGINE HEATER	DEHUMIDIFIER	20A	8
9	20A	GEN BATTERY CHARGER	SUMP PUMP	20A	10
11	20A	VAULT FAN/LIGHTS	SPARE	20A	12

CONTRACTOR RESPONSIBLE TO BALANCE LOADS

WRC WATER RESOURCES COMMISSIONER

REVISIONS	REV	BY
FOR REVIEW & APPROVAL	3/23/20	GB
REVISED PER COMMENTS	4/1/20	GB
REVISED PER COMMENTS	2/12/21	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS
MUNICIPALITY NAME HERE
PROJECT SITE/PANEL NAME:
SEWAGE LIFT STATION
DRAWING TITLE:
ELECTRICAL ONE-LINE EXAMPLE

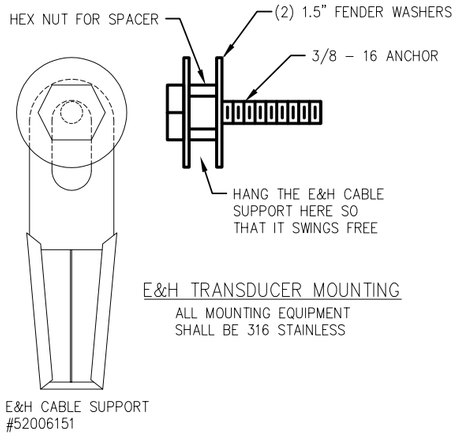
DESIGN BY: GB

DRAWN BY: GB

SCALE NONE

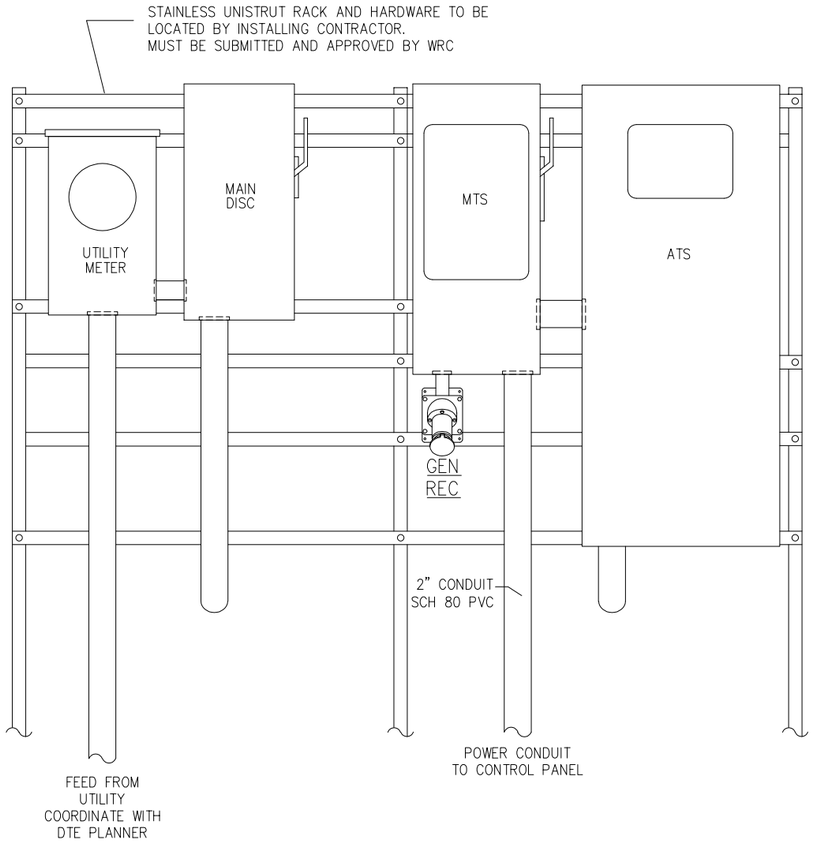
JOB: 4422-23

SHEET: 20 OF 21



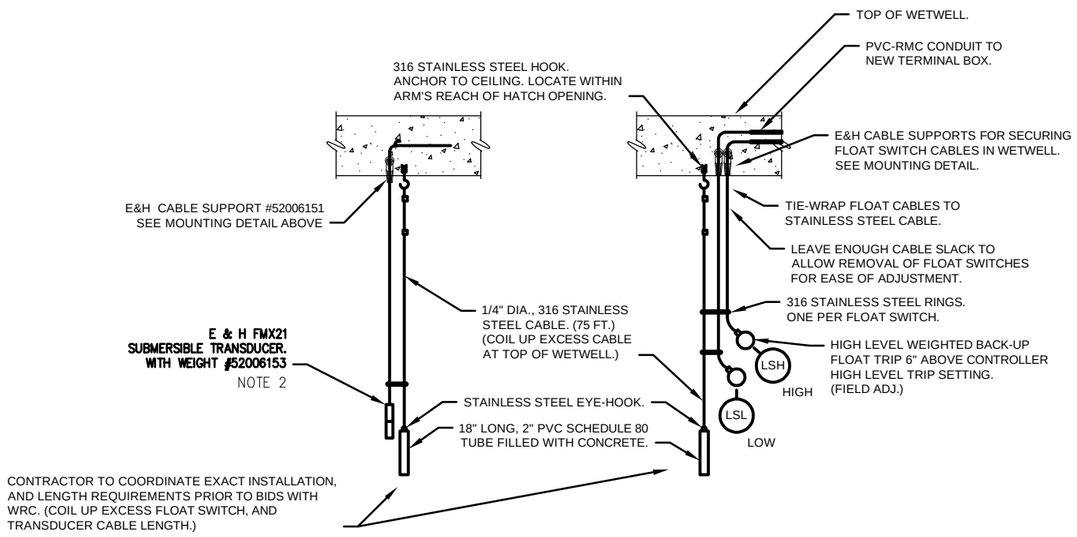
E&H TRANSDUCER MOUNTING

ALL MOUNTING EQUIPMENT SHALL BE 316 STAINLESS

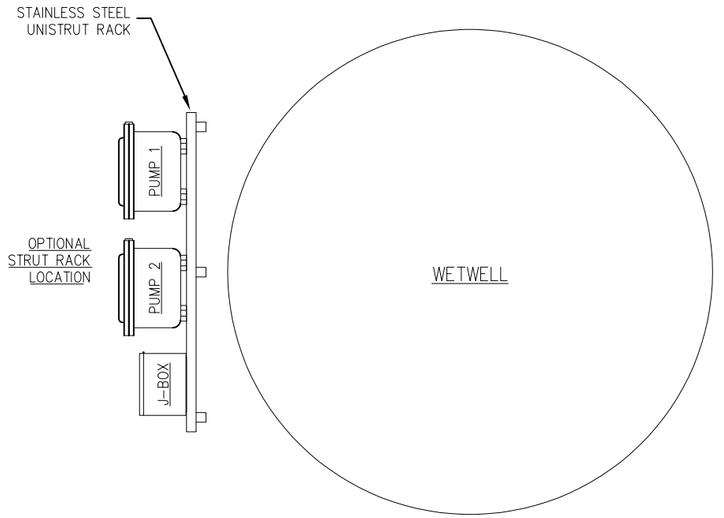


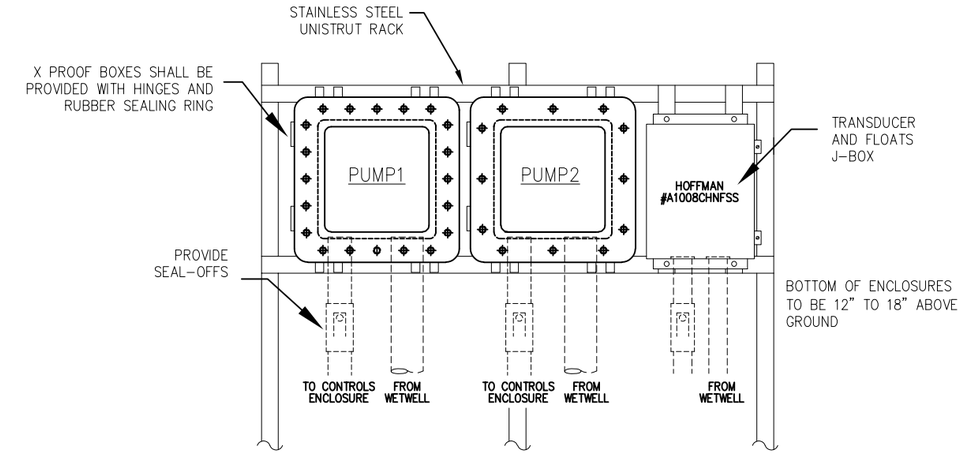
NOTE:

1) Locate the floats and level transducer in an area with low turbulance.
2) If turbulance can't be avoided, level transducer must be mounted in a stilling well.
3) Confirm low float is not affected by pump suction.
4) Level transducer to be mounted 6 inches off the bottom to reduce problems caused by sludge build up.
5) Main Disc shall be service entrance rated.



LEVEL TRANSDUCER, AND
FLOAT SWITCH MOUNTING DETAIL





OPTIONAL STRUT RACK LAYOUT

WRC
WATER RESOURCES COMMISSIONER

REV	REVISIONS	BY
4/13/20	FOR REVIEW & APPROVAL	GB
1/29/21	REVISED PER COMMENTS	GB

OAKLAND COUNTY WRC
STANDARD DRAWINGS

MUNICIPALITY NAME HERE

PANEL NAME:

SEWAGE LIFT STATION

PUMP/SCADA CONTROL PANELS

DRAWING TITLE:

EQUIPMENT INSTALLATION DETAILS

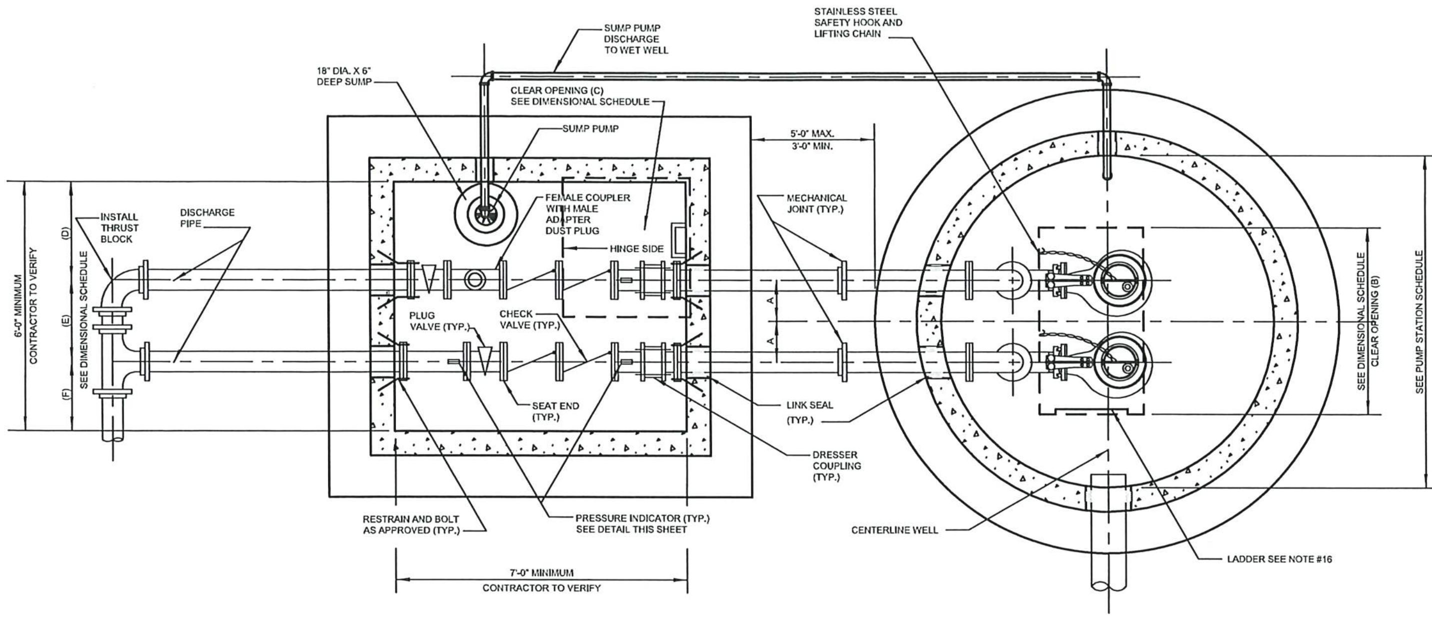
DESIGN BY: GB

DRAWN BY: GB

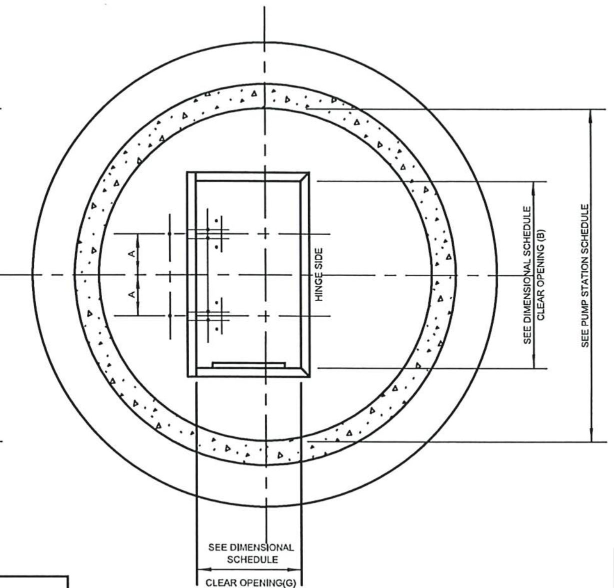
SCALE NONE

JOB: 4422-23

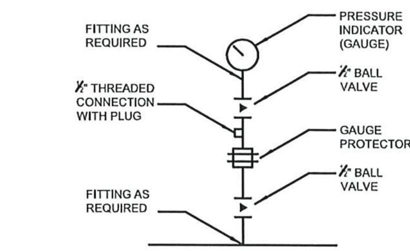
SHEET: 21 OF 21



PLAN VIEW BASE ELEVATION



PLAN VIEW GRADE ELEVATION



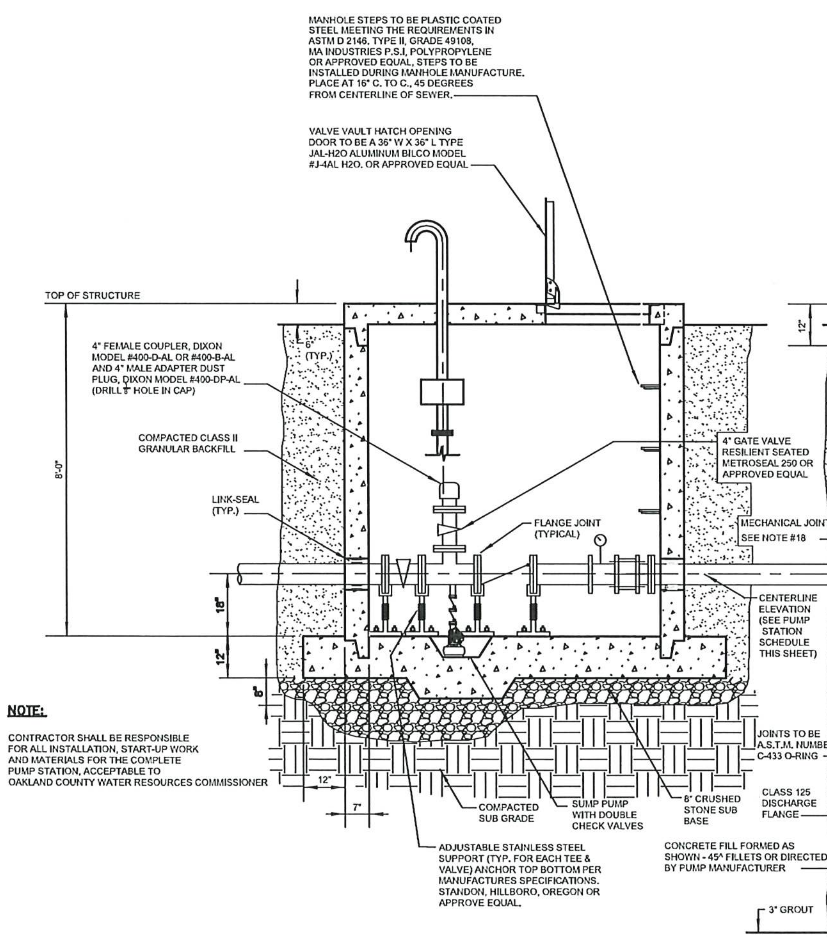
NOTES:
1. GAUGE PROTECTOR: ELASTOMERIC
2. PIPING ¼" EXCEPT AS APPROVED

PRESSURE INDICATOR POST

DIMENSIONAL SCHEDULE		
℄ DISCHARGE PIPE TO ℄ OF WET WELL	A	12"
CLEAR OPENING OF WET WELL HATCH	B	72"
CLEAR OPENING OF VALVE VAULT HATCH	C	36"x36"
℄ DISHARGE PIPE TO INSIDE FACE OF SUMP PUMP SIDE OF VALVE VAULT	D	30"
℄ TO ℄ DISCHARGE PIPES IN VALVE VAULT	E	24"
℄ DISHARGE PIPE TO INSIDE FACE OF OPPOSITE SIDE OF VALVE VAULT	F	18"
CLEAR OPENING OF WETWELL HATCH WIDTH (FRAME OPENING WIDTH – 7")	G	41"

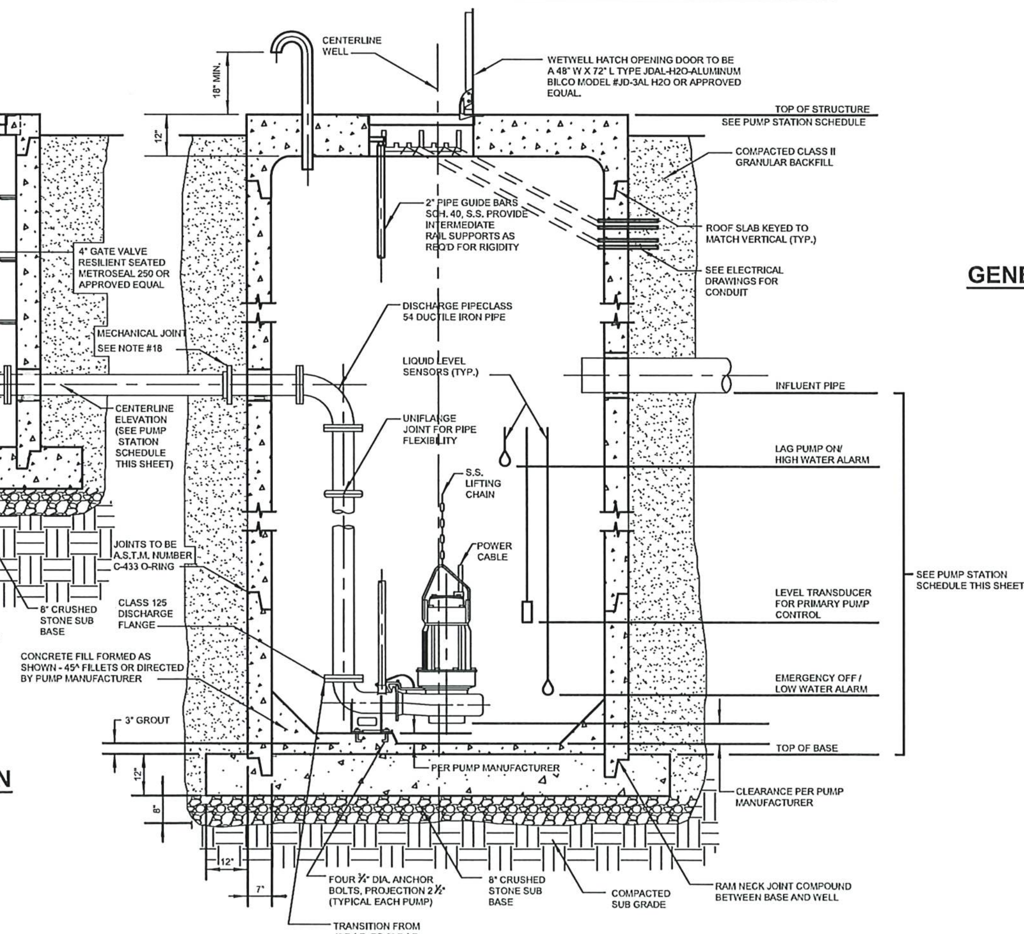
PUMP STATION SCHEDULE	
NUMBER OF PUMPS	TWO
WETWELL DIAMETER	8'
TOP OF WETWELL ELEVATION	ELEV.
GRAVITY INLET INVERT	ELEV.
GRAVITY INLET PIPE DIAMETER	DIA. INCH
TOP OF BASE ELEV.	ELEV.
DISCHARGE PIPE DIAMETER	DIA. INCH
DISCHARGE PIPE CENTERLINE ELEV.	ELEV.
HIGH WATER ALARM SIGNAL ELEV.	ELEV.
LEAD PUMP ON ELEV.	ELEV.
LAG PUMP ON ELEV.	ELEV.
PUMPS OFF ELEV.	ELEV.
EMERGENCY OFF ELEV.	ELEV.
CAPACITY (EACH) GPM	GPM
TOTAL DYNAMIC HEAD (FT.)	FT.
MOTOR H.P. (3-PHASE)	H.P.
MOTOR R.P.M.	SPEED
MANUFACTURER	FLYGT *
MODEL NO./IMPELLER	MDL. NO./IMP

* OR APPROVED EQUAL



NOTE:

CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INSTALLATION, START-UP WORK AND MATERIALS FOR THE COMPLETE PUMP STATION, ACCEPTABLE TO OAKLAND COUNTY WATER RESOURCES COMMISSIONER



VERTICAL SECTION

GENERAL NOTES

1. CONTRACTOR SHALL FURNISH LOCKS (WHICH MEET OAKLAND COUNTY WATER RESOURCES COMMISSIONER REQUIREMENTS) WITH ONE MASTER KEY FOR THE EQUIPMENT ENCLOSURE, SAFETY SWITCHES AND HATCHES (INCLUDE GENERATOR).
2. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL BEFORE FABRICATION OF EQUIPMENT AND STRUCTURES.
3. ACCESS COVER, ANCHOR BOLTS, AND PUMP LOCATION IN WET WELL SHALL BE CONFIRMED WITH APPROVED SHOP DRAWINGS PRIOR TO CONSTRUCTION.
4. PIPING SHALL BE PAINTED PER OAKLAND COUNTY WATER RESOURCES COMMISSIONER SPECIFICATIONS. (EPOXY COATED PIPE AND PVC PIPE SHALL NOT BE PAINTED)
5. SEAL ALL PIPE AND CONDUIT OPENINGS WITH NON-SHRINK GROUT UNLESS OTHERWISE SHOWN OR SPECIFIED.
6. DO NOT LOCATE LIQUID LEVEL SENSORS OR EMERGENCY FLOATS NEAR INFLUENT STREAM.
7. POWER METER ENCLOSURE SHALL BE FURNISHED BY DETROIT EDISON CO. AND INSTALLED BY CONTRACTOR.
8. PRECAST VALVE VAULT AND PUMP STATION WET WELL SHALL BE PROVIDED WITH REINFORCING STEEL TO MEET H-20 LIVE LOADS AND DEAD LOADS AS INDUCED BY STRUCTURE DEPTH. THE STRUCTURAL DIMENSIONS SHOWN SUCH AS WALL THICKNESS ARE FOR GUIDANCE ONLY. WET WELL SHALL BE A MINIMUM OF C76 CLASS IV CONCRETE.
9. STRUCTURE MANUFACTURER'S SHOP DRAWING SUBMITTAL SHOULD INCLUDE STRUCTURAL AND BUOYANCY CALCULATIONS BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MICHIGAN
10. TWO INSTALLED PRESSURE INDICATORS ARE REQUIRED ON PUMP SIDE OF VALVES. IN ADDITION ONE INSTALLED PRESSURE GAUGE ON DOWNSTREAM END OF VALVE IS REQUIRED.
11. CONTRACTOR SHALL SUPPLY SPARE IMPELLER AND OTHER PARTS AS INDICATED IN SPECIFICATIONS.
12. CONTRACTOR SHALL PLACE WET WELL AND VALVE VAULT VENTS SUCH THAT THEY DO NOT FACE THE CONTROL PANEL.
13. ALL PIPE OPENINGS IN CAST STRUCTURES ARE TO BE CAST IN PLACE OR CORED. BREAK-OUTS WITH SLEDGEHAMMERS OR JACK HAMMERS IN THE FIELD WILL NOT BE ALLOWED.
14. SEE SPECIFICATIONS FOR SUMP PUMP INFORMATION:
    SUMP PUMP DISCHARGE PIPING SHALL BE 2" HDPE SDR 11 AND INCLUDE TWO (2) CHECK VALVES FOLLOWED BY ONE (1) BALL VALVE.
15. LADDER SPECIFICATION:
    A. FIBERGLASS LADDER AS MANUFACTURED BY IMCO OR APPROVED EQUAL
    B. LADDER RUNGS @16" O.C.
    C. ATTACH TO WET WELL WITH STANDOFF CLIPS AS REQUIRED
16. PUMPS SHALL BE EXPLOSION PROOF, SEE SPECIFICATIONS.
17. THE JOINT NEEDS TO BE RESTRAINED BY ONE OF THE FOLLOWING APPROVED METHODS:
    A. RESTRAIN JOINT TO WETWELL & VALVE VAULT STRUCTURE WALLS
    B. USE MECHANICAL JOINT RESTRAINT OR FIELD-LOCK GASKET
18. MUST INCREASE FROM A 4" D.I.P. TO A 6" D.I.P. AFTER THE PUMPS AND BEFORE THE WETWELL.
19. FLANGE JOINTS MUST BE USED IN WET WELL AND VALVE VAULT.
20. ONSITE EMERGENCY GENERATOR SHALL BE INSTALLED OF SUFFICIENT SIZE TO OPERATE ALL COMPONENTS OF PUMP STATION.

WRC DUPLEX STANDARD PUMP STATION DETAILS

OAKLAND COUNTY, MICHIGAN

REVISION BLOCK

Data Source / Source Date: County Data / Month/Year

Rev. No.:	Rev. By:	Rev. Date:	Description:
1	DS	3-31-06	MADE REVISIONS PER MARK UP
2	KB	12-16-19	REVISIONS PER MARK UP
3			
4			

ORIG. DATE:	08/31/05
SCALE:	NTS
DESIGNED BY:	MWD
DRAWN BY:	lz

WRC WATER RESOURCES COMMISSIONER Jim Nash

ONE PUBLIC WORKS DRIVE, BLDG 95 WEST
WATERFORD, MICHIGAN
48328-1907

SHEET NO.: 1 of 1