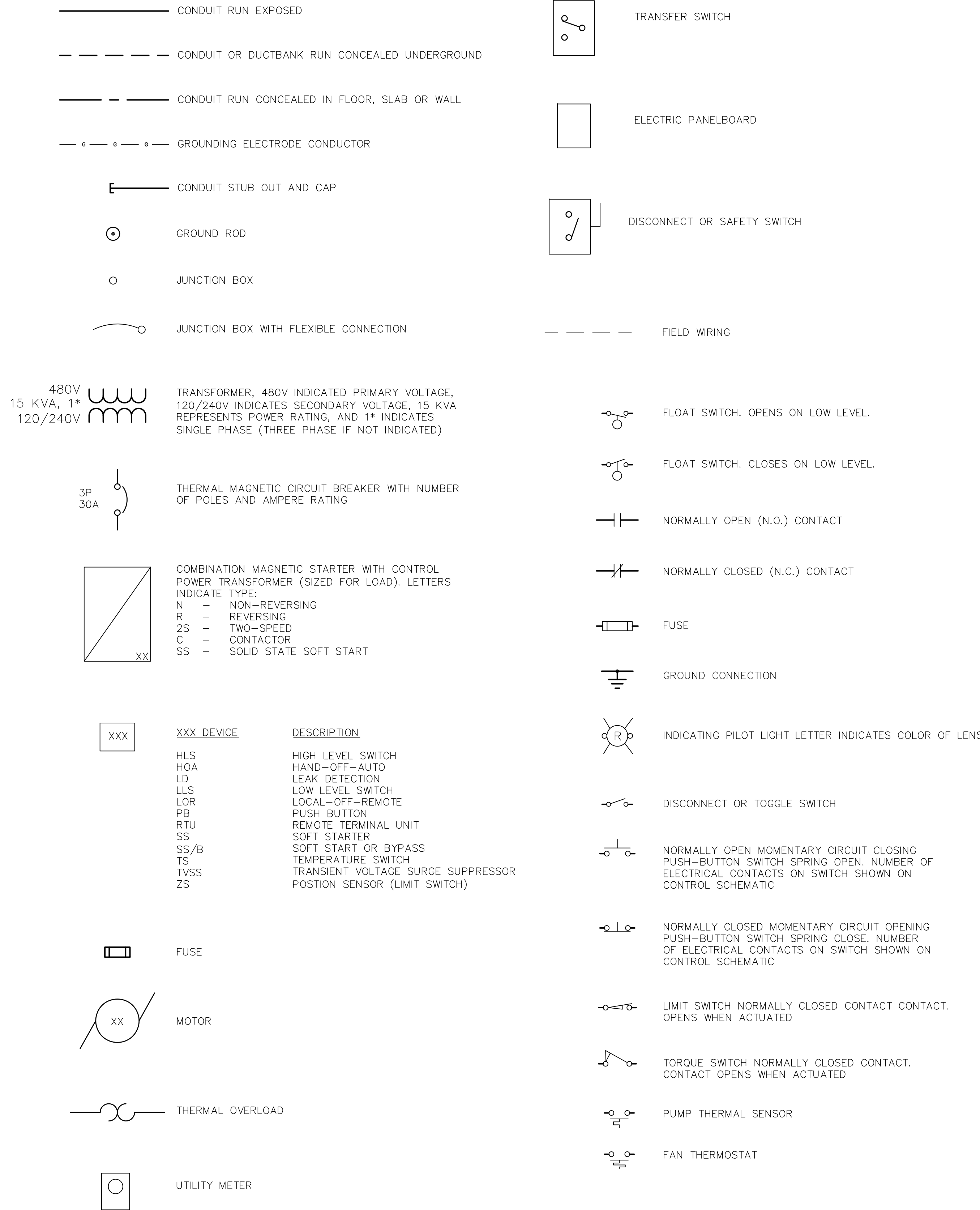
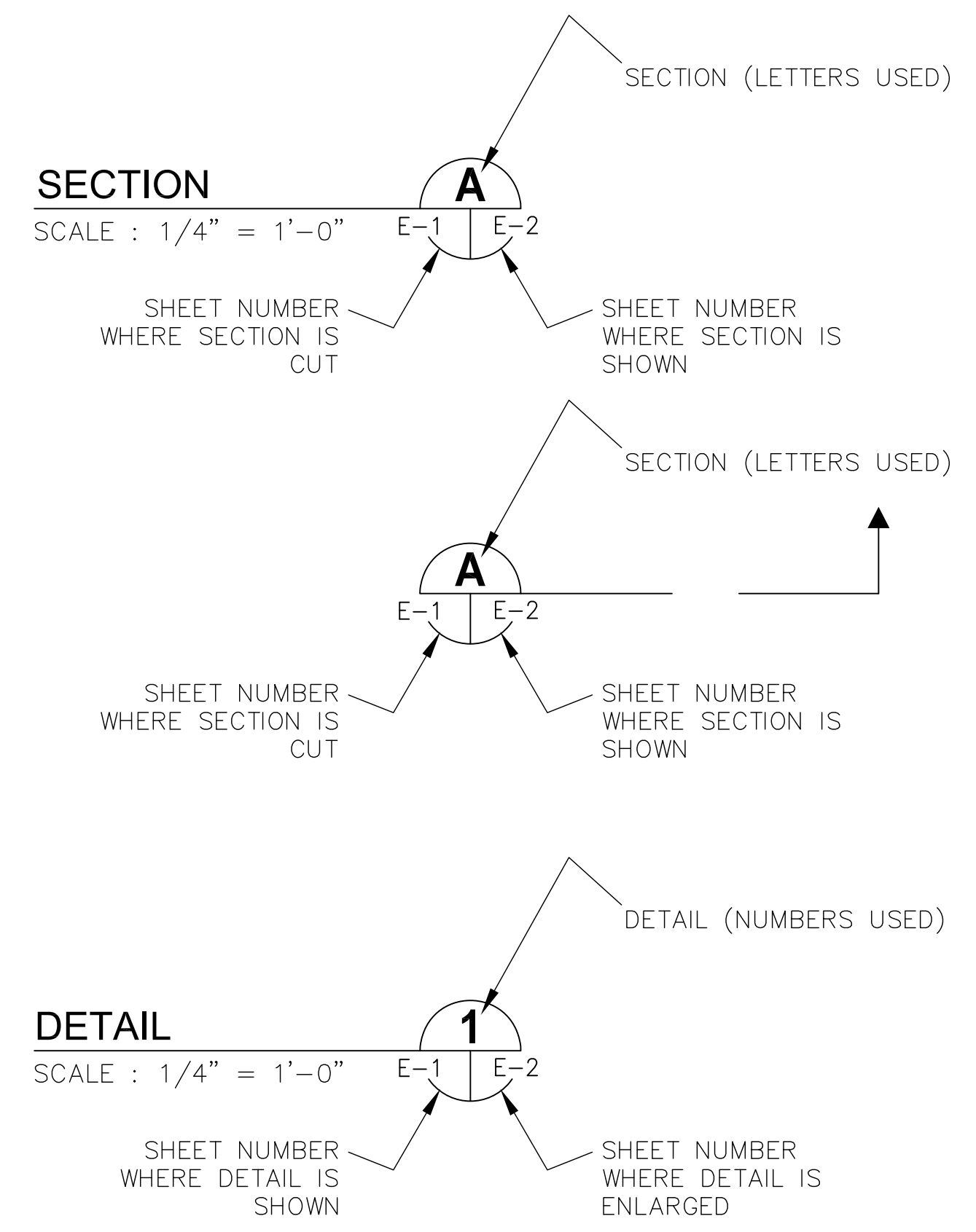


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EXAMPLE OF SECTION CUT AND DETAIL



ABBREVIATIONS:

A	AMPS
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
C	CONDUIT
DFS	DATA FLOW SYSTEMS
DIA	DIAMETER
EX	EXISTING
ELEC	ELECTRICAL
GFI	GROUND FAULT INTERRUPTER
GND	GROUNDING CONDUCTOR
HP	HORSEPOWER
HZ	HERTZ
IG	ISOLATED GROUND
KVA	KILOVOLT AMPERES
KW	KILOWATTS
MAX	MAXIMUM
MIN	MINIMUM
N/A	NOT APPLICABLE
PH	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
RECP	RECEPTACLE
RPM	REVOLUTIONS PER MINUTE
RTU	REMOTE TERMINAL UNIT
SPD	SURGE PROTECTION DEVICE
SS	STAINLESS STEEL
TYP	TYPICAL
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHERPROOF
XFMR	TRANSFORMER



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CHECKED BY	TDT

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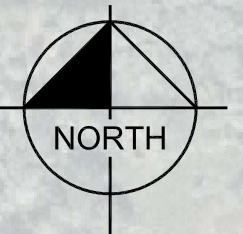
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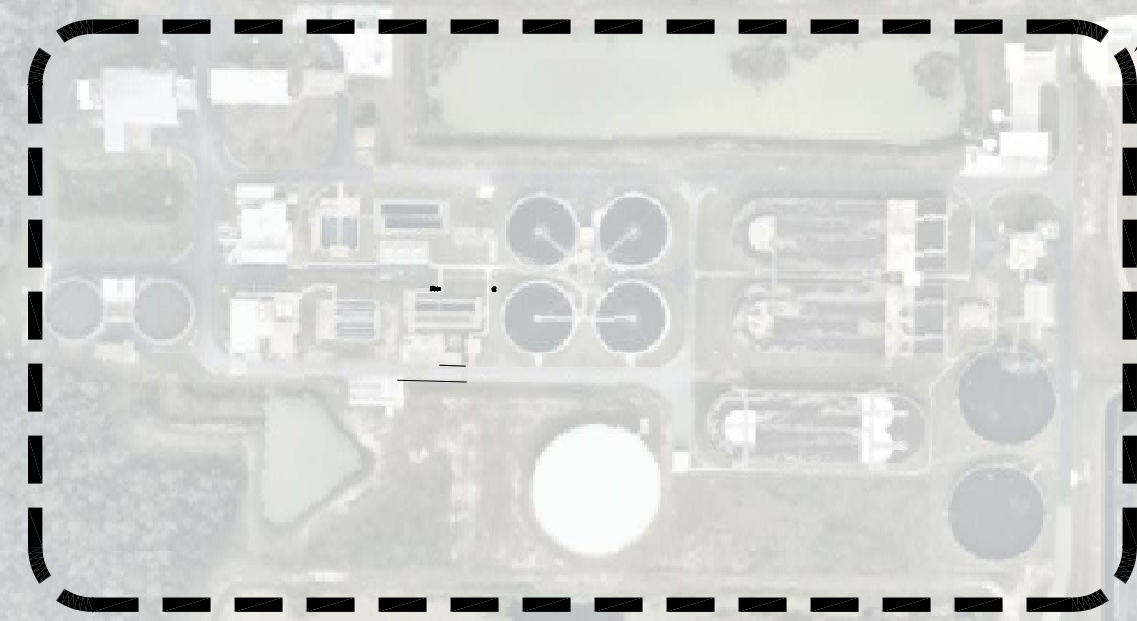
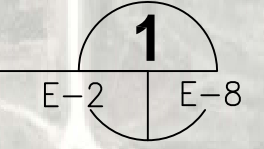
ELECTRICAL LEGEND AND ABBREVIATIONS

SHEET NUMBER
E-1

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REFER TO SITE PLAN ON SHEET E-8 FOR MOV-104 REPLACEMENT, LEACHATE FLOW METER MODIFICATIONS, MCC-9/MCC-10 REPLACEMENT AND WORK REQUIRED AT BIOSOLIDS BUILDING.



PROPOSED ACCESS DRIVE

EXISTING ACCESS ROAD

LAKEWOOD RANCH BLVD

EAST LAKE

SOUTH LAKE 1

PROPOSED 24" RECLAIMED WATER MAIN

EXISTING EAST LAKE DISCHARGE PIPE AND PUMP STATION LOCATION

EXISTING ACCESS DRIVE

EXISTING EAST LAKE OVERFLOW STRUCTURE LOCATION

EXISTING SOUTH LAKE 2 OVERFLOW STRUCTURE LOCATION

41ST AVE

PROPOSED RECLAIMED PUMP BACK STATION

EXISTING ACCESS DRIVE
EXISTING SOUTH LAKE 2 PUMP STATION LOCATION

SOUTH LAKE 2
PROPOSED RECLAIMED PUMP BACK STATION (SEE INSET)

EXISTING ACCESS DRIVE

CREEK

WETLAND

WETLAND

EAST LAKE REHAB BOTTOM ELEVATION 23.00'

PROPOSED ACCESS DRIVE

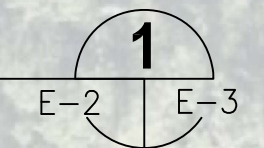
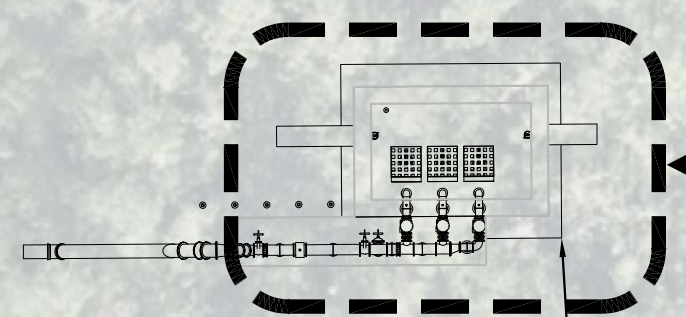
WETLAND

EXISTING SOUTH LAKE 2 DISCHARGE LOCATION

MARBELLA DR

ACCESS DRIVE

PROPOSED 24" RECLAIMED WATER MAIN



PROPOSED PUMP STATION. REFER TO SHEET E-3 FOR ELECTRICAL LAYOUT

WETLAND

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Manatee County
FLORIDA

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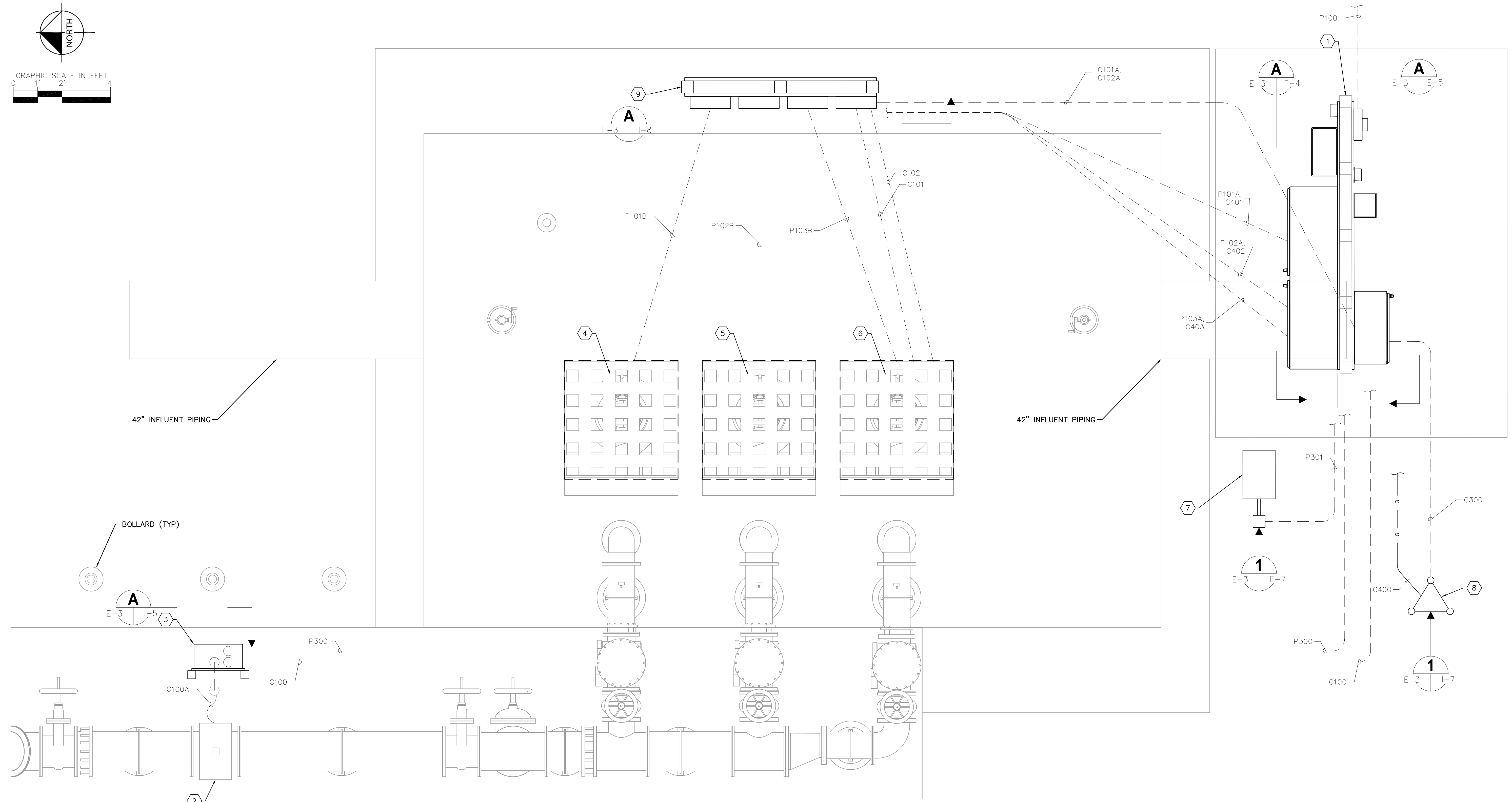
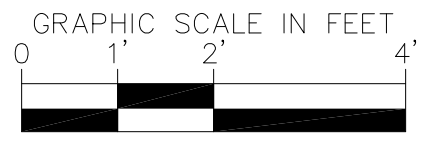
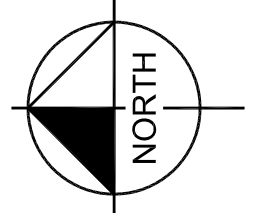
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ELECTRICAL SITE PLAN

SHEET NUMBER	E-2
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KEY NOTES:

- 1 PROPOSED ELECTRICAL EQUIPMENT RACK FOR CENTRAL PUMP STATION. REFER TO ELEVATIONS ON SHEETS E-4 AND E-5.
- 2 PROPOSED FLOW METER ELEMENT.
- 3 PROPOSED FLOW METER TRANSMITTER EQUIPMENT RACK. REFER TO ELEVATION OF SHEET I-5 FOR DETAILS.
- 4 PROPOSED 480V, 3 ϕ , 85 HP PUMP No. 1.
- 5 PROPOSED 480V, 3 ϕ , 85 HP PUMP No. 2.
- 6 PROPOSED 480V, 3 ϕ , 85 HP PUMP No. 3.
- 7 PROPOSED AREA LIGHT. REFER TO DETAIL ON SHEET E-7.
- 8 PROPOSED RADIO ANTENNA AND TOWER. REFER TO DETAIL ON SHEET I-7.
- 9 PROPOSED JUNCTION BOX RACK. REFER TO ELEVATION ON SHEET I-8.

CENTRAL PUMP STATION ELECTRICAL LAYOUT 1
SCALE : 1" = 2'-0" E-2 E-3



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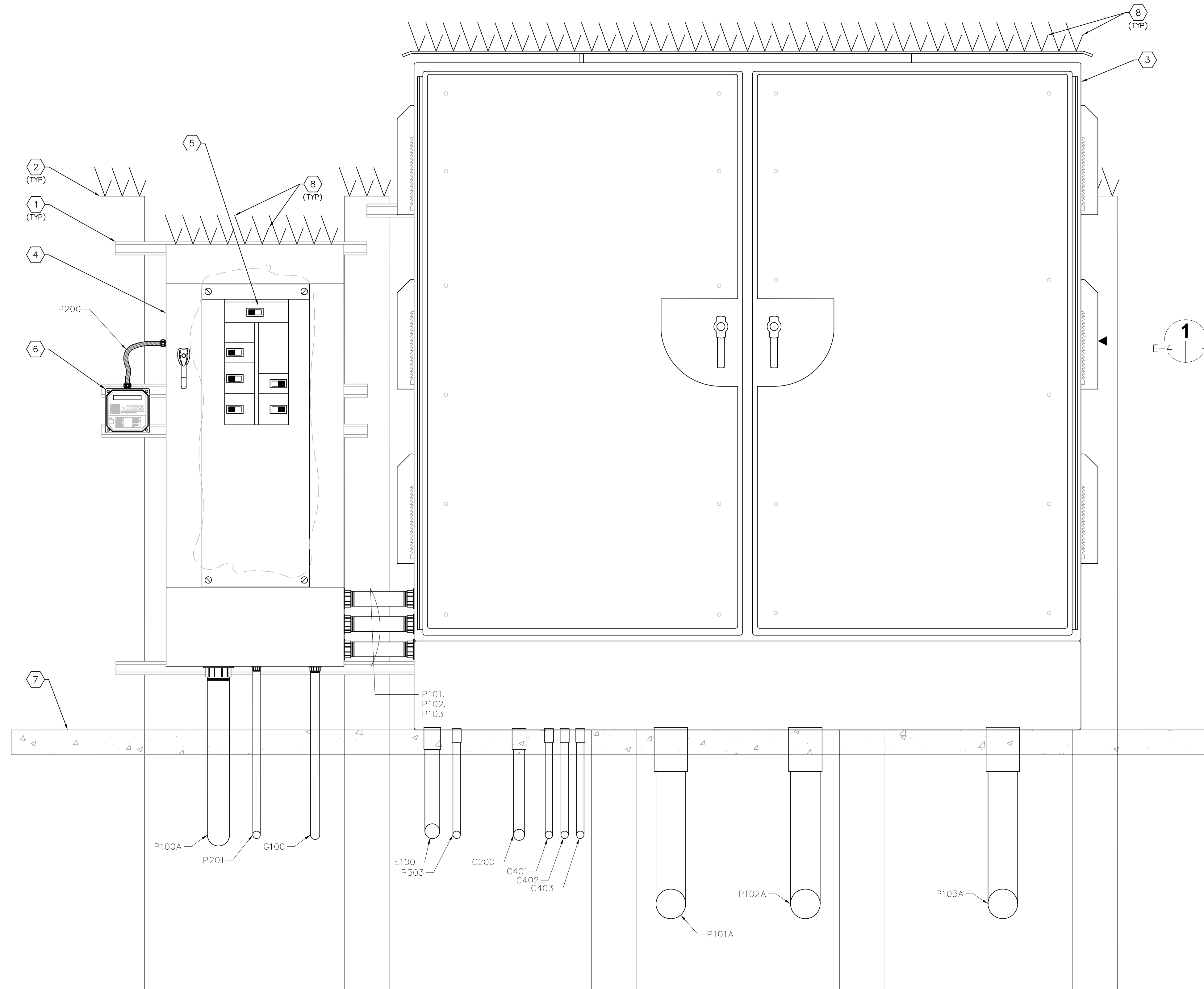
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**CENTRAL PUMP STATION
ELECTRICAL LAYOUT**

SHEET NUMBER
E-3

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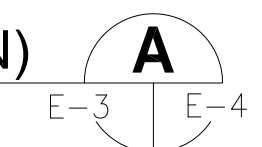


KEY NOTES:

- 1 PROVIDE AND INSTALL 1-5/8" STAINLESS STEEL UNISTRUT (OR EQUAL) BOLTS TO SECURE UNISTRUT SHALL BE INSTALLED COMPLETELY THROUGH CONCRETE POST.
- 2 PROVIDE AND INSTALL 6" X 6" CONCRETE POST. POST SHALL BE EMBEDDED A MINIMUM OF 3 FEET INTO CONCRETE SLAB/SOIL. REFER TO SHEET I-2 FOR DETAILS.
- 3 PROVIDE AND INSTALL MOTOR CONTROL CABINET. REFER TO SHEET I-2 FOR DETAILS.
- 4 PROVIDE AND INSTALL 600V, 400A, 3φ, 4-WIRE MAIN DISTRIBUTION PANELBOARD 'MDP' WITH 400A MAIN CIRCUIT BREAKER (EATON PRL4 PANELBOARD WITH EATON CHKD3400FT38W MAIN CIRCUIT BREAKER). PROVIDE IN NEMA 3R STAINLESS STEEL ENCLOSURE. PROVIDE MAINTENANCE MODE SWITCH IN DOOR OF PANELBOARD FOR MAIN CIRCUIT BREAKER MAINTENANCE MODE SELECTION.
- 5 INTERIOR VIEW OF MAIN DISTRIBUTION PANELBOARD 'MDP'. PROVIDE MAIN CIRCUIT BREAK AS INDICATED IN KEYED NOTE #4. PROVIDE THREE (3) 3-POLE, 600V, 200A CIRCUIT BREAKERS (ONE FOR EACH VFD), ONE (1) 3-POLE, 600V, 30A CIRCUIT BREAKER FOR MDP SURGE PROTECTION DEVICE AND ONE (1) 2-POLE, 600V, 20A CIRCUIT BREAKER FOR MINI-POWER ZONE FEEDER.
- 6 PROVIDE AND INSTALL SURGE PROTECTION DEVICE (SPD). 480V, 3-PHASE, 4-WIRE WITH GROUND, ASCO CAT# 430277YP20ACJ10. PROVIDE AND INSTALL 3-#10 + 1-#10 NEUTRAL + 1-#10 GND IN 3/4" NON-METALLIC, WEATHERPROOF FLEXIBLE CONDUIT TO MAIN DISTRIBUTION PANELBOARD 'MDP'.
- 7 PROPOSED CONCRETE SLAB. REFER TO STRUCTURAL DRAWINGS.
- 8 PROVIDE AND INSTALL STAINLESS STEEL BIRD SPIKES (FOR PIGEONS OR LARGER BIRDS) TO COVER TOP OF ENCLOSURE. INSTALL BIRD SPIKES WITH NON-SILICONE BASED ADHESIVE FOR OUTDOOR CONSTRUCTION OR PER MANUFACTURER'S SPECIFICATIONS.

CENTRAL PUMP STATION ELECTRICAL RACK (FRONT ELEVATION)

SCALE : NOT TO SCALE



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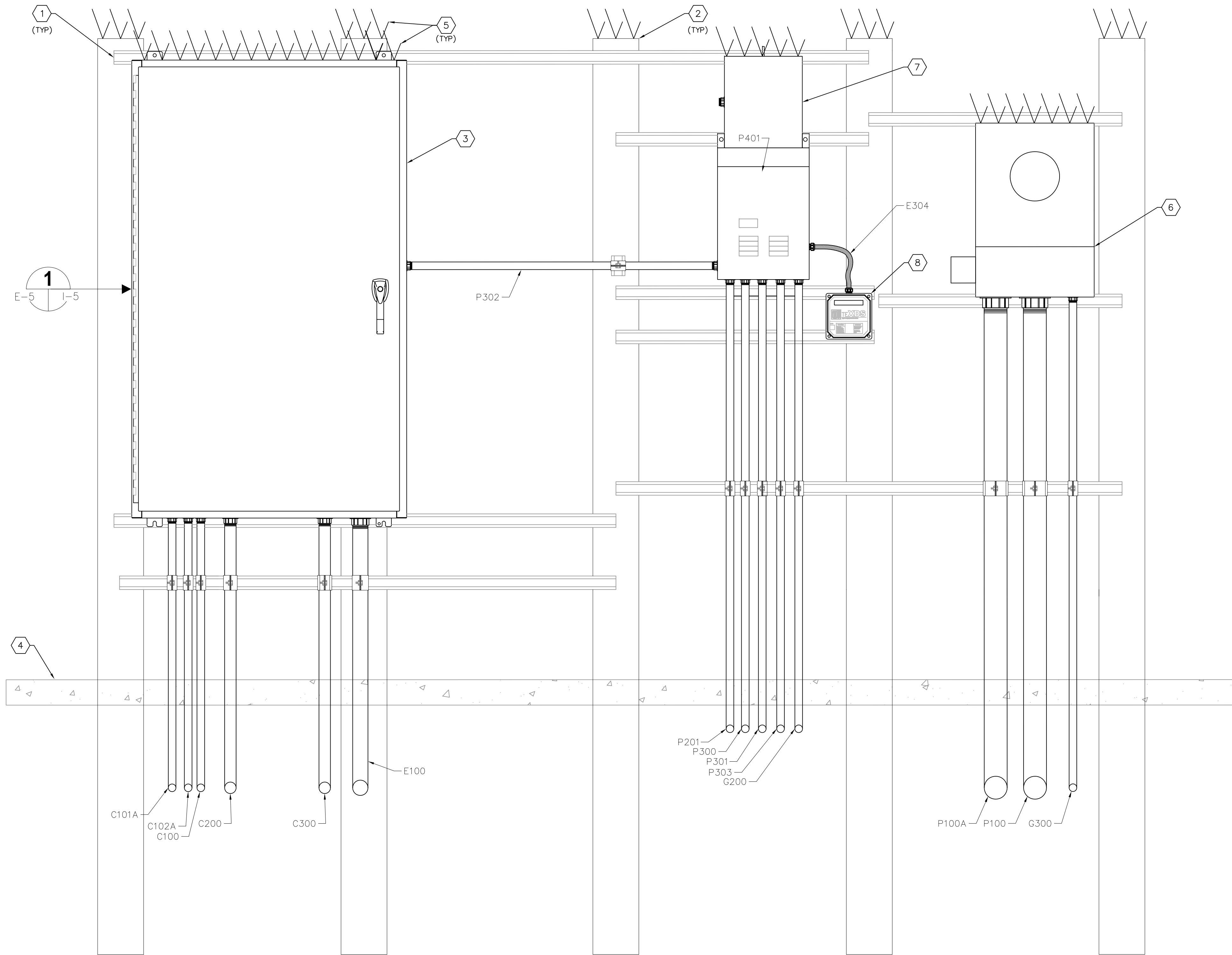
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CENTRAL PUMP STATION ELECTRICAL EQUIPMENT RACK LAYOUTS

SHEET NUMBER	E-4
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KEY NOTES:

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- ② PROVIDE AND INSTALL 6" X 6" CONCRETE POST. POST SHALL BE EMBEDDED A MINIMUM OF 3 FEET INTO CONCRETE SLAB/SOIL.
- ③ PROVIDE AND INSTALL PUMP CONTROL PANEL. REFER TO SPECIFICATIONS AND DETAILS ON SHEET I-5.
- ④ PROPOSED CONCRETE SLAB. REFER TO STRUCTURAL DRAWINGS.
- ⑤ PROVIDE AND INSTALL STAINLESS STEEL BIRD SPIKES (FOR PIGEONS OR LARGER BIRDS) TO COVER TOP OF ENCLOSURE. INSTALL BIRD SPIKES WITH NON-SILICONE BASED ADHESIVE FOR OUTDOOR CONSTRUCTION OR PER MANUFACTURER'S SPECIFICATIONS.
- ⑥ PROVIDE AND INSTALL 277/480V, 400A, 3-PHASE, 4-WIRE, METER SOCKET. PROVIDE FP&L APPROVED LIGHTNING SURGE PROTECTOR, GROUND METER PER FP&L REQUIREMENTS. COORDINATE ALL REQUIREMENTS WITH FP&L. CONTRACTOR TO VERIFY FEED-THRU VERSUS C.T. METER WITH FP&L.
- ⑦ PROVIDE AND INSTALL NEW 480-120/240V, 1φ, 10KVA MINI POWER ZONE 'LP' IN NEMA 3R, 316 STAINLESS STEEL ENCLOSURE, SQUARE-D MPZ10S40FSS. REFER TO SHEET E-7 FOR PANEL SCHEDULE.
- ⑧ PROVIDE AND INSTALL SURGE PROTECTION DEVICE (SPD), 120/240V, SINGLE-PHASE, 3-WIRE WITH GROUND, ASCO CAT# 430120SP10AC10. PROVIDE AND INSTALL 2-#10 + 1-#10 NEUTRAL +1-#10 GND IN 3/4" NON-METALLIC, WEATHERPROOF FLEXIBLE CONDUIT TO MINI POWER ZONE 'LP'.

CENTRAL PUMP STATION ELECTRICAL RACK (BACK ELEVATION)

SCALE : NOT TO SCALE

A
E-3 | E-5



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**SEWRF RECLAIMED
PUMP BACK STATION**

MANATEE COUNTY

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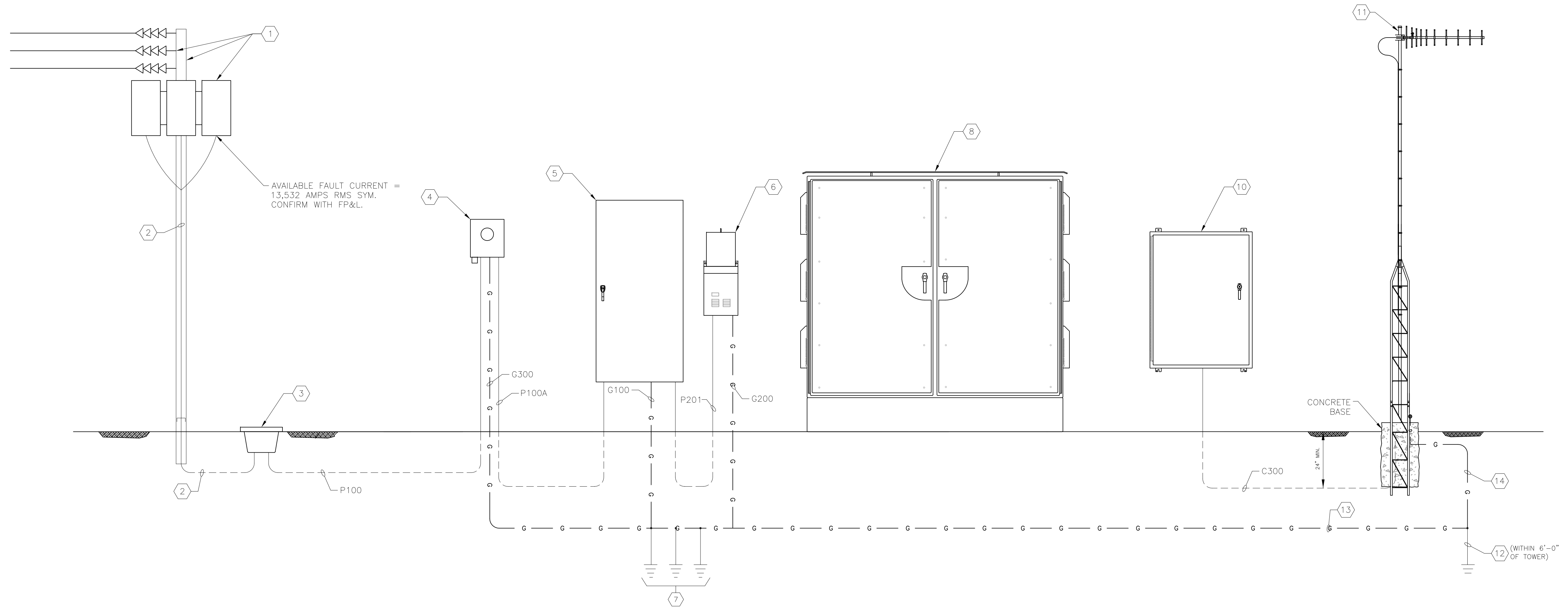
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**CENTRAL PUMP STATION
ELECTRICAL EQUIPMENT
RACK LAYOUTS**

SHEET NUMBER

E-5

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CENTRAL PUMP STATION ELECTRICAL ONE-LINE DIAGRAM

KEYED NOTES:

- 1 NEW 15KV DISTRIBUTION POLE, DISTRIBUTION TRANSFORMERS AND 15KV OVERHEAD DISTRIBUTION BY FP&L.
- 2 CONDUIT AND CONDUCTORS BY FP&L.
- 3 PROVIDE AND INSTALL NEW HANDHOLE. COORDINATE REQUIREMENTS WITH FP&L.
- 4 PROVIDE AND INSTALL METER SOCKET. COORDINATE MOUNTING, SURGE PROTECTION AND GROUNDING REQUIREMENTS WITH FP&L.
- 5 PROVIDE AND INSTALL 600V, 400A, 3Ø, 4-WIRE MAIN DISTRIBUTION PANELBOARD 'MDP' WITH 400A MAIN CIRCUIT BREAKER IN NEMA 3R STAINLESS STEEL ENCLOSURE.
- 6 480-120/240V, 1Ø, 10KVA MINI POWER ZONE 'LP' IN NEMA 3R, 316 STAINLESS STEEL ENCLOSURE. SQUARE-D MPZ10S40FSS.

- 7 PROVIDE AND INSTALL THREE (3) 5/8" X 20'-0" COPPER CLAD GROUND RODS. SPACE GROUND RODS A MINIMUM OF 10'-0" APART. BOND GROUND RODS TOGETHER WITH 2/0 BARE COPPER GROUNDING ELECTRODE CONDUCTORS. ALL CONNECTIONS SHALL BE VIA EXOTHERMIC WELDS.
- 8 MOTOR CONTROL CABINET. REFER TO SHEET I-2 FOR DETAILS.
- 10 PUMP CONTROL PANEL. REFER TO SHEET I-5 FOR DETAILS.
- 11 NEW RADIO ANTENNA AND ASSOCIATED TOWER.
- 12 PROVIDE AND INSTALL ONE (1) 5/8" X 20'-0" COPPER CLAD GROUND ROD ADJACENT TO RADIO TOWER.
- 13 PROVIDE AND INSTALL BARE 1/0 AWG COPPER GROUNDING ELECTRODE CONDUCTOR IN 1" CONDUIT FROM RADIO TOWER TO GROUNDING ELECTRODE GRID (REFER TO KEYED NOTE #7). G400.

GENERAL NOTES:

- 1. NOT ALL CONDUITS AND CONDUCTORS SHOWN FOR CLARITY. REFER ALSO TO OTHER ELECTRICAL SHEETS.
- 2. TOWER & FOUNDATION SHALL BE DESIGNED FOR 130 MPH WINDSPEED.
- 3. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR TOWER AND TOWER FOUNDATION. SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA.
- 4. ALL GROUNDING ELECTRODE CONDUCTOR CONNECTIONS MADE OUTSIDE OF EQUIPMENT SHALL BE VIA EXOTHERMIC WELDS.



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MANATEE COUNTY

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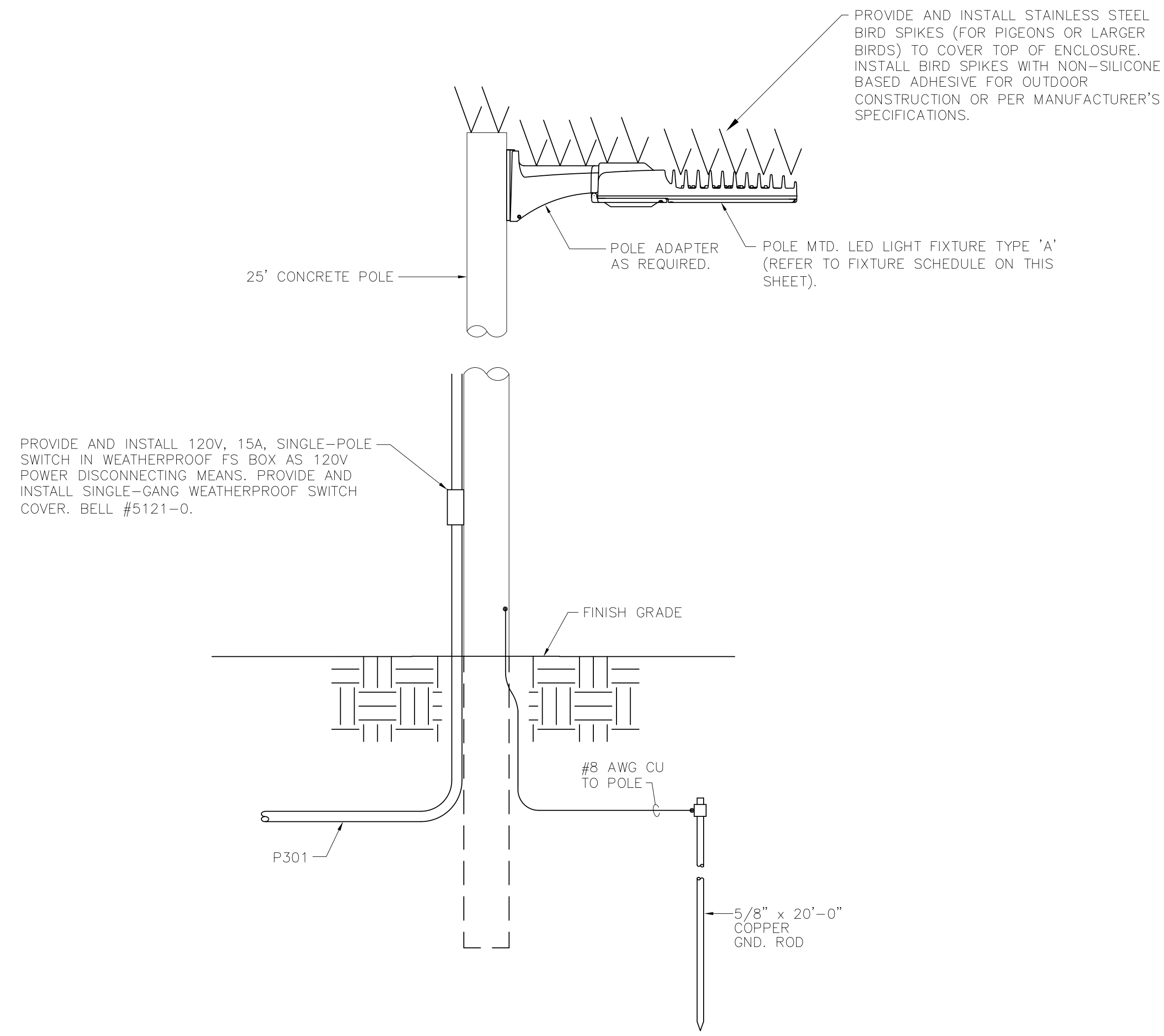
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**CENTRAL PUMP STATION
 ELECTRICAL
 ONE-LINE DIAGRAM**

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E-6

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AREA LIGHT DETAIL 1
SCALE : NOT TO SCALE E-3 | E-7

ELECTRICAL SERVICE LOAD SUMMARY					
480 VAC, 3 ϕ , 4W					
LOAD	CONNECTED	DEMAND	APPROX. PHASE CURRENTS		
			L1	L2	L3
PUMP No. 1	109.0 A	109.0 A	109.0 A	109.0 A	109.0 A
PUMP No. 2	109.0 A	109.0 A	109.0 A	109.0 A	109.0 A
PUMP No. 3	109.0 A	109.0 A	109.0 A	109.0 A	109.0 A
MINI POWER ZONE 'LP'	21.0 A	10.0 A	21.0 A	21.0 A	0.0 A
TOTAL CONNECTED LOAD	348.0 A	337.0 A	348.0 A	348.0 A	327.0 A

THE NEW ELECTRICAL SERVICE WILL CONSIST OF A 480V, 400 AMPERE FEEDER PROTECTED BY A 400A MAIN CIRCUIT BREAKER.

MAIN DISTRIBUTION PANELBOARD 'MDP' CIRCUIT BREAKER SCHEDULE					
BREAKER	POLES	AMPERAGE	VOLTAGE	AIC RATING	SERVICE
A	3P	200A	600V	35K	PUMP No. 1 VFD
B	3P	200A	600V	35K	PUMP No. 2 VFD
C	3P	200A	600V	35K	PUMP No. 3 VFD
D	2P	20A	600V	35K	MINI POWER ZONE 'LP'
E	3P	30A	600V	35K	SURGE PROTECTION DEVICE (SPD)

PROPOSED PANEL SCHEDULE													
PANEL 'LP' ; SQUARE D CO. ; 120/240 VOLTS, 1 ϕ , 3W ; 30 AMP MAIN ; SURFACE ENCLOSURE ; MPZ ; CIRCUIT BREAKER ; 10K AIC RATING ; TOP AT 5'-6" AFF													
EQUIPMENT SERVED	CIRCUIT BREAKER			KVA/PHASE		CIRC. NO.		KVA/PHASE		CIRCUIT BREAKER			EQUIPMENT SERVED
	POLE	AMPS	FRAME	A	B	1	2	A	B	POLE	AMPS	FRAME	
PUMP CONTROL PANEL	1	20	QOB	0.8		1	2	0.2		1	20	QOB	AREA LIGHT
PUMP CONTROL PANEL	1	20	QOB		0.8	3	4	0.2		1	20	QOB	MOTOR CONTROL CABINET
MOTOR CONTROL CABINET	1	20	QOB	0.4		5	6	0.2		1	20	QOB	MOTOR CONTROL CABINET
SURGE PROTECTION DEVICE (SPD)	2	30	QOB			7	8	0.2		1	20	QOB	MOTOR CONTROL CABINET
" "	-	-	-			9	10		0.2	1	20	QOB	FLOW METER TRANSMITTER
SUB-TOTAL KVA				1.2	0.8			0.4	0.6				
TOTAL CONNECTED LOAD = 3.0 KVA						TOTAL DEMAND LOAD = 2.6 KVA							

LIGHTING FIXTURE SCHEDULE						
TYPE	MANUFACTURER	CATALOG NUMBER	LAMP(S)	VOLTS	MOUNTING	REMARKS
A	GENERAL ELECTRIC	EASCOE2F550ADKBZ	(1) 119 W LED	120/277	POLE	LED AREA LIGHT



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PUMP BACK STATION

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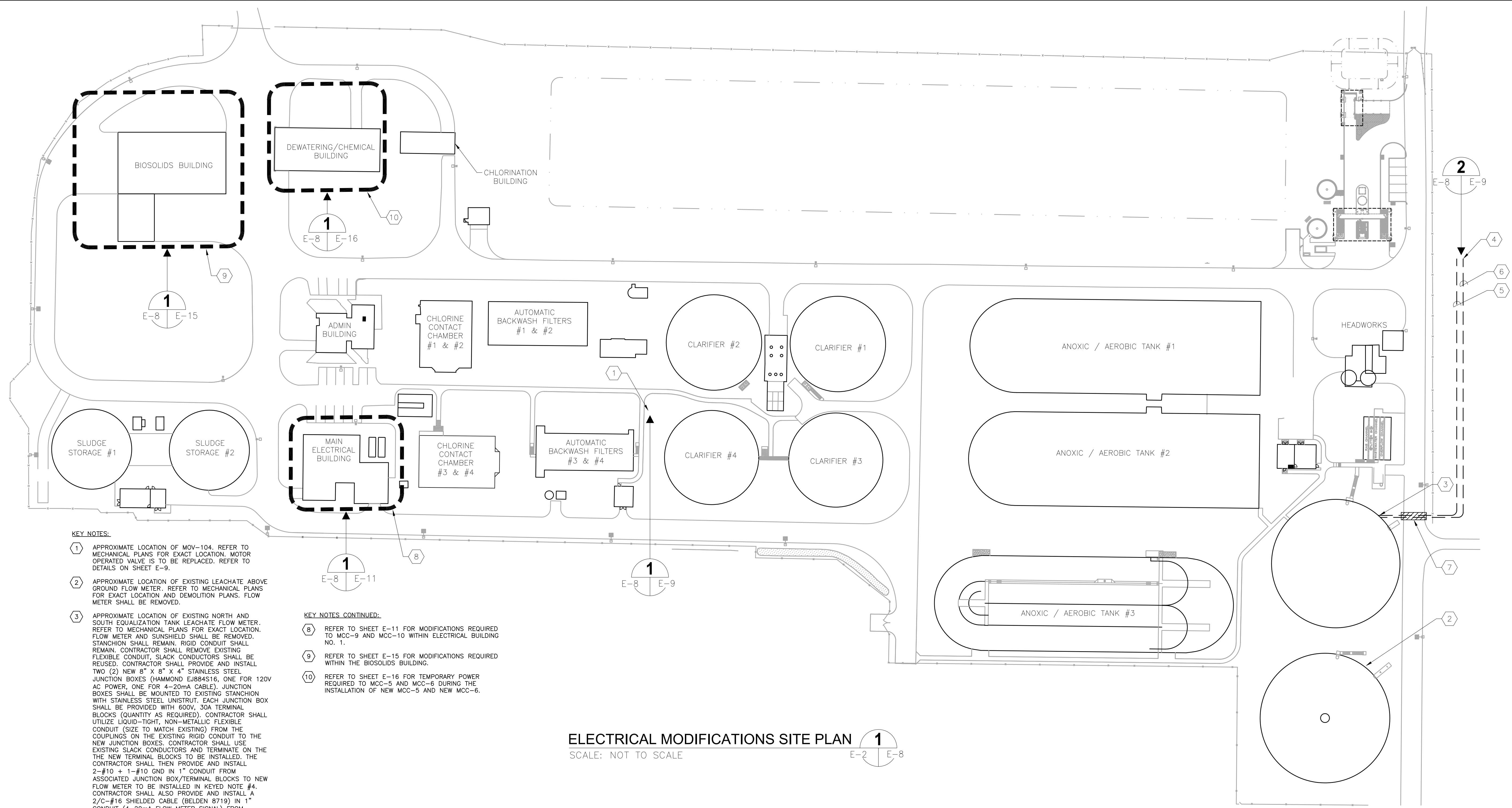
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ELECTRICAL DETAILS
AND PANEL SCHEDULE

SHEET NUMBER

E-7

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KEY NOTES:

- ① APPROXIMATE LOCATION OF MOV-104. REFER TO MECHANICAL PLANS FOR EXACT LOCATION. MOTOR OPERATED VALVE IS TO BE REPLACED. REFER TO DETAILS ON SHEET E-9.
- ② APPROXIMATE LOCATION OF EXISTING LEACHATE ABOVE GROUND FLOW METER. REFER TO MECHANICAL PLANS FOR EXACT LOCATION AND DEMOLITION PLANS. FLOW METER SHALL BE REMOVED.
- ③ APPROXIMATE LOCATION OF EXISTING NORTH AND SOUTH EQUALIZATION TANK LEACHATE FLOW METER. REFER TO MECHANICAL PLANS FOR EXACT LOCATION. FLOW METER AND SUNSHIELD SHALL BE REMOVED. STANCHION SHALL REMAIN. RIGID CONDUIT SHALL REMAIN. CONTRACTOR SHALL REMOVE EXISTING FLEXIBLE CONDUIT, SLACK CONDUCTORS SHALL BE REUSED. CONTRACTOR SHALL PROVIDE AND INSTALL TWO (2) NEW 6" X 8" X 4" STAINLESS STEEL JUNCTION BOXES (HAMMOND EJ884S16, ONE FOR 120V AC POWER, ONE FOR 4-20mA CABLE). JUNCTION BOXES SHALL BE MOUNTED TO EXISTING STANCHION WITH STAINLESS STEEL UNISTRUT. EACH JUNCTION BOX SHALL BE PROVIDED WITH 800V, 30A TERMINAL BLOCKS (QUANTITY AS REQUIRED). CONTRACTOR SHALL UTILIZE LIQUID-TIGHT, NON-METALLIC FLEXIBLE CONDUIT (SIZE TO MATCH EXISTING) FROM THE COUPLINGS ON THE EXISTING RIGID CONDUIT TO THE NEW JUNCTION BOXES. CONTRACTOR SHALL USE EXISTING SLACK CONDUCTORS AND TERMINATE ON THE NEW TERMINAL BLOCKS TO BE INSTALLED. THE CONTRACTOR SHALL THEN PROVIDE AND INSTALL 2-#10 + 1-#10 GND IN 1" CONDUIT FROM ASSOCIATED JUNCTION BOX/TERMINAL BLOCKS TO NEW FLOW METER TO BE INSTALLED IN KEYED NOTE #4. CONTRACTOR SHALL ALSO PROVIDE AND INSTALL A 2/C-#16 SHIELDED CABLE (BELDEN 8719) IN 1" CONDUIT (4-20mA FLOW METER SIGNAL) FROM ASSOCIATED JUNCTION BOX/TERMINAL BLOCKS TO NEW FLOW METER TO BE INSTALLED IN KEYED NOTE #4.
- ④ NEW ABOVE GROUND FLOW METER ASSEMBLY. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION.
- ⑤ PROVIDE AND INSTALL 2-#10 + 1-#10 GND IN 1" CONDUIT FROM ASSOCIATED JUNCTION BOX/TERMINAL BLOCKS TO NEW FLOW METER FOR 120V AC POWER.
- ⑥ PROVIDE AND INSTALL A 2/C-#16 SHIELDED CABLE (BELDEN 8719) IN 1" CONDUIT FROM ASSOCIATED JUNCTION BOX/TERMINAL BLOCKS TO NEW FLOW METER.
- ⑦ CONTRACTOR SHALL CUT EXISTING ASPHALT PAVEMENT, INSTALL CONDUIT AND REPAIR PAVEMENT TO ORIGINAL CONDITION.

KEY NOTES CONTINUED:

- ⑧ REFER TO SHEET E-11 FOR MODIFICATIONS REQUIRED TO MCC-9 AND MCC-10 WITHIN ELECTRICAL BUILDING NO. 1.
- ⑨ REFER TO SHEET E-15 FOR MODIFICATIONS REQUIRED WITHIN THE BIOSOLIDS BUILDING.
- ⑩ REFER TO SHEET E-16 FOR TEMPORARY POWER REQUIRED TO MCC-5 AND MCC-6 DURING THE INSTALLATION OF NEW MCC-5 AND NEW MCC-6.

ELECTRICAL MODIFICATIONS SITE PLAN 1
SCALE: NOT TO SCALE E-2 E-8



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KHA PROJECT	148400015
DATE	6/26/19
SCALE	AS SHOWN
DESIGNED BY	TDT
DRAWN BY	JLH
CHECKED BY	TDT

Manatee County
SEWRF RECLAIMED PUMP BACK STATION
MANATEE COUNTY

LICENSED PROFESSIONAL	TIMOTHY THOMAS, P.E.
FL LICENSE NUMBER	47079
FL DATE:	

ELECTRICAL MODIFICATIONS SITE PLAN

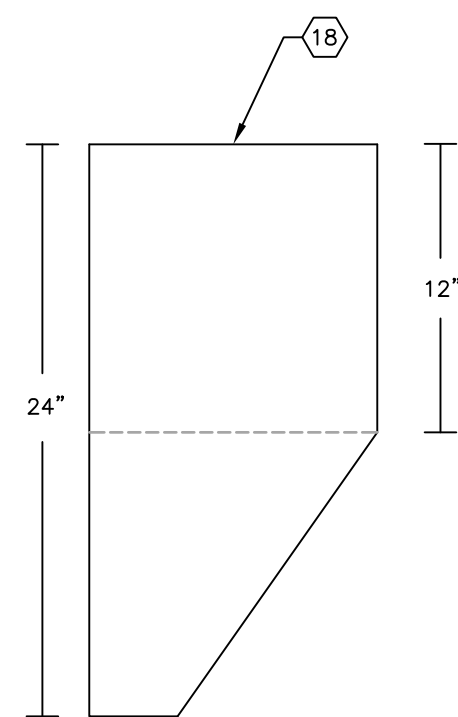
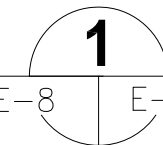
SHEET NUMBER	E-8
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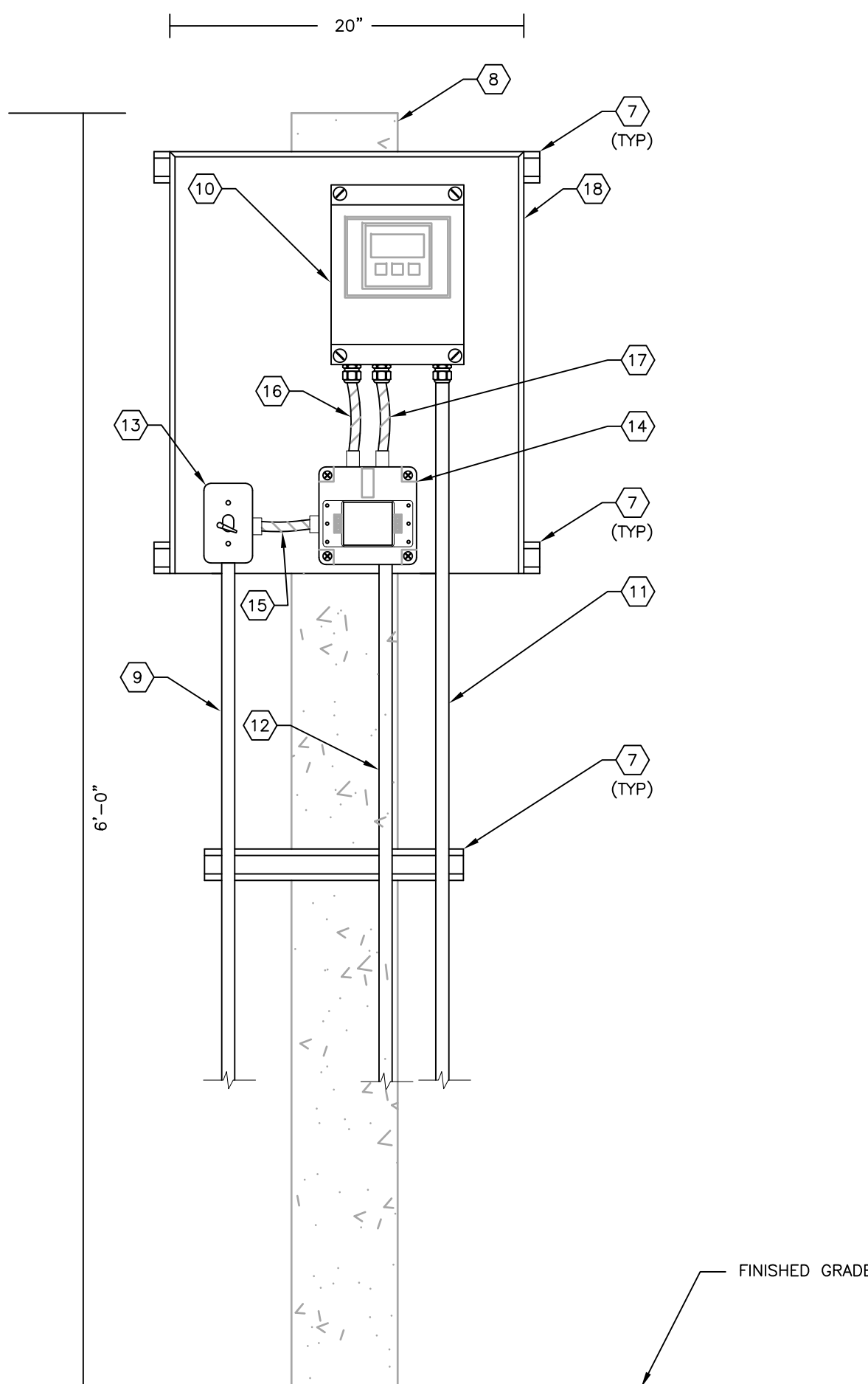
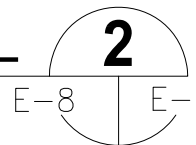
MOV-104 DETAIL

SCALE: NOT TO SCALE E-8 E-9



FLOW METER TRANSMITTER DETAIL

SCALE: NOT TO SCALE



KEY NOTES:

- 1 EXISTING MOV-104 TO BE REPLACED.
- 2 EXISTING MOV-104 DISCONNECT TO REMAIN.
- 3 EXISTING CONDUIT AND CONDUCTORS FOR MOV-104 480V POWER TO REMAIN. EXISTING CONDUCTORS CONNECTED TO LINE SIDE OF DISCONNECT.
- 4 EXISTING CONDUIT AND CONDUCTORS FOR MOV-104 480V POWER TO BE REPLACED. PROVIDE NEW LIQUID-TIGHT, NON-METALLIC FLEXIBLE CONDUIT (SIZE TO MATCH EXISTING) FROM DISCONNECT TO NEW MOTOR OPERATED VALVE. PROVIDE NEW CONDUCTORS (QUANTITY AND SIZE TO MATCH EXISTING TO BE REPLACED) FROM LOAD SIDE OF DISCONNECT TO NEW MOTOR OPERATED VALVE. LENGTH AS REQUIRED TO ACCOMMODATE NEW MOTOR OPERATED VALVE.
- 5 EXISTING CONDUIT AND CONDUCTORS FOR MOV-104 CONTROLS TO REMAIN AND BE REUSED.
- 6 EXISTING CONDUIT AND CONDUCTORS FOR MOV-104 CONTROLS TO BE REUSED IF EXISTING LENGTH WILL ACCOMMODATE THE NEW MOTOR OPERATED VALVE. IF CONDUCTOR/CONDUIT LENGTH WILL NOT ACCOMMODATE THE NEW MOTOR OPERATED VALVE, THE CONTRACTOR SHALL PROVIDE AND INSTALL A NEW 8" X 8" X 4" STAINLESS STEEL JUNCTION BOX (HAMMOND E884516). JUNCTION BOX SHALL BE INSTALLED ON CONCRETE POST WITH STAINLESS STEEL UNISTRUT. INSTALL JUNCTION BOX AT A HEIGHT TO ALLOW FOR THE INSTALLATION OF A SHORT (8 TO 12 INCHES) LIQUID-TIGHT, NON-METALLIC FLEXIBLE CONDUIT (SIZE TO MATCH EXISTING) FROM THE JUNCTION BOX TO THE EXISTING RIGID COUPLINGS ON THE EXISTING CONTROL CONDUIT. THE CONTRACTOR SHALL UTILIZE THE EXISTING SLACK CONDUCTOR TO TRAVERSE TO THE NEW JUNCTION BOX. THE JUNCTION BOX SHALL BE PROVIDED WITH 600V, 30A TERMINAL BLOCKS (QUANTITY AS REQUIRED). CONTRACTOR SHALL TERMINATE EXISTING SLACK CONDUCTOR ON THE NEW TERMINAL BLOCKS INSTALLED WITHIN THE NEW JUNCTION BOX. THE CONTRACTOR SHALL THEN PROVIDE AND INSTALL A NEW LIQUID-TIGHT, NON-METALLIC FLEXIBLE CONDUIT (SIZE TO MATCH EXISTING) WITH ASSOCIATED CONTROL CONDUCTORS (QUANTITY AND SIZE TO MATCH EXISTING) FROM THE MOTOR OPERATED VALVE TO THE NEW TERMINAL BLOCKS WITHIN THE NEW JUNCTION BOX. CONDUCTOR/CONDUIT LENGTH SHALL BE AS REQUIRED TO ACCOMMODATE THE NEW MOTOR OPERATED VALVE.
- 7 PROVIDE AND INSTALL 1-5/8" STAINLESS STEEL UNISTRUT (OR EQUAL). BOLTS TO SECURE UNISTRUT SHALL BE INSTALLED COMPLETELY THROUGH CONCRETE POST.
- 8 PROVIDE AND INSTALL 6" X 6" CONCRETE POST. POST SHALL BE EMBEDDED A MINIMUM OF 3 FEET INTO SOIL.
- 9 PROVIDE AND INSTALL 2-#10 + 1-#10 GND IN 1" CONDUIT TO NEW JUNCTION BOX INSTALLED FOR FLOW METER TRANSMITTER FOR 120V POWER. REFER TO KEYED NOTE #5 ON SHEET E-8.
- 10 PROVIDE AND INSTALL ENDRESS HAUSER MAG METER PROMAG W400 REMOTE TRANSMITTER. PROVIDE 1/4" ALUMINUM PLATE FOR MOUNTING.
- 11 PROVIDE AND INSTALL MANUFACTURER SUPPLIED SENSOR CABLES IN 1" CONDUIT. VERIFY CONDUIT SIZE WITH MANUFACTURER.
- 12 PROVIDE AND INSTALL 2/C-#16 SHIELDED (BELDEN 8719) IN 1" CONDUIT TO JUNCTION BOX INSTALLED FOR FLOW METER 4-20mA SIGNAL. REFER TO KEYED NOTE #6 ON SHEET E-8.
- 13 PROVIDE AND INSTALL 120V, 15A, SINGLE-POLE SWITCH IN WEATHERPROOF FS BOX AS 120V POWER DISCONNECTING MEANS. PROVIDE AND INSTALL SINGLE-GANG WEATHERPROOF SWITCH COVER. BELL #5121-0.
- 14 PROVIDE AND INSTALL EDCO - SLAC SERIES AC POWER/SIGNAL TVSS DEVICE IN NEMA 4X ENCLOSURE TO PROTECT 120V POWER CIRCUIT AND 4-20mA ANALOG OUTPUT SIGNAL.
- 15 PROVIDE AND INSTALL 2-#10 + 1-#10 GND IN 3/4" FLEXIBLE, SEALTITE CONDUIT FOR 120V POWER.
- 16 PROVIDE AND INSTALL 2-#10 + 1-#10 GND IN 3/4" FLEXIBLE, SEALTITE CONDUIT TO FLOW METER TRANSMITTER FOR 120V POWER.
- 17 PROVIDE AND INSTALL 2/C-#16 SHIELDED (BELDEN 8719) IN 3/4" FLEXIBLE, SEALTITE CONDUIT. (4-20mA FLOW METER SIGNAL).
- 18 PROVIDE AND INSTALL SUN-SHIELD, CONSTRUCTED FROM 1/8" ALUMINUM STOCK. PROVIDE FULL FILLET WELDS. 20" WIDE, 24" TALL.

GENERAL NOTES:

- 1. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING CONTROL CONDUCTORS FOR MOV-104 (QUANTITY AND FUNCTION) PRIOR TO ORDERING EQUIPMENT OR SUBMITTING SHOP DRAWINGS. THE CONTRACTOR SHALL INSURE THE NEW MOTOR OPERATED VALVE PROVIDES THE SAME CONTROL FUNCTIONS AND MONITORING CAPABILITY AS THE EXISTING VALVE.
- 2. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING POWER SUPPLY UTILIZED FOR THE FLOW METER BEING RELOCATED IS 120V AC PRIOR TO ORDERING EQUIPMENT OR SUBMITTING SHOP DRAWINGS.

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**SEWRF RECLAIMED
PUMP BACK STATION**
MANATEE COUNTY

LICENSED PROFESSIONAL	TIMOTHY THOMAS, P.E.
FL LICENSE NUMBER	47079
FL DATE:	

ELECTRICAL DETAILS

SHEET NUMBER	E-9
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CONDUIT AND CABLE SCHEDULE					
CONDUIT No.	QTY/SIZE	NUMBER OF CONDUCTORS/SIZE	FROM	TO	REMARKS
P100	4"	3-#600 + 1-#250 NEUTRAL	FP&L HANHOLE	METER SOCKET	
P100A	4"	3-#600 + 1-#250 NEUTRAL	METER SOCKET	MAIN DISTRIBUTION PANELBOARD 'MDP'	
P101	2"	3-2/0 + 1-#6 GND	MAIN DISTRIBUTION PANELBOARD 'MDP'	MOTOR CONTROL CABINET	PUMP No. 1 VFD FEEDER.
P101	2"	3-2/0 + 1-#6 GND	MOTOR CONTROL CABINET	PUMP No. 1 JUNCTION BOX	
P101B	4"	PUMP CABLE BY MANUFACTURER	PUMP No. 1 JUNCTION BOX	PUMP No. 1	CABLE TO INCLUDE CONDUCTORS FOR PUMP LEAK AND TEMPERATURE SENSOR.
P102	2"	3-2/0 + 1-#6 GND	MAIN DISTRIBUTION PANELBOARD 'MDP'	MOTOR CONTROL CABINET	PUMP No. 2 VFD FEEDER.
P102A	2"	3-2/0 + 1-#6 GND	MOTOR CONTROL CABINET	PUMP No. 2 JUNCTION BOX	
P102B	4"	PUMP CABLE BY MANUFACTURER	PUMP No. 2 JUNCTION BOX	PUMP No. 2	CABLE TO INCLUDE CONDUCTORS FOR PUMP LEAK AND TEMPERATURE SENSOR.
P103	2"	3-2/0 + 1-#6 GND	MAIN DISTRIBUTION PANELBOARD 'MDP'	MOTOR CONTROL CABINET	PUMP No. 3 VFD FEEDER.
P103A	2"	3-2/0 + 1-#6 GND	MOTOR CONTROL CABINET	PUMP No. 3 JUNCTION BOX	
P103B	4"	PUMP CABLE BY MANUFACTURER	PUMP No. 3 JUNCTION BOX	PUMP No. 3	CABLE TO INCLUDE CONDUCTORS FOR PUMP LEAK AND TEMPERATURE SENSOR.
P200	1"	3-#10 + 1-#10 NEU + 1-#10 GND	MAIN DISTRIBUTION PANELBOARD 'MDP'	'MDP' SURGE PROTECTION DEVICE	PROVIDE NON-METALLIC WEATHERPROOF FLEXIBLE CONDUIT.
P201	1"	2-#10 + 1-#10 GND	MAIN DISTRIBUTION PANELBOARD 'MDP'	MINI POWER ZONE 'LP' TRANSFORMER	
P300	3/4"	2-#12 + 1-#12 GND	PANELBOARD 'LP'	FLOW METER TRANSMITTER	120V AC FLOW TRANSMITTER POWER. CIRCUIT LP-10.
P301	3/4"	2-#12 + 1-#12 GND	PANELBOARD 'LP'	AREA LIGHT	120V AC AREA LIGHT POWER. CIRCUIT LP-2.
P302	3/4"	2-#12 + 2-#12 NEU + 1-#12 GND	PANELBOARD 'LP'	PUMP CONTROL PANEL	120V AC PUMP CONTROL CABINET POWER. CIRCUITS LP-1 AND LP-3.
P303	1"	4-#12 + 4-#12 NEU + 1-#12 GND	PANELBOARD 'LP'	MOTOR CONTROL CABINET	120V AC POWER. CIRCUITS LP-4, LP-5, LP-6 AND LP-8.
P304	3/4"	2-#10 + 1-#10 NEU + 1-#10 GND	PANELBOARD ZONE 'LP'	'LP' SURGE PROTECTION DEVICE	PROVIDE NON-METALLIC WEATHERPROOF FLEXIBLE CONDUIT.
G100	1-1/4"	2/0 BARE COPPER	MAIN DISTRIBUTION PANELBOARD 'MDP'	GROUNDING ELECTRODE GRID	
G200	3/4"	#8 BARE COPPER	PANELBOARD 'LP'	GROUNDING ELECTRODE GRID	
G300	1"	#4 BARE COPPER	METER SOCKET	GROUNDING ELECTRODE GRID	
G400	1-1/4"	1/0 BARE COPPER	RADIO ANTENNA TOWER	GROUNDING ELECTRODE GRID	
C100	1"	2/C-#16 SHIELDED CABLE	PUMP CONTROL CABINET	FLOW METER TRANSMITTER	FLOW METER 4-20mA SIGNAL. CABLE TO BE BELDEN 8719.
C100A	1"	SENSOR CABLE	FLOW METER ELEMENT	FLOW METER TRANSMITTER	FLOW METER ELEMENT SENSOR CABLE TO BE PROVIDED BY MANUFACTURER.
C101	2"	FIVE (5) 2/C-#14 + 1-#14 GND	WET WELL FLOAT SWITCHES	WET WELL JUNCTION BOX	CABLES TO BE PROVIDED BY FLOAT SWITCH MANUFACTURER.
C101A	2"	10-#14 + 1-#14 GND	WET WELL JUNCTION BOX	PUMP CONTROL PANEL	FLOAT SIGNALS.
C102	2"	LEVEL TRANSMITTER CABLE	WET WELL LEVEL TRANSDUCER	WET WELL JUNCTION BOX	CABLE TO BE PROVIDED BY LEVEL TRANSDUCER MANUFACTURER.
C102A	1"	2/C-#16 SHIELDED CABLE	WET WELL JUNCTION BOX	PUMP CONTROL CABINET	WET WELL LEVEL 4-20mA SIGNAL. CABLE TO BE BELDEN 8719.
C200	1"	20-#14 + 1-#14 GND	MOTOR CONTROL CABINET	PUMP CONTROL CABINET	VFD MINI CAS II AND NORMAL POWER MONITORING. CONDUCTOR COUNT INCLUDES SPARES.
C300	1-1/4"	COAXIAL CABLE	PUMP CONTROL PANEL	RADIO ANTENNA TOWER	
C401	3/4"	2-#14 + 1-#14 GND	PUMP No. 1 JUNCTION BOX	MOTOR CONTROL CABINET	MINI CAS II FROM PUMP No. 1.
C402	3/4"	2-#14 + 1-#14 GND	PUMP No. 2 JUNCTION BOX	MOTOR CONTROL CABINET	MINI CAS II FROM PUMP No. 2.
C403	3/4"	2-#14 + 1-#14 GND	PUMP No. 3 JUNCTION BOX	MOTOR CONTROL CABINET	MINI CAS II FROM PUMP No. 3.
E100	2"	ETHERNET CABLE	PUMP CONTROL CABINET	MOTOR CONTROL CABINET	VFD ETHERNET CONTROL

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KHA PROJECT 148400015
DATE 6/26/19
SCALE AS SHOWN
DESIGNED BY TDT
DRAWN BY JLH
CHECKED BY TDT



**SEWRF RECLAIMED
PUMP BACK STATION**
 MANATEE COUNTY

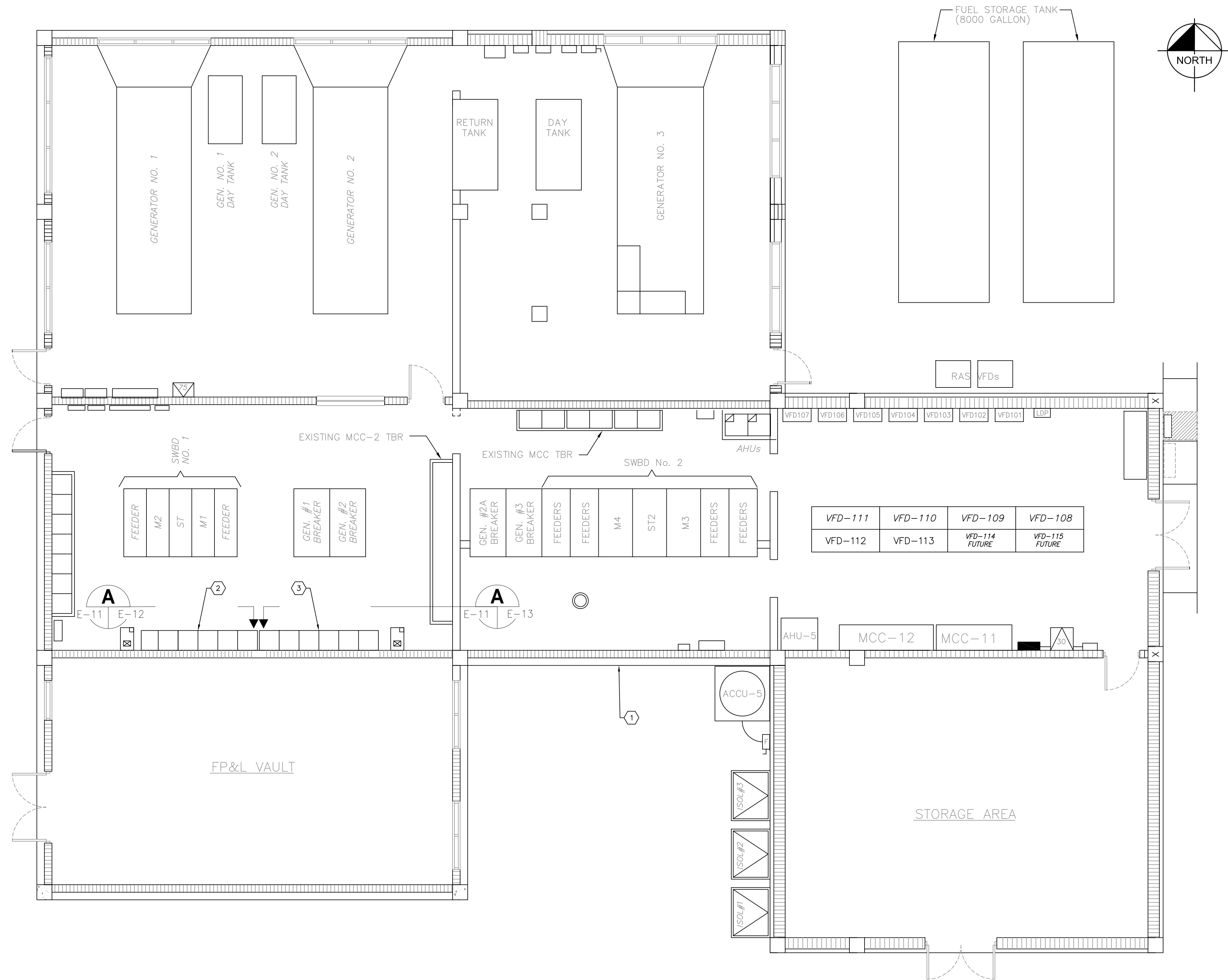
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FL LICENSE NUMBER 47079

**CONDUIT AND CABLE
SCHEDULE**

SHEET NUMBER
E-10



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KEY NOTES:

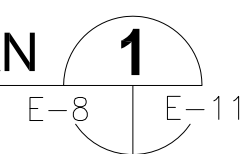
- ① EXISTING ELECTRICAL BUILDING NO. 1.
- ② EXISTING MOTOR CONTROL CENTER 'MCC-9'. REFER TO SHEET E-12 FOR ELEVATION AND DETAILS.
- ③ EXISTING MOTOR CONTROL CENTER 'MCC-10'. REFER TO SHEET E-12 FOR ELEVATION AND DETAILS.

GENERAL NOTES:

- 1. THE CONTRACTOR SHALL NOT COMMENCE INSTALLATION OF THE TEMPORARY FEEDERS, THE DISCONNECTION OF THE 480V POWER FEEDERS FROM MCC-9 AND MCC-10, OR THE INSTALLATION OF MCC-9 AND MCC-10 UNTIL THE CENTRAL PUMP BACK STATION TO BE INSTALLED AS PART OF THIS CONTRACT IS COMPLETE, TESTED AND ACCEPTED BY MANATEE COUNTY.
- 2. THE CONTRACTOR SHALL NOTIFY MANATEE COUNTY IN WRITING A MINIMUM OF ONE (1) WEEK IN ADVANCE OF ANY PROPOSED SHUTDOWN OF MCC-9 OR MCC-10. THE CONTRACTOR SHALL NOT COMMENCE SHUTDOWNS WITHOUT WRITTEN APPROVAL OF MANATEE COUNTY.
- 3. MCC-9 AND MCC-10 SHALL NOT BE REPLACED CONCURRENTLY. THE CONTRACTOR SHALL ONLY REPLACE ONE (1) MOTOR CONTROL CENTER AT A TIME.

ELECTRICAL BUILDING NO. 1 MODIFICATIONS PLAN

SCALE: NOT TO SCALE



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SEWRF RECLAIMED PUMP BACK STATION

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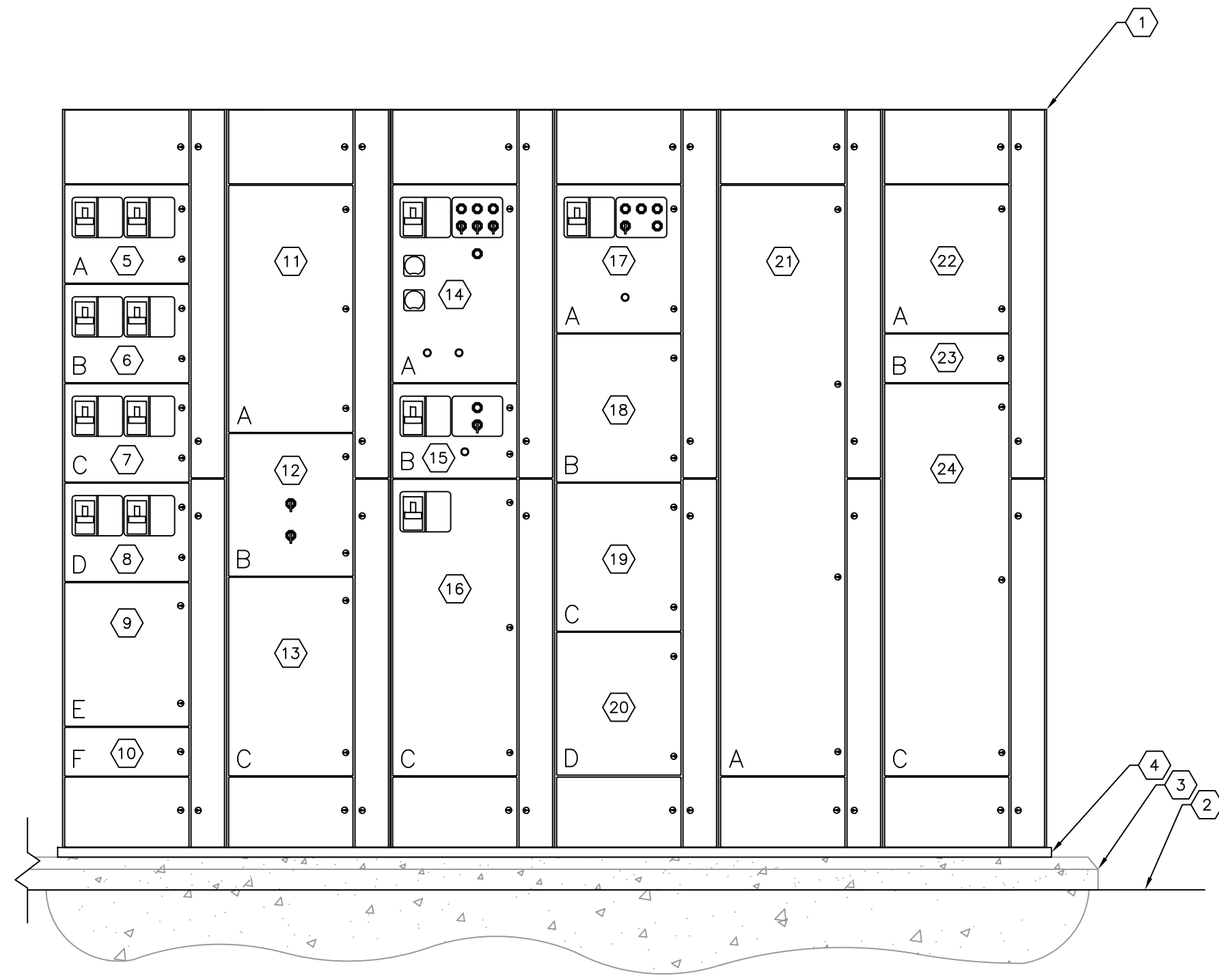
ELECTRICAL BUILDING NO. 1 FLOOR PLAN

SHEET NUMBER

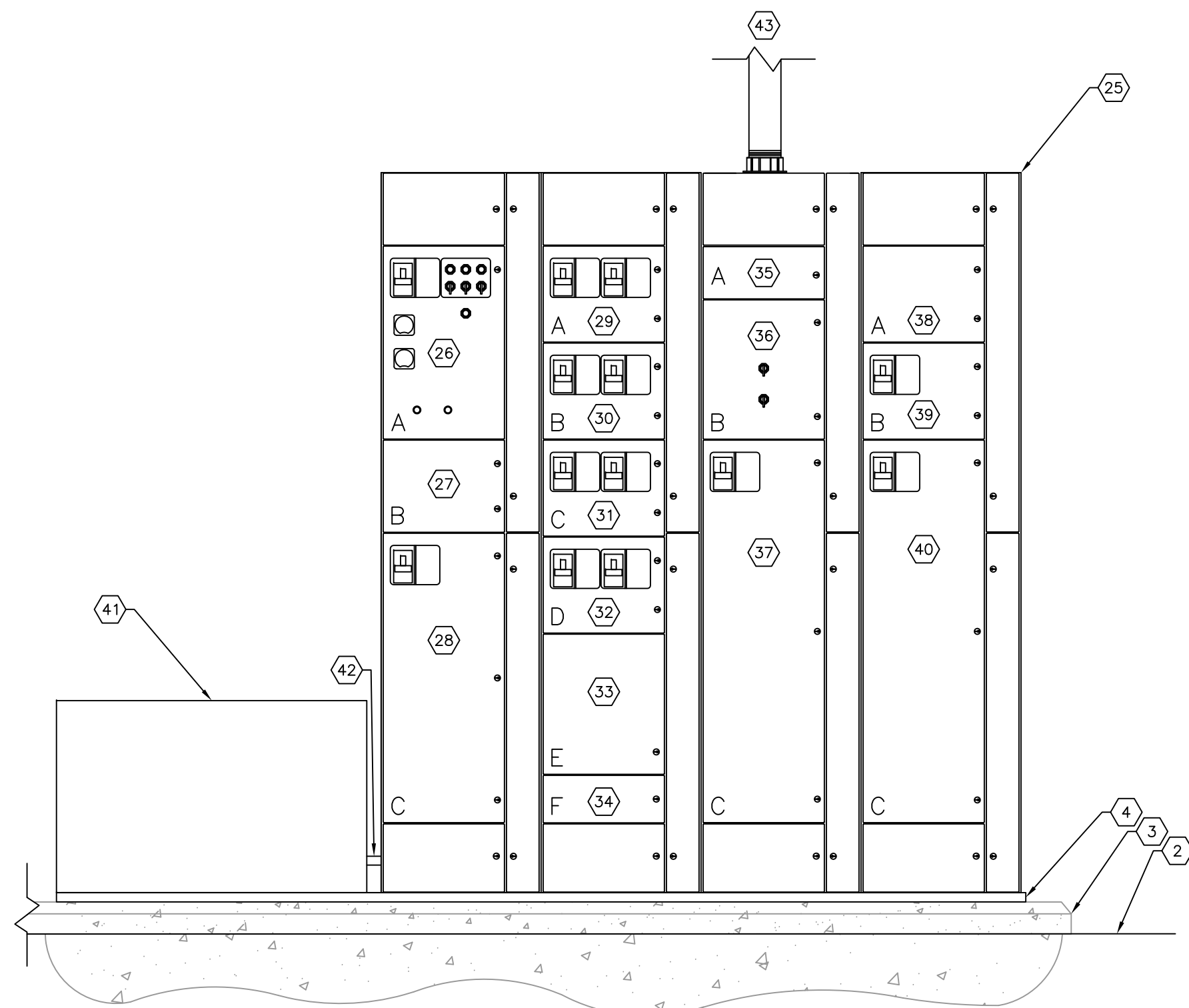
E-11

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EXISTING MCC-9 FRONT ELEVATION
SCALE: NOT TO SCALE



PROPOSED MCC-9 FRONT ELEVATION
SCALE: NOT TO SCALE

KEY NOTES:

- 1 EXISTING MOTOR CONTROL CENTER "MCC-9". EXISTING MOTOR CONTROL CENTER SHALL BE REPLACED.
- 2 EXISTING FINISHED FLOOR.
- 3 EXISTING HOUSEKEEPING PAD.
- 4 EXISTING MOTOR CONTROL CENTER IS INSTALLED ON CHANNEL.
- 5 EXISTING SECTION 1A CONTAINING CIRCUIT BREAKERS FOR PANEL P1 TRANSFER SWITCH AND SOUTH AUTO BACK WASH. THESE CIRCUIT BREAKERS SHALL BE DUPLICATED IN THE NEW MCC-9.
- 6 EXISTING SECTION 1B CONTAINING CIRCUIT BREAKERS FOR PANEL LE TRANSFER SWITCH AND ACCU-2. THESE CIRCUIT BREAKERS SHALL BE DUPLICATED IN THE NEW MCC-9.
- 7 EXISTING SECTION 1C CONTAINING CIRCUIT BREAKER FOR THE FLOCCULATOR CONTROL PANEL AND A SPARE CIRCUIT BREAKER. THESE CIRCUIT BREAKERS SHALL BE DUPLICATED IN THE NEW MCC-9.
- 8 EXISTING SECTION 1D CONTAINING CIRCUIT BREAKER FOR WEIR OPERATOR NO. 2 AND A SPARE CIRCUIT BREAKER. THESE CIRCUIT BREAKERS SHALL BE DUPLICATED IN THE NEW MCC-9.
- 9 EXISTING SECTION 1E IS A SPARE BUCKET THAT WILL BE DUPLICATED IN THE NEW MCC-9.
- 10 EXISTING SECTION 1F IS A SPARE BUCKET THAT WILL BE DUPLICATED IN THE NEW MCC-9.
- 11 EXISTING SECTION SECTION 2A IS THE ELR AND LDR RELAY COMPARTMENT. THE ELR AND LDR RELAY COMPARTMENT WILL NOT BE DUPLICATED IN THE NEW MCC-9.
- 12 EXISTING SECTION 2B CONTAINS THE A/C CONTROLS. THIS COMPARTMENT WILL BE DUPLICATED IN THE NEW MCC-9.
- 13 EXISTING SECTION 2C CONTAINS 400A CURRENT LIMITING FUSES. THIS COMPARTMENT WILL NOT BE DUPLICATED IN THE NEW MCC-9.
- 14 EXISTING SECTION 3A CONTAINS THE CIRCUIT BREAKER AND MOTOR STARTER FOR FLASH MIXER NO. 1. THIS COMPARTMENT WILL BE DUPLICATED IN THE NEW MCC-9.
- 15 EXISTING SECTION 3B CONTAINS THE CIRCUIT BREAKER AND MOTOR STARTER FOR EXHAUST FAN NO. 1. THIS COMPARTMENT WILL NOT BE DUPLICATED IN THE NEW MCC-9.
- 16 EXISTING SECTION 3C CONTAINING CIRCUIT BREAKER FOR MCC-5 (BELT PRESS WEST). THIS CIRCUIT BREAKER SHALL BE DUPLICATED IN THE NEW MCC-9.
- 17 EXISTING SECTION 4A CONTAINS A SPARE STARTER THAT WILL NOT BE DUPLICATED IN THE NEW MCC-9.
- 18 EXISTING SECTION 4B CONSISTS OF A SPARE BUCKET THAT WILL NOT BE DUPLICATED IN THE NEW MCC-9.
- 19 EXISTING SECTION 4C CONSISTS OF A SPARE BUCKET THAT WILL NOT BE DUPLICATED IN THE NEW MCC-9.
- 20 EXISTING SECTION 4D CONSISTS OF A SPARE BUCKET THAT WILL NOT BE DUPLICATED IN THE NEW MCC-9.
- 21 EXISTING SECTION 5A CONSISTS OF A SPARE BUCKET THAT WILL NOT BE DUPLICATED IN THE NEW MCC-9.
- 22 EXISTING SECTION 6A CONSISTS OF A SPARE BUCKET THAT WILL NOT BE DUPLICATED IN THE NEW MCC-9.
- 23 EXISTING SECTION 6B CONTAINS LIGHTNING ARRESTERS THAT SHALL BE DUPLICATED IN THE NEW MCC-9.
- 24 EXISTING SECTION 6C CONTAINS 800A CURRENT LIMITING FUSES (MCC-9 INCOMING FEED FROM SWITCHGEAR 1). THE FUSES SHALL NOT BE DUPLICATED IN THE NEW MCC-9.
- 25 PROPOSED MOTOR CONTROL CENTER "MCC-9". REFER ALSO TO SPECIFICATIONS.
- 26 SECTION 1A SHALL CONTAIN THE NEW CIRCUIT BREAKER AND NEW MOTOR STARTER FOR FLASH MIXER NO. 1.
- 27 SECTION 1B SHALL BE A SPARE CUBICLE.
- 28 SECTION 1C SHALL CONTAIN THE NEW CIRCUIT BREAKER FOR MCC-5 (BELT PRESS WEST).
- 29 SECTION 2A SHALL CONTAIN THE CIRCUIT BREAKERS FOR PANEL P1 TRANSFER SWITCH AND SOUTH AUTO BACK WASH.
- 30 SECTION 2B SHALL CONTAIN THE CIRCUIT BREAKERS FOR PANEL LE TRANSFER SWITCH AND ACCU-2.
- 31 SECTION 2C SHALL CONTAIN THE CIRCUIT BREAKER FOR THE FLOCCULATOR CONTROL PANEL AND A SPARE CIRCUIT BREAKER.
- 32 SECTION 2D SHALL CONTAIN THE CIRCUIT BREAKER FOR WEIR OPERATOR NO. 2 AND A SPARE CIRCUIT BREAKER.
- 33 SECTION 2E SHALL CONSIST OF A SPARE BUCKET.
- 34 SECTION 2F SHALL CONSIST OF A SPARE BUCKET.

KEY NOTES CONTINUED:

- 35 SECTION 3A SHALL CONSIST OF A SPARE BUCKET.
- 36 SECTION 3B SHALL CONTAIN THE A/C CONTROLS.
- 37 SECTION 3C SHALL CONTAIN A 3-POLE, 400A, TIE BREAKER.
- 38 SECTION 4A SHALL CONSIST OF A SPARE BUCKET.
- 39 SECTION 4B SHALL CONSIST OF A SURGE PROTECTION DEVICE (SPD).
- 40 SECTION 4C SHALL CONTAIN A 3-POLE, 800A, MAIN CIRCUIT BREAKER THAT SHALL BE FED FROM SWITCHBOARD No. 1.
- 41 THE CONTRACTOR SHALL PROVIDE A 24" X 20" X 20" STAINLESS STEEL JUNCTION BOX TO BE UTILIZED TO REROUTE THE ASSOCIATED CONDUCTORS FOR THE PANEL P1 TRANSFER SWITCH, THE SOUTH AUTO BACK WASH, THE PANEL LE TRANSFER SWITCH, ACCU-2, THE FLOCCULATOR CONTROL PANEL, WEIR OPERATOR NO. 2, ETC.. AS THE EXISTING CONDUCTORS WILL NOT REACH THE NEW LOCATION OF THEIR ASSOCIATED CIRCUIT BREAKER OF STARTER, THE CONTRACTOR SHALL INSTALL 600V, POWER DISTRIBUTION BLOCKS (AMPACITY AS REQUIRED) FOR THE TERMINATION OF THE EXISTING CONDUCTORS AND THE INSTALLATION OF THE NEW CONDUCTORS.
- 42 THE CONTRACTOR SHALL PROVIDE CONDUITS AS REQUIRED FOR THE NEW CONDUCTORS TO BE INSTALLED IN KEYED NOTE #41.
- 43 THE CONTRACTOR SHALL PROVIDE AND INSTALL 3-#600 kcmil THWN CU + 1/0 THWN CU GND. IN 4" CONDUIT TO THE NEW MCC-10 FOR THE TIE FEEDER. CONTRACTOR SHALL FIELD ROUTE CONDUIT AS REQUIRED. REFER ALSO TO MCC-10 ELEVATION ON SHEET E-13.

GENERAL NOTES:

- 1. THE CONTRACTOR SHALL NOT COMMENCE INSTALLATION OF THE TEMPORARY FEEDERS, THE DISCONNECTION OF THE 480V POWER FEEDERS TO MCC-5 AND MCC-6, OR THE INSTALLATION OF MCC-9 AND MCC-10 UNTIL THE CENTRAL PUMP BACK STATION TO BE INSTALLED AS PART OF THIS CONTRACT IS COMPLETE, TESTED AND ACCEPTED BY MANATEE COUNTY.
- 2. THE CONTRACTOR SHALL NOTIFY MANATEE COUNTY IN WRITING A MINIMUM OF ONE (1) WEEK IN ADVANCE OF ANY PROPOSED SHUTDOWN OF MCC-9 OR MCC-10. THE CONTRACTOR SHALL NOT COMMENCE SHUTDOWNS WITHOUT WRITTEN APPROVAL OF MANATEE COUNTY.




No.	REVISIONS	DATE	BY

Kimley»Horn

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DRAWN BY	JLH
CHECKED BY	TDT



**SEWRF RECLAIMED
PUMP BACK STATION**

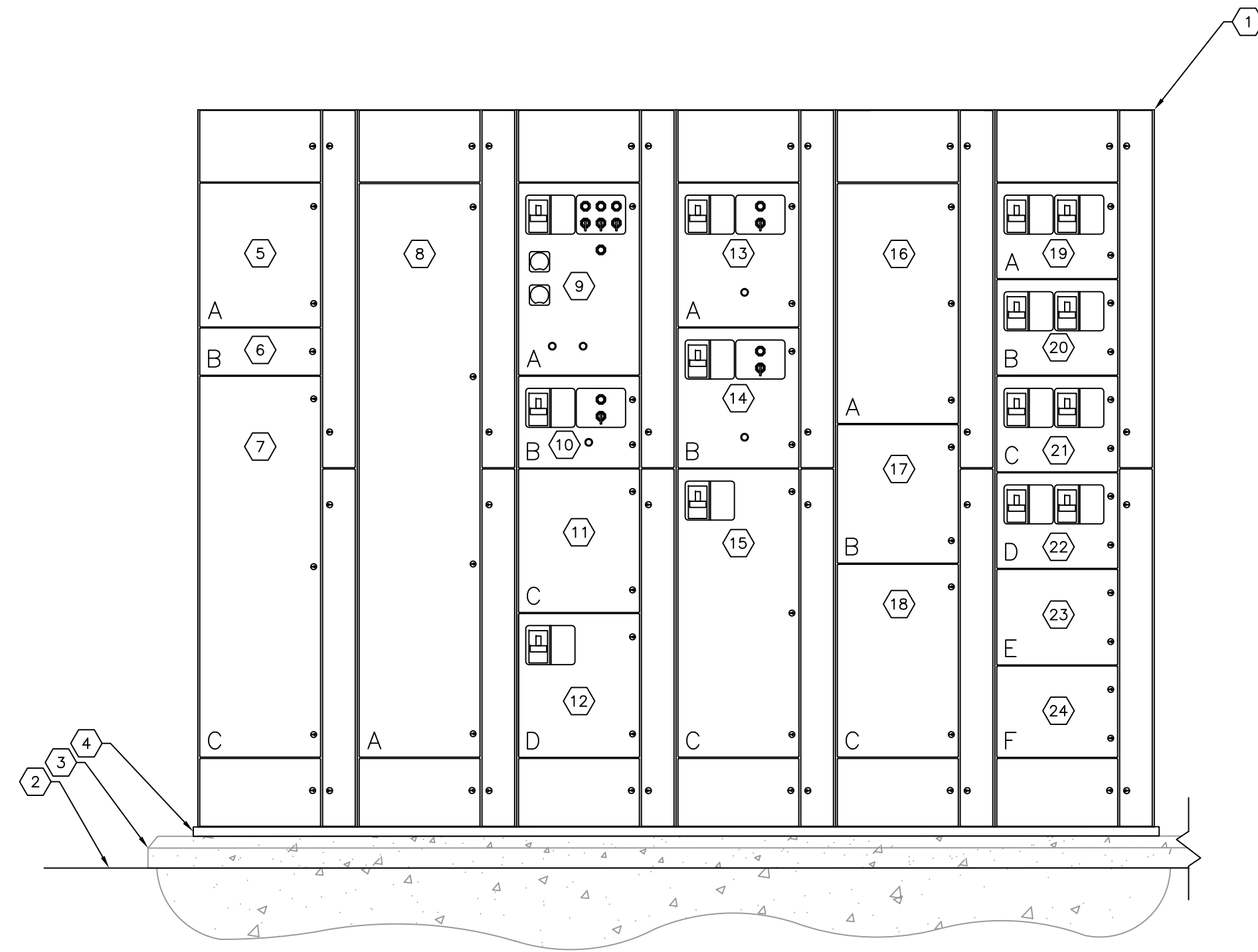
MANATEE COUNTY

LICENSED PROFESSIONAL	TIMOTHY THOMAS, P.E.
FL LICENSE NUMBER	47079
FL DATE:	

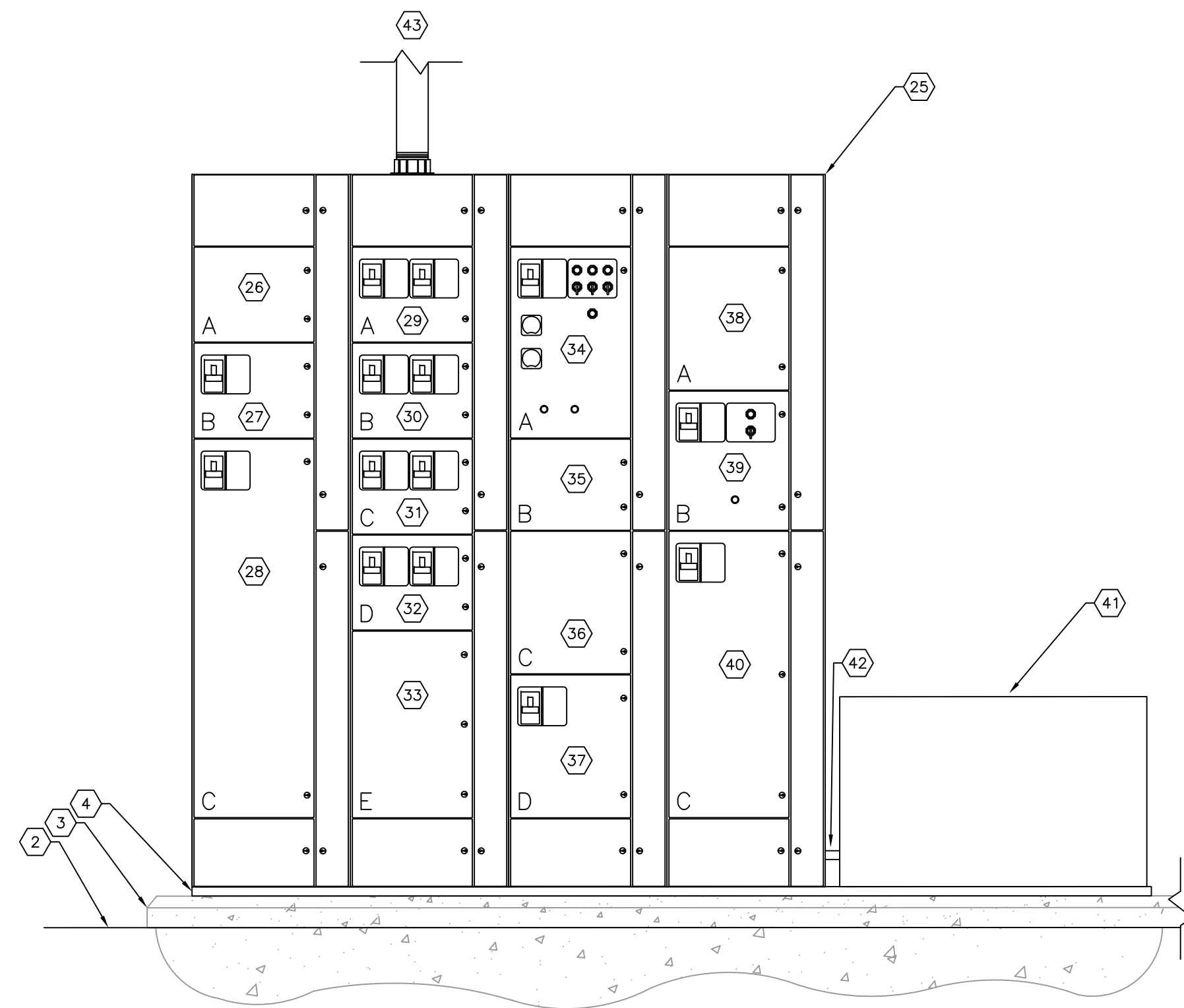
**MCC-9 ELEVATION
AND DETAILS**

SHEET NUMBER
E-12

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EXISTING MCC-10 FRONT ELEVATION A
SCALE: NOT TO SCALE
E-11 | E-13



PROPOSED MCC-10 FRONT ELEVATION
SCALE: NOT TO SCALE

KEY NOTES:

- 1 EXISTING MOTOR CONTROL CENTER 'MCC-10'. EXISTING MOTOR CONTROL CENTER SHALL BE REPLACED.
- 2 EXISTING FINISHED FLOOR.
- 3 EXISTING HOUSEKEEPING PAD.
- 4 EXISTING MOTOR CONTROL CENTER IS INSTALLED ON CHANNEL.
- 5 EXISTING SECTION 1A CONSISTS OF A SPARE BUCKET. THE SPARE SHALL BE DUPLICATED IN THE NEW MCC-10.
- 6 EXISTING SECTION 1B CONTAINS LIGHTNING ARRESTERS THAT SHALL BE DUPLICATED IN THE NEW MCC-10.
- 7 EXISTING SECTION 1C CONTAINS 800A CURRENT LIMITING FUSES (MCC-10 INCOMING FEED FROM SWITCHGEAR 1). THE FUSES SHALL NOT BE DUPLICATED IN THE NEW MCC-10.
- 8 EXISTING SECTION 2A CONSISTS OF A SPARE BUCKET THAT WILL NOT BE DUPLICATED IN THE NEW MCC-10.
- 9 EXISTING SECTION 3A CONTAINS THE CIRCUIT BREAKER AND MOTOR STARTER FOR FLASH MIXER NO. 2. THIS COMPARTMENT WILL BE DUPLICATED IN THE NEW MCC-10.
- 10 EXISTING SECTION 3B CONTAINS THE CIRCUIT BREAKER AND MOTOR STARTER FOR EXHAUST FAN NO. 2. THIS COMPARTMENT WILL NOT BE DUPLICATED IN THE NEW MCC-10.
- 11 EXISTING SECTION 3C CONSISTS OF A SPARE BUCKET THAT WILL NOT BE DUPLICATED IN THE NEW MCC-10.
- 12 EXISTING SECTION 3D CONTAINS THE CIRCUIT BREAKER FOR THE SOUTH LAKE FEEDER. THIS COMPARTMENT WILL NOT BE DUPLICATED IN THE NEW MCC-10.
- 13 EXISTING SECTION 4A CONTAINS A SPARE STARTER THAT WILL NOT BE DUPLICATED IN THE NEW MCC-10.
- 14 EXISTING SECTION 4B CONTAINS THE CIRCUIT BREAKER FOR A SAMPLE PUMP. THIS COMPARTMENT WILL BE DUPLICATED IN THE NEW MCC-10.
- 15 EXISTING SECTION 4C CONTAINING CIRCUIT BREAKER FOR MCC-6 (BELT PRESS EAST). THIS CIRCUIT BREAKER SHALL BE DUPLICATED IN THE NEW MCC-10.
- 16 EXISTING SECTION 5A CONSISTS OF A SPARE BUCKET THAT WILL NOT BE DUPLICATED IN THE NEW MCC-10.
- 17 EXISTING SECTION SECTION 5B IS THE ELR AND LDR RELAY COMPARTMENT. THE ELR AND LDR RELAY COMPARTMENT WILL NOT BE DUPLICATED IN THE NEW MCC-10.
- 18 EXISTING SECTION 5C CONTAINS 400A CURRENT LIMITING FUSES. THIS COMPARTMENT WILL NOT BE DUPLICATED IN THE NEW MCC-10.
- 19 EXISTING SECTION 6A CONTAINING THE CIRCUIT BREAKERS FOR PANEL P1 TRANSFER SWITCH AND NORTH AUTO BACK WASH. THESE CIRCUIT BREAKERS SHALL BE DUPLICATED IN THE NEW MCC-10.
- 20 EXISTING SECTION 6B CONTAINING CIRCUIT BREAKERS FOR PANEL LE TRANSFER SWITCH AND ACCU-1. THESE CIRCUIT BREAKERS SHALL BE DUPLICATED IN THE NEW MCC-10.
- 21 EXISTING SECTION 6C CONTAINING CIRCUIT BREAKERS FOR PLANT DRAIN PUMP STATION AND PANEL LE TRANSFER SWITCH. THESE CIRCUIT BREAKERS SHALL BE DUPLICATED IN THE NEW MCC-10.
- 22 EXISTING SECTION 6D CONTAINING CIRCUIT BREAKERS FOR PANEL PFC AND WEIR OPERATOR NO. 1. THESE CIRCUIT BREAKERS SHALL BE DUPLICATED IN THE NEW MCC-10.
- 23 EXISTING SECTION 6E CONSISTS OF A SPARE BUCKET THAT WILL NOT BE DUPLICATED IN THE NEW MCC-10.
- 24 EXISTING SECTION 6F CONSISTS OF A SPARE BUCKET THAT WILL NOT BE DUPLICATED IN THE NEW MCC-10.
- 25 PROPOSED MOTOR CONTROL CENTER 'MCC-10'. REFER ALSO TO SPECIFICATIONS.
- 26 SECTION 1A SHALL CONSIST OF A SPARE BUCKET.
- 27 SECTION 1B SHALL CONSIST OF A SURGE PROTECTION DEVICE (SPD).
- 28 SECTION 1C SHALL CONTAIN A 3-POLE, 800A, MAIN CIRCUIT BREAKER THAT SHALL BE FED FROM SWITCHBOARD No. 1.
- 29 SECTION 2A SHALL CONTAIN THE CIRCUIT BREAKERS FOR PANEL P1 TRANSFER SWITCH AND NORTH AUTO BACK WASH.
- 30 SECTION 2B SHALL CONTAIN THE CIRCUIT BREAKERS FOR PANEL LE TRANSFER SWITCH AND ACCU-1.
- 31 SECTION 2C SHALL CONTAIN THE CIRCUIT BREAKERS FOR THE PLANT DRAIN PUMP STATION AND SCUM EJECTORS.
- 32 SECTION 2D SHALL CONTAIN THE CIRCUIT BREAKERS FOR PANEL PFC AND WEIR OPERATOR NO. 1.

KEY NOTES CONTINUED:

- 33 SECTION 2E SHALL CONSIST OF A LUG CONNECTION FOR THE MCC-9 TIE FEEDER.
- 34 SECTION 3A SHALL CONTAIN THE CIRCUIT BREAKER AND MOTOR STARTER FOR FLASH MIXER NO. 2.
- 35 SECTION 3B SHALL CONSIST OF A SPARE BUCKET.
- 36 SECTION 3C SHALL CONSIST OF A SPARE BUCKET.
- 37 SECTION 3D SHALL CONSIST OF A 3-POLE, 150A CIRCUIT BREAKER FOR THE FUTURE PLANT DRAIN PUMP STATION.
- 38 SECTION 4A SHALL CONSIST OF A SPARE BUCKET.
- 39 SECTION 4B SHALL CONSIST OF THE CIRCUIT BREAKER FOR A SAMPLE PUMP.
- 40 SECTION 4C SHALL CONSIST OF THE CIRCUIT BREAKER FOR MCC-6 (BELT PRESS EAST).
- 41 THE CONTRACTOR SHALL PROVIDE A 24" X 20" X 20" STAINLESS STEEL JUNCTION BOX TO BE UTILIZED TO REROUTE THE ASSOCIATED CONDUCTORS FOR THE PANEL P1 TRANSFER SWITCH, THE NORTH AUTO BACK WASH, THE PANEL LE TRANSFER SWITCH, ACCU-1, AND WEIR OPERATOR NO. 1, ETC.. AS THE EXISTING CONDUCTORS WILL NOT REACH THE NEW LOCATION OF THEIR ASSOCIATED CIRCUIT BREAKER OF STARTER, THE CONTRACTOR SHALL INSTALL 600V, POWER DISTRIBUTION BLOCKS (AMPACITY AS REQUIRED) FOR THE TERMINATION OF THE EXISTING CONDUCTORS AND THE INSTALLATION OF THE NEW CONDUCTORS.
- 42 THE CONTRACTOR SHALL PROVIDE CONDUITS AS REQUIRED FOR THE NEW CONDUCTORS TO BE INSTALLED IN KEYED NOTE #41.
- 43 THE CONTRACTOR SHALL PROVIDE AND INSTALL 3-#600 kcmil THWN CU + 1/0 THWN CU GND. IN 4" CONDUIT TO THE NEW MCC-9 FOR THE TIE FEEDER. CONTRACTOR SHALL FIELD ROUTE CONDUIT AS REQUIRED. REFER ALSO TO MCC-9 ELEVATION ON SHEET E-12.

GENERAL NOTES:

- 1. THE CONTRACTOR SHALL NOT COMMENCE INSTALLATION OF THE TEMPORARY FEEDERS, THE DISCONNECTION OF THE 480V POWER FEEDERS TO MCC-5 AND MCC-6, OR THE INSTALLATION OF MCC-9 AND MCC-10 UNTIL THE CENTRAL PUMP BACK STATION TO BE INSTALLED AS PART OF THIS CONTRACT IS COMPLETE, TESTED AND ACCEPTED BY MANATEE COUNTY.
- 2. THE CONTRACTOR SHALL NOTIFY MANATEE COUNTY IN WRITING A MINIMUM OF ONE (1) WEEK IN ADVANCE OF ANY PROPOSED SHUTDOWN OF MCC-9 OR MCC-10. THE CONTRACTOR SHALL NOT COMMENCE SHUTDOWNS WITHOUT WRITTEN APPROVAL OF MANATEE COUNTY.

No.	REVISIONS	DATE	BY

Kimley»Horn

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KHA PROJECT 148400015
DATE 6/26/19
SCALE AS SHOWN
DESIGNED BY TDT
DRAWN BY JLH
CHECKED BY TDT



**SEWRF RECLAIMED
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MANATEE COUNTY

LICENSED PROFESSIONAL
TIMOTHY THOMAS, P.E.
FL LICENSE NUMBER 47079
FL DATE:

**MCC-10 ELEVATION
AND DETAILS**

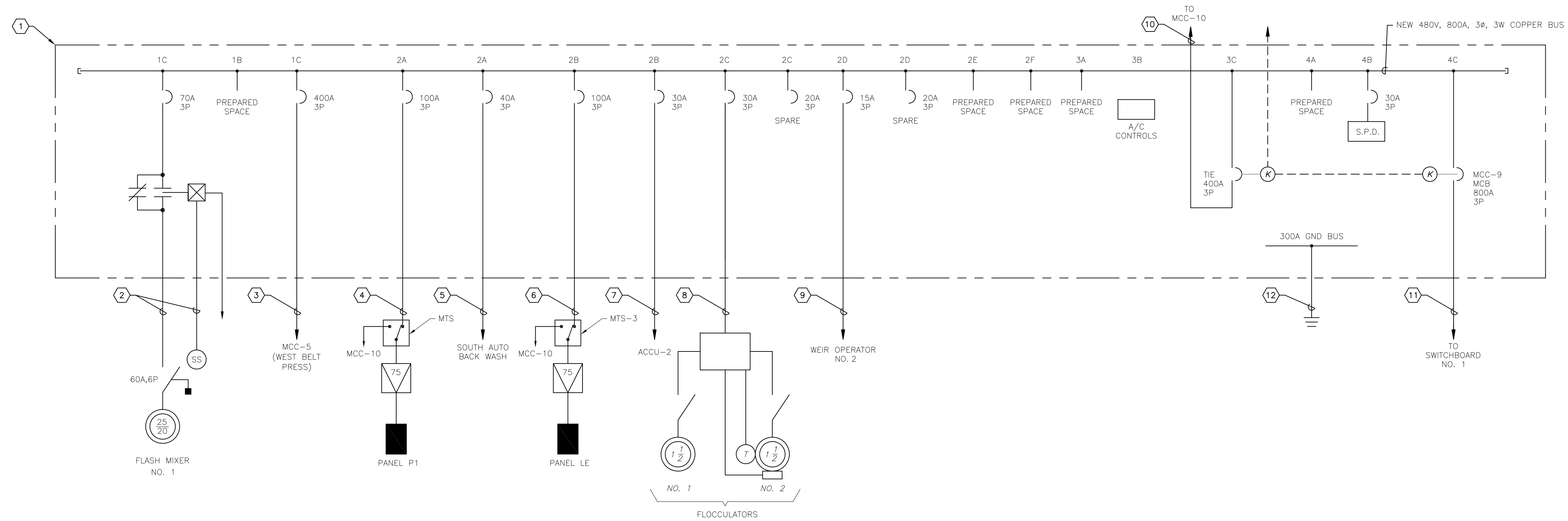
SHEET NUMBER

E-13



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813.227.9190 FAX 813.227.9195
Certificate of Authorization No. 00031028

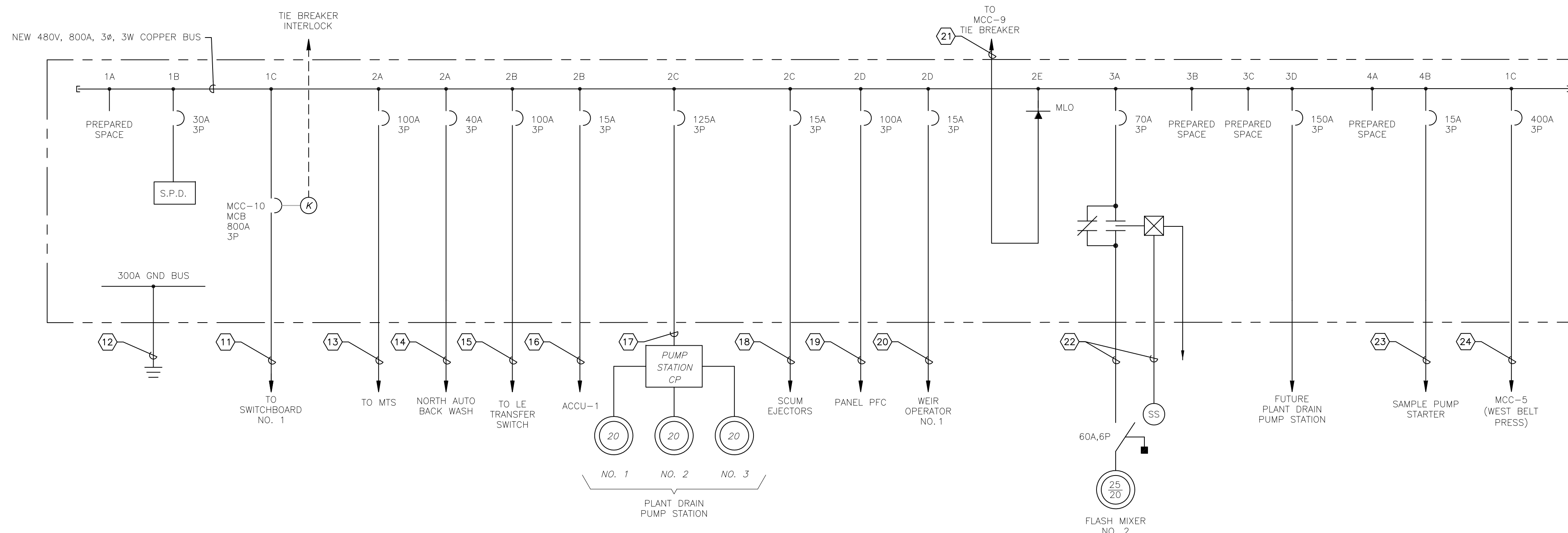
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NEW MOTOR CONTROL CENTER 'MCC-9' ONE-LINE DIAGRAM

KEY NOTES:

- ① NEW MOTOR CONTROL CENTER 'MCC-9'.
- ② 3-#6 + 1-#8 GND + 4-#12 IN 1-1/4". FOR FLASH MIXER NO. 1.
- ③ 3-#600 MCM + 1-#2 IN 4". FOR MCC-5 (BELT PRESS WEST).
- ④ 3-#3 + 1-#8 IN 1-1/4". FOR PANEL P1 TRANSFER SWITCH.
- ⑤ 3-#8 + 1-#10 IN 1-1/4". FOR SOUTH AUTO BACK WASH.
- ⑥ 3-#3 + 1-#8 IN 1-1/4". FOR PANEL LE TRANSFER SWITCH.
- ⑦ 3-#10 + 1-#10 IN 1". FOR ACCU-2.
- ⑧ 3-#8 + 1-#10 IN 1-1/4". FOR THE FLOCCULATOR CONTROL PANEL.
- ⑨ 3-#10 + 1-#10 IN 1". FOR WEIR OPERATOR NO. 2.
- ⑩ 3-#500 MCM + 1-#3 IN 4". FOR 400A TIE CIRCUIT BREAKER.
- ⑪ TWO (2) PARALLEL RUNS OF 3-#500 MCM + 1-#3 IN 4". FOR 800A MAIN CIRCUIT BREAKER FED FROM SWITCHBOARD NO. 1.
- ⑫ #1/0 GROUND TO GROUND GRID.
- ⑬ 3-#3 + 1-#8 IN 1-1/4". FOR PANEL P1 TRANSFER SWITCH.
- ⑭ 3-#8 + 1-#10 IN 1-1/4". FOR NORTH AUTO BACK WASH.
- ⑮ 3-#3 + 1-#8 IN 1-1/4". FOR PANEL LE TRANSFER SWITCH.
- ⑯ 3-#10 + 1-#10 IN 1". FOR ACCU-1.
- ⑰ 3-#1/0 + 1-#6 IN 1-1/2". FOR THE EXISTING PLANT DRAIN PUMP STATION.
- ⑱ 3-#10 + 1-#10 IN 1". FOR THE SCUM EJECTORS.
- ⑲ 3-#3 + 1-#8 IN 1-1/4". FOR PANEL PFC.
- ⑳ 3-#10 + 1-#10 IN 1". FOR WEIR OPERATOR NO. 1.
- ㉑ 3-#500 MCM + 1-#3 IN 4". TO THE 400A TIE CIRCUIT BREAKER.
- ㉒ 3-#6 + 1-#8 GND + 4-#12 IN 1-1/4". FOR FLASH MIXER NO. 2.
- ㉓ 3-#10 + 1-#10 IN 1". FOR THE SAMPLE PUMP.
- ㉔ 3-#600 MCM + 1-#2 IN 4". FOR MCC-6 (BELT PRESS EAST).



NEW MOTOR CONTROL CENTER 'MCC-10' ONE-LINE DIAGRAM

GENERAL NOTES:

1. THE CONDUIT AND CONDUCTOR INFORMATION PRESENTED HERE IS DERIVED FROM BEST AVAILABLE RECORD DRAWINGS. EXISTING CONDITIONS MAY NOT REFLECT WHAT IS DEPICTED. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING CONDITIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS OR COMMENCING WORK.



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KHA PROJECT
148400015
DATE
6/26/19
SCALE AS SHOWN
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CHECKED BY TDT



SEWRF RECLAIMED
PUMP BACK STATION

MANATEE COUNTY

LICENSED PROFESSIONAL
TIMOTHY THOMAS, P.E.
FL LICENSE NUMBER
47079

FL DATE:

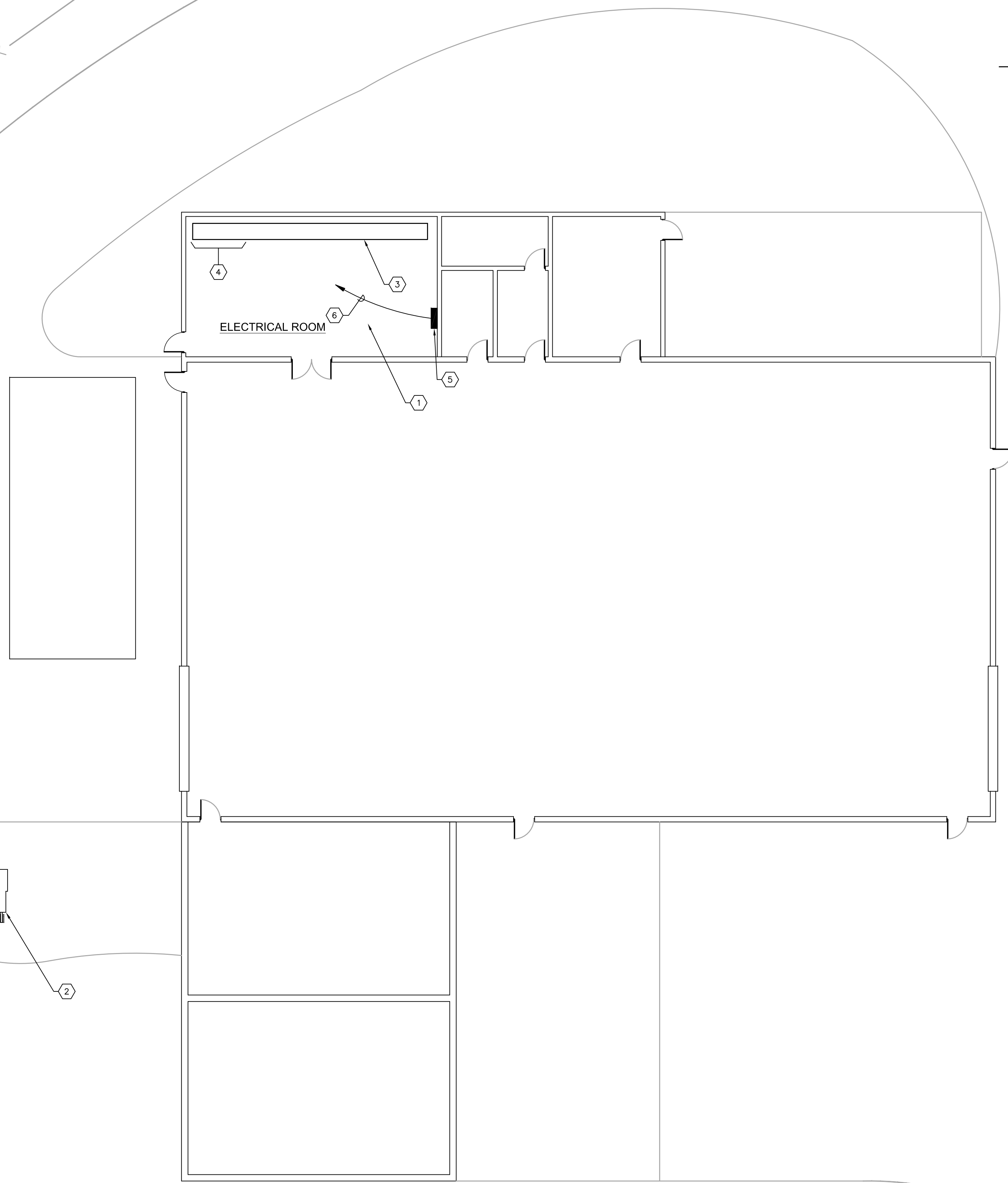
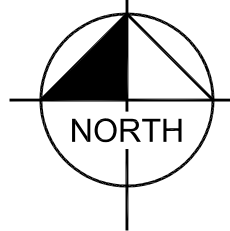
MCC-9 AND MCC-10
ONE-LINE DIAGRAMS

SHEET NUMBER

E-14

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KEY NOTES:

- 1 EXISTING BIOSOLIDS BUILDING ELECTRICAL ROOM.
- 2 EXISTING FP&L TRANSFORMER.
- 3 EXISTING MOTOR CONTROL CENTER 'MCC-1'.
- 4 CONTRACTOR TO REMOVE EXISTING 30" MAIN CIRCUIT BREAKER SECTION OF MCC-1. CONTRACTOR TO PROVIDE AND INSTALL NEW ALLEN BRADLEY 30" MAIN BREAKER SECTION WITH NEW 3-POLE, 600V, 1,600 AMPERE MAIN CIRCUIT BREAKER. REFER ALSO TO SPECIFICATIONS.
- 5 EXISTING PANELBOARD 'L1'. CONTRACTOR SHALL UTILIZE EXISTING 120V, 20A SPARE CIRCUIT BREAKER (OR PROVIDE NEW 120V, 20A, SINGLE-POLE CIRCUIT BREAKER) TO PROVIDE 120V AC POWER TO MCC-1 MAIN CIRCUIT BREAKER SECTION FOR ARC FLASH SENSOR.
- 6 PROVIDE 2-#12 +1-#12 IN 3/4" C. FOR ARC FLASH SENSOR 120V AC POWER.

GENERAL NOTES:

- 1. THE CONTRACTOR SHALL NOTIFY MANATEE COUNTY IN WRITING A MINIMUM OF ONE (1) WEEK IN ADVANCE OF ANY PROPOSED SHUTDOWN OF MCC-1. THE CONTRACTOR SHALL NOT COMMENCE THE SHUTDOWN WITHOUT WRITTEN APPROVAL OF MANATEE COUNTY.
- 2. THE CONTRACTOR SHALL UTILIZE EXTREME CARE TO INSURE THE MAIN CIRCUIT BREAKER FEEDER CONDUCTORS ARE PROTECTED DURING THE INSTALLATION OF THE NEW MCC-1 MAIN CIRCUIT BREAKER SECTION. THE CONTRACTOR SHALL MEGGER THE CONDUCTORS AFTER INSTALLATION IS COMPLETE AND PROVIDE THE COUNTY WITH WRITTEN MEGGER RESULTS.

BIOSOLIDS BUILDING MODIFICATIONS PLAN 1
SCALE: NOT TO SCALE



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KHA PROJECT	148400015
DATE	6/26/19
SCALE	AS SHOWN
DESIGNED BY	TDT
DRAWN BY	JLH
CHECKED BY	TDT

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PUMP BACK STATION**

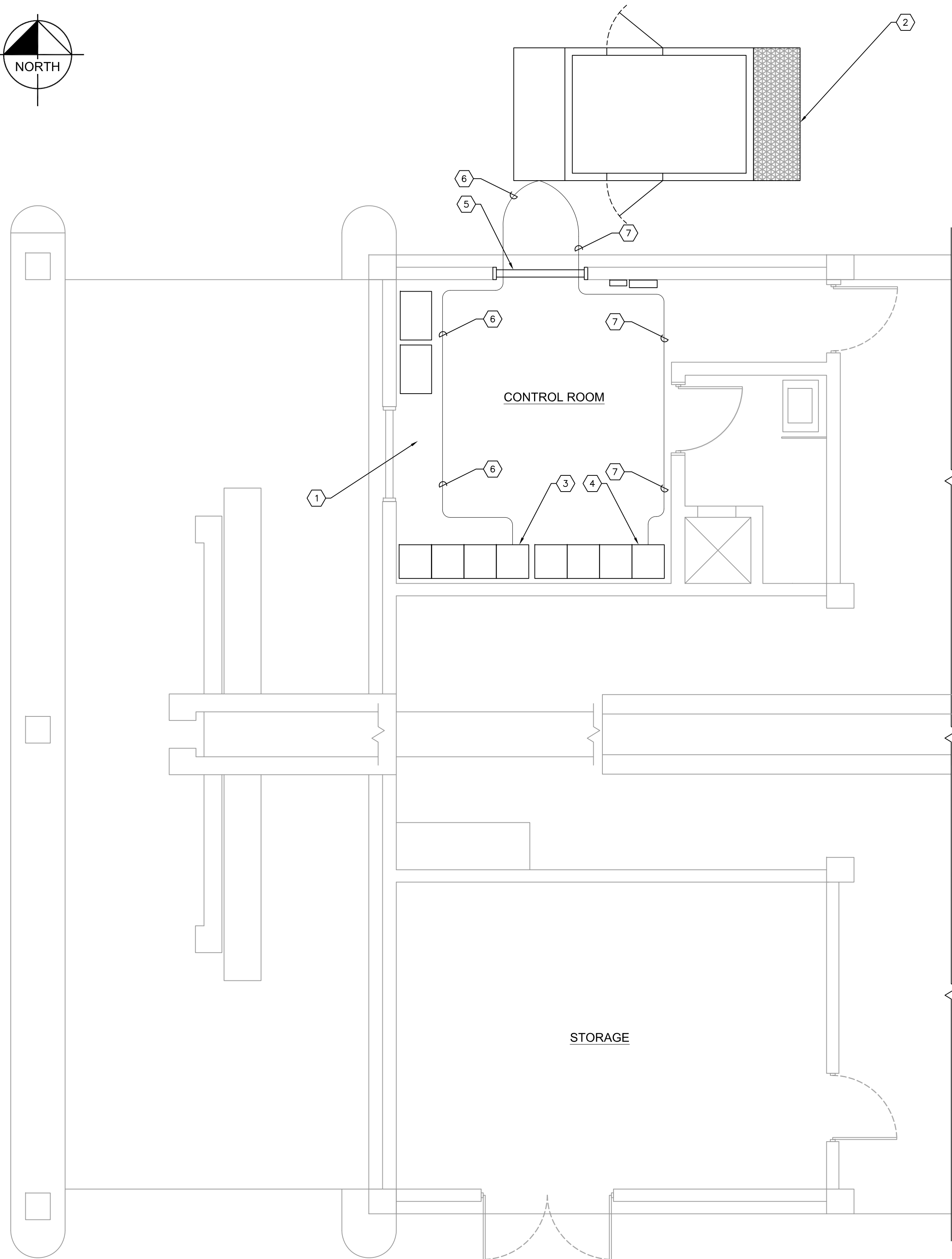
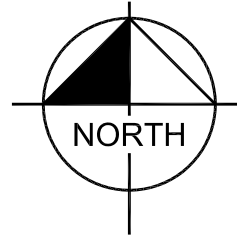
MANATEE COUNTY

LICENSED PROFESSIONAL	TIMOTHY THOMAS, P.E.
FL LICENSE NUMBER	47079

**BIOSOLIDS BUILDING
ELECTRICAL PLAN**

SHEET NUMBER	E-15
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KEY NOTES:

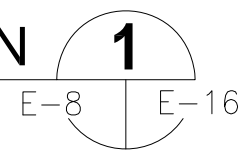
1. EXISTING DEWATERING BUILDING CONTROL ROOM.
2. CONTRACTOR TO PROVIDE TEMPORARY 400 KW, 480V, 3-PHASE, 3-WIRE GENERATOR TO PROVIDE POWER TO MCC-5 AND MCC-6 DURING REPLACEMENT OF MCC-9 AND MCC-10. TEMPORARY GENERATOR SHALL BE CONTRACTOR OWNED OR RENTAL, BUT THE UNIT MUST BE PROVIDED IN WEATHERPROOF, SOUND- ATTENUATED ENCLOSURE AND MUST HAVE TWO (2) INDIVIDUAL 300 AMPERE CIRCUIT BREAKERS TO POWER THE INDIVIDUAL MOTOR CONTROL CENTERS.
3. EXISTING MOTOR CONTROL CENTER 'MCC-5'. MCC-5 TO BE POWERED TEMPORARILY BY GENERATOR IN KEYED NOTE #2 DURING THE REPLACEMENT OF MCC-9 AND MCC-10. CONTRACTOR SHALL TEMPORARILY DISCONNECT 480V FEEDER CONDUCTORS FROM MCC-9 AND FEED MOTOR CONTROL CENTER FROM TEMPORARY GENERATOR IN KEYED NOTE #2.
4. EXISTING MOTOR CONTROL CENTER 'MCC-6'. MCC-6 TO BE POWERED TEMPORARILY BY GENERATOR IN KEYED NOTE #2 DURING THE REPLACEMENT OF MCC-9 AND MCC-10. CONTRACTOR SHALL TEMPORARILY DISCONNECT 480V FEEDER CONDUCTORS FROM MCC-10 AND FEED MOTOR CONTROL CENTER FROM TEMPORARY GENERATOR IN KEYED NOTE #2.
5. EXISTING WINDOW ON NORTH WALL OF DEWATERING BUILDING CONTROL ROOM. CONTRACTOR SHALL TEMPORARILY REMOVE EXISTING SCREEN AND OPEN WINDOW AS REQUIRED TO FEED TEMPORARY CONDUCTORS FROM GENERATOR TO ASSOCIATED MOTOR CONTROL CENTER. CONTRACTOR SHALL PROTECT WINDOW AS REQUIRED IN ORDER TO INSURE TEMPORARY CONDUCTOR INSTALLATION DOES NOT DAMAGE THE WINDOW. AFTER THE INSTALLATION AND ACCEPTANCE OF MCC-9 AND MCC-10, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING THE WINDOW SCREEN.
6. CONTRACTOR TO PROVIDE AND INSTALL TEMPORARY CONDUCTORS, 600V, COPPER CONDUCTORS CONSISTING OF 3-#350 kcmil + 1-#4 GND FROM TEMPORARY GENERATOR TO MCC-5. CONTRACTOR SHALL CONNECT TEMPORARY CONDUCTORS TO LINE SIDE OF MCC-5 MAIN CIRCUIT BREAKER. REFER ALSO TO KEYED NOTE #3.
7. CONTRACTOR TO PROVIDE AND INSTALL TEMPORARY CONDUCTORS, 600V, COPPER CONDUCTORS CONSISTING OF 3-#350 kcmil + 1-#4 GND FROM TEMPORARY GENERATOR TO MCC-6. CONTRACTOR SHALL CONNECT TEMPORARY CONDUCTORS TO LINE SIDE OF MCC-6 MAIN CIRCUIT BREAKER. REFER ALSO TO KEYED NOTE #4.

GENERAL NOTES:

1. THE CONTRACTOR SHALL NOT COMMENCE INSTALLATION OF THE TEMPORARY FEEDERS, THE DISCONNECTION OF THE 480V POWER FEEDERS FROM MCC-9 AND MCC-10, OR THE INSTALLATION OF MCC-9 AND MCC-10 UNTIL THE CENTRAL PUMP BACK STATION TO BE INSTALLED AS PART OF THIS CONTRACT IS COMPLETE, TESTED AND ACCEPTED BY MANATEE COUNTY.
2. THE CONTRACTOR SHALL FIELD ROUTE THE TEMPORARY CONDUCTORS FROM THE TEMPORARY GENERATOR TO MCC-5 AND MCC-6. ROUTE SHALL AVOID TRIPPING HAZARD AS MUCH AS POSSIBLE. COORDINATE ROUTING /LOCATION WITH MANATEE COUNTY.
3. THE TEMPORARY GENERATOR SHALL NOT BLOCK VEHICULAR TRAFFIC. CONTRACTOR SHALL PROVIDE A PROPOSED LOCATION TO THE ENGINEER/COUNTY PRIOR TO DELIVERY. THE PROPOSED LOCATION MUST BE APPROVED BY THE ENGINEER/COUNTY PRIOR TO DELIVERY TO THE SITE.
4. THE CONTRACTOR SHALL NOTIFY MANATEE COUNTY IN WRITING A MINIMUM OF ONE (1) WEEK IN ADVANCE OF ANY PROPOSED SHUTDOWN OF MCC-5 OR MCC-6. THE CONTRACTOR SHALL NOT COMMENCE SHUTDOWNS WITHOUT WRITTEN APPROVAL OF MANATEE COUNTY.

DEWATERING BUILDING TEMPORARY POWER PLAN

SCALE: NOT TO SCALE



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SCALE	AS SHOWN
DESIGNED BY	TDT
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**SEWRF RECLAIMED
 PUMP BACK STATION**

MANATEE COUNTY

LICENSED PROFESSIONAL	TIMOTHY THOMAS, P.E.
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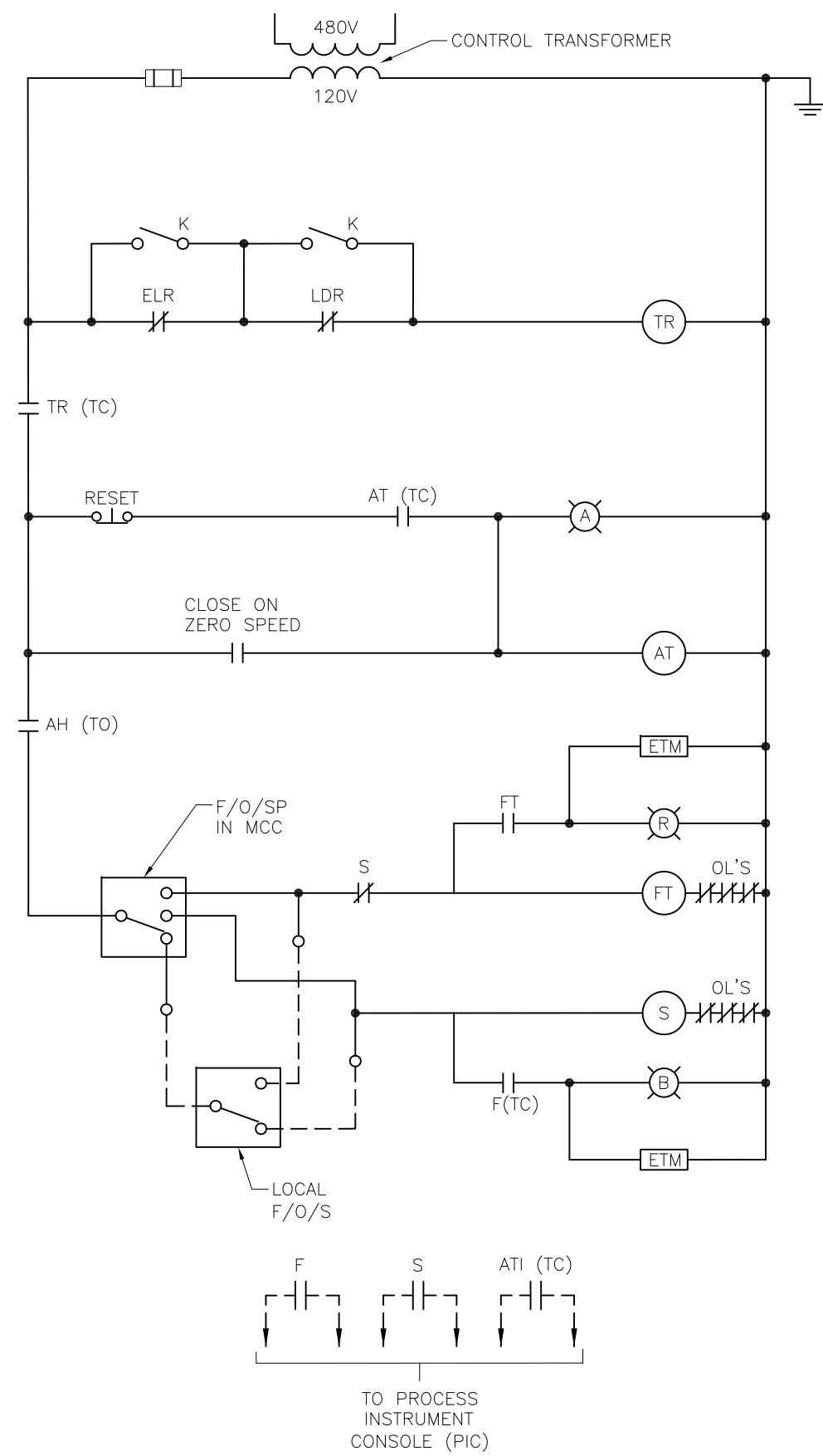
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**DEWATERING BUILDING
 TEMPORARY
 POWER PLAN**

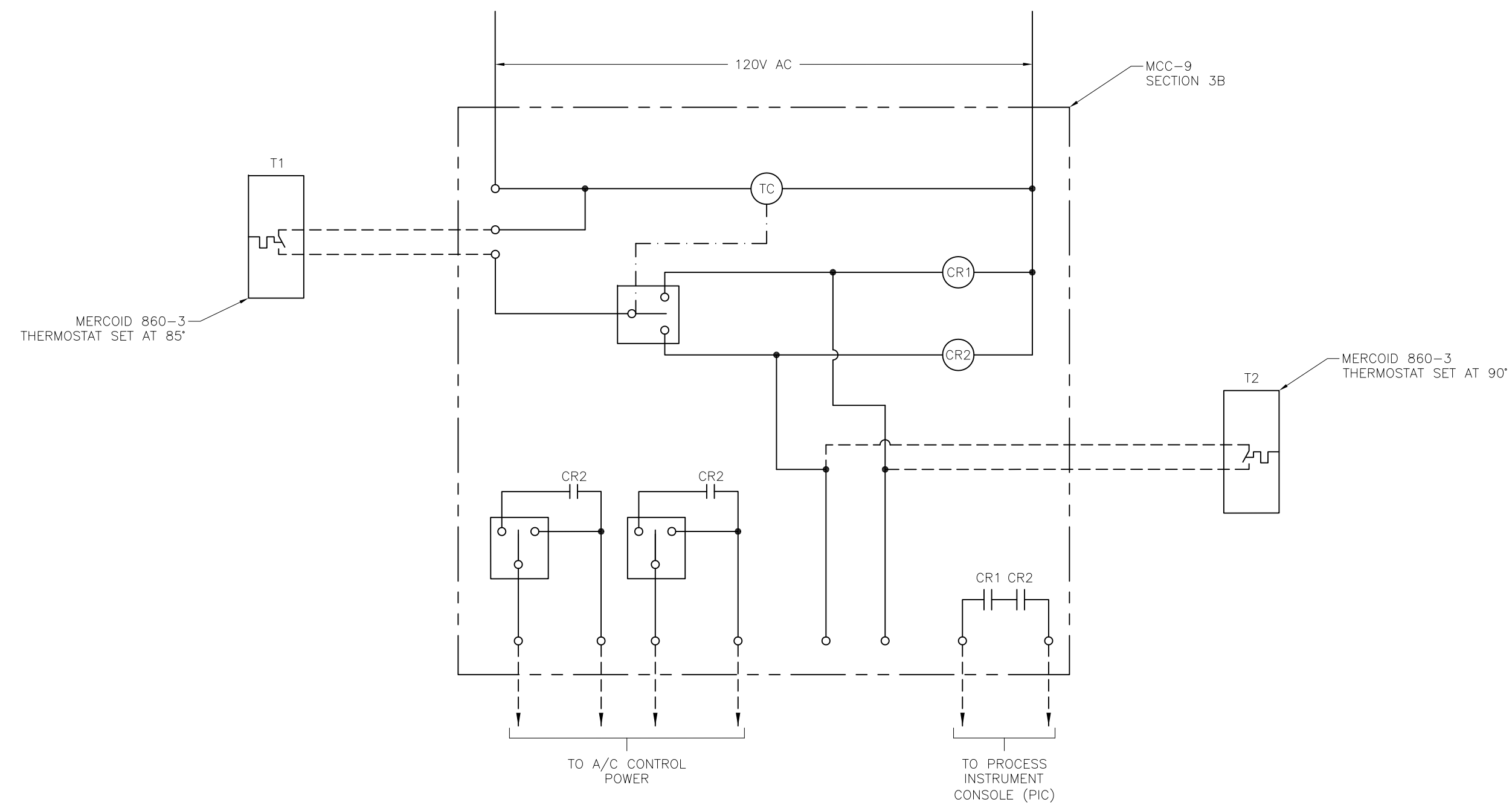
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**TYPICAL FLASH MIXER
MOTOR CONTROL WIRING DIAGRAM**




**ELECTRICAL ROOM A/C CONTROLS
WIRING DIAGRAM**

GENERAL NOTES:
1. THE WIRING DIAGRAMS PRESENTED HERE ARE DERIVED FROM THE BEST AVAILABLE RECORD DRAWINGS. EXISTING CONDITIONS MAY NOT REFLECT WHAT IS DEPICTED. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING CONDITIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS OR COMMENCING WORK.

No.	REVISIONS	DATE	BY

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**SEWRF RECLAIMED
PUMP BACK STATION**
 MANATEE COUNTY

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FL LICENSE NUMBER	47079
FL DATE:	

WIRING DIAGRAMS

SHEET NUMBER	E-17
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FUNCTION SYMBOL SCHEDULE

IDENTIFICATION LETTERS				
	FIRST LETTER		SUCCEEDING LETTERS	
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION
A	ANALYSIS		ALARM	
B	BURNER, COMBUSTION		PROGRAMMER	
C	CONDUCTIVITY			CLOSED
D	DENSITY	DIFFERENTIAL		
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)	
F	FLOW RATE	RATIO (FRACTION)		
G	GAGING		GLASS VIEWING DEVICE	
H	HAND			HIGH
I	CURRENT (ELECTRICAL)		INDICATE	
J	POWER	SCAN		
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION
L	LEVEL		LIGHT (PILOT)	LOW
M	MOTOR	MOMENTARY		MIDDLE, INTERMEDIATE
N	VIBRATION		IGNITOR	ISOLATOR
O	OPERATION	OFFSET	ORIFICE, RESTRICTION	OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION	
Q	QUANTITY, EVENT	INTEGRATE, TOTALIZE	INTEGRATE	
R	RADIATION		RECORD, PRINT	
S	SPEED, FREQUENCY	SAFETY		SWITCH
T	TEMPERATURE			TRANSMIT
U	MULTIVARIABLE	TREND	MULTIFUNCTION	MULTIFUNCTION
V	VISCOSITY	VACUUM		VALVE, DAMPER, LOUVER, GATE
W	WEIGHT, FORCE, TORQUE		WELL	
X	UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED
Y			RELAY, COMPUTE, CONVERT	
Z	POSITION		FINAL CONTROL ELEMENT	UNCLASSIFIED

LINE DESIGNATIONS

INSTRUMENTATION SIGNAL ——— ———
 ELECTRICAL POWER ——— ———
 DATA LINK —D— —D—
 RADIO LINK —R— —R—
 FIBER OPTIC DATA —F— —F—

MISCELLANEOUS NOTATIONS

S/D = SHUTDOWN
 O/R = OVERRIDE
 MCS = MASTER CONTROL STATION
 VFD = VARIABLE FREQUENCY DRIVE
 PCC = PROCESS CONTROL CABINET
 LCP = LOCAL CONTROL PANEL
 ES = ELECTRICAL SUPPLY (120VAC)

CONTROLLER NOTATION

PV = PROCESS VARIABLE INPUT
 SP = SET POINT INPUT
 C = CONTROL OUTPUT

INPUT/OUTPUT NOTATIONS

AI = ANALOG INPUT
 AO = ANALOG OUTPUT
 DI = DISCRETE INPUT
 DO = DISCRETE OUTPUT

HAND SWITCH NOTATION

HOA = HAND-OFF-AUTO
 S/S = START/STOP
 SEL = SELECTOR
 O/C = OPEN/CLOSE
 O/O = ON/OFF
 LOS = LOCKOUT-START
 LOR = LOCAL-OFF-REMOTE
 OAC = OPEN-AUTO CLOSE
 CAO = CLOSED-AUTO OPEN

EQUIPMENT NOTATION

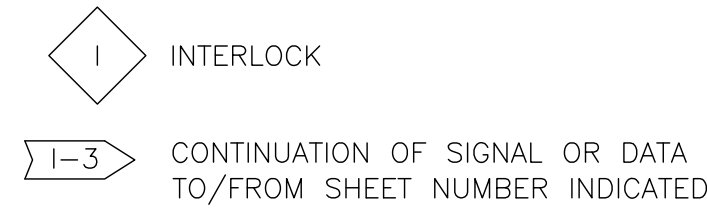
B = BLOWER OR FAN
 E = ENGINE
 G = GENERATOR
 F = FILTER
 GS = GRINDER/SCREEN
 K = COMPRESSOR
 H = HOIST
 ME = MECHANICAL EQUIPMENT
 MX = MIXER
 P = PUMP
 T = TANK OR SUMP

VALVE DESIGNATIONS

MOV = MOTOR OPERATED VALVE

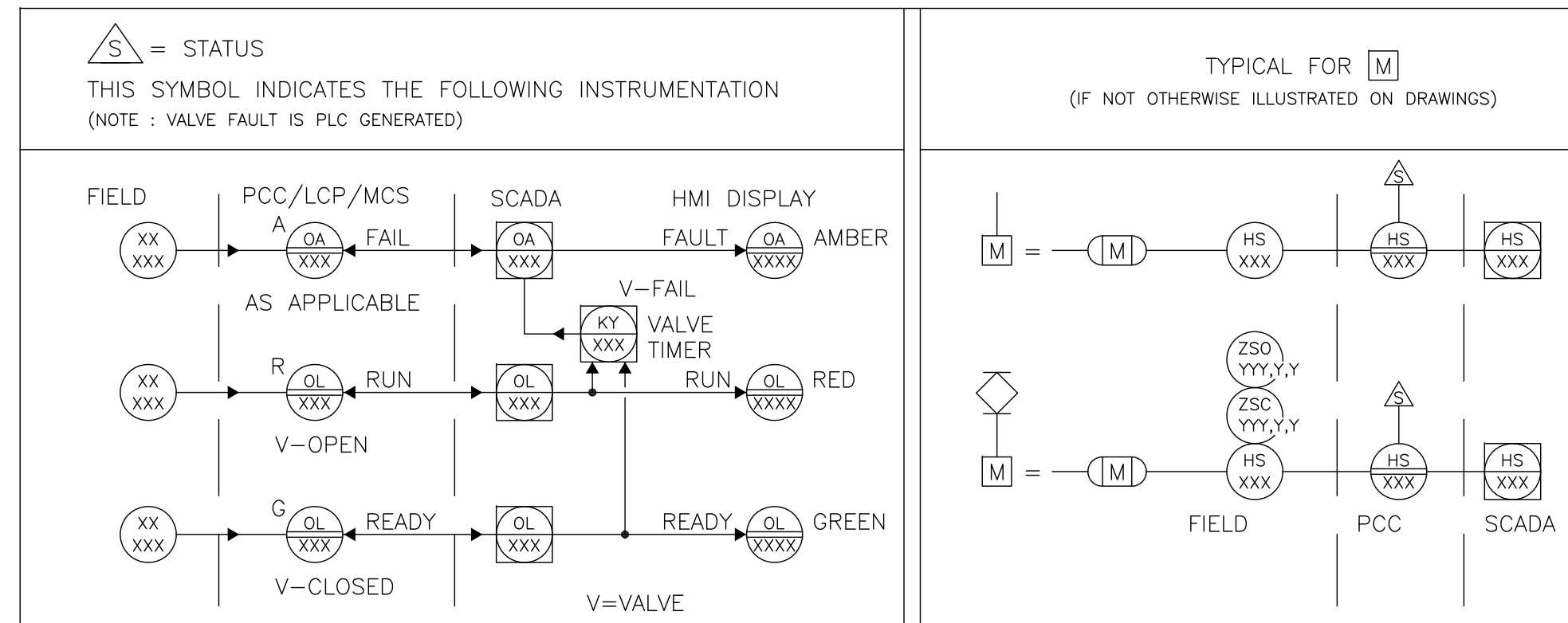
GENERAL ABBREVIATIONS

SCADA = SUPERVISORY CONTROL AND DATA ACQUISITION.
 PLC = PROGRAMMABLE LOGIC CONTROL
 SA = SURGE SUPPRESSOR DEVICE



BASIC SYMBOLS

SINGLE FUNCTION		MUTIPLE FUNCTION	
○	OR	○○	FIELD MOUNTED INSTRUMENT OR DEVICE
◐	OR	◐◐	FRONT OF PANEL MOUNTED INSTRUMENT ON LCP, PCC, MCS, OR VFD
◑	OR	◑◑	REAR OF PANEL MOUNTED INSTRUMENT ON LCP, PCC, MCS, OR VFD
◒	OR	◒◒	FRONT OF PANEL MOUNTED INSTRUMENT ON MAIN PANEL
◓	OR	◓◓	REAR OF PANEL MOUNTED INSTRUMENT ON MAIN PANEL
◔	OR	◔◔	PLC AND/OR COMPUTER SOFTWARE COMPONENT (OPERATOR ACCESSIBLE UNDER NORMAL CONDITIONS) OR
◕	OR	◕◕	PLC AND/OR COMPUTER GENERATED COMPONENT (NOT OPERATOR ACCESSIBLE UNDER NORMAL CONDITIONS)
◖	OR	◖◖	DATA FLOW SYSTEMS RTU INPUT/OUTPUT



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 148400015
 DATE
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MANATEE COUNTY

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INSTRUMENTATION
 LEGEND AND
 ABBREVIATIONS

SHEET NUMBER

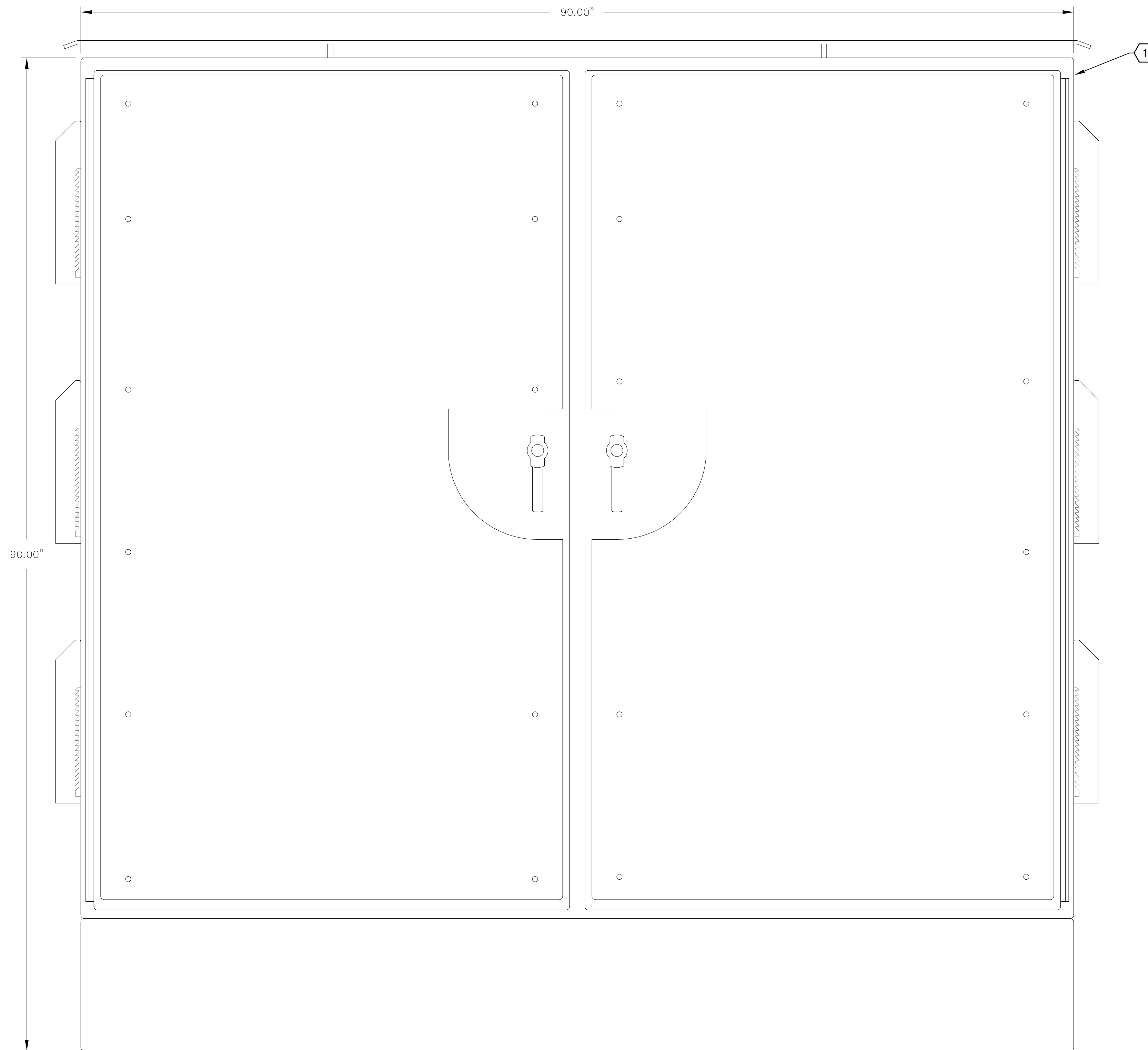
I-1



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 - PROVIDE AND INSTALL ALL ASSOCIATED END BARRIERS, TERMINAL JUMPERS AND SPACERS AS REQUIRED FOR TERMINAL BLOCKS AS SHOWN OR REQUIRED.
 - PROVIDE AND INSTALL 35mm ALUMINUM DIN RAIL. QUANTITY AS REQUIRED.
 - PROVIDE AND INSTALL CORROSION INHIBITOR, HOFFMAN # AHCI10E.
 - PROVIDE AND INSTALL STAINLESS STEEL BIRD SPIKES (FOR PIGEONS OR LARGER BIRDS) TO COVER TOP OF ENCLOSURE. INSTALL BIRD SPIKES WITH NON-SILICONE BASED ADHESIVE FOR OUTDOOR CONSTRUCTION OR PER MANUFACTURER'S SPECIFICATIONS.

**MOTOR CONTROL CABINET
EXTERIOR ELEVATION** 1
E-4 | I-2




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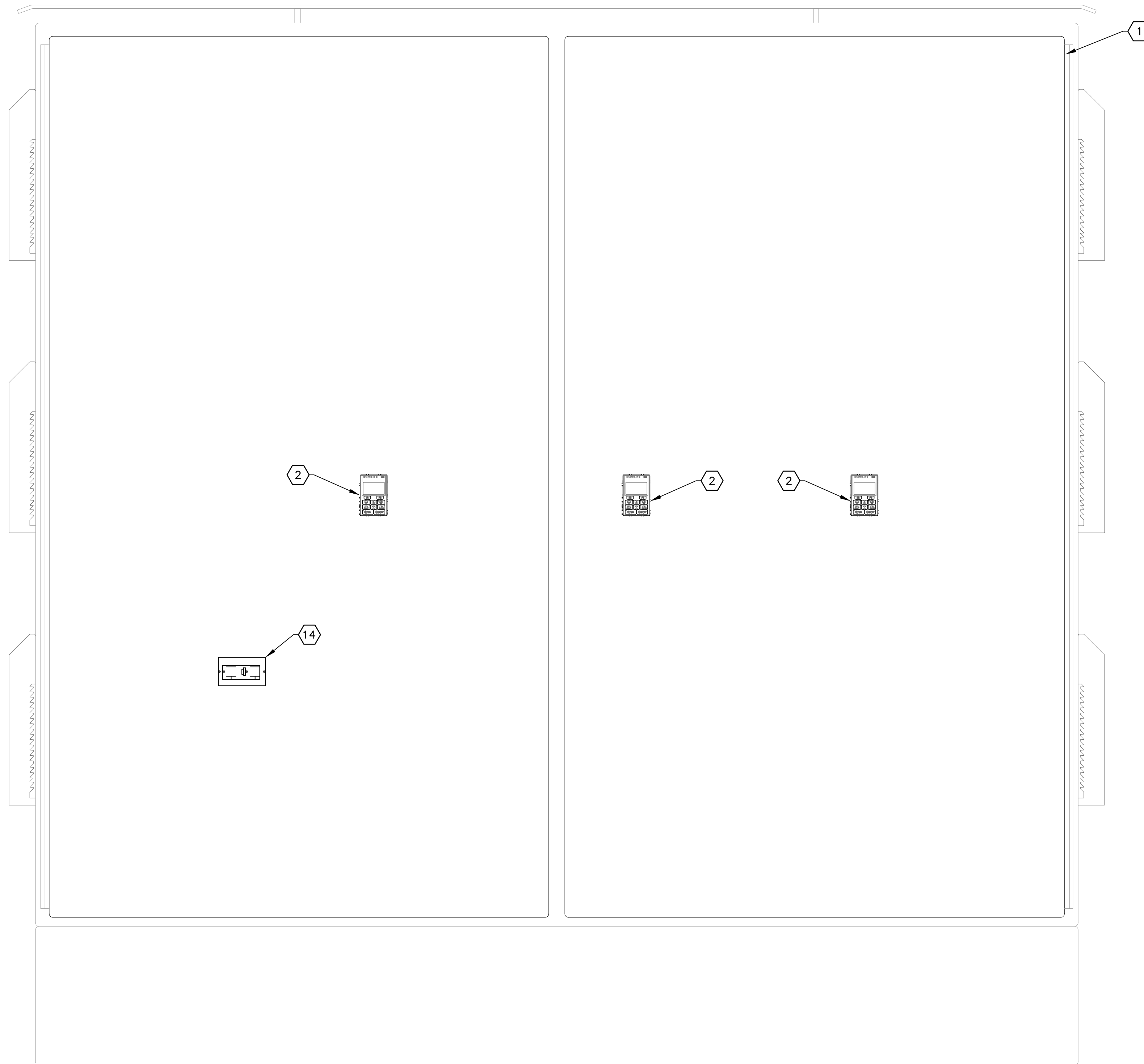
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**MOTOR CONTROL CABINET
EXTERIOR ELEVATION**

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I-2

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**MOTOR CONTROL CABINET
DEADFRONT ELEVATION** **1**
SCALE: NOT TO SCALE E-4 I-3
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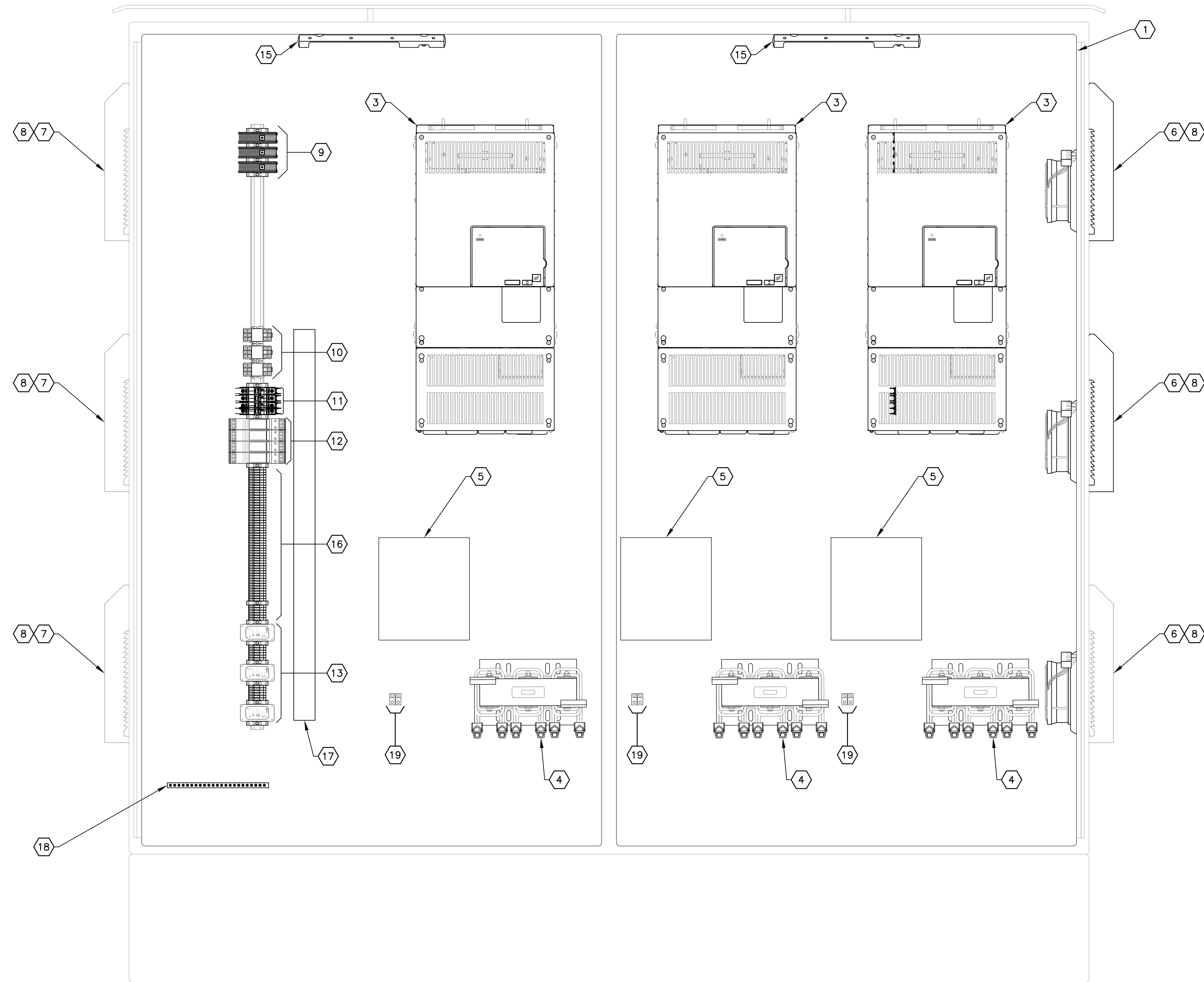
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**MOTOR CONTROL CABINET
DEADFRONT ELEVATION**

SHEET NUMBER
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**MOTOR CONTROL CABINET
DEADFRONT ELEVATION** 1
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**MOTOR CONTROL CABINET
DEADFRONT ELEVATION**

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MOTOR CONTROL CABINET BILL OF MATERIALS					
NOTE#	QTY	DESCRIPTION	PART NUMBER	MANUFACTURER	NOTES
1	1	90" X 90" X 24", NEMA 4X, POWDER COATED WHITE	CUSTOM	CUSTOM	316 STAINLESS STEEL, POWDER COATED WHITE WITH HINGED AND DEADFRONT DOORS, HANDLES, PADLOCKABLE 3-POINT LATCHING, DOOR STOP KITS ALUMINUM BACKPANEL AND SUNSHIELDS.
2	3	DOOR KEYPAD MOUNTING KIT	UUX000527	YASKAWA	REMOVAL KEYPAD FOR VARIABLE FREQUENCY DRIVE CONTROL.
3	3	VARIABLE FREQUENCY DRIVE	CIMR-PW4A139AFF	YASKAWA	480V, 139 AMP OUTPUT CAPACITY FOR 85 HP DRIVE. PROVIDE WITH ETHERNET IP CARD, YASKAWA PART # SI-EN3.
4	3	124 AMP, 3% INPUT LINE REACTOR	KDRULH3L	ABB	OPEN STYLE PANEL MOUNT.
5	3	124 AMP, MOTOR OUTPUT FILTER	V1K130A00	ABB	
6	3	CABINET FAN, UL TYPE 12	PF 67000-11667154055	PFANNENBERG	368 CFM, 115V, 50/60 HZ WITH FILTER.
7	3	CABINET EXHAUST FILTER	PFA 6000-11740004055	PFANNENBERG	
8	6	WASHDOWN SHROUD	PF-RH-60000-1818200020	PFANNENBERG	STAINLESS STEEL
9	3	CAT 6 SURGE PROTECTION DEVICE	#2858991	PHOENIX CONTACT	
10	3	FAN CONTROL RELAYS	CLASS 8501, TYPE R	SQUARE D	10A CONTACTS WITH 120V AC COILS.
11	4	POWER CIRCUIT BREAKERS	TYPE 1489M	ALLEN BRADLEY	120V, 5 AMPERE.
12	4	120V SURGE PROTECTION DEVICE	#2905228	PHOENIX CONTACT	
13	3	PUMP MOTOR SUPERVISORY RELAY	MINI CAS II	XYLEM	RELAYS TO BE PROVIDED BY PUMP MANUFACTURER.
14	1	DUPLEX GFI RECEPTACLE	GFR5352IA	HUBBELL	
15	2	120V AC LED CABINET LIGHT	LEDA1S35	HOFFMAN	120V AC LED FIXTURE WITH INTEGRAL ON/OFF SWITCH. PROVIDE CUSTOM BRACKET TO MOUNT FIXTURE TO PANEL.
16		TERMINAL BLOCKS	DN-T10B-A	AUTOMATION DIRECT	QUANTITY AS REQUIRED.
17		2" X 3" SLOTTED WIRING DUCT	G2X3LG6	PANDUIT	QUANTITY AS REQUIRED.
18	1	EQUIPMENT GROUND BAR SYSTEM	UGB2/0-414-18	PANDUIT	PROVIDE BONDING STANDOFFS (PANDUIT UGB-B-S0).
19	3	GROUNDING LUGS			PROVIDE GROUNDING LUGS AS REQUIRED FOR PUMP MOTOR CABLE GROUNDING.




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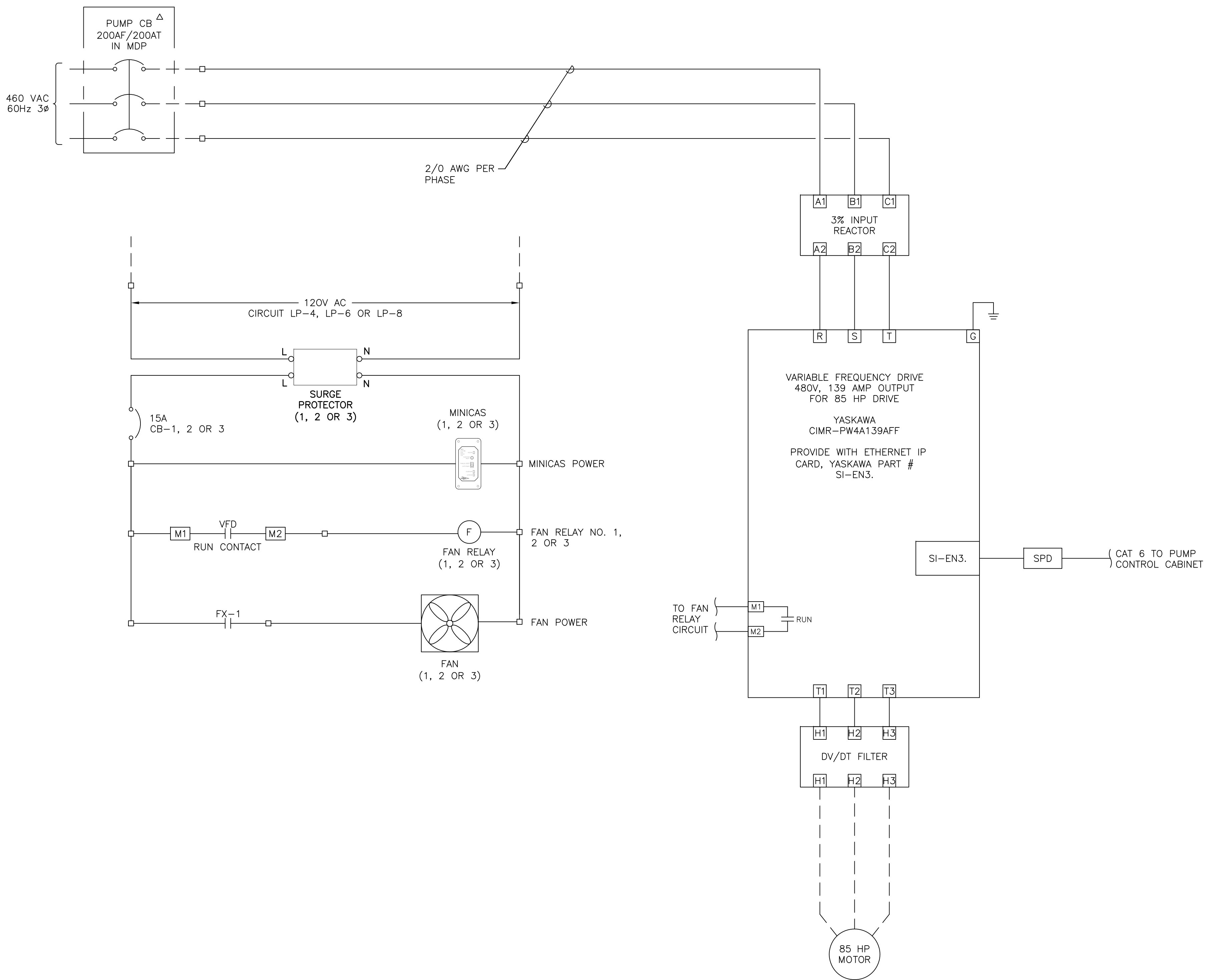

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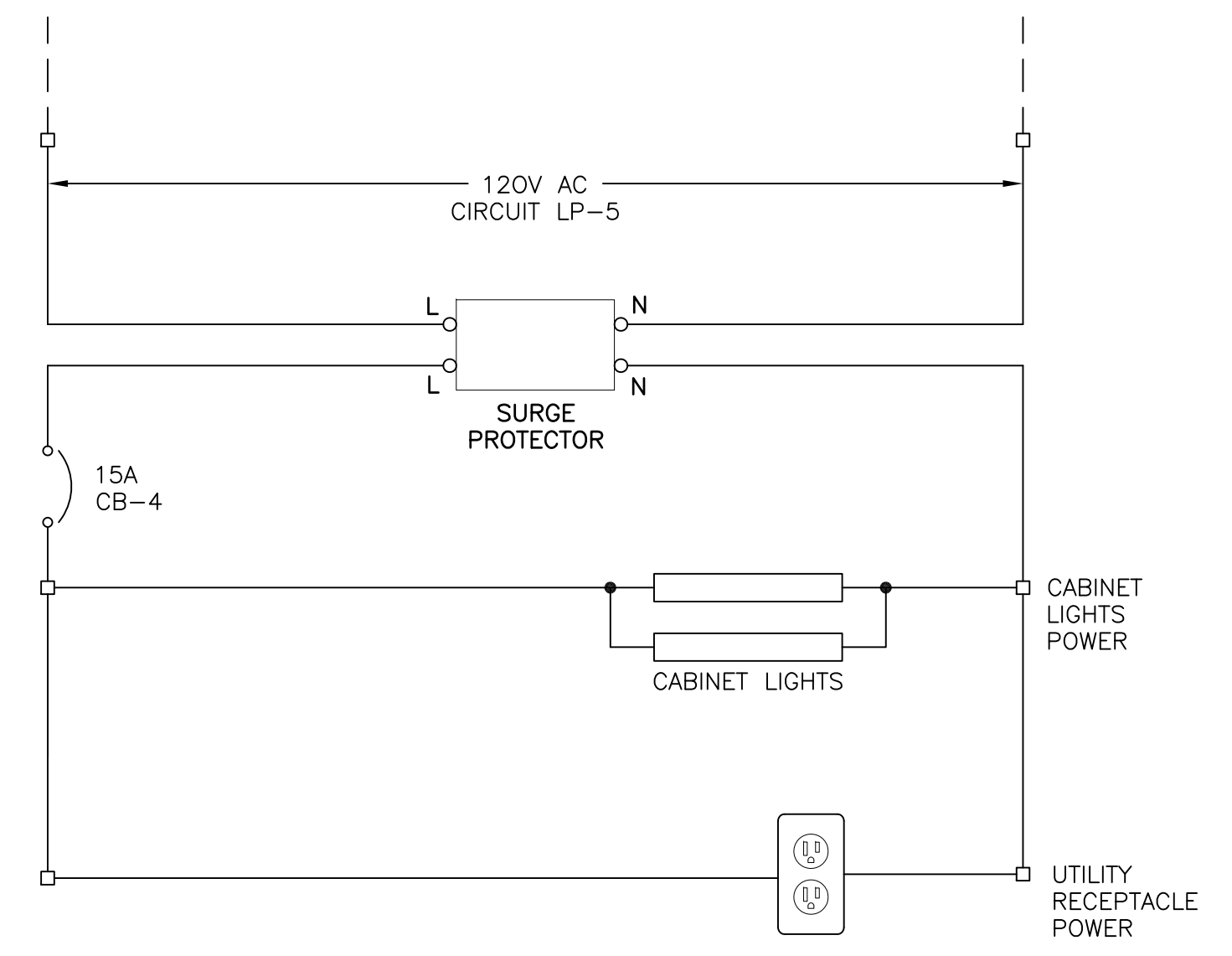
**MOTOR CONTROL CABINET
BILL OF MATERIALS**

SHEET NUMBER
I-3

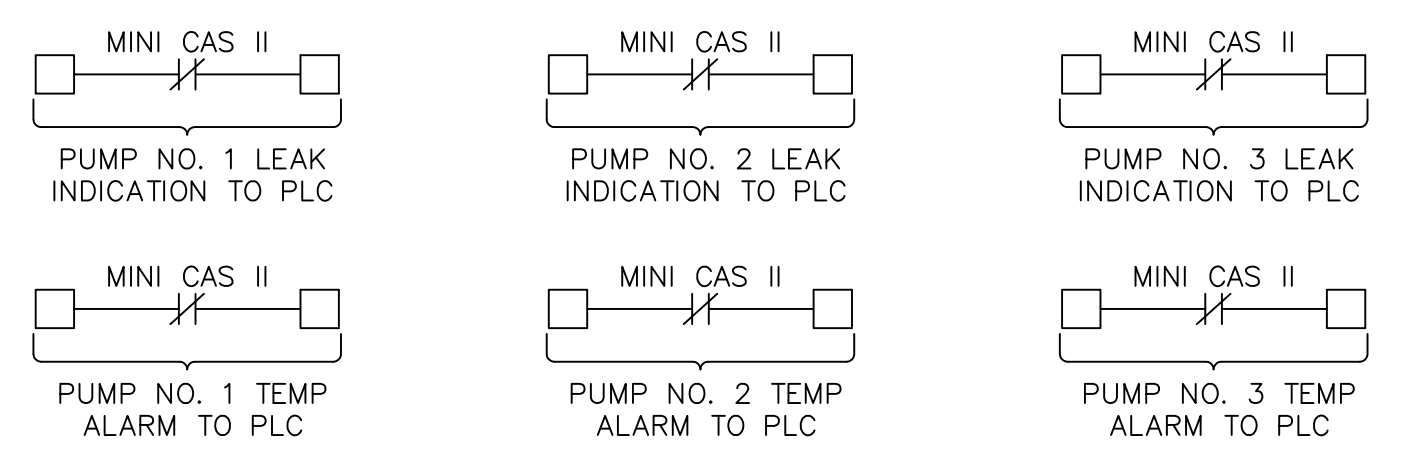
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TYPICAL VFD WIRING SCHEMATIC



UTILITY POWER WIRING SCHEMATIC



MINI CAS II OUTPUTS TO PLC



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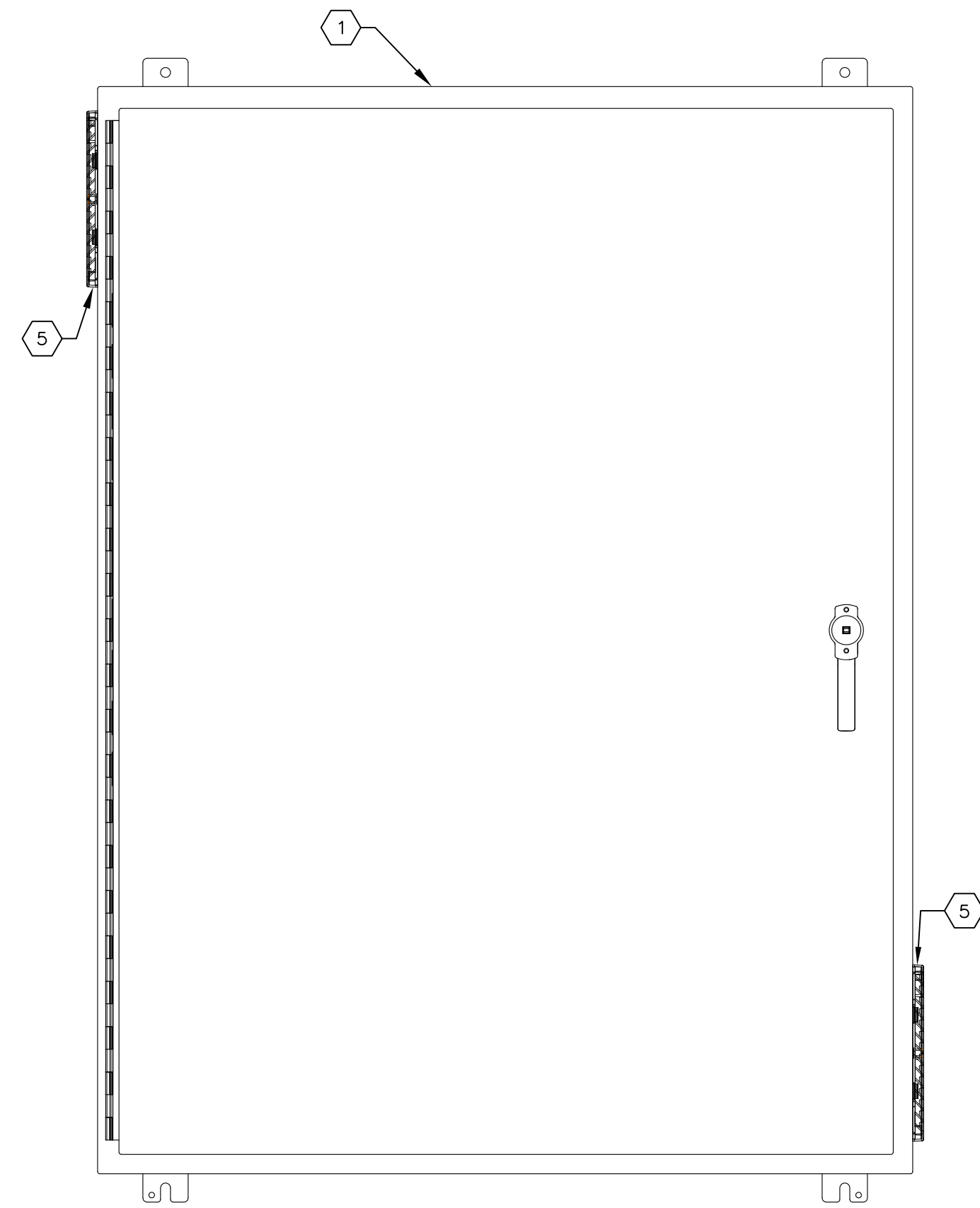
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TYPICAL VFD WIRING SCHEMATIC

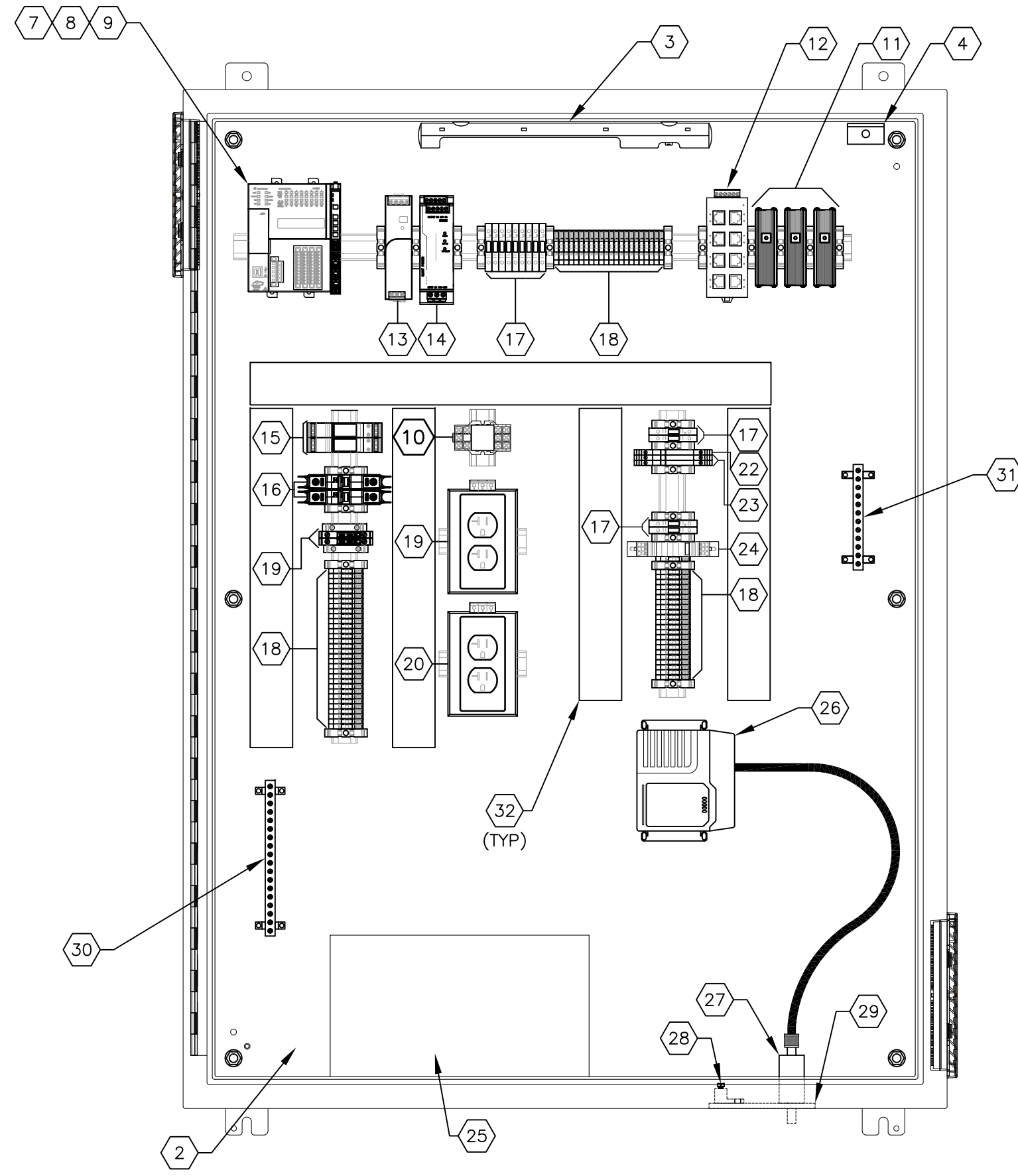
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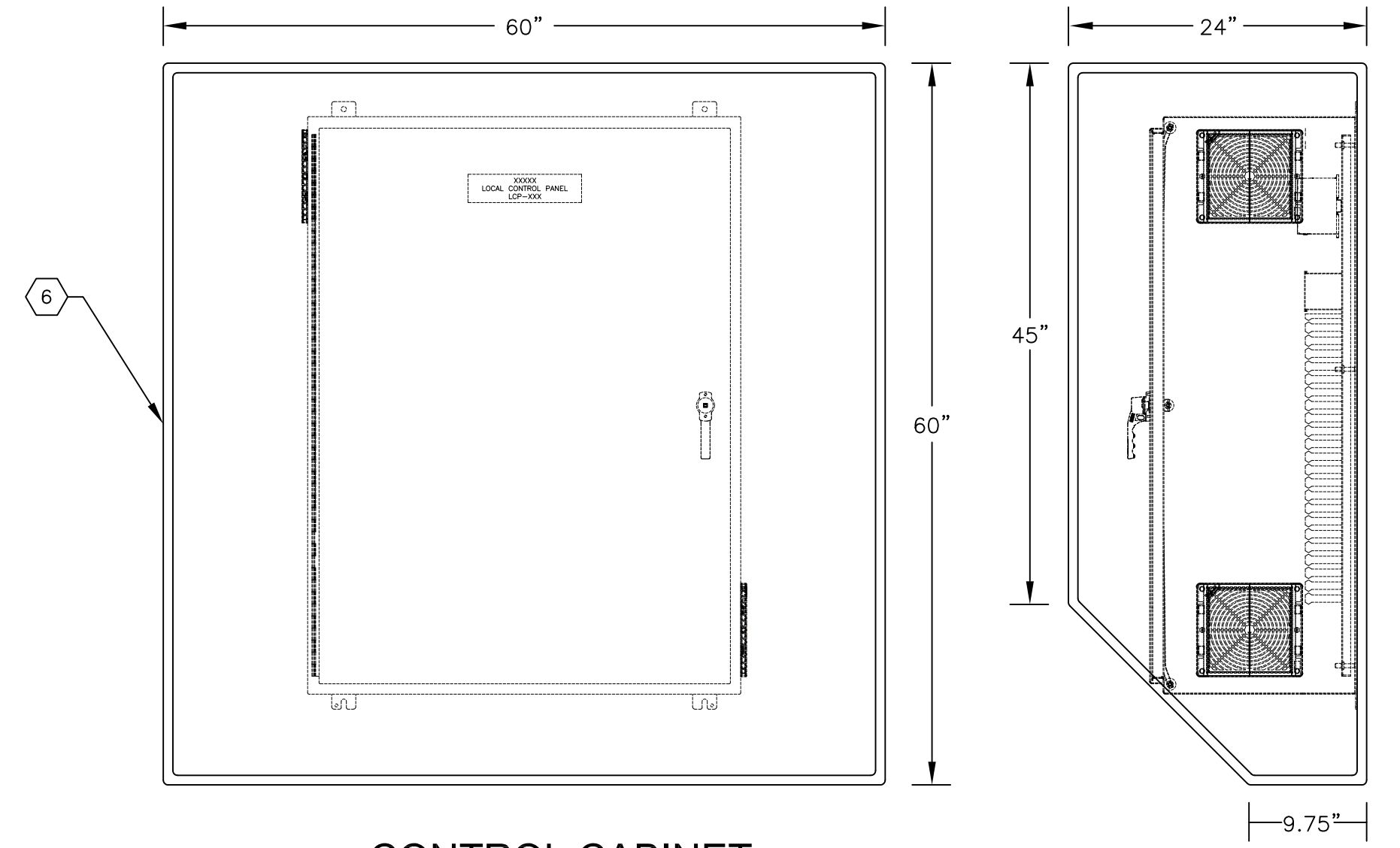
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**PUMP CONTROL CABINET
EXTERIOR ELEVATION**
SCALE: NOT TO SCALE



**PUMP CONTROL CABINET
INTERIOR ELEVATION**
SCALE: NOT TO SCALE
(SHOWN WITH ENCLOSURE DOOR OPEN)



**CONTROL CABINET
SUNSHIELD DETAIL**
SCALE: NOT TO SCALE

GENERAL NOTES :

1. REFER TO SHEET I-5A FOR BILL OF MATERIALS.
2. PROVIDE AND INSTALL ALL ASSOCIATED END BARRIERS, TERMINAL JUMPERS AND SPACERS AS REQUIRED FOR TERMINAL BLOCKS, FUSE HOLDERS AND SURGE PROTECTION DEVICES SHOWN OR REQUIRED.
3. PROVIDE AND INSTALL 35mm ALUMINUM DIN RAIL, QUANTITY AS REQUIRED.
4. PROVIDE AND INSTALL CORROSION INHIBITOR, HOFFMAN # AHCI10E.



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**PUMP CONTROL CABINET
ELEVATIONS AND DETAIL**

SHEET NUMBER

I-5

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PUMP CONTROL CABINET BILL OF MATERIALS					
NOTE#	QTY	DESCRIPTION	PART NUMBER	MANUFACTURER	NOTES
①	1	48" X 36" X 16", NEMA 4X, 316 STAINLESS STEEL ENCLOSURE	A48H3616SS6LP3PT	HOFFMAN	POWDER COATED WHITE WITH 3-POINT LATCHING SYSTEM. PROVIDE DOOR STOP KIT.
②	1	45" X 33" STAINLESS STEEL BACKPANEL	A48P36SS6	HOFFMAN	
③	1	24V DC LED CABINET LIGHT	LED24V15	HOFFMAN	PROVIDE CUSTOM BRACKET TO MOUNT FIXTURE TO BACKPANEL.
④	1	REMOTE DOOR SWITCH SWITCH AND ASSOCIATED DOOR SWITCH CABLE	ALFSWD	HOFFMAN	FOR 24V DC LED CABINET LIGHT. PROVIDE CUSTOM BRACKET TO MOUNT SWITCH TO BACKPANEL.
⑤	2	6" X 6" STAINLESS STEEL EXHAUST GRILLE	TEP6SS	HOFFMAN	
⑥	1	60" X 60" X 24" ALUMINUM SUNSHIELD		CUSTOM	PROVIDE FULL FILLET WELDS.
⑦	1	PLC PROCESSOR	1769-L18ER-BB1B	ALLEN BRADLEY	
⑧	1	POINT I/O CURRENT INPUT ANALOG MODULE	1734-IE4C	ALLEN BRADLEY	4 CHANNEL, 24V DC.
⑨	1	POINT I/O MOUNTING BASE	1734-TB	ALLEN BRADLEY	
⑩	1	NORMAL POWER FAIL RELAY	CLASS 8501, TYPE R	SQUARE D	10A CONTACTS WITH 120V AC COILS.
⑪	3	CAT 6 SURGE PROTECTION DEVICE	#2858991	PHOENIX CONTACT	
⑫	1	ETHERNET SWITCH	#2891929	PHOENIX CONTACT	
⑬	1	120VAC-24VDC POWER SUPPLY	1606-XLE80E	ALLEN BRADLEY	DUAL 24V DC OUTPUTS
⑭	1	120VAC-24VDC POWER SUPPLY	#2866750	PHOENIX CONTACT	5 AMPERE OUTPUT
⑮	2	INCOMING 120V POWER SURGE PROTECTION DEVICE	#2905228	PHOENIX CONTACT	
⑯	2	120V, SINGLE POLE, 15A CIRCUIT BREAKER	1489-M1C150	ALLEN BRADLEY	
⑰	13	FUSED TERMINAL BLOCK WITH LED INDICATOR, 24V DC	AB1FUSE435U5XB	SQUARE D	PROVIDE FUSE FOR TERMINAL BLOCK. EACH FUSE SHALL BE BUSSMANN 5 X 20mm GMC SERIES. REFER TO SHEETS I-6 AND I-6A FOR AMPERAGES.
⑱		TERMINAL BLOCKS	DN-T10B-A	AUTOMATION DIRECT	QUANTITY AS REQUIRED.
⑲	2	120V, THERMAL CIRCUIT BREAKERS	DN-SUPP-2-1	AUTOMATION DIRECT	PROVIDE EACH BREAKER WITH AUTOMATION DIRECT DN-FE EURO F SERIES SOCKET. REFER TO SHEET I-6 FOR AMPERAGE.
⑳	1	120V, 20A DUPLEX UTILITY RECEPTACLE	#5600525	PHOENIX CONTACT	
㉑	1	120V, 20A UPS RECEPTACLE	#5600525	PHOENIX CONTACT	
㉒	1	POWER TERMINAL BLOCK MINI MCR-SL-PTB FOR ANALOG ISOLATORS	#2864134	PHOENIX CONTACT	PROVIDE DIN RAIL BUS CONNECTORS AS REQUIRED, PHOENIX CONTACT #2869728.
㉓	2	ANALOG ISOLATOR MINI MCR-2-RPSS-I-I FOR ANALOG I/O	#2902014	PHOENIX CONTACT	REFER TO LOOP DIAGRAMS FOR WIRING CONNECTIONS BASED ON TRANSMITTER TYPE.
㉔	1	SURGE PROTECTION PLUG PT 2X2-24DC-ST	#2838228	PHOENIX CONTACT	PROVIDE SURGE PROTECTION BASE ELEMENT PT 2X2-BE, PHOENIX CONTACT #2839208 FOR EACH UNIT. PROVIDE TERMINAL BLOCK FOR SHIELD GROUNDING AUTOMATION DIRECT DN-GTO.
㉕	1	UNINTERRUPTIBLE POWER SUPPLY (UPS)	BR700G	APC	APC PRO 700, 120V AC OUTPUT, 700VA.
㉖	1	ECR ORBIT 900 Mhz RADIO	MDSECRU91NNNNN S1S1USUNNN	GE	
㉗	1	698-2700 Mhz COAXIAL CABLE PROTECTION	TSX-NFF	iPOLYPHASER	
㉘	1	SINGLE BARREL ONE-HOLE COPPER GROUNDING LUG	HL1-25-X	PANDUIT	
㉙	1	2"W X 5"L X 1/4"D COPPER GROUNDING PLATE		CUSTOM	
㉚	1	EQUIPMENT GROUND BAR SYSTEM	UGB2/0-414-18	PANDUIT	PROVIDE BONDING STANDOFFS (PANDUIT UGB-B-S0).
㉛	1	SIGNAL GROUND BAR SYSTEM	UGB2/0-414-12	PANDUIT	PROVIDE ISOLATION STANDOFFS (PANDUIT UGB-IN-S0).
㉜		2" X 3" SLOTTED WIRING DUCT	G2X3LG6	PANDUIT	QUANTITY AS REQUIRED.




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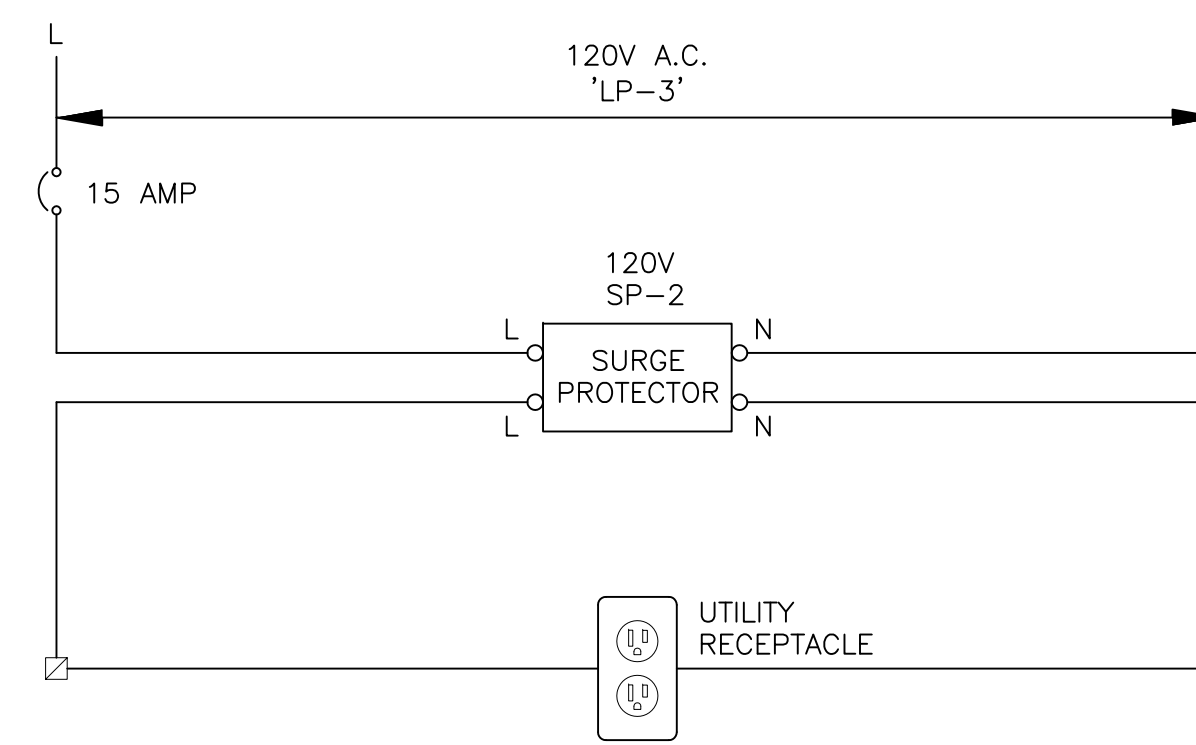
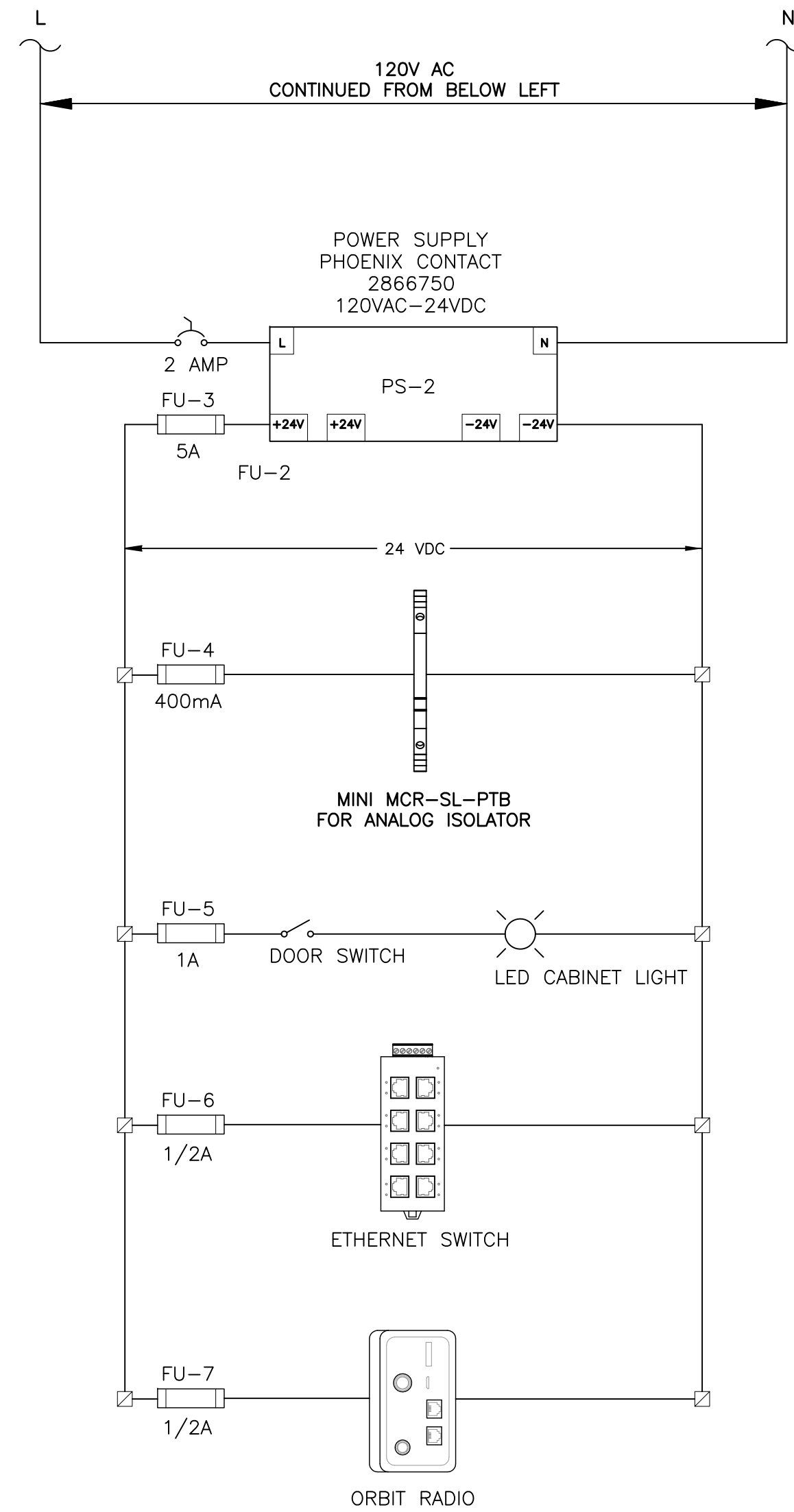
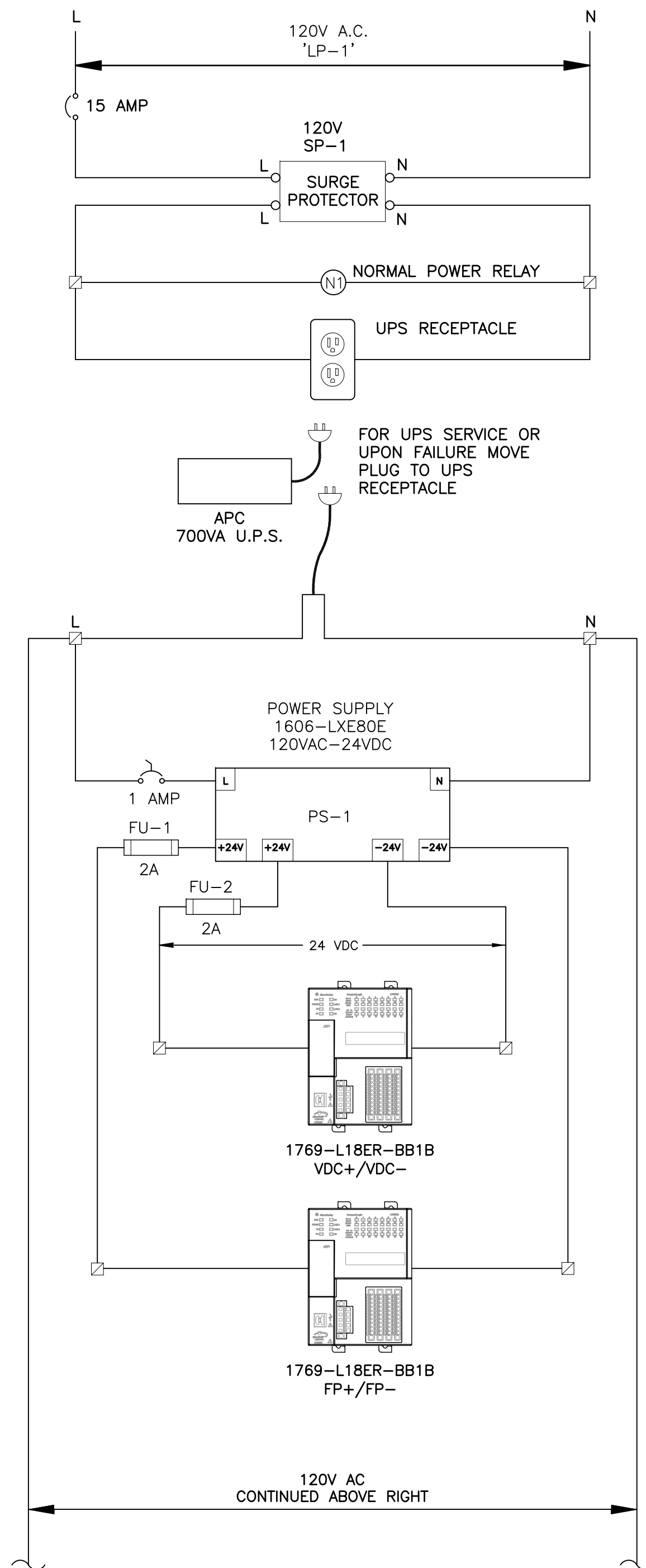

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**PUMP CONTROL CABINET
BILL OF MATERIALS**

SHEET NUMBER
I-5A

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LEGEND

- DENOTES TERMINAL IN FIELD DEVICE
- DENOTES NEW FIELD WIRING
- DENOTES TERMINAL IN PUMP CONTROL CABINET
- DENOTES TERMINAL ON PLC



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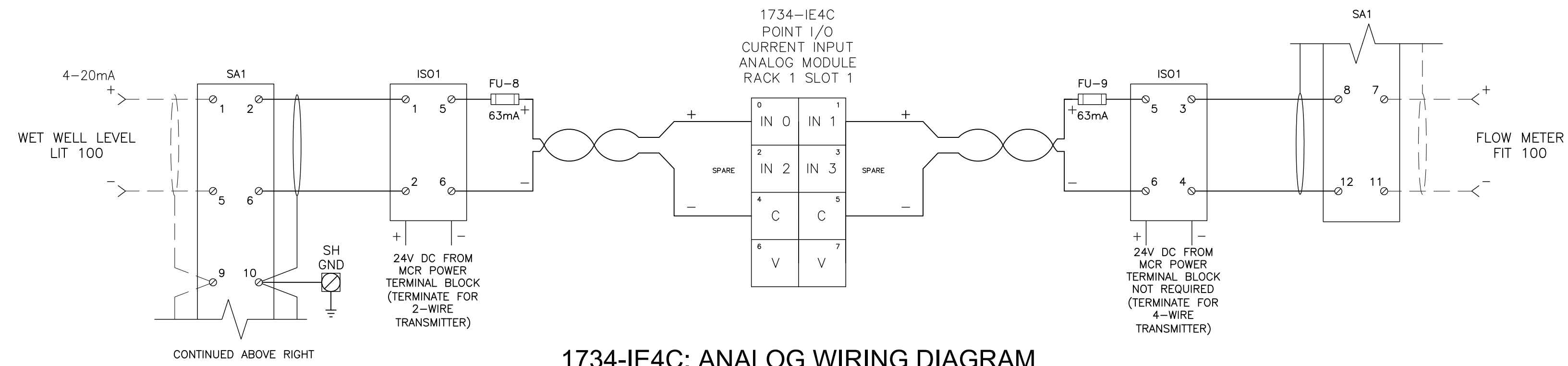
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**PUMP CONTROL CABINET
POWER WIRING SCHEMATICS**

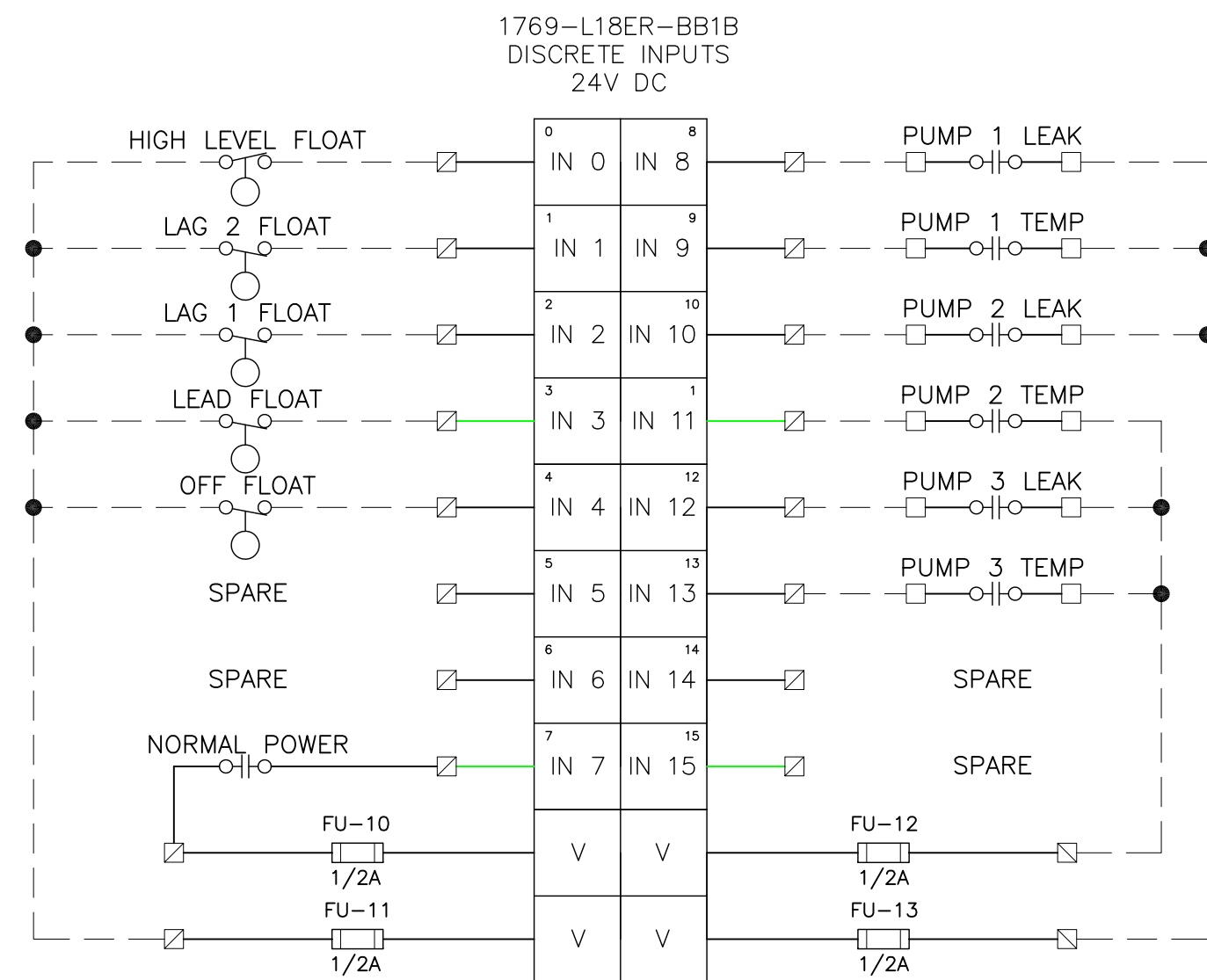
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1734-IE4C: ANALOG WIRING DIAGRAM



1769 L18ER-BB1B
DISCRETE INPUT I/O
WIRING DIAGRAM

LEGEND

- DENOTES TERMINAL IN FIELD DEVICE
- DENOTES NEW FIELD WIRING
- DENOTES TERMINAL IN PUMP CONTROL CABINET
- DENOTES TERMINAL ON PLC



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KHA PROJECT 148400015
DATE 6/26/19
SCALE AS SHOWN
DESIGNED BY TDT
DRAWN BY JLH
CHECKED BY TDT

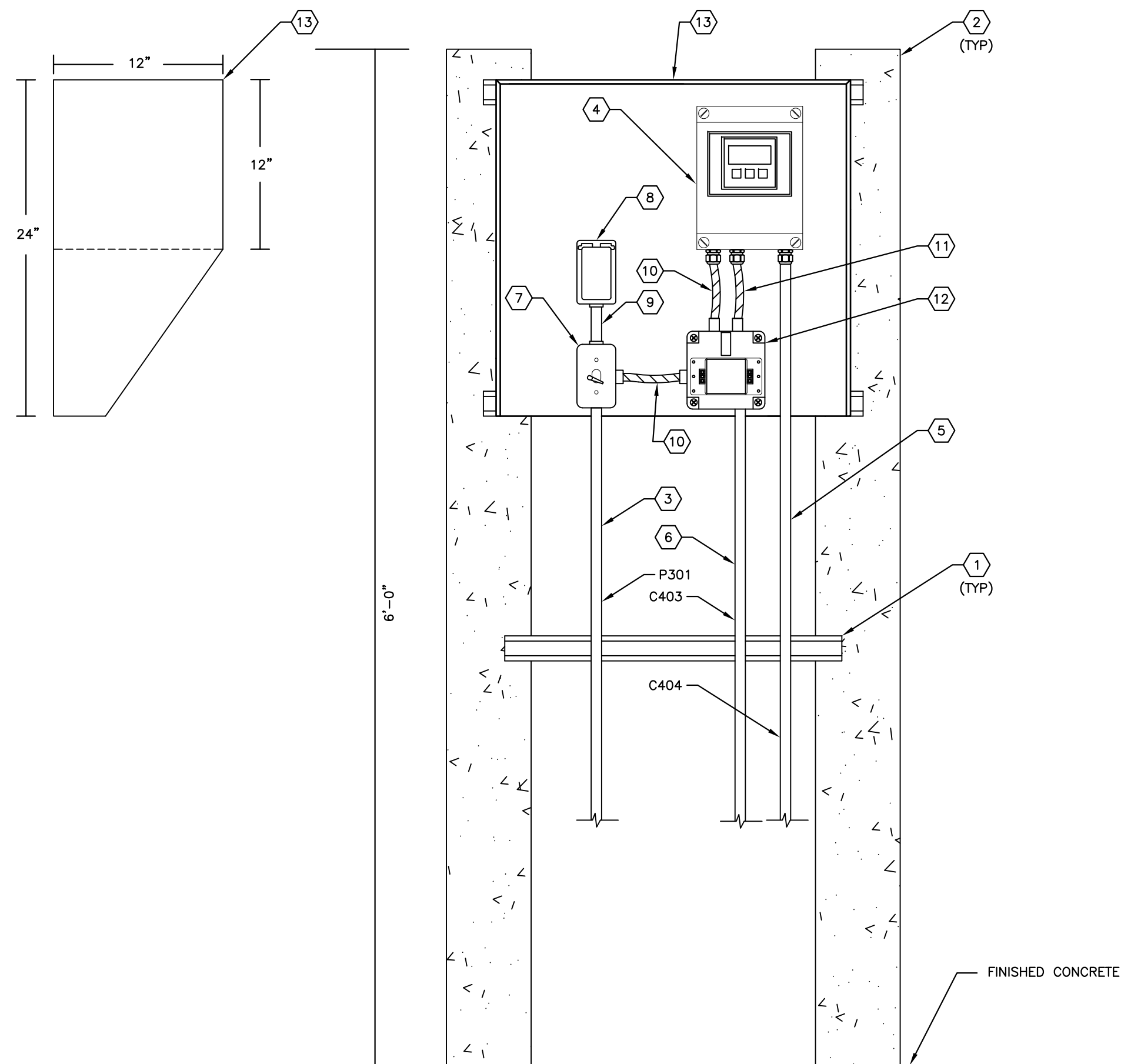
**SEWRF RECLAIMED
PUMP BACK STATION**
 MANATEE COUNTY

LICENSED PROFESSIONAL
TIMOTHY THOMAS, P.E.
FL LICENSE NUMBER 47079

**PUMP CONTROL CABINET
PLC I/O
WIRING SCHEMATICS**

SHEET NUMBER
I-6A

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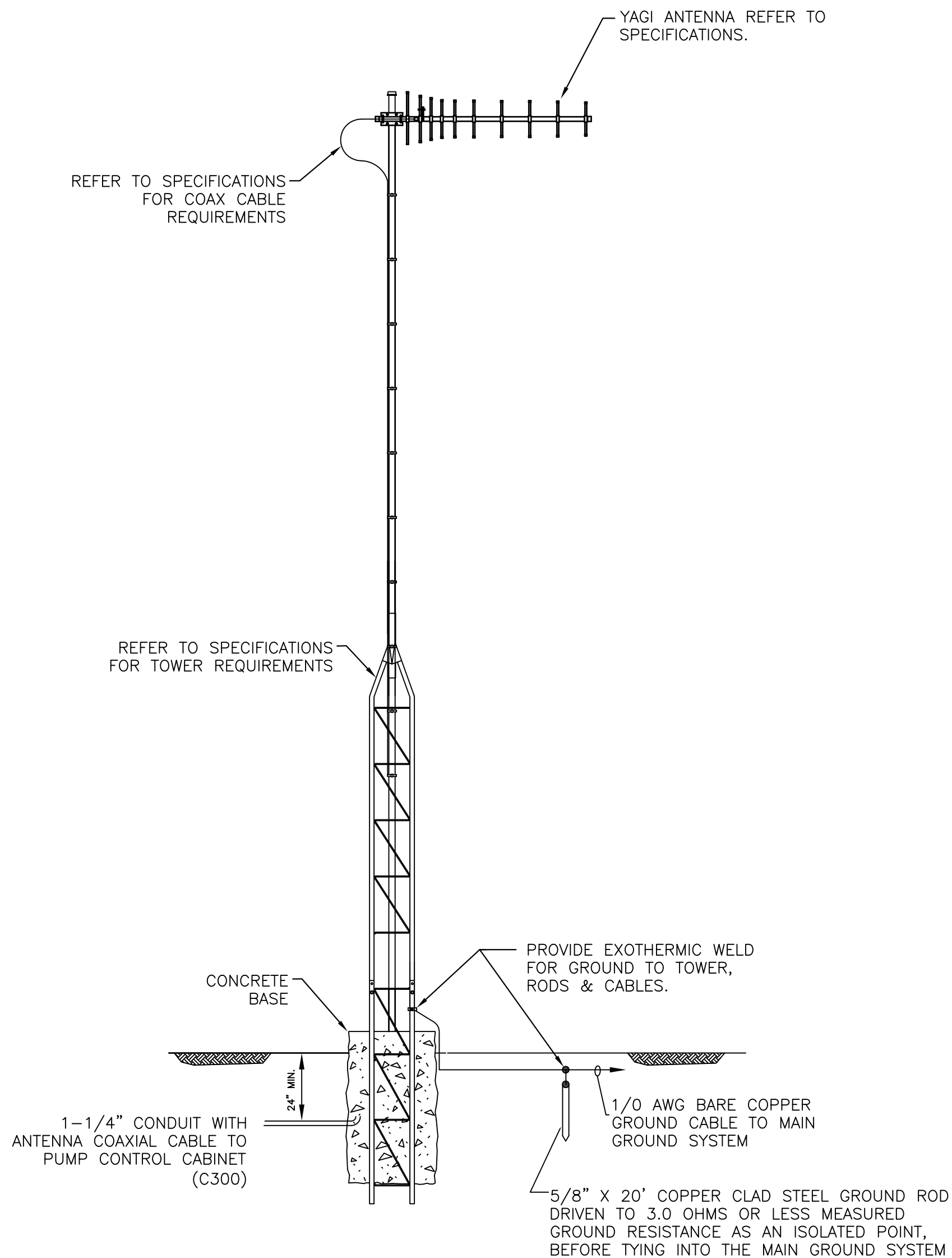
FLOW TRANSMITTER RACK ELEVATION A
SCALE : NOT TO SCALE

KEY NOTES:

- 1 PROVIDE AND INSTALL 1-5/8" STAINLESS STEEL UNISTRUT (OR EQUAL). BOLTS TO SECURE UNISTRUT SHALL BE INSTALLED COMPLETELY THROUGH CONCRETE POST.
- 2 PROVIDE AND INSTALL 6" X 6" CONCRETE POST. POST SHALL BE EMBEDDED A MINIMUM OF 3 FEET INTO CONCRETE SLAB/SOIL.
- 3 PROVIDE AND INSTALL 2-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" C. FOR FLOW METER TRANSMITTER AND RECEPTACLE FOR 120V POWER. (P300).
- 4 PROVIDE AND INSTALL FLOW METER TRANSMITTER. REFER TO SPECIFICATIONS. PROVIDE 1/4" ALUMINUM PLATE FOR MOUNTING.
- 5 PROVIDE AND INSTALL MANUFACTURER SUPPLIED SENSOR CABLES IN 1" C. TO FIELD SENSORS, (C100A).
- 6 PROVIDE AND INSTALL 2/C-#16 SHIELDED (BELDEN 8719) IN 1" C. (4-20mA FLOW METER SIGNAL) TO DFS RTU, (C100).
- 7 PROVIDE AND INSTALL 120V, 15A, SINGLE-POLE SWITCH IN WEATHERPROOF FS BOX AS 120V POWER DISCONNECTING MEANS. PROVIDE AND INSTALL SINGLE-GANG WEATHERPROOF SWITCH COVER. BELL #5121-0.

KEY NOTES:

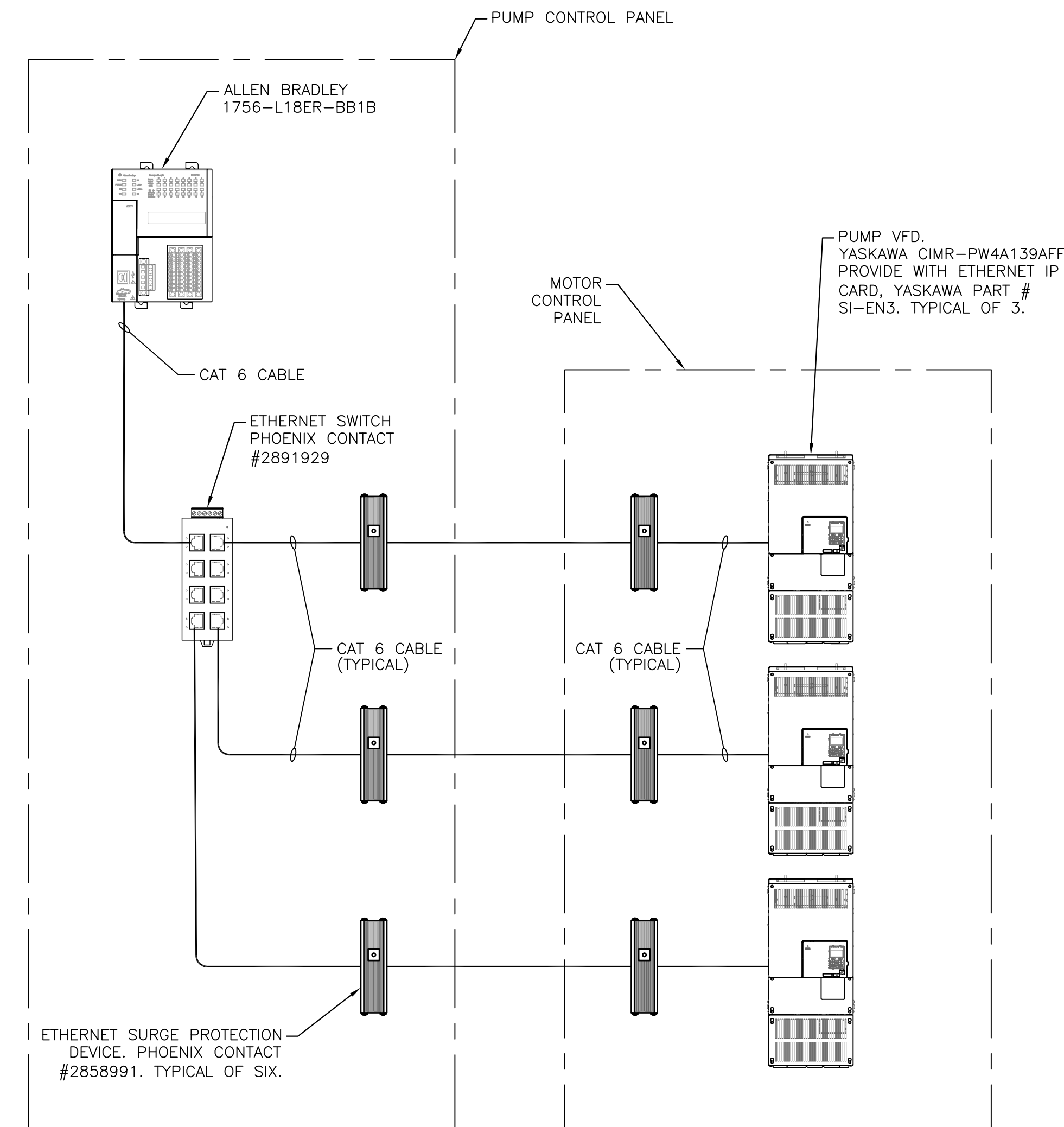
- 8 PROVIDE AND INSTALL DUPLEX GFCI RECEPTACLE, HUBBELL, GFR53521A OR EQUAL. PROVIDE AND INSTALL SINGLE-GANG WEATHERPROOF GFCI COVER. BELL #5103-6.
- 9 PROVIDE AND INSTALL 2-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" C. TO RECEPTACLE FOR 120V POWER.
- 10 PROVIDE AND INSTALL 2-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" FLEXIBLE, SEALTITE CONDUIT TO FLOW METER TRANSMITTER FOR 120V POWER.
- 11 PROVIDE AND INSTALL 2/C-#16 SHIELDED (BELDEN 8719) IN 3/4" FLEXIBLE, SEALTITE CONDUIT. (4-20mA FLOW METER SIGNAL).
- 12 PROVIDE AND INSTALL EDCO - SLAC SERIES AC POWER/SIGNAL TVSS DEVICE IN NEMA 4X ENCLOSURE TO PROTECT 120V POWER CIRCUIT AND 4-20mA ANALOG OUTPUT SIGNAL.
- 13 PROVIDE AND INSTALL SUN-SHIELD, CONSTRUCTED FROM 1/8" ALUMINUM STOCK. PROVIDE FULL FILLET WELDS. 24" WIDE, 24" TALL.



TOWER & ANTENNA DETAIL 1
SCALE : NOT TO SCALE

NOTES:

1. TOWER & FOUNDATION DESIGNED FOR 150 MPH WINDSPEED.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ANTENNA FOUNDATION. SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA.
3. CONTRACTOR TO PROVIDE RADIO SURVEY TO DETERMINE TOWER HEIGHT REQUIREMENT AND ANTENNA AIMING. REFER ALSO TO SPECIFICATIONS.



COMMUNICATIONS RISER




No.	REVISIONS	DATE	BY

Kimley >>> Horn

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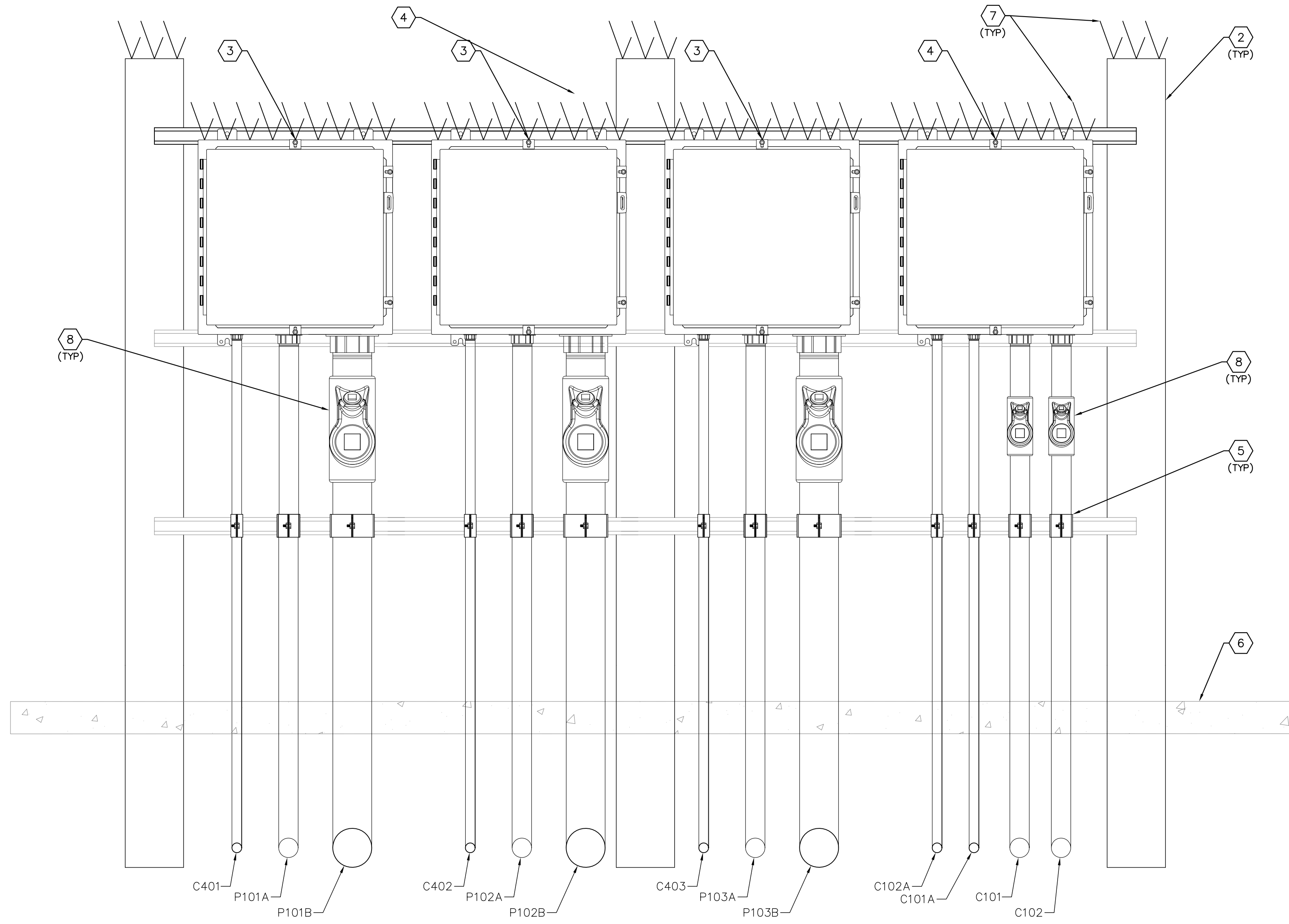
MANATEE COUNTY

LICENSED PROFESSIONAL	TIMOTHY THOMAS, P.E.
FL LICENSE NUMBER	47079

**INSTRUMENTATION
DETAILS**

SHEET NUMBER	I-7
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JUNCTION BOX RACK ELEVATION
 SCALE : NOT TO SCALE
 E-3 | I-8

- KEY NOTES:**
- 1 PROVIDE AND INSTALL 1-5/8" STAINLESS STEEL UNISTRUT (OR EQUAL), BOLTS TO SECURE UNISTRUT SHALL BE INSTALLED COMPLETELY THROUGH CONCRETE POST.
 - 2 PROVIDE AND INSTALL 6" X 6" CONCRETE POST. POST SHALL BE EMBEDDED A MINIMUM OF 3 FEET INTO CONCRETE SLAB/SOIL (TYP OF 3).
 - 3 PUMP MOTOR CONNECTIONS JUNCTION BOX USED AS A DEMARCATION BOX TO PROVIDE ISOLATION BETWEEN THE WET WELL AND MOTOR CONTROL CABINET. PROVIDE AND INSTALL A 20"x20"x8" NEMA 4X, STAINLESS STEEL JUNCTION BOX WITH HINGED DOOR, HAMMOND #1418N4S16D8. PROVIDE INNER PANEL. REFER TO SHEET I-9 FOR DETAILS. TYPICAL OF 3.
 - 4 WET WELL JUNCTION BOX USED AS A DEMARCATION BOX TO PROVIDE ISOLATION BETWEEN THE WET WELL AND PUMP CONTROL CABINET. PROVIDE AND INSTALL A 20"x20"x8" NEMA 4X, STAINLESS STEEL JUNCTION BOX WITH HINGED DOOR, HAMMOND #1418N4S16D6. PROVIDE INNER PANEL. REFER TO SHEET I-9 FOR DETAILS.
 - 5 PROVIDE AND INSTALL ALUMINUM CONDUIT CLAMP.
 - 6 PROPOSED CONCRETE SLAB. REFER TO STRUCTURAL DRAWINGS.
 - 7 PROVIDE AND INSTALL STAINLESS STEEL BIRD SPIKES (FOR PIGEONS OR LARGER BIRDS) TO COVER TOP OF ENCLOSURE. INSTALL BIRD SPIKES WITH NON-SILICONE BASED ADHESIVE FOR OUTDOOR CONSTRUCTION OR PER MANUFACTURER'S SPECIFICATIONS.
 - 8 PROVIDE AND INSTALL EYS SEAL. SIZE AS REQUIRED.



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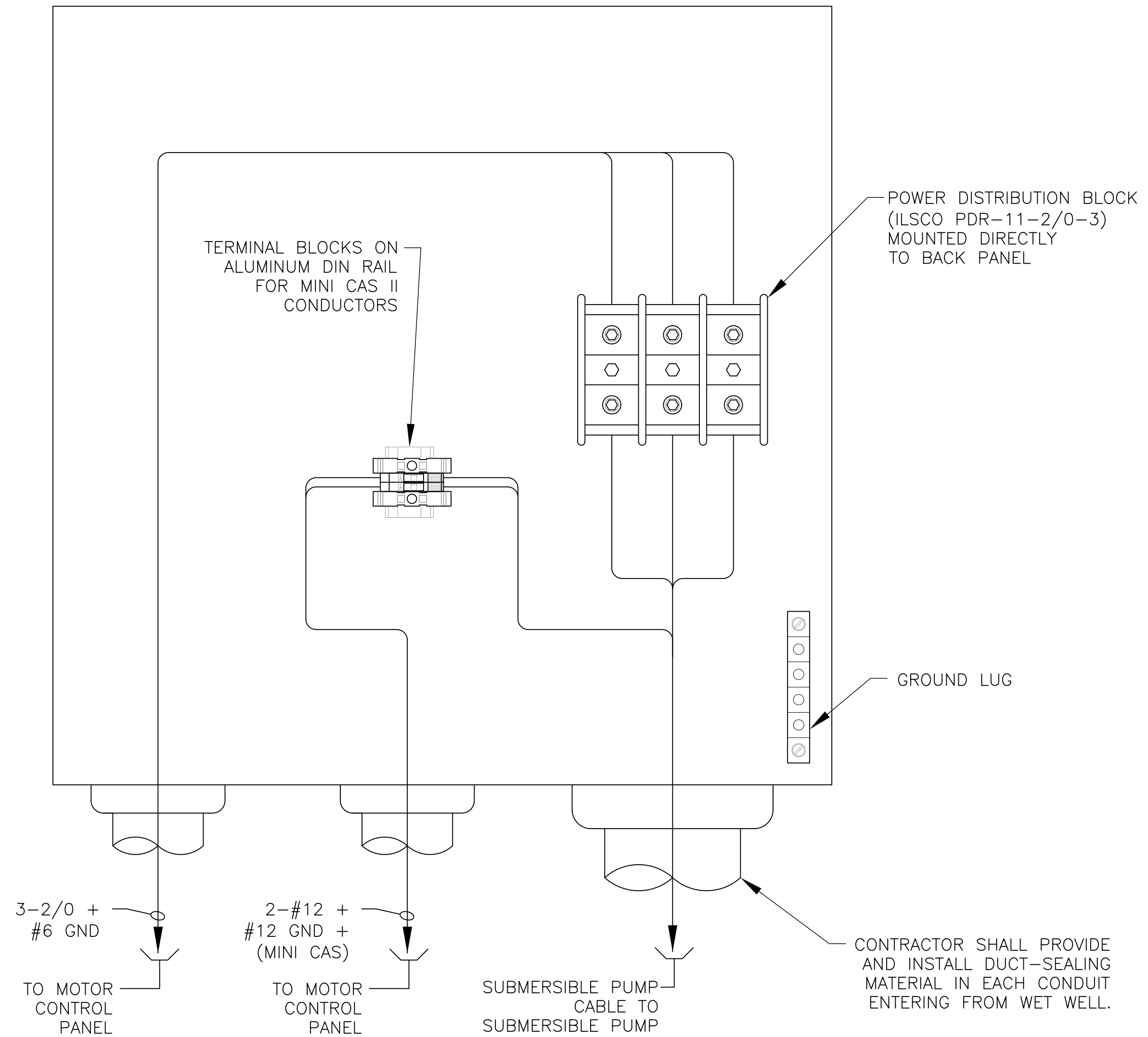
SEWRF RECLAIMED PUMP BACK STATION
 MANATEE COUNTY

LICENSED PROFESSIONAL	TIMOTHY THOMAS, P.E.
FL LICENSE NUMBER	47079
FL DATE:	

WET WELL JUNCTION BOX RACK DETAILS

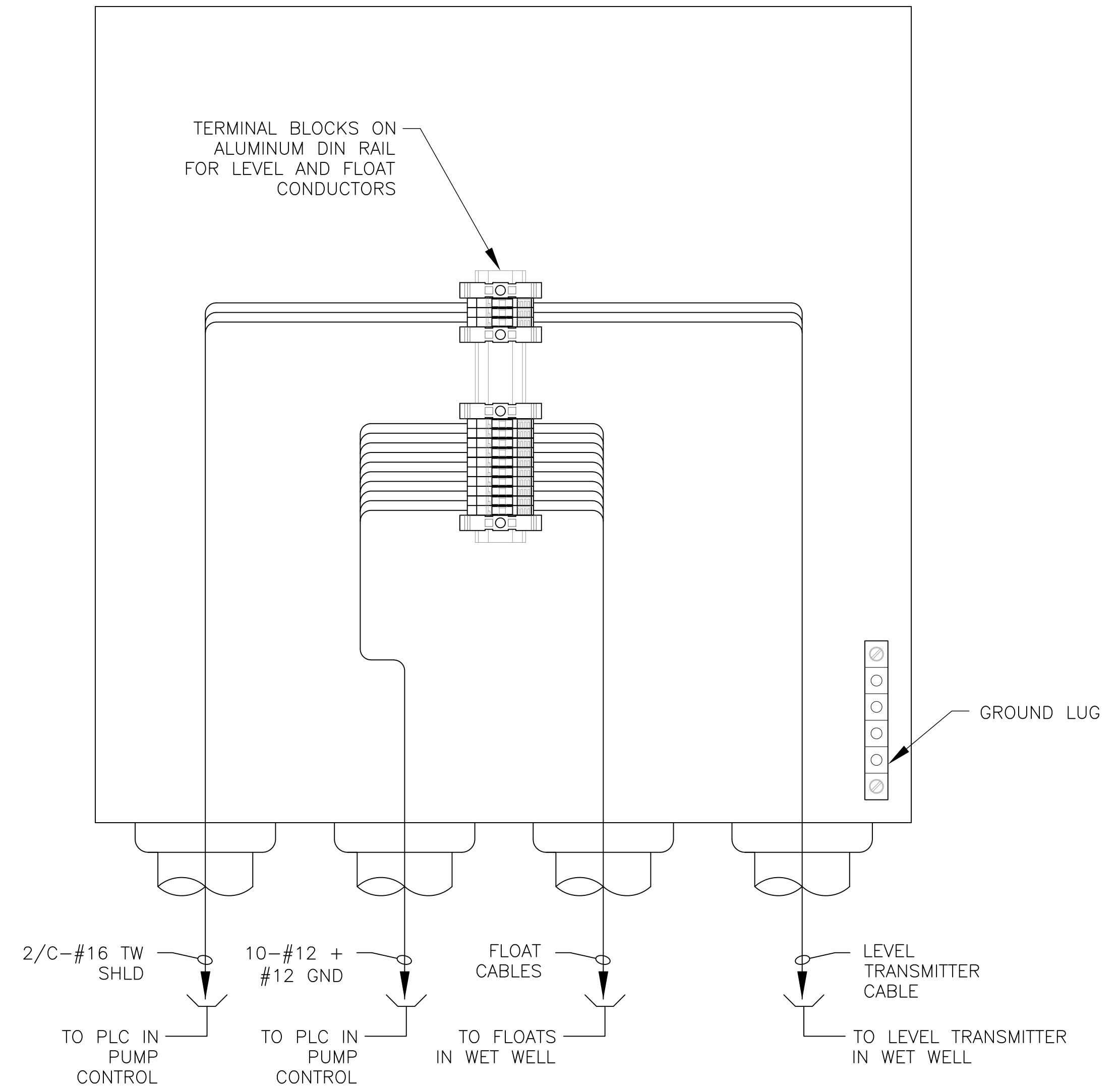
SHEET NUMBER	I-8
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TYPICAL MOTOR JUNCTION BOX DETAIL 1
SCALE : NOT TO SCALE

- NOTES:**
- COVER NOT SHOWN FOR CLARITY
 - BOND GROUNDING CONDUCTORS TO ENCLOSURE BACK PANEL.



LEVEL AND FLOAT JUNCTION BOX DETAIL 2
SCALE : NOT TO SCALE

- NOTES:**
- COVER NOT SHOWN FOR CLARITY
 - BOND GROUNDING CONDUCTORS TO ENCLOSURE BACK PANEL.



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Manatee County

SEWRF RECLAIMED PUMP BACK STATION

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JUNCTION BOX DETAILS

SHEET NUMBER	1-9
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