

Lift Station Construction Details

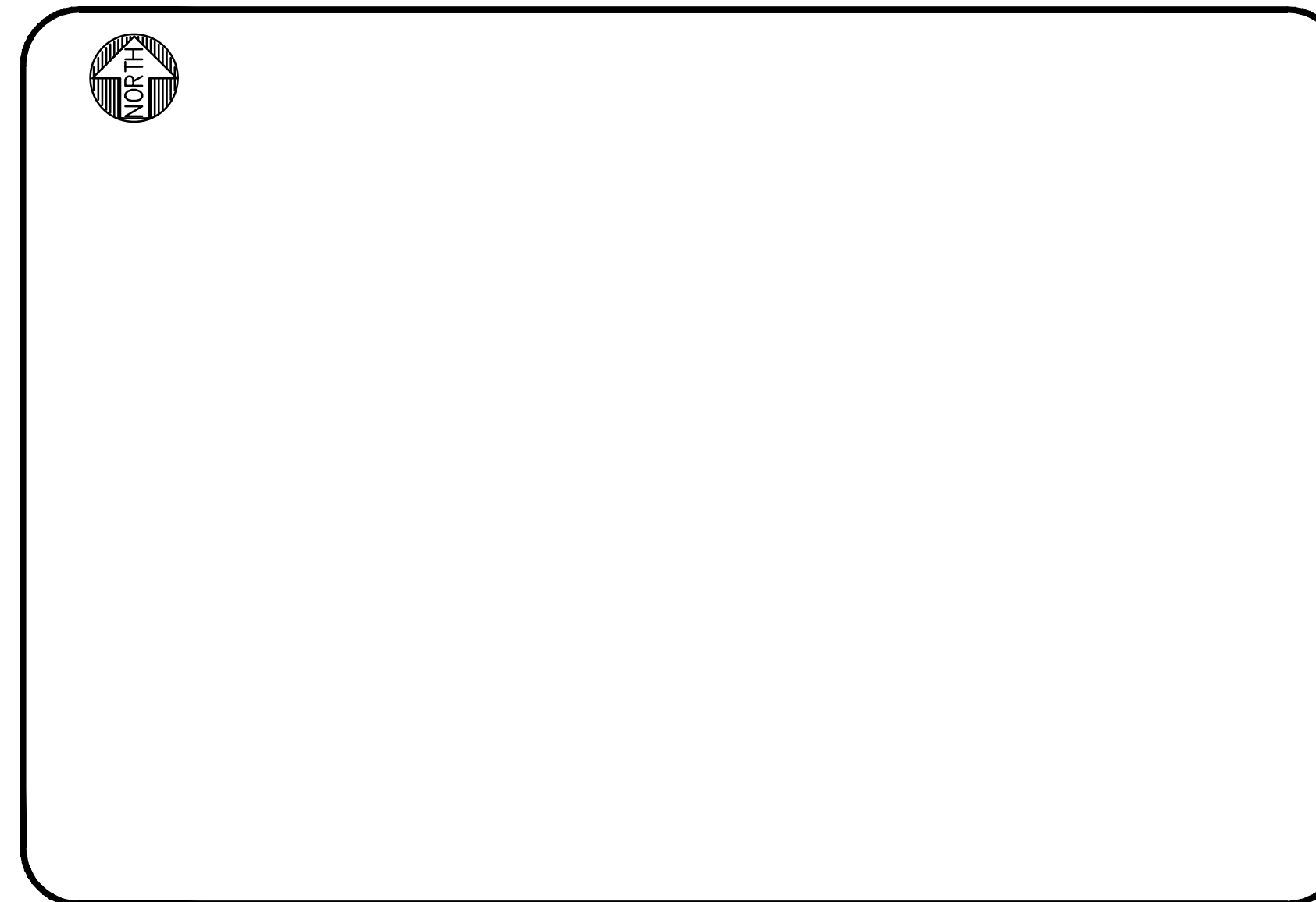


GRU STANDARD WASTEWATER LIFT STATION DRAWINGS

GENERAL NOTES

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE DRAWINGS AND WITH THE LATEST EDITION OF THE GAINESVILLE REGIONAL UTILITIES (GRU) WATER AND WASTEWATER STANDARDS AND APPROVED MATERIALS MANUAL. THESE DRAWINGS ARE INTENDED TO COMPLEMENT WRITTEN STANDARDS IN ORDER TO PROVIDE COMPLETE INFORMATION NECESSARY TO CONSTRUCT THE PUMP STATION IN ACCORDANCE WITH GRU STANDARDS.
- ALL WORK SHALL BE INSPECTED BY A GRU UTILITY INSPECTOR. CONTRACTOR SHALL PROVIDE 48 HOURS NOTICE (TELEPHONE (352) 393-1633) PRIOR TO START OF CONSTRUCTION.
- CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF THE PRECAST STRUCTURES, VALVES (BALL, PLUG, CHECK, AIR RELEASE, BACKFLOW), FENCE, LEVEL SENSOR, SAFETY DISCONNECT SWITCH, QUICK-CONNECT, HATCH COVERS, PIPES & FITTINGS, PUMPS & ACCESSORIES, AND CONTROL PANEL FOR REVIEW AND ACCEPTANCE PRIOR TO START OF CONSTRUCTION.
- CONTRACTOR SHALL PROTECT OFF-SITE AREAS FROM EROSION AND SEDIMENT DISCHARGES AT ALL TIMES DURING CONSTRUCTION AND UNTIL PERMANENT VEGETATION IS ESTABLISHED AND ACCEPTED.
- CONTRACTOR SHALL LOCATE AND PROTECT, ALL EXISTING UTILITIES AND FACILITIES. UTILITY SERVICE SHALL NOT BE DISRUPTED UNLESS APPROVED BY AND COORDINATED WITH GRU.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL FEDERAL, STATE, AND LOCAL SAFETY REQUIREMENTS AND REGULATIONS. THE PROJECT MAY REQUIRE SHEETING, SHORING, BRACING AND/OR SLOPING FOR EXCAVATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING ACTUAL REQUIREMENTS AND SHALL SUBMIT SIGNED AND SEALED ENGINEERING DESIGN PLANS AND SPECIFICATIONS, PREPARED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AS APPROPRIATE FOR PREVAILING WORK CONDITIONS IN ACCORDANCE WITH THE LATEST REVISION OF THE FLORIDA DEPARTMENT OF TRANSPORTATION'S ROADWAY AND TRAFFIC DESIGN STANDARDS.
- CONTRACTOR SHALL PERMIT GRU PERSONNEL ACCESS TO THE SITE AT ALL TIMES DURING CONSTRUCTION.
- CONTRACTOR SHALL COORDINATE STARTUP OF THE LIFT STATION PUMPS AND CONTROL PANEL WITH PUMP SUPPLIER AND GRU WATER AND WASTEWATER ENGINEERING DEPARTMENT.
- LIFT STATIONS REQUIRING PUMPS GREATER THAN 20 HP AND LESS THAN 47 HP SHALL BE EQUIPPED WITH SOLID STATE REDUCED VOLTAGE STARTERS AND AUTOMATIC TRANSFER SWITCH AS SHOWN ON THE ELECTRICAL SHEETS E-4.
- LIFT STATIONS THAT SERVE CRITICAL FACILITIES AS DEFINED BY FDEP, FDEM OR FDOH OR THAT HAVE PUMPS GREATER THAN 47 HP WILL BE EQUIPPED WITH A BACK UP GENERATOR AS SHOWN ON E-5. GRU SHALL DETERMINE IF A SOLID STATE REDUCED VOLTAGE STARTER OR VFD IS REQUIRED FOR THIS CLASS LIFT STATION.
- MAGNETIC FLOW METERING SHALL BE PROVIDED FOR ALL LIFT STATIONS SERVING PRIVATE COLLECTION SYSTEMS AND STATIONS THAT HAVE PUMPS GREATER THAN 20 HP.

LOCATION MAP

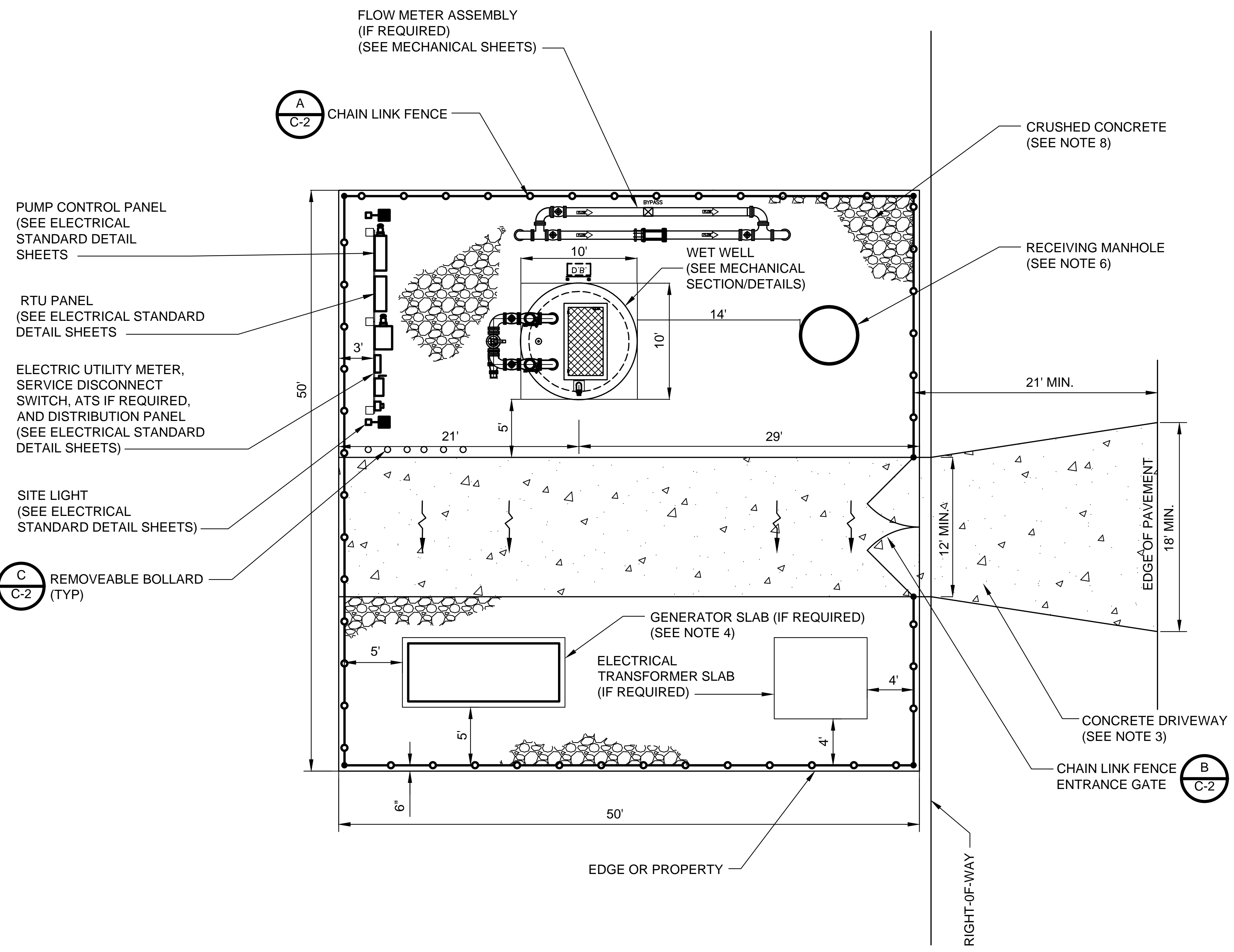


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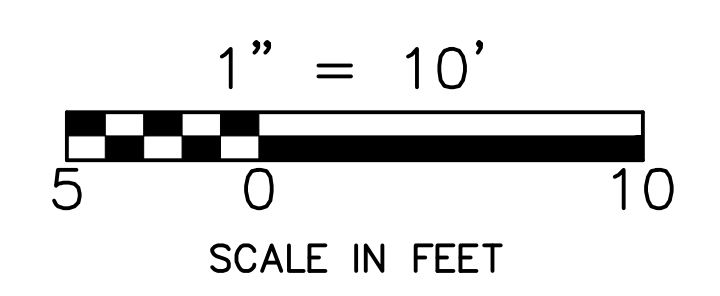
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 SHEET NO.: G-1
 PROJECT: GRU STANDARD LIFT STATION DRAWINGS
 DRAWN BY: []
 CHECKED BY: []
 COMPUTER FILE: []
 DATE: FEB 2023
 GAINESVILLE REGIONAL UTILITIES
 WATER & WASTEWATER ENGINEERING
 REVISIONS: []
 DATE: 07/2023
 SCALE: 1" = 1'-0"
 IF NOT ONE INCH ON SHEET, INDICATE SCALE.
 SEAL: []
 APPROVED BY: []
 DATE: []



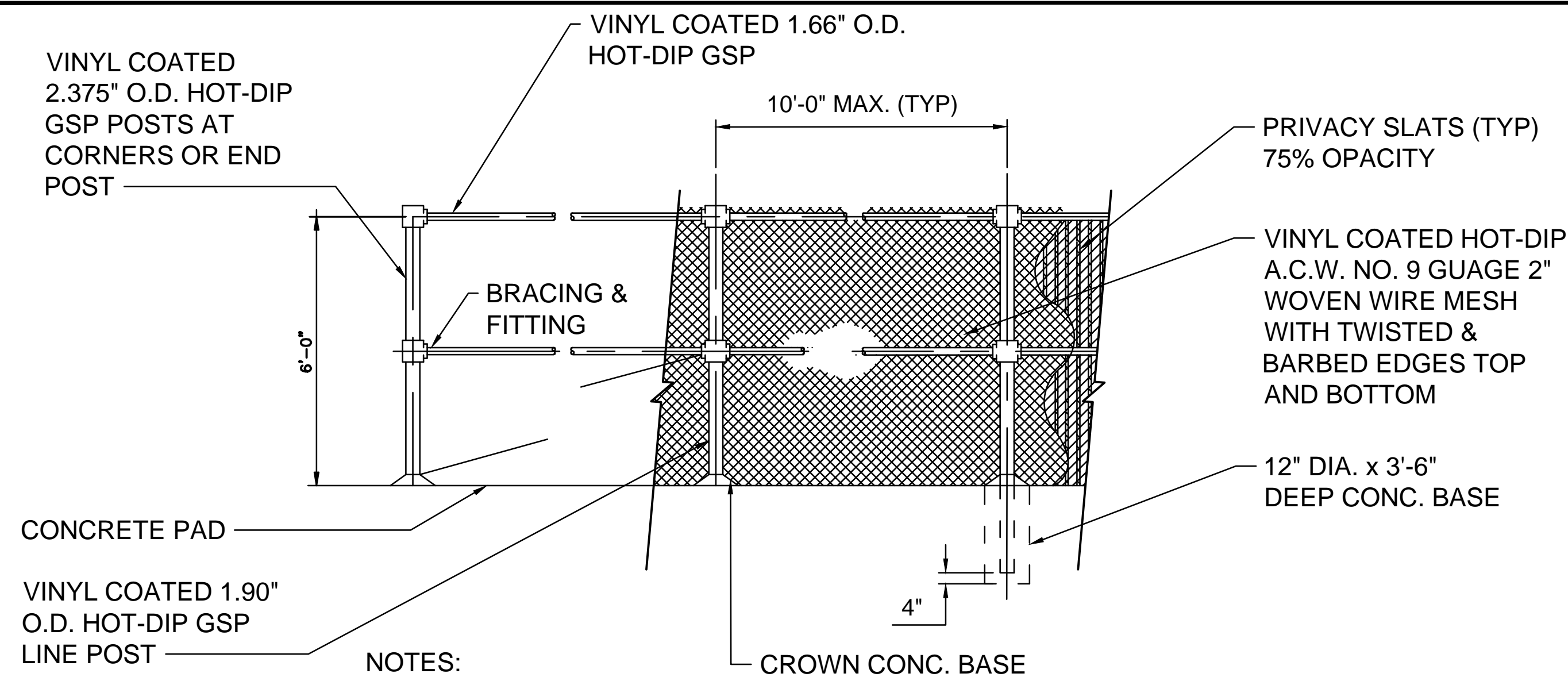
- NOTES:
1. CONTRACTOR SHALL GRADE SITE TO PROVIDE POSITIVE DRAINAGE AWAY FROM WETWELL.
 2. CONSTRUCT CHAIN LINK FENCE WITH GATED ACCESS IN ACCORDANCE WITH CIVIL DETAILS. COORDINATE WITH WATER/WASTEWATER DEPARTMENT.
 3. CONCRETE DRIVEWAY SHALL BE 3000 PSI MINIMUM. EXPANSION JOINTS REQUIRED ADJACENT TO PAVING, CURB, DRIVEWAY APRONS, STRUCTURES & PADS, EVERY 18 FEET AT A MINIMUM. SEE DETAIL E ON SHEET C-2.
 4. GENERATOR SLAB THICKNESS SHALL BE 12" MINIMUM.
 5. TOP OF WETWELL SLAB SHALL BE INSTALLED 6 INCHES ABOVE FINISHED GRADE. SLOPE FINISHED GRADE AWAY FROM WET WELL SLAB ALONG ALL SIDES.
 6. MANHOLE WILL BE ARMOROCK PER GRU STANDARDS. DISTANCE FROM MANHOLE TO WET WELL SHALL BE 14 FEET MINIMUM.
 7. IF RECEIVING MANHOLE IS GREATER THAN 25 FEET DEEP, COORDINATE WITH GRU ON LOCATION OF RECEIVING MANHOLE.
 8. SEE DETAIL D ON SHEET C-2.

STANDARD LIFT STATION CIVIL SITE PLAN

SCALE: 1" = 10'

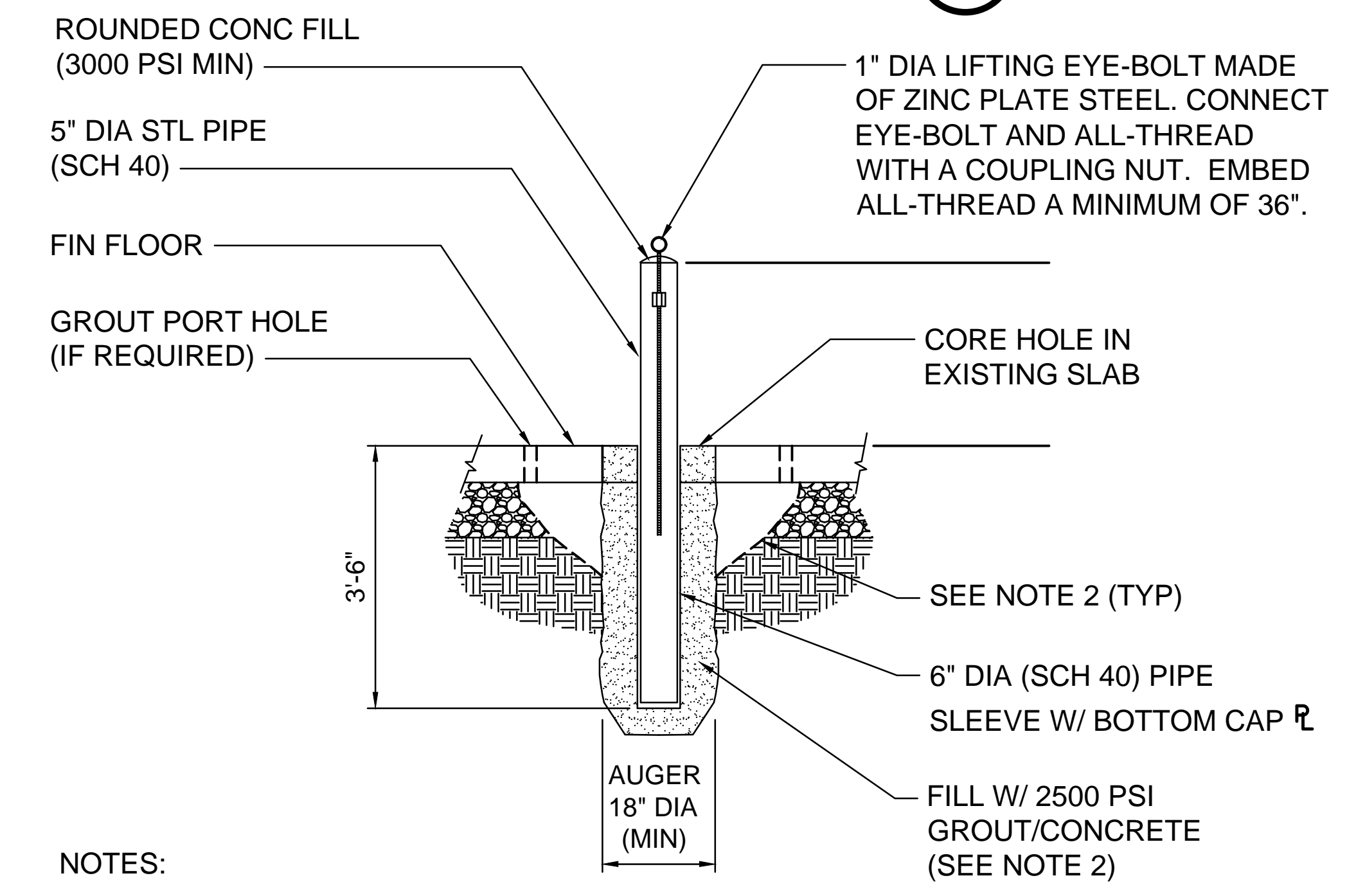


CLIENT:	GRU STANDARD LIFT STATION DRAWINGS	SHEET NO.:	C-1
PROJECT:	STANDARD LIFT STATION CIVIL SITE PLAN	DRAWN BY:	
DESIGNED BY:		CHECKED BY:	
COMPUTER FILE:		DATE:	FEB 2023
GAINESVILLE REGIONAL UTILITIES		WATER & WASTEWATER ENGINEERING	
DATE:	02/2023	APPROVED BY:	
REVISIONS:		PAGE:	
1" SCALE 0' 10' 20' 30' 40' 50' 60' 70' 80' 90' 100' IF NOT ONE INCH ON SCALE, RECORDING.			



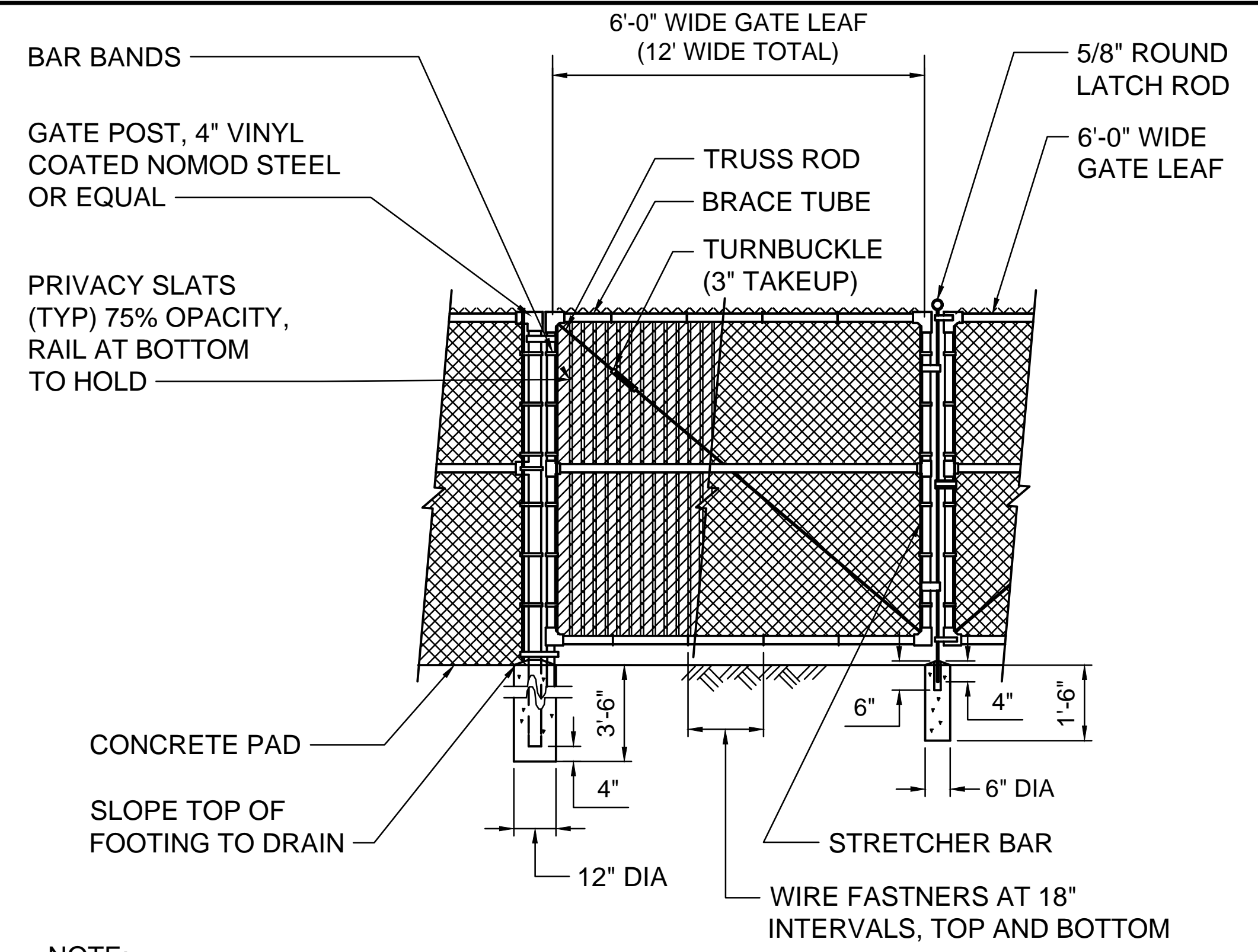
- NOTES:
1. ALL FENCING AND POSTS SHALL BE BLACK VINYL COATED.
 2. THE LOCK HASP SHALL BE CAPABLE OF ACCEPTING A STANDARD PADLOCK.
 3. HEIGHT OF FENCE AT LIFT STATION SHALL BE 6'.
 4. ALL FENCE POSTS SHALL BE SET WITHIN CONCRETE SLAB WITH 4" MINIMUM CLEARANCE FROM EDGE OF SLAB.
 5. FENCE SHALL INCLUDE GROUNDING SYSTEM. SEE ELECTRICAL SHEETS.

TYPICAL FENCE DETAIL
DETAIL A
 NTS



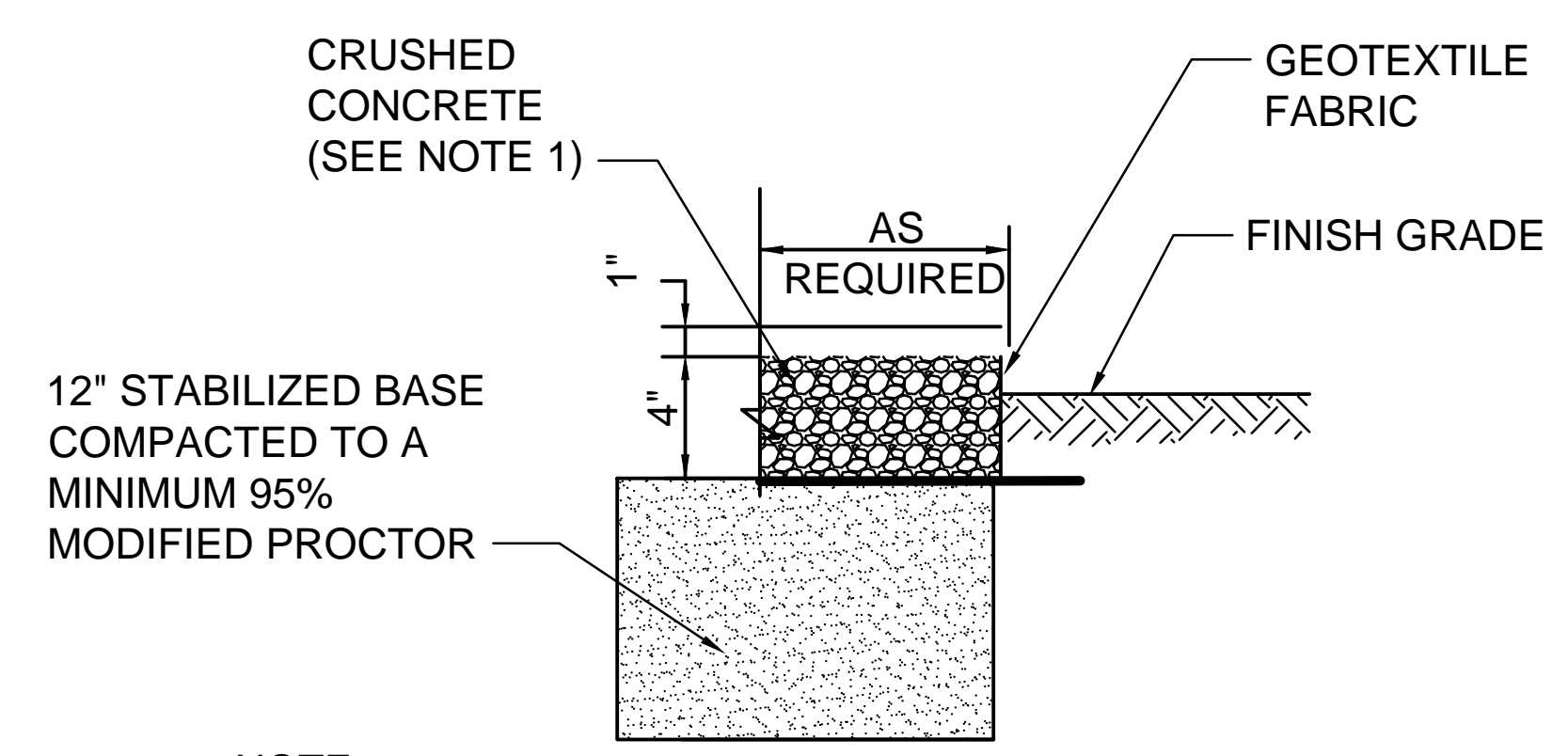
- NOTES:
1. PAINT WITH HIGHLY VISIBLE COLOR (DETERMINED BY OWNER). BELOW BOTTOM OF FINISHED FLOOR ONLY PRIMER AND SINGLE COAT OF PAINT REQUIRED.
 2. IF AUGER OF HOLE CREATES A VOID IN THE SUBGRADE BENEATH SLAB, CONTRACTOR SHALL DETERMINE EXTENT OF UNDERMINING AND REPLACE WITH 2500 PSI GROUT/CONCRETE BY DRILLING 2" DIA PORT HOLES IN SLAB.

REMOVABLE BOLLARD DETAIL
DETAIL C
 NTS



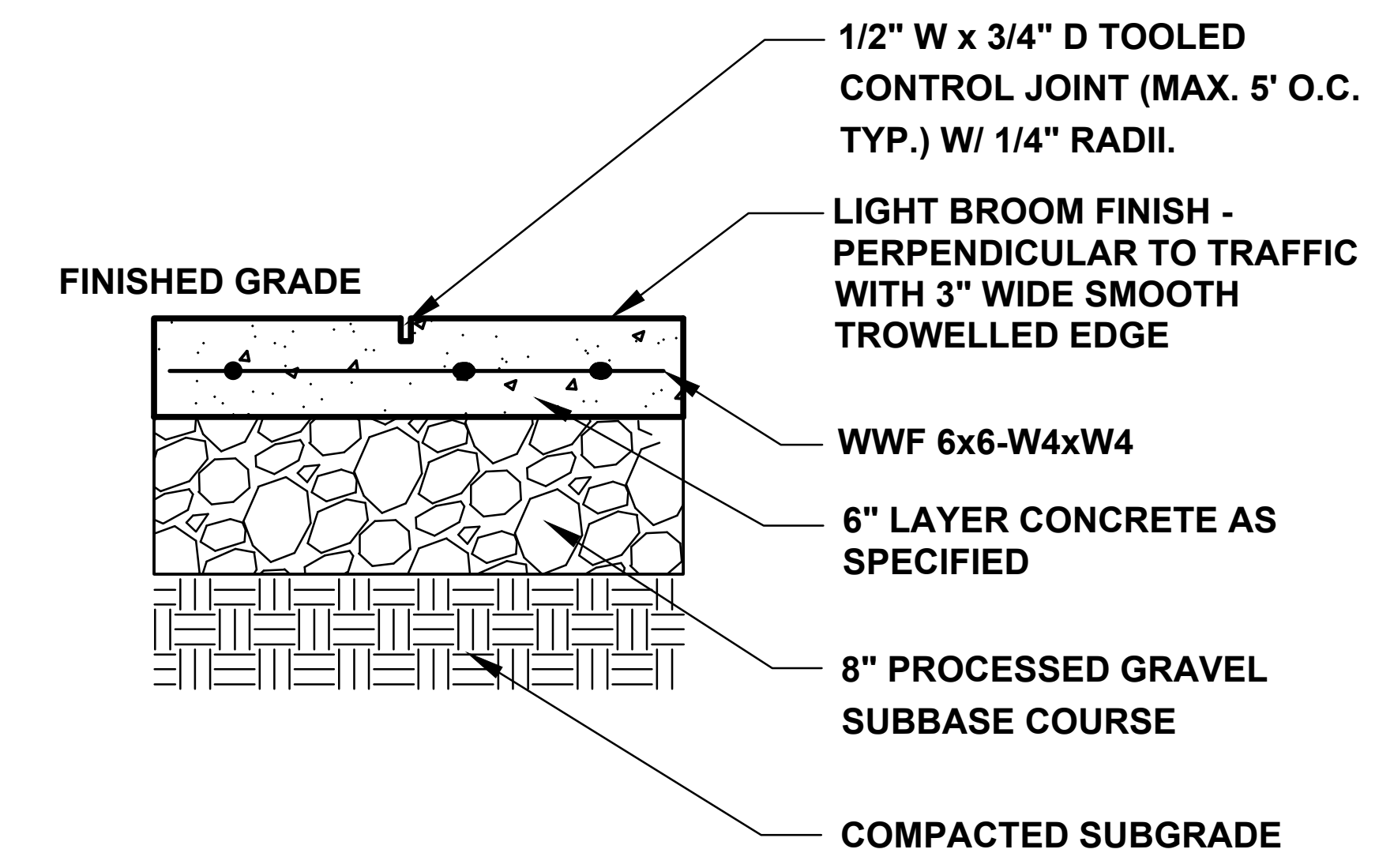
- NOTE:
1. GATE STOPS SHALL BE INSTALLED TO STOP AND SECURE GATE PROPERLY WHEN IN THE OPEN POSITION.

CHAIN LINK FENCE-GATE
DETAIL B
 NTS



- NOTE:
1. CRUSHED CONCRETE SHALL BE IN ACCORDANCE WITH FDOT STANDARD SPECIFICATION SECTION 285, OPTIONAL BASE COURSE, RECYCLED CONCRETE AGGREGATE (RCA) AND SECTION 911, CASE AND STABILIZED BASE MATERIALS.

SITE COVER
DETAIL D
 NTS



CONCRETE PAVEMENT
DETAIL E
 NTS

CIVIL DETAILS
 NOT TO SCALE

CLIENT:	CRU STANDARD LIFT STATION DRAWINGS	SHEET NO.:	C-2
PROJECT:	CRU STANDARD LIFT STATION DRAWINGS	DATE:	FEB 2023
DESIGNED BY:		CHECKED BY:	
DRAWN BY:		DATE:	FEB 2023
COMPUTER FILE:		DATE:	FEB 2023
REVISIONS:		DATE:	
DATE:		DATE:	
APPROVED BY:		DATE:	
PAGE:		DATE:	

PUMP CONTROL PANEL
(SEE ELECTRICAL
STANDARD DETAIL SHEETS)

RTU PANEL (SEE
ELECTRICAL STANDARD
DETAIL SHEETS)

ELECTRIC UTILITY METER,
SERVICE DISCONNECT
SWITCH, ATS IF REQUIRED,
AND DISTRIBUTION PANEL
(SEE ELECTRICAL
STANDARD DETAIL SHEETS)

TYPICAL DISCHARGE PIPING
(SEE MECHANICAL SECTION
SHEET MD-1)

SITE LIGHT (SEE
ELECTRICAL STANDARD
DETAIL SHEETS)

 REMOVABLE
BOLLARD
(TYP)

POTABLE WATER
GRID TEST STATION
(SEE MECHANICAL
DETAIL SHEET MD-2)

REDUCED PRESSURE BACKFLOW
PREVENTION ASSEMBLY. ALL ABOVE
GROUND POTABLE WATER PIPING
SHALL BE STAINLESS STEEL (SEE
MECHANICAL DETAILS SHEET MD-2)

HOSE STATION
(SEE MECHANICAL
DETAILS SHEET MD-2)

DEMARICATION BOX
SEE DETAIL

FENCE

VALVE W/ B&C

WET WELL

1% SLOPE

DISCHARGE FORCE MAIN

RECEIVING MANHOLE

INFLUENT GRAVITY

EDGE OF PAVEMENT

UTILITY TRANSFORMER
CONCRETE PAD

RIGHT-OF-WAY

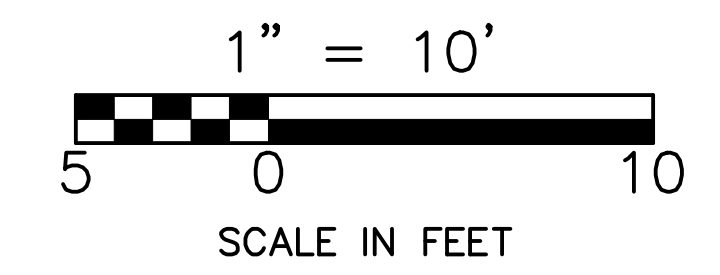
1-1/2" WATER SERVICE -
SEE GRU STANDARD
WATER & SEWER
CONSTRUCTION DETAILS

WATER METER

1-1/2" PVC SCH 40

STANDARD LIFT STATION UTILITY PLAN

SCALE: 1"=10'



CLIENT:	GRU STANDARD LIFT STATION DRAWINGS	PROJECT:	STANDARD LIFT STATION UTILITY PLAN	SHEET NO.:	ME-1
DESIGNED BY:		DRAWN BY:		CHECKED BY:	
COMPUTER FILE:		DATE:	FEB 2023		
GAINESVILLE REGIONAL UTILITIES					
					
WATER & WASTEWATER ENGINEERING					
DATE:	02/2023	REVISIONS:	UPDATED STANDARD LIFT STATION UTILITY PLAN	SCALE:	1" = 10'
APPROVED BY:		DATE:		IF NOT ONE INCH ON SCALE, INDICATE SCALE HERE.	
PAGE NO.:					

PUMP CONTROL PANEL
(SEE ELECTRICAL
STANDARD DETAIL SHEETS)

RTU PANEL (SEE
ELECTRICAL STANDARD
DETAIL SHEETS)

ELECTRIC UTILITY METER,
SERVICE DISCONNECT
SWITCH, ATS IF REQUIRED,
AND DISTRIBUTION PANEL
(SEE ELECTRICAL
STANDARD DETAIL SHEETS)

TYPICAL DISCHARGE PIPING
(SEE MECHANICAL SECTION
SHEET MD-1)

SITE LIGHT (SEE
ELECTRICAL STANDARD
DETAIL SHEETS)

REMOVABLE
BOLLARD
(TYP)

POTABLE WATER
GRID TEST STATION
(SEE MECHANICAL
DETAIL SHEET MD-2)

REDUCED PRESSURE BACKFLOW
PREVENTION ASSEMBLY. ALL ABOVE
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SHALL BE STAINLESS STEEL (SEE
MECHANICAL DETAILS SHEET MD-2)

HOSE STATION
(SEE MECHANICAL
DETAILS SHEET MD-2)

DEMARICATION BOX
SEE DETAIL

FENCE

2' MIN

VALVE W/ B&C

WET WELL

1% SLOPE

DISCHARGE FORCE MAIN

RECEIVING MANHOLE

INFLUENT GRAVITY

EDGE OF PAVEMENT

GENERATOR
W/BELLY TANK
15'x6'

UTILITY TRANSFORMER
CONCRETE PAD

1-1/2" PVC SCH 40

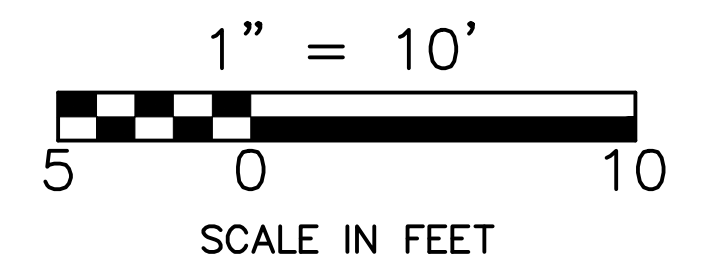
1-1/2" WATER SERVICE -
SEE GRU STANDARD
WATER & SEWER
CONSTRUCTION DETAILS

RIGHT-OF-WAY

WATER METER

STANDARD LIFT STATION UTILITY PLAN WITH GENERATOR AND WITHOUT MAG METER

SCALE: 1"=10'



CLIENT:	GRU STANDARD LIFT STATION DRAWINGS	PROJECT:	GRU STANDARD LIFT STATION DRAWINGS	DATE:	FEB 2023	SHEET NO.:	ME-2
DESIGNED BY:		DRAWN BY:		CHECKED BY:			
COMPUTER FILE:		DATE:	FEB 2023				
GAINESVILLE REGIONAL UTILITIES				 WATER & WASTEWATER ENGINEERING			
REVISIONS 01/2023 UPDATED STANDARD LIFT STATION UTILITY PLAN				SCALE: 1"=10' 0 IF NOT ONE INCH ON SHEET, RECORD AS SHOWN			
DATE:	02/2023	APPROVED BY:		PAGE:	1		

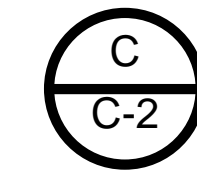
PUMP CONTROL PANEL
(SEE ELECTRICAL
STANDARD DETAIL SHEETS)

RTU PANEL (SEE
ELECTRICAL STANDARD
DETAIL SHEETS)

ELECTRIC UTILITY METER,
SERVICE DISCONNECT
SWITCH, ATS IF REQUIRED,
AND DISTRIBUTION PANEL
(SEE ELECTRICAL
STANDARD DETAIL SHEETS)

TYPICAL DISCHARGE PIPING
(SEE MECHANICAL SECTION
SHEET MD-1)

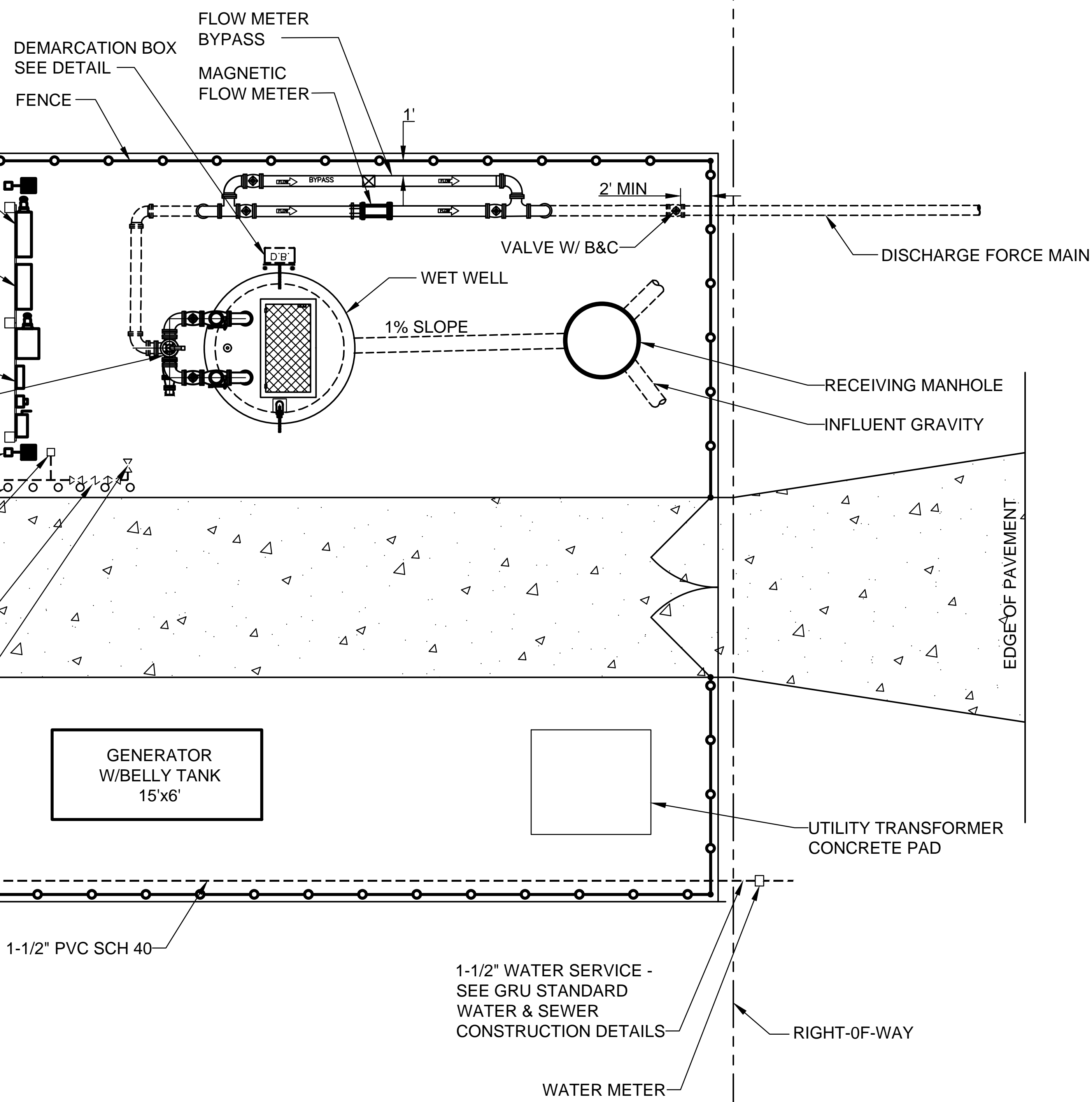
SITE LIGHT (SEE
ELECTRICAL STANDARD
DETAIL SHEETS)

 REMOVABLE
BOLLARD
(TYP)

POTABLE WATER
GRID TEST STATION
(SEE MECHANICAL
DETAIL SHEET MD-2)

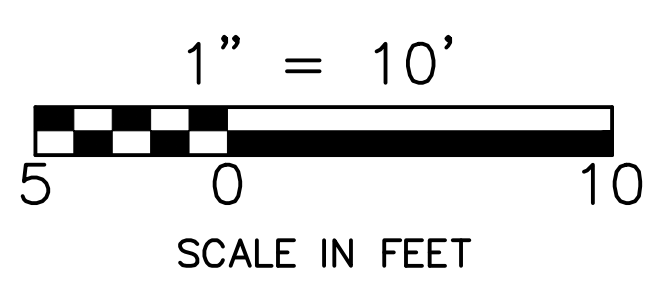
REDUCED PRESSURE BACKFLOW
PREVENTION ASSEMBLY. ALL ABOVE
GROUND POTABLE WATER PIPING
SHALL BE STAINLESS STEEL (SEE
MECHANICAL DETAILS SHEET MD-2)

HOSE STATION
(SEE MECHANICAL
DETAILS SHEET MD-2)



STANDARD LIFT STATION UTILITY PLAN WITH GENERATOR AND MAG METER

SCALE: 1"=10'



CLIENT:	GRU STANDARD LIFT STATION DRAWINGS	SHEET NO.:	ME-3
PROJECT:	GRU STANDARD LIFT STATION DRAWINGS	FOR NO.:	
DESIGNED BY:		CHECKED BY:	
COMPUTER FILE:		DATE:	FEB 2023
REVISIONS:	1. REVISED FOR STANDARD LIFT STATION UTILITY PLAN 2. REVISED FOR STANDARD LIFT STATION UTILITY PLAN W/ GENERATOR AND MAG METER		
DATE:	02/2023	SCALE:	1" = 10'
APPROVED BY:		PAGE:	1
SEAL:	GAINESVILLE REGIONAL UTILITIES  WATER & WASTEWATER ENGINEERING		

MECHANICAL MATERIALS SCHEDULE

MARK	ITEM	TYPE	QTY.	UNIT
1	SUBERSIBLE SEWAGE PUMP	FLYGT	2	EA
2	PUMP BASE/DISCHARGE ELBOW	FLYGT	2	EA
3	ANCHOR BOLT	316 SST	8	EA
4	UPPER GUIDE RAIL BRACKET	316 SST	2	EA
5	INTERMEDIATE GUIDE RAIL BRACKET (SEE NOTE 16)	316 SST	2	EA
6	GUIDE RAIL (ALL ONE PIECE, BUTT WELDED AS REQUIRED)	316 SST	4	EA
7	PUMP LIFTING SS CHAIN	316 SST	2	EA
8	CABLE HOLDER	316 SST	1	EA
9	DISCHARGE PIPE ONE PIECE WITH FLANGED END (SEE NOTE 23)	316 SST	2	EA
10	BEND 45° (SEE NOTE 23)	316 SST	2	EA
11	FLANGED ECCENTRIC INCREASER (IF REQUIRED)	316 SST	2	EA
12	2" PVC PIPE W/3" DIA. SLAB OPENING (SEE NOTE 24)	PVC, SCH 80	1	EA
13	VALVE SUPPORT (DETAIL)	316 SST	2	EA
14	ACCESS HATCH (SEE NOTE 29)	LOCKING	AS REQ'D	EA
15	SEWER PIPE	PVC, DR18	1	EA
16	BEND FLANGED CONNECTION	D.I.	2	EA
17	TEE	D.I.	1	EA
18	FLANGED PIPE	D.I.	1	EA
19	FILLET FDOT TYPE 1 WITH FIBER	CONCRETE	2	EA
20	REINFORCED STEEL #5	AS REQ'D	EA	
21	WETWELL	CONCRETE	1	EA
22	WETWELL LINER (SEE NOTE 27)	HDPE	1	EA
23	MJ CONNECTION (RESTRAINED)		1	EA
24	F.M.	PVC, DR18	1	EA
25	JOINT WRAP - 10" WIDE MIN. ALL JOINTS		AS REQ'D	
26	PUMP CONDUCTOR	VARIABLES	2	EA
27	TRANSDUCER (1/8" SS AIR CRAFT CABLE) (MFR: KELLER AMERICA)	LEVEL RAT	1	EA
28	FLOAT SWITCH, HIGH ALARM (MFR: ANCHOR SCIENTIFIC)	ECO-FLOAT	1	EA
29	FLUSH VALVE	FLYGT	1	EA
30	PUMPOUT MALE CAMLOCK W/ CAP (S.S.)		1	EA
31	SEE NOTE 25		1	EA
32	FLANGED CHECK VALVE (SEE NOTE 17)		2	EA
33	FLANGED PLUG VALVE (SEE NOTE 18)		2	EA
34	1 1/2" ARV (SEE GRU STANDARDS FOR APPROVED MFRS) W/ 1-1/2" FLEX HOSE W/ FEMALE CAMLOCK ROUTED TO LIFT STATION		1	EA
35	DROP BOWL (SEE DETAIL)		1	EA
36	EMERGENCY SUCTION PIPE WITH CAMLOCK (SEE DETAIL)			
37	RAM-NEK JOINT			
38	FLANGED CROSS			

DIMENSION SCHEDULE

VARIABLE DIMENSIONS	DIMENSION	DESCRIPTION
AA		WETWELL DIAMETER
BB		WETWELL HATCH OPENING LENGTH
CC		WETWELL HATCH OPENING WIDTH
DD		WETWELL CL TO PUMP CL
EE		WETWELL CL TO HATCH OPENING
FF		PUMP BENCH HEIGHT
GG		PUMP MINIMUM WATER DEPTH (SEE NOTE 22)

ELEVATION SCHEDULE

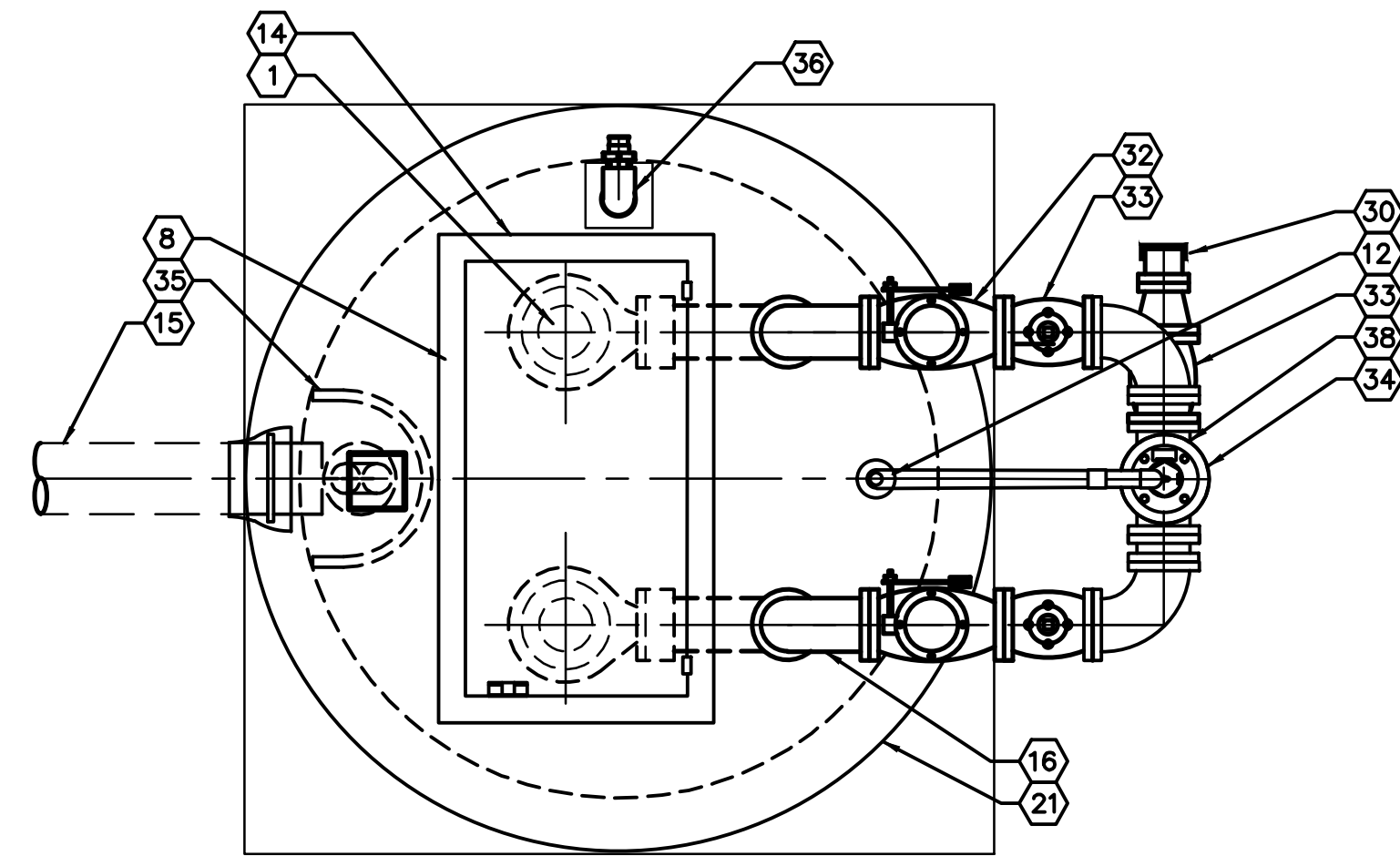
VARIABLE ELEVATIONS	ELEVATIONS (FT.)	DESCRIPTION
A		WETWELL COVER
B		INFLUENT PIPE INVERT
D		FLOOR OF WETWELL (W/O BENCH)
E		HIGH WATER ALARM
F		LAG PUMP ON
G		LEAD PUMP ON
H		PUMP OFF (SEE NOTE 22)

WETWELL DIMENSIONS

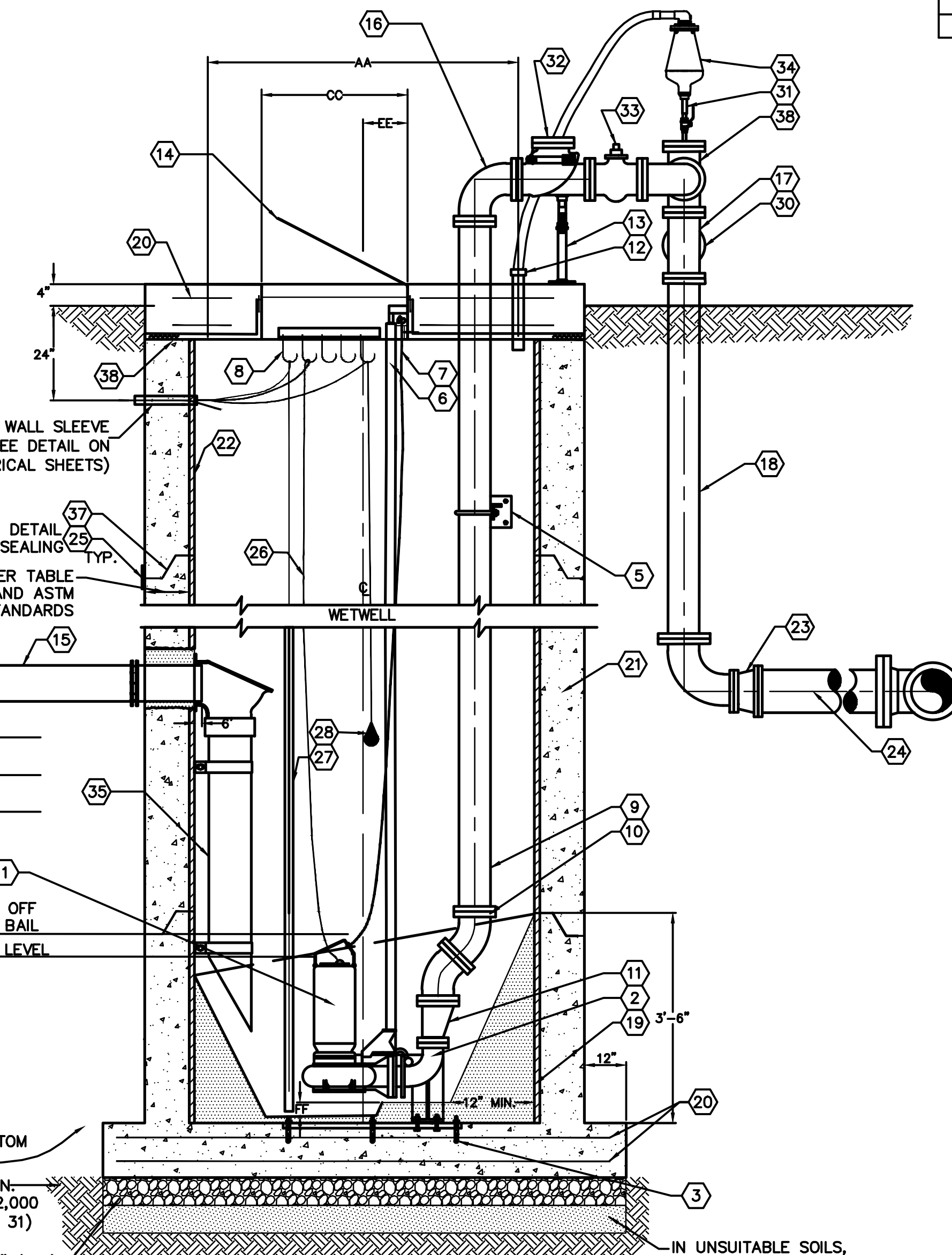
WETWELL I.D.	WALL THICKNESS (MIN)	TOP SLAB THICKNESS (MIN)
8'-0"	0'-9"	0'-10"
10'-0"	1'-0"	1'-0"
12'-0"	1'-0"	1'-0"

STRUCTURAL/MECHANICAL NOTES

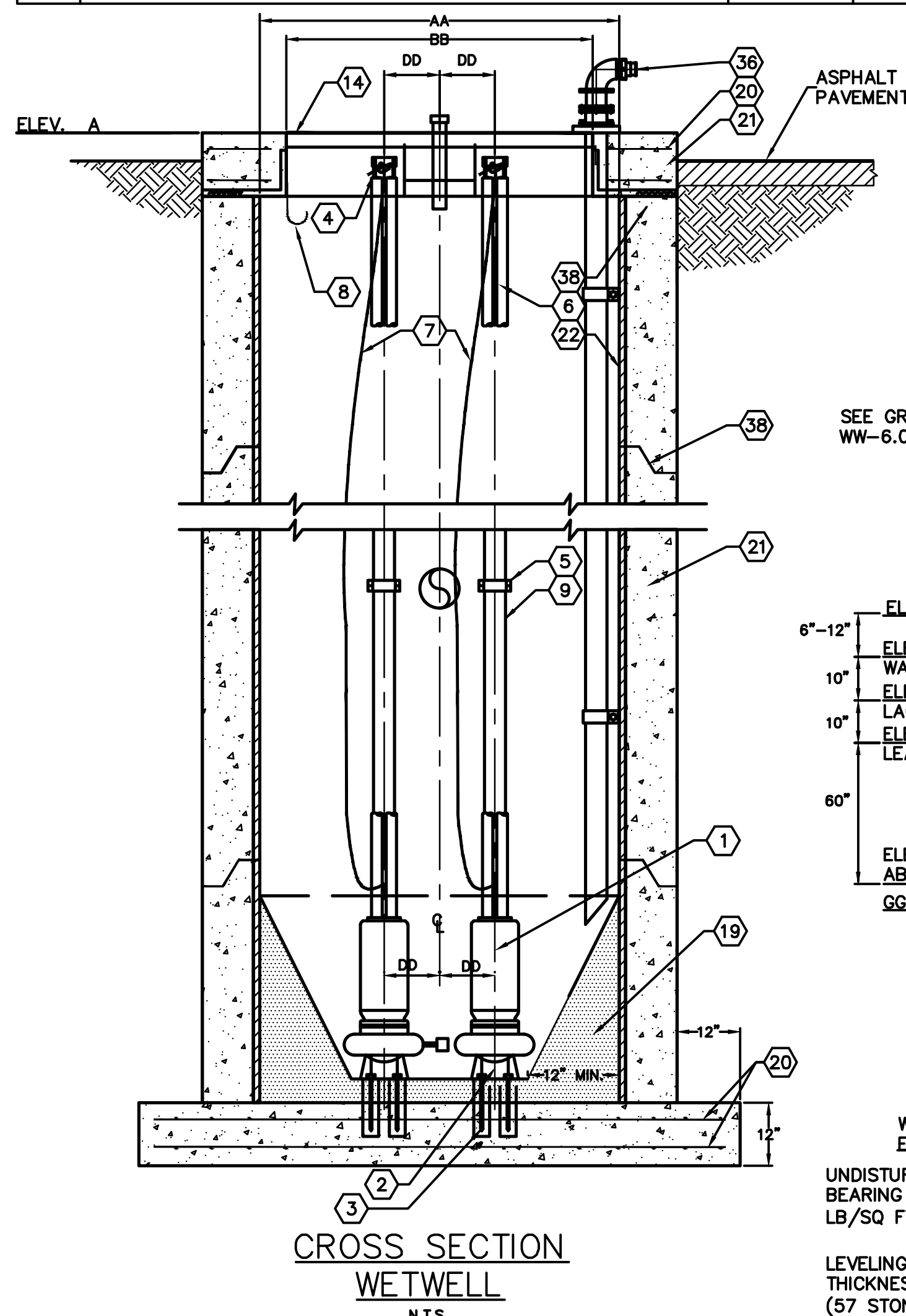
- STRUCTURAL DESIGN FOR ALL PRECAST CONCRETE STRUCTURES SHALL BE THE RESPONSIBILITY OF THE PRECAST MANUFACTURER AND SHALL CONFORM TO ASTM STANDARDS FOR PRECAST STRUCTURES. STRUCTURE SHALL BE DESIGNED TO RESIST FLOTATION AGAINST BUOYANT FORCE WITH FACTOR OF SAFETY OF 1.1 USING DEAD LOAD OF STRUCTURE ONLY. ALL STRUCTURES SHALL BE WATER-TIGHT AND FREE OF VOIDS (HONEYCOMB). ANY STRUCTURES FOUND WITH VOIDS OR LEAKING WATER SHALL BE REPLACED IMMEDIATELY AT THE MANUFACTURERS EXPENSE, INCLUDING DELIVERY AND INSTALLATIONS COSTS.
- COMPACT SUBGRADE BENEATH CONCRETE STRUCTURES TO 98% OF THE MODIFIED PROCTOR DENSITY (AASHTO T-180) PRIOR TO INSTALLATION.
- STABILIZE SUB BASE BENEATH CONCRETE STRUCTURES WITH 12" (MINIMUM) OF GRAVEL (FDOT #57) WRAPPED IN GEOTEXTILE FILTER FABRIC. 4. BACKFILL AROUND STRUCTURES IN 12" LIFTS COMPACTING EACH LIFT TO 95% OF THE MODIFIED PROCTOR DENSITY (AASHTO T-180).
- BACKFILL THE LAST 3 FEET BENEATH STRUCTURES AND THE ACCESS DRIVEWAY COMPACTING TO A MINIMUM DENSITY OF 98% OF THE MODIFIED PROCTOR DENSITY (AASHTO T-180).
- SEAL ALL PENETRATIONS IN CONCRETE STRUCTURES WITH TYPE II LEAN CEMENT GROUT.
- INSTALL PUMP BASES, GUIDE RAILS, AND DISCHARGE PIPING PLUMB, LEVEL, AND SQUARE.
- INSTALL BENCH FOR PUMP BASE PER GRU APPROVED PUMP MANUFACTURER'S SHOP DRAWINGS.
- UNLESS OTHERWISE SPECIFIED, ALL ACCESSORIES AND FASTENERS SHALL BE 316 STAINLESS STEEL FASTENERS. INSTALL ANTI-SEIZING COMPOUND ON ALL STAINLESS STEEL FASTENERS.
- INSTALL FILLET AFTER THE INSTALLATION OF ALL PUMP EQUIPMENT. FILLET SHALL BE CONSTRUCTED WITH A SLOPE OF 2 : 1 (VERTICAL : HORIZONTAL).
- COAT ALL METALS THAT ARE NOT ALUMINUM OR STAINLESS STEEL AND ARE LOCATED IN THE WETWELL OR VALVE VAULT WITH 10 MILS (DRY FILM THICKNESS) OF BLACK, HIGH-SOLIDS EPOXY. (TNEC SERIES 69 HI-BUILD EPOXYLINE II). COATING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION AND SHALL NOT BE IMMERSED UNTIL FULL CURE IS ACHIEVED.
- COAT ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE WITH BITUMINOUS COATING PRIOR TO INSTALLATION.
- INSTALL 2" PE WATER SERVICE PIPING. GRU WILL FURNISH AND INSTALL WATER METER AND RPZ BACKFLOW PREVENTER.
- PUMP BASES, PUMP ANCHOR BOLTS, UPPER AND INTERMEDIATE GUIDE RAIL BRACKETS, GUIDE RAILS, CABLE HANGER, PUMP LIFTING CABLES, CONTROL PANEL & LEVEL SENSOR SHALL BE PROVIDED BY PUMP SUPPLIER.
- UPPER & INTERMEDIATE GUIDE RAIL BRACKETS, GUIDE RAILS, & CABLE HANGER SHALL BE 316 STAINLESS STEEL.
- INSTALL INTERMEDIATE GUIDE RAIL BRACKETS WHEN GUIDE RAILS EXCEED 20'-0" IN LENGTH.
- PROVIDE CHECK VALVES WITH EXTERNAL WEIGHT & LEVER ARM.
- PROVIDE PLUG VALVES WITH 2" SQUARE NUT OPERATOR.
- ANCHOR BOLTS FOR PUMP BASES SHALL BE 316 STAINLESS STEEL, EPOXY TYPE, 3/4" MINIMUM DIAMETER, LENGTH AS REQUIRED. OTHER ANCHOR BOLTS SHALL BE 316 STAINLESS STEEL, MECHANICAL WEDGE TYPE, 3/8" MINIMUM DIAMETER, LENGTH AS REQUIRED.
- APPLY COATING TO STEEL PIPE SUPPORTS BEFORE INSTALLING.
- ALL WORK MUST CONFORM TO THESE DRAWINGS AND WITH THE WRITTEN SPECIFICATIONS CONTAINED WITHIN GRU'S WATER AND WASTEWATER STANDARDS AND APPROVED MATERIALS MANUAL.
- PUMP MINIMUM WATER DEPTH (GG) SHALL BE SUFFICIENT TO COMPLETELY COVER THE LIFTING BAIL ON TOP OF THE PUMP AT ALL TIMES.
- PIPING WITHIN THE WETWELL SHALL BE FLANGED 316 STAINLESS STEEL, (SCHEDULE 10, ONE PIECE CONSTRUCTION). FITTINGS WITHIN THE WETWELL SHALL BE FLANGED 316 STAINLESS STEEL. BUTT WELDING OF PIPING IS NOT ALLOWED. ALL NUTS, BOLTS AND ACCESSORIES WITHIN THE WETWELL SHALL BE 316 STAINLESS STEEL.
- PROVIDE 2" PIPE (PVC, SCH. 80) THROUGH CONCRETE TOP WITH CAPPED TOP AND OPEN END BOTTOM. SEAL AROUND CONCRETE TOP WITH NON-SHRINK GROUT. THIS PIPE WILL BE UTILIZED FOR THE CONSTRUCTION OF THE AIR-RELEASE VALVE PIPING.
- INSTALL 2" WELDED STAINLESS STEEL NIPPLE OR 2" DOUBLE STRAP SADDLE W/ 2" 316 S.S. BALL VALVE & 2" S.S. PLUG.
- PIPE AND FITTINGS OUTSIDE THE WETWELL OR ABOVE GRADE SHALL BE FLANGED DUCTILE IRON.
- WETWELL LINER SHALL BE AGRU ULTRA GRIP LINER OR APPROVED BY GRU. 3MM MINIMUM THICKNESS.
- UNLESS OTHERWISE STATED, ALL DESIGN ELEMENTS SHALL BE PER GRU STANDARDS.
- INSTALL SINGLE OPENING HATCH WITH DOOR SWINGING TOWARD PIPING.
- GRU MAY REQUEST A GEOTECHNICAL INVESTIGATION AND REPORT PRIOR TO INSTALLING WETWELL.
- IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 12" (AT MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).



PLAN
N.T.S.



SECTION
N.T.S.



CROSS SECTION
WETWELL
N.T.S.

STAINLESS STEEL HINGES WITH TAMPER-PROOF BOLTS

HATCH DETAIL

NOTES:

- WETWELL HATCH TO BE CONSTRUCTED OF ALUMINUM
- DESIGN LOAD = 300 LBS. PER SQ. FT.
- 316 STAINLESS STEEL NUTS AND BOLTS

SHEET NO. MD-1

DATE: FEB 2023

PROJECT: GRU STANDARD LIFT STATION DRAWINGS

DRAWN BY: []

CHECKED BY: []

COMPUTER FILE: []

GAINESVILLE REGIONAL UTILITIES

GRU WATER & WASTEWATER ENGINEERING

SCALE: 1" = 1'-0"

REVISIONS: []

DATE: 02/2023

APPROVED BY: []

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RACEWAYS, BOXES, FITTINGS AND SUPPORTS:

- RIGID ALUMINUM CONDUIT (RAC) SHALL BE USED IN ALL LOCATIONS WHERE CONDUIT IS EXPOSED. RIGID ALUMINUM CONDUIT SHALL BE 6063 ALLOY AND SHALL BE AS MANUFACTURED BY NEW JERSEY ALUMINUM CORP.; REYNOLDS ALUMINUM INTERNATIONAL SERVICES INC.; ALUMAX EXTRUSIONS, INC; VAW OF AMERICA, INC. OR APPROVED EQUAL. RIGID ALUMINUM CONDUIT SHALL BE FOR USE UNDER THE PROVISIONS OF NEC ARTICLE 344.
- RIGID NONMETALLIC CONDUIT SHALL BE USED IN ALL UNDERGROUND DIRECT BURIED APPLICATIONS. RIGID NONMETALLIC CONDUIT SHALL BE PVC SCHEDULE 40 AS MANUFACTURED BY CARLON; AN INDIAN HEAD CO.; CANTEX; QUEEN CITY PLASTICS OR APPROVED EQUAL. PVC CONDUIT SHALL BE FOR USE UNDER THE PROVISIONS OF NEC ARTICLE 352.
- LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC) SHALL BE USED FOR ALL MOTOR, TRANSFORMER, AND GENERATOR TERMINATIONS AND OTHER EQUIPMENT WHERE VIBRATION IS PRESENT. LFMC SHALL BE SEALTITE TYPE UA STAINLESS STEEL AS MANUFACTURED BY THE ANACONDA METAL HOSE DIV.; ANACONDA AMERICAN BRASS CO.; AMERICAN FLEXIBLE CONDUIT CO.; UNIVERSAL METAL HOSE CO. OR APPROVED EQUAL. LFMC SHALL BE FOR USE UNDER THE PROVISIONS OF NEC ARTICLE 350. FITTINGS USED WITH LFMC SHALL BE STAINLESS STEEL AS MANUFACTURED BY GIBSON OR APPROVED EQUAL.
- MINIMUM SIZE CONDUIT SHALL BE 3/4-INCH ELECTRICAL TRADE SIZE.
- CONDUITS TERMINATING IN GASKETED ENCLOSURES SHALL BE TERMINATED WITH ALUMINUM MYERS GROUNDING TYPE CONDUIT HUBS.
- CONDUITS SHALL BE INSTALLED USING THREADED FITTINGS U.O.N. PVC CONDUIT TO NON-METALLIC AND METALLIC BOX CONNECTIONS SHALL BE MADE WITH SEALING RINGS, WITH A STAINLESS STEEL RETAINER AS MANUFACTURED BY THOMAS & BETTS CO.
- ALL THREADS ON RAC AND FITTINGS SHALL BE CLEANED AND COATED WITH "NO-OXIDE" COMPOUND BEFORE INSTALLATION.
- ALL METAL CONDUIT RISERS FROM UNDERGROUND, CONCRETE PADS, ETC. SHALL BE COATED WITH BITUMASTIC COATING FROM A POINT 12-INCHES BELOW BOTTOM OF SLAB OR GRADE TO A POINT NOT LESS THAN 6-INCHES ABOVE GRADE OR SURFACE OF SLAB.
- ALL JUNCTION BOXES AND PULL BOXES SHALL BE TYPE 316 STAINLESS STEEL. BOXES SHALL BE SIZED IN ACCORDANCE WITH THE REQUIREMENTS OF NEC ARTICLE 314.
- CONDUIT MOUNTING EQUIPMENT AND HARDWARE SUCH AS CHANNELS, HANGERS, RODS, BACKPLATES, BEAM CLAMPS, FASTENERS, ANCHORS, NUTS, WASHERS, ETC. SHALL BE TYPE 316 STAINLESS STEEL.
- THE MINIMUM COVER FOR DIRECT BURIED CONDUITS SHALL BE 24 INCHES UNLESS OTHERWISE PERMITTED BY THE ENGINEER.
- NEMA 4X STAINLESS STEEL, JUNCTION BOXES AND PULL BOXES SHALL BE 316 STAINLESS STEEL WITH 316 STAINLESS STEEL HARDWARE AND GASKETED COVERS. BOXES SHALL HAVE CONTINUOUSLY WELDED SEAMS AND WELDS SHALL BE GROUND SMOOTH. BOX BODIES SHALL BE FLANGED AND SHALL NOT HAVE HOLES OR KNOCKOUTS. BOX BODIES SHALL NOT BE LESS THAN 14 GAUGE METAL AND COVERS SHALL NOT BE LESS THAN 12 GAUGE METAL. COVERS SHALL BE GASKETED AND FASTENED WITH STAINLESS STEEL SCREWS.
- CAST ALUMINUM BOXES AND FITTINGS SHALL BE COPPER-FREE ALUMINUM WITH CAST ALUMINUM COVERS AND STAINLESS STEEL SCREWS AS MANUFACTURED BY THE KILLARK ELECTRIC CO.; CROUSE-HINDS CO.; APPLETON ELECTRIC CO.; OR APPROVED EQUAL.
- CAST ALUMINUM DEVICE BOXES SHALL BE TYPE FD. ALL CAST ALUMINUM BOXES AND FITTINGS SHALL BE COPPER-FREE ALUMINUM WITH CAST ALUMINUM COVERS AND STAINLESS STEEL SCREWS AS MANUFACTURED BY THE KILLARK ELECTRIC CO.; CROUSE-HINDS CO.; L.E. MASON CO. OR APPROVED EQUAL.

GROUNDING AND BONDING:

- ALL POWER AND CONTROL CONDUITS SHALL INCLUDE AN EQUIPMENT GROUNDING CONDUCTOR. EQUIPMENT GROUNDING CONDUCTORS SHALL BE NEC TYPE XHHW-2 AND UNLESS OTHERWISE SHOWN SHALL BE SIZED PER NEC TABLE 250.122.
- GROUND RODS SHALL BE 5/8-INCH DIAMETER BY 20- FEET COPPER CLAD STEEL.
- ALL BURIED GROUNDING CONNECTIONS OR CONNECTIONS TO BUILDING STEEL SHALL BE BY EXOTHERMIC WELDING PROCESS.
- GROUNDING SYSTEM SHALL BE TESTED AND INSPECTED TO VERIFY PHYSICAL AND MECHANICAL CONDITION. NO LOCATION SHALL HAVE A MAXIMUM GROUND-RESISTANCE GREATER THAN 10 OHMS. THE GROUNDING SYSTEM WILL BE CONSIDERED DEFECTIVE IF IT DOES NOT PASS TESTS AND INSPECTIONS. TEST AND INSPECTION REPORTS SHALL BE PROVIDED.

FUSED SE DISCONNECT SWITCHES:

- DISCONNECT SWITCHES SHALL BE FUSED, SERVICE ENTRANCE RATED, HEAVY DUTY, QUICK-MAKE, QUICK-BREAK, VISIBLE BLADES, 600 VOLT, 3 POLE WITH FULL COVER INTERLOCK DEFEAT AND FLANGE MOUNTED OPERATING HANDLE. ALL CURRENT CARRYING PARTS INCLUDING LUGS SHALL BE COPPER. ENCLOSURE SHALL BE NEMA 4X STAINLESS STEEL WITH ALL STAINLESS STEEL EXTERIOR HARDWARE.
- FUSES SHALL BE REJECTION TYPE, 600 VOLTS, 200,000 AIC DUAL ELEMENT, TIME DELAY, BUSSMAN FUSETRON, CLASS RK-5 OR EQUAL.
- SWITCHES SHALL BE AS MANUFACTURED BY SQUARE D.

EQUIPMENT IDENTIFICATION:

- PROVIDE AND INSTALL ENGRAVED, ALUMINUM NAMEPLATES AS CALLED FOR ON THE DRAWINGS. NAMEPLATES SHALL BE MINIMUM 1/16" THICK X 3/4" HIGH X 2 1/2" WIDE WITH WHITE LETTER ON BLACK BACKGROUND.
- SCREW MOUNT NAMEPLATES TO NEMA 1 ENCLOSURES. EPOXY BOND (NO DOUBLE SIDED TAPE) ALL OTHER ENCLOSURE TYPES.

COMBINATION MAGNETIC MOTOR STARTER:

- MOTOR STARTERS SHALL BE A COMBINATION MOTOR CIRCUIT PROTECTOR AND CONTACTOR, 3 POLE, 3 PHASE, 60 HZ, 480 VOLT, MAGNETICALLY OPERATED, REDUCED VOLTAGE SOLID STATE, NEMA RATED, FULLY RATED FOR 42,000 AMPS RMS SYMMETRICAL IN A NEMA 4X STAINLESS STEEL ENCLOSURE.
- EACH MOTOR STARTER SHALL HAVE A 120 VOLT OPERATING COIL WITH FUSE PROTECTION ON THE TRANSFORMER PRIMARY AND SECONDARY. MOTOR OVERLOAD PROTECTION SHALL BE PROVIDED IN EACH PHASE VIA NON-ADJUSTABLE, AMBIENT COMPENSATED MOTOR OVERLOAD RELAYS WHICH ARE MANUALLY RESET.
- COMBINATION MAGNETIC MOTOR STARTER SHALL BE AS MANUFACTURED BY ALLEN BRADLEY.

CONDUIT MOUNTING EQUIPMENT:

- 316 STAINLESS STEEL CHANNEL WITH 316 STAINLESS STEEL HARDWARE (HANGERS, RODS, BACKPLATES, BEAM CLAMPS, FASTENERS, ANCHORS, NUTS, WASHERS, ETC.) SHALL BE USED IN PROCESS AREAS, AS SHOWN ON THE DRAWINGS, IN AREAS DESIGNATED "WET", "DAMP" AND "CORROSIVE" ON THE DRAWINGS AND IN OUTDOOR LOCATIONS. ALL CHANNEL AND HARDWARE SHALL BE RESISTANT TO THE CHEMICALS PRESENT IN THE AREA IN WHICH IT IS USED.

PUMP CONTROL PANEL:

- ELECTRICAL CONTROL EQUIPMENT SHALL BE MOUNTED WITHIN A NEMA 4X 316 STAINLESS STEEL ENCLOSURE, AT LEAST 14 GAUGE. OUTER DOOR SHALL HAVE PADLOCKABLE HANDLE WITH 3-POINT LATCHING AND 90-DEGREE DOOR STOP KIT, AND ALL HARDWARE SHALL BE 316 STAINLESS STEEL. SEE PUMP CONTROL PANEL DETAILS.
- ALL MAIN BREAKERS SHALL BE THERMAL-MAGNETIC AIR CIRCUIT BREAKER, TYPE FH (42KAIC MINIMUM) AS MANUFACTURED BY SQUARE D OR EQUAL. MOTOR CIRCUIT PROTECTORS (MCP) SHALL BE MOLDED CASE WITH ADJUSTABLE MAGNETIC TRIP ONLY, "MAG-GARD" AS MANUFACTURED BY SQUARE D OR APPROVED EQUAL.
- AN OPEN FRAME, ACROSS-THE-LINE, NEMA-RATED MAGNETIC MOTOR/STARTER, CLASS 8536 AS MANUFACTURED BY ALLEN BRADLEY, SHALL BE FURNISHED FOR EACH MOTOR UNLESS OTHERWISE NOTED ON THE DRAWINGS. ALL MOTOR STARTERS SHALL BE PROVIDED WITH MOTOR CIRCUIT PROTECTORS AND EQUIPPED TO PROVIDE UNDER-VOLTAGE RELEASE AND OVERLOAD PROTECTION ON ALL THREE PHASES. MOTOR STARTER CONTACTS SHALL BE EASILY REPLACEABLE WITHOUT REMOVING THE MOTOR STARTER FROM ITS MOUNTED POSITION. OVERLOADS SHALL BE OF THE MELTING ALLOY OR BI-METALLIC TYPE, ADJUSTABLE OVERLOADS ARE NOT ACCEPTABLE. OVERLOAD RESET PUSH-BUTTONS SHALL BE LOCATED ON THE EXTERIOR OF THE DOOR. NORMALLY OPEN AND NORMALLY CLOSED AUXILIARY MOTOR OVERLOAD CONTACTS WIRED TO TERMINAL BLOCKS SHALL BE PROVIDED FOR EACH MOTOR STARTER WITHIN THE CONTROL PANEL.
- THE CONTROL DIAGRAMS AND OVERLOAD TABLES SHALL BE LAMINATED TO THE INSIDE OF THE DOOR EXCEPT WHERE DOOR SPACE IS LIMITED THE LAMINATED DOCUMENTS SHALL BE IN THE PRINT STORAGE POCKET.
- WELDED STUD MOUNTED PRINT STORAGE POCKETS SHALL BE PROVIDED ON THE INSIDE OF EACH PANEL. POCKET SHALL BE OF SUFFICIENT SIZE AS REQUIRED TO HOLD ALL PRINTS NECESSARY TO SERVICE THE EQUIPMENT. A SET OF REDUCED DRAWINGS SHALL BE PROVIDED FOR EACH PANEL, FIXED TO FIT IN THE STORAGE POCKET.
- A PHASE MONITOR SHALL BE PROVIDED FOR THE CONTROL PANEL, MONITORS SHALL BE MODEL MPE-001-DVM-118 AS MANUFACTURED BY MOTOR PROTECTION ELECTRONICS LLC., OR APPROVED EQUAL.
- ALL CONTROL PANEL WIRING SHALL BE NUMBERED AT BOTH ENDS WITH TYPE WRITTEN HEAT SHRINKABLE WIRE MARKERS.
- WIRING SHALL BE STRANDED COPPER, MINIMUM SIZE #16 AWG (EXCEPT FOR SHIELDED INSTRUMENTATION CABLE), WITH 600 VOLT, 90 DEGREE C, FLAME RETARDANT, TYPE MTW THERMOPLASTIC INSULATION.
- ALL CONTROL RELAYS SHALL HAVE 10 AMP RATED CONTACTS (MINIMUM), 8 PIN WITH MOUNTING BASE, 3PDT (MINIMUM), WITH LED INDICATORS TO SHOW RELAY STATUS AND MANUAL OVERRIDE, RELAYS SHALL BE MANUFACTURED BY SQUARE D OR APPROVED EQUAL.
- TERMINAL BLOCKS SHALL BE 600 VOLT HEAVY DUTY RATED, TUBULAR CLAMP TYPE. TERMINAL STRIPS SHALL BE WAGO OR APPROVED EQUAL. EACH TERMINAL SHALL BE INDIVIDUALLY LABELED.
- THE COMPLETED CONTROL PANEL ASSEMBLY SHALL BE U.L. CERTIFIED.
- A GROUND BAR WITH SUFFICIENT TERMINALS FOR ALL FIELD AND PANEL GROUND CONNECTIONS SHALL BE PROVIDED.
- CONTROL PANEL SPARE PARTS:
THE FOLLOWING NUMBER OF SPARE PARTS SHALL BE FURNISHED FOR EACH CONTROL PANEL:
A. 2 CONTROL RELAYS FOR EACH TYPE FURNISHED
B. 5 FUSES FOR EACH TYPE/SIZE FURNISHED
C. 1 STARTER COIL FOR EACH SIZE FURNISHED

VARIABLE-FREQUENCY MOTOR CONTROLLERS:

- VARIABLE-FREQUENCY MOTOR CONTROLLERS SHALL CONSIST OF A POWER CONVERTER THAT EMPLOYS PULSE-WIDTH-MODULATED INVERTER, FACTORY BUILT AND TESTED IN AN ENCLOSURE, WITH INTEGRAL DISCONNECTING MEANS AND OVERCURRENT AND OVERLOAD PROTECTION; LISTED AND LABELED BY AN NRTL AS A COMPLETE UNIT; ARRANGED TO PROVIDE SELF-PROTECTION, PROTECTION, AND VARIABLE-SPEED CONTROL OF ONE OR MORE THREE-PHASE INDUCTION MOTORS BY ADJUSTING OUTPUT VOLTAGE AND FREQUENCY. VFC MUST BE RATED 600 VOLT AND WITHIN A NEMA 4X STAINLESS STEEL ENCLOSURE.
- UNITS SUITABLE FOR OPERATION OF NEMA MG 1, DESIGN A AND DESIGN B MOTORS, AS DEFINED BY NEMA MG 1, SECTION IV, PART 30, "APPLICATION CONSIDERATIONS FOR CONSTANT SPEED MOTORS USED ON A SINUSOIDAL BUS WITH HARMONIC CONTENT AND GENERAL PURPOSE MOTORS USED WITH ADJUSTABLE-VOLTAGE OR ADJUSTABLE-FREQUENCY CONTROLS OR BOTH."
- UNITS SUITABLE FOR OPERATION OF INVERTER-DUTY MOTORS AS DEFINED BY NEMA MG 1, SECTION IV, PART 31, "DEFINITE-PURPOSE INVERTER-FED POLYPHASE MOTORS."
- VARIABLE-FREQUENCY MOTOR CONTROLLERS SHALL BE AS MANUFACTURED BY EATON OR SQUARE D.

REDUCED VOLTAGE SOLID STATE CONTROLLERS:

- CONTROLLER UNITS: COMPLY WITH UL 508 SOLID STATE, SIX SCR, FULL WAVE TYPE WITH ADJUSTABLE CURRENT LIMIT AND VOLTAGE RAMP TO CONTROL STARTING TORQUE, AUTOMATIC LOAD SENSING CIRCUIT TO MINIMIZE ENERGY CONSUMPTION, LINE AND LOAD SIDE SURGE PROTECTION AND NOISE SUPPRESSION AND CONTROLLED DECELERATION ADJUSTMENT TO REDUCE THE EFFECTS OF SURGES. PROVIDE HEAT SINKS AND VENTILATION TO REMOVE HEAT FROM THE STRUCTURE. EACH STARTER SHALL INCLUDE A MOTOR HORSEPOWER RATED ISOLATION CONTACTOR TO POSITIVELY DISCONNECT THE LINE VOLTAGE WHEN THE SCR CONTROL IS OFF.
- UNITS SUITABLE FOR OPERATION OF NEMA MG 1, DESIGN A AND DESIGN B MOTORS, POLYPHASE INDUCTION MOTORS.
- REDUCED VOLTAGE SOLID STATE CONTROLLERS SHALL BE ALLEN BRADLEY SMC-3 OR APPROVED EQUAL BY SQUARE D.

BOXES:

- DEVICE BOXES SHALL BE CAST ALUMINUM, TYPE FD.
- NEMA 4X STAINLESS-STEEL, JUNCTION BOXES AND PULL BOXES SHALL BE 316 STAINLESS-STEEL HARDWARE AND GASKETED COVERS. BOXES SHALL HAVE CONTINUOUSLY WELDED SEAMS AND WELDS SHALL BE GROUND SMOOTH. BOX BODIES SHALL BE FLANGED AND SHALL NOT HAVE HOLES OR KNOCKOUTS. BOX BODIES AND COVERS SHALL NOT BE LESS THAN 14 GAUGE METAL. COVERS SHALL BE GASKETED, HINGED, AND FASTENED WITH QUICK CONNECT DOOR CLAMP. TERMINAL BOXES SHALL BE FURNISHED WITH HINGED DOORS WITH 3-POINT LATCH, TERMINAL MOUNTING STRAPS AND BRACKETS. BOXES SHALL BE AS MANUFACTURED BY HOFFMAN ENGINEERING CO.; LEE PRODUCTS CO.; ASCO ELECTRICAL PRODUCTS CO.; INC., OR APPROVED EQUAL.
- WHERE NO SIZE IS INDICATED FOR JUNCTION BOXES, PULL BOXES, OR TERMINAL CABINETS, THEY SHALL BE SIZED IN ACCORDANCE WITH THE REQUIREMENTS OF NEC ARTICLE 314.

MAJOR EQUIPMENT MANUFACTURERS:

EQUIPMENT	MANUFACTURER
CIRCUIT BREAKERS	SQUARE D (SCHNEIDER ELECTRIC)
FUSED SE DISCONNECT SWITCH	SQUARE D (SCHNEIDER ELECTRIC)
COMBINATION MAGNETIC MOTOR STARTERS	ALLEN BRADLEY (ROCKWELL AUTOMATION)
VARIABLE-FREQUENCY MOTOR CONTROLLERS	EATON OR SQUARE D (SCHNEIDER ELECTRIC)
REDUCED VOLTAGE SOLID STATE CONTROLLERS	ALLEN BRADLEY (ROCKWELL AUTOMATION) OR SQUARE D (SCHNEIDER ELECTRIC)
AUTOMATIC TRANSFER SWITCH	ASCO (SCHNEIDER ELECTRIC)
GENERATOR	CATERPILLAR
SURGE PROTECTIVE DEVICES	SQUARE D (SCHNEIDER ELECTRIC)

EXCAVATION AND BACKFILL:

- CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, EQUIPMENT AND SERVICES REQUIRED TO ACCOMPLISH ALL EXCAVATION, BACKFILLING AND RELATED WORK IN ACCORDANCE WITH THE DRAWINGS.
- ALL EXCAVATION AND BACKFILL WORK SHALL CONFORM TO GRU STANDARDS.
- ALL BACKFILL SHALL BE THOROUGHLY COMPACTED TO PREVENT FUTURE SETTLEMENT.
- ALL CONDUIT LINES SHALL BE LAID STRAIGHT AND IN TRUE ALIGNMENT WITH THE GRADE AND LOCATION AS SHOWN ON THE DRAWINGS.
- ALL TRENCHING FOR CONDUIT SHALL CONTAIN DETECTABLE UNDERGROUND WARNING TAPE, PER CITY STANDARDS.
- ALL TRENCHING WORK SHALL BE SCHEDULED TO ALLOW BACKFILLING IN PAVED AREAS AT THE END OF THE WORK DAY. OPEN TRENCHES IN PAVED AREAS WILL NOT BE PERMITTED.
- CONTRACTOR SHALL RETURN ALL EXCAVATED AREAS TO ORIGINAL GRADE ONCE INSTALLATION IS COMPLETE. ALL AREAS ORIGINALLY COVERED WITH SOD SHALL BE RE-SODDED.

WIRES & CABLES:

- WIRES AND CABLES SHALL BE ANNEALED, 98 PERCENT CONDUCTIVITY, STRANDED, SOFT DRAWN COPPER WITH 600V INSULATION.
 - ALL WIRE OF A GIVEN TYPE SHALL BE BY THE SAME MANUFACTURER.
 - MINIMUM WIRE SIZE FOR POWER CIRCUITS SHALL BE NO. 12 AWG. MINIMUM WIRE SIZE FOR CONTROL CIRCUITS SHALL BE NO. 16 AWG.
 - WIRE FOR POWER AND CONTROL CIRCUITS SHALL BE NEC TYPE THWN-2 AND BE AS MANUFACTURED BY SOUTHWIRE CO.; OR APPROVED EQUAL.
 - WIRE FOR 4-20 mA PROCESS INSTRUMENT SIGNALS SHALL BE SINGLE OF MULTIPLE PAIRED, TWISTED, SHIELDED, NO. 16 AWG MINIMUM, STRANDED (19X29), TINNED-COPPER CONDUCTORS, TYPE TC, UL 1277, 600V, XLPE INSULATION WITH A 100 PERCENT ALUMINUM/POLYESTER FOIL SHIELD AND DRAIN WIRE. WIRE MUST BE MANUFACTURED BY BELDEN; ROCKBESTOS, OR APPROVED EQUAL.
 - INDUSTRIAL ETHERNET CABLE MUST BE FOUR-PAIR, BALANCED-TWISTED PAIR CABLE, CERTIFIED TO MEET TRANSMISSION CHARACTERISTICS OF CATEGORY 6 CABLE AT FREQUENCIES UP TO 100 MHZ ETHERNET/IP COMPLIANT. THE CABLE MUST BE UL COMPLIANT, THE CONDUCTORS MUST BE RATED 100-OHM, 22 AWG SOLID COPPER, 600V, WITH AN OVERALL FOIL SHIELD AND PVC JACKET.
 - UNLESS OTHERWISE INDICATED ON THE PLANS, NO SPLICES MAY BE MADE IN THE CABLES WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER. WHERE SPLICING IS APPROVED, THEN SPLICING MATERIAL SHALL BE APPROVED BY THE ENGINEER AND CABLE MANUFACTURER. SPLICING MATERIALS AND INSTALLATION FOR CONTROL CONDUCTORS SHALL BE AS REQUIRED BY THE ENGINEER. THE CONDUCTIVITY OF ALL COMPLETED CONNECTIONS SHALL BE NOT LESS THAN THAT OF THE UN CUT CONDUCTOR.
 - WIRE AND CABLE MARKERS SHALL BE TYPE WRITTEN, HEAT SHRINKABLE TYPE, SHRUNK IN PLACE AS MANUFACTURED BY THE W.H. BRADY CO., PANDUIT, OR APPROVED EQUAL.
 - USE LUBRICATIONS TO FACILITATE WIRE PULLING. PULLING COMPOUND SHALL BE NONTOXIC, NONFLAMMABLE, NONCOMBUSTIBLE AND NONCORROSIVE. THE MATERIAL SHALL BE UL LISTED AND COMPATIBLE WITH THE CABLE INSULATION AND JACKET.
 - IF CABLE CANNOT BE TERMINATED IMMEDIATELY AFTER INSTALLATION INSTALL HEAT SHRINKABLE END CAPS.
 - TEST ALL 600 VOLT WIRE INSULATION WITH A MEGOHM METER AFTER INSTALLATION AND PRIOR TO TERMINATION. MAKE TESTS AT NO LESS THAN 1000 VOLTS DC. SUBMIT A WRITTEN TEST REPORT OF THE RESULTS TO THE ENGINEER. NOTIFY ENGINEER AND CONSTRUCTION MANAGER IN WRITING 48 HOURS PRIOR TO TESTING. FIELD TESTING AND COMMISSIONING SHALL BE DONE IN ACCORDANCE WITH THE LATEST REVISION OF THE "ACCEPTANCE TESTING SPECIFICATIONS FOR ELECTRICAL POWER DISTRIBUTION EQUIPMENT AND SYSTEMS" PUBLISHED BY THE INTERNATIONAL ELECTRICAL TESTING ASSOCIATION. MINIMUM WIRE INSULATION RESISTANCE SHALL NOT BE LESS THAN 250 MEGOHMS.
 - WIRE COLOR CODE IDENTIFICATION SHALL BE: BROWN, ORANGE, YELLOW, GRAY (L1, L2, L3, N) FOR 480/277V; BLACK, RED, WHITE (L1, L2, N) FOR 240/120V; RED FOR AC CONTROL, BLUE FOR DC CONTROL AND GREEN FOR GROUND.
 - EQUIPMENT GROUNDING CONDUCTORS SHALL BE INSTALLED IN ALL RACEWAYS. CONDUCTORS SHALL BE NEC TYPE THW, GREEN IN COLOR, AND SIZED PER NEC TABLE 250-122.
- UNDERGROUND SYSTEMS:**
- LAY RACEWAY LINES IN TRENCHES ON A CLEAN BACKFILL BEDDING NOT LESS THAN 6 INCHES THICK AND WELL GRADED AND COMPACTED.
 - ALL CONDUITS, ELBOWS, AND SWEEPS UNDERGROUND SHALL BE PVC SCHEDULE 40.
 - ALL 2-INCH AND LARGER RACEWAYS SHALL HAVE A MANDREL DRAWN THROUGH FOLLOWED BY A SWAB TO CLEAN OUT ANY OBSTRUCTION WHICH MAY CAUSE CABLE ABRASIONS. THE MANDREL SHALL BE 12 INCHES IN LENGTH AND THE DIAMETER 1/2-INCH LESS THAN THE INSIDE DIAMETER OF THE RACEWAY. ALL 1 1/2-INCH AND SMALLER RACEWAYS SHALL BE SWABBED CLEAN BEFORE INSTALLING CABLES.
 - PLUG AND SEAL SPARE RACEWAYS WATERTIGHT AT ALL HANDHOLES, BUILDINGS, AND STRUCTURES WITH MECHANICAL DEVICE.
 - 3/16 -INCH POLYPROPYLENE PULL LINE SHALL BE INSTALLED AND LEFT IN ALL SPARE AND EMPTY RACEWAYS.
 - INSTALL DETECTABLE WARNING TAPE IN ALL UNDERGROUND RACEWAYS, DUCT BANKS, ETC. TAPE SHALL BE PLACED ALONG THE ENTIRE LENGTH OF THE RACEWAY AND INSTALLED 18 INCHES ABOVE THE TOP OF THE RACEWAY OR DUCT RELY ON COMPACTED BACKFILL MATERIAL. WHERE TRENCH EXCEEDS 24-INCH WIDTH, PROVIDE ADDITIONAL DETECTABLE TAPE RUNS TO MARK EACH SIDE OF THE DUCT BANK IN ADDITION TO THE ONE IN THE CENTER.
 - DETECTABLE WARNING TAPE SHALL BE CAPABLE OF BEING DETECTED OR LOCATED BY EITHER CONDUCTIVE OR INDUCTIVE LOCATION TECHNIQUES.
 - DETECTABLE WARNING TAPE SHALL CONSIST OF 5 MIL (.005 INCH) OVERALL THICKNESS; FIVE-PLY COMPOSITION; ULTRA-HIGH MOLECULAR WEIGHT; VIRGIN POLYETHYLENE; ACID; ALKALINE AND CORROSION RESISTANT; WITH 150 POUNDS OF TENSILE BREAK STRENGTH MINIMUM PER 6-INCH WIDTH.
 - THE TOP SIDE OF THE TRACER TAPE SHALL BE COLOR BANDED RED FOR ELECTRICAL AND HIGH VOLTAGE LINES, AND ORANGE FOR SIGNAL, COMMUNICATION, TELEPHONE, AND FIRE ALARM LINES. TRACER TAPE SHALL BE 4-INCH-WIDE WITH FOUR COLOR BANDS. THE TAPE SHALL BE INSCRIBED WITH THE WARNING MESSAGE FOR THE UTILITY SUCH AS "CAUTION - ELECTRICAL LINE BURIED BELOW". TAPE SHALL BE AS MANUFACTURED BY MUTUAL INDUSTRIES, INC.; TERRA TAPE, DIV. OF REEF INDUSTRIES INC. OR APPROVED EQUAL.

E-1

GAINESVILLE REGIONAL UTILITIES

GRU

WATER & WASTEWATER ENGINEERING

PROJECT: GRU STANDARD LIFT STATION DRAWINGS

SHEET NO.: 08 001

SHEET TITLE: ELECTRICAL NOTES

DESIGNED BY: _____

DRAWN BY: _____

CHECKED BY: _____

COMPUTER FILE: _____

DATE: FEB 2023

SCALE: _____

IF NOT ONE INCH ON SHEET, INDICATE SCALE.

DATE: 02/2023

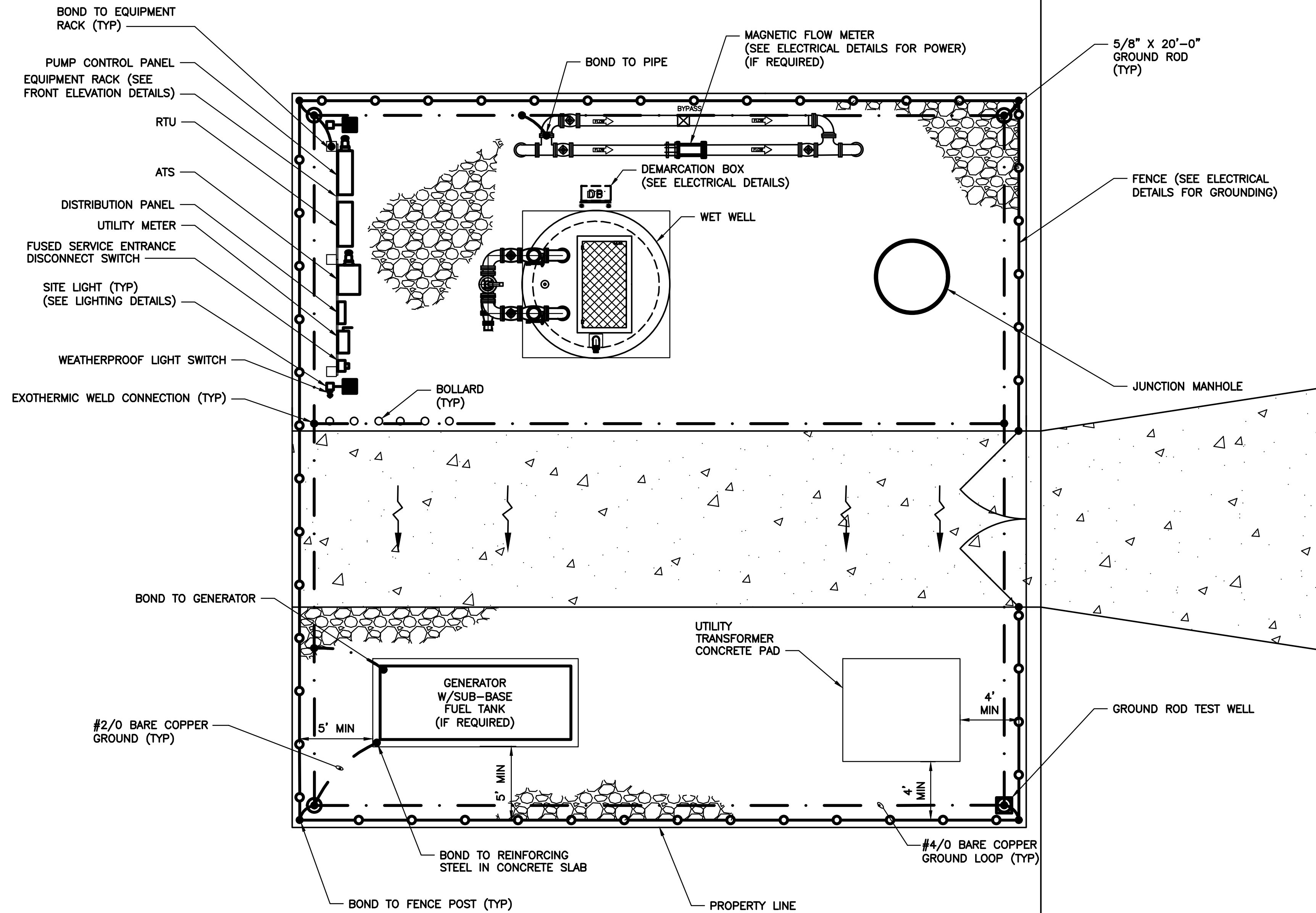
REVISIONS

UPDATED STANDARD LIFT STATION UTILITY PLAN

APPROVED BY: _____

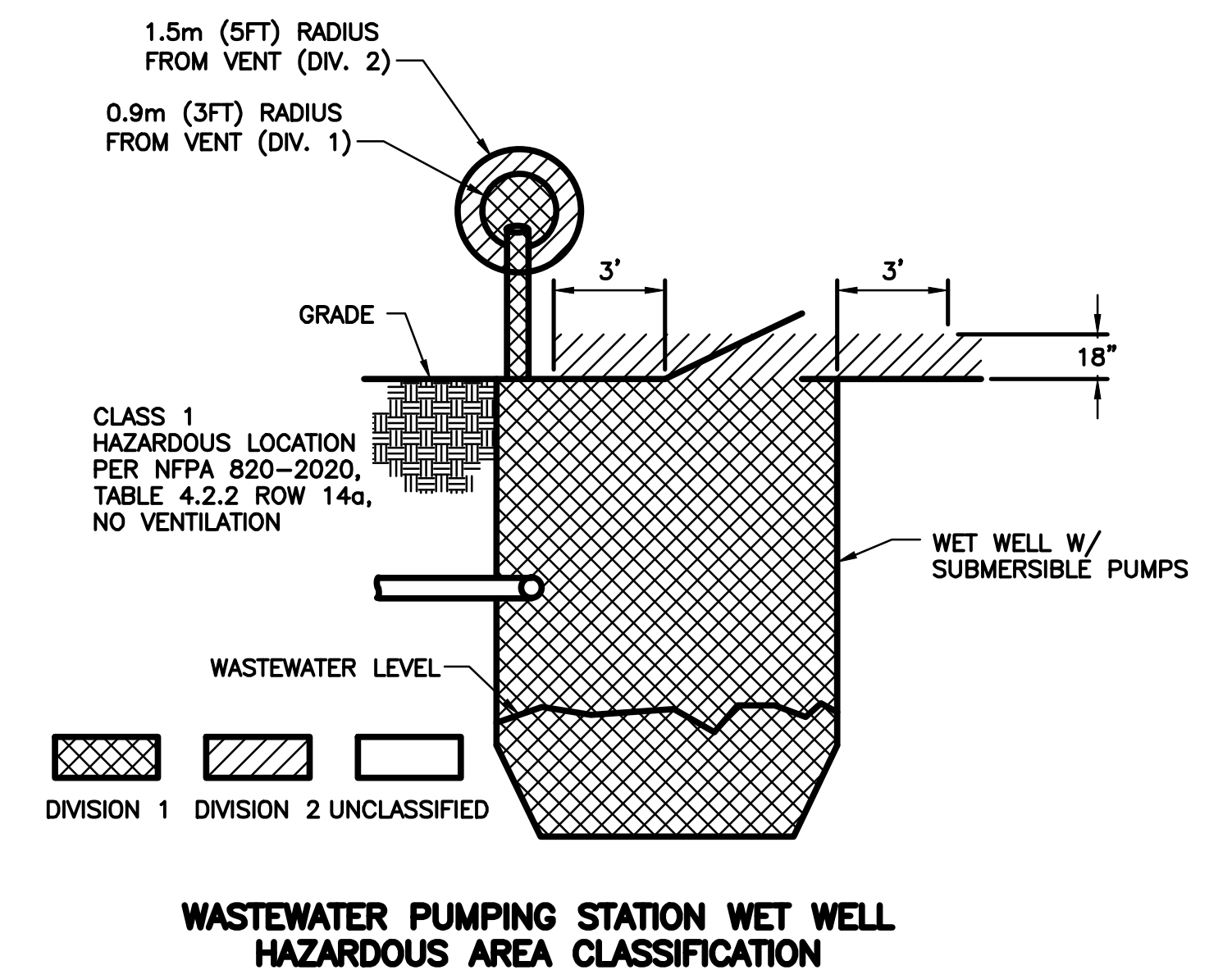
DATE: _____

PAGE: _____



TYPICAL ELECTRICAL SITE PLAN
PLAN
 1" = 10'-0"

NOTES:
 1. REFER TO ELECTRICAL NOTES SHEET, ELECTRICAL ONE LINE POWER DIAGRAM SHEETS, AND ELECTRICAL DETAILS SHEETS.



WASTEWATER PUMPING STATION WET WELL HAZARDOUS AREA CLASSIFICATION

CLIENT:	CRU STANDARD LIFT STATION DRAWINGS	PROJECT:	CRU STANDARD LIFT STATION DRAWINGS	SHEET NO.:	E-2
DESIGNED BY:		DRAWN BY:		CHECKED BY:	
COMPUTER FILE:		DATE:	FEB 2023		
GAINESVILLE REGIONAL UTILITIES					
CRU					
WATER & WASTEWATER ENGINEERING					
DATE:	02/2023	REVISIONS:	UPDATED STANDARD LIFT STATION UTILITY PLAN	SCALE:	AS SHOWN
APPROVED BY:		DATE:		PAGE:	1

480 VAC, 3-PHASE, 4-WIRE WYE GROUNDED, 60 HZ

SERVICE CONDUIT SHALL BE MINIMUM 2 1/2" FOR SERVICES UP TO 200 AMPS, MINIMUM 4" FOR SERVICES UP TO 400 AMPS, AND MINIMUM (2) 4" FOR SERVICES UP TO 800 AMPS. SERVICE CONDUIT SHALL BE RAC ABOVE GRADE AND SCHEDULE 40 PVC BELOW GRADE. SERVICE CONDUCTORS SHALL BE TYPE THWN-2 COPPER

THE ELECTRICAL SERVICE FUSED DISCONNECT SWITCH RATING SHALL BE MINIMUM 200A. WHERE THE MINIMUM ELECTRICAL SERVICE RATING EXCEEDS 200A, THE MAIN SERVICE DISCONNECT RATING SHALL BE 400A OR LARGER AS DETERMINED BY THE PUMP STATION ELECTRICAL DESIGN ENGINEER

EXTEND THE UNDERGROUND SERVICE CONDUIT TO THE SERVICE POINT OF CONNECTION, AS DESIGNATED BY THE ELECTRIC UTILITY COMPANY, AND TERMINATE IN ACCORDANCE WITH THE ELECTRIC UTILITY COMPANY REQUIREMENTS. PROVIDE SERVICE RISER UP POLE, SERVICE CONNECTION BOX AT BASE OF POLE, PAD MOUNTED TRANSFORMER SERVICE CONNECTION, ETC. AS REQUIRED BY THE ELECTRIC UTILITY COMPANY.

SERVICE ENTRANCE RATED FUSED DISCONNECT SWITCH WITH TYPE 316 NEMA 4X ENCLOSURE. COORDINATE DISCONNECT SWITCH AND METER ARRANGEMENT WITH ELECTRIC UTILITY COMPANY. FOR ELECTRIC SERVICE BY CLAY ELECTRIC COOPERATIVE, INC., REFER TO CLAY ELECTRIC COOPERATIVE, INC. SINGLE SERVICE (320 AMP MAX) UNDERGROUND SUPPLY (PEDESTAL MOUNT) DRAWING NO. ESVG7A 2020 FOR INSTALLATION REQUIREMENTS.

SPD SURGE PROTECTIVE DEVICE
UL 1449 FIFTH (LATEST) EDITION
MODEL NUMBER SDSA3650
NEMA 4X ENCLOSURE
MOUNTED SO THAT THE INDICATOR LIGHTS ARE VISIBLE AND ACCESSIBLE

FUSED DISCONNECT SWITCHES TO INCLUDE CLASS RK5 TIME DELAY FUSES.

SELF CONTAINED OR CT METERING IN ACCORDANCE WITH THE ELECTRIC UTILITY COMPANY REQUIREMENTS. METER ENCLOSURES AND CT CABINETS SHALL BE STAINLESS STEEL.

GROUND METERING IN ACCORDANCE WITH NEC AND LOCAL INSPECTION AUTHORITY REQUIREMENTS.

PROVIDE GROUNDING ELECTRODE SYSTEM PER NEC AND LOCAL INSPECTION AUTHORITY REQUIREMENTS. THE GROUNDING ELECTRODE SYSTEM SHALL INCLUDE A MINIMUM OF TWO GROUND RODS, NOT LESS THAN 6 FEET APART. THE GROUNDING ELECTRODE CONDUCTOR SHALL BE CONTINUOUS FROM THE METER CAN TO EACH GROUND ROD AND SHALL TERMINATE ON A FENCE POST EMBEDDED IN CONCRETE.

PUMP STATION CONTROL PANEL FEEDER AMPACITY SHALL BE BASED ON 100% OF THE PUMP CONTROL PANEL RATING. CONDUIT SHALL BE RAC ABOVE GRADE AND SCHEDULE 40 PVC BELOW GRADE (2" MIN)

GENERATOR RECEPTACLE SHALL BE RATED 4 WIRE, 3 POLE, 200 AMPS, 600 VAC, CROUSE-HINDS, CAT NO. SR2042-S22 REVERSE SERVICE

PUMP CONTROL PANEL (PCP)

480V, 3-PHASE, 3-WIRE, 60 HZ

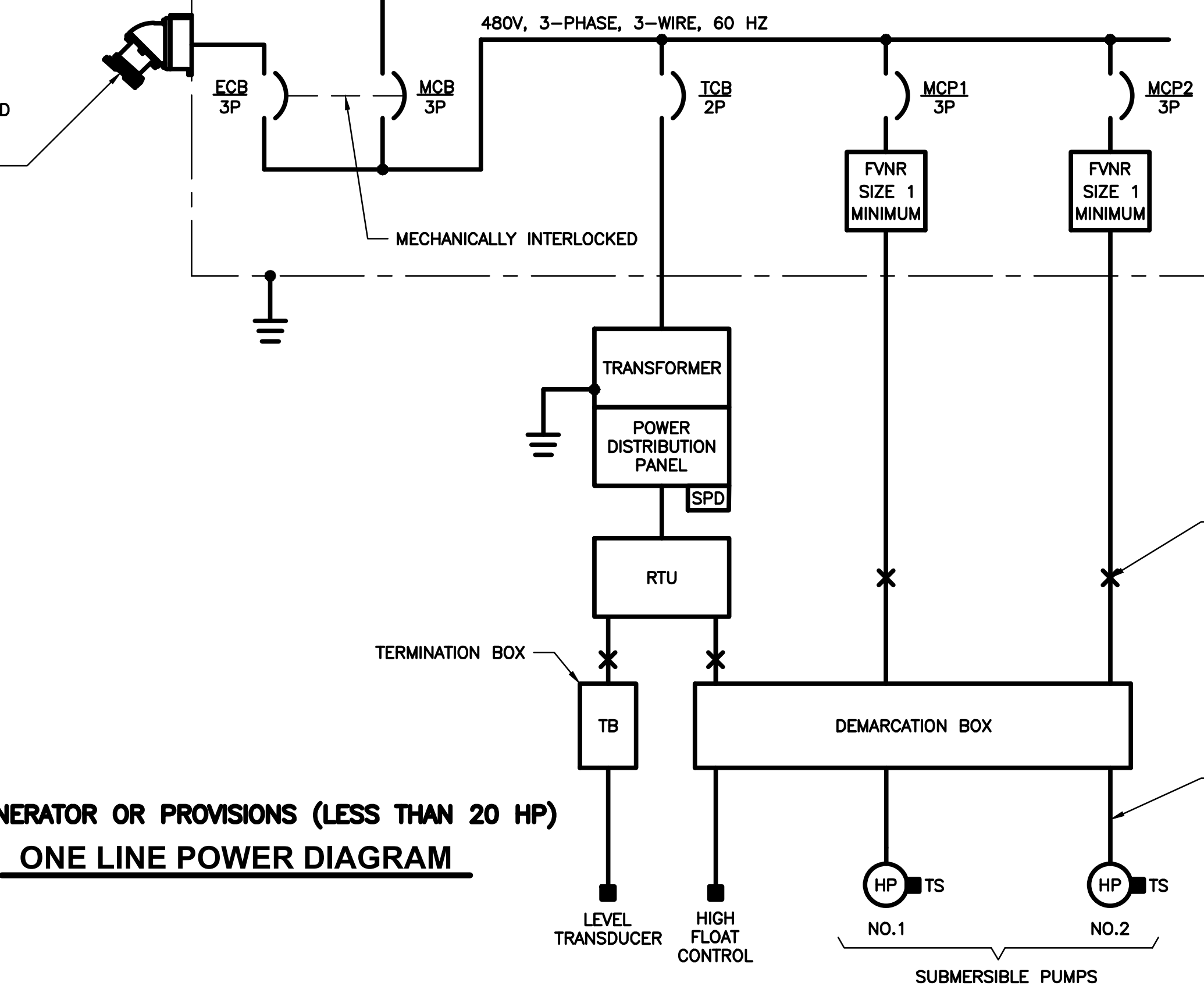
THE PUMP CONTROL PANEL MCB RATING SHALL BE MINIMUM 100A. WHERE THE CONTROL PANEL MINIMUM LOAD RATING EXCEEDS 100A, THE MAIN CIRCUIT BREAKER RATING SHALL BE 200A, 400A OR LARGER AS DETERMINED BY THE PUMP STATION ELECTRICAL DESIGN ENGINEER.

PORTABLE GENERATOR ECB SHALL BE THE SAME SIZE AS THE PCP MCB.

REFER TO THE ELECTRICAL NOTES SHEET FOR ADDITIONAL PUMP CONTROL PANEL REQUIREMENTS.

REFER TO INSTRUMENTATION SHEETS FOR ADDITIONAL REQUIREMENTS.

**NO GENERATOR OR PROVISIONS (LESS THAN 20 HP)
ONE LINE POWER DIAGRAM**



EXPLOSIONPROOF CONDUIT SEAL FITTING (TYP)

WET WELL CONDUITS SHALL BE RAC ABOVE GRADE AND SCHEDULE 40 PVC BELOW GRADE, MAXIMUM 31% FILL (2" MIN.) (TYP)

DATE	07/2023	DESIGNED BY		PROJECT	GRU STANDARD LIFT STATION DRAWINGS	CLEAR	
APPROVED BY		DRAWN BY		SHEET TITLE	ONE LINE POWER DIAGRAM WITH NO GENERATOR	JOB NO.	
DATE		CHECKED BY		COMPUTER FILE			
				DATE	FEB 2023		
GAINESVILLE REGIONAL UTILITIES							
WATER & WASTEWATER ENGINEERING							
REVISIONS							
DATE							
SEAL							
DATE							
APPROVED BY							
PAGE							
							E-3

480 VAC, 3-PHASE, 4-WIRE WYE GROUNDED, 60 HZ

SERVICE CONDUIT SHALL BE MINIMUM 2 1/2" FOR SERVICES UP TO 200 AMPS, MINIMUM 4" FOR SERVICES UP TO 400 AMPS, AND MINIMUM (2) 4" FOR SERVICES UP TO 800 AMPS. SERVICE CONDUIT SHALL BE RAC ABOVE GRADE AND SCHEDULE 40 PVC BELOW GRADE. SERVICE CONDUCTORS SHALL BE TYPE THWN-2 COPPER.

THE ELECTRICAL SERVICE FUSED DISCONNECT SWITCH RATING SHALL BE MINIMUM 200A. WHERE THE MINIMUM ELECTRICAL SERVICE RATING EXCEEDS 200A, THE MAIN SERVICE DISCONNECT RATING SHALL BE 400A OR LARGER AS DETERMINED BY THE PUMP STATION ELECTRICAL DESIGN ENGINEER.

EXTEND THE UNDERGROUND SERVICE CONDUIT TO THE SERVICE POINT OF CONNECTION, AS DESIGNATED BY THE ELECTRIC UTILITY COMPANY, AND TERMINATE IN ACCORDANCE WITH THE ELECTRIC UTILITY COMPANY REQUIREMENTS. PROVIDE SERVICE RISER UP POLE, SERVICE CONNECTION BOX AT BASE OF POLE, PAD MOUNTED TRANSFORMER SERVICE CONNECTION, ETC. AS REQUIRED BY THE ELECTRIC UTILITY COMPANY.

SERVICE ENTRANCE RATED FUSED DISCONNECT SWITCH WITH TYPE 316 NEMA 4X ENCLOSURE. COORDINATE DISCONNECT SWITCH AND METER ARRANGEMENT WITH ELECTRIC UTILITY COMPANY. FOR ELECTRIC SERVICE BY CLAY ELECTRIC COOPERATIVE, INC., REFER TO CLAY ELECTRIC COOPERATIVE, INC. SINGLE SERVICE (320 AMP MAX) UNDERGROUND SUPPLY (PEDESTAL MOUNT) DRAWING NO. ESFIG7A 2020 FOR INSTALLATION REQUIREMENTS.

SURGE PROTECTIVE DEVICE
UL 1449 FIFTH (LATEST) EDITION
MODEL NUMBER SDSA3650
NEMA 4X ENCLOSURE
MOUNTED SO THAT THE INDICATOR LIGHTS ARE VISIBLE AND ACCESSIBLE

FUSED DISCONNECT SWITCHES TO INCLUDE CLASS RK5 TIME DELAY FUSES.

SELF CONTAINED OR CT METERING IN ACCORDANCE WITH THE ELECTRIC UTILITY COMPANY REQUIREMENTS. METER ENCLOSURES AND CT CABINETS SHALL BE STAINLESS STEEL.

GROUND METERING IN ACCORDANCE WITH NEC AND LOCAL INSPECTION AUTHORITY REQUIREMENTS.

PROVIDE GROUNDING ELECTRODE SYSTEM PER NEC AND LOCAL INSPECTION AUTHORITY REQUIREMENTS. THE GROUNDING ELECTRODE SYSTEM SHALL INCLUDE A MINIMUM OF TWO GROUND RODS, NOT LESS THAN 6 FEET APART. THE GROUNDING ELECTRODE CONDUCTOR SHALL BE CONTINUOUS FROM THE METER CAN TO EACH GROUND ROD AND SHALL TERMINATE ON A FENCE POST EMBEDDED IN CONCRETE.

AUTOMATIC TRANSFER SWITCH (ATS)
ASCO 300 SERIES, 200 AMP, 4 POLE,
WITHIN A NEMA 4X ENCLOSURE

GENERATOR RECEPTACLE SHALL BE RATED
4 WIRE, 3 POLE, 200 AMPS, 600 VAC, CROUSE-HINDS,
CAT NO. AR2042-S22 REVERSE SERVICE.

PUMP STATION CONTROL PANEL
FEEDER AMPACITY SHALL BE BASED
ON 100% OF THE PUMP CONTROL
PANEL RATING. CONDUIT SHALL BE
RAC ABOVE GRADE AND SCHEDULE
40 PVC BELOW GRADE (2" MIN)

ATS SIGNALS TO RTU (REFER TO INSTRUMENTATION SHEETS FOR ADDITIONAL REQUIREMENTS)
START SIGNAL TO GENERATOR (PORTABLE GENERATORS MUST HAVE AUTOMATIC STARTING CAPABILITIES)
PUMP CONTROL PANEL (PCP)

GENERATOR RECEPTACLE SHALL BE RATED
4 WIRE, 3 POLE, 200 AMPS, 600 VAC,
CROUSE-HINDS, CAT NO. SR2042-S22
REVERSE SERVICE

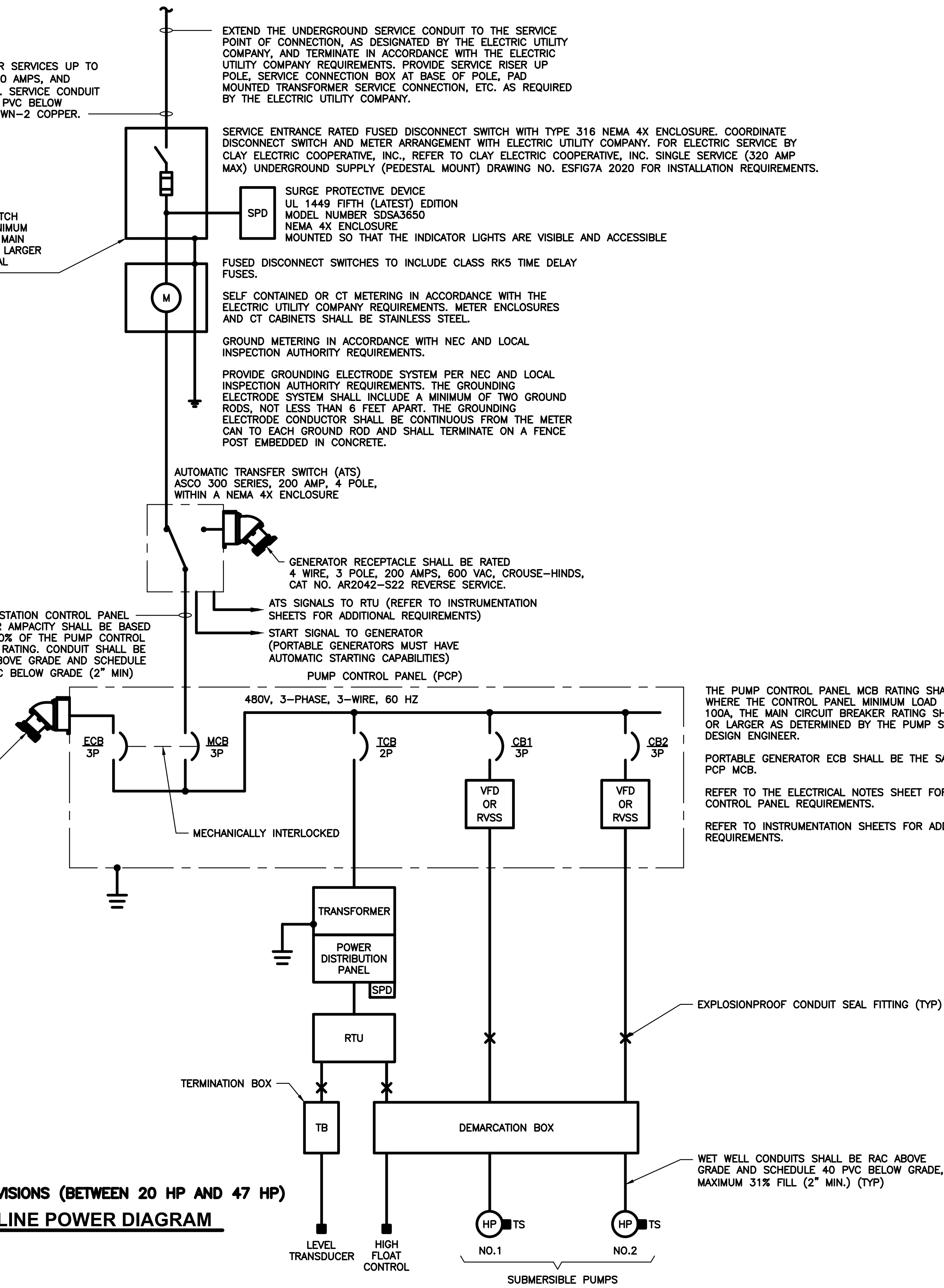
THE PUMP CONTROL PANEL MCB RATING SHALL BE MINIMUM 100A. WHERE THE CONTROL PANEL MINIMUM LOAD RATING EXCEEDS 100A, THE MAIN CIRCUIT BREAKER RATING SHALL BE 200A, 400A OR LARGER AS DETERMINED BY THE PUMP STATION ELECTRICAL DESIGN ENGINEER.

PORTABLE GENERATOR ECB SHALL BE THE SAME SIZE AS THE PCP MCB.

REFER TO THE ELECTRICAL NOTES SHEET FOR ADDITIONAL PUMP CONTROL PANEL REQUIREMENTS.

REFER TO INSTRUMENTATION SHEETS FOR ADDITIONAL REQUIREMENTS.

**GENERATOR PROVISIONS (BETWEEN 20 HP AND 47 HP)
ONE LINE POWER DIAGRAM**



EXPLOSIONPROOF CONDUIT SEAL FITTING (TYP)

WET WELL CONDUITS SHALL BE RAC ABOVE GRADE AND SCHEDULE 40 PVC BELOW GRADE, MAXIMUM 31% FILL (2" MIN.) (TYP)

DATE	07/2023	DESIGNED BY	COMPUTER FILE	DATE	FEB 2023	CLIENT	CRU STANDARD LIFT STATION DRAWINGS	SHEET NO.	E-4
APPROVED BY		DRAWN BY		CHECKED BY		PROJECT	CRU STANDARD LIFT STATION DRAWINGS	CRU NO.	
REVISIONS									
GAINESVILLE REGIONAL UTILITIES CRU WATER & WASTEWATER ENGINEERING									
SHEET TITLE: ONE LINE POWER DIAGRAM WITH GENERATOR PROVISIONS									

480 VAC, 3-PHASE, 4-WIRE WYE GROUNDED, 60 HZ

SERVICE CONDUIT SHALL BE MINIMUM 2 1/2" FOR SERVICES UP TO 200 AMPS, MINIMUM 4" FOR SERVICES UP TO 400 AMPS, AND MINIMUM (2) 4" FOR SERVICES UP TO 800 AMPS. SERVICE CONDUIT SHALL BE RAC ABOVE GRADE AND SCHEDULE 40 PVC BELOW GRADE. SERVICE CONDUCTORS SHALL BE TYPE THWN-2 COPPER.

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EXTEND THE UNDERGROUND SERVICE CONDUIT TO THE SERVICE POINT OF CONNECTION, AS DESIGNATED BY THE ELECTRIC UTILITY COMPANY, AND TERMINATE IN ACCORDANCE WITH THE ELECTRIC UTILITY COMPANY REQUIREMENTS. PROVIDE SERVICE RISER UP POLE, SERVICE CONNECTION BOX AT BASE OF POLE, PAD MOUNTED TRANSFORMER SERVICE CONNECTION, ETC. AS REQUIRED BY THE ELECTRIC UTILITY COMPANY.

SERVICE ENTRANCE RATED FUSED DISCONNECT SWITCH WITH TYPE 316 NEMA 4X ENCLOSURE. COORDINATE DISCONNECT SWITCH AND METER ARRANGEMENT WITH ELECTRIC UTILITY COMPANY. FOR ELECTRIC SERVICE BY CLAY ELECTRIC COOPERATIVE, INC., REFER TO CLAY ELECTRIC COOPERATIVE, INC. SINGLE SERVICE (320 AMP MAX) UNDERGROUND SUPPLY (PEDESTAL MOUNT) DRAWING NO. EFIG7A 2020 FOR INSTALLATION REQUIREMENTS.

SPD
SURGE PROTECTIVE DEVICE
UL 1449 FIFTH (LATEST) EDITION
MODEL NUMBER SDSA3650
NEMA 4X ENCLOSURE
MOUNTED SO THAT THE INDICATOR LIGHTS ARE VISIBLE AND ACCESSIBLE

FUSED DISCONNECT SWITCHES TO INCLUDE CLASS RK5 TIME DELAY FUSES.

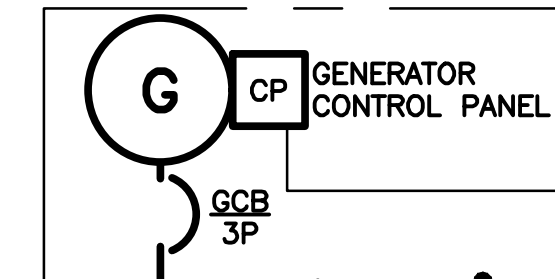
SELF CONTAINED OR CT METERING IN ACCORDANCE WITH THE ELECTRIC UTILITY COMPANY REQUIREMENTS. METER ENCLOSURES AND CT CABINETS SHALL BE STAINLESS STEEL.

GROUND METERING IN ACCORDANCE WITH NEC AND LOCAL INSPECTION AUTHORITY REQUIREMENTS.

PROVIDE GROUNDING ELECTRODE SYSTEM PER NEC AND LOCAL INSPECTION AUTHORITY REQUIREMENTS. THE GROUNDING ELECTRODE SYSTEM SHALL INCLUDE A MINIMUM OF TWO GROUND RODS, NOT LESS THAN 6 FEET APART. THE GROUNDING ELECTRODE CONDUCTOR SHALL BE CONTINUOUS FROM THE METER CAN TO EACH GROUND ROD AND SHALL TERMINATE ON A FENCE POST EMBEDDED IN CONCRETE.

ATS
AUTOMATIC TRANSFER SWITCH (ATS)
ASCO 300 SERIES, 200 AMP MINIMUM, 4 POLE,
WITHIN A NEMA 4X ENCLOSURE

CATERPILLAR
STANDBY GENERATOR
WYE GROUNDED
480/277V, 3Ø



GENERATOR SIGNALS TO RTU (REFER TO INSTRUMENTATION SHEETS FOR ADDITIONAL REQUIREMENTS)

ATS SIGNALS TO RTU (REFER TO INSTRUMENTATION SHEETS FOR ADDITIONAL REQUIREMENTS)

PUMP STATION CONTROL PANEL
FEEDER AMPACITY SHALL BE BASED ON 100% OF THE PUMP CONTROL PANEL RATING. CONDUIT SHALL BE RAC ABOVE GRADE AND SCHEDULE 40 PVC BELOW GRADE (2" MIN)

GENERATOR RECEPTACLE SHALL BE RATED 4 WIRE, 3 POLE, 200 AMPS, 600 VAC, CROUSE-HINDS, CAT NO. SR2042-S22 REVERSE SERVICE

PUMP CONTROL PANEL (PCP)

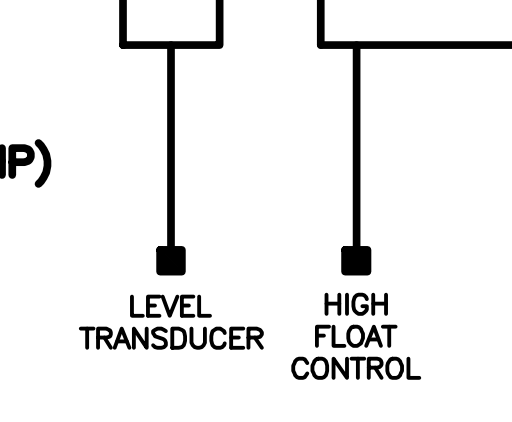
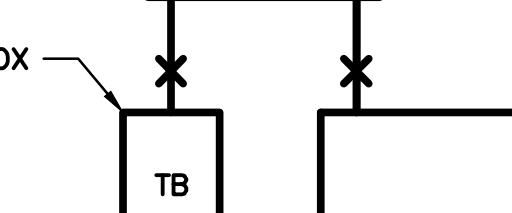
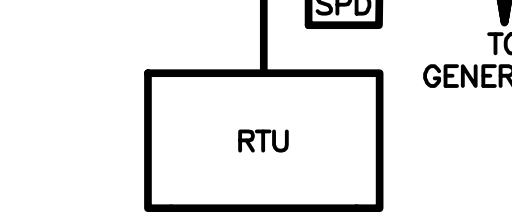
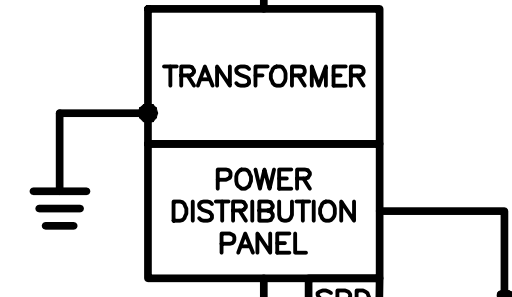
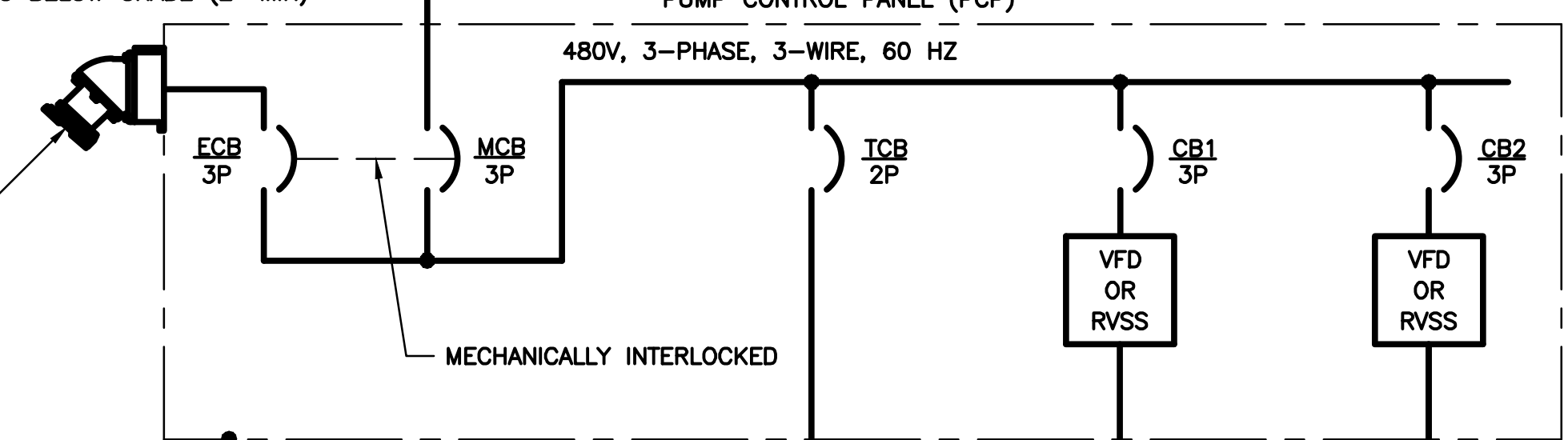
480V, 3-PHASE, 3-WIRE, 60 HZ

THE PUMP CONTROL PANEL MCB RATING SHALL BE MINIMUM 100A. WHERE THE CONTROL PANEL MINIMUM LOAD RATING EXCEEDS 100A, THE MAIN CIRCUIT BREAKER RATING SHALL BE 200A, 400A OR LARGER AS DETERMINED BY THE PUMP STATION ELECTRICAL DESIGN ENGINEER.

PORTABLE GENERATOR ECB SHALL BE THE SAME SIZE AS THE PCP MCB.

REFER TO THE ELECTRICAL NOTES SHEET FOR ADDITIONAL PUMP CONTROL PANEL REQUIREMENTS.

REFER TO INSTRUMENTATION SHEETS FOR ADDITIONAL REQUIREMENTS.

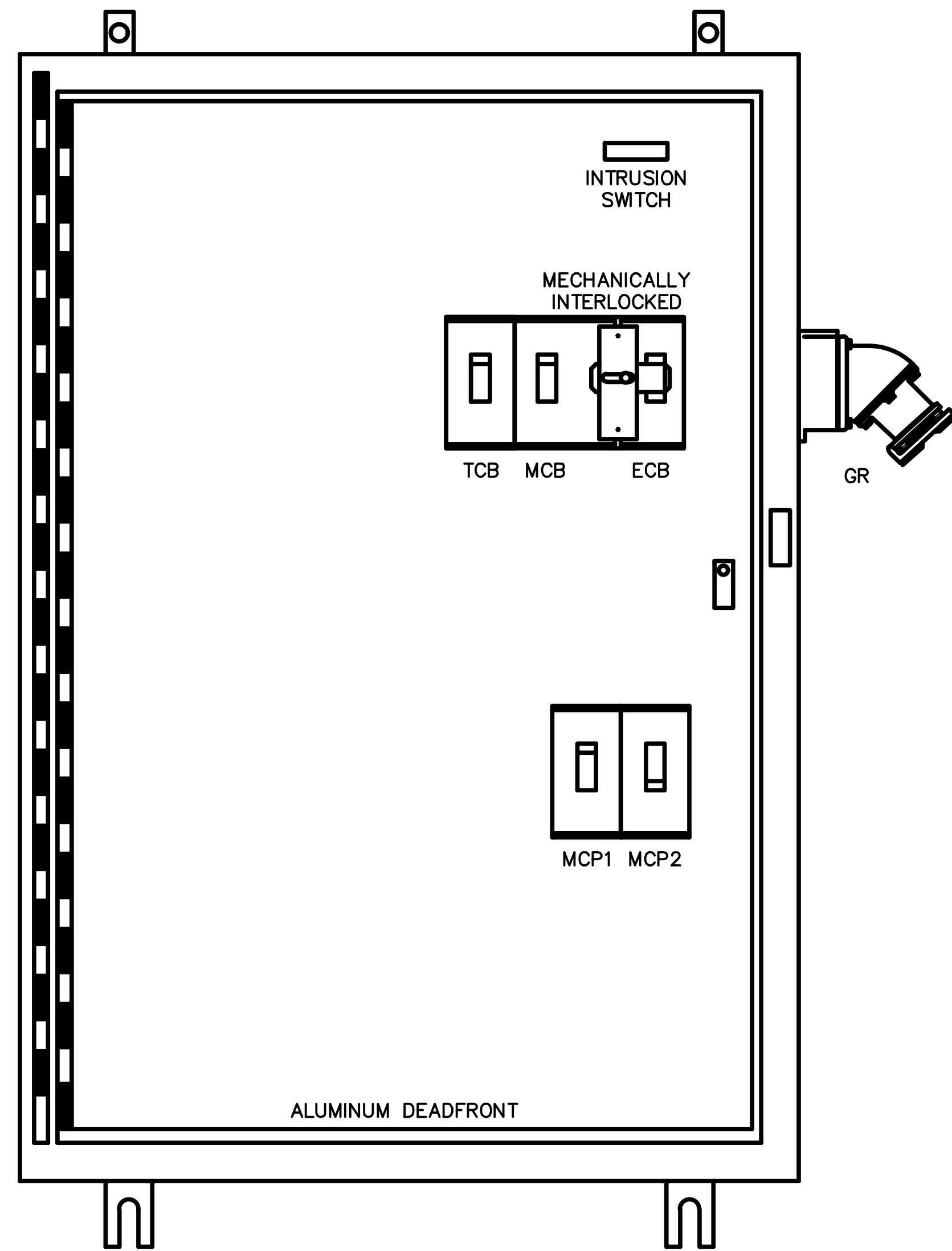


EXPLOSIONPROOF CONDUIT SEAL FITTING (TYP)

WET WELL CONDUITS SHALL BE RAC ABOVE GRADE AND SCHEDULE 40 PVC BELOW GRADE, MAXIMUM 31% FILL (2" MIN.) (TYP)

**GENERATOR (GREATER THAN OR EQUAL TO 47 HP)
ONE LINE POWER DIAGRAM**

DATE	07/2023	DESIGNED BY	COMPUTER FILE	DATE	FEB 2023	CHECKED BY	PROJECT	CRU STANDARD LIFT STATION DRAWINGS	SHEET NO.	E-5
APPROVED BY		DRAWN BY		DATE			SHEET TITLE	ONE LINE POWER DIAGRAM WITH GENERATOR	CRU NO.	
GAINESVILLE REGIONAL UTILITIES WATER & WASTEWATER ENGINEERING										
REVISIONS 01 UPDATED STANDARD LIFT STATION UTILITY PLAN 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100										



INNER DOOR LAYOUT
(OUTER DOOR REMOVED FOR CLARITY)

ENCLOSURE:
NEMA 4X RATED, WITH DRIP SHIELD, FABRICATED FROM TYPE 316 STAINLESS STEEL, POLISHED FINISH. OUTER DOOR WILL HAVE A PADLOCKABLE HANDLE WITH 3-POINT LATCHING AND 90° DOOR STOP KIT.

BACK PANEL:
FABRICATED FROM 12ga. STEEL WITH WHITE POLYESTER POWDER COAT FINISH.

INNER DOOR:
FABRICATED FROM .125 ALUMINUM WITH CONTINUOUS HINGE, TWIST LATCHES, AND 90° DOOR STOP KIT.

CONTROL PANEL ABBREVIATIONS

ECB	EMERGENCY CIRCUIT BREAKER
F	FUSE
FB	FUSE BLOCK
FVNR	FULL VOLTAGE NON-REVERSING
G	GROUND
GR	GENERATOR RECEPTACLE
HZ	HERTZ
ISR	INTRINSICALLY SAFE RELAY
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCP	MOTOR CIRCUIT PROTECTOR
MS	MOTOR STARTER
N	NEUTRAL
OL	OVERLOADS
OT	OVER TEMPERATURE
OTR	OVER TEMPERATURE RELAY
PH	PHASE
PLCB	PANEL LIGHT CIRCUIT BREAKER
PM	PHASE MOTOR
R	RELAY
RTU	REMOTE TELEMETRY UNIT
RVSS	REDUCED VOLTAGE SOLID STATE
SCB	SPARE CIRCUIT BREAKER
SPD	SURGE PROTECTIVE DEVICE
TB	TERMINAL BLOCK
TCB	TRANSFORMER CIRCUIT BREAKER
VAC	VOLTS ALTERNATING CURRENT
W	WIRE

CONTROL PANEL NOTES:

1. GENERATOR RECEPTACLE SHALL BE RATED 4 WIRE, 3 POLE, 200 AMPS, 600VAC, CROUSE-HINDS CAT NO. AR2042-S22 REVERSE SERVICE.
2. THE CONTROL PANEL SHALL UTILIZE INTRINSICALLY SAFE RELAYS SUITABLE FOR CLASS 1, DIVISION 1, GROUP D HAZARDOUS LOCATION.
3. THE OVERALL SHORT-CIRCUIT WITHSTAND AND INTERRUPT RATING OF THE EQUIPMENT AND DEVICES SHALL NOT BE LESS THAN 42,000 AMPS RMS SYMMETRICAL AT 480 VOLTS.
4. THE COMPLETED CONTROL PANEL ASSEMBLY SHALL BE UL CERTIFIED.

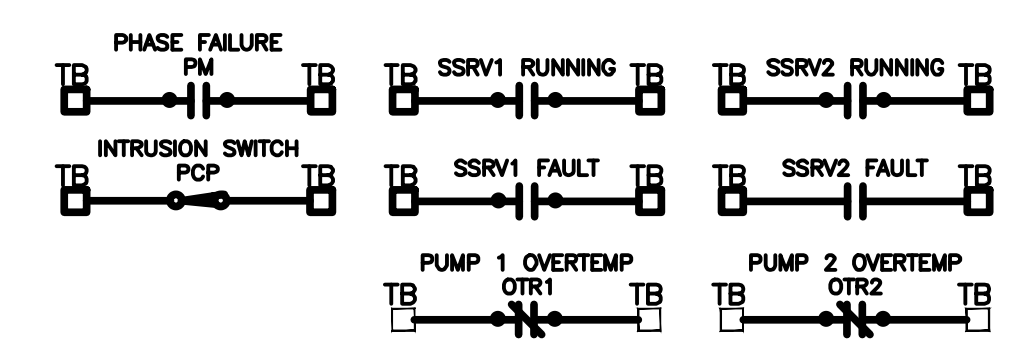
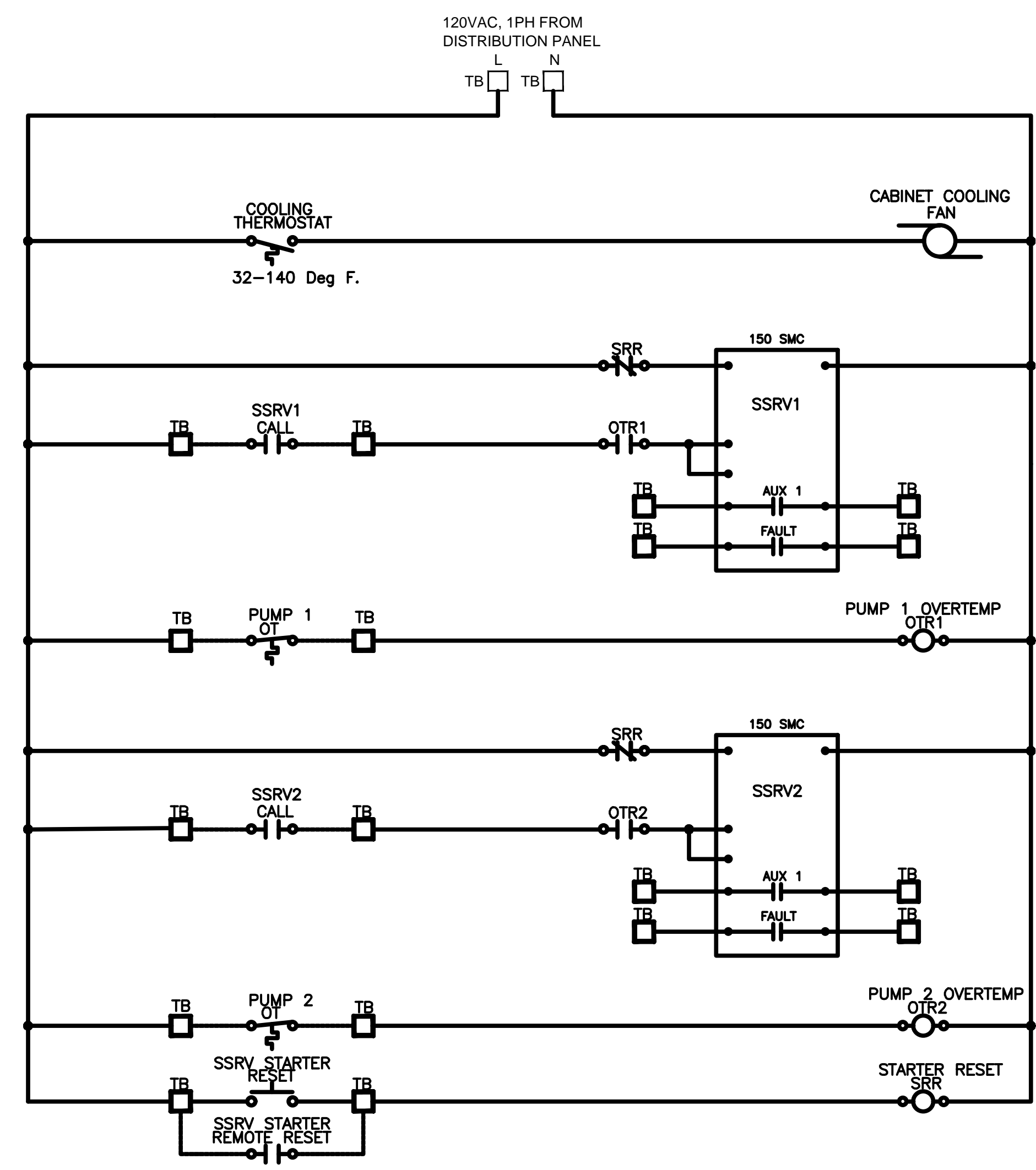
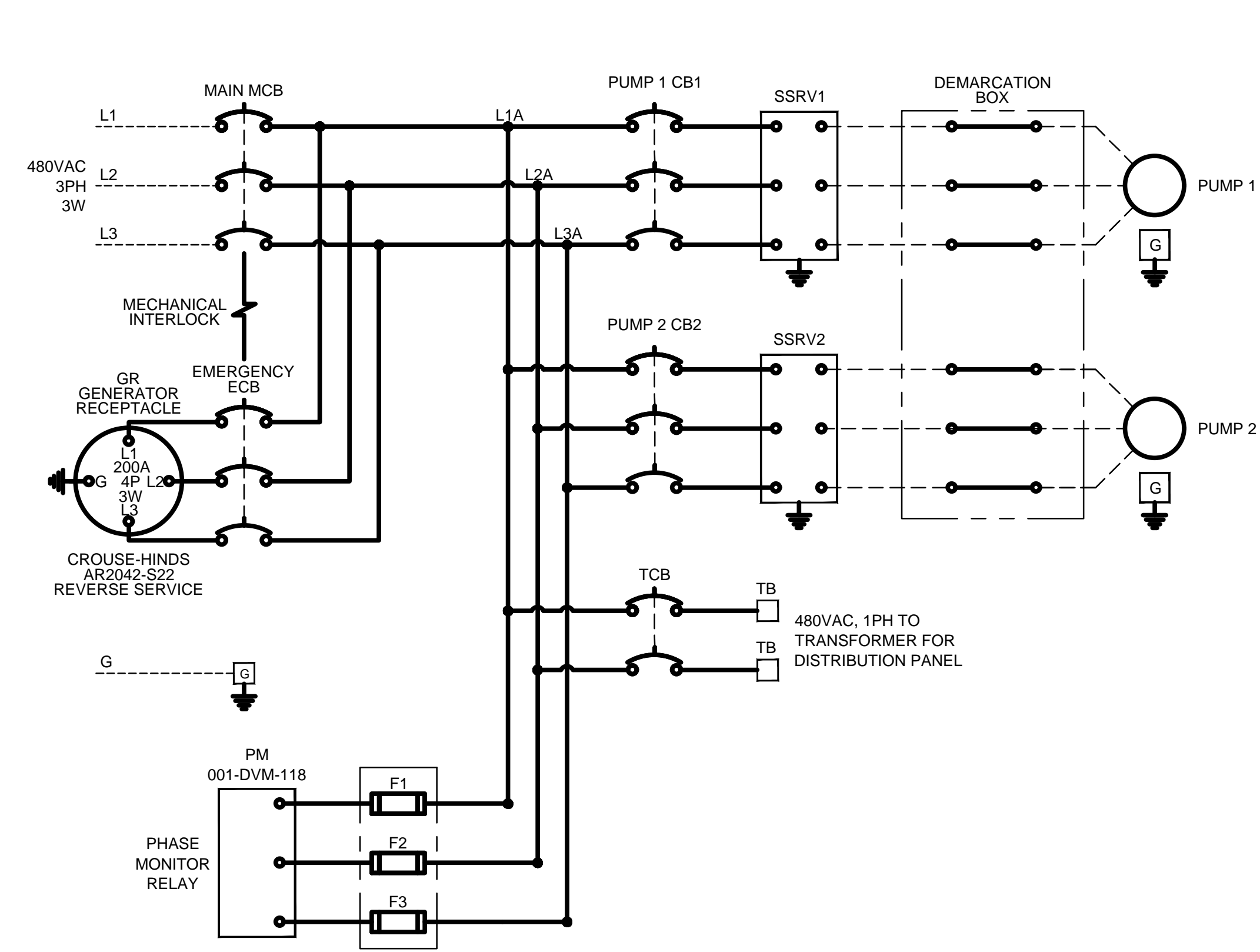
3-PHASE 480 VOLT CONTROL PANEL FOR LIFT STATIONS
(FVNR STARTER)

DATE: APPROVED BY: PLOT BY:	REVISIONS UPDATED STANDARD LIFT STATION UTILITY PLAN DATE: 07/2023	COMPUTER FILE: DATE: FEB 2023	DESIGNED BY: DRAWN BY: CHECKED BY:	CLIENT: GRU STANDARD LIFT STATION DRAWINGS SHEET TITLE: CONTROL PANEL DETAIL (FVNR STARTER)	SHEET NO.: E-7
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GAINESVILLE REGIONAL UTILITIES

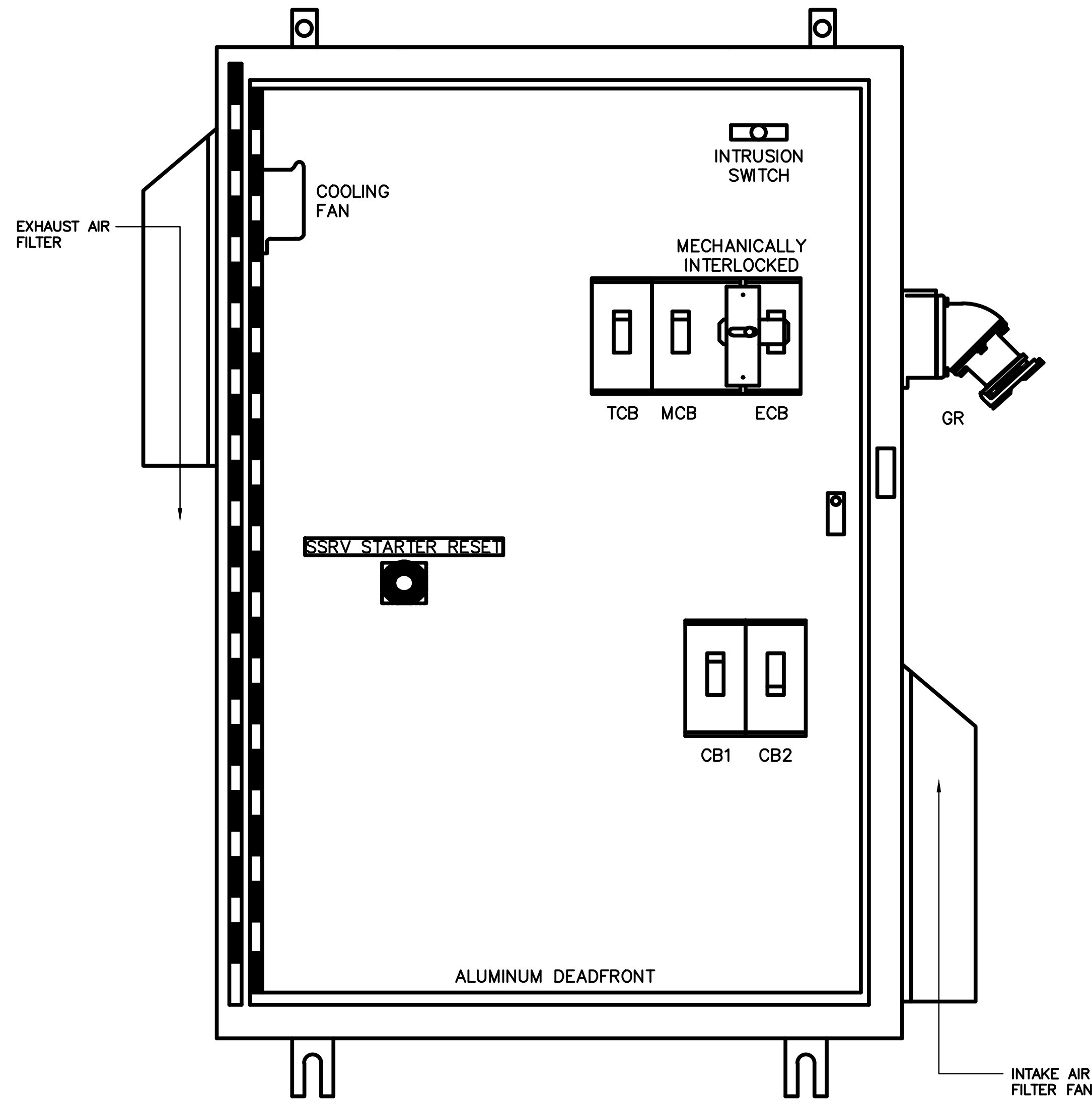
 WATER & WASTEWATER ENGINEERING

GRAPHIC SCALE
 0" = 1'-0" (AS SHOWN)
 IF NOT ONE INCH ON SHEET, ACCORDINGLY.



3-PHASE 480 VOLT ELEMENTARY CONTROL DIAGRAM FOR LIFT STATIONS
(SSRV STARTERS)

DATE	02/2023	APPROVED BY:		PROJECT:	GRU STANDARD LIFT STATION DRAWINGS	CLIENT:	GRU
DESIGNED BY:		DRAWN BY:		COMPUTER FILE:		SHEET NO.:	E-8
CHECKED BY:		DATE:	FEB 2023	DATE:		SHEET TITLE:	ELEMENTARY CONTROL DIAGRAM (SSRV STARTERS)
REVISIONS 01 UPDATED STANDARD LIFT STATION UTILITY PLAN 02 02/2023							
SCALE: 1" = 12" (AS SHOWN) IF NOT ONE INCH ON SHEET, RECORD AS SHOWN.							
GAINESVILLE REGIONAL UTILITIES WATER & WASTEWATER ENGINEERING							



INNER DOOR LAYOUT
(OUTER DOOR REMOVED FOR CLARITY)

ENCLOSURE:
NEMA 4X RATED, WITH DRIP SHIELD. FABRICATED FROM TYPE 316 STAINLESS STEEL, POLISHED FINISH. OUTER DOOR WILL HAVE A PADLOCKABLE HANDLE WITH 3-POINT LATCHING AND 90° DOOR STOP KIT.

BACK PANEL:
FABRICATED FROM 12ga. STEEL WITH WHITE POLYESTER POWDER COAT FINISH.

INNER DOOR:
FABRICATED FROM .125 ALUMINUM WITH CONTINUOUS HINGE, TWIST LATCHES, AND 90° DOOR STOP KIT.

CONTROL PANEL ABBREVIATIONS

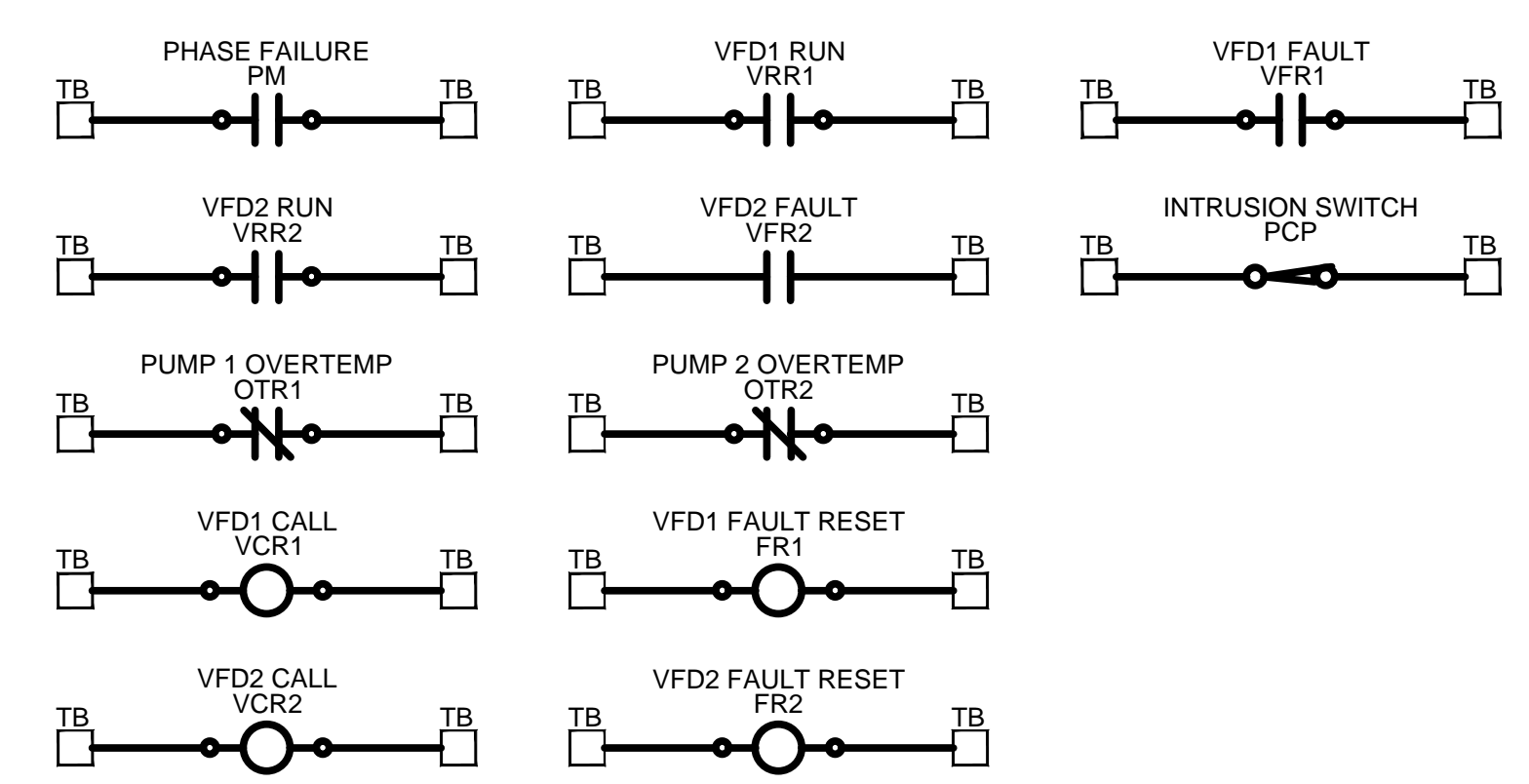
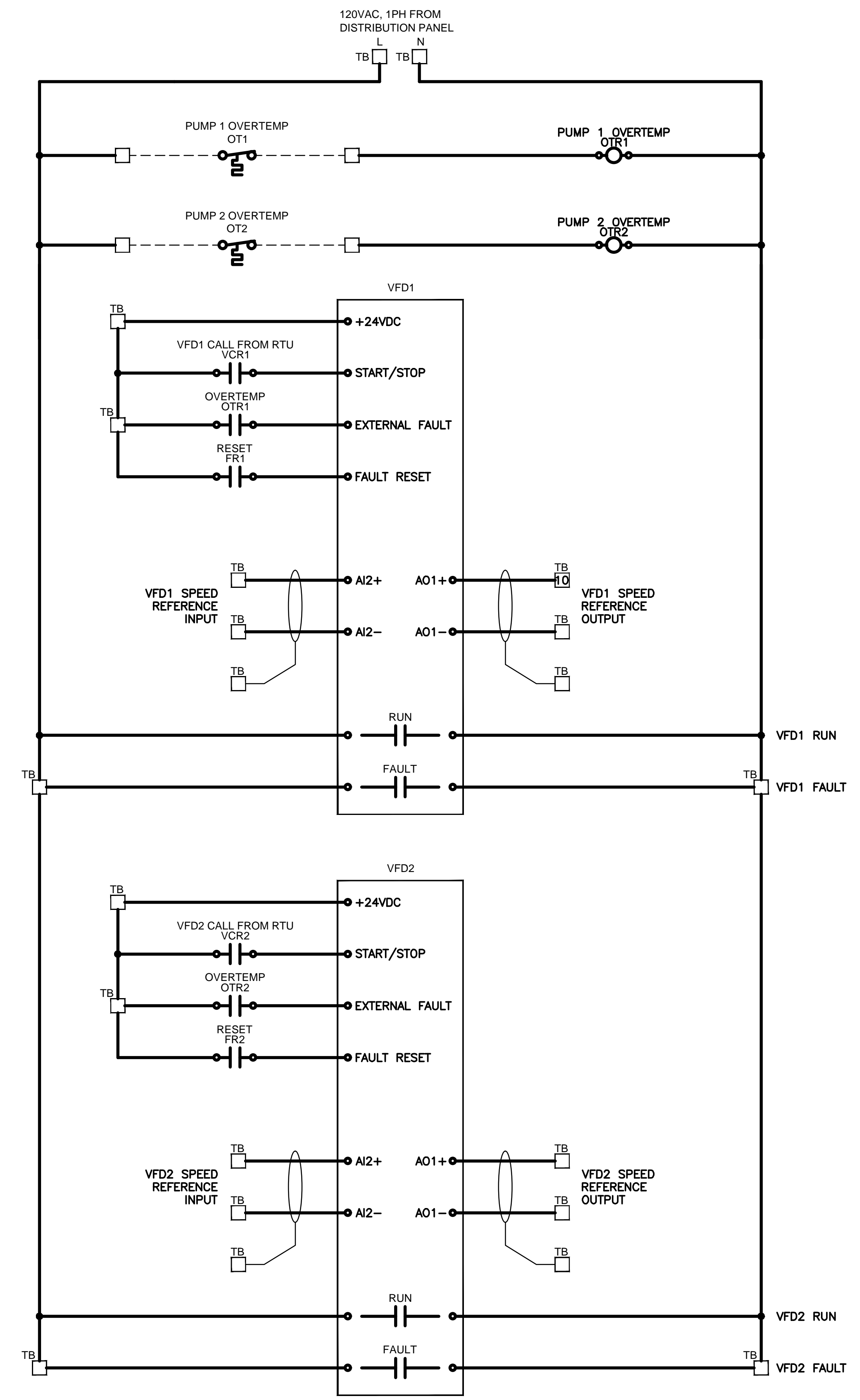
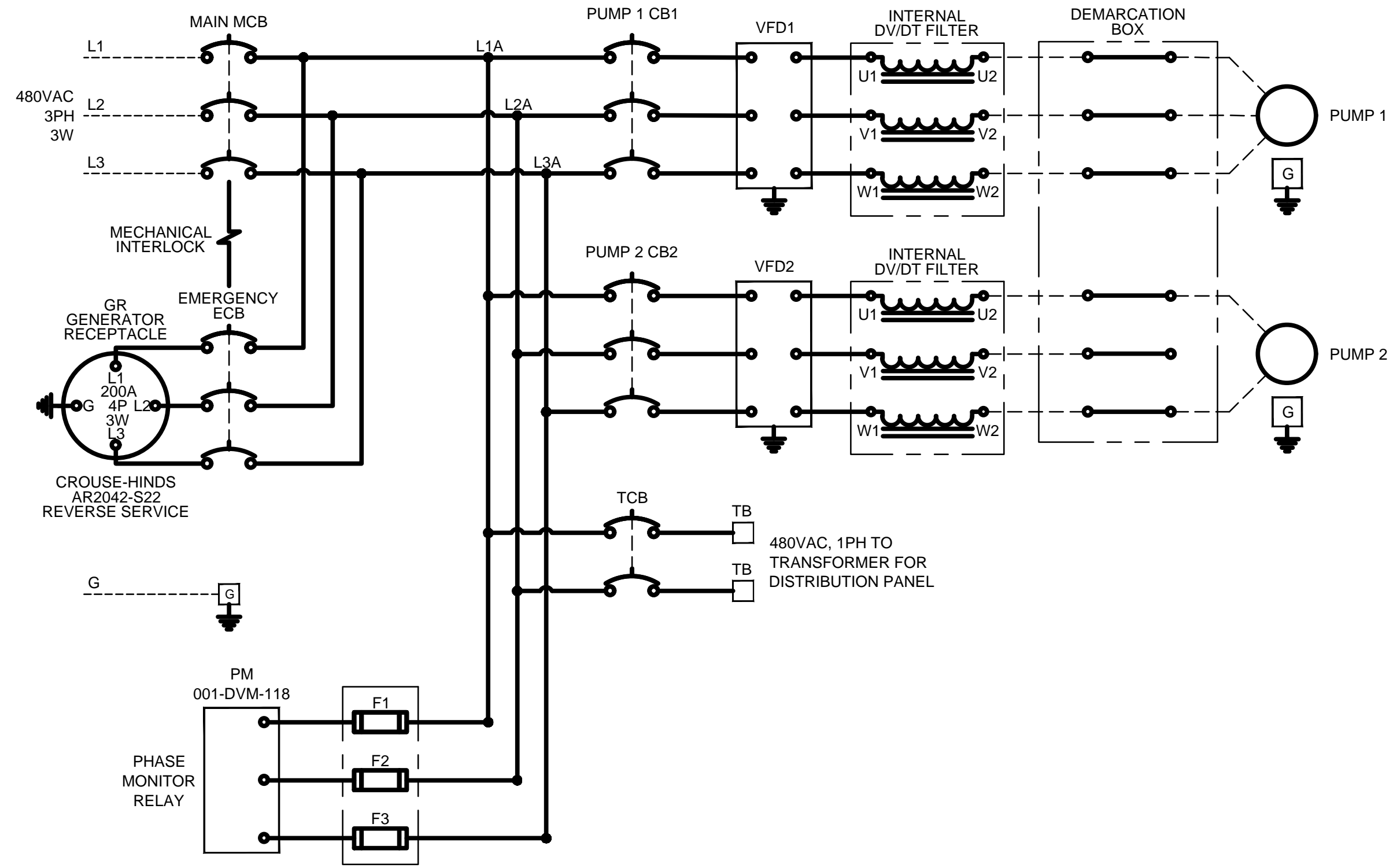
CB	CIRCUIT BREAKER
ECB	EMERGENCY CIRCUIT BREAKER
F	FUSE
FB	FUSE BLOCK
FVNR	FULL VOLTAGE NON-REVERSING
G	GROUND
GR	GENERATOR RECEPTACLE
HZ	HERTZ
ISR	INTRINSICALLY SAFE RELAY
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MS	MOTOR STARTER
N	NEUTRAL
OL	OVERLOADS
OT	OVER TEMPERATURE
OTR	OVER TEMPERATURE RELAY
PH	PHASE
PLCB	PANEL LIGHT CIRCUIT BREAKER
PM	PHASE MOTOR
R	RELAY
RTU	REMOTE TELEMETRY UNIT
RVSS	REDUCED VOLTAGE SOLID STATE
SCB	SPARE CIRCUIT BREAKER
SPD	SURGE PROTECTIVE DEVICE
SSR	STARTER RESET RELAY
SSRV	SOLID STATE REDUCED VOLTAGE
TB	TERMINAL BLOCK
TCB	TRANSFORMER CIRCUIT BREAKER
VAC	VOLTS ALTERNATING CURRENT
W	WIRE

CONTROL PANEL NOTES:

1. GENERATOR RECEPTACLE SHALL BE RATED 4 WIRE, 3 POLE, 200 AMPS, 600VAC, CROUSE-HINDS CAT NO. AR2042-S22 REVERSE SERVICE.
2. THE CONTROL PANEL SHALL UTILIZE INTRINSICALLY SAFE RELAYS SUITABLE FOR CLASS 1, DIVISION 1, GROUP D HAZARDOUS LOCATION.
3. THE OVERALL SHORT-CIRCUIT WITHSTAND AND INTERRUPT RATING OF THE EQUIPMENT AND DEVICES SHALL NOT BE LESS THAN 42,000 AMPS RMS SYMMETRICAL AT 480 VOLTS.
4. THE COMPLETED CONTROL PANEL ASSEMBLY SHALL BE UL CERTIFIED.

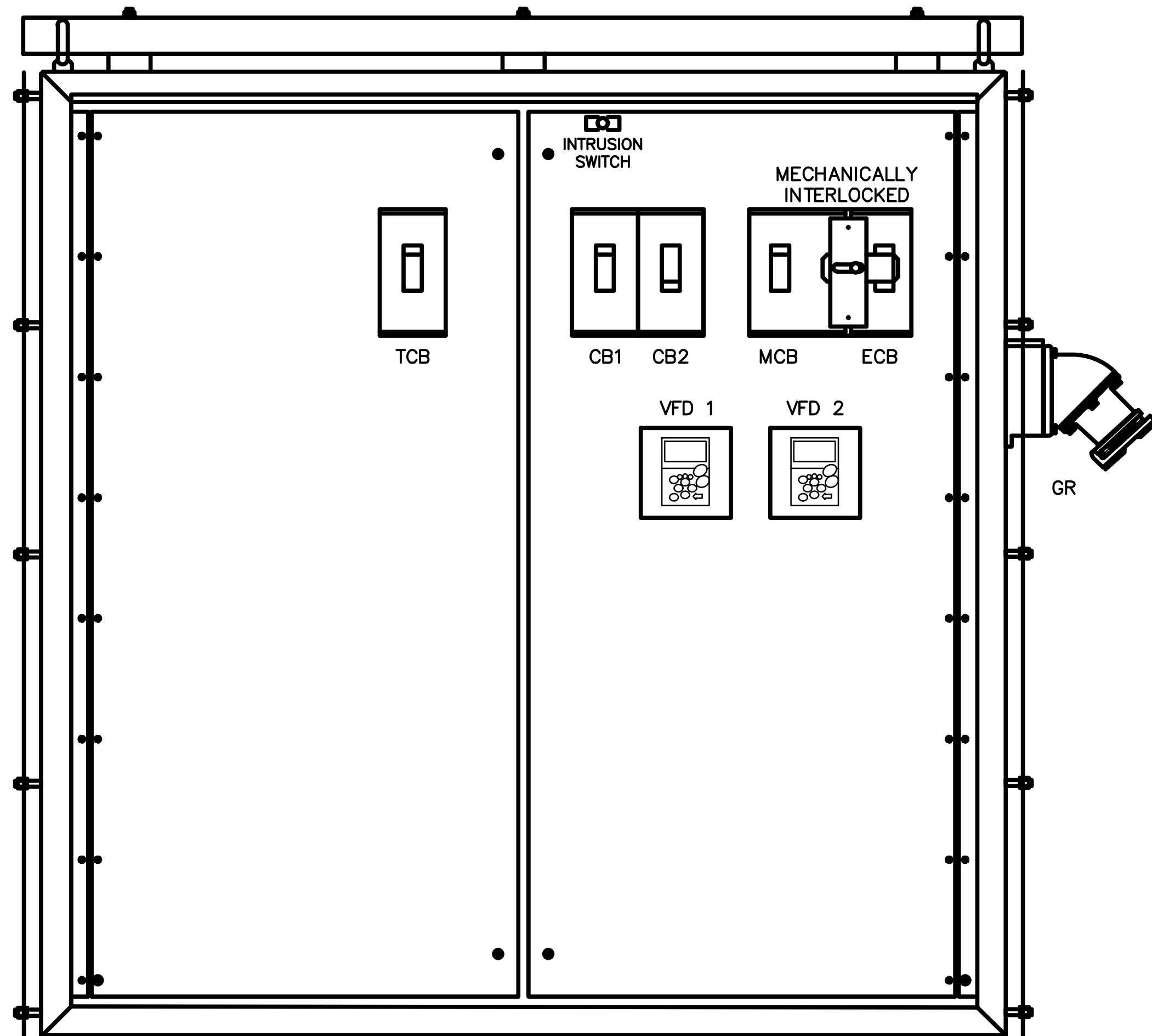
3-PHASE 480 VOLT CONTROL PANEL FOR LIFT STATIONS
(SSRV STARTER)

DATE	07/2023	APPROVED BY:		PLOT BY:	
SEAL					
REVISIONS					
UPDATED STANDARD LIFT STATION UTILITY PLAN					
GAINESVILLE REGIONAL UTILITIES					
 WATER & WASTEWATER ENGINEERING					
COMPUTER FILE:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:	FEB 2023
PROJECT:	GRU STANDARD LIFT STATION DRAWINGS		SHEET TITLE:	CONTROL PANEL DETAIL (SSRV STARTER)	
CLIENT:			SHEET NO.:	E-9	



3-PHASE 480 VOLT ELEMENTARY CONTROL DIAGRAM FOR LIFT STATIONS (VFD)

DATE	APPROVED BY	PAGE NO.	E-10
07/2023			
SEAL			
REVISIONS	DATE	DESCRIPTION	
1	07/2023	UPDATED STANDARD LIFT STATION UTILITY PLAN	
2		REVISIONS	
VFD SCALE 0 = IF NOT ONE INCH ON SHEET, INDICATE SCALE ACCORDINGLY.			
PROJECT: CRU STANDARD LIFT STATION DRAWINGS SHEET TITLE: ELEMENTARY CONTROL DIAGRAM (VFD)			
DESIGNED BY:	COMPUTER FILE:	DATE:	FEB 2023
DRAWN BY:	CHECKED BY:		
CLIENT: CRU PROJECT: CRU STANDARD LIFT STATION DRAWINGS SHEET TITLE: ELEMENTARY CONTROL DIAGRAM (VFD)			
GAINESVILLE REGIONAL UTILITIES WATER & WASTEWATER ENGINEERING			



INNER DOOR LAYOUT
(OUTER DOOR REMOVED FOR CLARITY)

ENCLOSURE:

NEMA 4X RATED, WITH DRIP SHIELD, SUN SHIELDS ON TOP, FRONT, BACK AND BOTH SIDES. FABRICATED FROM TYPE 316 STAINLESS STEEL, POLISHED FINISH. OUTER DOOR WILL HAVE A PADLOCKABLE HANDLE WITH 3-POINT LATCHING AND 90° DOOR STOP KIT.

BACK PANEL:

FABRICATED FROM 10ga. STEEL WITH WHITE POLYESTER POWDER COAT FINISH.

INNER DOOR:

FABRICATED FROM .125 ALUMINUM WITH CONTINUOUS HINGE, AND TWIST LATCHES.

CONTROL PANEL ABBREVIATIONS

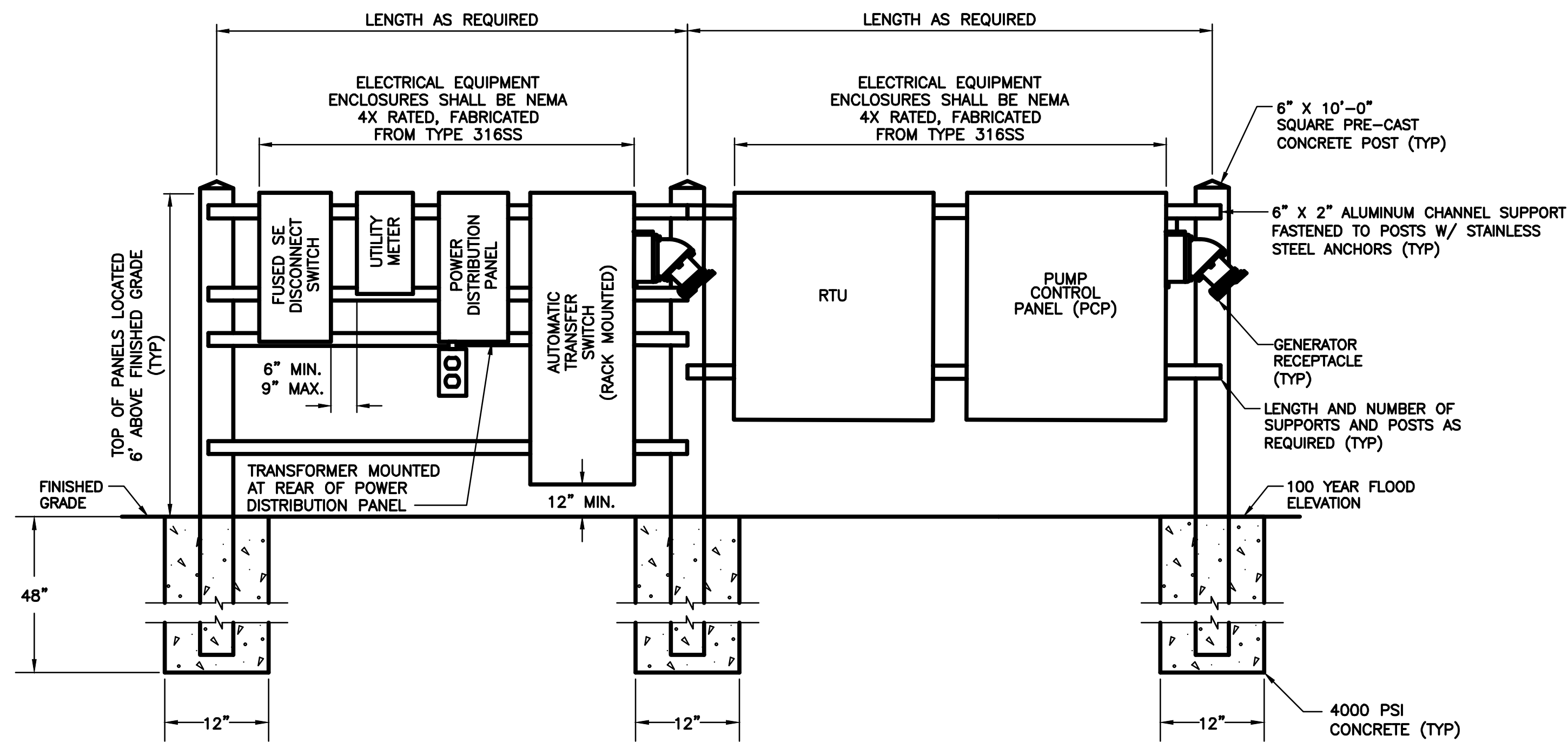
CB	CIRCUIT BREAKER
ECB	EMERGENCY CIRCUIT BREAKER
F	FUSE
FB	FUSE BLOCK
G	GROUND
GR	GENERATOR RECEPTACLE
HZ	HERTZ
ISR	INTRINSICALLY SAFE RELAY
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MS	MOTOR STARTER
N	NEUTRAL
OL	OVERLOADS
OT	OVER TEMPERATURE
OTR	OVER TEMPERATURE RELAY
PH	PHASE
PLCB	PANEL LIGHT CIRCUIT BREAKER
PM	PHASE MOTOR
R	RELAY
RTU	REMOTE TELEMETRY UNIT
SCB	SPARE CIRCUIT BREAKER
SPD	SURGE PROTECTIVE DEVICE
TB	TERMINAL BLOCK
TCB	TRANSFORMER CIRCUIT BREAKER
VAC	VOLTS ALTERNATING CURRENT
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE

CONTROL PANEL NOTES:

1. GENERATOR RECEPTACLE SHALL BE RATED 4 WIRE, 3 POLE, 200 AMPS, 600VAC, CROUSE-HINDS CAT NO. AR2042-S22 REVERSE SERVICE.
2. THE CONTROL PANEL SHALL UTILIZE INTRINSICALLY SAFE RELAYS SUITABLE FOR CLASS 1, DIVISION 1, GROUP D HAZARDOUS LOCATION.
3. THE OVERALL SHORT-CIRCUIT WITHSTAND AND INTERRUPT RATING OF THE EQUIPMENT AND DEVICES SHALL NOT BE LESS THAN 42,000 AMPS RMS SYMMETRICAL AT 480 VOLTS.
4. THE COMPLETED CONTROL PANEL ASSEMBLY SHALL BE UL CERTIFIED.

3-PHASE 480 VOLT CONTROL PANEL FOR LIFT STATIONS
(VFD)

DATE	02/2023	DATE	FEB 2023	DATE	FEB 2023
APPROVED BY:		DRAWN BY:		CHECKED BY:	
PGT 16:		COMPUTER FILE:		SHEET NO.:	E-11
SEAL		PROJECT:	GRU STANDARD LIFT STATION DRAWINGS	SHEET TITLE:	CONTROL PANEL DETAIL (VFD)
REVISIONS		CLIENT:		JOB NO.:	
UPDATED STANDARD LIFT STATION UTILITY PLAN		GAINESVILLE REGIONAL UTILITIES WATER & WASTEWATER ENGINEERING			
VERTICAL SCALE		0" = 1" (NOT ONE INCH ON SCALE) IF NOT ONE INCH ON SCALE, INDICATE SCALE.			



EQUIPMENT RACK WITH STANDBY GENERATOR PROVISIONS

DETAIL

NTS

EQUIPMENT RACK MOUNTING NOTES:

1. WIND SPEEDS SHALL BE DETERMINED BY THE DELEGATE ENGINEER.
2. EMBEDMENT DEPTH AS REQUIRED PER DELEGATE ENGINEER.
3. ALL SUPPORTS, AND MOUNTING HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.
4. FOR ELECTRIC SERVICE BY CLAY ELECTRIC COOPERATIVE, INC., REFER TO CLAY ELECTRIC COOPERATIVE, INC. SINGLE SERVICE (320 AMP MAX) UNDERGROUND SUPPLY (PEDESTAL MOUNT) DRAWING NO. ESFIG7A 2020 FOR INSTALLATION REQUIREMENTS PERTAINING TO THE ELECTRIC METER AND DISCONNECT SWITCH EQUIPMENT RACK LAYOUT.

6" ALUMINUM CHANNEL (TYP OF 2)

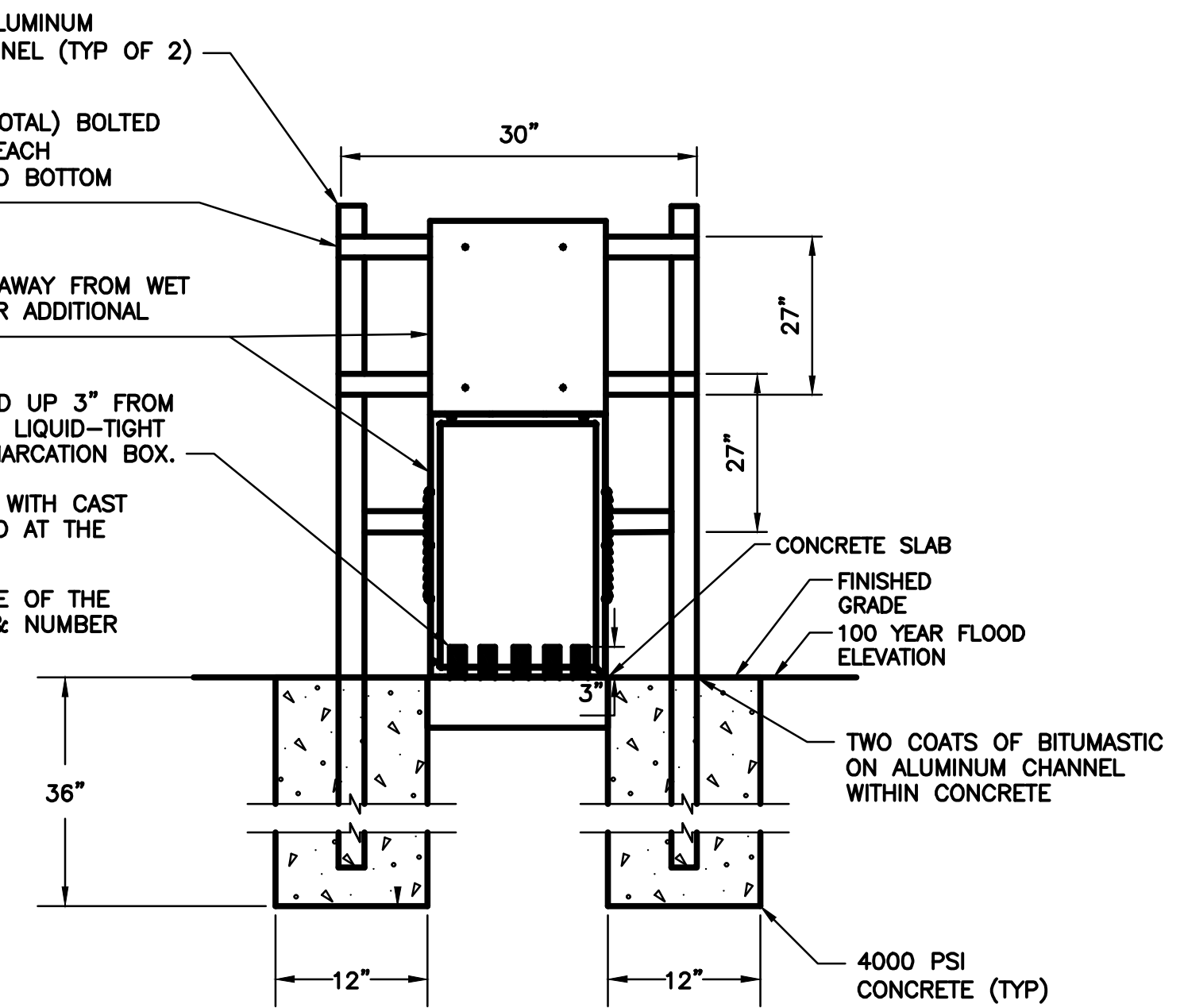
6" X 1/4" ALUMINUM CHANNEL SUPPORT (3 TOTAL) BOLTED TO POST W/ 1/2" S.S. ANCHOR BOLTS. FOR EACH DEMARICATION BOX, DRILL 2 HOLES IN TOP AND BOTTOM SUPPORTS ONLY

BOX SHALL BE MOUNTED SO THAT DOORS FACE AWAY FROM WET WELL. SEE DEMARICATION BOX DETAILS SHEET FOR ADDITIONAL REQUIREMENTS.

CONDUIT FROM THE WET WELL IS TO BE STUBBED UP 3" FROM BASE AND WIRE IS TO RUN IN THE OPEN AIR TO LIQUID-TIGHT CORD CONNECTORS AT THE BOTTOM OF THE DEMARICATION BOX.

WIRE FROM THE RTU IS TO BE RUN IN CONDUIT WITH CAST ALUMINUM SEAL-OFF CONDUIT FITTINGS INSTALLED AT THE BOTTOM OF THE DEMARICATION BOX.

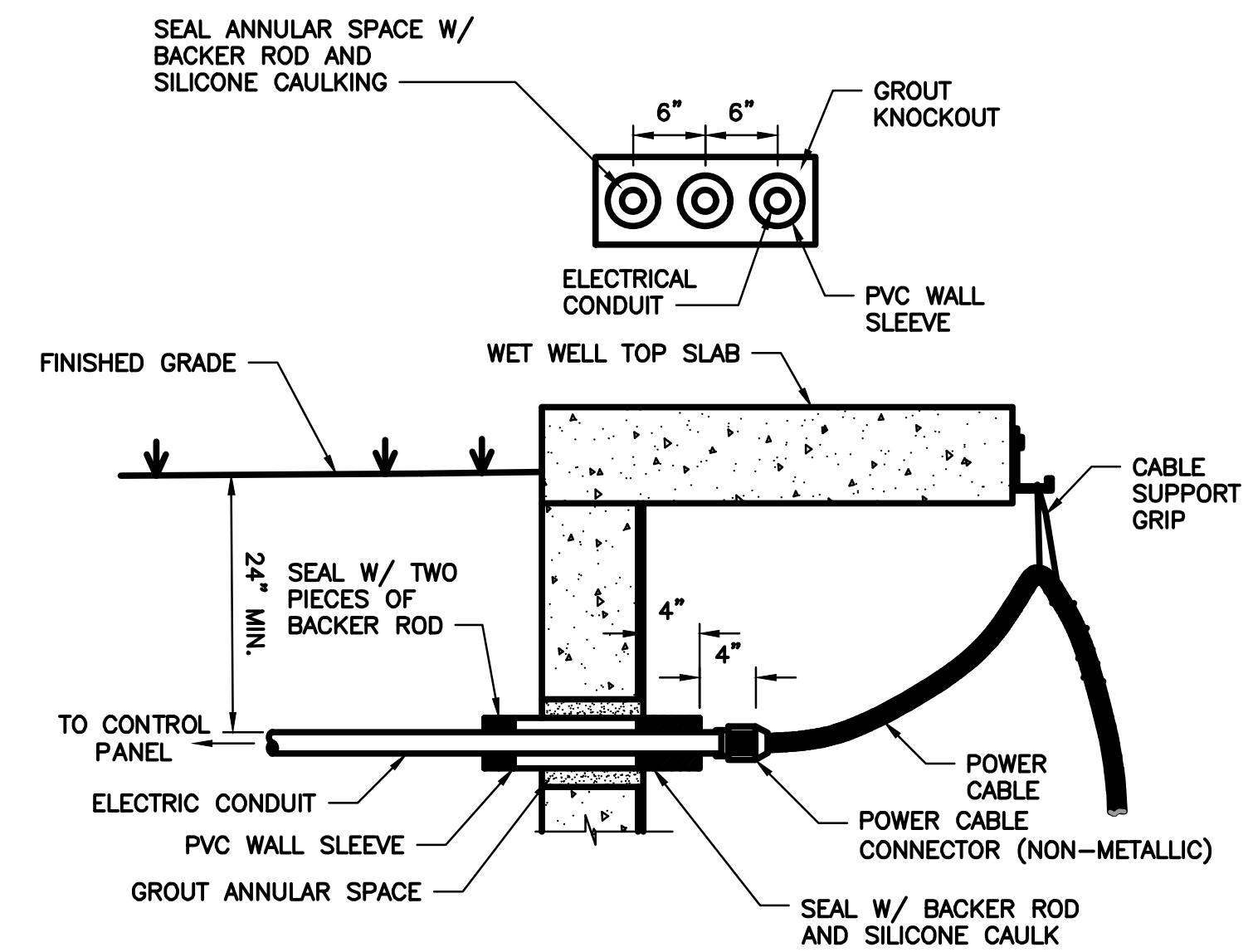
ONLY ONE PULLING 90 DEGREE ELL AT THE BASE OF THE DEMARICATION BOX IS ALLOWED. CONDUIT SIZE & NUMBER AS REQUIRED.



DEMARICATION BOX MOUNTING

DETAIL

NTS

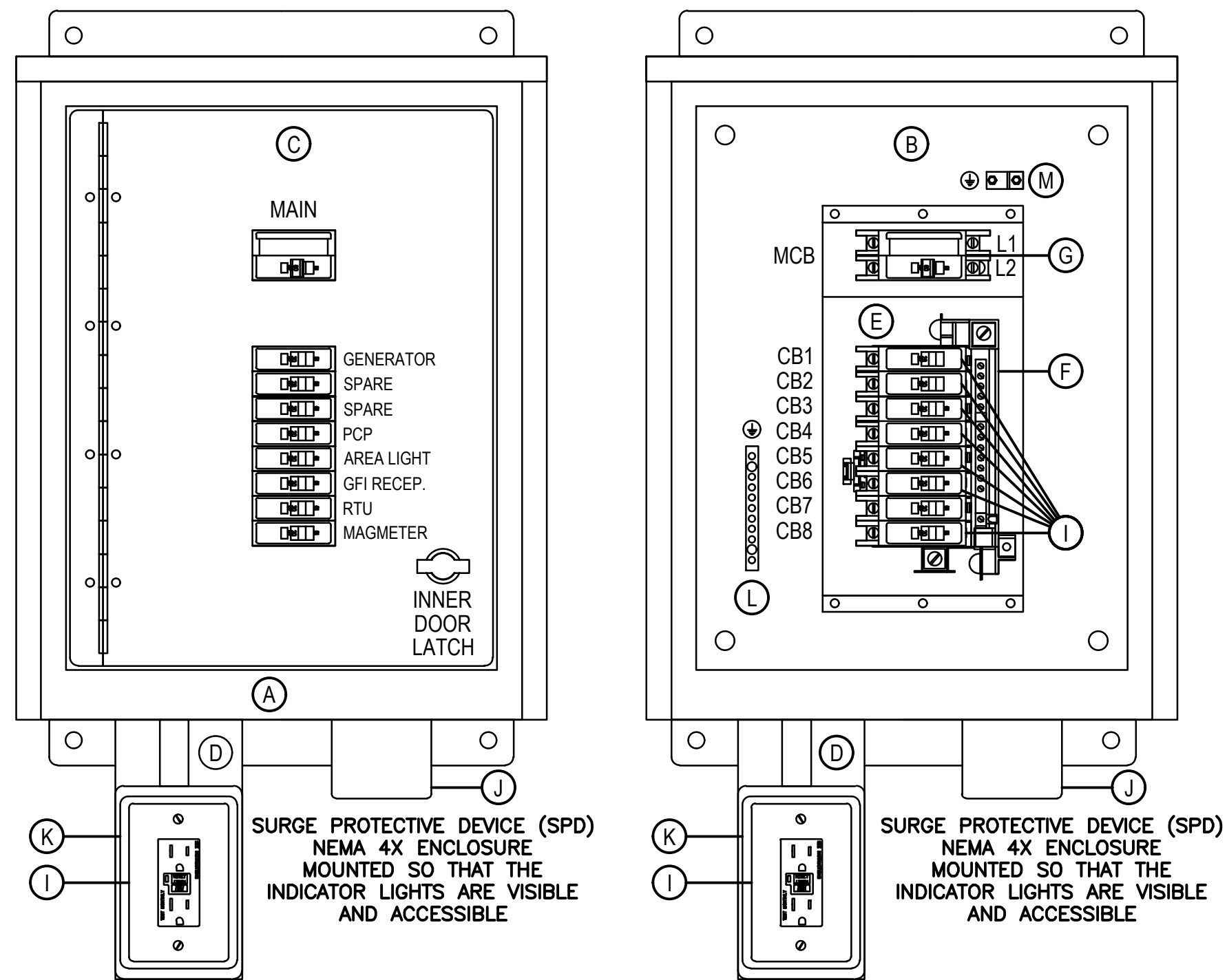


ELECTRICAL WALL PENETRATION

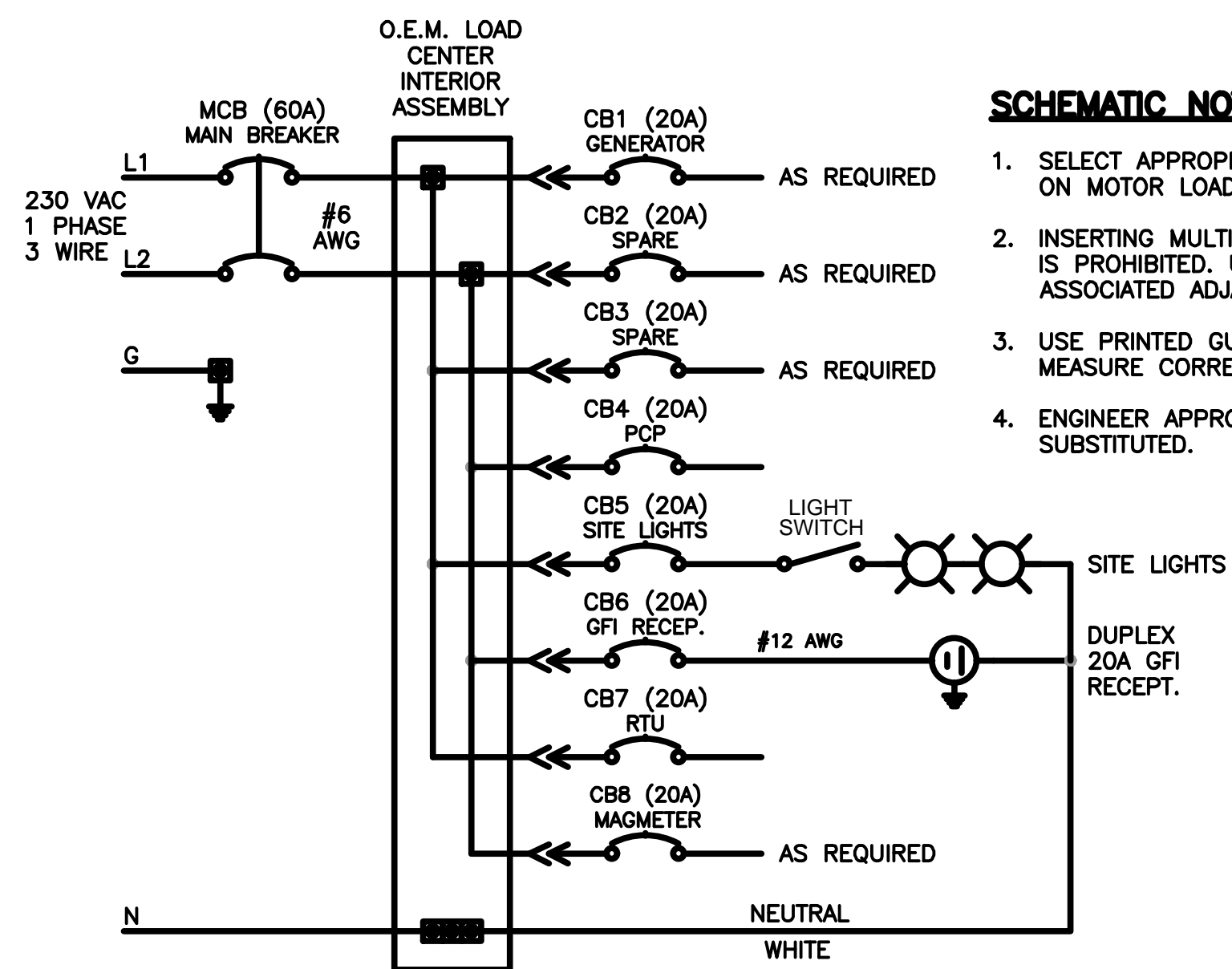
DETAIL

NTS

CLIENT:	CRU STANDARD LIFT STATION DRAWINGS	DATE:	FEB 2023
PROJECT:	CRU STANDARD LIFT STATION DRAWINGS	DESIGNED BY:	
SHEET NO.:	FRONT ELEVATION DETAILS	DRAWN BY:	
DATE:		CHECKED BY:	
COMPUTER FILE:		DATE:	FEB 2023
SCALE:	AS SHOWN	DATE:	
REVISIONS:	UPDATED STANDARD LIFT STATION UTILITY PLAN	DATE:	07/2023
DATE:		DATE:	
APPROVED BY:		DATE:	
PAGE NO.:	E-12	DATE:	



POWER DISTRIBUTION PANEL
(TYPICAL 240VAC - 1 PHASE SHOWN)



POWER DISTRIBUTION PANEL SCHEMATIC:

SCHEMATIC NOTES:

1. SELECT APPROPRIATELY SIZED TERMINAL BLOCK BASED ON MOTOR LOAD.
2. INSERTING MULTIPLE CABLES INTO A SINGLE TERMINAL IS PROHIBITED. USE A SECOND BLOCK AND THE ASSOCIATED ADJACENT JUMPER.
3. USE PRINTED GUIDE ON TERMINAL BLOCKS TO MEASURE CORRECT CABLE STRIP LENGTH.
4. ENGINEER APPROVED EQUAL COMPONENT MAY BE SUBSTITUTED.

ENCLOSURE:

HOFFMAN #A24H2008SS6LP3PT (24"H x 20"W x 8"D) NEMA 4X RATED, FABRICATED FROM TYPE 316 STAINLESS STEEL. OUTER DOOR WILL HAVE A PADLOCKABLE HANDLE WITH 3-POINT LATCHING AND 90° DOOR STOP KIT.

BACK PANEL:

SCHAEFER #A24P20 (21"H x 17"W) FABRICATED FROM 14 GAUGE. CARBON STEEL WITH WHITE POLYESTER POWDER COAT FINISH.

HINGED INNER DOOR:

FABRICATED FROM .125 ALUMINUM WITH CONTINUOUS HINGE AND TWIST LATCH.

480 VAC DISTRIBUTION PANEL NOTES:

1. STANDARD PANEL: 5 KVA TRANSFORMER 480V-120/240V WITH 2-POLE 30-AMP BREAKER.
2. PANEL WITH GENERATOR: 10 KVA TRANSFORMER 480V-120/240V WITH 2-POLE 60-AMP MAIN BREAKER.
3. PANEL OUTER DOOR SHALL BE HINGED AND PADLOCKABLE.
4. ALL LIVE PARTS SHALL BE ENCLOSED FOR PERSONNEL SAFETY AND EQUIPMENT PROTECTION.
5. GROUNDING TERMINAL SHALL BE PROVIDED IN THE ENCLOSURE
6. THE ENCLOSURE SHALL BE NEMA 4X RATED.
7. IF ENCLOSURE IS FABRICATED WITHIN AN AUTHORIZED PANEL SHOP, TYPE 316 STAINLESS STEEL SHALL BE USED.
8. IF ENCLOSURE IS PURCHASED FROM AN AUTHORIZED DISTRIBUTOR, TYPE 316 STAINLESS STEEL MAY ALSO BE USED.
9. THE LOAD CENTER MOUNTING BASE PLATE SHALL BE UL LISTED, RATED AT 240 VOLTS / 200 AMPS MINIMUM.
10. THE LOAD CENTER BUS MATERIAL SHALL BE TIN-PLATED COPPER.
11. THE LOAD CENTER SHALL HAVE EIGHT SPACES.
12. BREAKERS SHALL BE BOLT-IN TYPE BREAKERS.
13. PANEL SHALL CONTAIN EIGHT 1-POLE 20-AMP BREAKERS: (1) PCP, (1) LIGHTS, (1) GFI, (1) RTU, AND IF REQUIRED: (1) MAGMETER, (1) GENERATOR, (2) SPARE.
14. PANEL SHALL HAVE A 20-AMP OUTDOOR RATED GFCI RECEPTACLE.
15. GFCI RECEPTACLE SHALL BE MOUNTED ACCORDING TO N.E.C. STANDARDS.
16. GFCI RECEPTACLE SHALL BE RIGIDLY MOUNTED ON THE EXTERIOR OF THE PANEL USING TYPE 316 SS BRACKETS.
17. THE GFCI RECEPTACLE SHALL BE PROVIDED WEATHERPROOF WHILE-IN-USE COVER.

BILLS OF MATERIALS

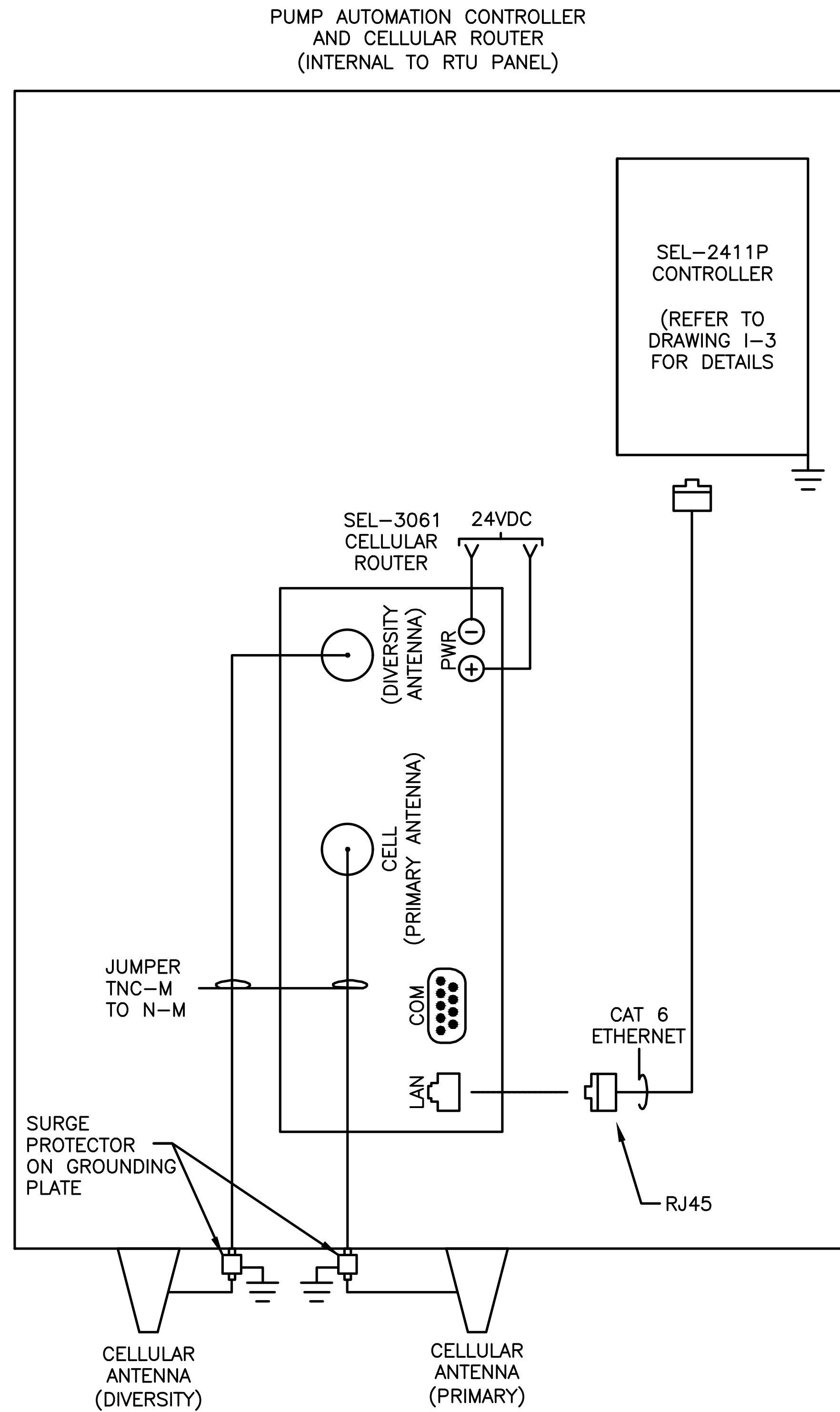
POWER DISTRIBUTION PANEL (AS SHOWN)

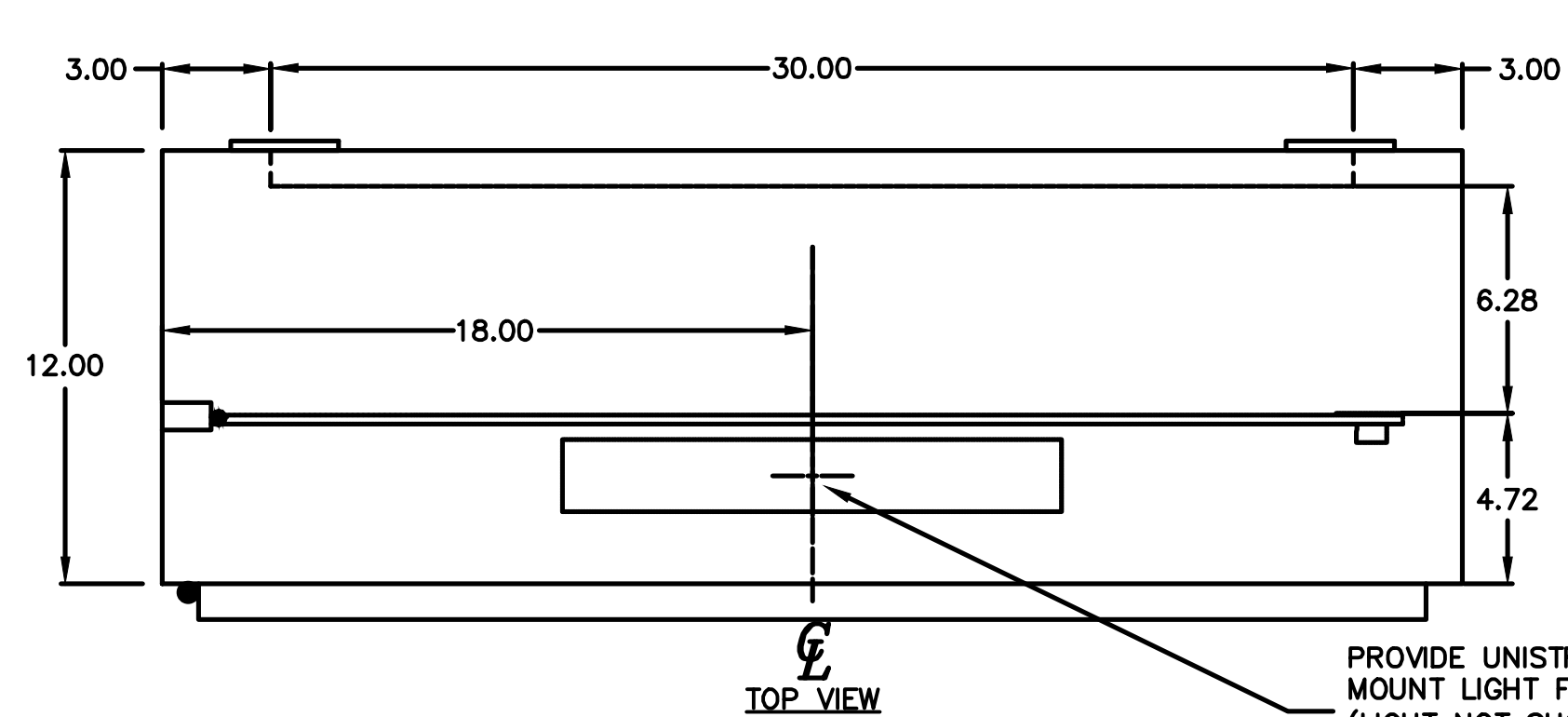
QTY	MANUFACTURER	PART NUMBER	DESCRIPTION
A 1	HOFFMAN	A23H2008SS6LP3PT	ENCLOSURE, NEMA 4X, 316 SS
B 1	HOFFMAN	A24P20	MOUNTING PANEL, 14ga. PAINTED STEEL
C 1	OEM	-	HINGED INNER DOOR, .125 ALUMINUM
D 1	OEM	GFI MOUNT	TO RIGIDLY MOUNT EXTERNAL DEVICES
E 1	OEM	BREAKER MOUNT	TO RAISE CBs FLUSH WITH INNER DOOR
F 1	SQUARE D	QON816L100	100 AMP LOAD CENTER INTERIOR ASSY.
G 1	SQUARE D	QOU260	MCB MAIN CIRCUIT BREAKER, 2 POLE, 60A
H 8	SQUARE D	QO120	CB3-CB6 CONTROL BREAKER, 1 POLE, 20A
I 1	HUBBELL	GF20WLA	DUPLEX GFCI RECEPTACLE, 20A
J 1	SQUARE D	SDS1175	120/240 VAC SPD (NEMA 4X)
K 1	INTERMATIC	WP1030C	SINGLE GANG WEATHER-PROOF COVER, CLEAR
L 1	SQUARE D	PK96TA	EQUIPMENT GROUND BAR, 9-POINT
M 1	PANDUIT	LAMA2-14-QY	GROUND LUG, DUAL-RATED, #2-14 AWG

CLIENT: CRU STANDARD LIFT STATION DRAWINGS
 PROJECT: CRU STANDARD LIFT STATION DRAWINGS
 SHEET TITLE: POWER DISTRIBUTION PANEL DETAILS
 SHEET NO.: E-14
 DESIGNED BY: [blank]
 DRAWN BY: [blank]
 CHECKED BY: [blank]
 COMPUTER FILE: [blank]
 DATE: FEB 2023
 GAINESVILLE REGIONAL UTILITIES
 CRU
 WATER & WASTEWATER ENGINEERING
 REVISIONS: [blank]
 DATE: 07/2023
 SEAL
 APPROVED BY: [blank]
 DATE: [blank]
 PLOT BY: [blank]

RTU CABINET MATERIALS

QTY	MANUFACTURER	NUMBER	DESCRIPTION	IDENTITY
1	TDM		NEMA 4X 316SS ENCLOSURE 48"H x 36"W x 12"D	
1	TDM		42"H x 30"W BACK SUBPLATE	
1	TDM		42"H x 34"W SWING DOOR	
1	ILSCO	D-167-14	14 PT. GROUND BAR	
A/R	PANDUIT	D1.5X4LG6	1.5" GREY ROUND HOLE WIRE DUCT	
A/R	PANDUIT	1.5" COVER	GREY 1.5" COVER	
1	ALLEN BRADLEY	1489-M1C150	15AMP, 1-POLE CIRCUIT BREAKER	402CB
1	ALLEN BRADLEY	1489-M1C100	10AMP, 1-POLE CIRCUIT BREAKER	452CB
1	ALLEN BRADLEY	1489-M1C050	5AMP, 1-POLE CIRCUIT BREAKER	409CB
1	ALLEN BRADLEY	1489-M1C010	1AMP, 1-POLE CIRCUIT BREAKER	404CB
2	BUSSMANN	GMA-250R	250mA FUSE	1010,1014FU
1	BUSSMANN	GMA-1-R	1A FUSE	461FU
3	BUSSMANN	GMA-5-R	5A FUSE	407,459,460FU
1	OMRON	MY4-IN110/120AC	4-POLE RELAY (CONTACT RATING - 5 AMPS)	405CR
1	OMRON	PYF14A-E	SMALL STYLE 4-POLE WIRING BASE	405CR
2	WAGO	248-501	TERMINAL STRIP MARKER CARD, 10MARKING POINTS PER STRIP, 100 STRIP CARD	
101	WAGO	2002-1201	TERMINAL BLOCK, PUSH IN CAGE CLAMP	
2	WAGO	2002-1207	GROUND TERMINAL, PUSH IN CAGE CLAMP, GREEN/YELLOW	
3	WAGO	2002-1292	TERMINAL END PLATE, ORANGE	
16	WAGO	2002-0402	2-POLE TERMINAL BRIDGE JUMPER	
4	WAGO	249-116	TERMINAL STRIP END BARRIER	
5	WAGO	2002-1611/1000-541	24V FUSE TERMINAL BLOCK W/BLOWN FUSE INDICATOR	459,460,461,1010,1014FU
1	WAGO	2002-1611/1000-867	120V FUSE TERMINAL BLOCK W/BLOWN FUSE INDICATOR	407FU
1	WAGO	787-1675	UPS CHARGER & CONTROLLER	452UPS
1	WAGO	787-872	UPS BATTERY MODULE	454BATT
1	WAGO	51018351	DUPLEX GFCI RECEPTACLE, 15AMP, DIN RAIL MOUNTED	409RECP
1	CHERRY	E69-00A	DOOR SWITCH	404SW
1	COMMERCIAL ELECTRIC	54260141	LED SELF CONTAINED LIGHT FIXTURE	404LT
1	CITEL	DS42-120/G	120VAC SURGE SUPPRESSOR	401TVSS
2	PHOENIX CONTACT	1757239	24 PIN PRINTED CIRCUIT BOARD MALE CONNECTOR (MSTB2,5/24-ST-5,08)	CONNECTOR #1 & #2
1	PHOENIX CONTACT	1788868	16 PIN DIN RAIL PRINTED CIRCUIT BOARD FEMALE CONNECTOR (MSTBVK 2,5/16-G-5,08)	CONNECTOR #3
1	SEL	200-2004	SURGE PROTECTOR	815RD
1	SEL	3061	CELLULAR ROUTER	
1	SEL	235-0003	LOW PROFILE CELLULAR ANTENNA	
1	RF INDUSTRIES	RFW-3401-60	5' LMR195 JUMPER N MALE - TNC RIGHT ANGLE MALE	815RD
1	IWC	IWC5910-08	3FT - CAT 6E - GRAY BOOTED & SNAGLESS	
1	SEL	2411P	PUMP AUTOMATION CONTROLLER	





TOP VIEW

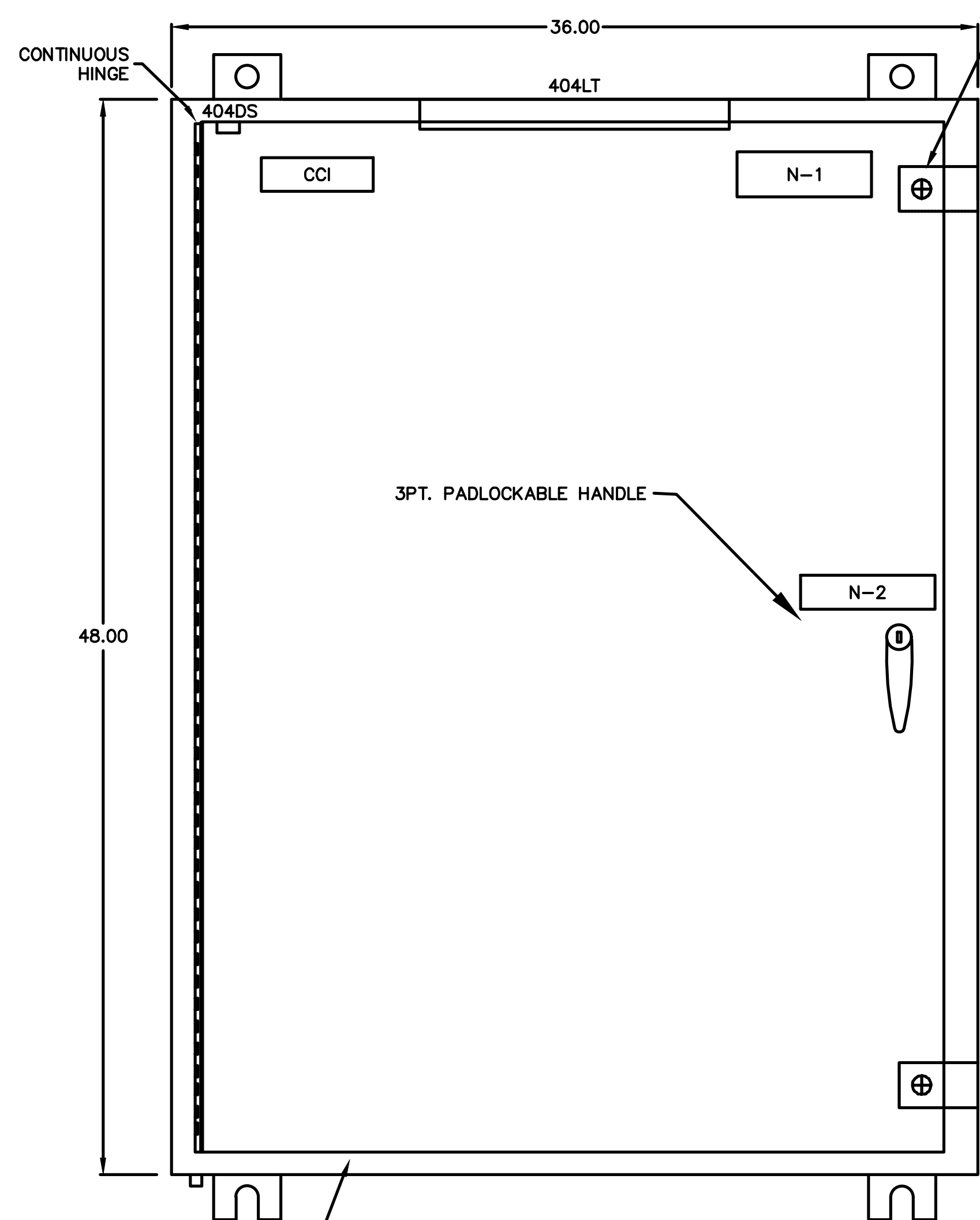
PROVIDE UNISTRUT TO MOUNT LIGHT FIXTURE (LIGHT NOT SHOWN IN TOP VIEW FOR CLARITY - SEE SIDE VIEW FOR MOUNTING DEPTH)

N-1
LIFT STATION RTU CONTROL PANEL
EQUIPMENT SUPPLIER: XXXXXXXXXXXXXXXXXXXX
EQUIPMENT SERIAL NUMBER: XXXXXXXXXXXXXXXXXXXX
EQUIPMENT DRAWING NUMBER: XXXXXXXXXXXXXXXXXXXX
SUPPLY: 120 VOLTS, 1 PHASE, 60HZ
FULL LOAD CURRENT: 2.5 AMPS
MAIN CIRCUIT BREAKER RATING: 15 AMPS
SHORT CIRCUIT BREAKER RATING: 10KA
TYPE: NEMA 4X
NOTE: PANEL SUPPLIER TO FILL IN SUPPLIER, SERIAL NUMBER, AND DRAWING NUMBER INFORMATION
2"H X 6"W
WHITE BACKBOARD WITH BLACK LETTERS

NAMEPLATE LEGEND

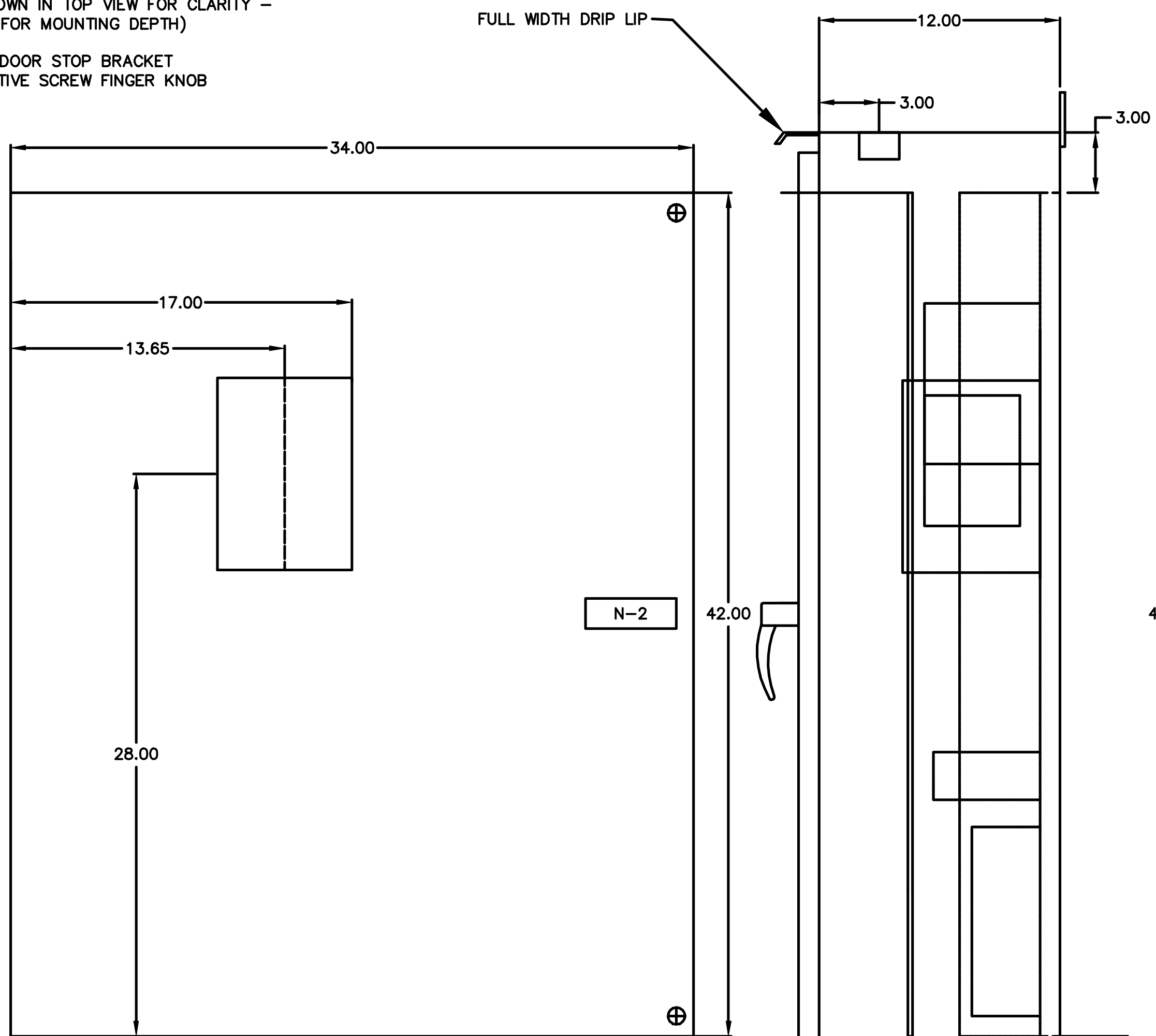
QTY	NUMBER	DESCRIPTION	TAG SIZE	TAG ID
1	N-1	SEE DESCRIPTION	2"H X 6"W	PANEL
1	N-2	SEE DESCRIPTION	1.5"H X 6"W	PANEL

N-2
WARNING
YELLOW WIRING IS NOT DE-ENERGIZED BY MAIN CIRCUIT BREAKER
1.5"H X 6"W
YELLOW BACKGROUND WITH BLACK LETTERS



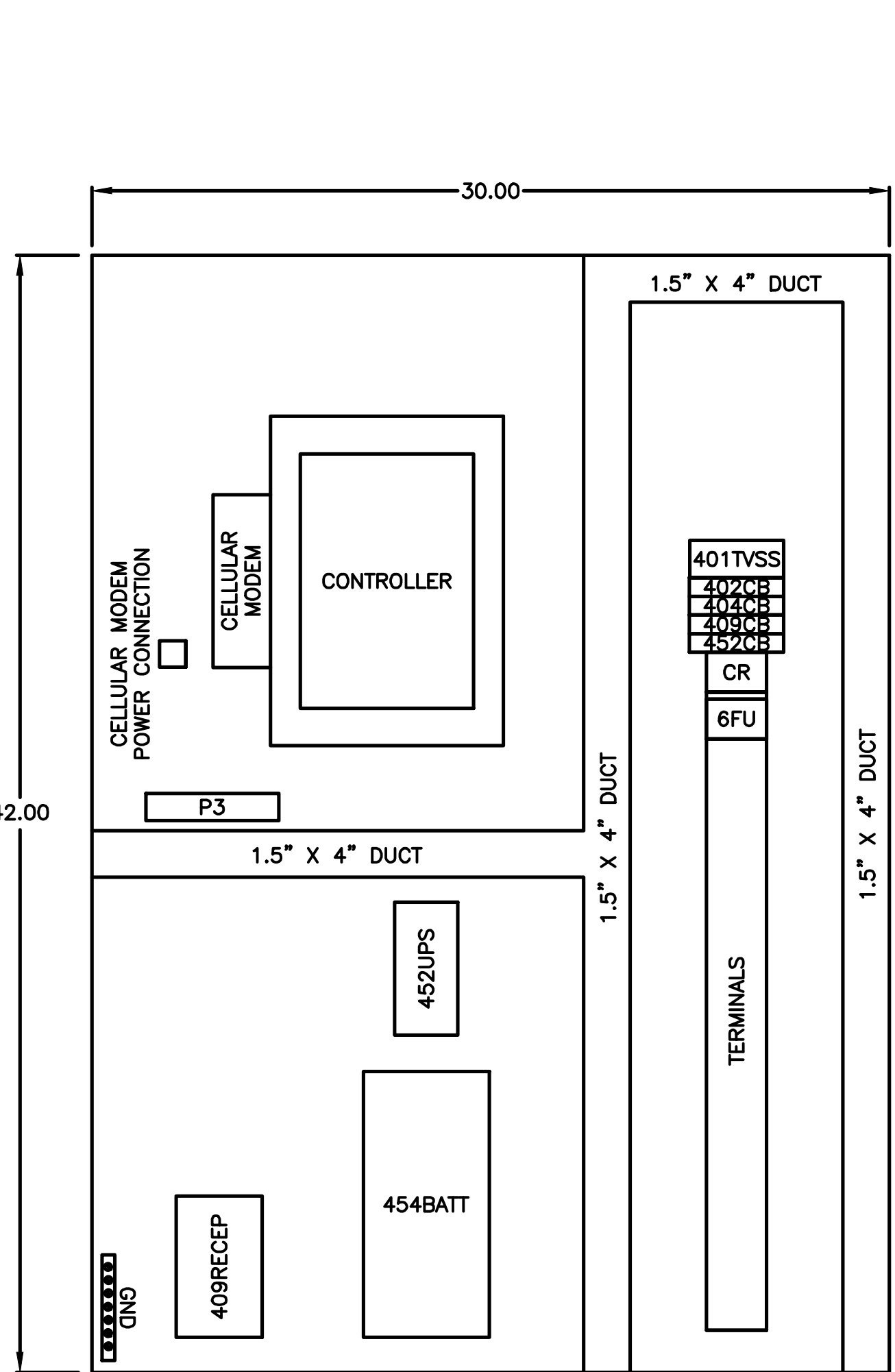
DOOR STOP KIT
HOFFMAN: ADSTOPKSS6

ENCLOSURE
NEMA 4X 316SS - BRUSHED FINISH
SIZE: 48"H X 36"W X 12"D
UL APPROVED



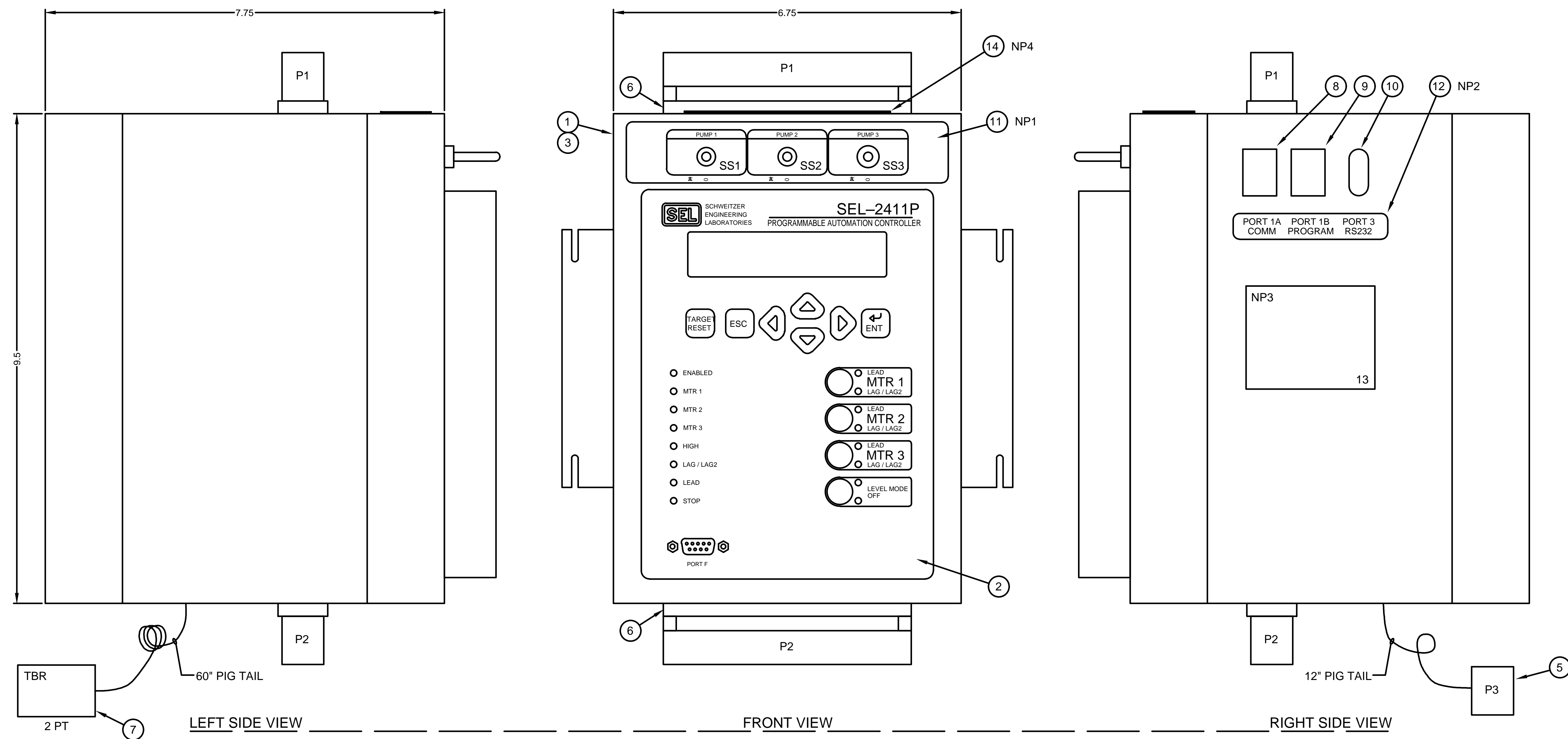
SWING DOOR
SIZE: 42"H X 34"W
PAINT: GLOSS WHITE

SIDE VIEW

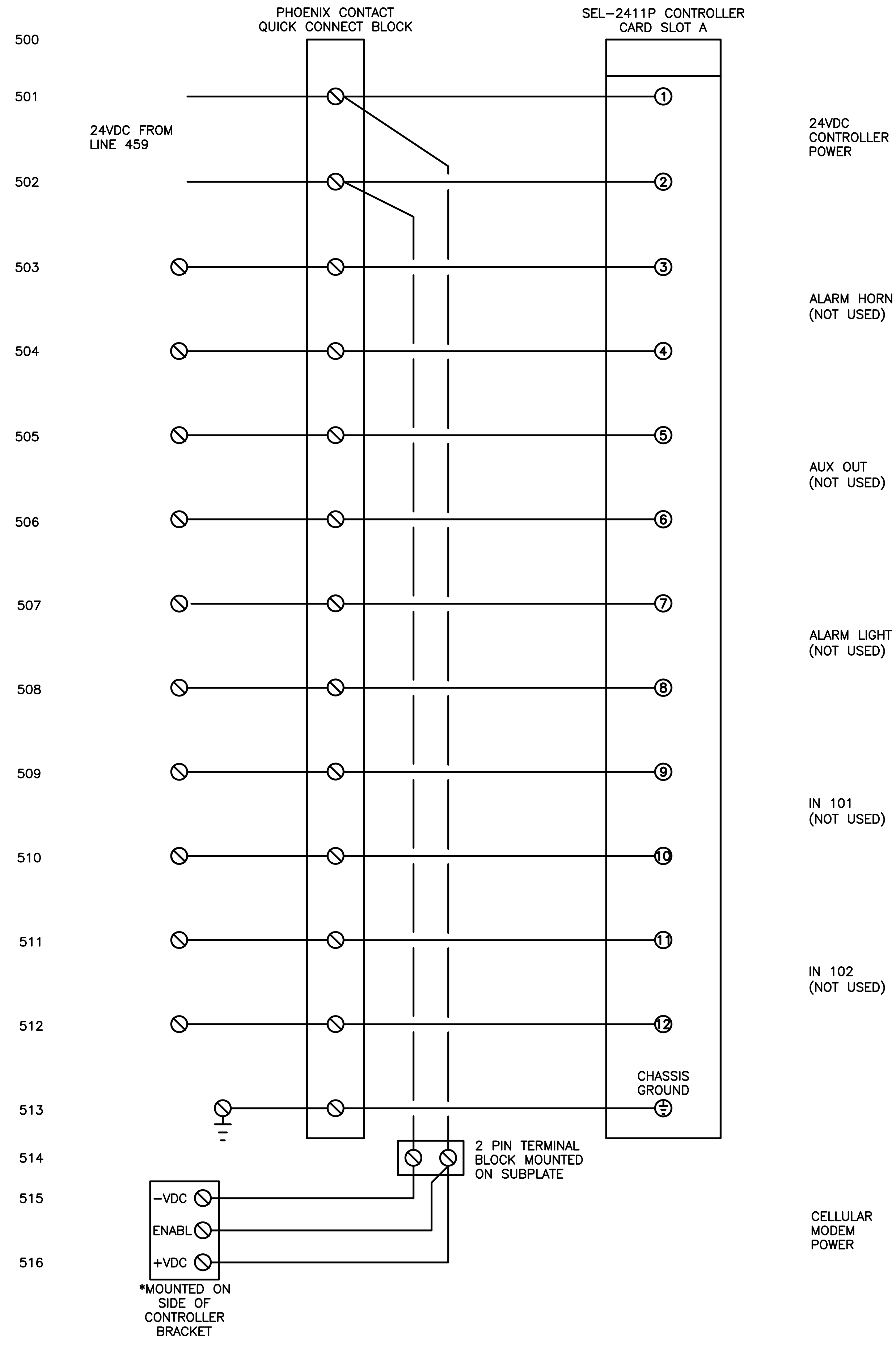


SUBPLATE
SIZE: 42"H X 30"W
PAINT: GLOSS WHITE

ANTENNA CABLE PENETRATION LOCATION



ITEM	SYMBOL	QTY	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	ITEM	SYMBOL	QTY	MANUFACTURER	CATALOG NUMBER	DESCRIPTION
1	FR	1	ELECTRIC MACHINE CONTROL, INC.	1149-ASSEMBLY-ALUM	FRAME FOR SEL CONTROLLER, ALUMINUM, UNPAINTED	8	CA502	1	ELECTRIC MACHINE CONTROL, INC.	ETHERNETCABBLK	ETHERNET CABLE ASSEMBLY WITH PLUG AND RECEPTACLE, BLACK
2	PAC	1	SEL	2411P2ADBBADB6X063120	PROGRAMMABLE AUTOMATION CONTROLLER, 24VDC, 34DI, 7DO, 4AI, 4A	9	CA504	1	ELECTRIC MACHINE CONTROL, INC.	ETHERNETCABWHT	ETHERNET CABLE ASSEMBLY WITH PLUG AND RECEPTACLE, WHITE
3	WH	1	ELECTRIC MACHINE CONTROL, INC.	WH103	WIRING HARNESS FOR SEL CONTROLLER, WITH SWITCHES AND CONNECTOR	10	CA510	1	ELECTRIC MACHINE CONTROL, INC.	RIBBONCABLE	RIBBON CABLE ASSEMBLY WITH D-SHELL CONNECTORS.
4	SD	1	ELECTRIC MACHINE CONTROL, INC.	SD103	SCHEMATIC DIAGRAM FOR WIRING HARNESS FOR SEL CONTROLLER	11	NP1	1	ELECTRIC MACHINE CONTROL, INC.	HOA BLACK/WHIT	ADHESIVE STICKER FOR H-O-A SWITCH
5	P3	1	PHOENIX	1757158	CONNECTOR, MSTB 2,5/24-ST-5,08, 300 V, 12A, 16 POSITION	12	NP2	1	ELECTRIC MACHINE CONTROL, INC.	BLACK/WHITE COMM PORT	ADHESIVE STICKER FOR COMMUNICATION PORTS.
6	P1, P2	1			DIN RAIL, NS 15, ALUMINUM, LENGTH PER OUTLINE DRAWING.	13	NP3	1	ELECTRIC MACHINE CONTROL, INC.		ADHESIVE "TESTED" LABEL
7	RTB	1	EUROSTRIPS	TS2.5/10WP-40.21	TERMINAL STRIP, 300 V, 30 A, BOX LUGS, #18-#12 AWG, 2 POINT	14	NP4	2	ELECTRIC MACHINE CONTROL, INC.		ADHESIVE STICKER FOR EMC SEL MODEL NUMBER AND SERIAL NUMBER



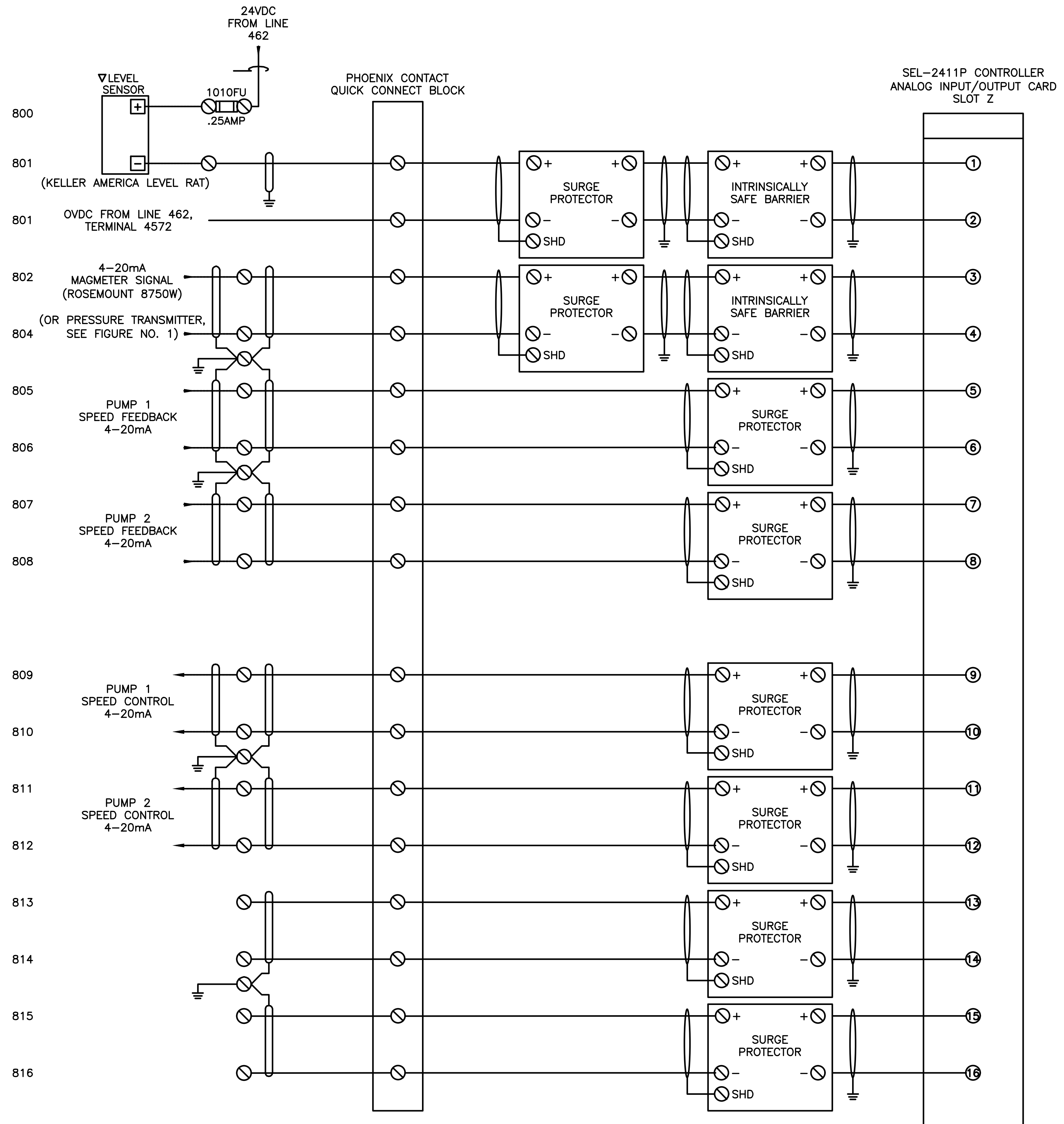
*MOUNTED ON SIDE OF CONTROLLER BRACKET

* MODEM TO BE PURCHASED THEN MOUNTED ACCORDINGLY ON CONTROLLER BRACKET PRE-WIRED FOR INSTALLATION.

DATE	APPROVED BY:	PAGE 15
02/2023	SEAL	1-5
REVISIONS	PROJECT:	CRU STANDARD LIFT STATION DRAWINGS
UPDATED STANDARD LIFT STATION UTILITY PLAN	DESIGNED BY:	CRU STANDARD LIFT STATION DRAWINGS
	DRAWN BY:	CRU STANDARD LIFT STATION DRAWINGS
	CHECKED BY:	CRU STANDARD LIFT STATION DRAWINGS
	DATE:	FEB 2023
	COMPUTER FILE:	
	DATE:	FEB 2023
	PROJECT:	CRU STANDARD LIFT STATION DRAWINGS
	SHEET TITLE:	WIRING DIAGRAM 1
	CLIENT:	CRU
	JOB NO.:	
	SHEET NO.:	1-5

GAINESVILLE REGIONAL UTILITIES
CRU
 WATER & WASTEWATER ENGINEERING

NOTE: SCALE 1" = 1'-0" UNLESS OTHERWISE NOTED.
 IF NOT ONE INCH ON SCALE, RECORD AS SUCH.



LEVEL SENSOR
ANALOG INPUT
RANGE:

FLOW METER
ANALOG INPUT
RANGE:

PUMP 1
SPEED FEEDBACK
ANALOG INPUT
RANGE: 0-100%

PUMP 2
SPEED FEEDBACK
ANALOG INPUT
RANGE: 0-100%

PUMP 1
SPEED CONTROL
ANALOG OUTPUT
RANGE: 0-100%

PUMP 2
SPEED CONTROL
ANALOG OUTPUT
RANGE: 0-100%

SPARE
ANALOG OUTPUT

SPARE
ANALOG OUTPUT

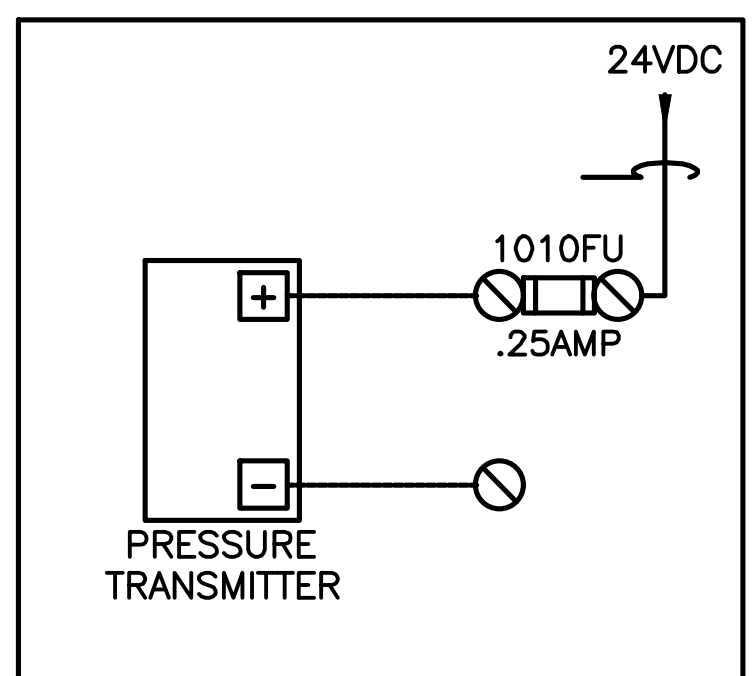


FIGURE NO. 1
(NOTE 1)

NOTES:

1. IN SELECT LOCATIONS, THE FLOW METER INPUT MAY BE REPLACED BY A LOOP-POWERED PRESSURE TRANSDUCER INPUT. SEE MD-2, WATER TEST STATION DETAIL.