

STILLWATER KINZIE SUBSTATION 138/69kV

STATION ADDRESS: 301 S SANGRE RD, STILLWATER OK 74074

GPS: LAT. = 36.120°, LONG. = -97.104°

Drawing #	Revision	Date	Drawing Title
S351DZ01	3	8/24/2023	DRAWING INDEX
S351DM01	0	5/9/2023	MATERIAL LIST 2023 CONSTRUCTION
S351DT01	0	5/9/2023	CABLE SCHEDULE 2023 CONSTRUCTION
S351PE01	5	8/24/2023	ELECTRICAL PLAN
S351PE04	0	5/9/2023	SECTION G-G & H-H
S351PE05	0	5/9/2023	BUS ASSEMBLY DETAILS
S351PG10	2	8/24/2023	CONDUIT LAYOUT
S351PG11	0	5/9/2023	CONDUIT DETAILS
S351PG20	3	8/24/2023	GROUNDING LAYOUT
S351PG21	0	5/9/2023	GROUNDING DETAILS
S351PG22	0	5/9/2023	GROUNDING DETAILS
S351PG30	5	8/24/2023	FOUNDATION LAYOUT
S351PG33	2	8/24/2023	FOUNDATION DETAILS - SLAB FOUNDATIONS - 69kV CAP BANK AND BREAKER
S351PG34	1	8/24/2023	FOUNDATION DETAILS 'D' - 69kV SWITCH STAND
S351PG35	1	8/24/2023	FOUNDATION DETAILS 'C' - 69kV REACTOR SUPPORT
S351PG36	1	8/24/2023	FOUNDATION DETAILS 'A' - 69kV RPD SUPPORT
S351VS01	0	8/11/2023	69kV 3Ø REACTOR SUPPORT, STRUCTURE (GS-201)
S351VS02	0	8/11/2023	69kV 1Ø SWITCH STAND, STRUCTURE (GS-210)
S351VS03	0	8/11/2023	69kV 1Ø RPD SUPPORT, STRUCTURE (GS-211)
S351PH01	2	5/9/2023	CONTROL HOUSE LAYOUT
S351PP001	1	5/9/2023	STEEL DETAILS & ELEVATIONS FOR PANELS 103 & 104
S351PP002	0	5/9/2023	PANEL #104 BOM & NAMEPLATES
S351PP105	0	5/9/2023	PNL #105 ELEVATION 138kV FDR 6 & BKR 670
S351SB10870	3	8/24/2023	BKR 10870 DC SCHEMATIC
S351SB670	3	8/24/2023	BKR 670 DC SCHEMATIC
S351SB81	1	8/24/2023	DC SCHEMATIC 69kV BKR 81 PNL #104 TRIP, CLOSE & MOTOR CIRCUITS
S351SB82	1	8/24/2023	DC SCHEMATIC 69kV BKR 81 PNL #104 HEATER CIRCUIT & ALARMS
S351SD001	1	8/24/2023	CAP BANK SEL 487V PRI. PROTECTION PNL #104
S351SD002	1	8/24/2023	DC SCHEMATIC BKR FAIL RELAY (50BF/50A/51A-351S) 69kV BKR 81 PNL #104
S351SF061	1	8/24/2023	DC SCHEMATIC PRIMARY RELAY (87L/21P/67P-311L) 138kV FDR 6 PNL #105
S351SF062	1	8/24/2023	DC SCHEMATIC BKR FAIL RELAY (50BF/25/79-351S) 138kV BKR 670 PNL #105
S351SF063	1	8/24/2023	DC SCHEMATIC ALTERNATE RELAY (21A/67A-311C) 138kV FDR 6 PNL #105
S351SF064	1	8/24/2023	DC SCHEMATIC CARRIER (UPLC2) PNL #105 FDR 6
S351SO01	11	8/24/2023	ONE LINE DIAGRAM
S351SO12	10	8/24/2023	THREE LINE AC CURRENT SCHEMATIC
S351SO13	9	8/24/2023	THREE LINE AC POTENTIAL SCHEMATIC
S351SO15	5	8/24/2023	ONE-LINE DIAGRAM METERING & RELAYING 138kV AND CITY AUTOTRANSFORMER
S351SO17	1	8/24/2023	ONE-LINE DIAGRAM METERING & RELAYING CAP BANK AND CITY 69kV
S351SO17-TEMP	1	8/24/2023	ONE-LINE DIAGRAM METERING & RELAYING CAP BANK AND CITY 69kV (TEMP)
S351SO18	1	8/24/2023	THREE-LINE DIAGRAM GRDA 69kV CAPACITOR BANK
S351SR01	7	8/24/2023	ANNUNCIATOR NAMEPLATE
S351SR01-1	5	8/24/2023	ANNUNCIATOR SCHEMATIC (SHEET 1) PNL 101
S351SR01-2	1	8/24/2023	ANNUNCIATOR SCHEMATIC (SHEET 2) PNL 101
S351WB81	1	8/24/2023	WIRING DIAGRAM 69kV CIRCUIT BREAKER 81
S351WP101	2	8/24/2023	TERMINAL BLOCK WIRING DIAGRAM PANEL 101
S351WP101-2	2	8/24/2023	WIRING DIAGRAM PANEL 101
S351WP103	2	8/24/2023	WIRING DIAGRAM PANEL 103 CB 10870
S351WP104	2	8/24/2023	WIRING DIAGRAM PANEL 104 - 69kV CAPACITOR BANK & 138kV BUS DIFFERENTIAL
S351WP104-2	1	8/24/2023	RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 2 OF 3)
S351WP104-3	1	8/24/2023	RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 3 OF 3)
S351WP105-1	1	8/24/2023	WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SHEET 1 OF 2)
S351WP105-2	1	8/24/2023	WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SHEET 2 OF 2)
S351WZ02	4	8/24/2023	CONTROL BUILDING AC/DC PANEL
S351WZ03	1	8/24/2023	WIRING DIAGRAM RPD TERMINAL BOX AND DEMARCATON CABINET

Drawing #	Revision	Date	Drawing Title
S351PP001-DEMO	0	5/9/2023	STEEL DETAILS & ELEVATIONS FOR PANELS 103 & 104 (DEMO)
S351SB10870-DEMO	0	5/9/2023	BKR 10870 DC SCHEMATIC DEMOLITION
S351SB670-DEMO	0	5/9/2023	BKR 670 DC SCHEMATIC DEMOLITION
S351SO12-DEMO	0	5/9/2023	THREE LINE AC CURRENT SCHEMATIC DEMOLITION
S351SO13-DEMO	0	5/9/2023	THREE LINE AC POTENTIAL SCHEMATIC DEMOLITION
S351SR01-1-DEMO	0	5/9/2023	ANNUNCIATOR SCHEMATIC PNL 101 DEMOLITION
S351SR01-DEMO	0	5/9/2023	ANNUNCIATOR NAMEPLATE DEMOLITION
S351WP101-2-DEMO	0	5/9/2023	WIRING DIAGRAM PANEL 101 DEMOLITION
S351WP101-DEMO	0	5/9/2023	TERMINAL BLOCK WIRING DIAGRAM PANEL 101 DEMOLITION
S351WP103-DEMO	0	5/9/2023	WIRING DIAGRAM PANEL 103 CB 10870 DEMOLITION
S351WP104-DEMO	0	5/9/2023	WIRING SCHEMATIC PANEL 104 - CB 670 DEMOLITION



4555 W Memorial Rd.
Oklahoma City, OK 73142

ISSUED FOR BID

GRAND RIVER DAM AUTHORITY
STILLWATER KINZIE INTERCONNECT S351
STILLWATER, OKLAHOMA 138/69kV

DRAWING INDEX

DESCRIPTION: ISSUED FOR BID	3	RF022-01145	8/24/2023	NC	BE	CP	NC
DESCRIPTION: ISSUE FOR REVIEW	2	RF022-01145	8/14/2023	CP	BE	JS	-
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION	1	RF022-01145	5/9/23	NC	BE	LA	NC
ENGINEER: NC	SCALE: NONE	DATE: 08/22/22	REV.				
DRAWN BY: RE	DRAWING NO.	SHEET 1 OF 1	3				
CHECKED BY: LA	S351DZ01						
APPROVED BY: NC	OLD DRAWING NO.:						



P.O. BOX 669
CHOUTEAU, OK 74337

Project Name -		Stillwater Kinzie 2023 Construction	Work Order # -	RF022-01145	
ITEM	AMOUNT/QTY	DESCRIPTION	MANUFACTURER	Catalog #	GRDA Stock Number
BOLTS					
NB-2D	104	BOLT-SS. 1/2" X 2.5", ASSEMBLY WITH BELLVILLE WASHER, FLAT WASHER, LOCK WASHER, AND SILICONE BRONZE NUT	Marsh	IF# 1010502503	33-316-5
NB-2H	3	BOLT-SS. 1/2" X 1", ASSEMBLY WITH BELLVILLE WASHER, FLAT WASHER, LOCK WASHER, AND SILICONE BRONZE NUT			
BUS MATERIAL					
B-3A	3	STATION POST INSULATOR, STANDARD STRENGTH, 69kV, 350KV BIL, 3" BOLT CIRCLE (TOP AND BOTOM). TR 216		LOCKE: PS03510	26-26
B-5A	175	336.4 ACSR, 26/7 STRANDING. 510 AMPS. LINNET		LINNET	46-73-2
B-34A	1	ENCLOSURE, METAL, ELECTRICAL. NEMA, WATER TIGHT, HINDGED DOOR WITH LATCHES. WITH STEEL PANEL. 20" H X 20" W X 10" D		Hoffman: A202010LP	31-1043 & 31-1043-1
B-34B	1	ENCLOSURE, FIBERGLASS, ELECTRICAL. NEMA, WATER TIGHT, HINDGED DOOR WITH LATCHES. WITH STEEL PANEL. 24" H X 24" W X 8" D		Hoffman: A24H2408ALLP	31-1071 & 31-1071-1
B-51J	25	TERMINAL, ALUMINUM SWAGE COMPRESSION, 4-HOLE 4" NEMA PAD, (LINNET - 336.4 ACSR, 26/7 STR), STRAIGHT		DMC# CPLK9442D03975S	-
B-53J	1	TERMINAL, ALUMINUM SWAGE COMPRESSION, 4-HOLE 4" NEMA PAD, (LINNET - 336.4 ACSR, 26/7 STR), 90 DEG		DMC# CPLK9449D03975S	-
CONTROL CABLE					
C-1	2500	4/C #10 AWG, STRANDED Cu COND., 600V PVC INSUL. 90° C, K1 COLOR CODE, 19 STRAND, UNSHIELDED			046-0356-000-000
C-2	1500	12/C #10 AWG, STRANDED Cu COND., 600V PVC INSUL. 90° C, K1 COLOR CODE, 19 STRAND, UNSHIELDED			046-0046-000-000
DISCONNECT SWITCHES					
DS-16E	1	VERTICAL BREAK SWITCH, STAND MOUNTED FOR LOW BUS, 69kV, 1200A, 6' PH-PH SWING HANDLE.			-
POWER CIRCUIT BREAKER					
CB-3	1	BREAKER: 69KV, 1200A, 31.5KVA INTERRUPTING RATING. 125VDC OPERATED. TWELVE 1200:5, C-800 CURRENT TRANSFORMERS			042-1383-XXX-000
STRUCTURES & STEEL ACCESSORIES					
GS-201	1	STEEL THREE PHASE, LOW BUS STAND (13FT), W/ ANCHOR BOLTS, NUTS, WASHERS & TEMPLATES			-
GS-210	1	STEEL THREE PHASE, VERTICAL BREAK SWITCH STAND, 69kV 13'-0" BUS HEIGHT, LOW BUS, W/ ANCHOR BOLTS, NUTS, WASHERS & MOUNTING PLATES			-
GS-211	1	STEEL SINGLE PHASE, RPD STRUCTURE, 69kV 8'-6", W/ ANCHOR BOLTS, NUTS, WASHERS & TEMPLATES			-
CAPACITOR BANK					
CP-1	1	CAPACITOR BANK, 69kV, 7.2MVAR, WITH STAND, BUS, INSULATORS, BOLTS, AND FUSES (EXISTING BANK TO BE RELOCATED)	ABB		-
TS-1	3	TRANSIENT SWITCHING REACTOR, 69kV, 550 uH			-
DS-28	36	S&C FUSE LINK 10K	S&C	265010R1	-
TRANSFORMERS					
RPD-1	1	TRANSFORMER: RESISTIVE POTENTIAL DEVICE: 34.5KV, 200KVBIL. 60 HZ. 120 VAC (CAPACITOR BANK NEUTRAL POTENTIAL)			-
GROUNDING					
GD-1	350	4/0 COPPER WIRE, BARE, 19 STRAND, SOFT-DRAWN.		PRIORITY WIRE P16R1	46-87-6
GD-2D	70	4/0 COPPER, SOFT DRAWN, BARE, 7 STRAND. COPPERWELD.			46-87-6
GD-2E	15	#2 AWG WIRE, SOFT DRAWN, BARE, 4 STRAND, COPPERWELD			
GD-6A	5	GROUND ROD, COPPER CLAD STEEL, 3/4" X 10'		Joslyn #J9170	30-291-6
GD-11	4	GROUND CLAMP, BRONZE, TWO CABLES TO FLAT #4 SOL-300 MCM STRANDED COPPER		A# GC-143A-02-1/2	48-335-2
GD-14	7	GROUND CLAMP, BRONZE, SINGLE CABLE TO FLAT #4 SOL-300 MCM STRANDED COPPER		A# GC-141A-02-1/2	48-713
GD-19	1	PLATFORM: GROUNDING, SWITCH OPERATOR, HEAVY DUTY GALVANIZED STEEL, SIZE: 49" X 33"			42-105-10
GD-30	19	SPLIT CONNECTOR, SWAGE COMPRESSION #4/0 TO #4/0 CU		DMC# GC888B004-004	
GD-30B	4	SPLIT CONNECTOR, SWAGE COMPRESSION #4/0 TO #2 CU		DMC# GC721B02G-004	
GD-31	5	ELBOW CONNECTOR, SWAGE COMPRESSION #4/0 CU TO 3/4" ROD		DMC# GC739B004-682	



4555 W Memorial Rd.
Oklahoma City, OK 73142



DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION						
0	RF022-01145	5/9/23	NC	BE	LA	NC
REV	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPROVD

ISSUED FOR CONSTRUCTION

GRAND RIVER DAM AUTHORITY
STILLWATER KINZIE INTERCONNECT S351
STILLWATER, OKLAHOMA 138/69kV

MATERIAL LIST
2023 CONSTRUCTION



ENGINEER: NC	SCALE: NONE	DATE: 5/9/23	REV.
DRAWN BY: RE	DRAWING NO.	SHEET 1 OF 1	0
CHECKED BY: LA	S351DM01		
APPROVED BY: NC	OLD DRAWING NO.:		

P.O. BOX 669
SHUTEAU, OK 74337

STILLWATER KINZIE INTERCONNECT CABLE SCHEDULE (RF022-01145)

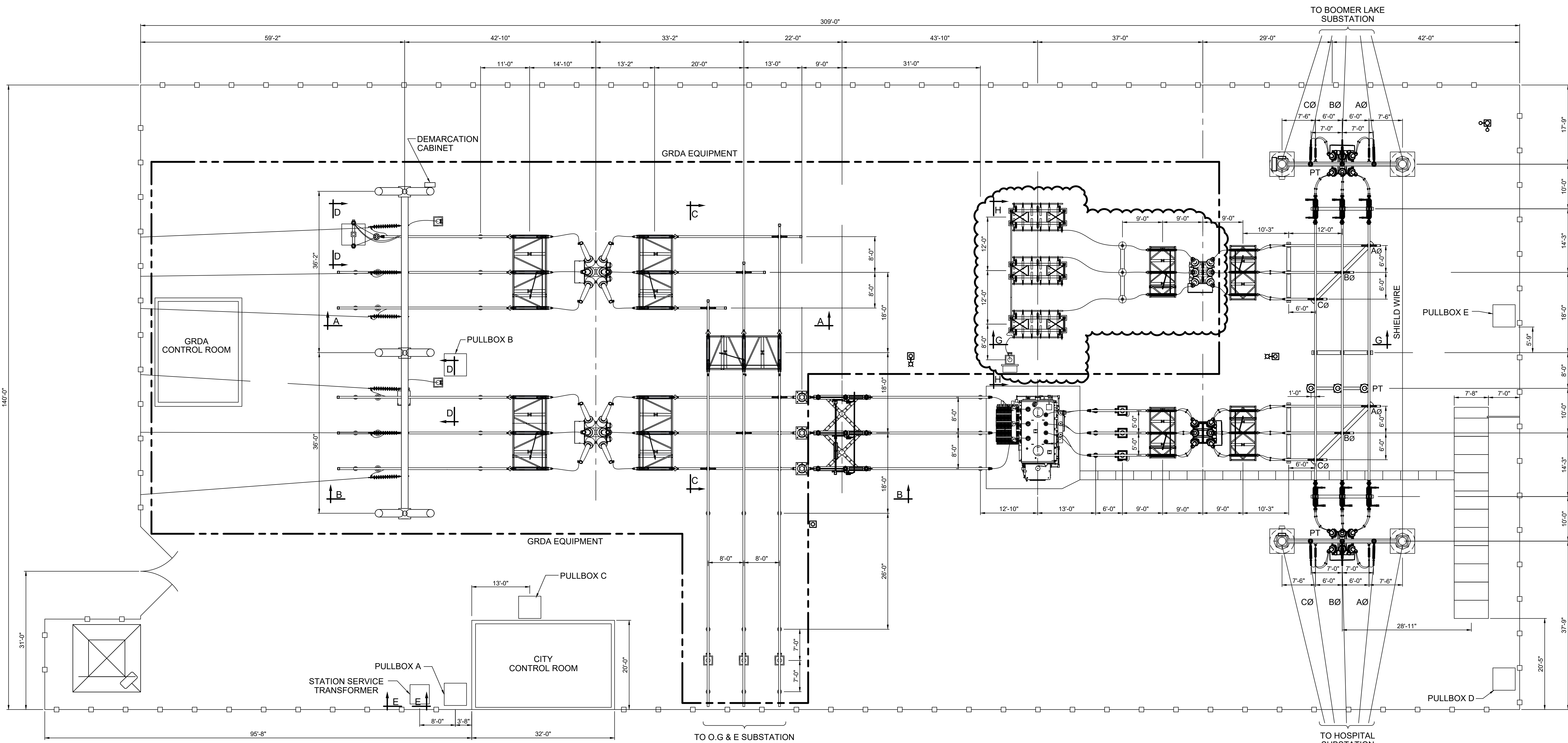
CABLE NO.	FROM	TO	NO. WIRES	SIZE	LENGTH	FUNCTION
BKR 670						
Y14-17	PNL 105 (MOVED FROM PNL 104)	BKR 670	12/C	#10		BREAKER CONTROL
Y14-18	PNL 105 (MOVED FROM PNL 104)	BKR 670	12/C	#10		BREAKER STATUS
Y14-20	PNL 105 (MOVED FROM PNL 104)	BKR 670	4/C	#10		FEEDER 6 ALTERNATE CT
Y14-21	PNL 105 (MOVED FROM PNL 104)	BKR 670	4/C	#10		FEEDER 6 PRIMARY CT
BKR 81						
Y23001	PNL 104	BKR 81	4/C	#10	337'	CAP BANK PRIMARY CT
Y23002	PNL 104	BKR 81	4/C	#10	337'	CAP BANK ALTERNATE CT
Y23003	DEMARICATION CABINET	BKR 81	4/C	#10	193'	69kV BUS PRIMARY CT
Y23004	DEMARICATION CABINET	BKR 81	4/C	#10	193'	69kV BUS ALTERNATE CT
Y23005	PNL 104	DEMARICATION CABINET	12/C	#10	145'	69kV BUS PT
Y23006	PNL 104	CAP BANK NEUTRAL RPD	4/C	#10	306'	CAP BANK NEUTRAL POTENTIAL
Y23007	PNL 104	BKR 81	12/C	#10	337'	BREAKER CONTROL
Y23008	PNL 104	BKR 81	12/C	#10	337'	BREAKER ALARMS
Y23009	DC PANEL	BKR 81	4/C	#10	340'	CLOSE & TC1 DC
Y23010	DC PANEL	BKR 81	4/C	#10	340'	TC2 & MOTOR DC
Y23011	AC PANEL	BKR 81	4/C	#10	346'	AC SUPPLY
PNL 105						
Y23101	PNL 103	PNL 105	12/C	#10	24'	BREAKER 670 FAILURE
Y23102	PNL 104	PNL 105	12/C	#10	21'	BREAKER 670 FAILURE
Y23103	PNL 101	PNL 105	12/C	#10	48'	ALARMS
Y23104	PNL 104	PNL 105	12/C	#10	21'	BREAKER 670 FAILURE
Y23105	DC PANEL	PNL 105	4/C	#10	52'	PRIMARY DC SOURCE
Y23106	DC PANEL	PNL 105	4/C	#10	52'	ALTERNATE DC SOURCE
Y23107	PNL 104	PNL 105	12/C	#10	21'	138kV BUS PT AND FDR 6 CCVT
PNL 104						
Y23201	PNL 101	PNL 104	12/C	#10	51'	ALARMS
Y23202	DEMARICATION CABINET	PNL 104	12/C	#10	145'	BREAKER 81 FAILURE
Y23203	DEMARICATION CABINET	PNL 104	12/C	#10	145'	BREAKER 81 FAILURE



4555 W MEMORIAL RD.
OKLAHOMA CITY, OK 73142



DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION								ISSUED FOR CONSTRUCTION			
0	RF022-01145	5/9/23	NC	BE	TM	NC		GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kV			
								CABLE SCHEDULE 2023 CONSTRUCTION			
								GRDA			
ENGINEER: NC		SCALE: NONE		DATE: 5/9/23		REV. 0					
DRAWN BY: BE		DRAWING NO. S351DT01		P.O. BOX 669 SHUTEAU, OK 74337		APPROVED BY: NC					
REV. NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPRVD					

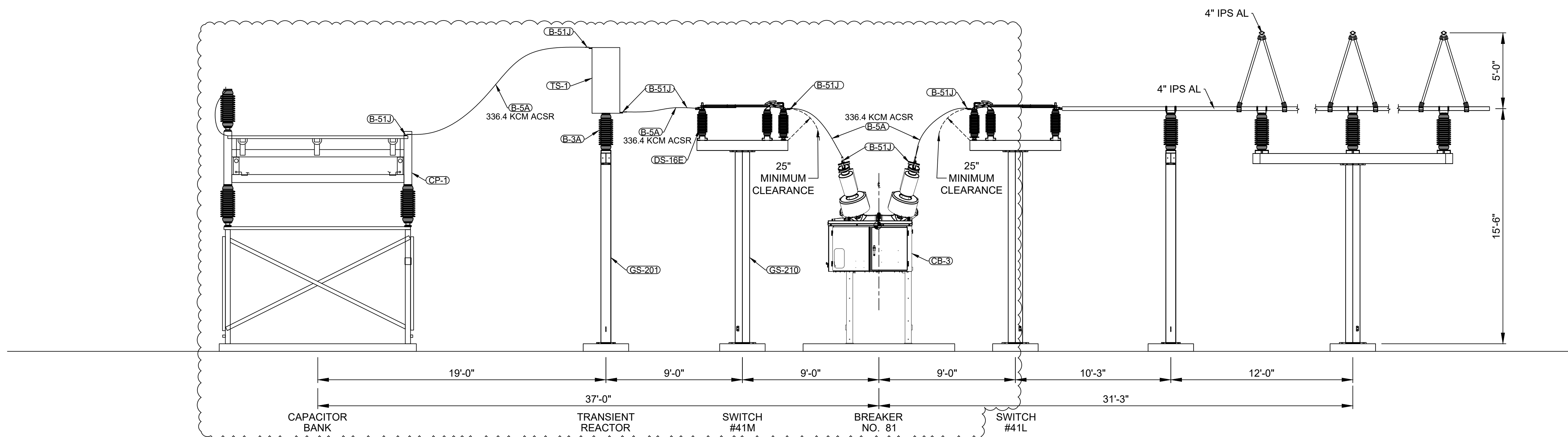


NOTES:
 1. 2024 CONSTRUCTION TO BE PERFORMED BY CITY OF STILLWATER

REFERENCE DRAWINGS:
 S351PE02 ELECTRICAL ELEVATIONS
 S351PE03 ELEVATION F-F
 S351PE04 ELEVATION G-G AND H-H

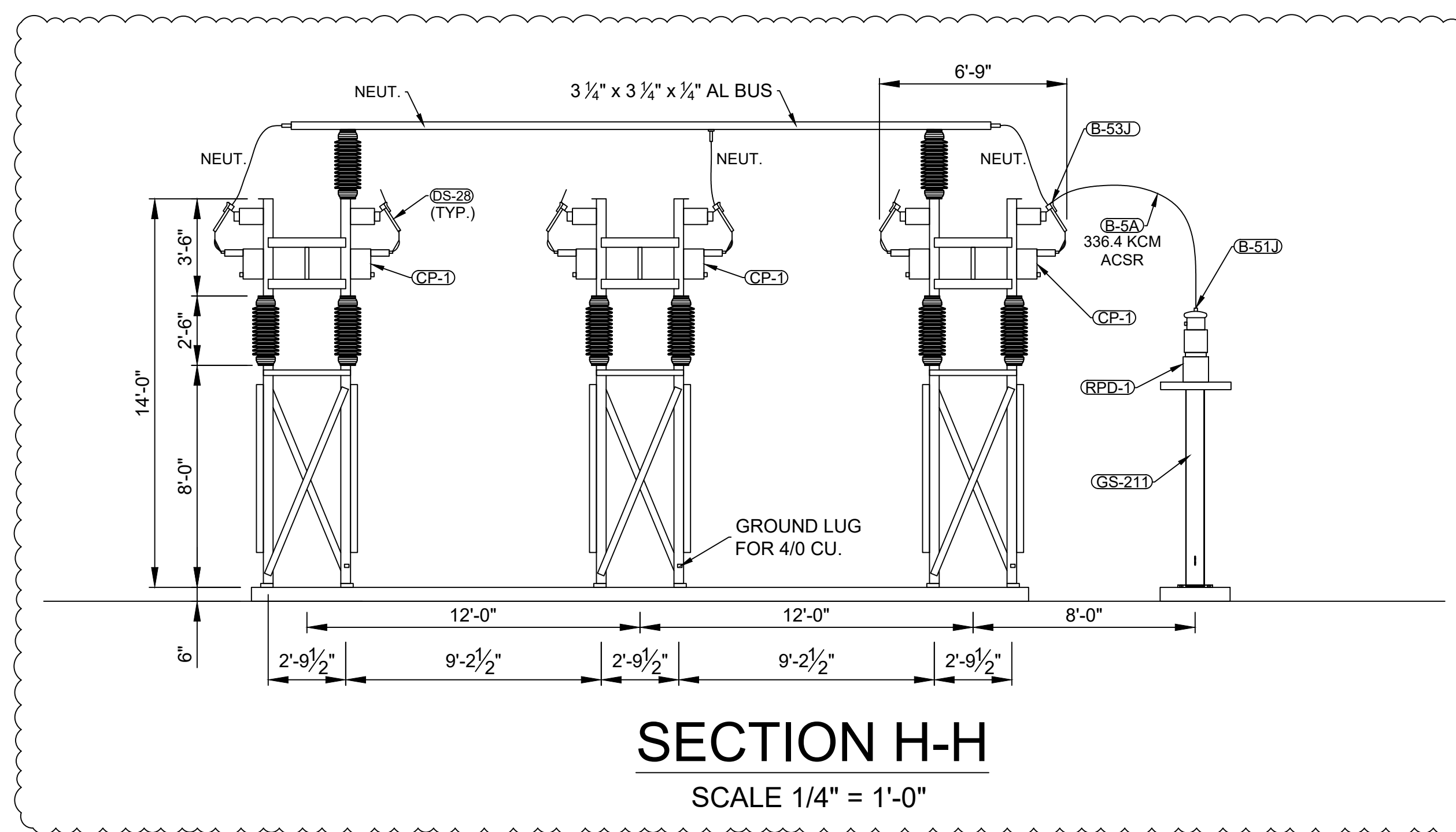


DESCRIPTION: ISSUED FOR BID		GRAND RIVER DAM AUTHORITY		STILLWATER KINZIE INTERCONNECT S351		STILLWATER, OKLAHOMA		138/69AV	
5	RF022-01145	8/24/2023	NC	BE	TM	NC			
DESCRIPTION: ISSUE FOR REVIEW									
4	RF022-01145	8/14/2023	CP	BE	JS	-			
DESCRIPTION: CAPACITOR BANK BREAKER ADDITION									
3	RF022-01145	5/5/2023	NC	BE	LA	NC			
DESCRIPTION: ASBUILT WAVE TRAP REPLACEMENT									
2	-	07OCT16	RM	TT	RM				
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPROVD			
									ENGINEER: NC DRAWN BY: RE CHECKED BY: LA APPROVED BY: NC
							SCALE: NONE DATE: 8/22/2022 SHEET 1 OF 1		REV. 5
							P.O. BOX 669 CHOUTEAU, OK 74337		S351PE01 OLD DRAWING NO.:



SECTION G-G

SCALE 1/4" = 1'-0"



SECTION H-H

SCALE 1/4" = 1'-0"

REFERENCE DRAWINGS:

- S351PE01 ELECTRICAL PLAN
- S351PE05 BUS ASSEMBLY DETAILS

ISSUED FOR CONSTRUCTION

GRAND RIVER DAM AUTHORITY
 STILLWATER KINZIE INTERCONNECT S351
 STILLWATER, OKLAHOMA 138/69kV

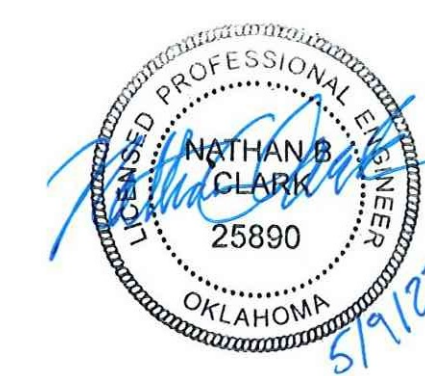
SECTION G-G & H-H

REV	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPRVD
0	RF022-01145	5/9/23	NC	BE	LA	NC

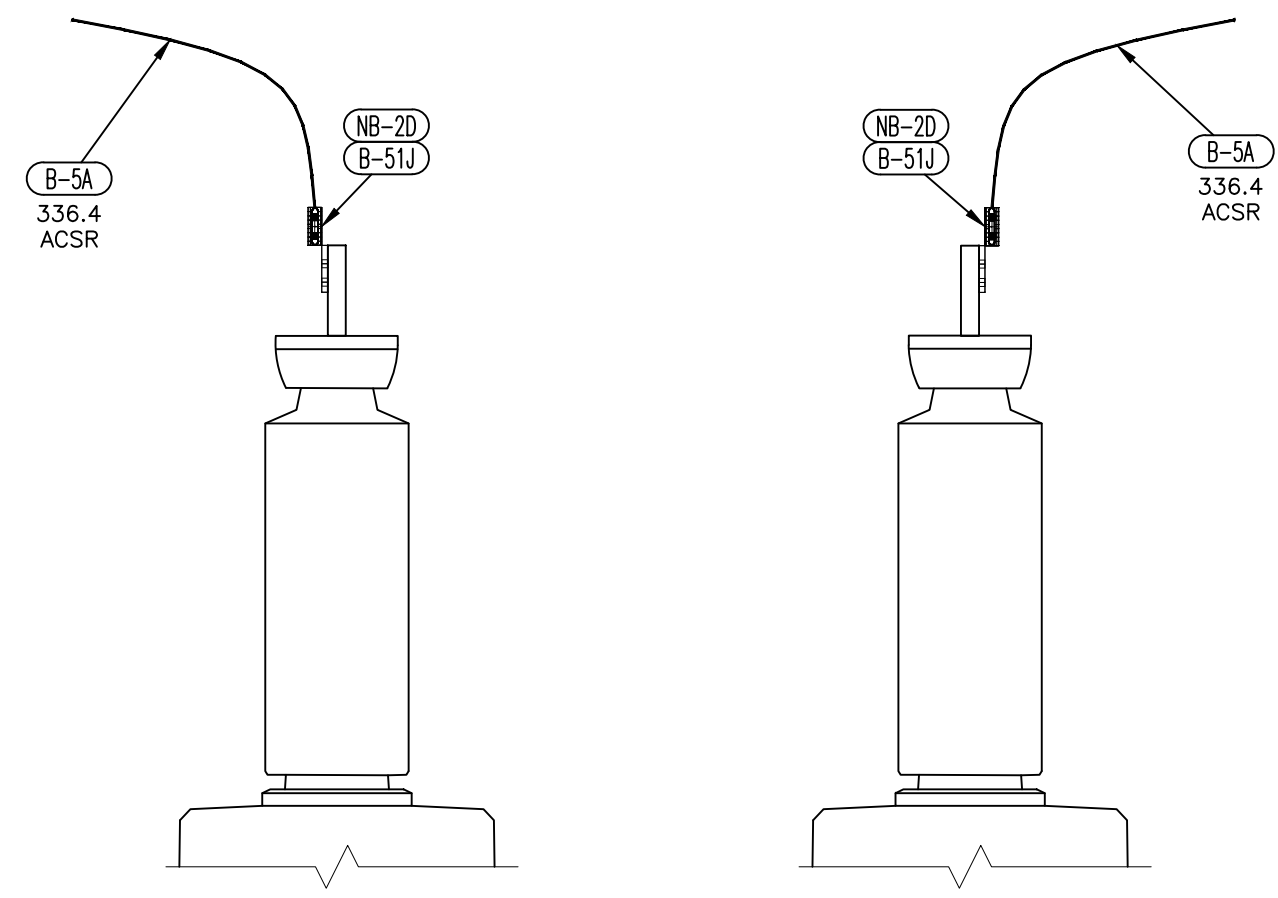
ENGINEER: NC	SCALE: 1/4"=1'-0"	DATE: 5/9/23	REV. 0
DRAWN BY: RE	DRAWING NO. S351PE04	SHEET 1 OF 1	
CHECKED BY: LA	APPROVED BY: NC	OLD DRAWING NO.:	



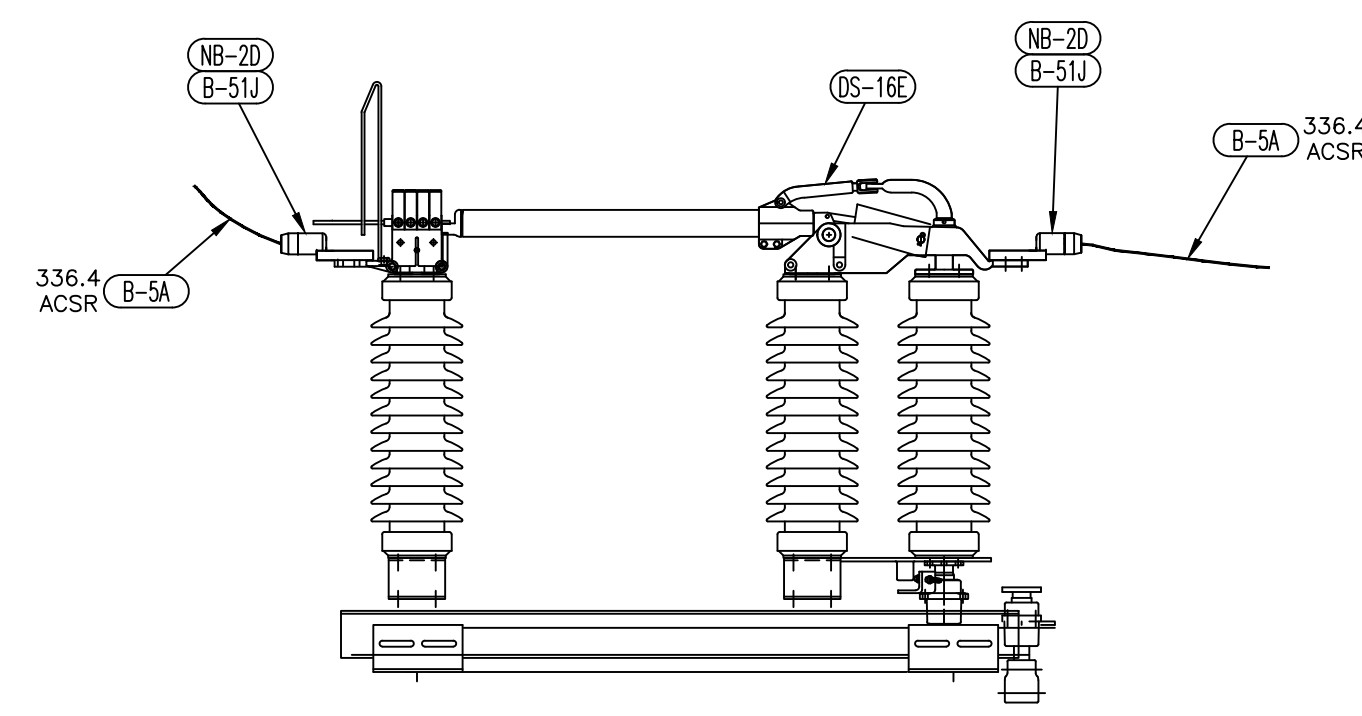
4555 W Memorial Rd.
 Oklahoma City, OK 73142



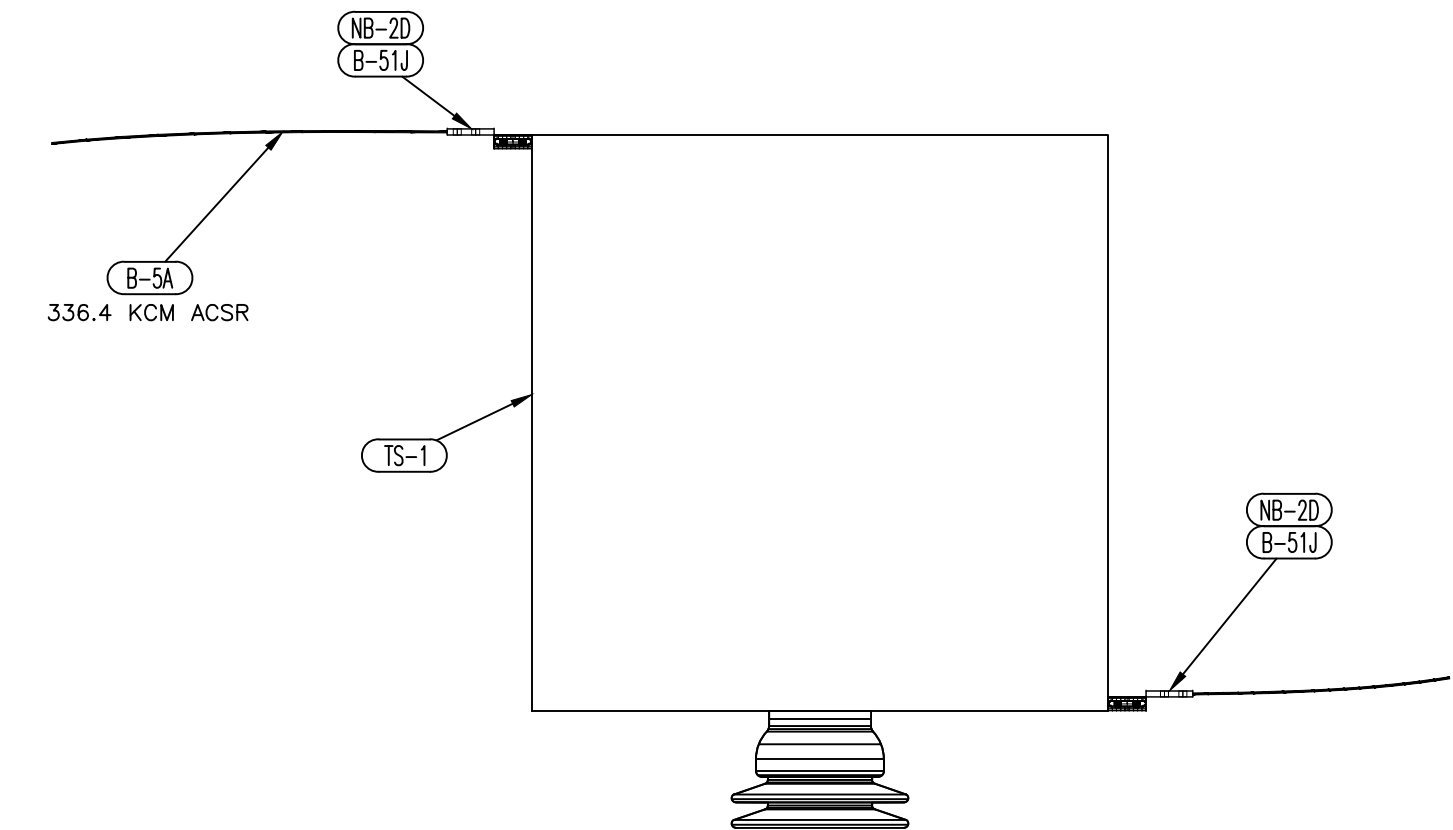
P.O. BOX 669
 SHUTEAU, OK 74337



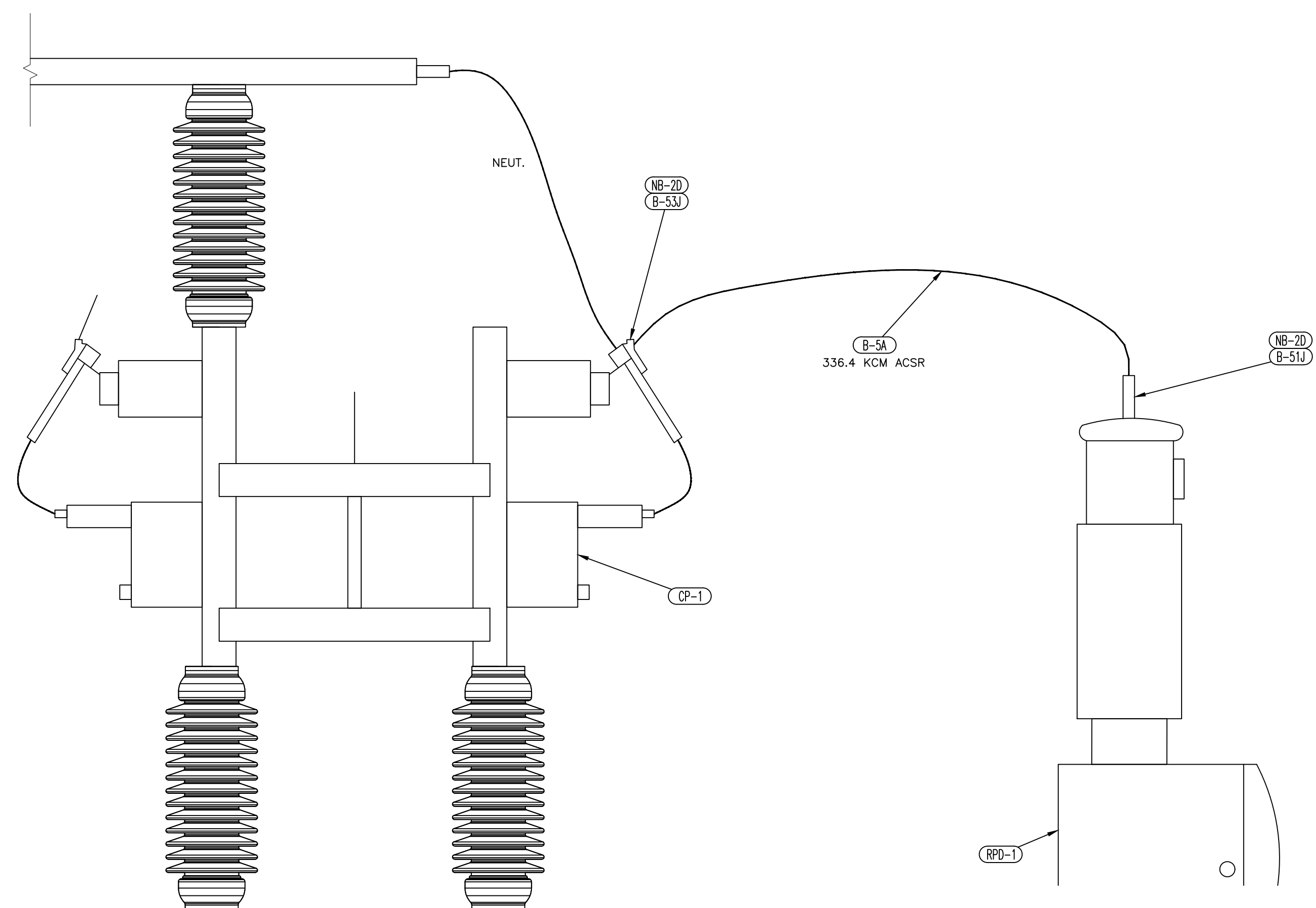
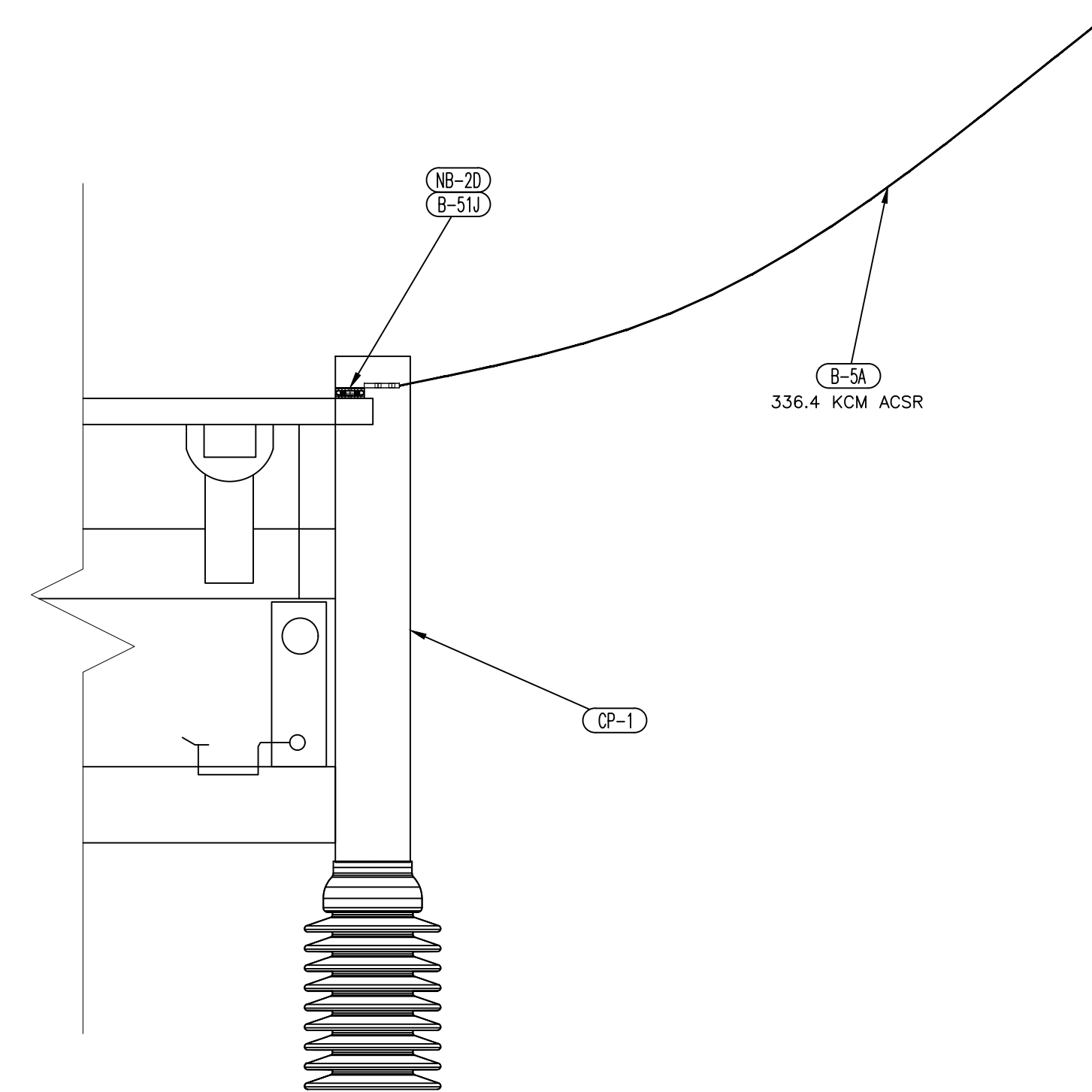
69kV BREAKER – SWAGE



69kV BREAKER DISC SWITCH – SWAGE



69kV TRANSIENT REACTOR – SWAGE



69kV CAPACITOR BANK – SWAGE

REFERENCE DRAWINGS
 S351PE01 ELECTRICAL LAYOUT
 S351PE04 SECTION G-G & H-H

DESCRIPTION: CAPACITOR BANK BREAKER ADDITION						
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPRVD
0	RF022-01145	5/9/23	NC	BE	LA	NC

ISSUED FOR CONSTRUCTION
 GRAND RIVER DAM AUTHORITY
 STILLWATER KINZIE INTERCONNECT S351
 STILLWATER, OKLAHOMA 138/69kV

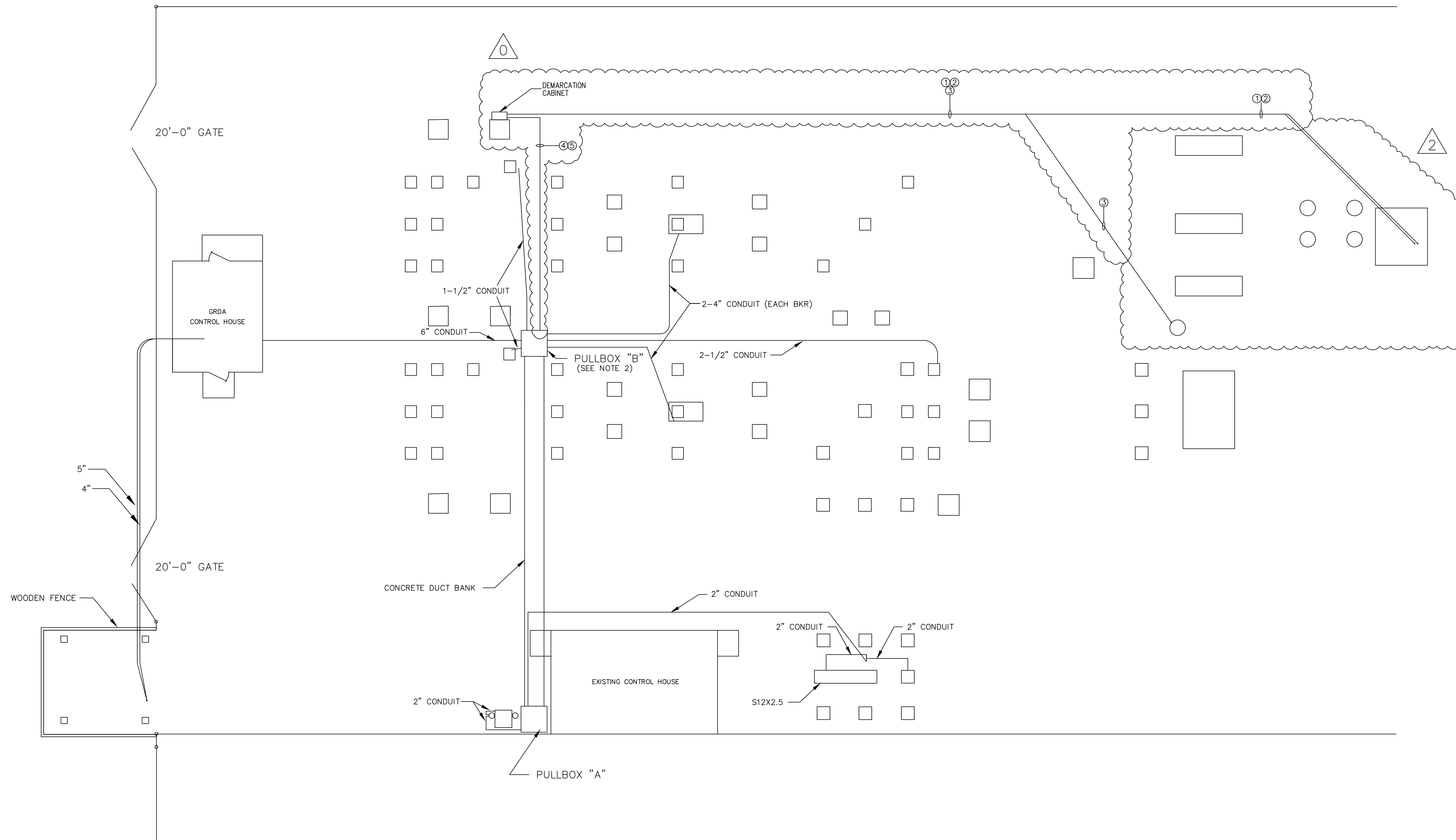
BUS ASSEMBLY DETAILS



GRDA
 ENGINEER: NC SCALE: NONE DATE: 5/9/23 REV.
 DRAWN BY: BE DRAWING NO. 0
 CHECKED BY: S351PE05
 APPROVED BY: P.O. BOX 669 CHOUTEAU, OK 74337



CONDUIT SCHEDULE - 2023 CONSTRUCTION				
NO.	FROM	TO	SIZE	PURPOSE
1	BKR. NO. 81	DEMARICATION CABINET	4"	BKR. PRI. CURRENTS & CONTROL
2	BKR. NO. 81	DEMARICATION CABINET	4"	BKR. ALT. CURRENTS & CONTROL
3	CAP. BANK RPD J-BOX	DEMARICATION CABINET	2"	CAP. BANK NEUTRAL POTENTIAL
4	DEMARICATION CABINET	PULL BOX 'B'	4"	CABLES TO BUILDING
5	DEMARICATION CABINET	PULL BOX 'B'	4"	CABLES TO BUILDING



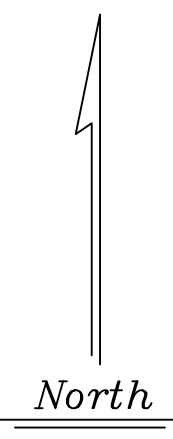
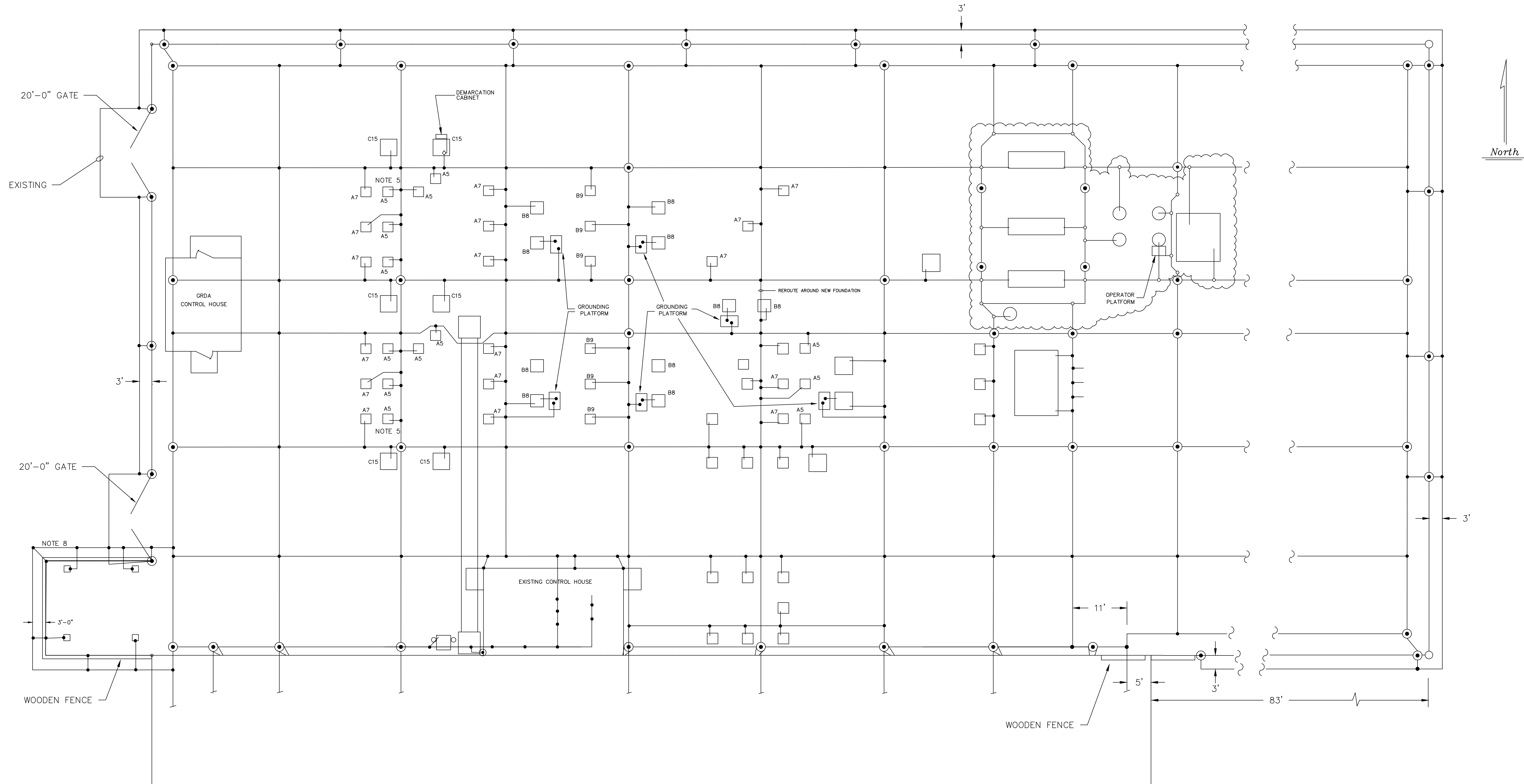
REFERENCE DRAWINGS:
 ED-10 CONDUIT PLAN (CITY)
 S351PE01 ELECTRICAL PLAN
 S351PG11 CONDUIT DETAILS

NOTES:

1. RUN 1-1/2" CONDUITS BETWEEN METERING UNIT TERMINAL BOXES.
2. FOR PULLBOX SECTIONS & DETAILS SEE GRDA DWG. D1402.
3. FOR CITY CONDUITS SEE DWG. ED-10.



DESCRIPTION: ISSUED FOR BID		GRAND RIVER DAM AUTHORITY		STILLWATER KINZIE INTERCONNECT S351		STILLWATER, OKLAHOMA		138/69KV	
2	RF022-01145	8/24/2023	NC	BE	TM	NC			
DESCRIPTION: CAPACITOR BANK BREAKER ADDITION									
1	RF022-01145	8/14/2023	CP	BE	JS	-			
DESCRIPTION: CAPACITOR BANK BREAKER ADDITION									
0	RF022-01145	5/9/23	NC	BE	LA	NC			
CONDUIT LAYOUT		ENGINEER: NC		SCALE: NONE		DATE: 8/22/2022		REV.	
DRAWN BY: RE		DRAWING NO.		SHEET 1 OF 1		2			
CHECKED BY: LA		S351PG10		P.O. BOX 669		CHOUTEAU, OK 74337			
APPROVED BY: NC		OLD DRAWING NO.:							



LEGEND:

- ⊕ EXOTHERMIC CONNECTION
- ⊙ 5/8" x 10' GROUND ROD
- ⊕ SWAGE CONNECTION

REFERENCE DRAWINGS

- S351PE01 ELECTRICAL PLAN
- S351PG21 GROUNDING DETAILS
- S351PG22 GROUNDING DETAILS

NOTE:

1. GRID CONDUCTOR IS #4/0 AWG BARE COPPER.



4555 W Memorial Rd.
Oklahoma City, OK 73142



REV NO.	JOB NO.	DATE	DESIGN ENGR.	DFTR	DESIGN CHECK	ISSUE APPROVD
3	RF022-01145	8/24/2023	NC	BE	TM	NC
2	RF022-01145	8/14/2023	CP	BE	JS	-
1	RF022-01145	5/9/23	NC	BE	LA	NC
B	-----	8/22/88	--	--	--	--

GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69KV			
GROUNDING LAYOUT			
ENGINEER: DRAWN BY: DA CHECKED BY: APPROVED BY:	SCALE: NONE DRAWING NO. S351PG20 OLD DRAWING NO.: D-1200	DATE: 12/2/1986 SHEET 1 OF 1	REV. 3



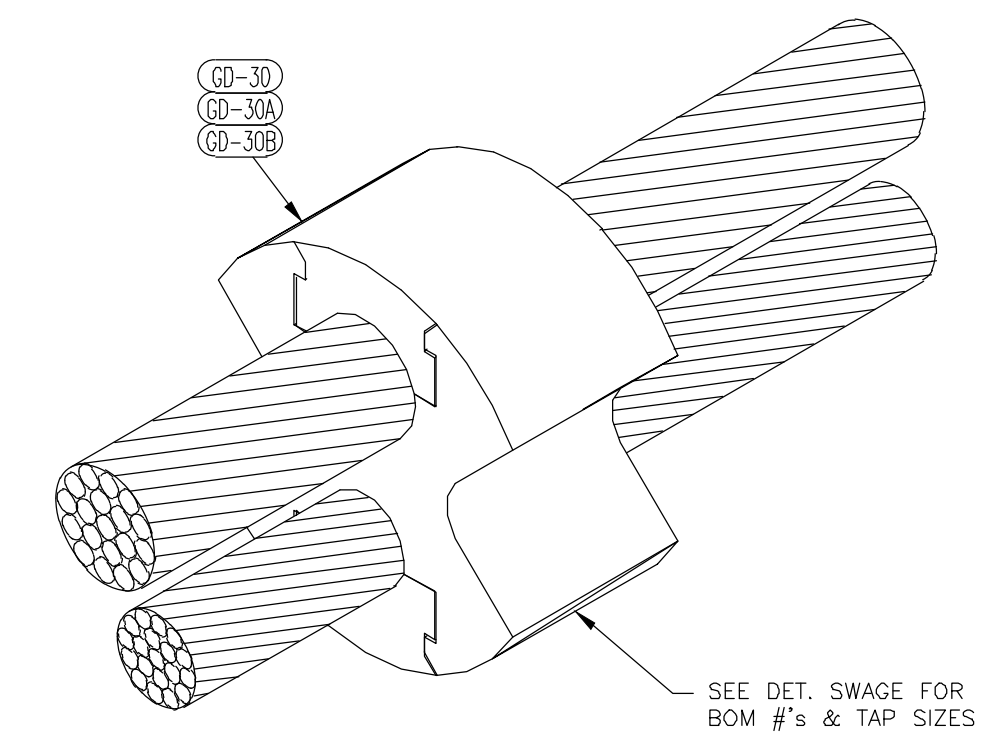
P.O. BOX 669
CHOUTEAU, OK 74337

GENERAL NOTES:

- USE #80 GRIT EMERY CLOTH FOR BRIGHT CLEANING OF SOLID CONDUCTOR SURFACES, AND WIRE BRUSH FOR ALL STRANDED CONDUCTORS BEFORE SWAGE CONNECTION.
- REFER TO MANUFACTURER'S GUIDELINES FOR PROCEDURES FOR PERFORMING SWAGE CONNECTIONS.
- A NO-OX-ID ELECTRICAL JOINT COMPOUND CORROSION INHIBITOR SHALL BE USED IN THE FOLLOWING APPLICATIONS:
 - BETWEEN ALL CONNECTOR CONTACT SURFACES
 - TO LUBRICATE UNLUBRICATED BOLTS MADE OF BRONZE, STAINLESS STEEL OR ALUMINUM USED WITH ELECTRICAL CONNECTORS.
 - TO IMPROVE CONNECTIONS AND PREVENT CORROSION OF GROUND BUS CONNECTIONS
- GROUND WIRE SHALL BE CONTINUOUS FROM POINT OF ORIGIN TO GRID. SPLICING OF GROUND WIRE WITH MECHANICAL CONNECTORS IS NOT PERMITTED. JUMPERS FROM ABOVE GRADE CONNECTIONS TO BELOW GRADE GRID SHALL BE COPPERWELD, AND STRUCTURES SHALL BE CONNECTED TO GRID AT TWO DIFFERENT GRID RUNS.
- CONTRACTOR SHALL COIL UP ENOUGH CONDUCTOR SO AS TO REACH THE EQUIPMENT GROUNDING CONNECTIONS WITHOUT REQUIRING A SPLICE.
- SECURE GROUND CONDUCTOR TO STEEL MAXIMUM 6' APART.

BOM	DESCRIPTION	RUN	TAP	DMC PART #	TOOL HEAD ASSY	INSPECTION GAUGE
GD-30	PARALLEL, SPLIT, CU	#4/0	#4/0	GC888B004-004	DLT45CLHA11130	GCIG200-11130
GD-30A	PARALLEL, SPLIT, CU	#4/0	#2/0	GC888B002-004	DLT45CLHA11130	GCIG200-11130
GD-30B	PARALLEL, SPLIT, CU	#4/0	#2	GC721B02G-004	DLT45CLHA11130	GCIG200-11130
GD-31	ELBOW, SPLIT, CU	#4/0	3/4" ROD	GC739B004-682	DLT45CLHA03975	GCIG200-03975
GD-32	TERMINAL, 1 HOLE, OFFSET PAD, CU	#2	NA	GC910BL02GT	DLT45CLHA03975	GCIG200-03975
GD-33	TERMINAL, 2 HOLE, OFFSET PAD, CU	#4/0	NA	GC920B004T	DLT45CLHA03975	GCIG200-03975

SWAGE ASSEMBLY TABLE

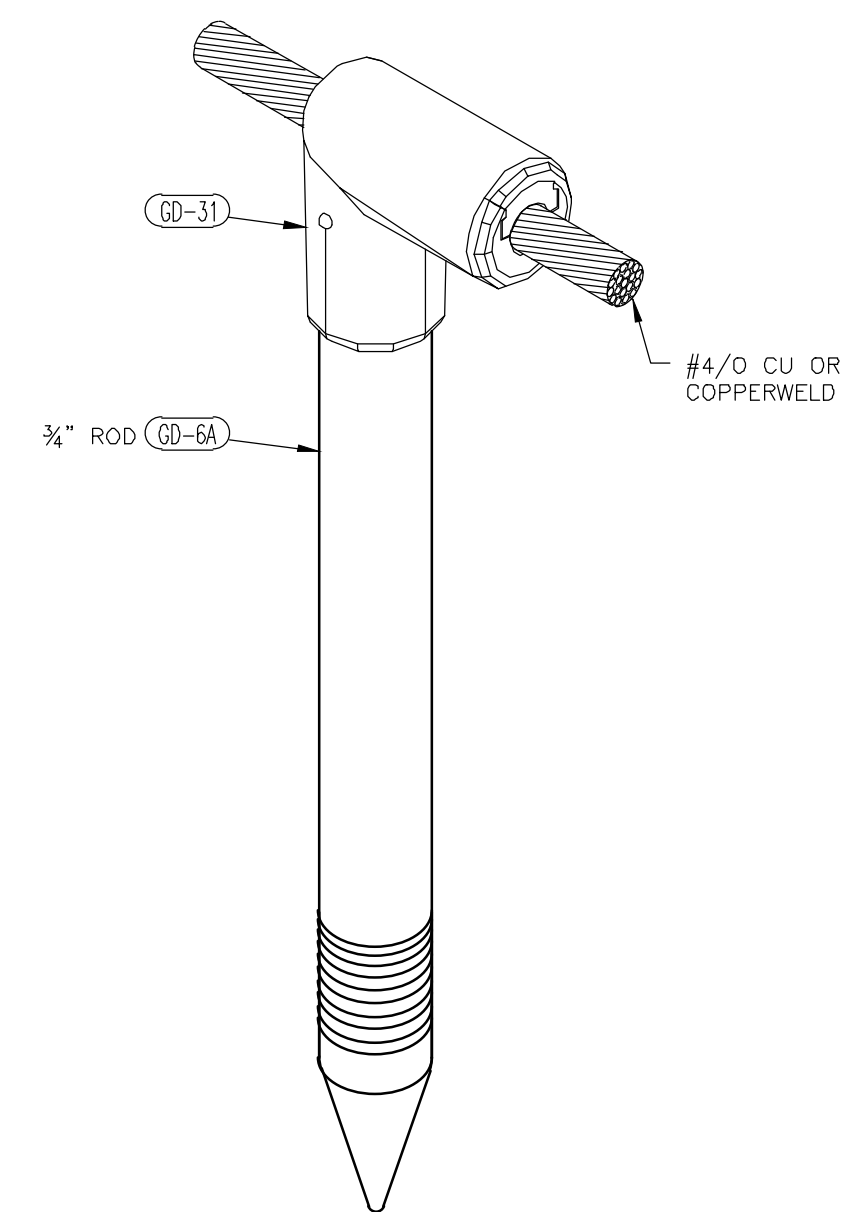


TEE, CROSS, AND SPLICE PARALLEL CONDUCTOR CONNECTOR - SWAGE

DETAIL NOTES

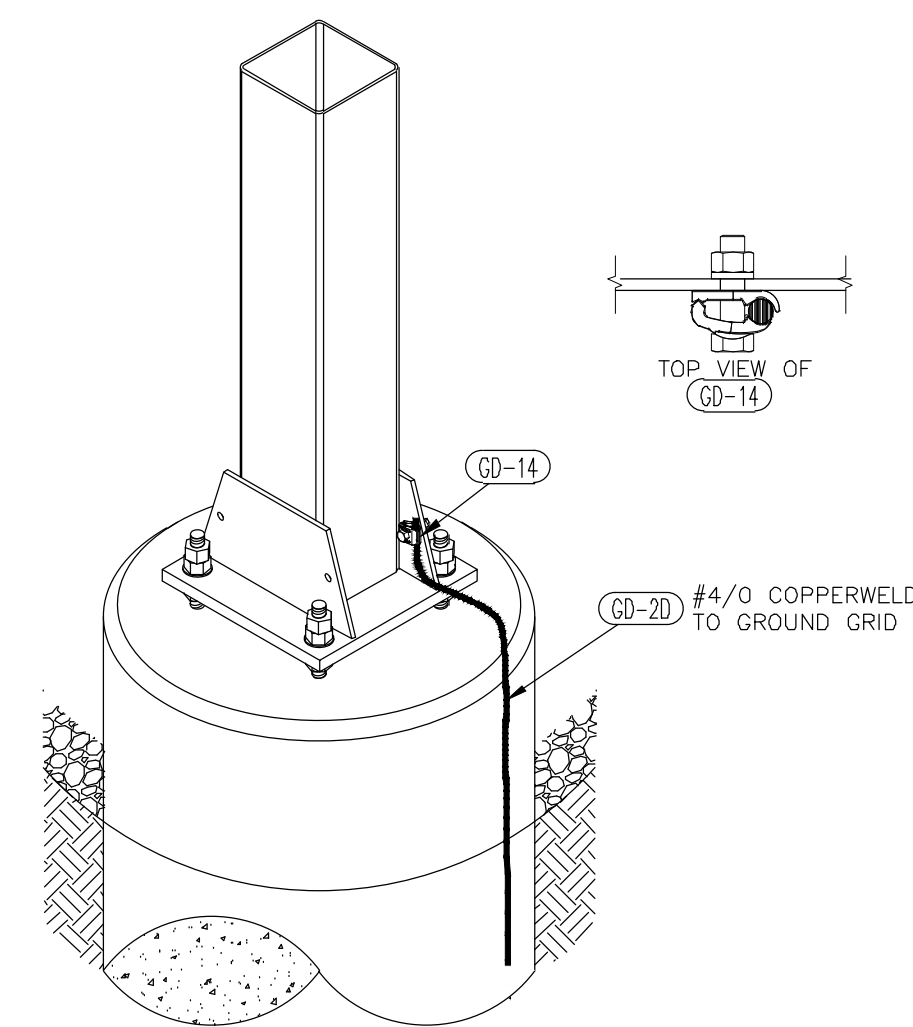
DETAIL SWAGE

DETAIL G1



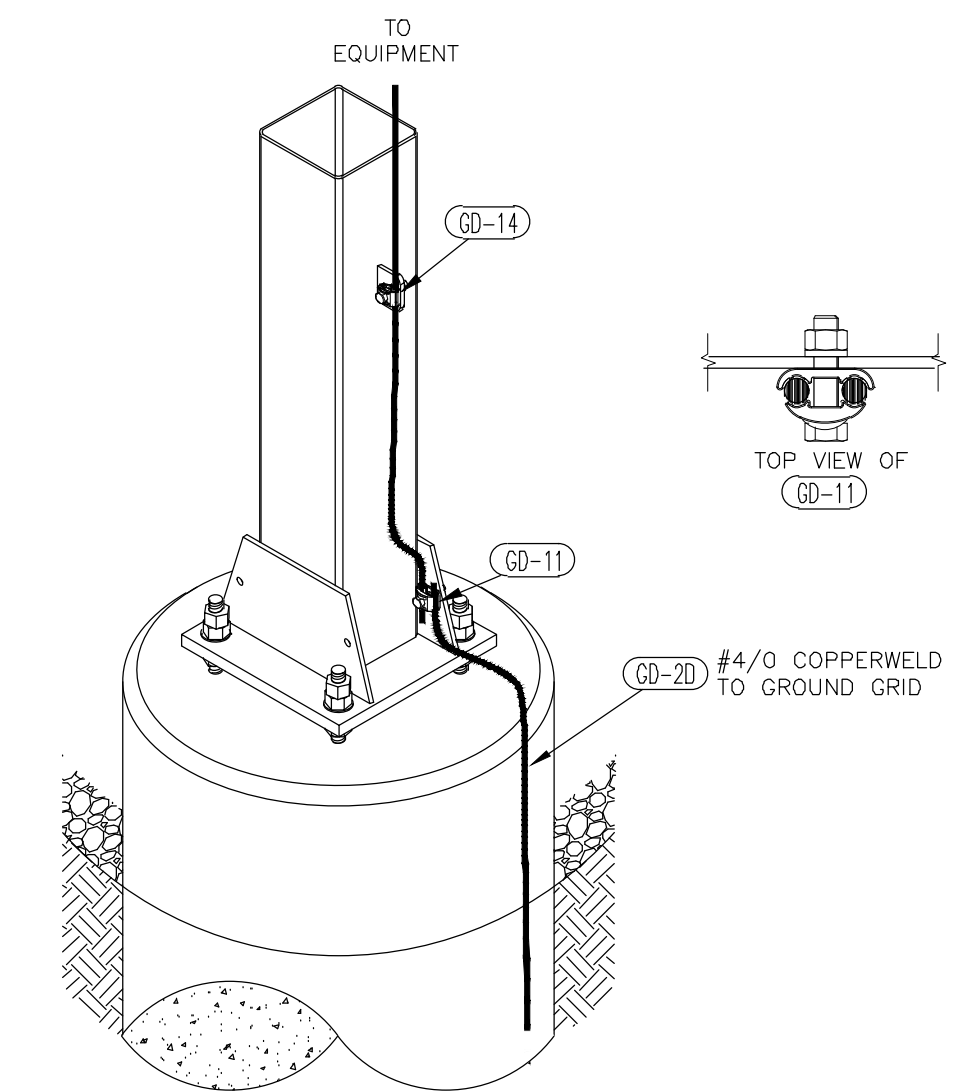
GROUND ROD TO CONDUCTOR CONNECTOR - SWAGE

DETAIL G2



STRUCTURE GROUNDING WITHOUT EQUIPMENT

DETAIL G3



STRUCTURE GROUNDING WITH EQUIPMENT

ISSUED FOR CONSTRUCTION

DETAIL G4



4555 W MEMORIAL RD.
OKLAHOMA CITY, OK 73142

REFERENCE DRAWINGS

- S351PE01 ELECTRICAL LAYOUT
- S351PG20 GROUNDING PLAN
- S351PG22 GROUNDING DETAILS
- S351PG30 FOUNDATION PLAN

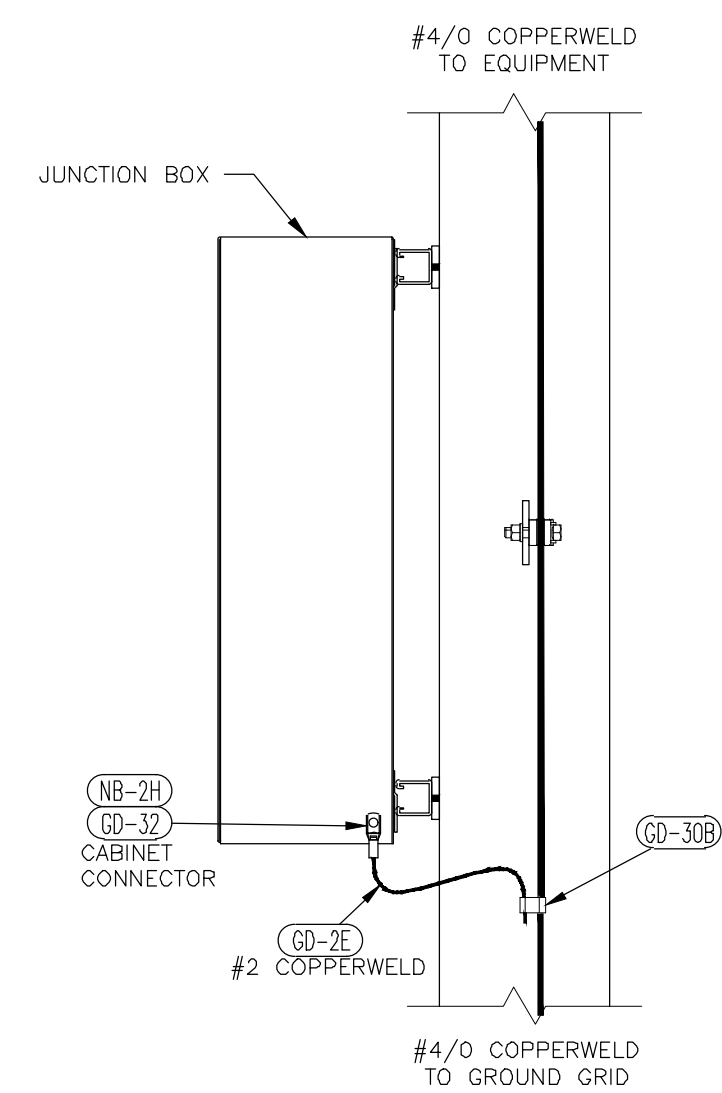


REV NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPROVD
0	RF022-01145	5/9/23	NC	BE	LA	NC

GRAND RIVER DAM AUTHORITY
STILLWATER KINZIE INTERCONNECT S351
STILLWATER, OKLAHOMA 138/69kV

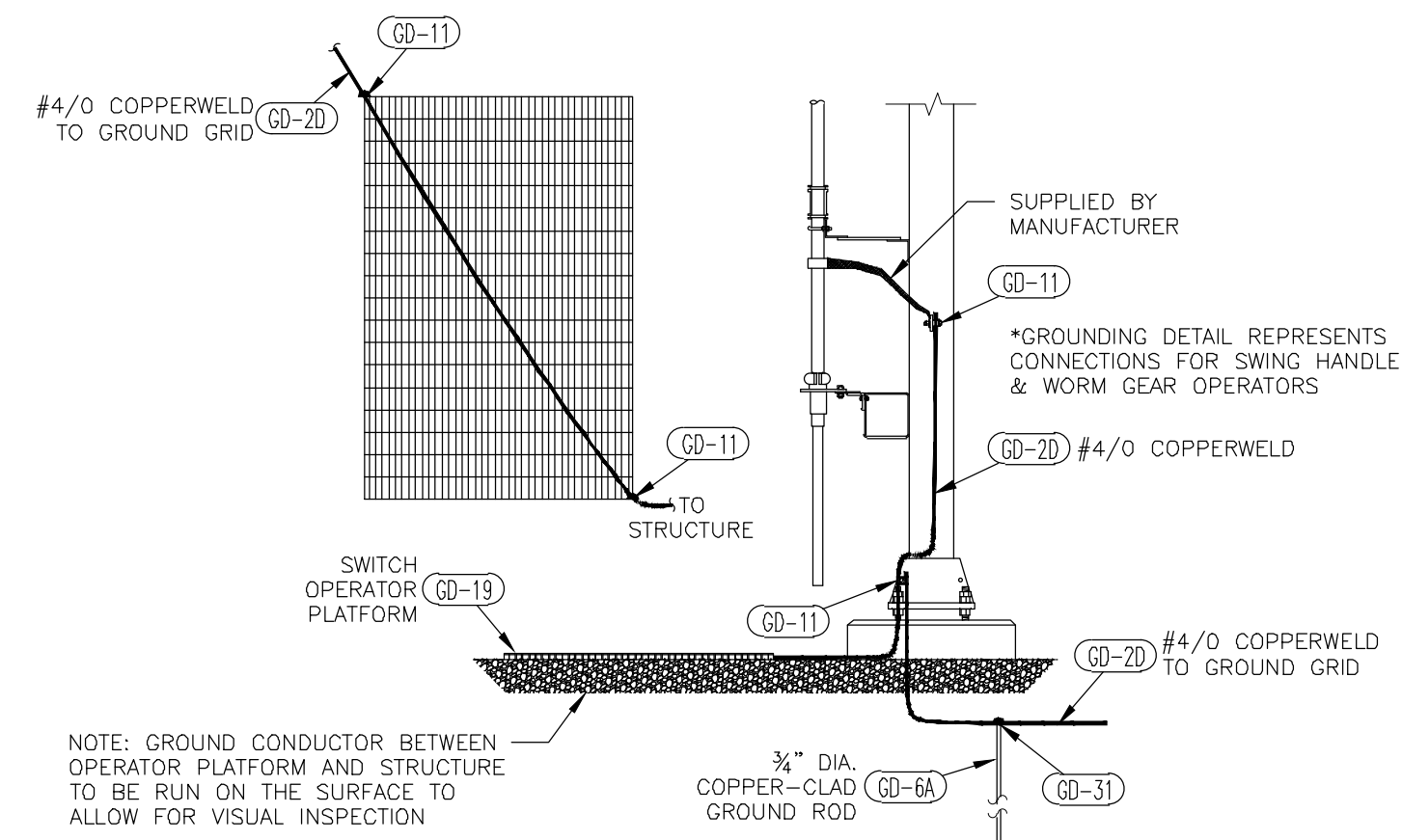
GROUNDING DETAILS

ENGINEER: NC SCALE: NONE DATE: 5/9/23 REV. 0
DRAWN BY: BE DRAWING NO. S351PG21
CHECKED BY: P.O. BOX 669
APPROVED BY: CHOUTEAU, OK 74337



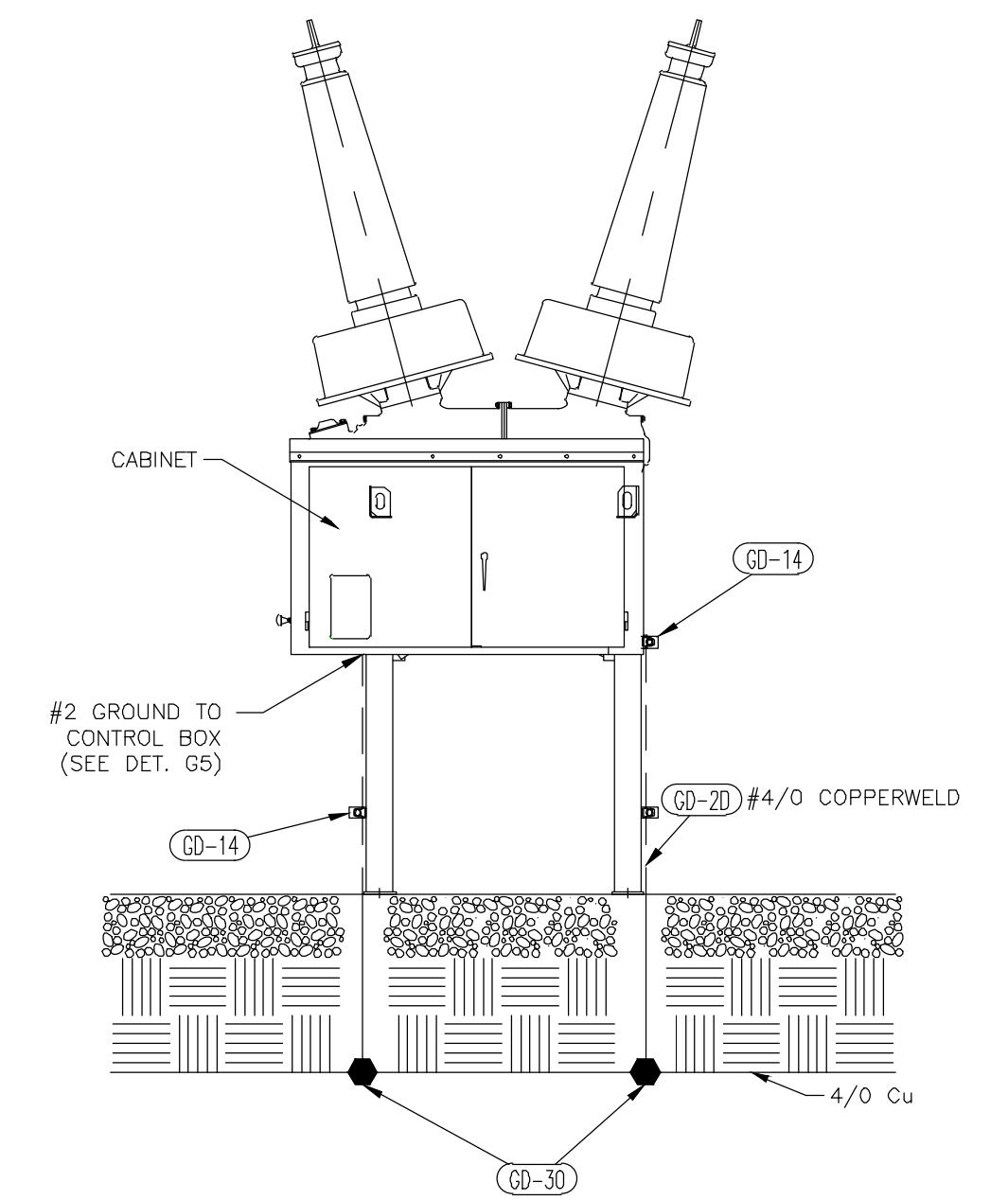
CABINET GROUNDING - SWAGE

DETAIL G5



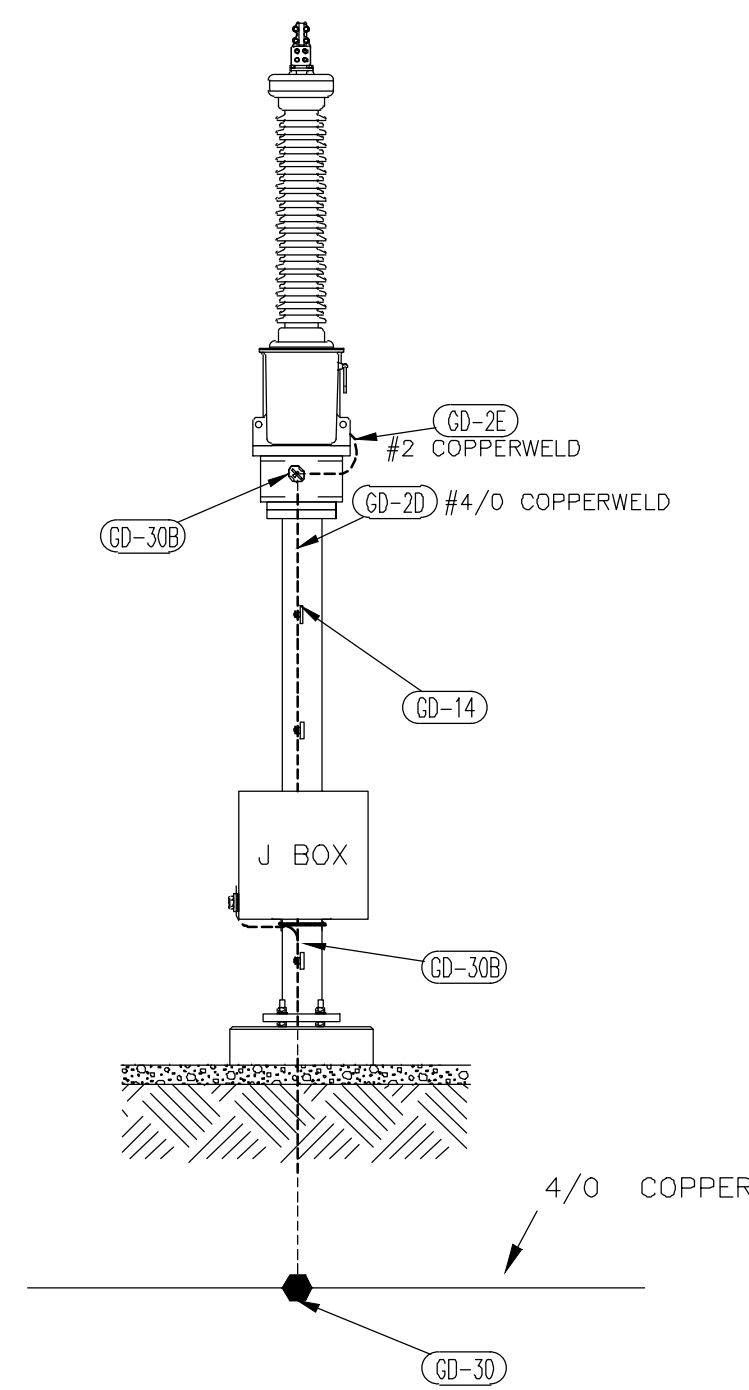
69/161kV SWITCH GROUNDING - SWAGE

DETAIL G6



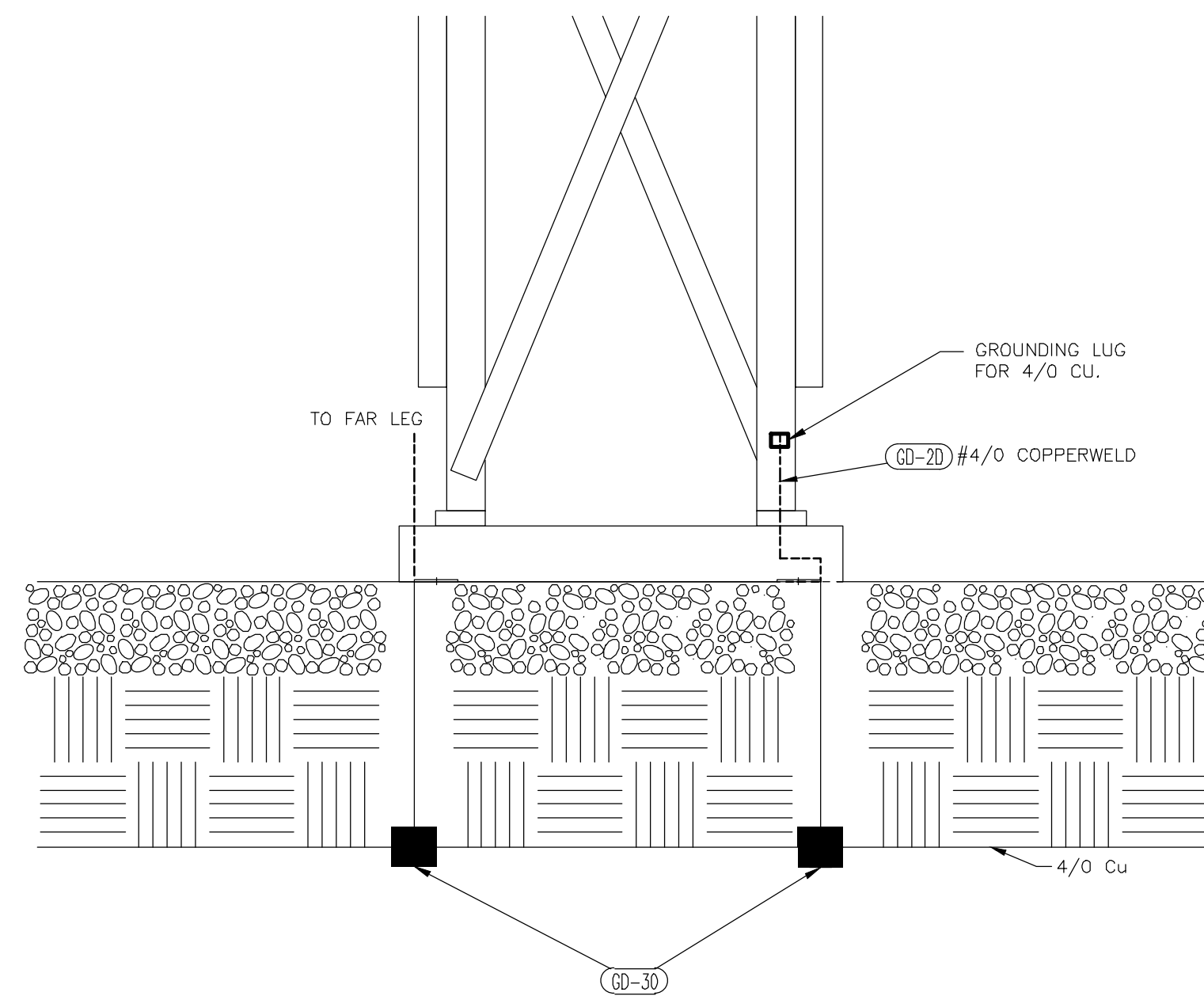
SINGLE-FRAME BREAKER GROUNDING - SWAGE

DETAIL G7



SINGLE PHASE PT GROUNDING - SWAGE

DETAIL G8



SINGLE-FRAME BREAKER GROUNDING - SWAGE

DETAIL G9

REFERENCE DRAWINGS:

- S351PE01 ELECTRICAL LAYOUT
- S351PG20 GROUNDING PLAN
- S351PG21 GROUNDING DETAILS
- S351PG30 FOUNDATION PLAN



ISSUED FOR CONSTRUCTION

REV NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPRVD
0	RF022-01145	5/9/23	NC	BE	LA	NC

GRAND RIVER DAM AUTHORITY
 STILLWATER KINZIE INTERCONNECT S351
 STILLWATER, OKLAHOMA 138/69kV

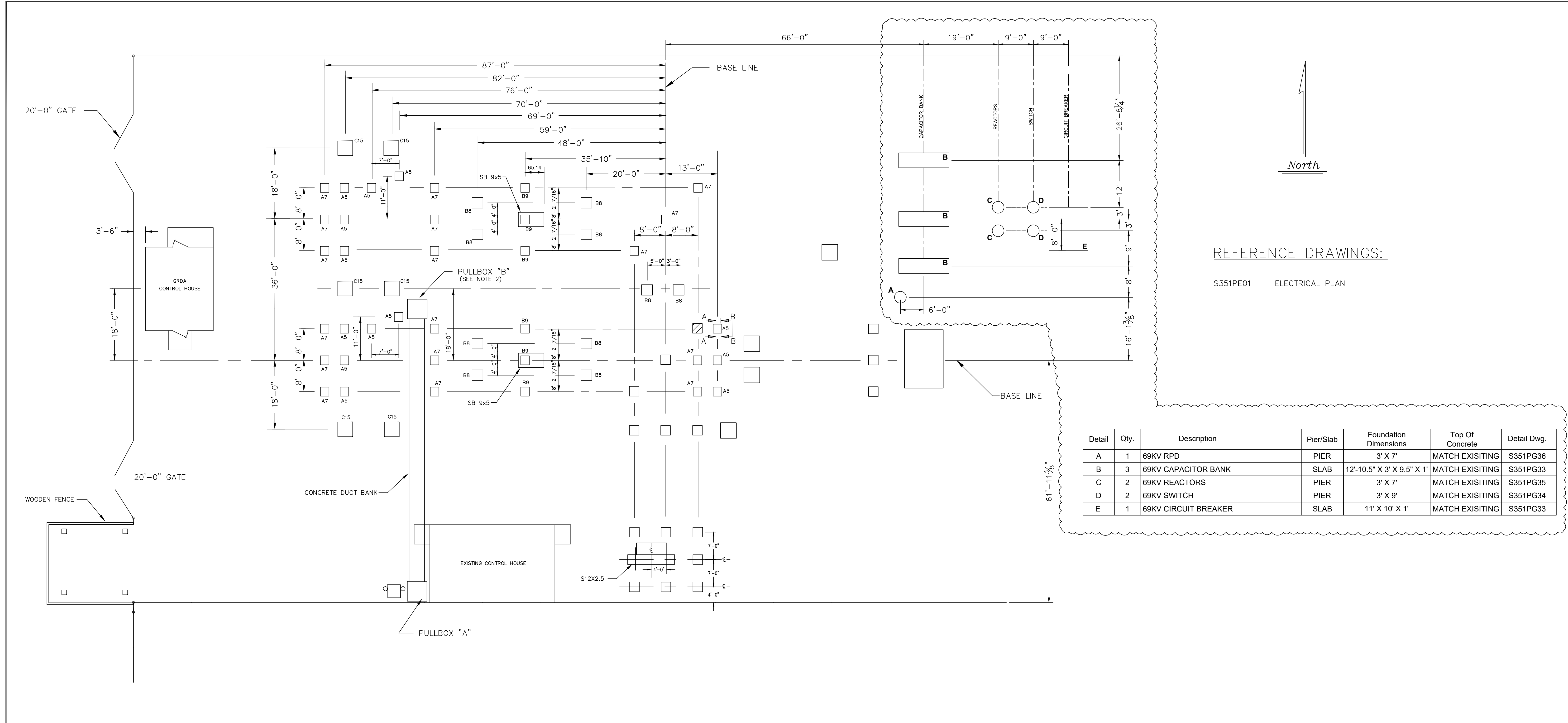
GROUNDING DETAILS



ENGINEER: NC	SCALE: NONE	DATE: 5/9/23	REV. 0
DRAWN BY: BE	DRAWING NO. S351PG22		
CHECKED BY:	APPROVED BY:		



4555 W MEMORIAL RD.
 OKLAHOMA CITY, OK 73142



REFERENCE DRAWINGS:

S351PE01 ELECTRICAL PLAN

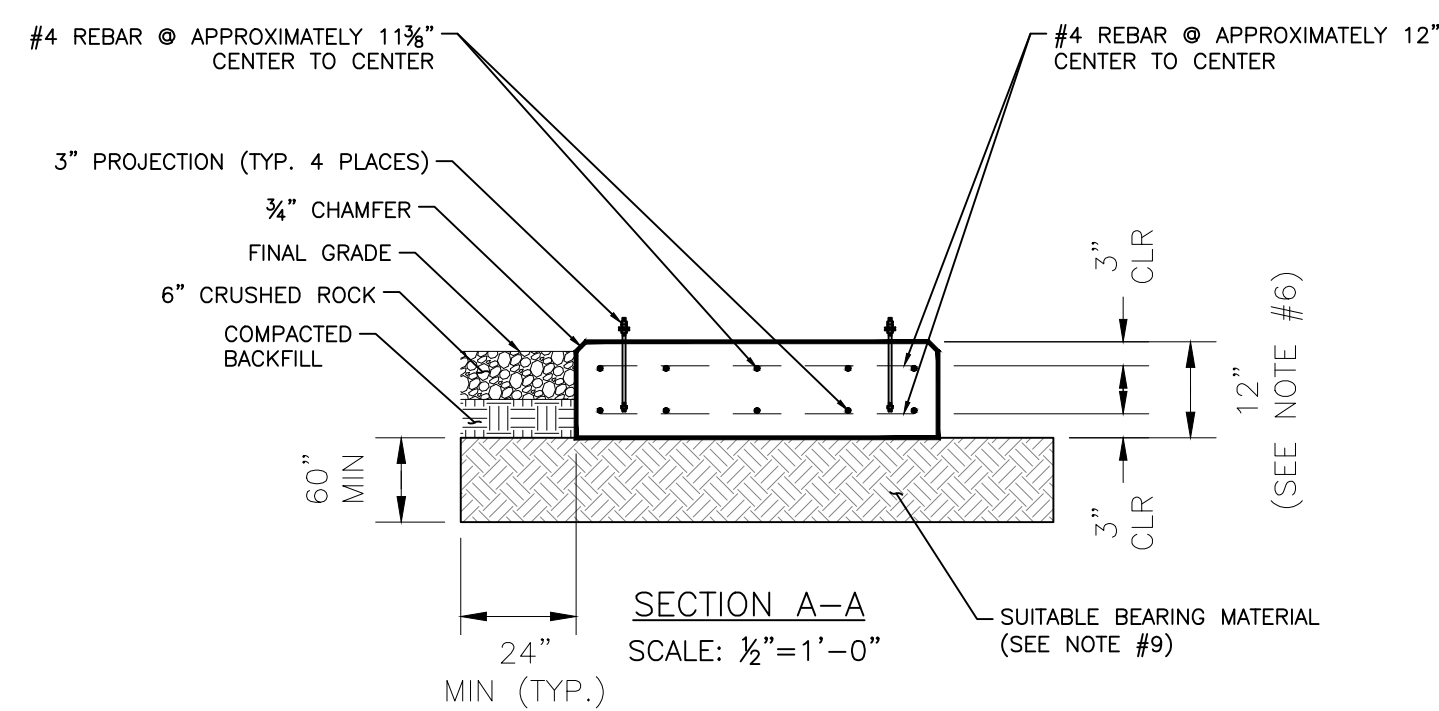
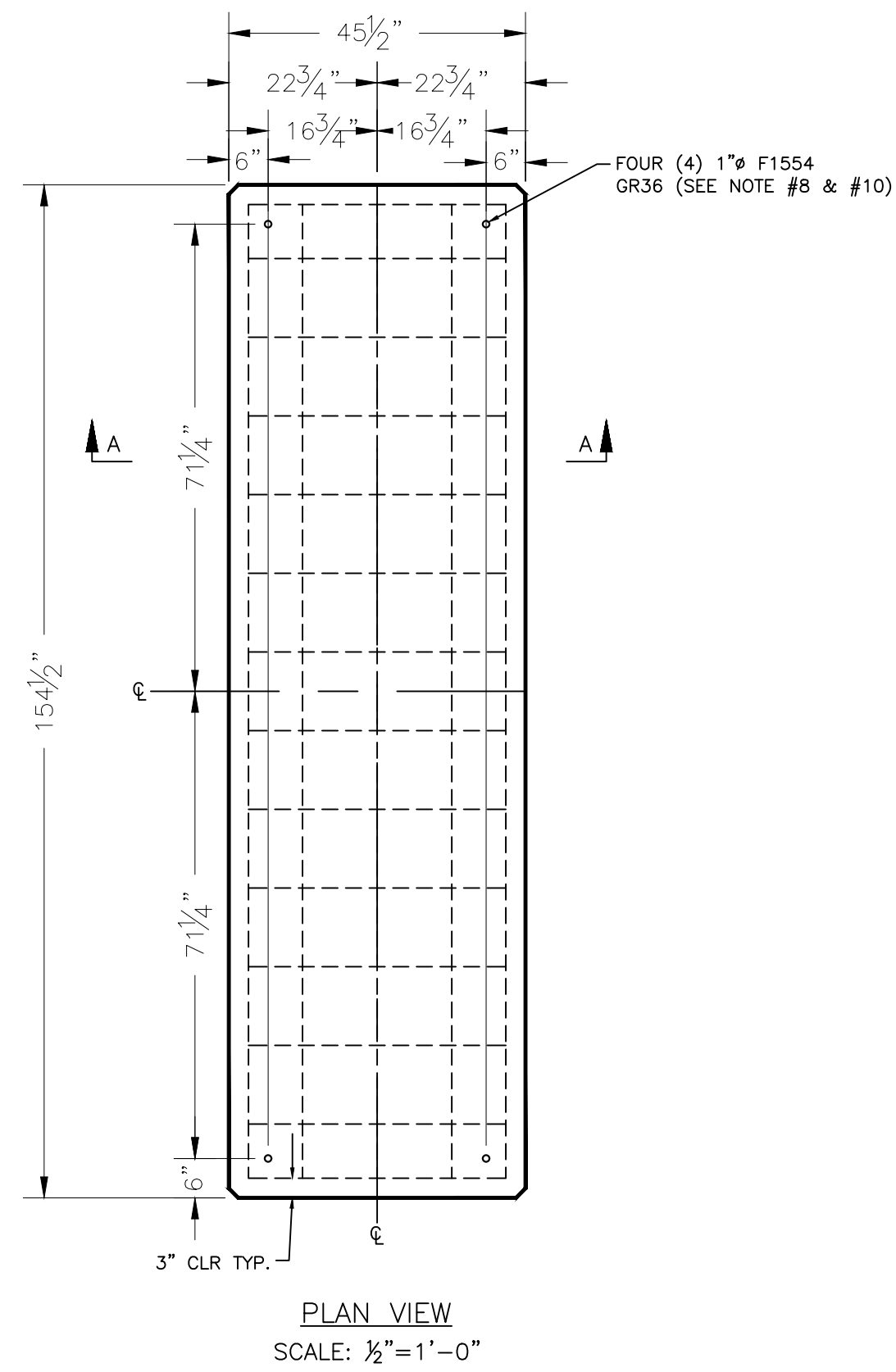
Detail	Qty.	Description	Pier/Slab	Foundation Dimensions	Top Of Concrete	Detail Dwg.
A	1	69KV RPD	PIER	3' X 7'	MATCH EXISTING	S351PG36
B	3	69KV CAPACITOR BANK	SLAB	12'-10.5" X 3' X 9.5" X 1'	MATCH EXISTING	S351PG33
C	2	69KV REACTORS	PIER	3' X 7'	MATCH EXISTING	S351PG35
D	2	69KV SWITCH	PIER	3' X 9'	MATCH EXISTING	S351PG34
E	1	69KV CIRCUIT BREAKER	SLAB	11' X 10' X 1'	MATCH EXISTING	S351PG33

NOTES:

1. ALL FOUNDATIONS 887'-6" TO MATCH EXISTING FOUNDATIONS
2. FOR PULLBOX SECTIONS & DETAILS SEE GRDA DWG. D1402.



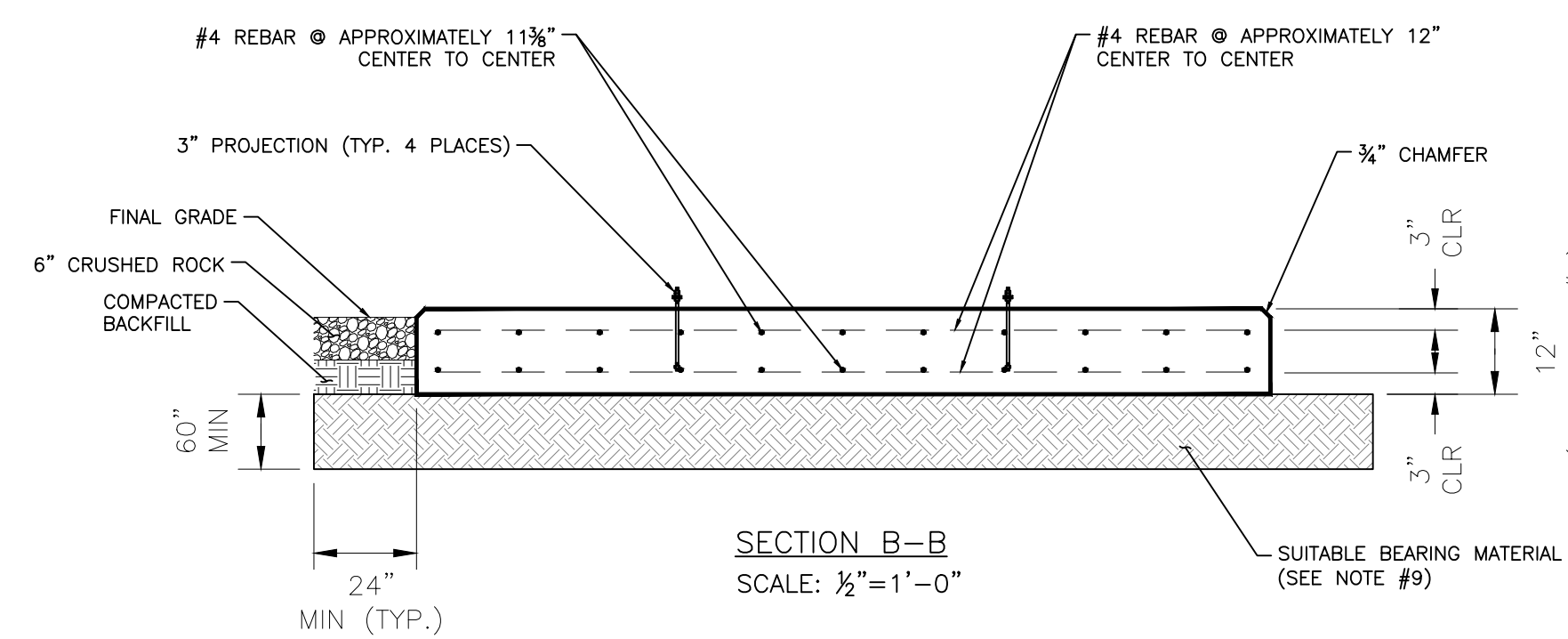
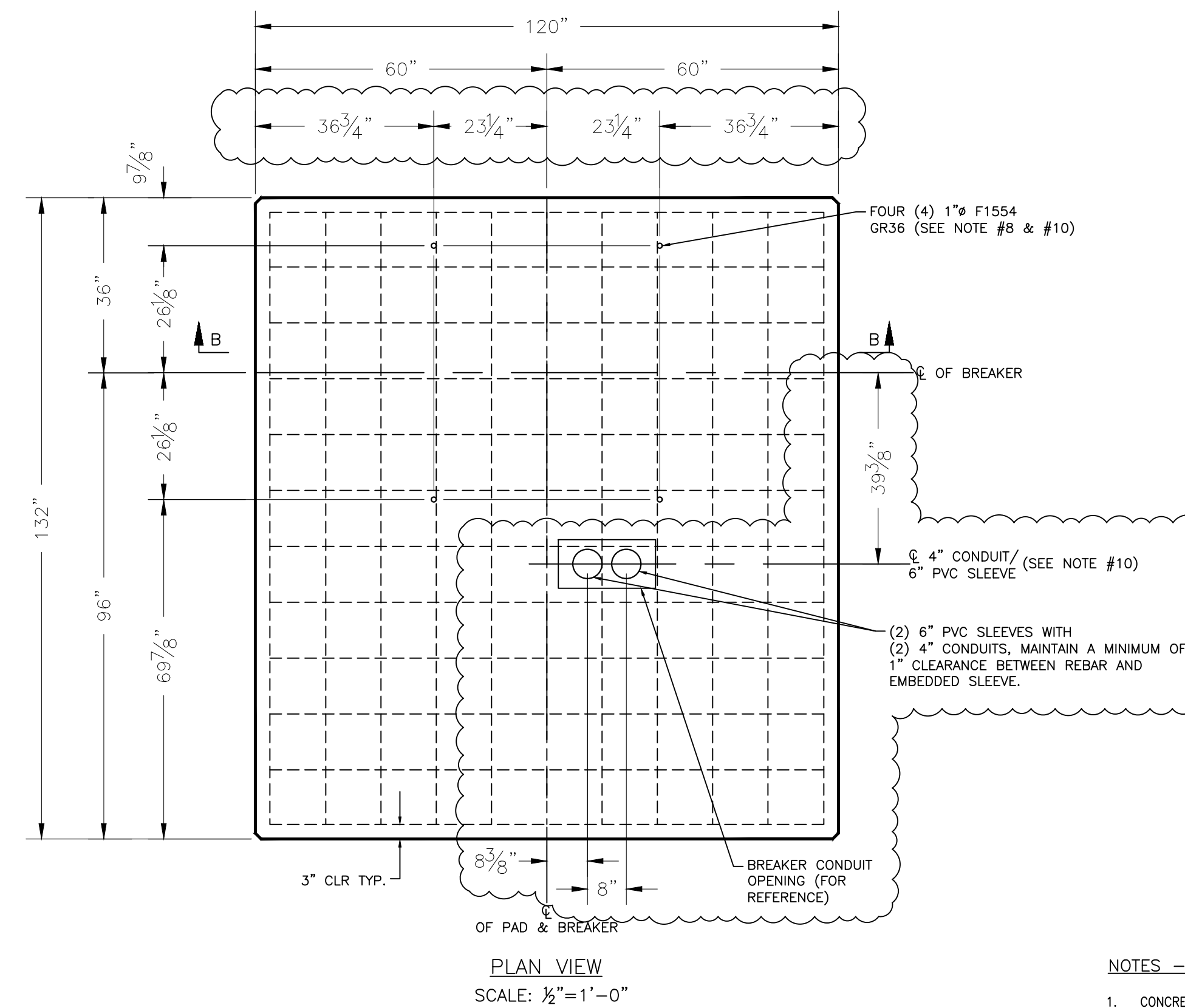
DESCRIPTION: ISSUED FOR BID		GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69KV			
5	RF022-01145	8/24/2023	NC	BE	TM NC
DESCRIPTION: ISSUE FOR REVIEW		FOUNDATION LAYOUT			
4	RF022-01145	8/14/2023	CP	BE	JS -
DESCRIPTION: CAPACITOR BANK BREAKER ADDITION		ENGINEER: BA SCALE: NONE DATE: 8/29/2014 REV.			
3	RF022-01145	5/9/23	NC	BE	LA NC
DESCRIPTION: ADDED NEW BKR FDN		DRAWN BY: RC DRAWING NO. SHEET 1 OF 1			
2	RF014-00635		BA		TT
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK
					ISSUE APPROVD
		P.O. BOX 669 CHOUTEAU, OK 74337		S351PG30 APPROVED BY: XXX OLD DRAWING NO.: D-1199	



DETAIL B
CAPACITOR BANK FOUNDATION
QUANTITY: 3

NOTES - FOUNDATION SL13X4 (CAP BANK):

1. CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI.
2. ALL REBAR TO BE #4, ASTM A-615, GRADE 60.
3. MAINTAIN A MINIMUM OF 3" BETWEEN BAR AND FACE OF CONCRETE.
4. REBAR TO BE ON APPROXIMATELY 11 3/8" & 12" CENTERS AS SHOWN.
5. ALL FOOTING EDGES ABOVE GROUND WILL HAVE 3/4" CHAMFER, UNLESS OTHERWISE NOTED.
6. DEPTH DIMENSION IS PROPOSED FOR INSTALLATIONS ON STABLE SURFACES. ALL FOOTINGS MUST EXTEND TO SOLID UNDISTURBED EARTH.
7. SEE MANUFACTURER PRINT FOR EQUIPMENT DETAILS.
8. CONTRACTOR TO PROVIDE ANCHOR RODS AS REQUIRED FOR INSTALLATION OF EQUIPMENT. ALL ANCHOR RODS SHALL BE CAST-IN-PLACE ANCHOR RODS EMBEDDED A MINIMUM OF 9" INTO THE FOOTING WITH A MINIMUM 3" PROJECTION ABOVE THE CONCRETE SURFACE OR AS NOTED ON THE EQUIPMENT MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, WHICHEVER IS GREATER. ANCHOR ROD DIAMETER SHALL BE AS STATED IN THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS. ALL CAST IN PLACE ANCHOR RODS SHALL BE GALVANIZED ASTM F1554 GR 36 AND SHALL HAVE A NUT AND STANDARD WASHER TACK WELDED TO THE EMBEDDED END.
9. UNSUITABLE BEARING MATERIALS SHALL BE REMOVED AND REPLACED AS INDICATED IN THE GEOTECHNICAL ENGINEERING REPORT BY HINDERLITER DATED JUNE 10, 2022.
10. FIELD TO ADJUST REBAR SPACING AS NECESSARY TO AVOID CONFLICT WITH ANCHOR BOLTS.



DETAIL E
69kV CIRCUIT BREAKER FOUNDATION
QUANTITY: 1

NOTES - FOUNDATION SL10X11 (BREAKERS):

1. CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI.
2. ALL REBAR TO BE #4, ASTM A-615, GRADE 60.
3. MAINTAIN A MINIMUM OF 3" BETWEEN BAR AND FACE OF CONCRETE.
4. REBAR TO BE ON APPROXIMATELY 1-1 3/8" & 12" CENTERS AS SHOWN.
5. ALL FOOTING EDGES ABOVE GROUND WILL HAVE 3/4" CHAMFER, UNLESS OTHERWISE NOTED.
6. DEPTH DIMENSION IS PROPOSED FOR INSTALLATIONS ON STABLE SURFACES. ALL FOOTINGS MUST EXTEND TO SOLID UNDISTURBED EARTH.
7. SEE MANUFACTURER PRINT FOR EQUIPMENT DETAILS.
8. CONTRACTOR TO PROVIDE ANCHOR RODS AS REQUIRED FOR INSTALLATION OF EQUIPMENT. ALL ANCHOR RODS SHALL BE CAST-IN-PLACE ANCHOR RODS EMBEDDED A MINIMUM OF 9" INTO THE FOOTING WITH A MINIMUM 3" PROJECTION ABOVE THE CONCRETE SURFACE OR AS NOTED ON THE EQUIPMENT MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, WHICHEVER IS GREATER. ANCHOR ROD DIAMETER SHALL BE AS STATED IN THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS. ALL CAST IN PLACE ANCHOR RODS SHALL BE GALVANIZED ASTM F1554 GR 36 AND SHALL HAVE A NUT AND STANDARD WASHER TACK WELDED TO THE EMBEDDED END.
9. UNSUITABLE BEARING MATERIALS SHALL BE REMOVED AND REPLACED AS INDICATED IN THE GEOTECHNICAL ENGINEERING REPORT BY HINDERLITER DATED JUNE 10, 2022.
10. FIELD TO ADJUST REBAR SPACING AS NECESSARY TO AVOID CONFLICT WITH ANCHOR BOLTS AND CONDUITS.

REFERENCE DRAWINGS:

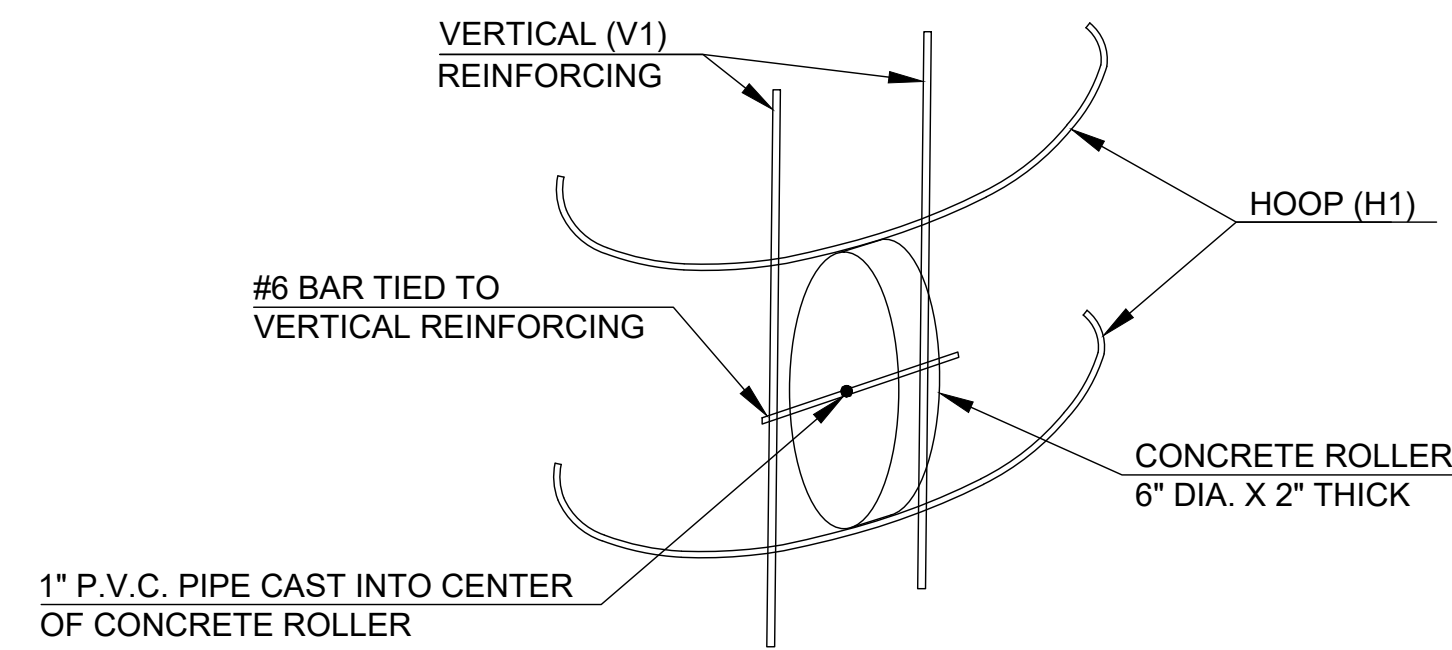
- S351PE01 ELECTRICAL PLAN
- S351PG10 CONDUIT LAYOUT
- S351PG20 GROUNDING LAYOUT
- S351PG30 FOUNDATION LAYOUT

REV NO.	JOB NO.	DATE	DESIGN ENGR.	DFT	DESIGN CHECK	ISSUE APPROV

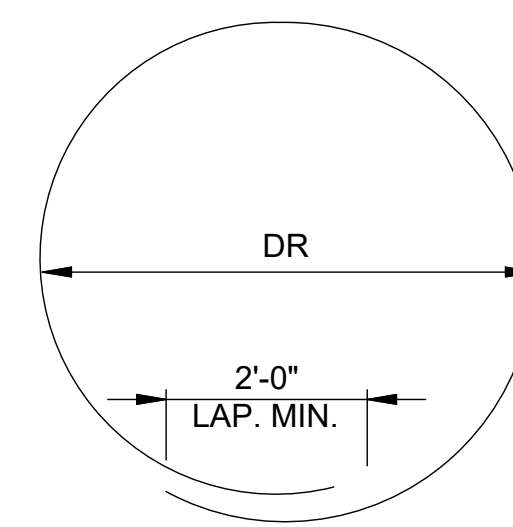
DESCRIPTION: ADD CONDUIT AND UPDATE ANCHOR BOLT DIMENSIONS				GRAND RIVER DAM AUTHORITY			
2	RF022-01145	8/24/2023	NC	BE	CP	CS	STILLWATER, OKLAHOMA 138/69kV
DESCRIPTION: ISSUE FOR REVIEW				FOUNDATION DETAILS B & E			
1	RF022-01145	8/14/2023	CP	BE	JS	-	69kV CAP BANK AND CIRCUIT BREAKER
DESCRIPTION: ISSUED FOR CONSTRUCTION				ENGINEER: NC			
0	RF022-01145	12/5/23	NC	BE	CP	CS	SCALE: NONE
				DATE: 12/5/23			
				DRAWN BY: BE			
				DRAWING NO.			
				S351PG33			
				CHECKED BY: CP			
				APPROVED BY: CS			
				P.O. BOX 669			
				CHOUTEAU, OK 74337			



4555 W Memorial Rd.
Oklahoma City, OK 73142

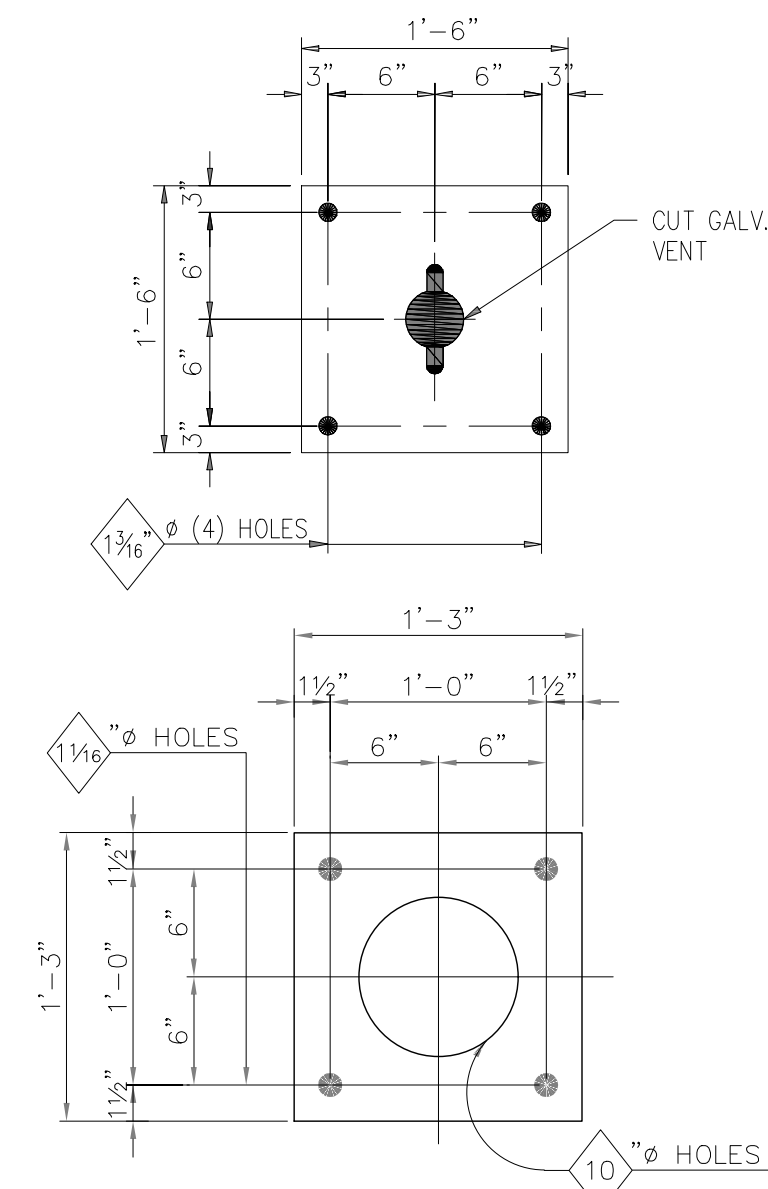


CONCRETE ROLLER DETAIL



H1 BAR BEND DETAIL

NOTE:
ALL REINFORCING STEEL DIMENSIONS
ARE OUT TO OUT



ANCHOR ROD DIMENSIONS			
ANCHOR ROD LENGTH			
ANCHOR ROD DIAMETER	ANCHOR ROD LENGTH	T1 (THREADS)	T2 (THREADS)
1"	3'-0"	7"	3"

- ANCHOR ROD NOTES
- ALL ANCHOR RODS SHALL BE ASTM F1554 GRADE 55 WITH (4) ASTM A563 GRADE A OR C HEAVY HEX NUTS AND (4) ASTM F436 FLAT WASHERS EACH AND SHALL BE GALVANIZED ACCORDING TO ASTM A153 UNLESS NOTED OTHERWISE.
 - ALL ANCHOR RODS SHALL BE SET WITH THE AID OF SETTING TEMPLATES.

ANCHOR ROD TEMPLATE - 2TP2

STRUCTURE BASE PLATE, ANCHOR BOLTS, AND TEMPLATES

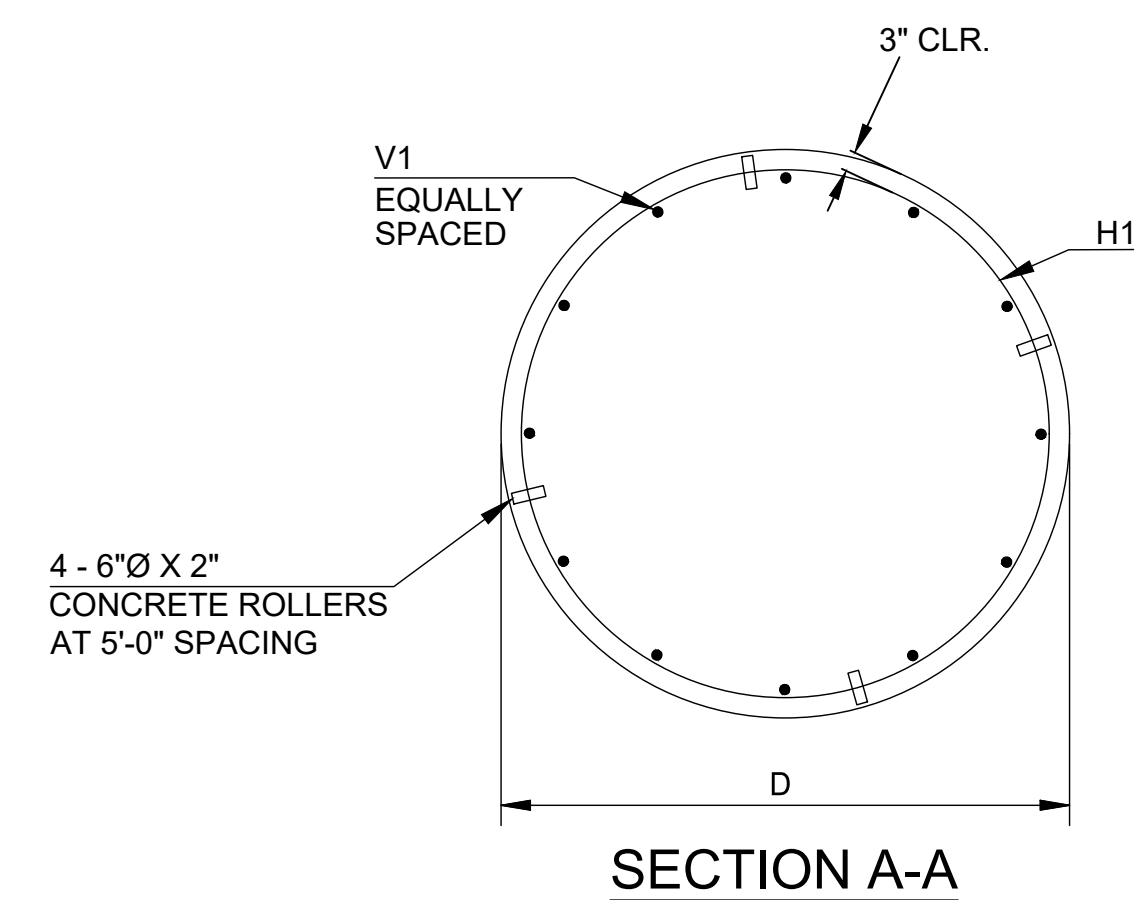
FOUNDATION	PIER QTY	DIAMETER "D" (FT)	LENGTH "L" (FT)	CONCRETE (YD ³ /PIER)	H1			V1			
					SIZE	LENGTH	QTY	DR	SIZE	LENGTH	QTY
D	2	3'-0"	8'-0"	*4.7	#4	9'-11"	10	2'-4"	#8	8'-6"	15

GENERAL NOTES

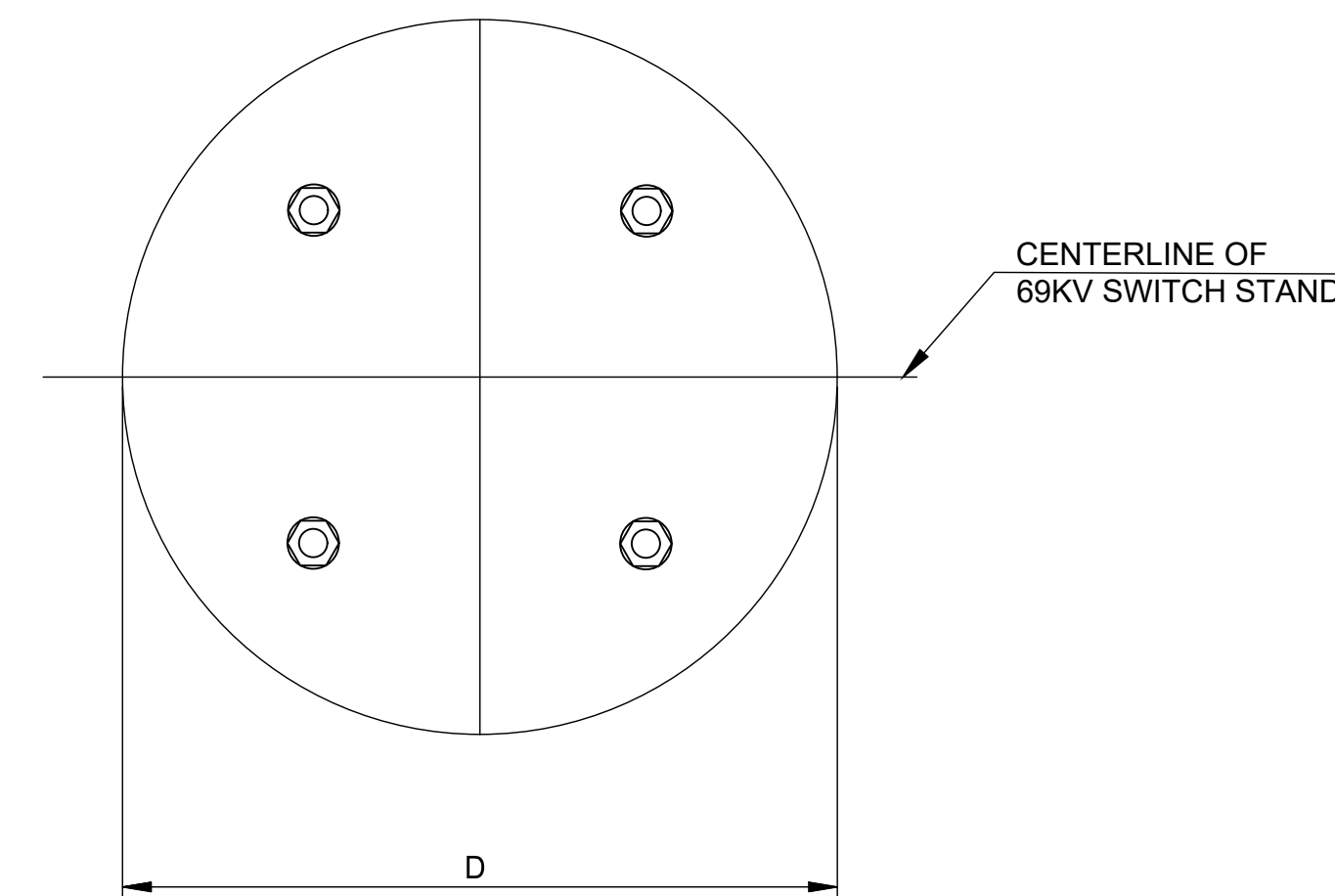
- CONCRETE SHALL BE HIGH EARLY STRENGTH WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS. CONCRETE SLUMP 1% ($\pm 1\%$) AND SHALL BE $6\pm 1"$. CONCRETE SHALL BE AIR ENTRAINED AT 4% EACH TRUCK LOAD TESTED AND RESULTS REPORTED TO PROJECT ENGINEER*. CONCRETE SHALL NOT EXCEED 90°F AT THE TIME OF PLACEMENT IN THE FORMS.
- TREMIE SHALL BE USED WHEN VERTICAL DROP FROM END OF CHUTE EXCEEDS 5'.
- REINFORCING STEEL SHALL BE FREE FROM RUST, MUD & GREASE.
- REINFORCING STEEL SHALL BE A615 GRADE 60.
- WHENEVER HOLE IS OVEREXCAVATED FOR ANY REASON, THE VOLUME OF OVEREXCAVATION SHALL BE FILLED WITH CONCRETE.
- POLE SHALL NOT BE LOADED UNTIL CONCRETE HAS REACHED 4000 PSI COMPRESSIVE STRENGTH OR AS DIRECTED BY THE ENGINEER.
- MINIMUM OF FOUR (4) TEST CYLINDERS SHALL BE TAKEN FROM THE FIRST TRUCK LOAD OF CONCRETE AND EVERY THIRD TRUCK THEREAFTER. TWO (2) CYLINDER SHALL BE BROKEN AT SEVEN DAYS AND THE REMAINING TWO (2) BROKEN AT 28 DAYS FOR ACCEPTANCE. TWO COPIES OF THE TEST REPORT SHALL BE SENT TO THE PROJECT ENGINEER*.
- FINISH SOIL GRADE AROUND COMPLETED PIER TO BE SLOPED TO DRAIN WATER AWAY FROM PIER. EXCESS SOIL TO BE REMOVED FROM RIGHT-OF-WAY.
- CONCRETE USED IN THE CONCRETE ROLLER SHALL HAVE A MINIMUM 28 DAY COMPRESSION STRENGTH OF 4,000 PSI. SLAB BOLSTERS, HIGH CHAIRS, OR PLASTIC ROLLERS SHALL NOT BE SUBSTITUTED FOR THE CONCRETE ROLLERS.
- SUBSTATION ENGINEERING OR CONSTRUCTION INSPECTOR MAY REQUEST ADDITIONAL TESTS TO BE MADE. CONTRACTOR WILL BE RESPONSIBLE FOR ALL TESTS AND ASSOCIATED COSTS. *11. THIS IS AN ESTIMATED CONCRETE VOLUME. CONTRACTOR TO CALCULATE ACTUAL CONCRETE VOLUME PRIOR TO JOB. DEPENDING ON SITE CONDITIONS, ADDITIONAL CONCRETE MAY BE REQUIRED.
- IF LOCK WASHER IS NOT PROVIDED, PEEN THE NUT AFTER LEVELING STRUCTURE.
- SEE HINDERLITER GEOTECHNICAL REPORT JUNE 10, 2022 FOR SOIL BORES, CONDITIONS, AND RECOMMENDATION. GROUNDWATER FOUND AT 17'-4".

REFERENCE DRAWINGS:

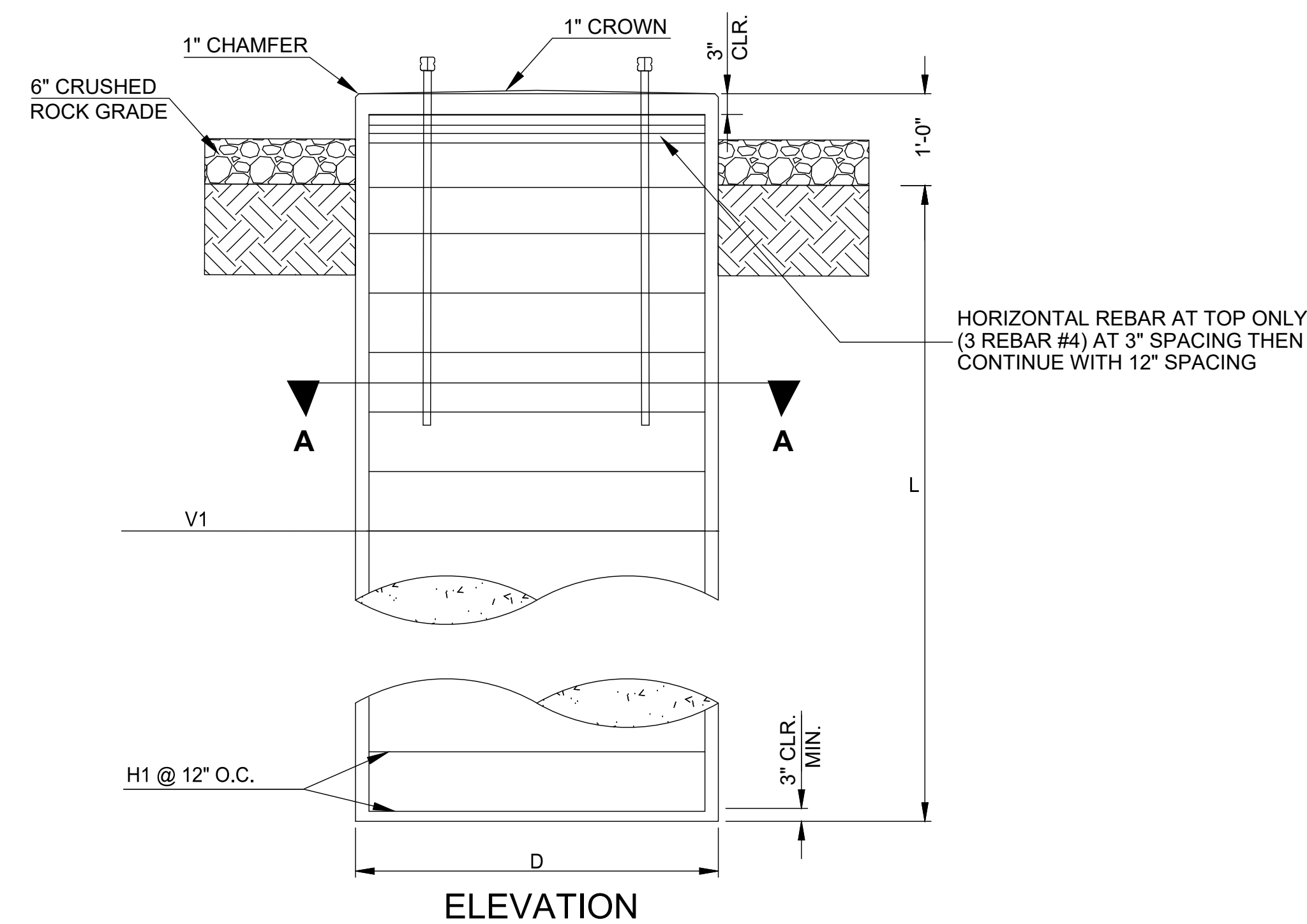
- S351PG30 FOUNDATION PLAN
- S351VS01 SWITCH STAND STRUCTURE (GS-201)



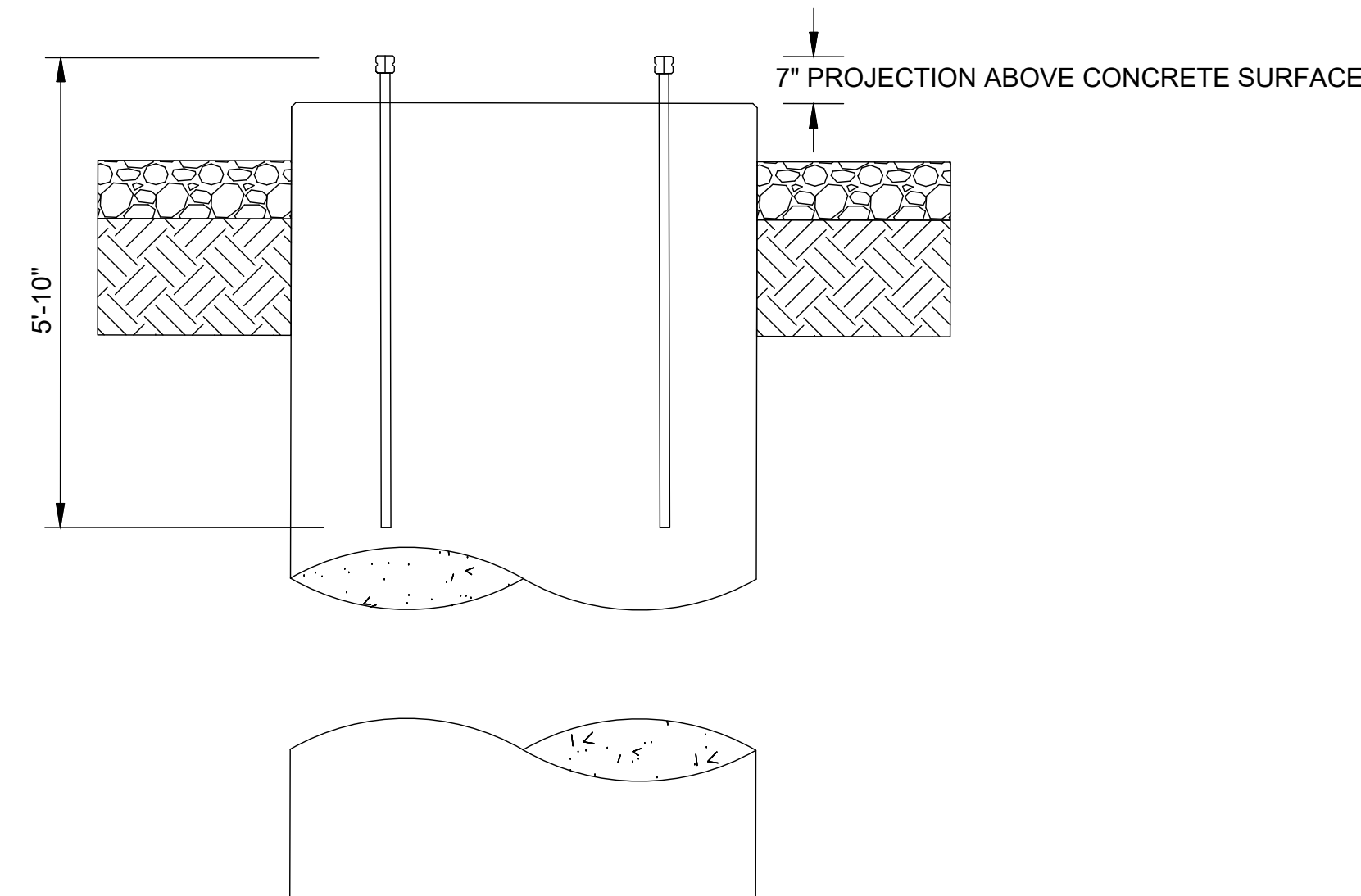
SECTION A-A



PLAN VIEW



ELEVATION



ELEVATION

ANCHOR BOLT CAGE ORIENTATION

DETAIL 'D'



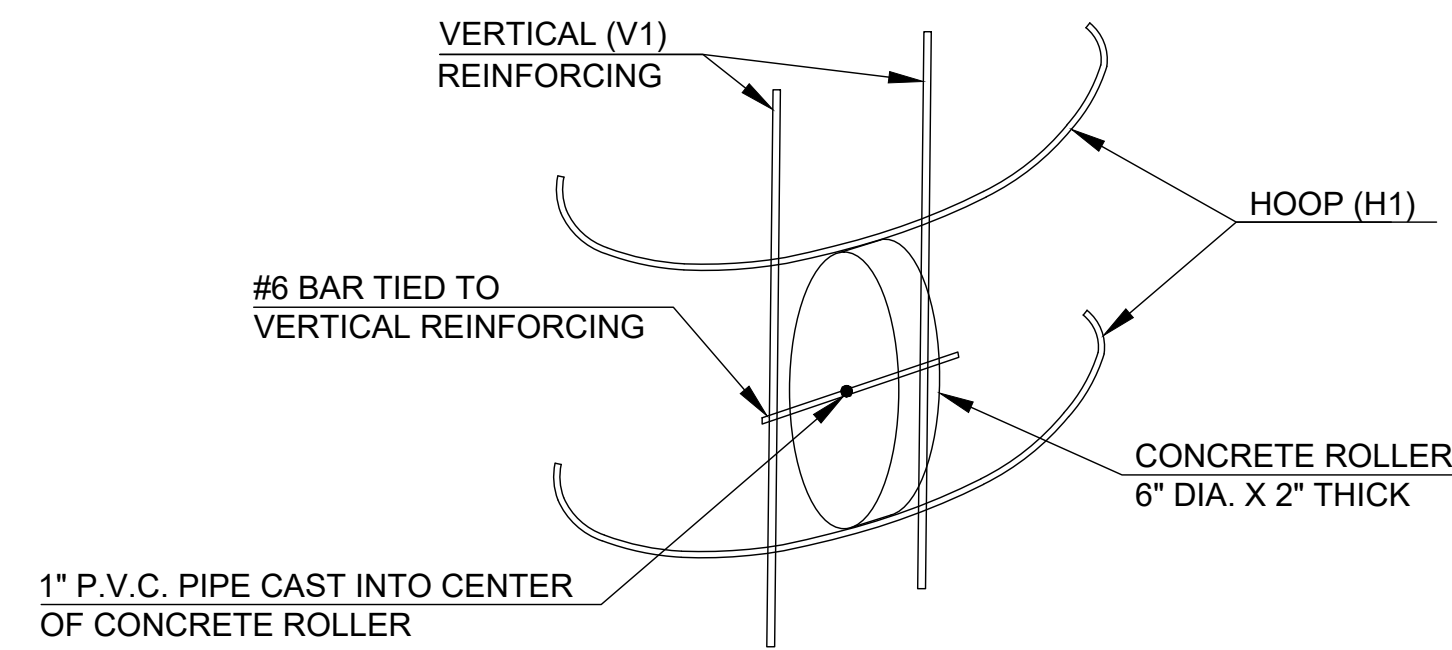
CEC CORPORATION
WWW.CONNECTCEC.COM
OK CAR: 32 EXP: 2024-06-30
4555 W MEMORIAL RD.
OKLAHOMA CITY, OK 73142
T. 405-753-4200



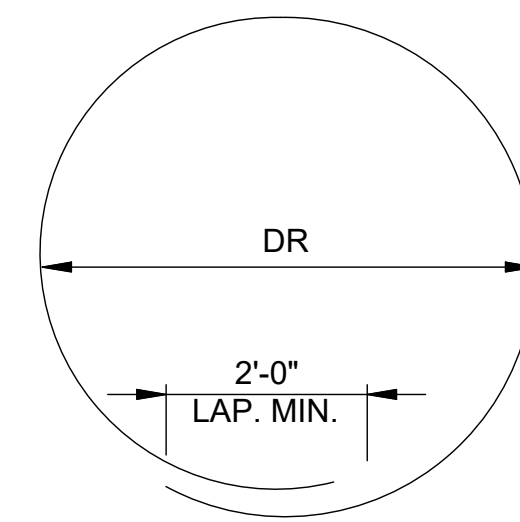
DESCRIPTION: ISSUED FOR CONSTRUCTION						GRAND RIVER DAM AUTHORITY				
1	RF022-01145	8/24/2023	CP	BE	JS	STILLWATER, OKLAHOMA 138/69kV				
DESCRIPTION: ISSUE FOR REVIEW						FOUNDATION DETAILS - 'D'				
0	RF022-01145	8/14/2023	CP	BE	JS	69kV SWITCH STAND				
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK	ISSUE APPROVD	ENGINEER: -	SCALE: NTS	DATE: 8/14/2023	REV.
							DRAWN BY: -	DRAWING NO.		1
							CHECKED BY: -	S351PG34		
							APPROVED BY: -			



P.O. BOX 669
CHOUTEAU, OK 74337

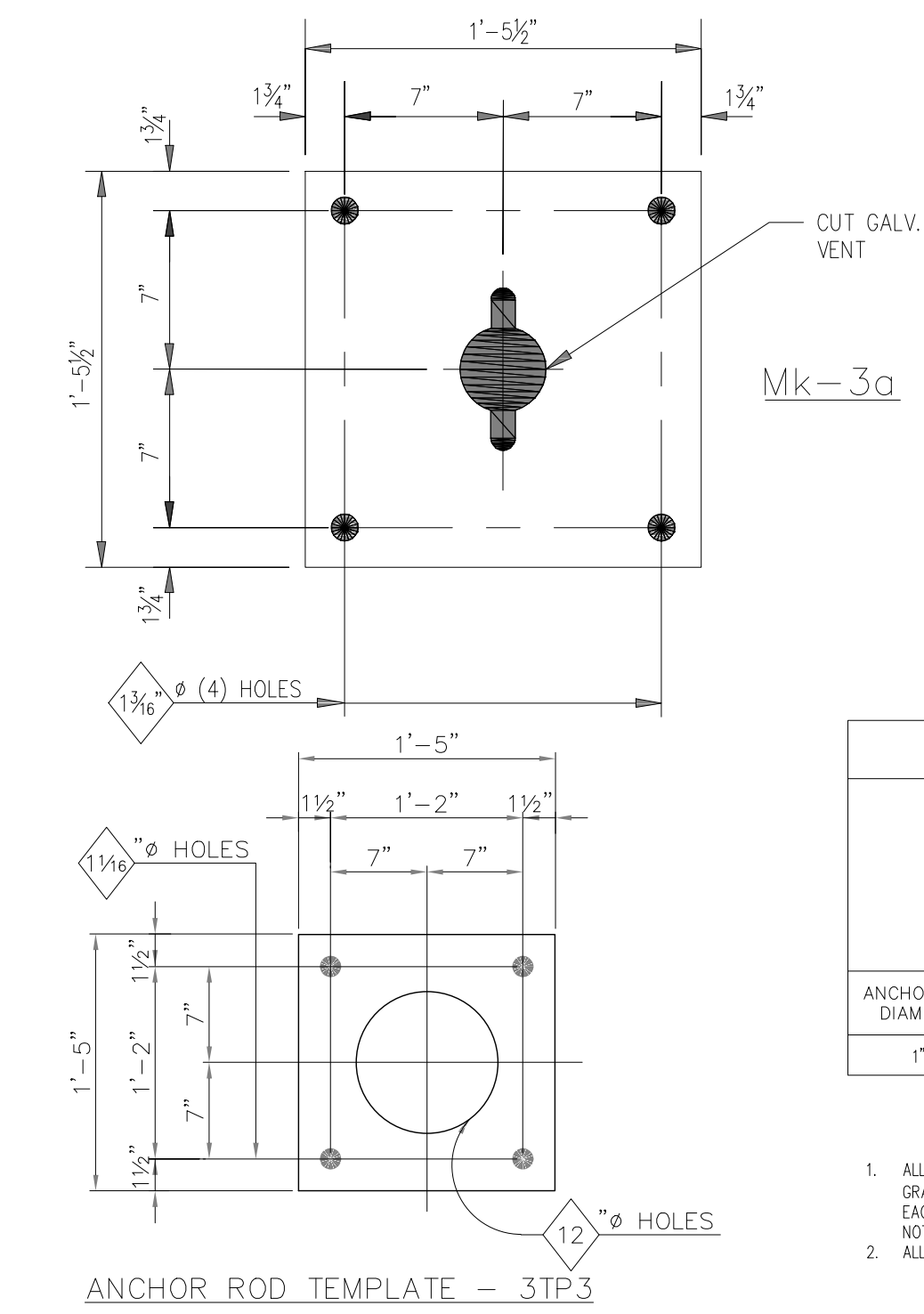


CONCRETE ROLLER DETAIL



H1 BAR BEND DETAIL

NOTE:
ALL REINFORCING STEEL DIMENSIONS
ARE OUT TO OUT



ANCHOR ROD DIMENSIONS			
ANCHOR ROD LENGTH			
T1 (THREADS)			
T2 (THREADS)			
ANCHOR ROD DIAMETER	ANCHOR ROD LENGTH	T1 (THREADS)	T2 (THREADS)
1"	3'-0"	7"	3"

- ANCHOR ROD NOTES
- ALL ANCHOR RODS SHALL BE ASTM F1554 GRADE 55 WITH (4) ASTM A563 GRADE A OR C HEAVY HEX NUTS AND (4) ASTM F436 FLAT WASHERS EACH AND SHALL BE GALVANIZED ACCORDING TO ASTM A153 UNLESS NOTED OTHERWISE.
 - ALL ANCHOR RODS SHALL BE SET WITH THE AID OF SETTING TEMPLATES.

STRUCTURE BASE PLATE, ANCHOR BOLTS, AND TEMPLATES

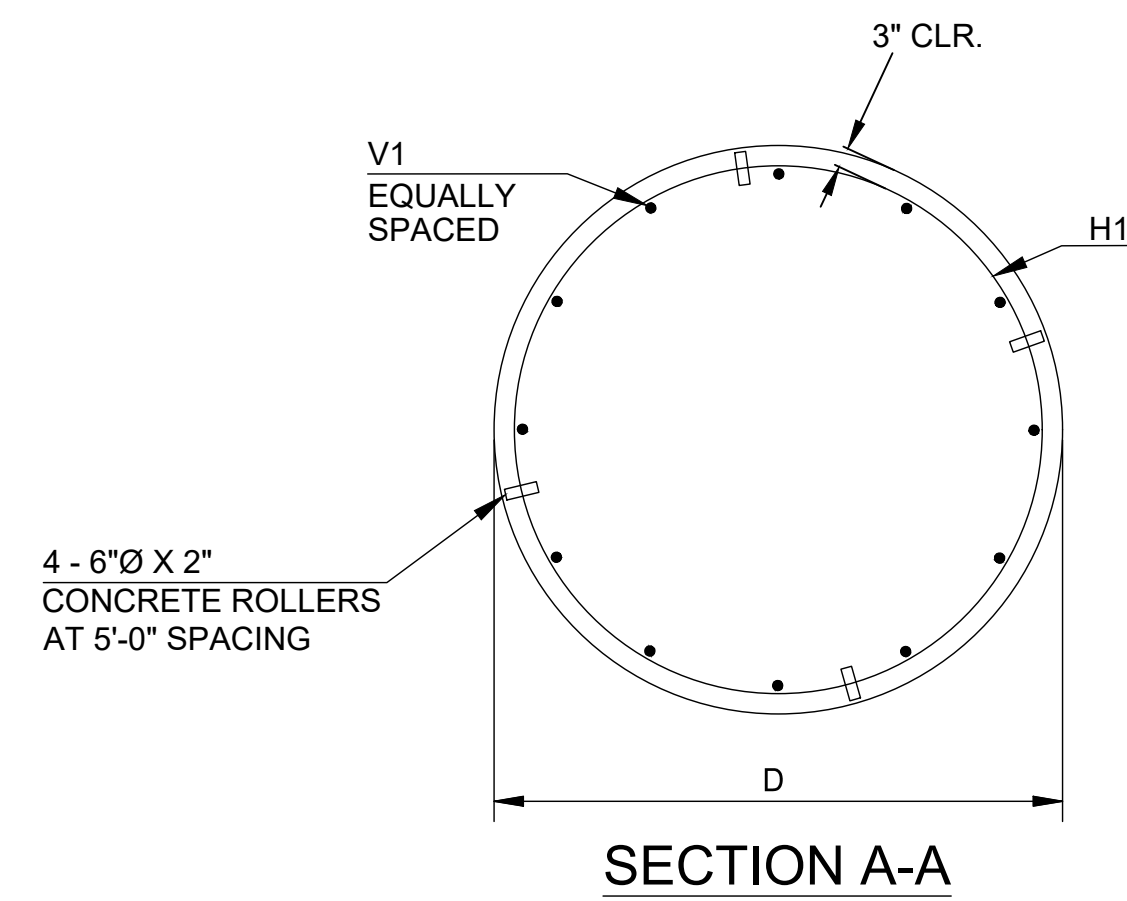
FOUNDATION	PIER QTY	DIAMETER "D" (FT)	LENGTH "L" (FT)	CONCRETE (YD ³ /PIER)	H1				V1		
					SIZE	LENGTH	QTY	DR	SIZE	LENGTH	QTY
C	2	3'-0"	6'-0"	*3.8	#4	9'-11"	8	2'-4"	#8	6'-6"	15

GENERAL NOTES

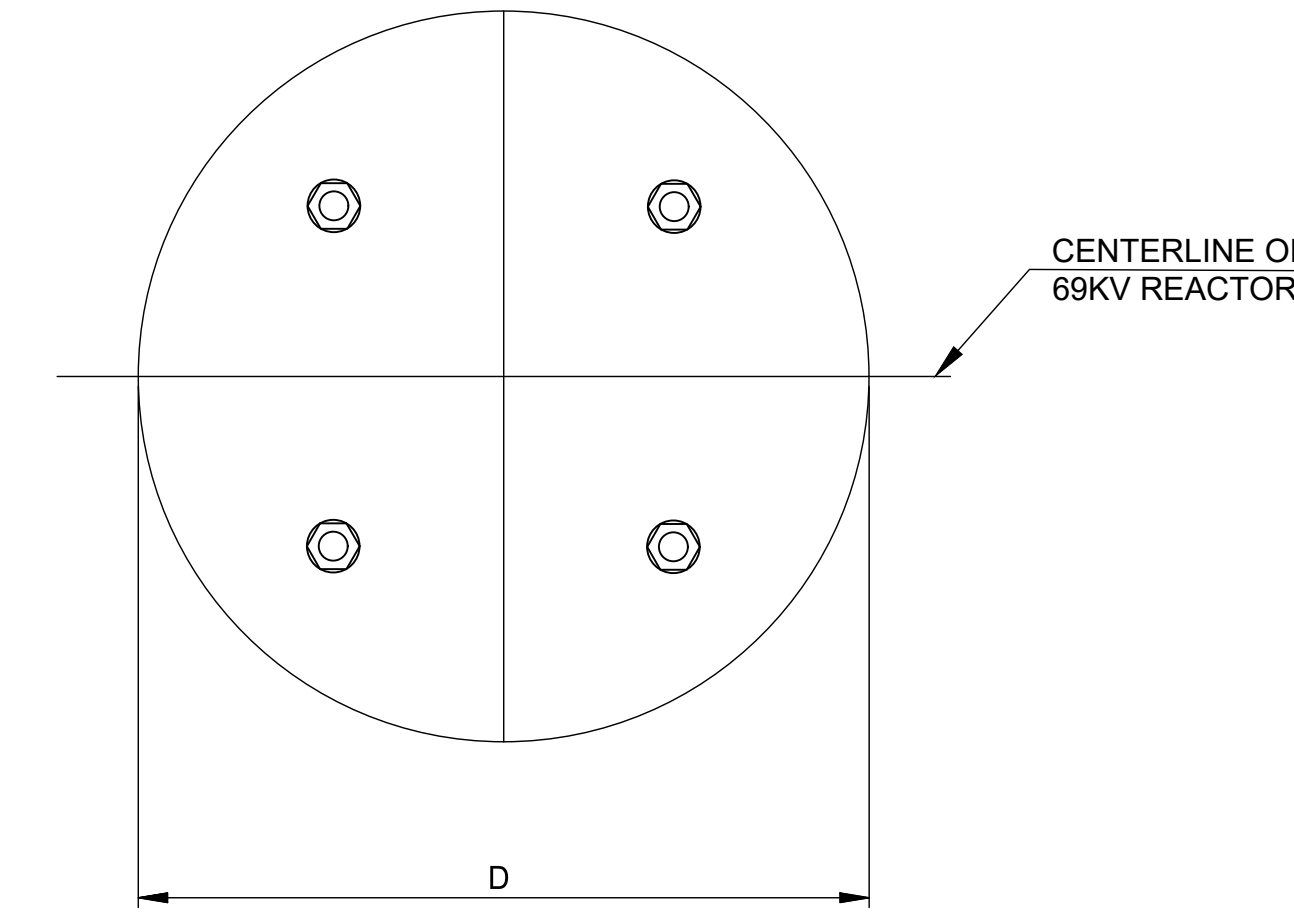
- CONCRETE SHALL BE HIGH EARLY STRENGTH WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS. CONCRETE SLUMP 1% ($\pm 1\%$) AND SHALL BE $6\pm 1"$. CONCRETE SHALL BE AIR ENTRAINED AT 4.2 EACH TRUCK LOAD TESTED AND RESULTS REPORTED TO PROJECT ENGINEER*. CONCRETE SHALL NOT EXCEED 90°F AT THE TIME OF PLACEMENT IN THE FORMS.
- TREMIE SHALL BE USED WHEN VERTICAL DROP FROM END OF CHUTE EXCEEDS 5'.
- REINFORCING STEEL SHALL BE FREE FROM RUST, MUD & GREASE.
- REINFORCING STEEL SHALL BE A615 GRADE 60.
- WHENEVER HOLE IS OVEREXCAVATED FOR ANY REASON, THE VOLUME OF OVEREXCAVATION SHALL BE FILLED WITH CONCRETE.
- POLE SHALL NOT BE LOADED UNTIL CONCRETE HAS REACHED 4000 PSI COMPRESSIVE STRENGTH OR AS DIRECTED BY THE ENGINEER.
- MINIMUM OF FOUR (4) TEST CYLINDERS SHALL BE TAKEN FROM THE FIRST TRUCK LOAD OF CONCRETE AND EVERY THIRD TRUCK THEREAFTER. TWO (2) CYLINDER SHALL BE BROKEN AT SEVEN DAYS AND THE REMAINING TWO (2) BROKEN AT 28 DAYS FOR ACCEPTANCE. TWO COPIES OF THE TEST REPORT SHALL BE SENT TO THE PROJECT ENGINEER*.
- FINISH SOIL GRADE AROUND COMPLETED PIER TO BE SLOPED TO DRAIN WATER AWAY FROM PIER. EXCESS SOIL TO BE REMOVED FROM RIGHT-OF-WAY.
- CONCRETE USED IN THE CONCRETE ROLLER SHALL HAVE A MINIMUM 28 DAY COMPRESSION STRENGTH OF 4,000 PSI. SLAB BOLSTERS, HIGH CHAIRS, OR PLASTIC ROLLERS SHALL NOT BE SUBSTITUTED FOR THE CONCRETE ROLLERS.
- SUBSTATION ENGINEERING OR CONSTRUCTION INSPECTOR MAY REQUEST ADDITIONAL TESTS TO BE MADE. CONTRACTOR WILL BE RESPONSIBLE FOR ALL TESTS AND ASSOCIATED COSTS. *11. THIS IS AN ESTIMATED CONCRETE VOLUME. CONTRACTOR TO CALCULATE ACTUAL CONCRETE VOLUME PRIOR TO JOB. DEPENDING ON SITE CONDITIONS, ADDITIONAL CONCRETE MAY BE REQUIRED.
- IF LOCK WASHER IS NOT PROVIDED, PEEN THE NUT AFTER LEVELING STRUCTURE.
- SEE HINDERLITER GEOTECHNICAL REPORT JUNE 10, 2022 FOR SOIL BORES, CONDITIONS, AND RECOMMENDATION. GROUNDWATER FOUND AT 17'-4".

REFERENCE DRAWINGS:

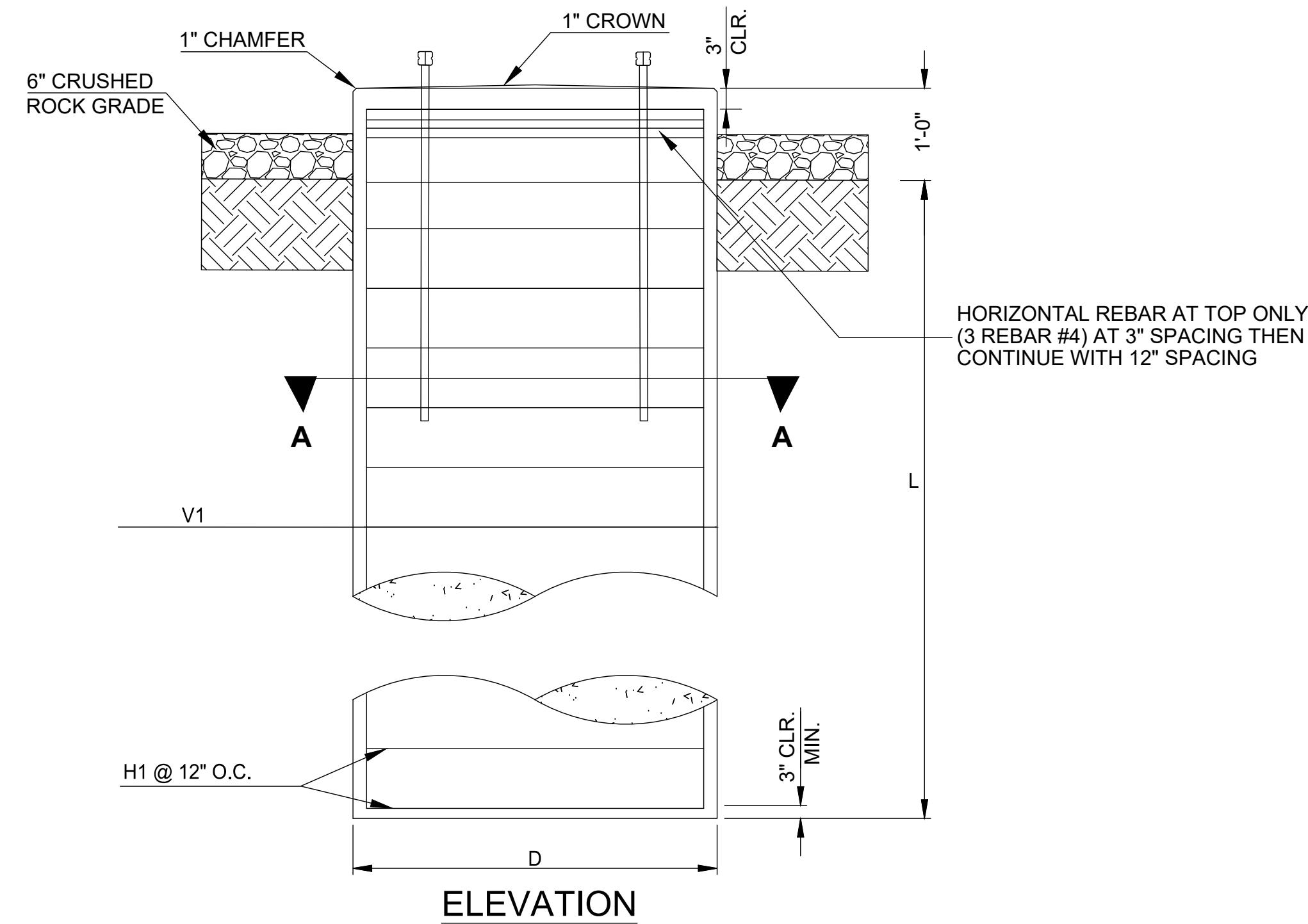
- S351PG30 FOUNDATION PLAN
- S351VS02 REACTOR SUPPORT STRUCTURE (GS-201)



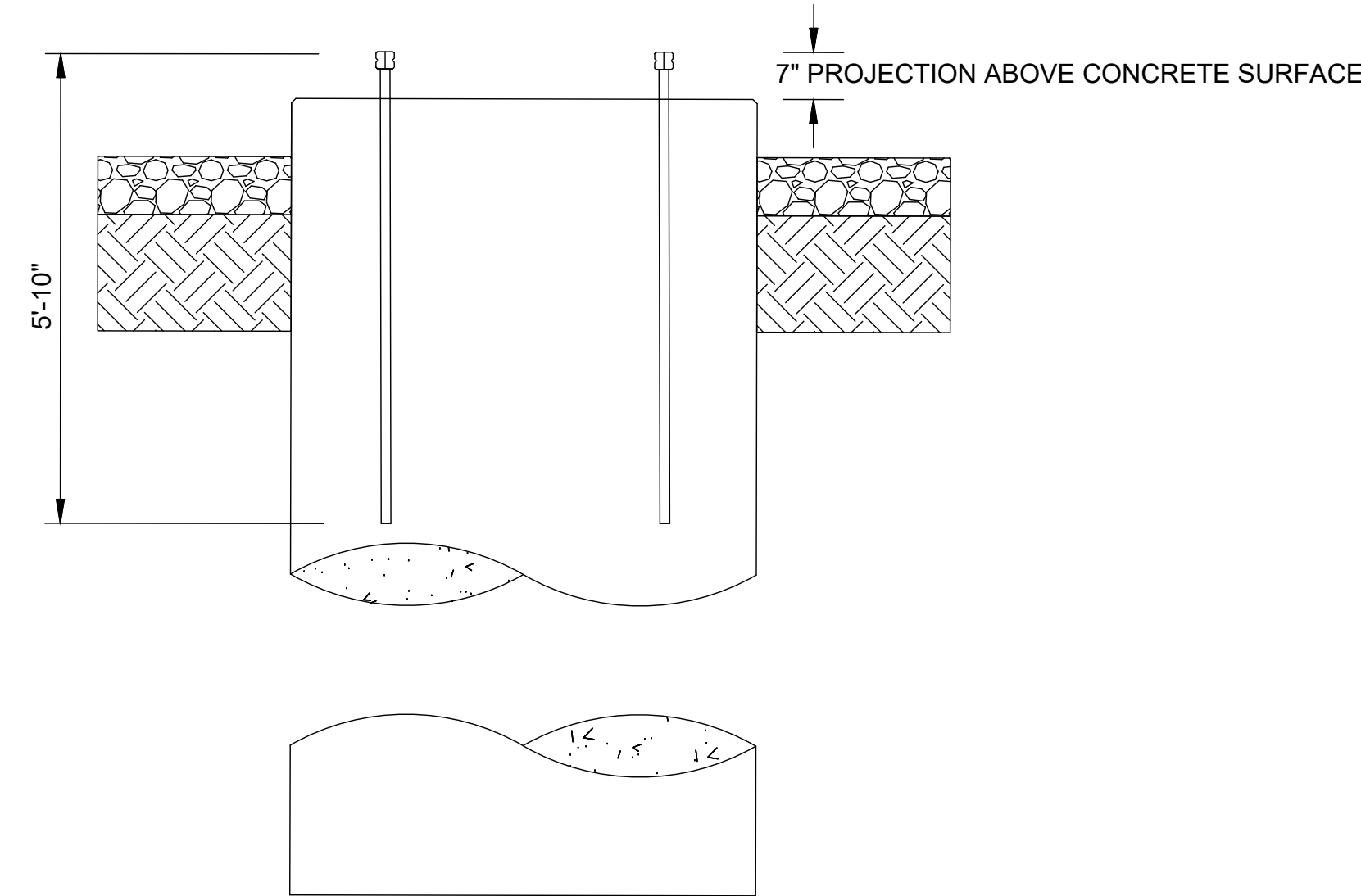
SECTION A-A



PLAN VIEW



ELEVATION



ELEVATION

ANCHOR BOLT CAGE ORIENTATION

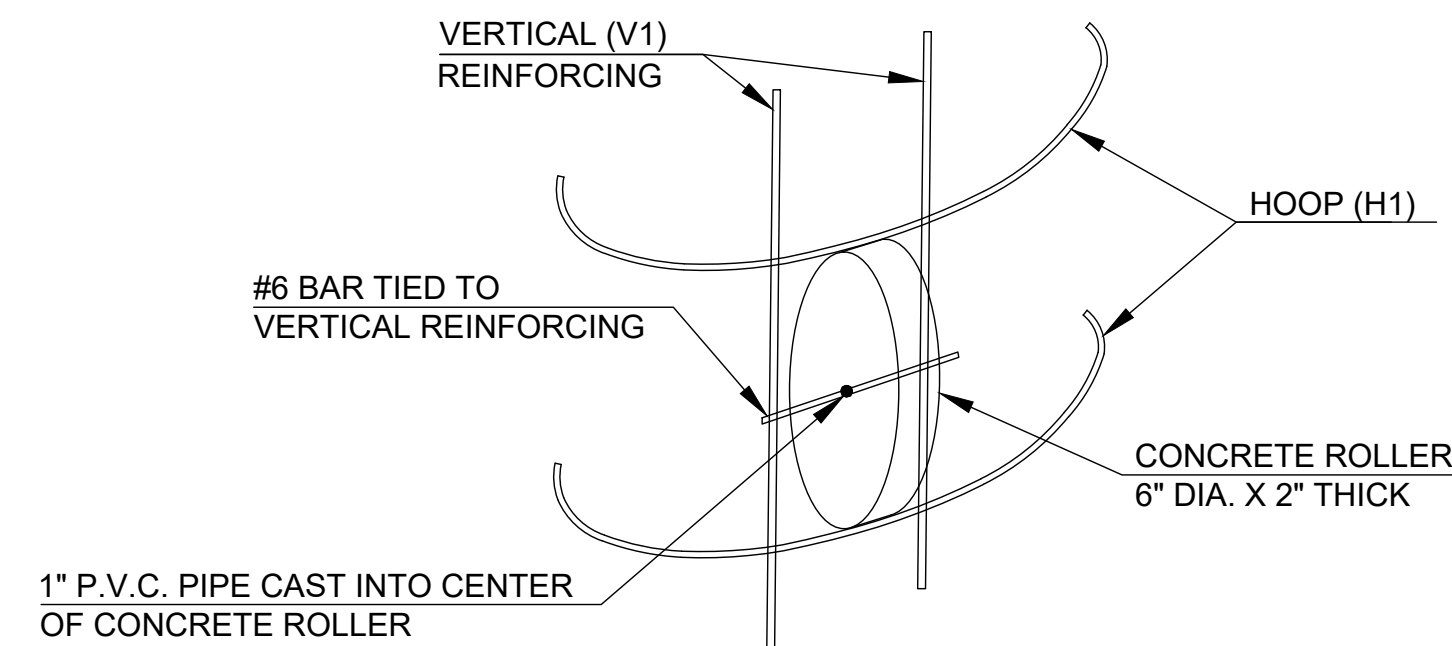
DETAIL 'C'



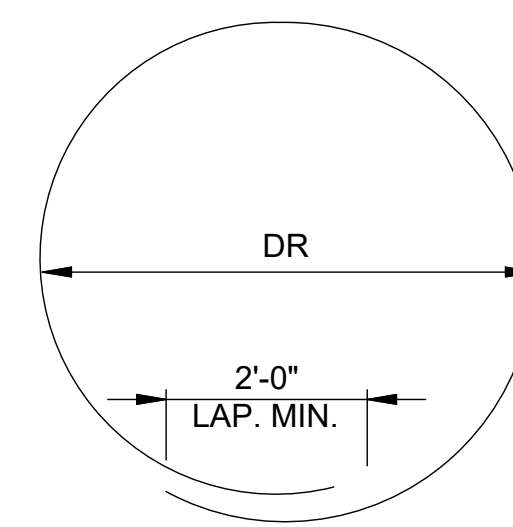
CEC CORPORATION
WWW.CONNECTCEC.COM
OK CAR: 32 EXP: 2024-06-30
4555 W MEMORIAL RD.
OKLAHOMA CITY, OK 73142
T. 405-753-4200



DESCRIPTION: ISSUED FOR CONSTRUCTION						GRAND RIVER DAM AUTHORITY				
1	RF022-01145	8/24/2023	CP	BE	JS	STILLWATER KINZIE INTERCONNECT S351				
DESCRIPTION: ISSUE FOR REVIEW						STILLWATER, OKLAHOMA 138/69kV				
0	RF022-01145	8/14/2023	CP	BE	JS	FOUNDATION DETAILS - 'C'				
						69kV 3Ø REACTOR SUPPORT				
						ENGINEER: -	SCALE: NTS	DATE: 8/14/2023	REV.	
						DRAWN BY: -	DRAWING NO.			
						CHECKED BY: -		S351PG35		1
						APPROVED BY: -				
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFTG	DESIGN CHECK	ISSUE APPROVD	P.O. BOX 669 CHOUTEAU, OK 74337			

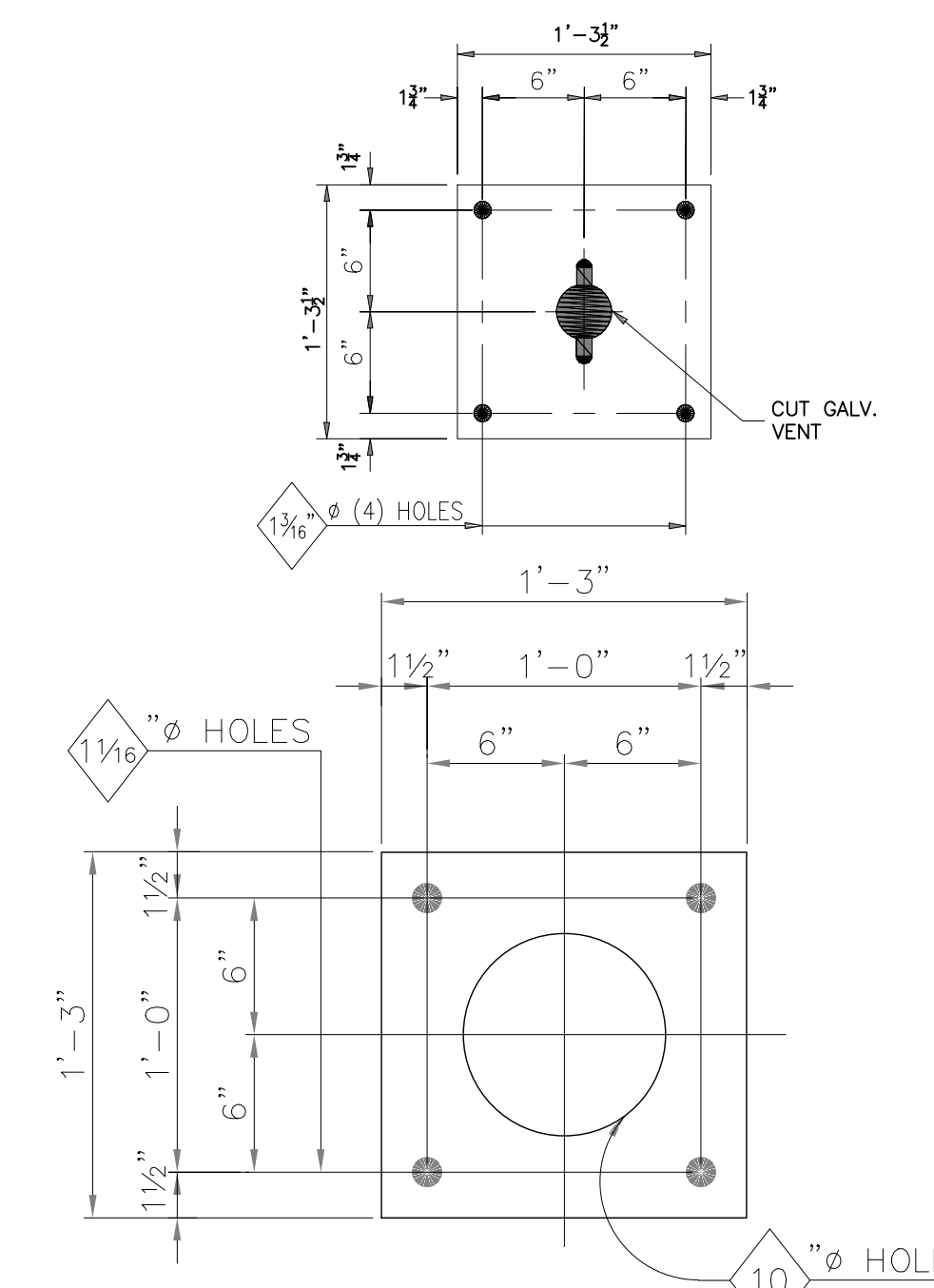


CONCRETE ROLLER DETAIL



H1 BAR BEND DETAIL

NOTE:
ALL REINFORCING STEEL DIMENSIONS
ARE OUT TO OUT



ANCHOR ROD TEMPLATE - 1TP1

ANCHOR ROD DIMENSIONS			
ANCHOR ROD DIAMETER	ANCHOR ROD LENGTH	T1 (THREADS)	T2 (THREADS)
1"Ø	3'-0"	7"	3"

ANCHOR ROD NOTES

- ALL ANCHOR RODS SHALL BE ASTM F1554 GRADE 55 WITH (4) ASTM A563 GRADE A OR C HEAVY HEX NUTS AND (4) ASTM F436 FLAT WASHERS EACH AND SHALL BE GALVANIZED ACCORDING TO ASTM A153 UNLESS NOTED OTHERWISE.
- ALL ANCHOR RODS SHALL BE SET WITH THE AID OF SETTING TEMPLATES.

STRUCTURE BASE PLATE, ANCHOR BOLTS, AND TEMPLATES

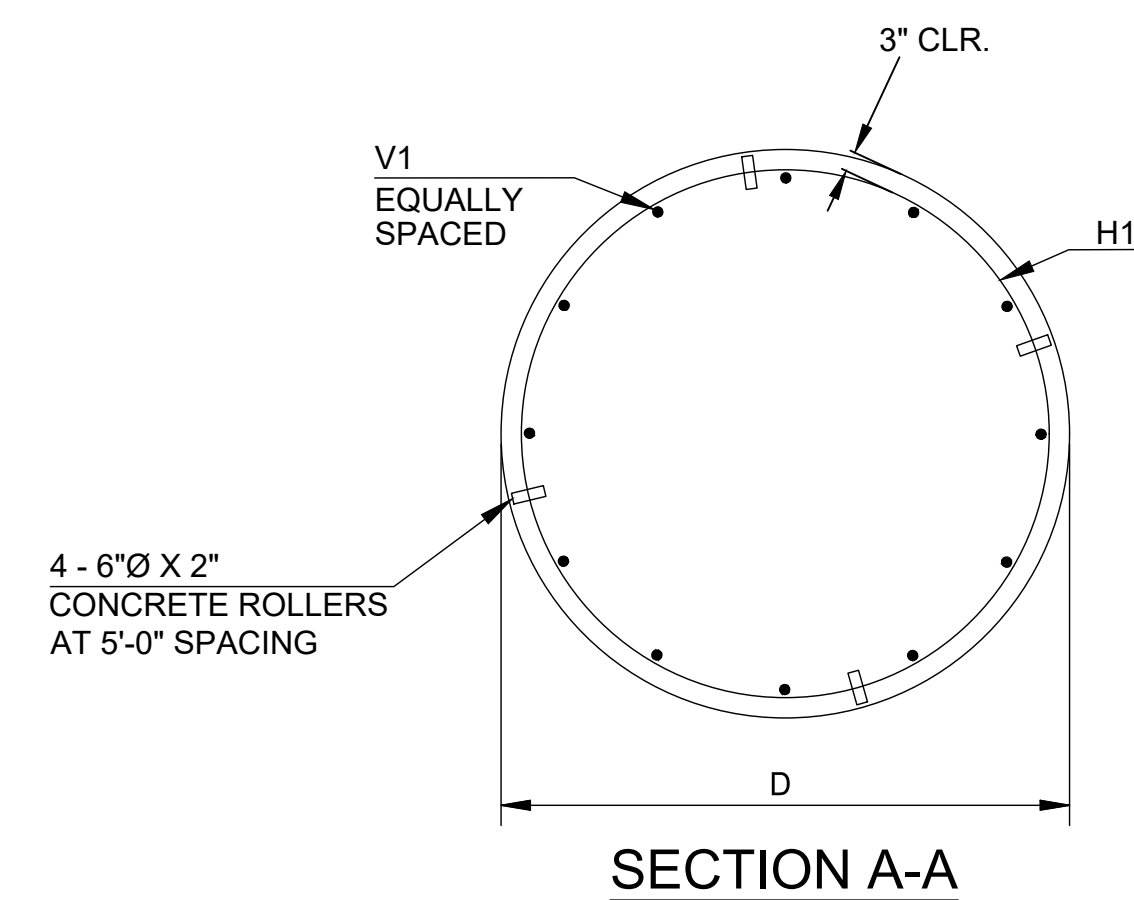
FOUNDATION	PIER QTY	DIAMETER "D" (FT)	LENGTH "L" (FT)	CONCRETE (YD ³ /PIER)	H1			V1			
					SIZE	LENGTH	QTY	DR	SIZE	LENGTH	QTY
A	1	3'-0"	6'-0"	*1.9	#4	9'-11"	8	2'-4"	#8	6'-6"	15

GENERAL NOTES

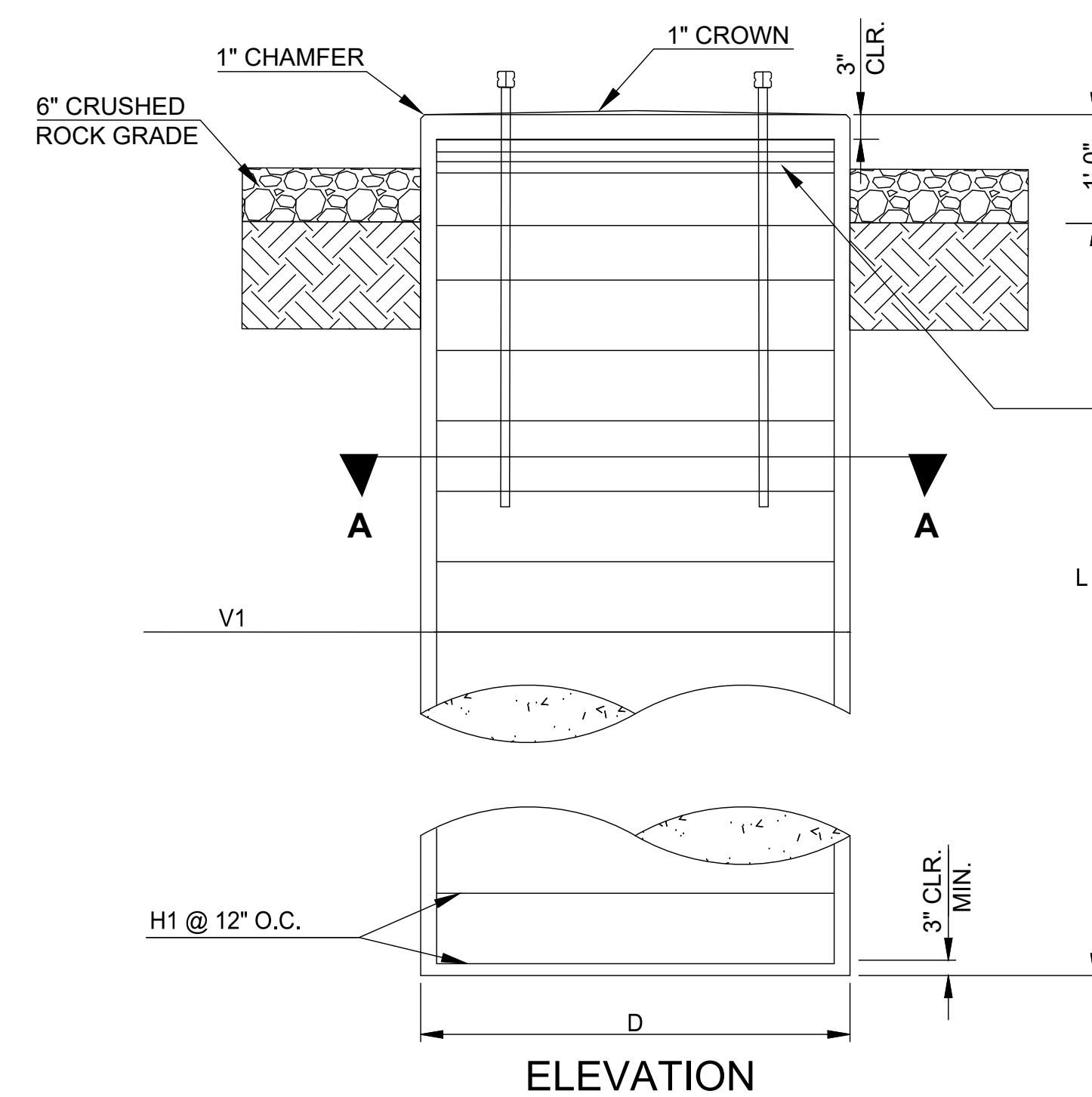
- CONCRETE SHALL BE HIGH EARLY STRENGTH WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS. CONCRETE SLUMP 1% (±1%) AND SHALL BE 6"±1". CONCRETE SHALL BE AIR ENTRAINED AT 4% EACH TRUCK LOAD TESTED AND RESULTS REPORTED TO PROJECT ENGINEER*. CONCRETE SHALL NOT EXCEED 90°F AT THE TIME OF PLACEMENT IN THE FORMS.
- TREMIE SHALL BE USED WHEN VERTICAL DROP FROM END OF CHUTE EXCEEDS 5'.
- REINFORCING STEEL SHALL BE FREE FROM RUST, MUD & GREASE.
- REINFORCING STEEL SHALL BE A615 GRADE 60.
- WHENEVER HOLE IS OVEREXCAVATED FOR ANY REASON, THE VOLUME OF OVEREXCAVATION SHALL BE FILLED WITH CONCRETE.
- POLE SHALL NOT BE LOADED UNTIL CONCRETE HAS REACHED 4000 PSI COMPRESSIVE STRENGTH OR AS DIRECTED BY THE ENGINEER.
- MINIMUM OF FOUR (4) TEST CYLINDERS SHALL BE TAKEN FROM THE FIRST TRUCK LOAD OF CONCRETE AND EVERY THIRD TRUCK THEREAFTER. TWO (2) CYLINDER SHALL BE BROKEN AT SEVEN DAYS AND THE REMAINING TWO (2) BROKEN AT 28 DAYS FOR ACCEPTANCE. TWO COPIES OF THE TEST REPORT SHALL BE SENT TO THE PROJECT ENGINEER*.
- FINISH SOIL GRADE AROUND COMPLETED PIER TO BE SLOPED TO DRAIN WATER AWAY FROM PIER. EXCESS SOIL TO BE REMOVED FROM RIGHT-OF-WAY.
- CONCRETE USED IN THE CONCRETE ROLLER SHALL HAVE A MINIMUM 28 DAY COMPRESSION STRENGTH OF 4,000 PSI. SLAB BOLSTERS, HIGH CHAIRS, OR PLASTIC ROLLERS SHALL NOT BE SUBSTITUTED FOR THE CONCRETE ROLLERS.
- SUBSTATION ENGINEERING OR CONSTRUCTION INSPECTOR MAY REQUEST ADDITIONAL TESTS TO BE MADE. CONTRACTOR WILL BE RESPONSIBLE FOR ALL TESTS AND ASSOCIATED COSTS. *11. THIS IS AN ESTIMATED CONCRETE VOLUME. CONTRACTOR TO CALCULATE ACTUAL CONCRETE VOLUME PRIOR TO JOB. DEPENDING ON SITE CONDITIONS, ADDITIONAL CONCRETE MAY BE REQUIRED.
- IF LOCK WASHER IS NOT PROVIDED, PEEN THE NUT AFTER LEVELING STRUCTURE.
- SEE HINDERLITER GEOTECHNICAL REPORT JUNE 10, 2022 FOR SOIL BORES, CONDITIONS, AND RECOMMENDATION. GROUNDWATER FOUND AT 17'-4".

REFERENCE DRAWINGS:

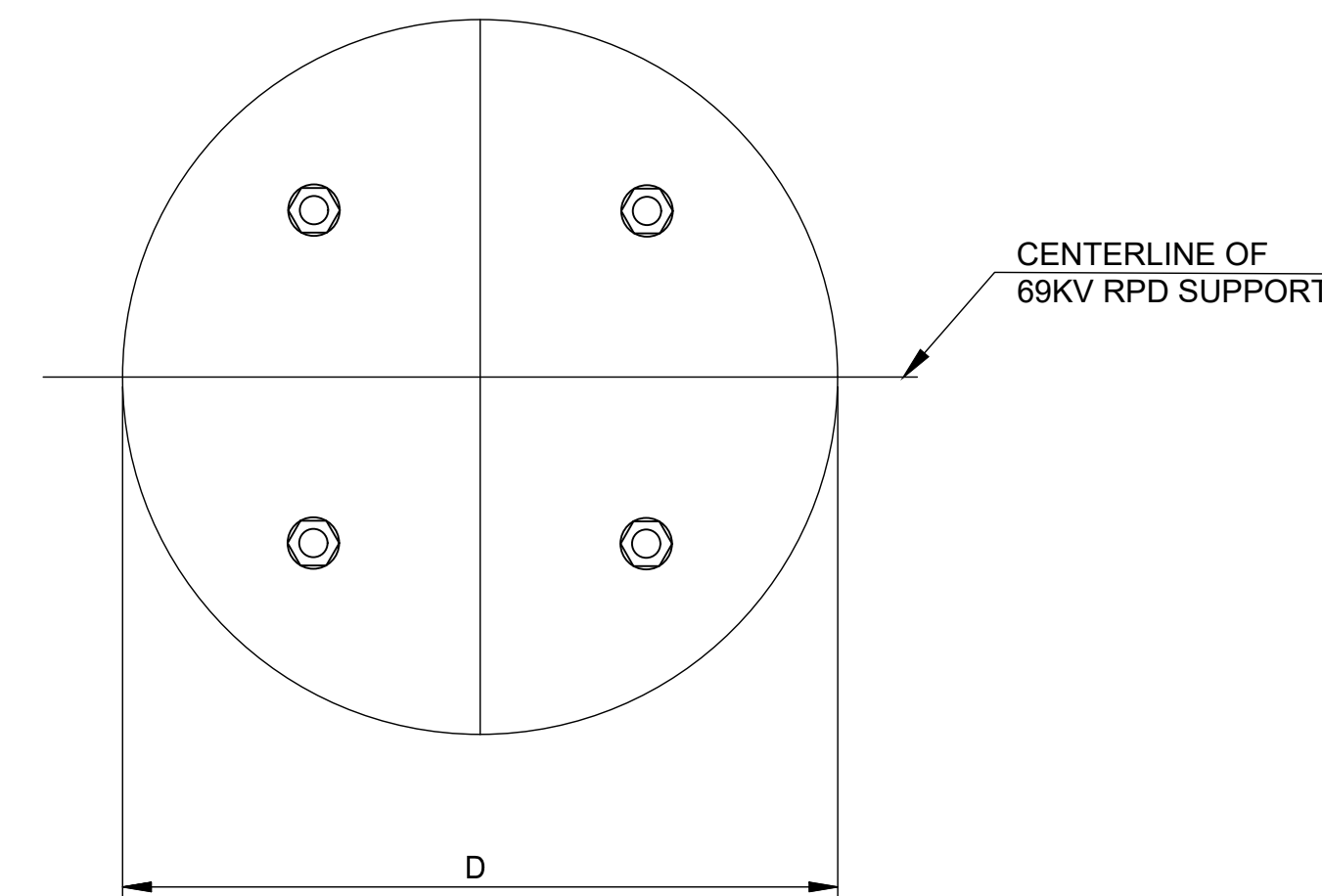
- S351PG30 FOUNDATION PLAN
- S351VS03 REACTOR SUPPORT STRUCTURE (GS-201)



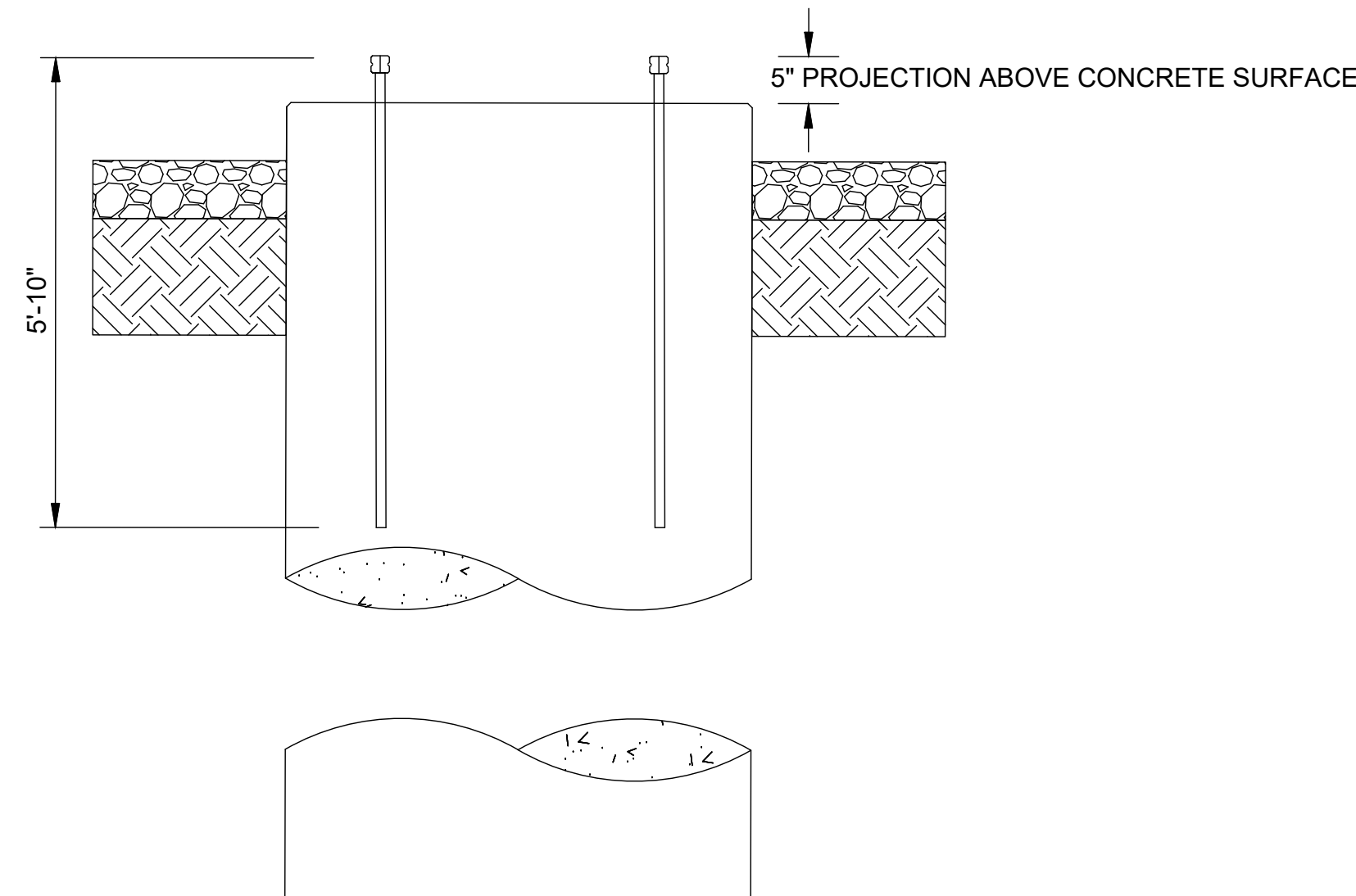
SECTION A-A



ELEVATION



PLAN VIEW



ELEVATION

ANCHOR BOLT CAGE ORIENTATION

DETAIL 'A'

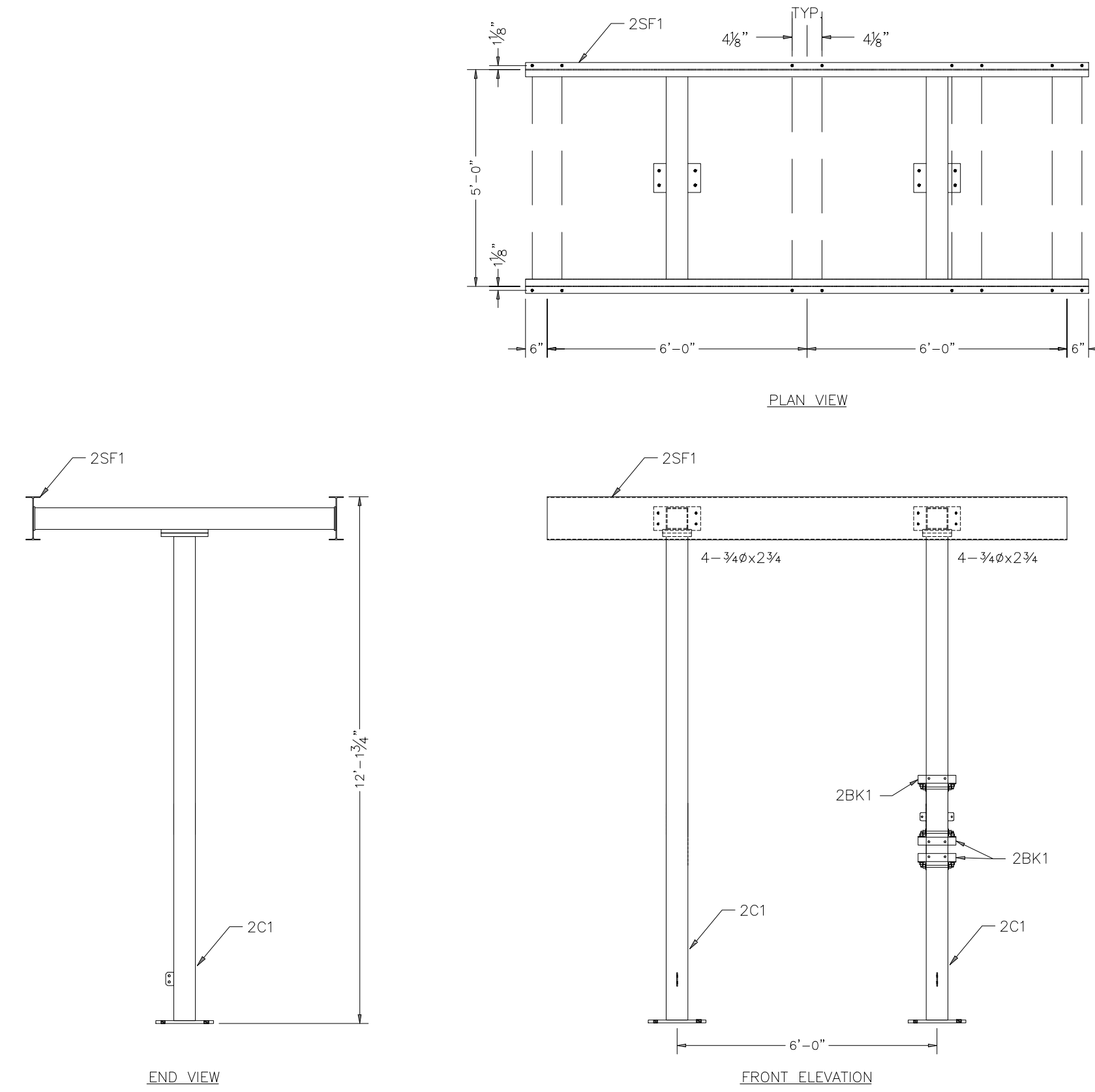


CEC CORPORATION
WWW.CONNECTCEC.COM
OK CAR: 32 EXP: 2024-06-30
4555 W MEMORIAL RD.
OKLAHOMA CITY, OK 73142
T. 405-753-4200

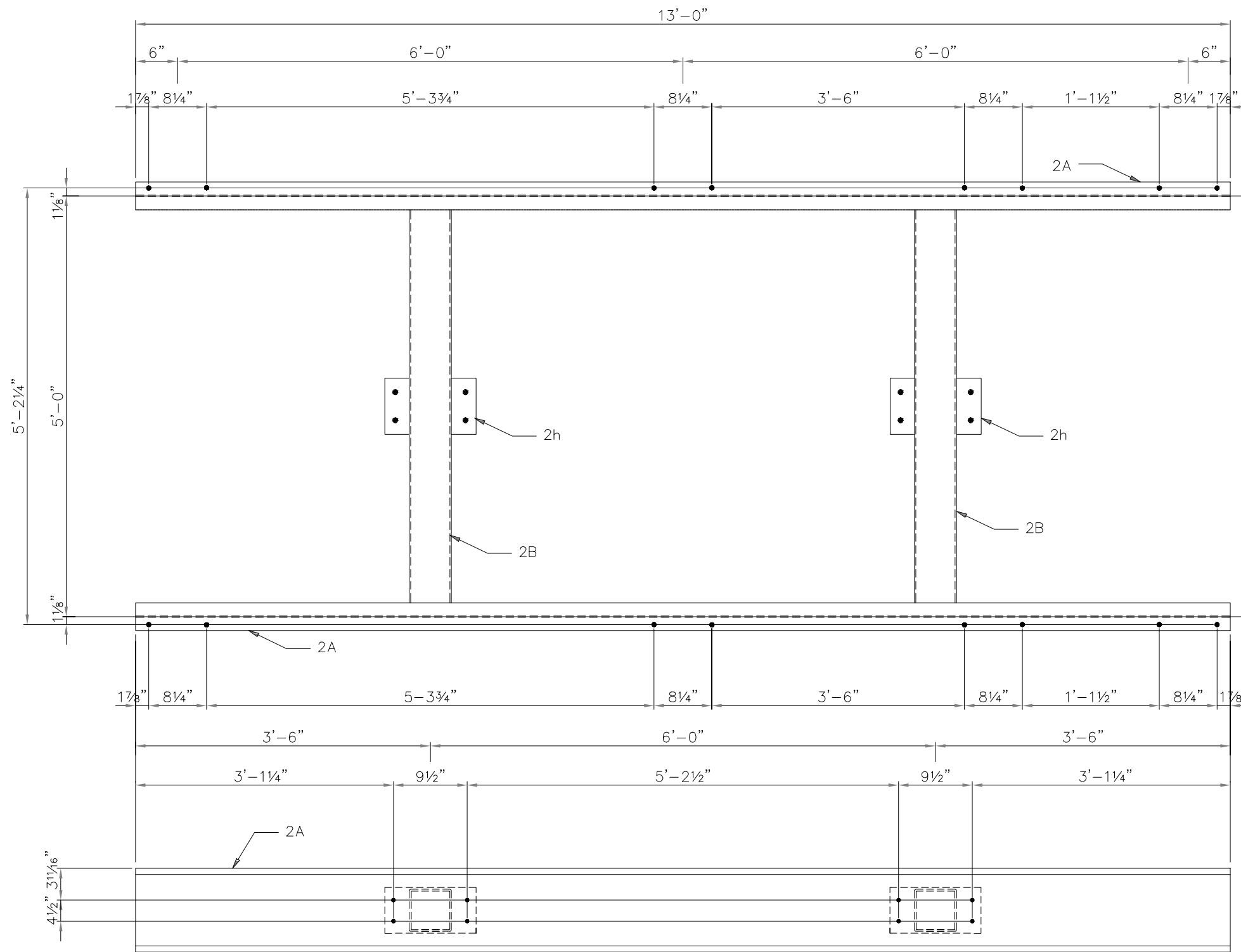


DESCRIPTION: ISSUED FOR CONSTRUCTION					
1	RF022-01145	8/24/2023	CP	BE	JS JB
DESCRIPTION: ISSUE FOR REVIEW					
0	RF022-01145	8/14/2023	CP	BE	JS -
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK
					ISSUE APPROV

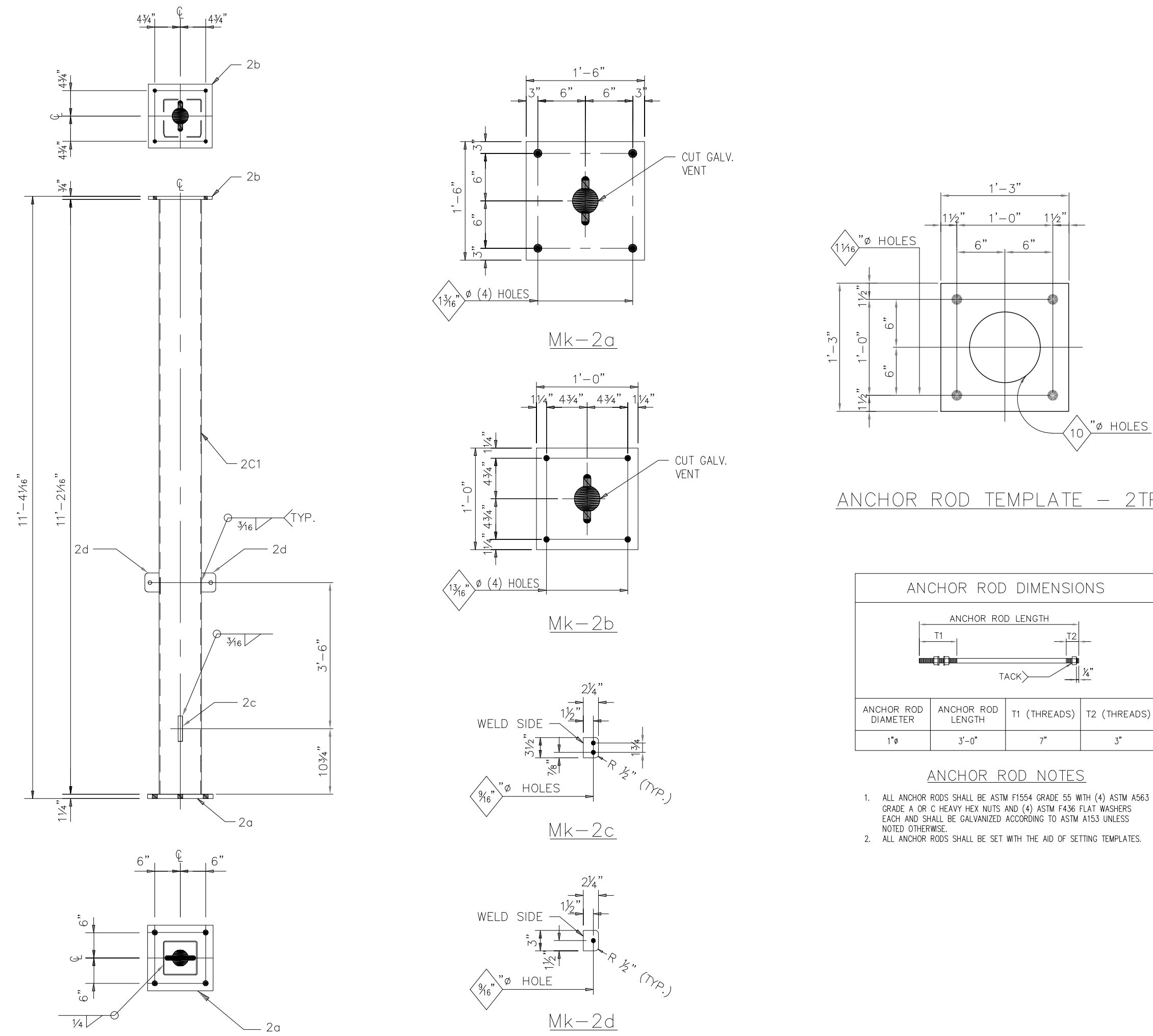
GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kV			
FOUNDATION DETAILS - 'A' 69kV RPD SUPPORT			
ENGINEER: -	SCALE: NTS	DATE: 8/14/2023	REV.
DRAWN BY: -	DRAWING NO.		
CHECKED BY: -			
APPROVED BY: -			
P.O. BOX 669 CHOUTEAU, OK 74337		S351PG36	
		1	



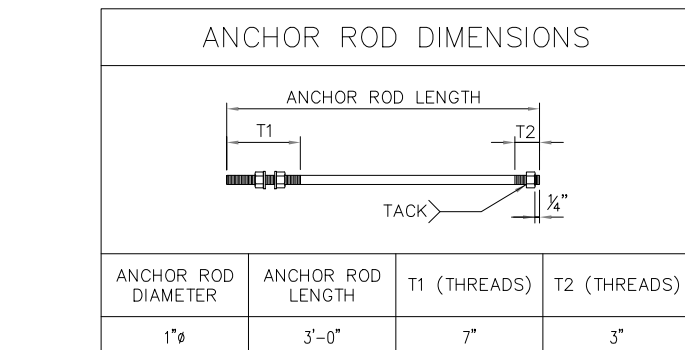
69kV SWITCH STAND 2SS1
STRUCTURE GS-210



SWITCH FRAME - 2SF1

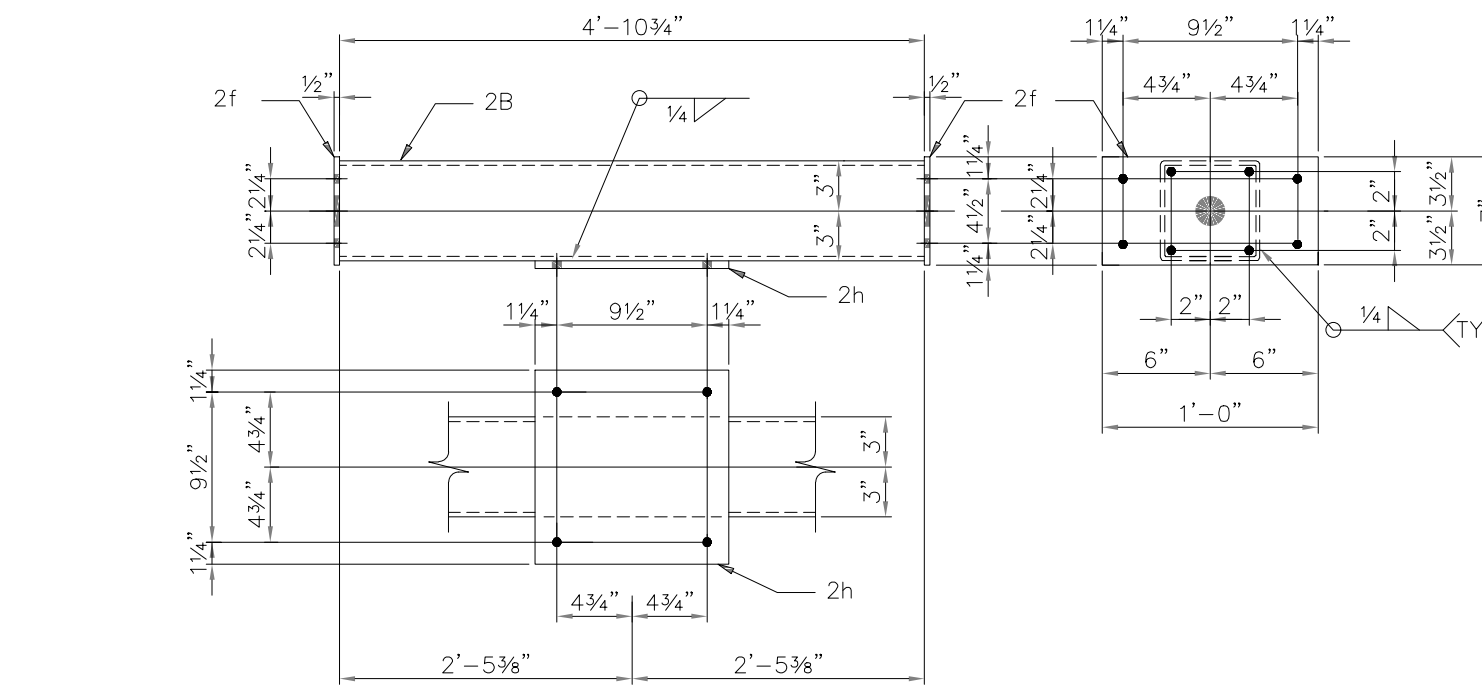


COLUMN - 2C1

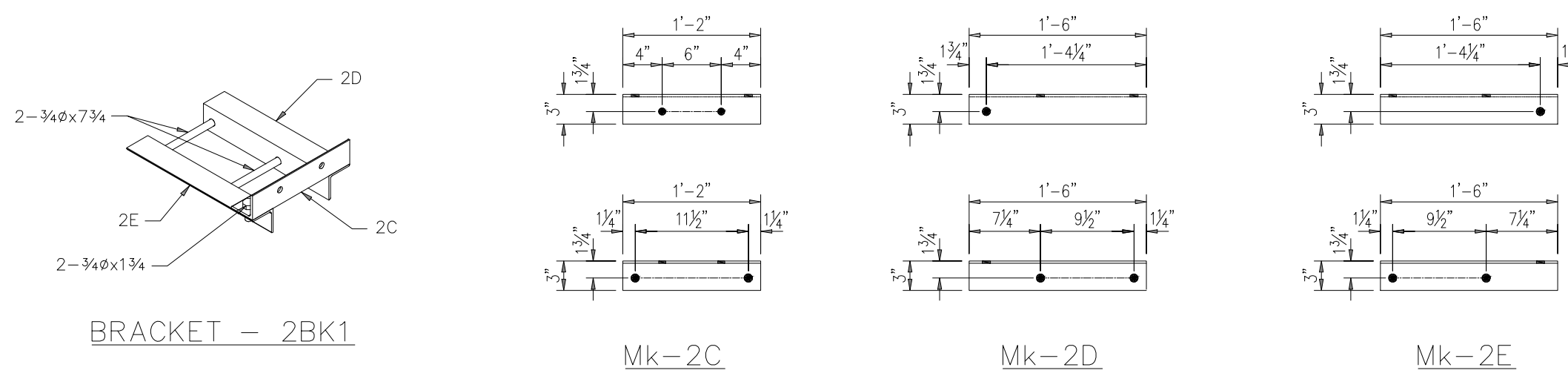


ANCHOR ROD NOTES

- ALL ANCHOR RODS SHALL BE ASTM F1554 GRADE 55 WITH (4) ASTM A563 GRADE A OR C HEAVY HEX NUTS AND (4) ASTM F436 FLAT WASHERS EACH AND SHALL BE GALVANIZED ACCORDING TO ASTM A753 UNLESS NOTED OTHERWISE.
- ALL ANCHOR RODS SHALL BE SET WITH THE AID OF SETTING TEMPLATES.



BRACKET - 2BK1



BILL OF MATERIAL						
MARK	QTY.	DESCRIPTION	LENGTH		WT.	REMARKS
			FT.	IN.		
	(2)	FOR (1) COLUMN - 2C1				
2C1	1	HSS 6 x 6 x 1/4	11	2 1/8	212.5	
2a	1	PL 1 1/4 x 18	1	6	114.8	(WELD)
2b	1	PL 3/4 x 12	1	0	30.6	(WELD)
2c	1	PL 1/4 x 2 1/4	0	3 1/2	0.6	(WELD)
2d	2	PL 1/4 x 2 1/4	0	3	1.0	(WELD)
					359.5	(BLACK WGT.)
					372#	(GALV. WGT.)
	(1)	FOR (1) SWITCH FRAME - 2SF1 (SHIP ASSEMBLED)				
2A	2	W 12 x 14	13	0	364.0	
2B	2	HSS 6 x 6 x 1/4	4	10 1/4	186.2	
2f	4	PL 1/2 x 7	1	0	47.6	(WELD)
2h	2	PL 3/4 x 12	1	0	61.2	(WELD)
16		3/4" x 2 SHOP BOLTS			10.5	(WELD)
					669.5	(BLACK WGT.)
					693#	(GALV. WGT.)
						8-3/4" x 2 3/4"
	(3)	FOR (1) BRACKET - 2BK1 (SHIP KNOCKED DOWN)				
2C	1	L 3 x 3 x 1/4	1	2	5.7	
2D	1	L 3 x 3 x 1/4	1	6	7.4	
2E	1	L 3 x 3 x 1/4	1	6	7.4	
2		3/4" x 1 1/4" FIELD BOLTS			0.1	
					20.6	(BLACK WGT.)
					21#	(GALV. WGT.)
						6-3/4" x 7/4"
		MISC MATERIAL (TOTAL QTY)				
2TP2	2	PL 1/4 x 15	1	3	32#	
8		1" x 3-0 THREADED ANCHOR ROD				
		W/(2) FLAT WASHERS & (3) HEX NUTS EACH				

FABRICATION NOTES:

- ALL STEEL HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A133.
- PIECE MARK STAMPED INTO METAL WITH NOT LESS THAN 3/8" HIGH CHARACTERS BEFORE GALVANIZING.
- ALL HOLES 1 3/16" Ø FOR 3/4" Ø A325 BOLTS W/ONE H. FLAT WASHER EACH, UNLESS NOTED.
- EDGE DISTANCE 1 1/8" UNLESS NOTED.
- ALL STEEL SHAPES ASTM A36 UNLESS NOTED.
- ALL STRUCTURAL TUBING SHAPES ASTM A500, GR. B.
- ALL WIDE FLANGE STEEL SHAPES TO BE ASTM A572, GR. 50, OR ASTM A992 GR 50
- WELD ELECTRODES SHALL BE E70XX EMPLOYING SMAW OR GMAW WELDING.

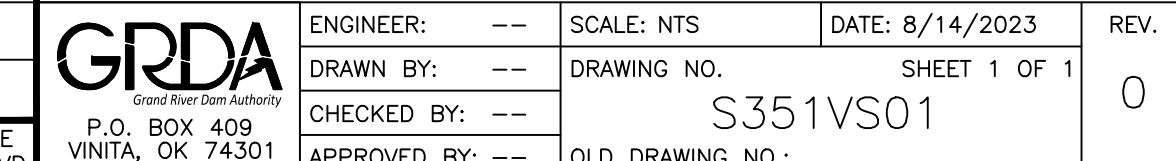
REV.	DATE	DESCRIPTION	DWN.	CHK.	APPR.
0	ISSUED FOR APPROVAL		06/26/23	HVC	JDG

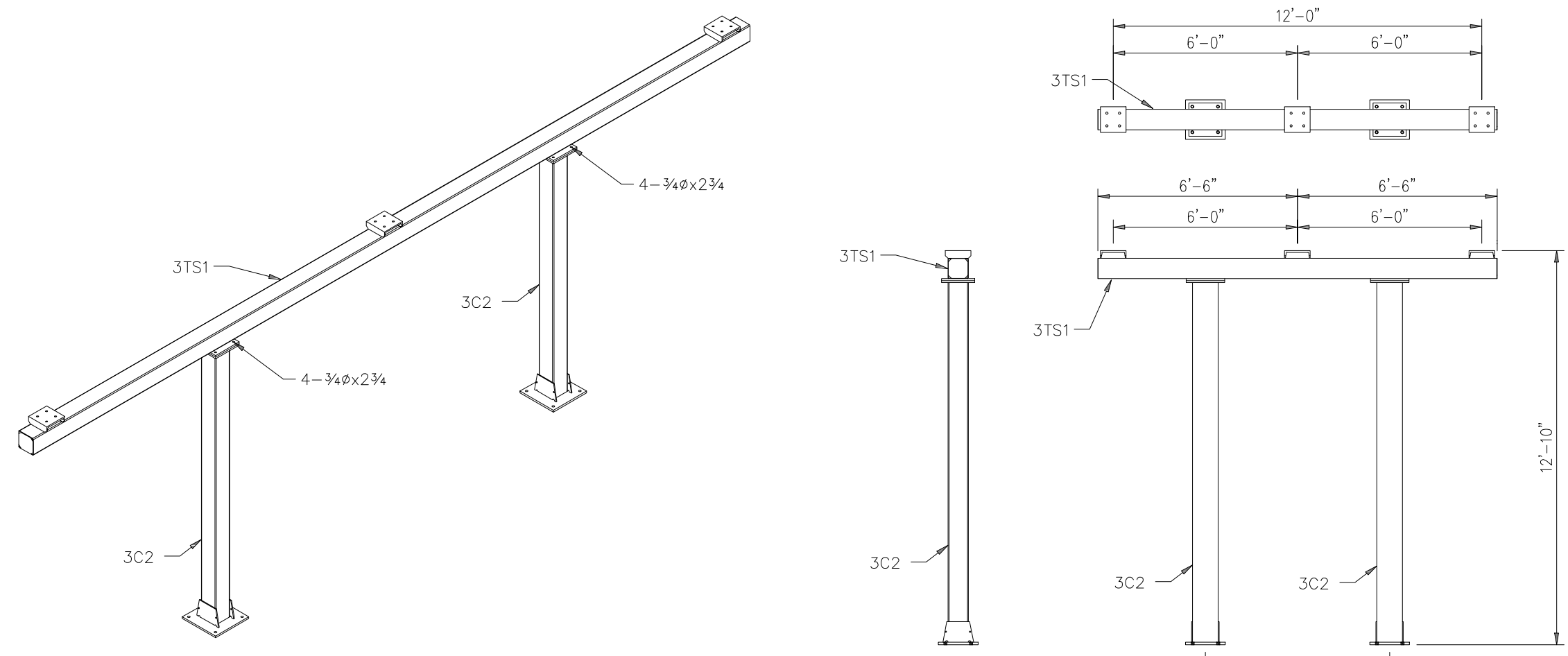
Alum-Elec Structures, Inc.
250 West Grove Street
Kendallville, IN 46755
Phone: (260) 347-9362
Fax: (260) 347-9326

PROJECT: STILLWATER KINZIE INTERCONNECT
STILLWATER, OKLAHOMA
69kV 1Ø SWITCH STAND, STRUCTURE GS-210

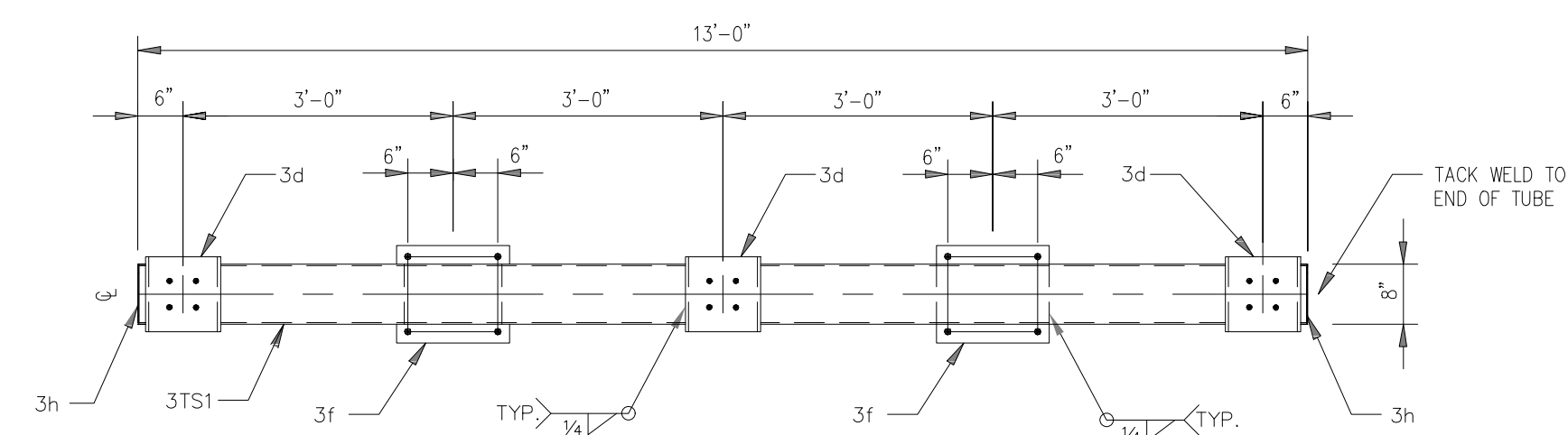
SCALE	DATE	DWN.	APPR.	JOB NO.	DRAWING NUMBER	REV.
N.T.S.	06/23/23	HVC	JDG	22-139	SD02	0

DESCRIPTION: ISSUE FOR REVIEW						GRAND RIVER DAM AUTHORITY			
0	RF022-01145	8/14/2023	CP	BE	JS	STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kv			
						69kV 1Ø SWITCH STAND, STRUCTURE (GS-210)			
						ENGINEER: -- SCALE: NTS DATE: 8/14/2023 REV. 0			
						DRAWN BY: -- DRAWING NO. SHEET 1 OF 1			
						CHECKED BY: -- S351VS01			
						APPROVED BY: -- OLD DRAWING NO.:			

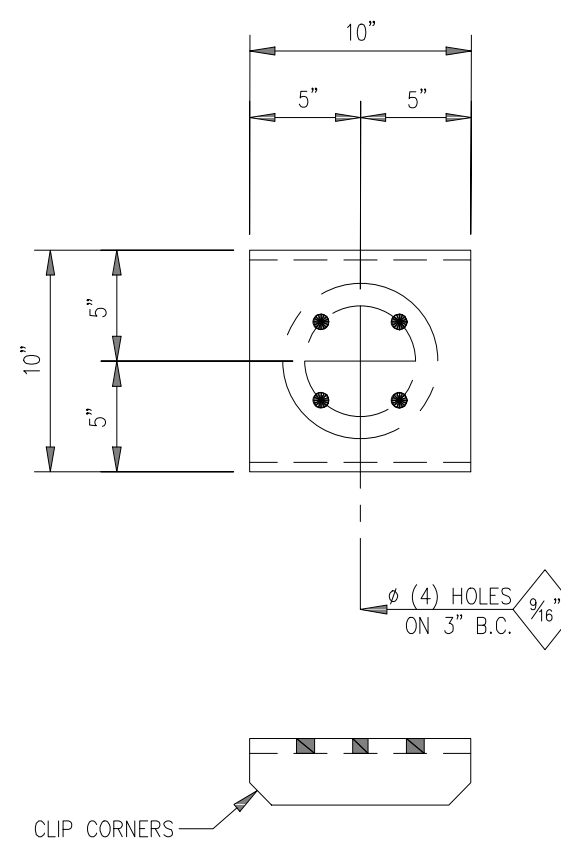




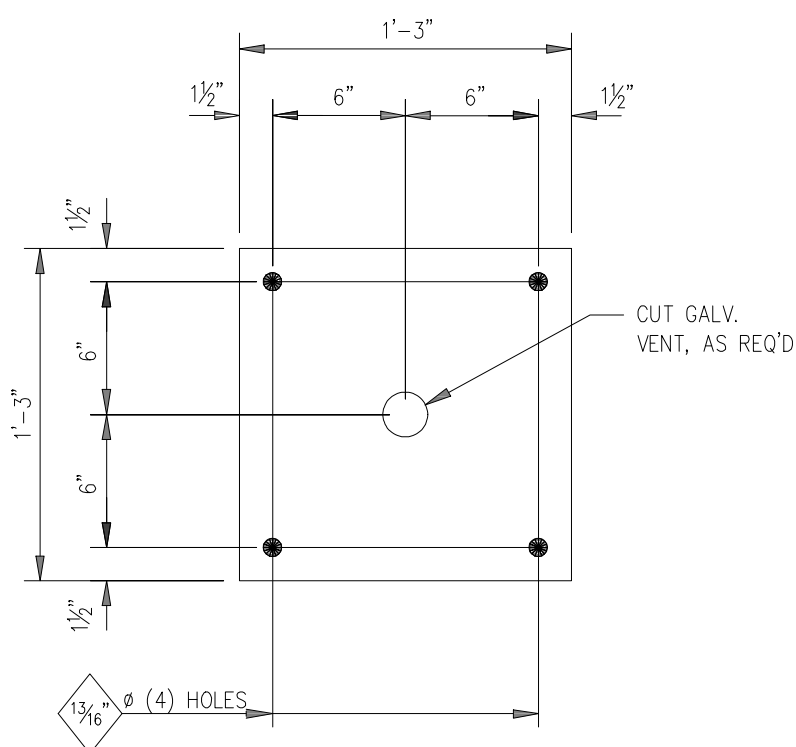
69kV 3Ø REACTOR SUPPORT - 3RS1
STRUCTURE GS-201



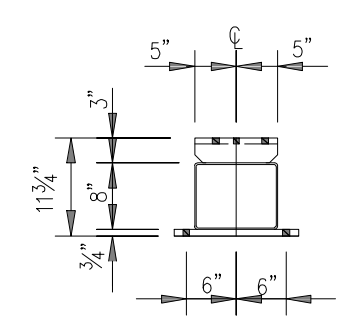
TUBE - 3TS1



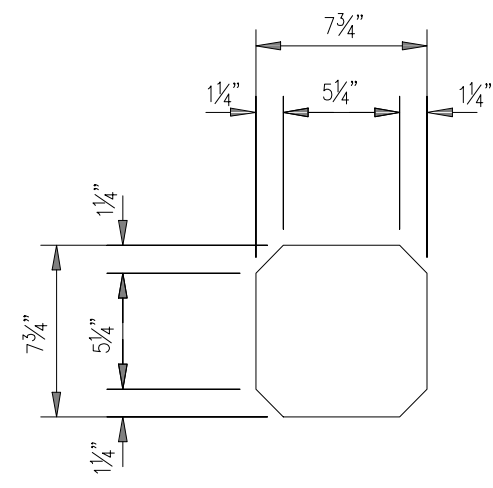
Mk-3d



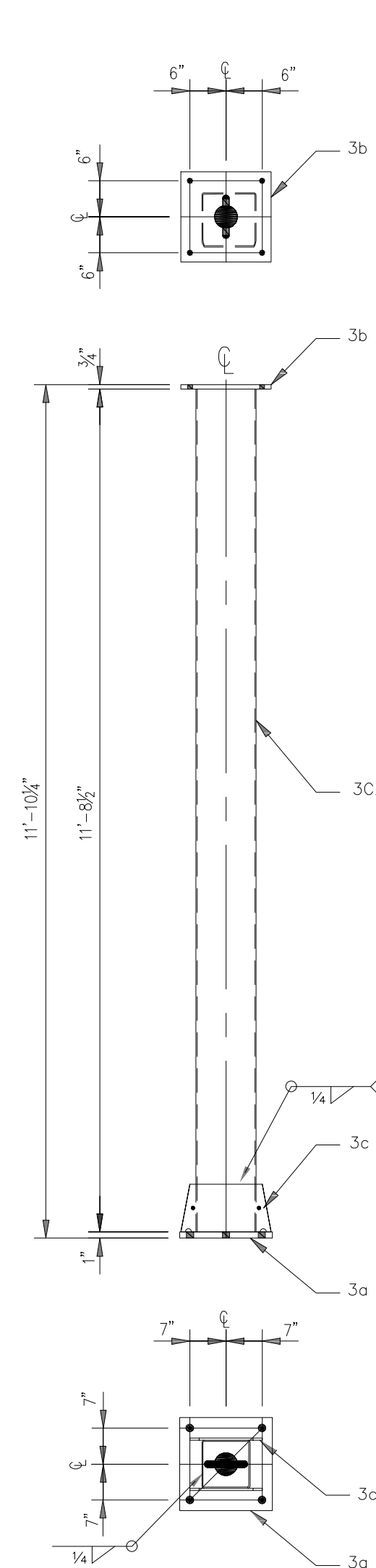
Mk-3f



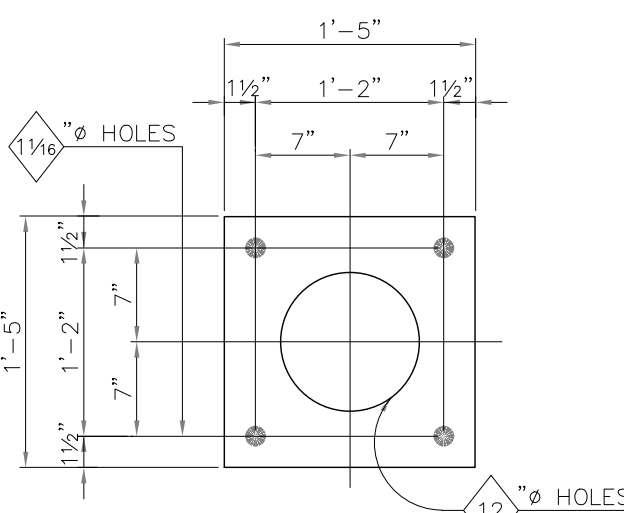
SECTION A-A



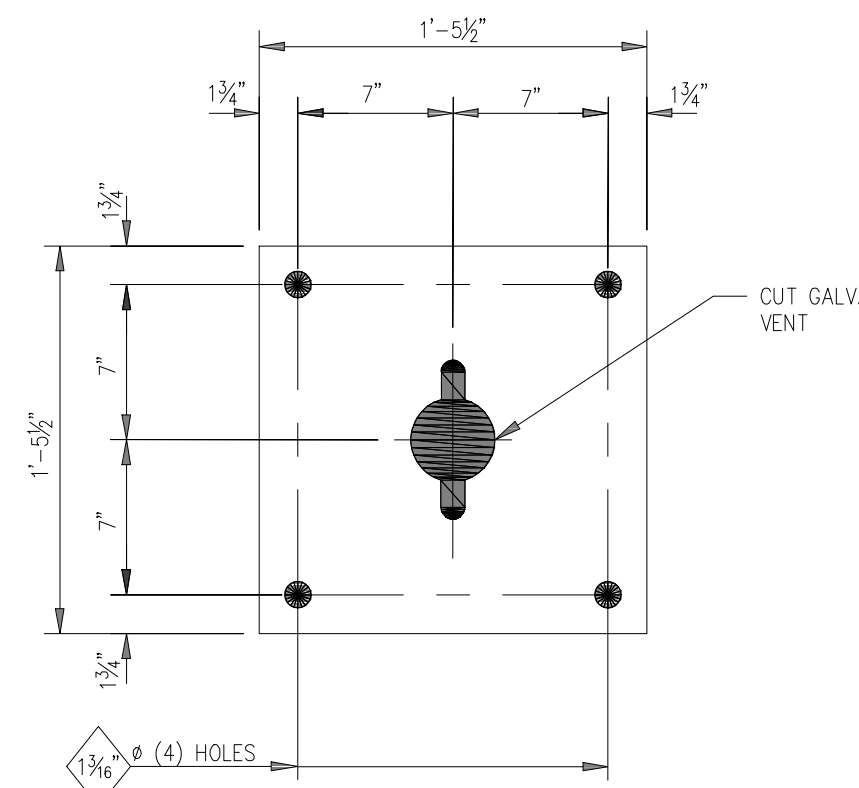
Mk-3h



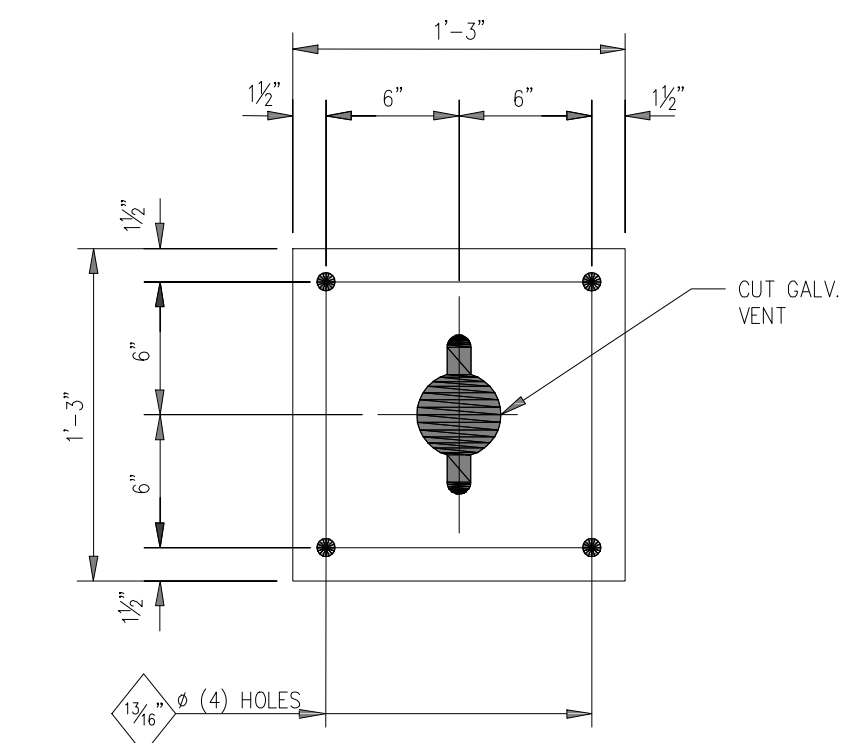
COLUMN - 3C2



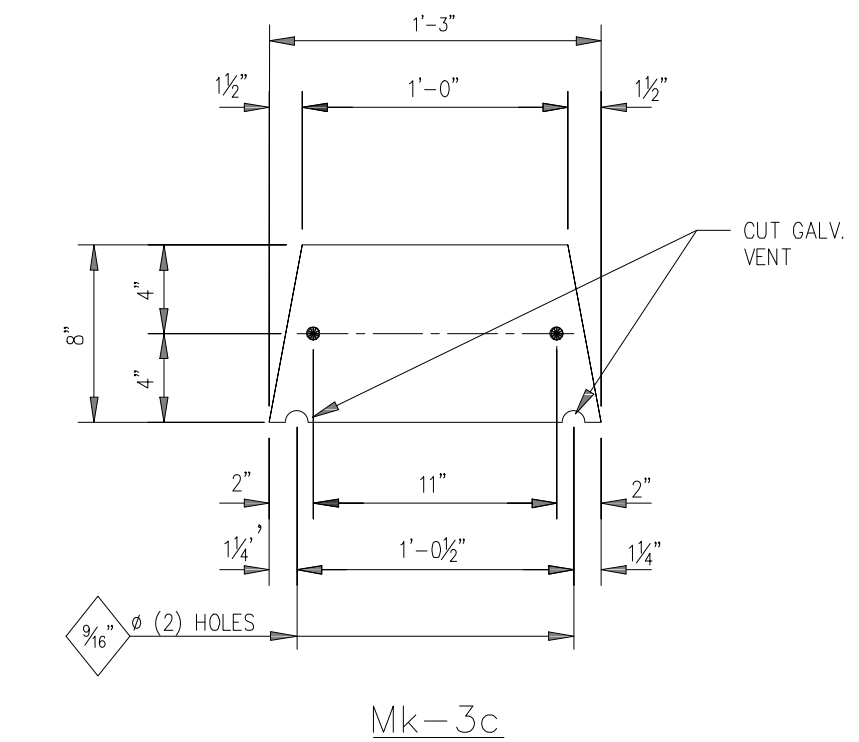
ANCHOR ROD TEMPLATE - 3TP3



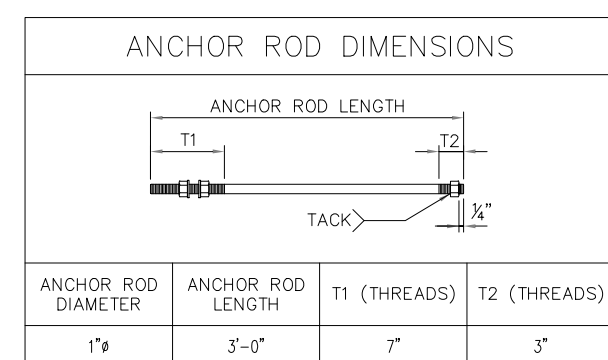
Mk-3a



Mk-3b



Mk-3c



ANCHOR ROD NOTES

- ALL ANCHOR RODS SHALL BE ASTM F1554 GRADE 55 WITH (4) ASTM A563 GRADE 4 OR C HEAVY HEX NUTS AND (4) ASTM F436 FLAT WASHERS EACH AND SHALL BE GALVANIZED ACCORDING TO ASTM A153 UNLESS NOTED OTHERWISE.
- ALL ANCHOR RODS SHALL BE SET WITH THE AID OF SETTING TEMPLATES.

BILL OF MATERIAL

MARK	QTY.	DESCRIPTION	LENGTH		WT.	REMARKS
			FT.	IN.		
	(2)	FOR (1) COLUMN - 3C2				
3C2	1	HSS 10 x 10 x 3/16	11	8 1/2	289.5	
3a	1	PL 1 x 17 1/2	1	5 1/2	86.8	(WELD)
3b	1	PL 3/4 x 15	1	3	47.8	(WELD)
3c	2	PL 3/8 x 8	1	3	25.5	(WELD)
					449.6	(BLACK WGT.)
					465#	(GALV. WGT.)
	(1)	FOR (1) TUBE - 3TS1				
3TS1	1	HSS 8 x 8 x 3/16	13	0	255.2	
3d	3	C 10 x 30	0	10	75.0	(WELD)
3f	2	PL 3/4 x 15	1	3	95.7	(WELD)
3h	2	PL 3/8 x 7 3/4	0	7 3/4	4.3	(WELD)
					430.2	(BLACK WGT.)
					445#	(GALV. WGT.)
						8-3/4 x 2 3/4
MISC MATERIAL (TOTAL QTY)						
3TP3	2	PL 1/4 x 17	1	5	41#	
	8	1" x 3-0 THREADED ANCHOR ROD W/(2) FLAT WASHERS & (3) HEX NUTS EACH				

FABRICATION NOTES:

- ALL STEEL HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A133.
- PIECE MARK STAMPED INTO METAL WITH NOT LESS THAN 3/8" HIGH CHARACTERS BEFORE GALVANIZING.
- ALL HOLES 1 3/16" Ø FOR 3/4" Ø A325 BOLTS W/ONE H. FLAT WASHER EACH, UNLESS NOTED.
- EDGE DISTANCE 1 1/8" UNLESS NOTED.
- ALL STEEL SHAPES ASTM A36 UNLESS NOTED.
- ALL STRUCTURAL TUBING SHAPES ASTM A500, GR. B.
- ALL WIDE FLANGE STEEL SHAPES TO BE ASTM A572, GR. 50, OR ASTM A992 GR 50
- WELD ELECTRODES SHALL BE E70XX EMPLOYING SMAW OR GMAW WELDING.

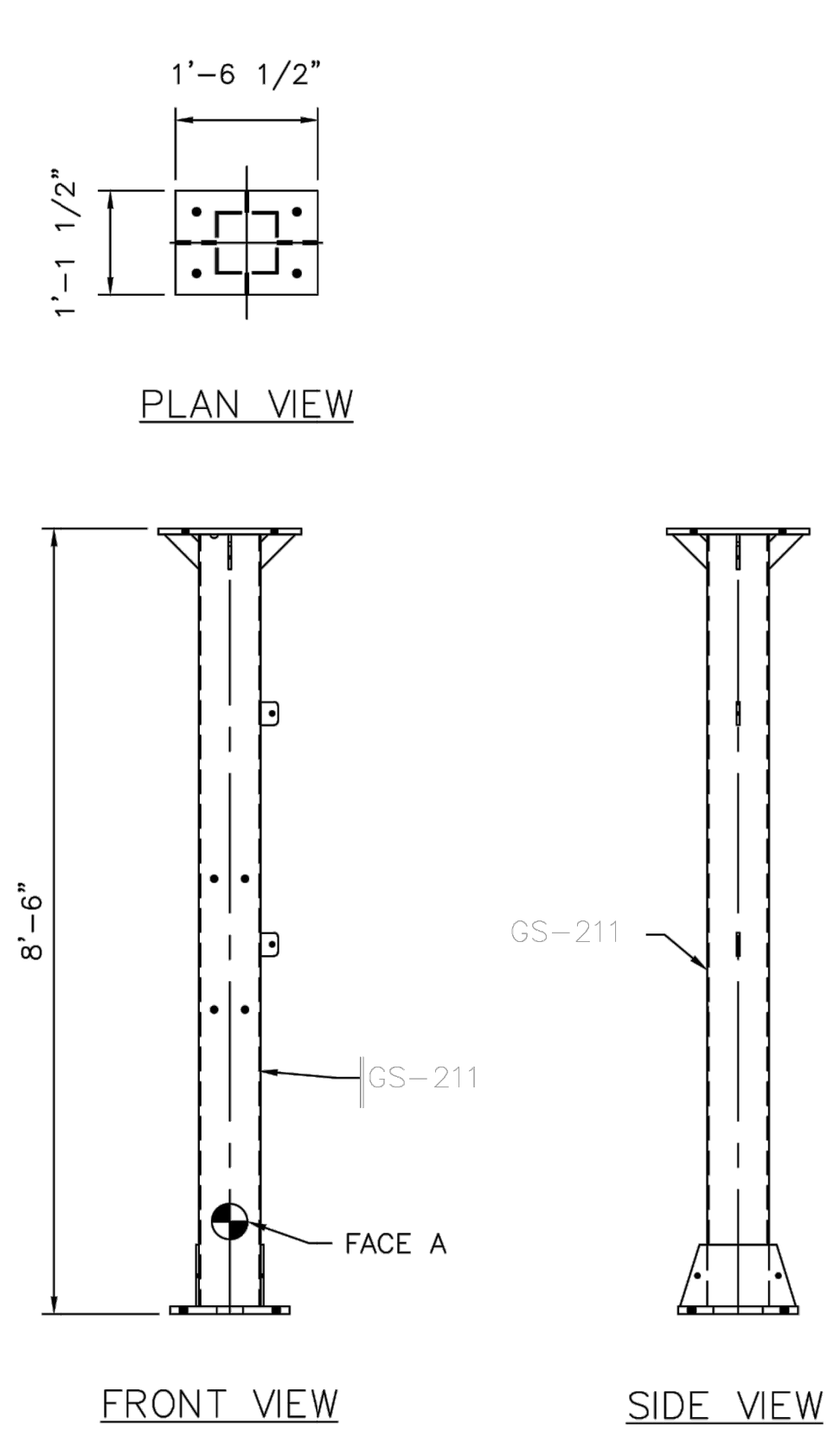
0	ISSUED FOR APPROVAL	06/26/23	HVC	HVC	JDG
REV.	DESCRIPTION	DATE	DWN.	CHK.	APPR.
Alum-Elec Structures, Inc.					
250 West Grove Street Kendallville, IN 46755 Phone: (260) 347-9362 Fax: (260) 347-9326					
PROJECT: STILLWATER KINZIE INTERCONNECT STILLWATER, OKLAHOMA 69kV 3Ø REACTOR SUPPORT, STRUCTURE GS-201					
SCALE	DATE	DWN.	APPR.	JOB NO.	DRAWING NUMBER
N.T.S.	06/23/23	HVC	JDG	22-139	SD03

DESCRIPTION: ISSUE FOR REVIEW					
0	RF022-01145	8/14/2023	CP	BE	JS
REV. NO.	JOB NO.	DATE	DESIGN ENGR.	DFTG	ISSUE CHECK/APPRVD

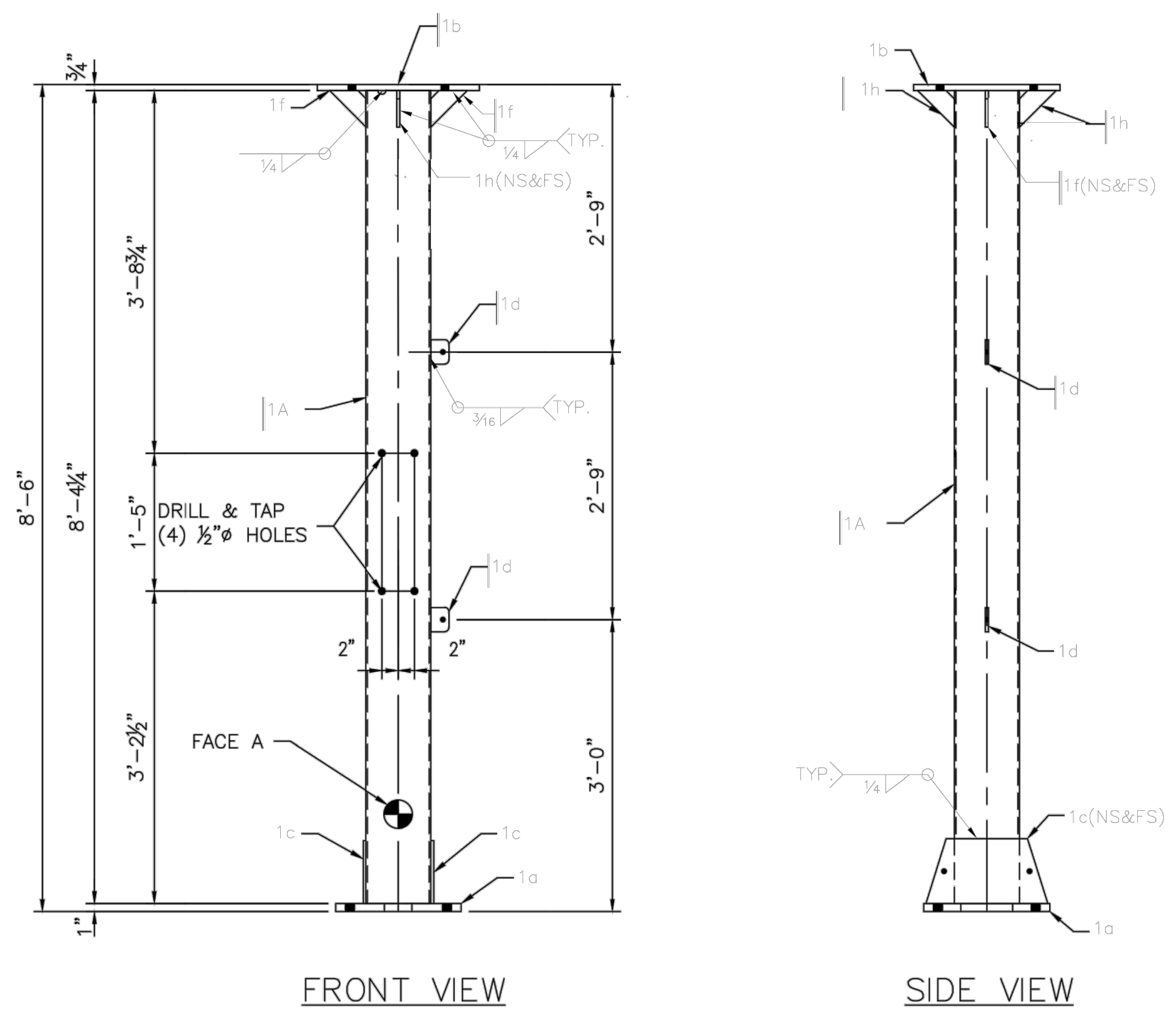
GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kV			
69kV 3Ø REACTOR SUPPORT, STRUCTURE (GS-201)			
ENGINEER:	SCALE: NTS	DATE: 8/14/2023	REV.
DRAWN BY: ---	DRAWING NO. ---	SHEET 1 OF 1	0
CHECKED BY: ---	S351VS02		
APPROVED BY: ---	P.O. BOX 409 VINITA, OK 74301		OLD DRAWING NO.:



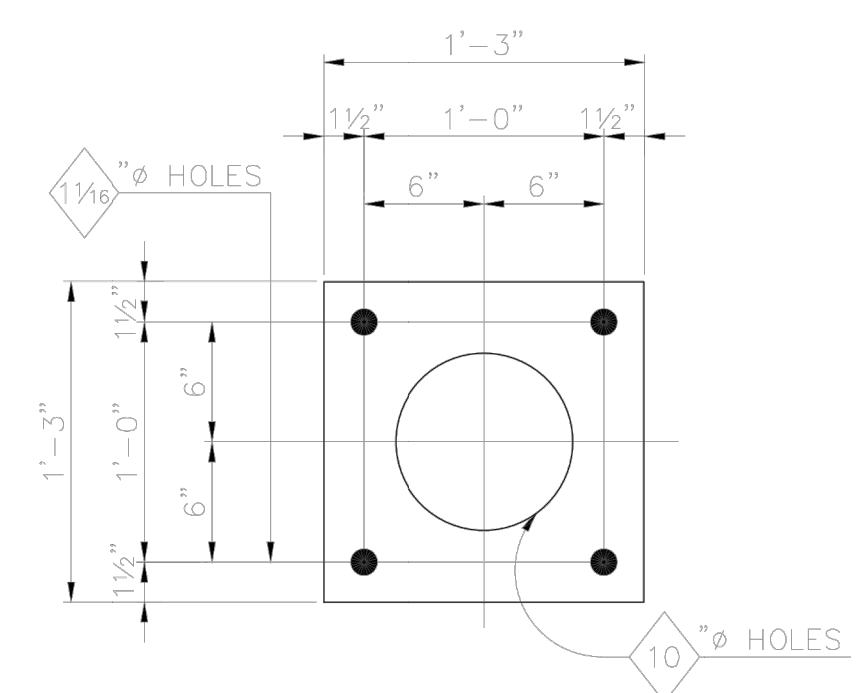
4555 W Memorial Rd.
Oklahoma City, OK 73142



69kV 1Ø RPD SUPPORT 1RPD1
STRUCTURE GS-211



RPD SUPPORT - 1RPD1



ANCHOR ROD TEMPLATE - 1TP1

ANCHOR ROD DIMENSIONS

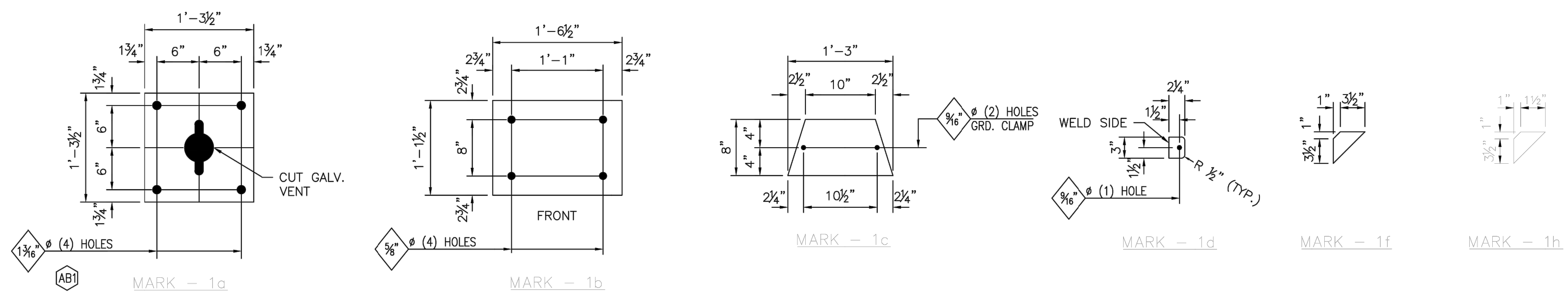
ANCHOR ROD DIAMETER	ANCHOR ROD LENGTH	T1 (THREADS)	T2 (THREADS)
1"	3'-0"	7"	3"

- ANCHOR ROD NOTES
- ALL ANCHOR RODS SHALL BE ASTM F1554 GRADE 55 WITH (4) ASTM A563 GRADE A OR C HEAVY HEX NUTS AND (4) ASTM F436 FLAT WASHERS EACH AND SHALL BE GALVANIZED ACCORDING TO ASTM A153 UNLESS NOTED OTHERWISE.
 - ALL ANCHOR RODS SHALL BE SET WITH THE AID OF SETTING TEMPLATES.

BILL OF MATERIAL

MARK	QTY.	DESCRIPTION	LENGTH	WT.	REMARKS
(1)		FOR (1) RPD SUPPORT - 1RPD1			
1A	1	HSS 8 x 8 x 3/8	8	4.4	632.0
1a	1	PL 1 x 15 1/2	1	3.5	68.1 (WELD)
1b	1	PL 3/4 x 13 1/2	1	6.2	53.1 (WELD)
1c	2	PL 3/8 x 8	1	3	25.5 (WELD)
1d	2	PL 3/8 x 2 1/2	0	3	1.4 (WELD)
1f	2	PL 3/8 x 4 1/2	0	4.2	4.3 (WELD)
1h	2	PL 3/8 x 2 1/2	0	4.2	2.4 (WELD)
					786.8 (BLACK WGT.)
					814# (GALV. WGT.)
MISC MATERIAL (TOTAL QTY)					
1TP1	1	PL 1/4 x 15	1	3	16#
4		1Ø x 3-0 THREADED ANCHOR ROD			
		W/(2) FLAT WASHERS & (3) HEX NUTS EACH			

- FABRICATION NOTES:
- ALL STEEL HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A133.
 - PIECE MARK STAMPED INTO METAL WITH NOT LESS THAN 3/8" HIGH CHARACTERS BEFORE GALVANIZING.
 - ALL HOLES 1 3/16" Ø FOR 3/4" Ø A325 BOLTS W/ONE H. FLAT WASHER EACH, UNLESS NOTED.
 - EDGE DISTANCE 1 1/8" UNLESS NOTED.
 - ALL STEEL SHAPES ASTM A36 UNLESS NOTED.
 - ALL STRUCTURAL TUBING SHAPES ASTM A500, GR. B.
 - ALL WIDE FLANGE STEEL SHAPES TO BE ASTM A572, GR. 50, OR ASTM A992 GR 50
 - WELD ELECTRODES SHALL BE E70XX EMPLOYING SMAW OR GMAW WELDING.



REV.	DATE	DESCRIPTION	DATE	DWN.	CHK.	APPR.
0	06/26/23	ISSUED FOR APPROVAL		HVC	HVC	JDG

Alum-Elec Structures, Inc.
250 West Grove Street
Kendallville, IN 46755
Phone: (260) 347-9362
Fax: (260) 347-9326

PROJECT: STILLWATER KINZIE INTERCONNECT
STILLWATER, OKLAHOMA
69kV 1Ø RPD SUPPORT, STRUCTURE GS-211

SCALE	DATE	DWN.	APPR.	JOB NO.	DRAWING NUMBER	REV.
N.T.S.	06/23/23	HVC	JDG	22-139	SD01	0



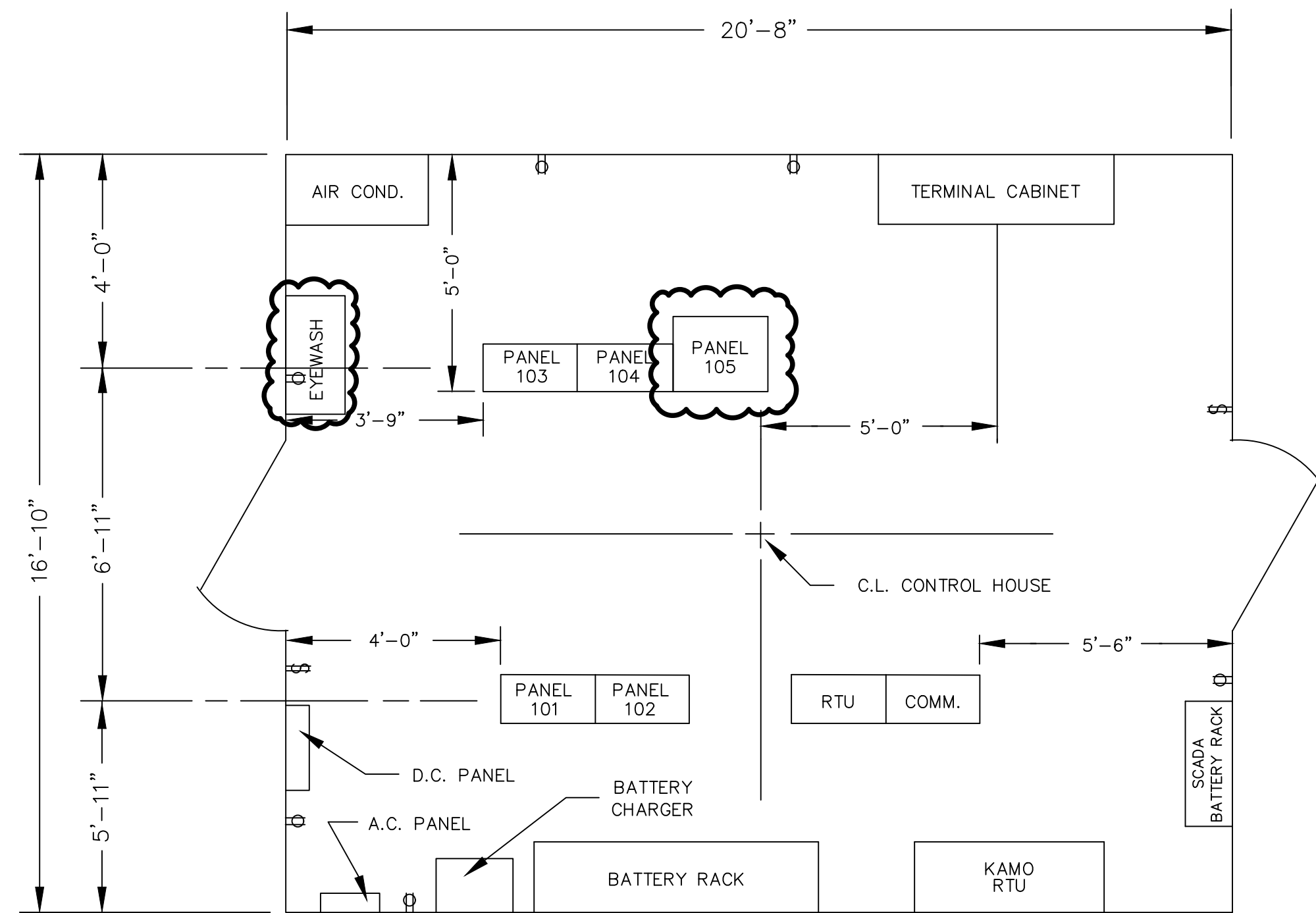
REV. NO.	JOB NO.	DATE	DESIGN ENGR.	DFTG	DESIGN CHECK	ISSUE APPROVD
0	RF022-01145	8/14/2023	CP	BE	JS	-

GRAND RIVER DAM AUTHORITY
STILLWATER KINZIE INTERCONNECT S351
STILLWATER, OKLAHOMA 138/69kV

69kV 1Ø RPD SUPPORT,
STRUCTURE (GS-211)

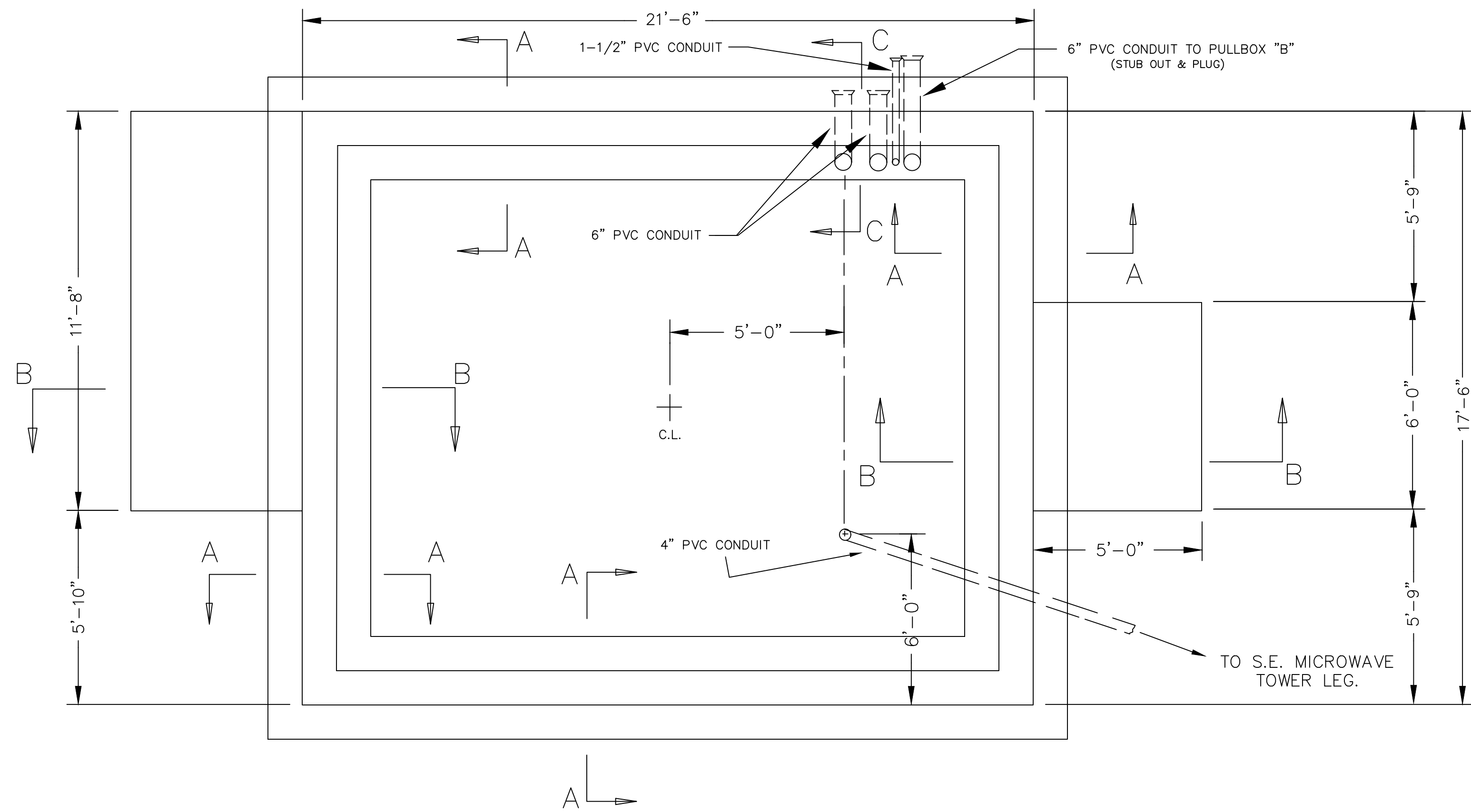
ENGINEER: -- SCALE: NTS DATE: 8/14/2023 REV. 0
DRAWN BY: -- DRAWING NO. SHEET 1 OF 1
CHECKED BY: -- S351VS03
APPROVED BY: -- OLD DRAWING NO.:

GRDA
P.O. BOX 409
VINITA, OK 74301



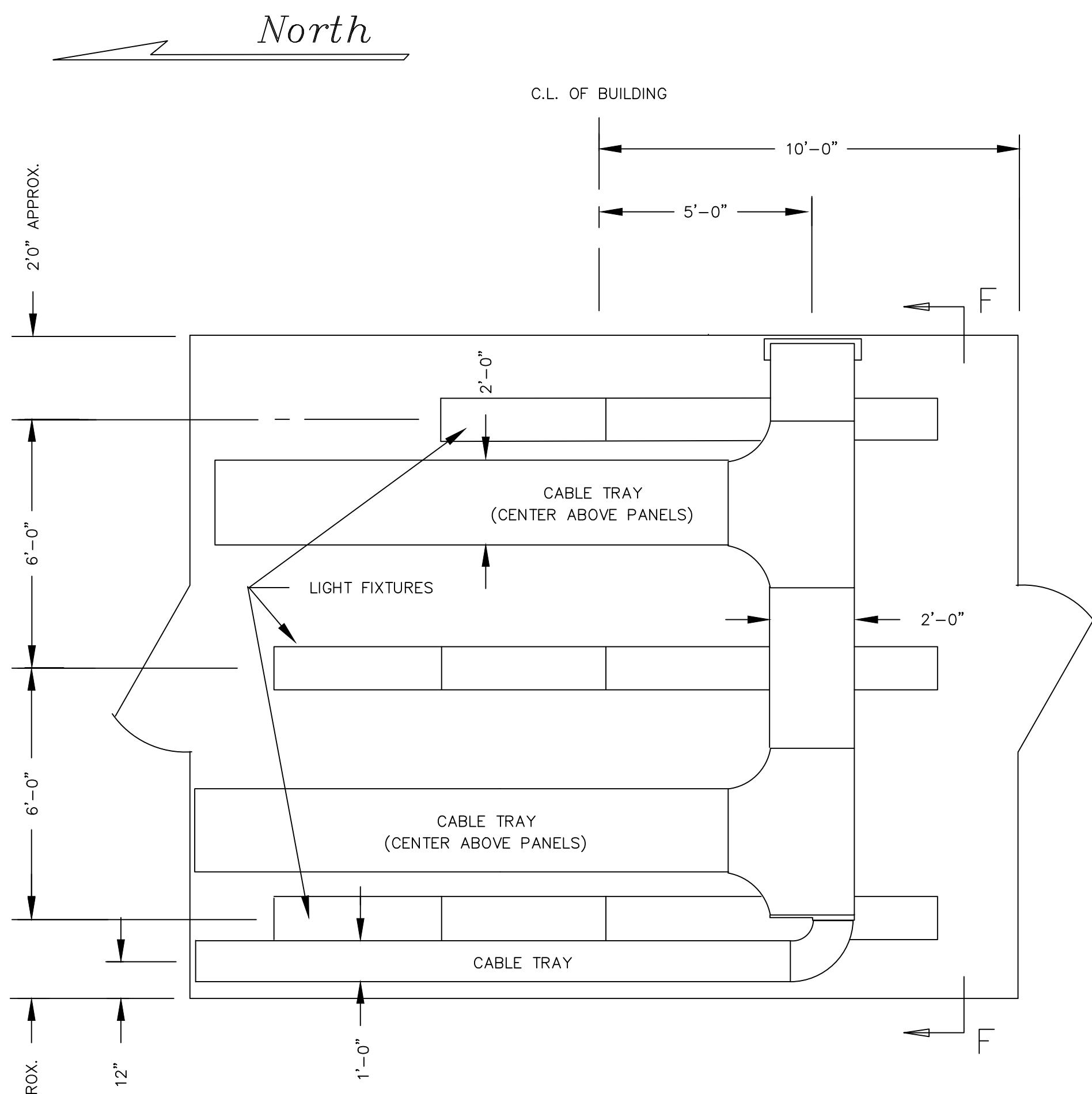
EQUIPMENT LAYOUT

SCALE: 3/8" = 1'-0"



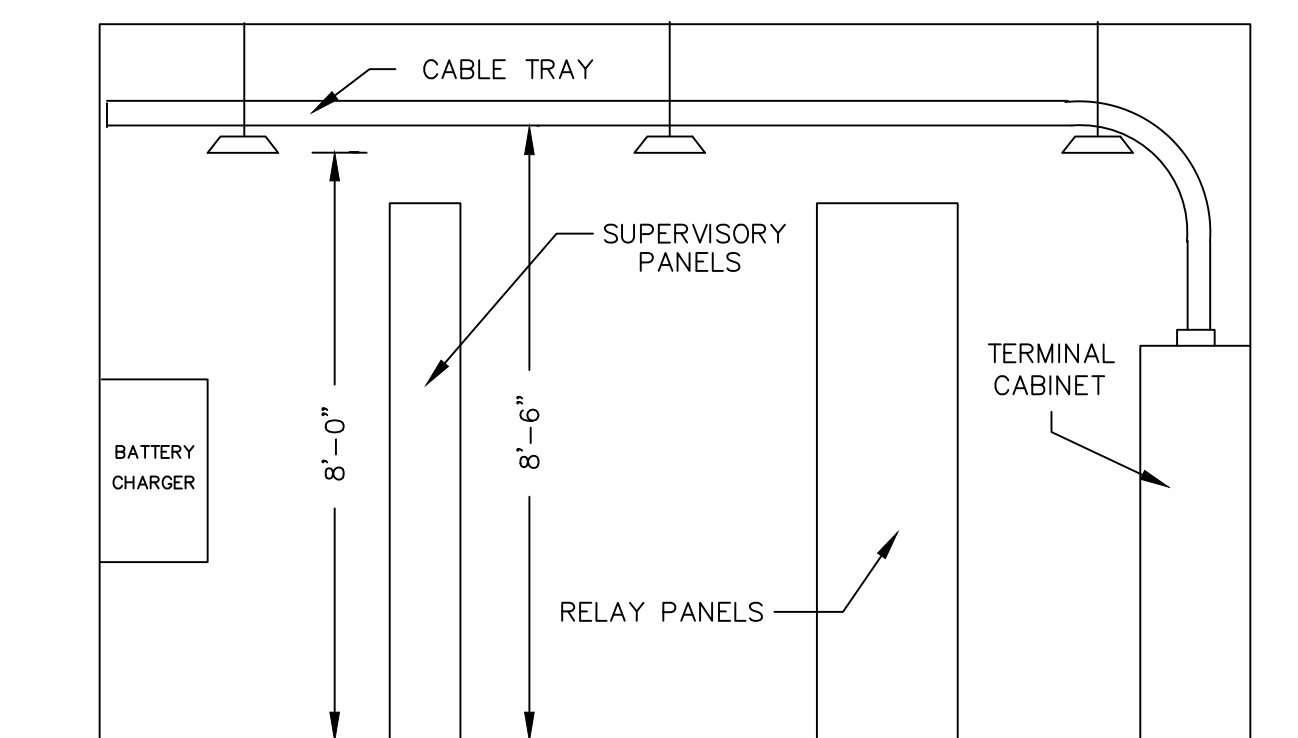
FOUNDATION PLAN

SCALE: 3/8" = 1'-0"



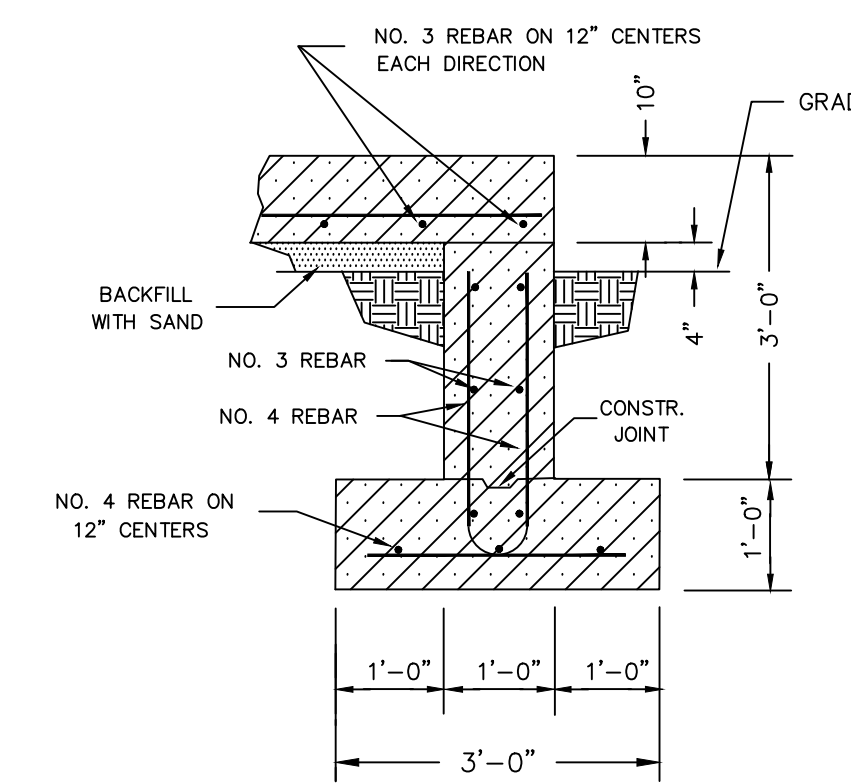
CABLE TRAY LAYOUT

SCALE: 3/8" = 1'-0"



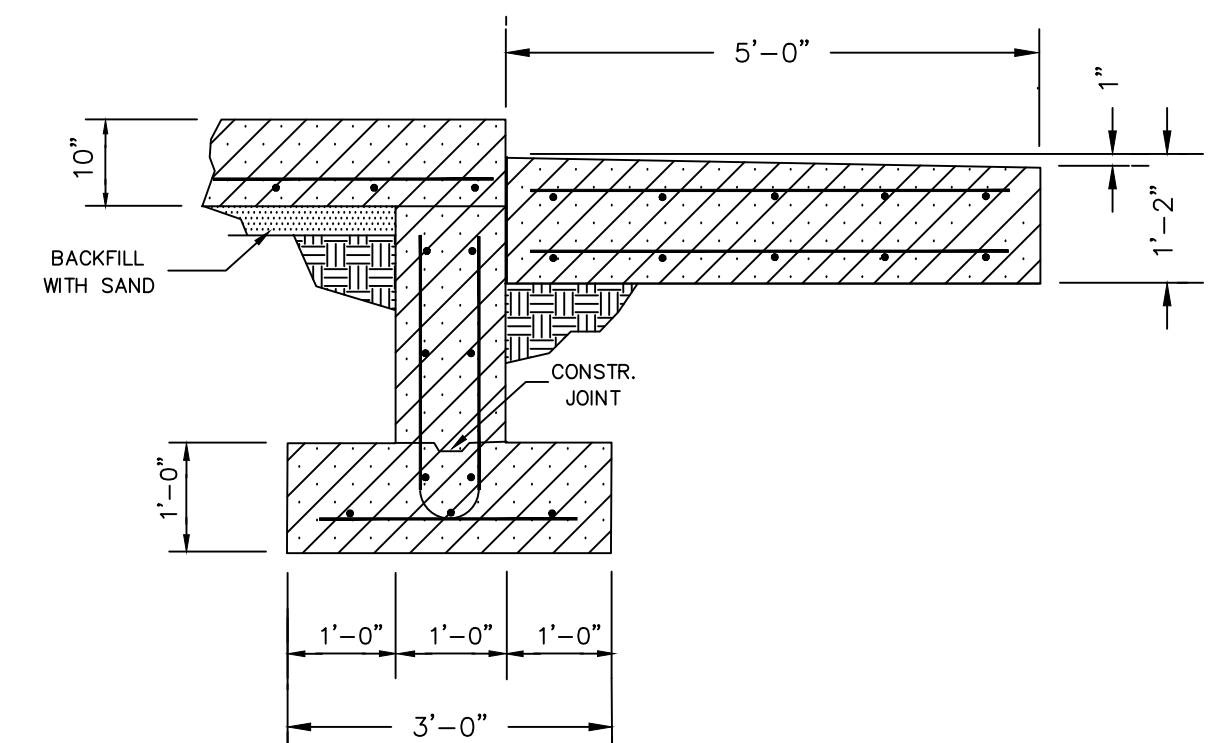
SECTION F-F

SCALE: 3/8" = 1'-0"



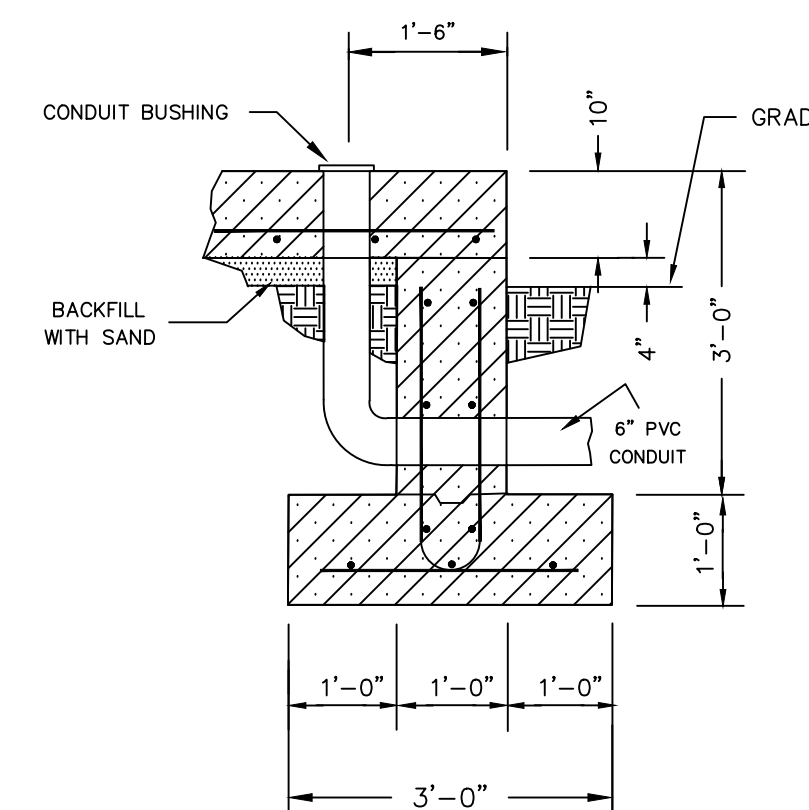
SECTION A-A

NO SCALE



SECTION B-B

NO SCALE



SECTION C-C

NO SCALE



DESCRIPTION:	F6 PNL REPLACEMENT & CAP BANK BKR ADDITION					
2	RF022-01145	5/9/23	NC	RE	LA	NC
DESCRIPTION:	AS BUILT					
1	-	8/22/88	-	-	-	-
REV. NO.	JOB NO.	DATE	DESIGN ENGR.	DFT	DESIGN CHECK	ISSUE APPROV

ISSUED FOR CONSTRUCTION

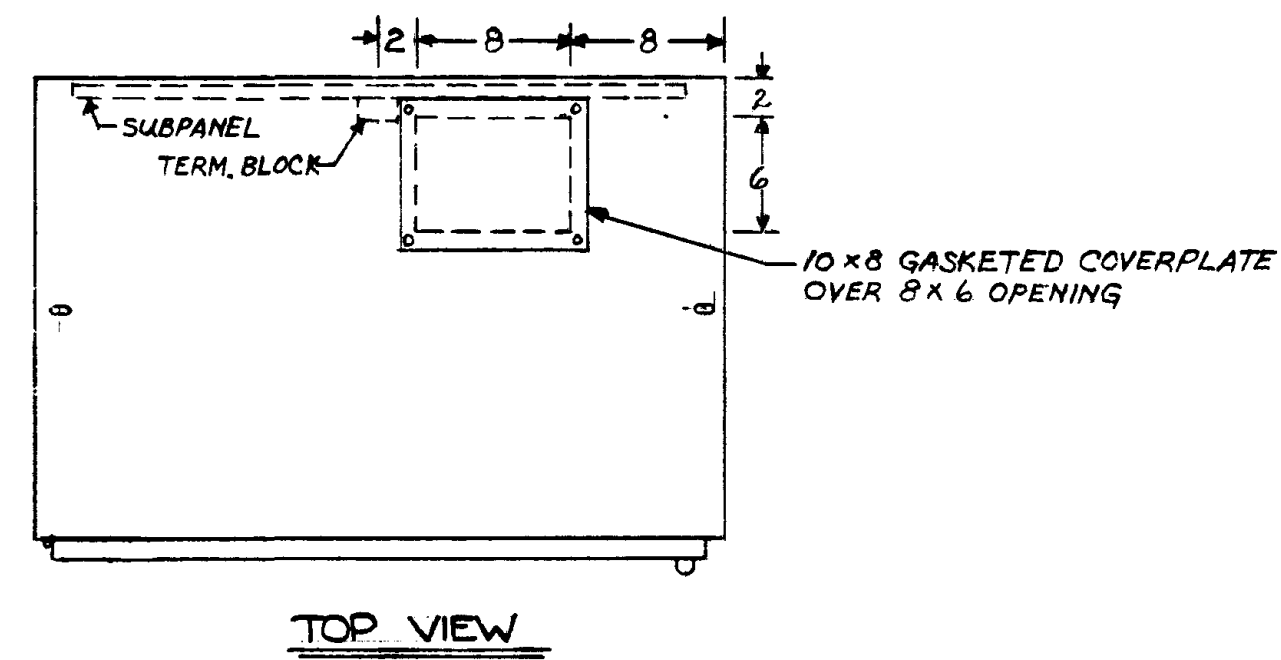
GRAND RIVER DAM AUTHORITY
STILLWATER KINZIE INTERCONNECT S351
STILLWATER, OKLAHOMA 138/69KV

CONTROL HOUSE LAYOUT

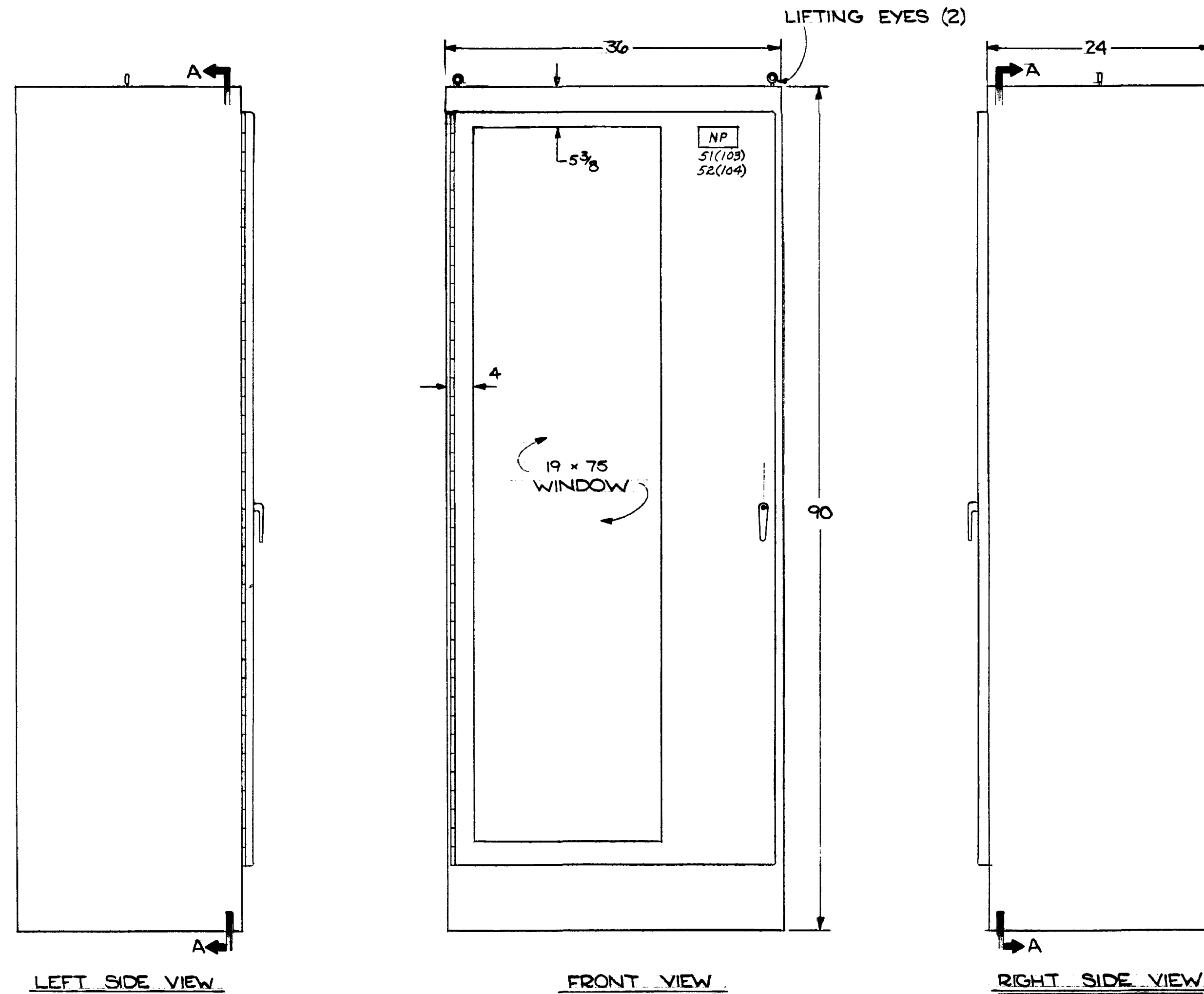
ENGINEER:	SCALE: NONE	DATE: 11/19/1986	REV.
DRAWN BY: DA	DRAWING NO.	SHEET 1 OF 1	2
CHECKED BY: XXX	S351PH01		
APPROVED BY: XXX	P.O. BOX 669 CHOUTEAU, OK 74337		
	OLD DRAWING NO.: D-1198		



4555 W Memorial Rd.
Oklahoma City, OK 73142



TOP VIEW

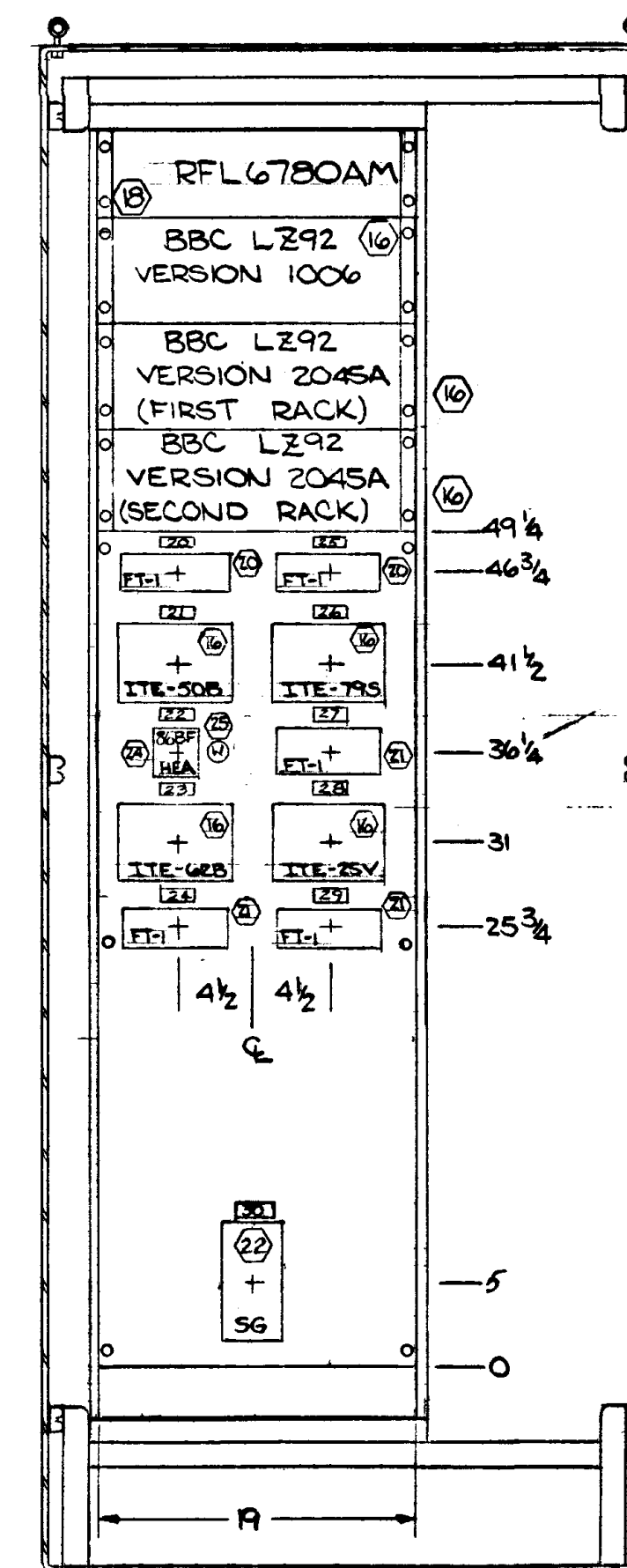


LEFT SIDE VIEW

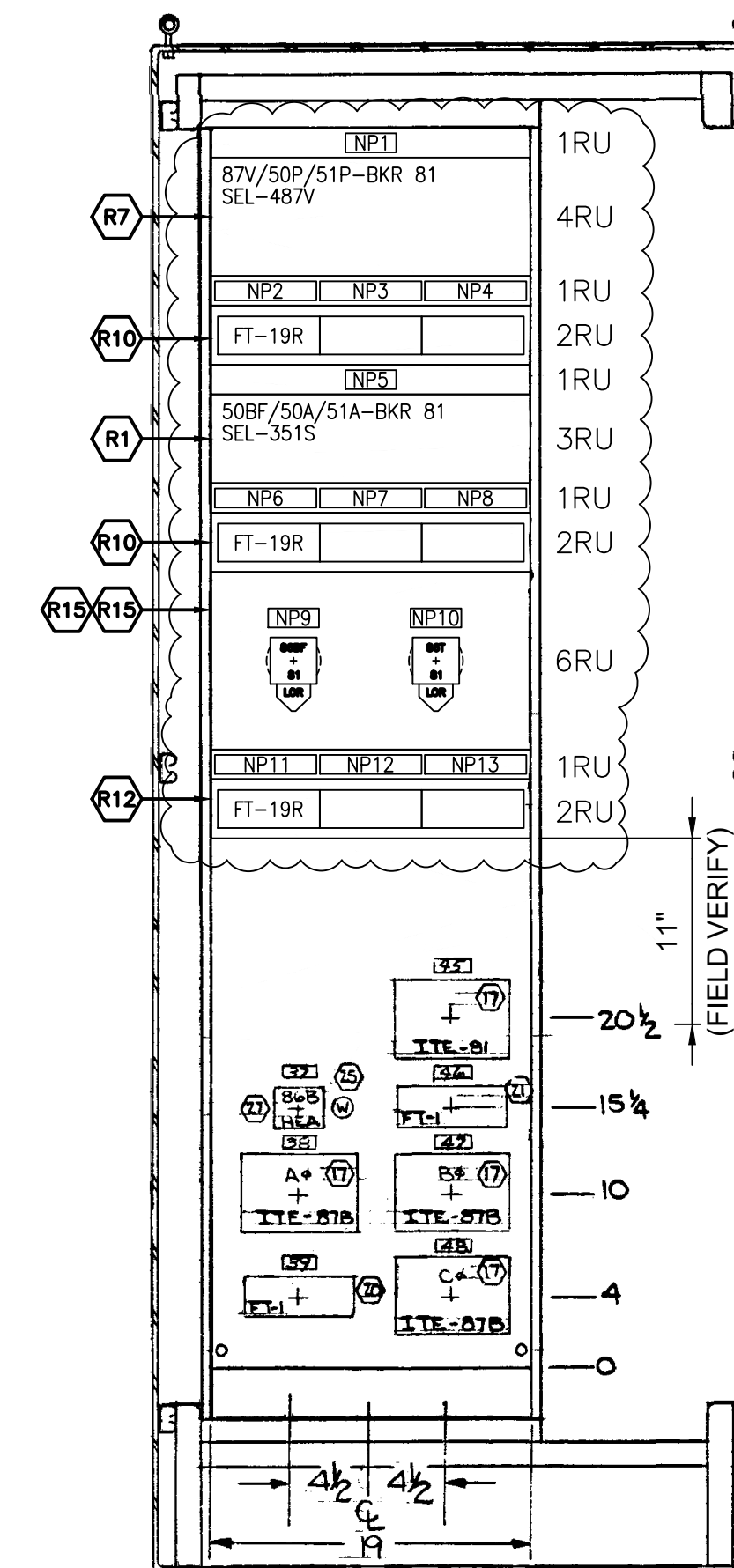
FRONT VIEW

RIGHT SIDE VIEW

Z REQUIRED FOR PANELS 103 & 104



OCB 10870
SECTION A-A
PANEL 103

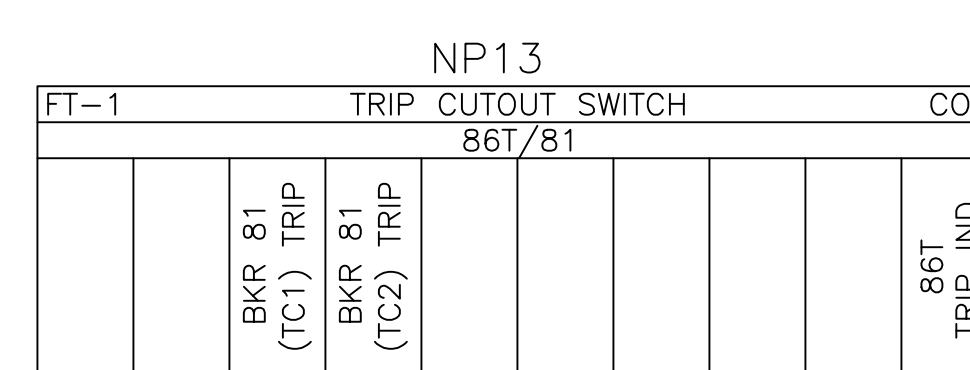
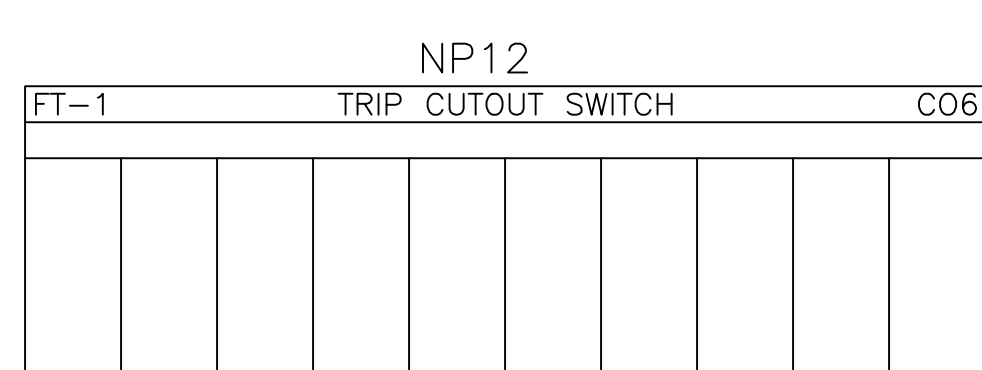
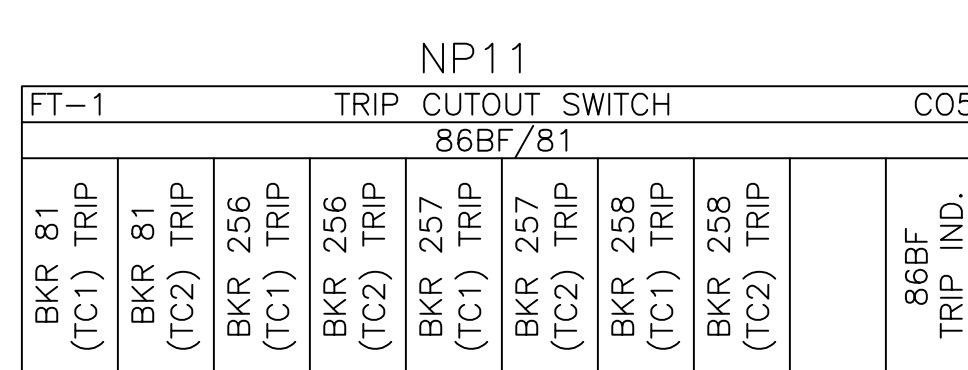
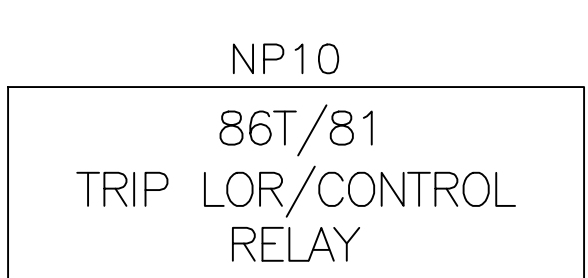
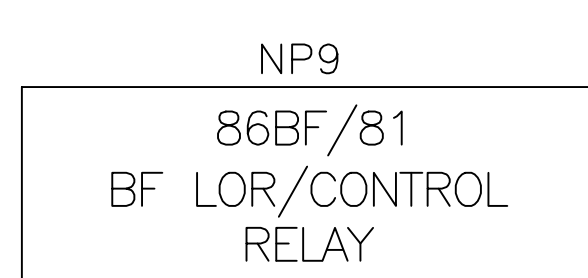
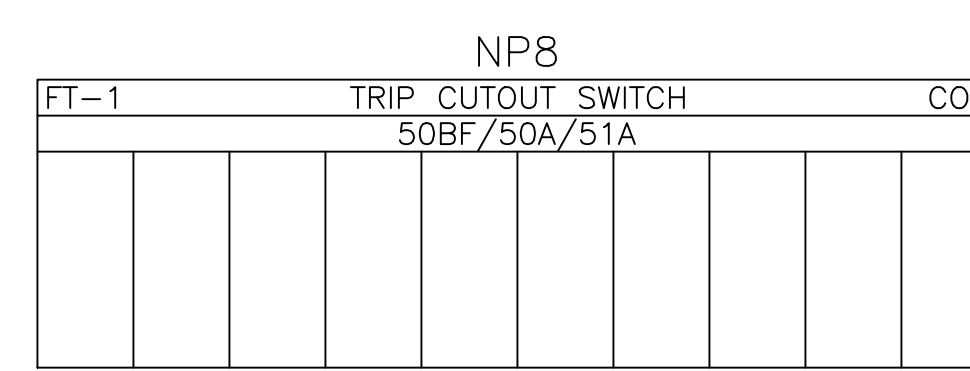
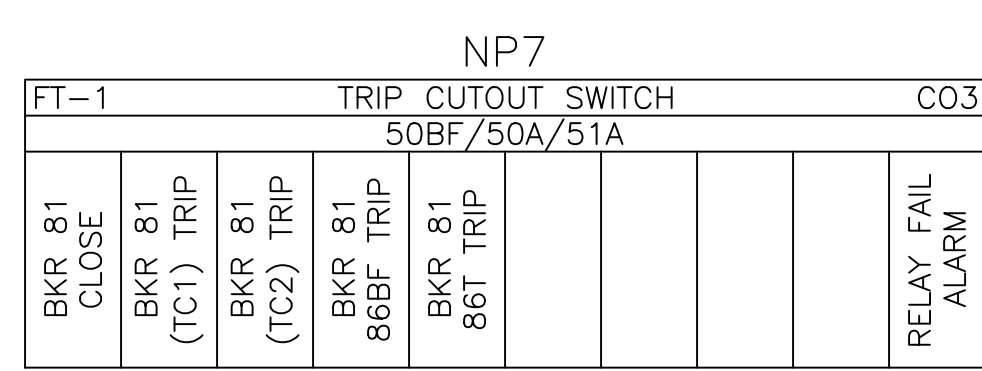
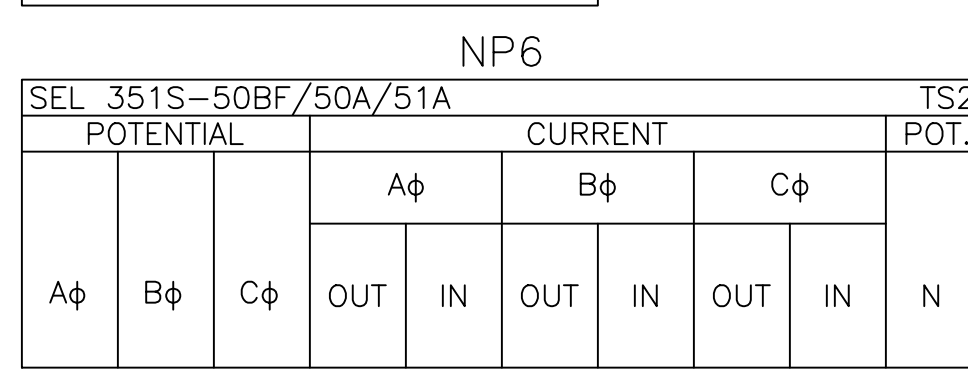
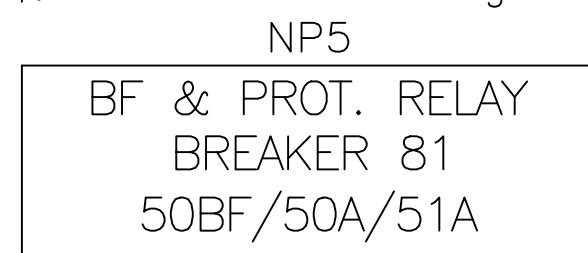
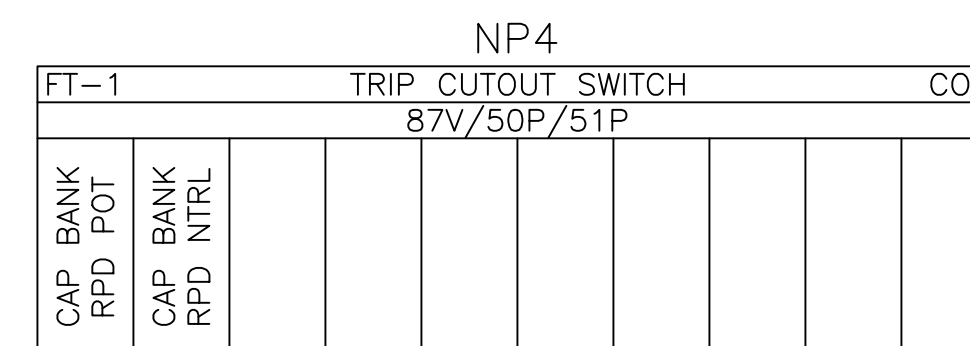
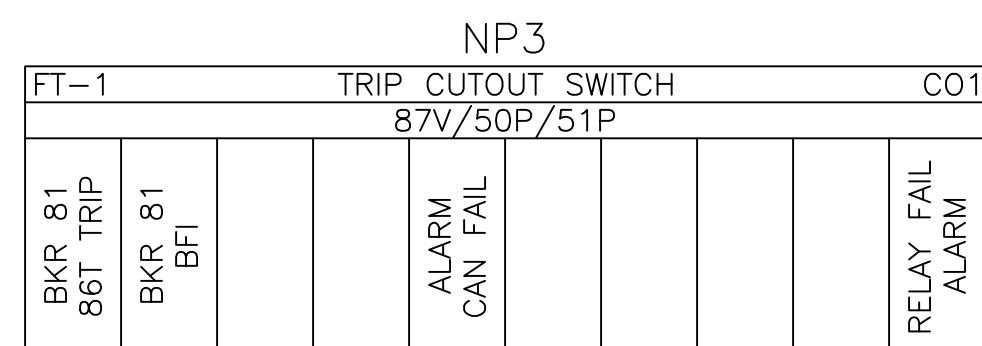
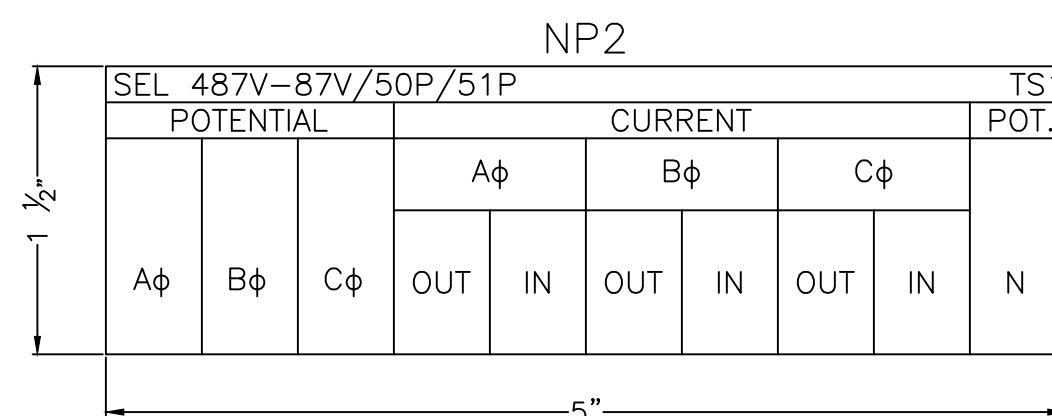
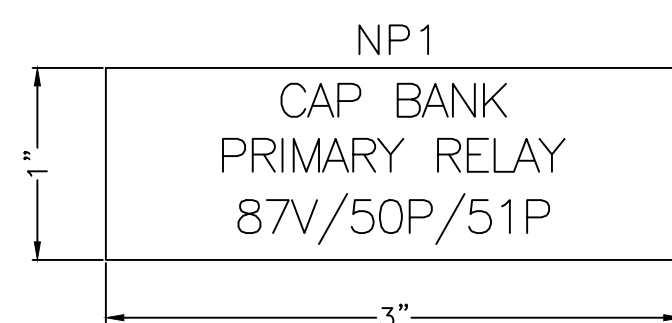


SECTION A-A
PANEL 104

NOTE
 1. STRUCTURES ARE HOFFMAN ENGINEERING NEMA 12 ENCLOSURE, CAT. # A-903624FS WITH SWING-OUT RACK MTG. FRAME, CAT. # A-903650F19
 2. STRUCTURES TO BE PAINTED AS FOLLOWS:
 EXTERIOR - ANSI-61 GRAY LACQUER
 INTERIOR - HOFFMAN WHITE ENAMEL
 3. ○ - HARLO BILL OF MATERIAL ITEM NO.

DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION						ISSUED FOR CONSTRUCTION				
1	RF022-01145	5/9/23	NC	RE	LA	NC	GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69KV			
DESCRIPTION: CHANGED 270 TO 10870						STEEL DETAILS & ELEVATIONS FOR PANELS 103 & 104				
C		10-05	RLS				ENGINEER: SCALE: NONE DATE: 2/23/87 REV.			
DESCRIPTION: REVISED SECTION A-A AND TOP VIEW						DRAWN BY: JY DRAWING NO. SHEET 1 OF 1				
B		7/7/87		EJ			S351PP001			
DESCRIPTION: ADDED WHITE LIGHT FOR HEA RELAYS						P.O. BOX 669 CHOUTEAU, OK 74337				
A		3/19/87		EJ			APPROVED BY: OLD DRAWING NO.: D14591.2			
REV. NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK	ISSUE APPROV				

PANEL 104 BILL OF MATERIAL - 2023 CONSTRUCTION				
ITEM	AMOUNT/QT	DESCRIPTION	MANUFACTURER	GRDA Stock Number
CONTROL EQUIP RELAY				
R-1	1	SEL 351S CIRCUIT BREAKER CONTROL RELAY, RACK MOUNT, EXTRA I/O	SEL	SEL-0351S6XHD3E5421
R-7	1	SEL 487V CAP BANK PROTECTION RELAY	SEL	SEL-0487V1X6151XB44H4A4XXX
R-10	2	ABB TYPE FT-19R TEST SWITCH (2) 10 POLE, (1) 4 POT, 6 CURRENT		S# FR2H-014-001-001A
R-12	1	ABB TYPE FT-19R TEST SWITCH (3) 10 POLE		S# FR2H-001-001-001A
R-15	2	ELECTROSWITCH, SERIES 24 AUXILIARY TRIPPING RELAY, 125VDC, S# 78PB08D, 8 DECK, MANUAL RESET LOR, WITH LIGHTS		S# 78PB08D 031-1121-000-000
R-17	1	MARATHON #F30A2S FUSE BLOCK WITH TYPE NON-6 AMP FUSES		#F30A2S 031-0017-000-000
R-18	2	MARATHON #F30A2S FUSE BLOCK WITH TYPE NON-10 AMP FUSES		#F30A2S
R-19	2	MARATHON #F30A3S FUSE BLOCK, 3 POLE, 30 AMP, 600 VOLT WITH TYPE NON-6 AMP FUSES		#F30A3S
R-28	2	RS232/CABLE SEL C273A TO RTU (25 FEET)		-



NOTES:

1. NAMEPLATE SIZES 5" x 1 1/2" OR 3" x 1", TEXT SIZE 0.187 UNLESS NOTED OTHERWISE
2. TEST SWITCHES/CUTOUTS 5" x 1 1/2", TEXT SIZE 0.13

REFERENCE DRAWINGS:

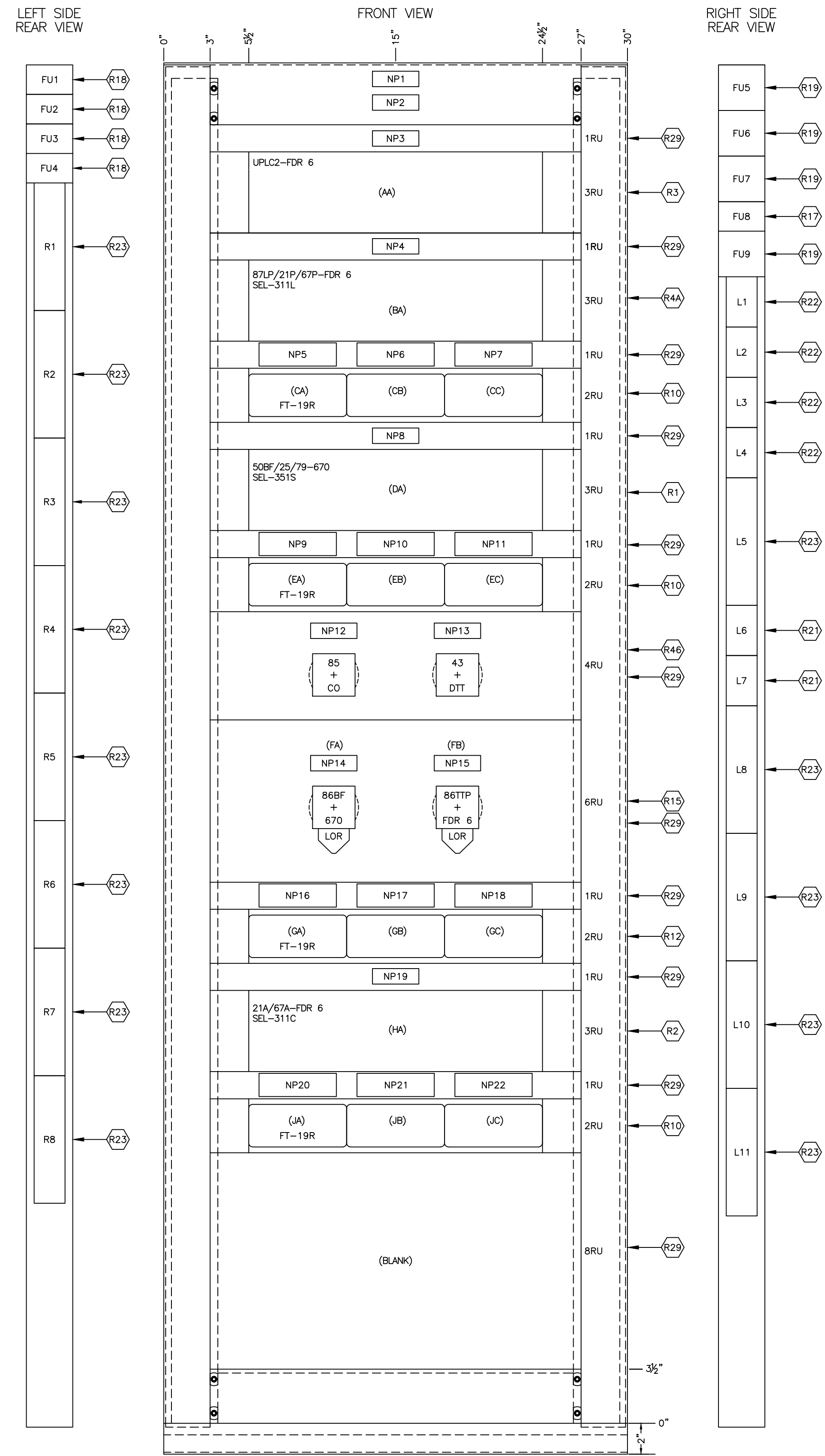
- S351S015 ONE-LINE DIAGRAM METERING AND RELAYING 138KV AND CITY AUTOTRANSFORMER
- S351S017 ONE-LINE DIAGRAM METERING AND RELAYING CAP BANK AND CITY 69KV



ISSUED FOR CONSTRUCTION

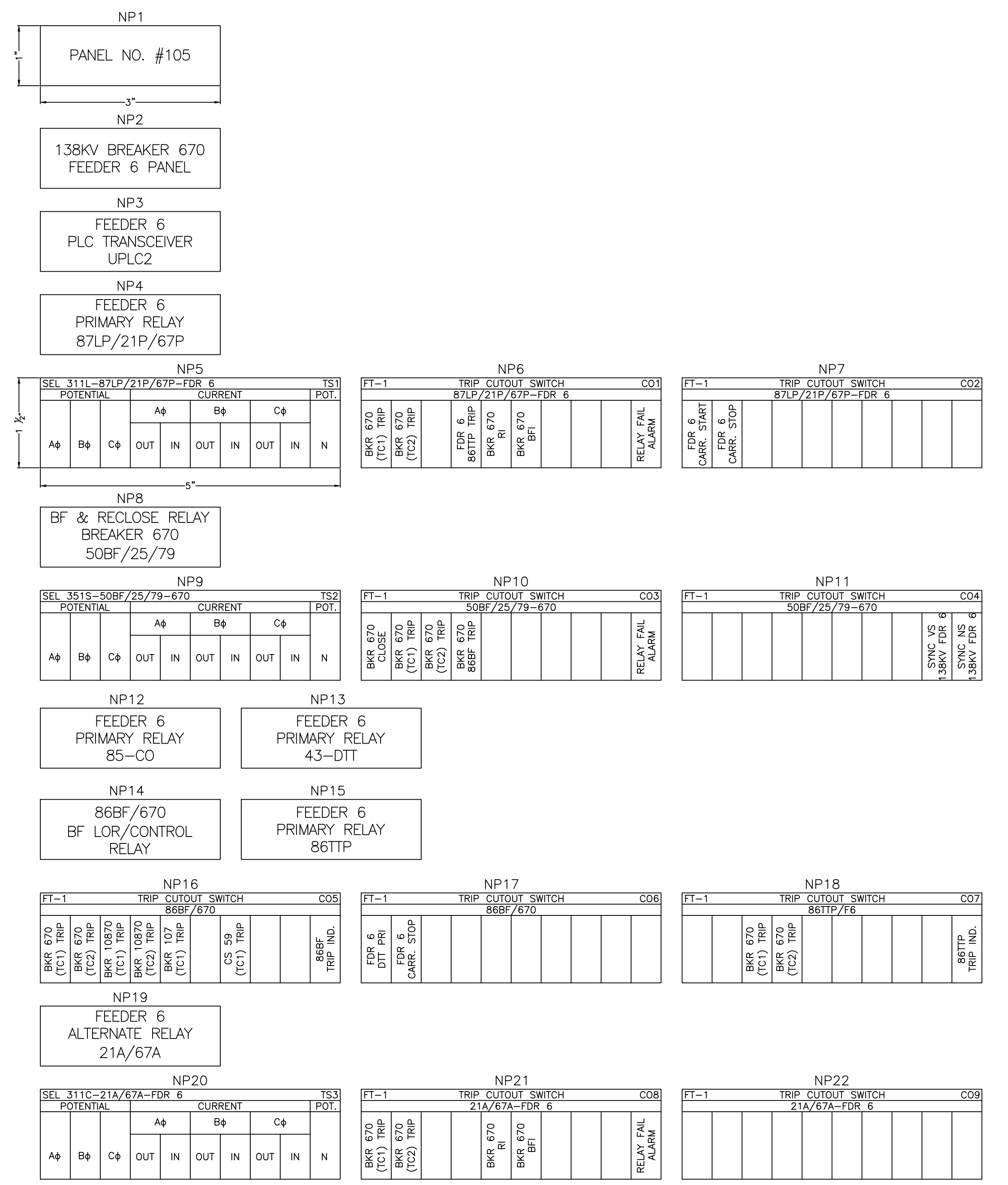
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION		GRAND RIVER DAM AUTHORITY	
0	RF022-01145	5/9/23	NC BE TM NC
		STILLWATER KINZIE INTERCONNECT S351	
		STILLWATER, OKLAHOMA 138/69KV	
PANEL #104 BOM & NAMEPLATES			
ENGINEER: NC	SCALE: NONE	DATE: 5/9/23	REV.
DRAWN BY: BE	CHECKED BY: TM	DRAWING NO. S351PP002	0
APPROVED BY: NC	P.O. BOX 669 CHOUTEAU, OK 74337		





BILL OF MATERIALS PANEL #105

ITEM	QTY.	DESCRIPTION	DEVICE NAME
R1	1	SEL-351S PROTECTION SYSTEM - CIRCUIT BREAKER CONTROL RELAY S# 035156KH03E5421	50BF/25/79-670
R2	1	SEL-311C TRANSMISSION SYSTEM - LINE PROTECTION RELAY S# 0311C11HH3E5421	21A/67A-FDR 6
R3	1	PULSAR UPLC-II UNIVERSAL POWER LINE CARRIER TRANSCEIVER S# US1NSM7AFSX	UPLC2-FDR 6
R4A	1	SEL-311L TRANSMISSION SYSTEM - LINE PROTECTION RELAY S# 0311L0HDD3254XXXX	87LP/21P/67P-FDR 6
R10	3	ABB TYPE FT-19R FLEXITEST SWITCH ASSEMBLY, [(2) 10 POTENTIAL, (1) 4 POTENTIAL, 6 CURRENT] S# FR2H-014-001-001A	FT-19R
R12	1	ABB TYPE FT-19R FLEXITEST SWITCH ASSEMBLY, [(3) POTENTIAL] S# FR2H-001-001-001A	FT-19R
R15	2	ELECTROSWITCH, SERIES 24 AUXILIARY LOCK-OUT RELAY, 8 DECK, MANUAL RESET LOR WITH LIGHTS S# 78P908D (125V DC)	86BF-670 86TTP-FDR 6
R17	1	MARATHON #F30A2S FUSE BLOCK WITH TYPE NON-6 AMP FUSES	FU
R18	4	MARATHON #F30A2S FUSE BLOCK WITH TYPE NON-10 AMP FUSES	FU
R19	4	MARATHON #F30A3S FUSE BLOCK WITH TYPE NON-6 AMP FUSES	FU
R21	2	GENERAL ELECTRIC TYPE EB-25 TERMINAL BLOCKS 4 CIRCUIT S# EB25B04	L
R22	4	GENERAL ELECTRIC TYPE EB-27 SHORTING TERMINAL BLOCKS 4 CIRCUIT S# EB27B04S	L
R23	13	GENERAL ELECTRIC TYPE EB-25 TERMINAL BLOCKS 12 CIRCUIT S# EB25B12	R/L
R28	3	CABLE, SEL 273A, 25 FEET LONG, EACH	RTU CABLE
R29	12	COVER PLATE (8-1RU, 1-6RU, 1-4RU, 1-8RU)	
R46	2	ELECTROSWITCH CONTROL SWITCH, ENABLE/DISABLE, DOUBLE-THROW (SCREW POSITIONS 1 & 7), 2 DECKS, OVAL HANDLE, ENGRAVING-POS. 1: ENABLE, POS. 2: DISABLE S#24202B	43-87L 43-DTT

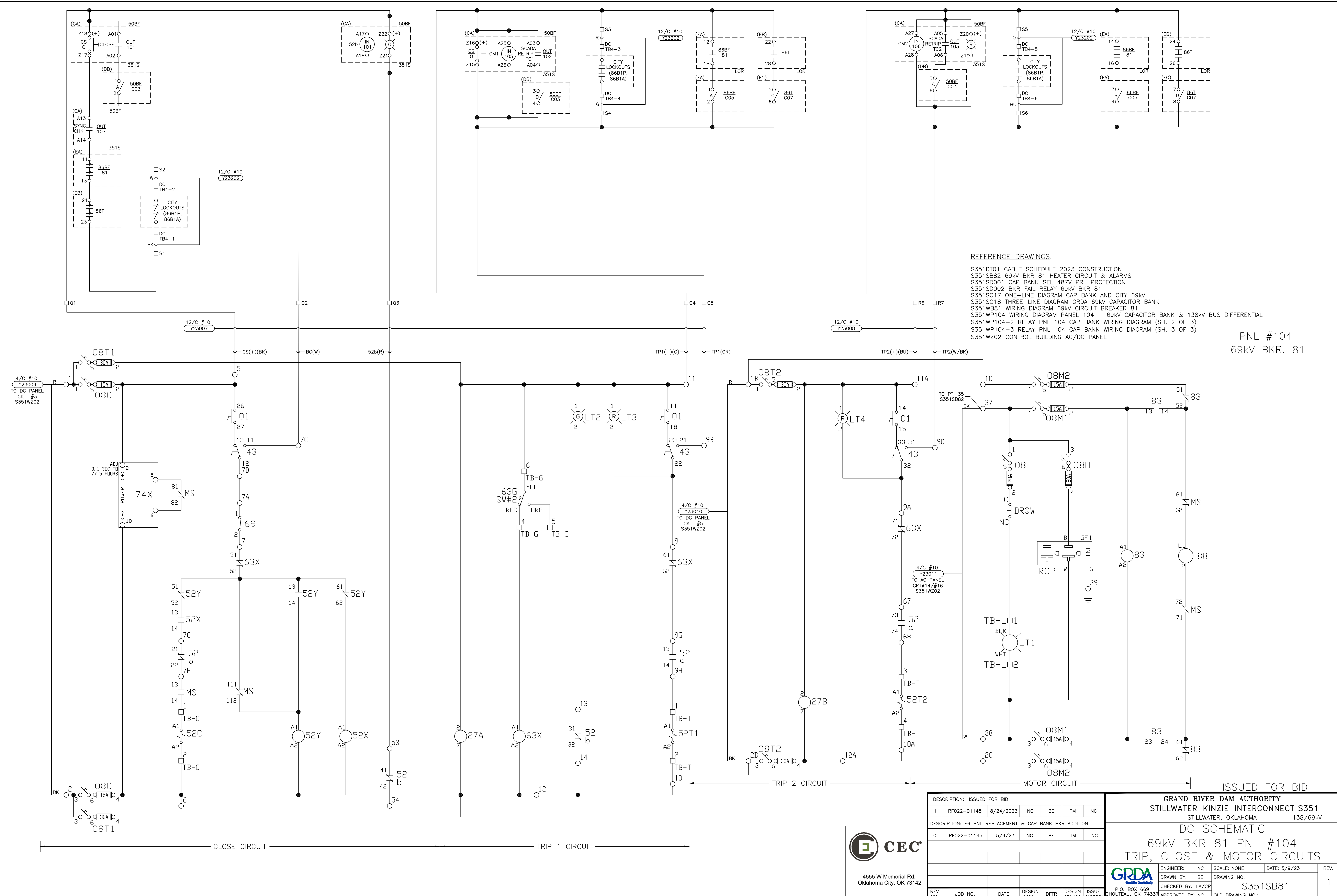


NOTES:
 1. NAMEPLATE SIZES 5" x 1 1/2" OR 3" x 1", TEXT SIZE 0.187 UNLESS NOTED OTHERWISE
 2. TEST SWITCHES/CUTOUTS 5" x 1 1/2", TEXT SIZE 0.13

REFERENCE DRAWINGS:
 S351S015 ONE-LINE DIAGRAM METERING AND RELAYING 138KV AND CITY AUTOTRANSFORMER
 S351S017 ONE-LINE DIAGRAM METERING AND RELAYING CAP BANK AND CITY 69KV



DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION				ISSUED FOR CONSTRUCTION			
0	RF022-01145	5/9/23	NC	BE	TM	NC	GRDA GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69KV
PNL #105 ELEVATION 138KV FDR 6 & BKR 670							REV. 0
ENGINEER:	NC	SCALE:	NONE	DATE:	5/9/23	ISSUE	
DRAWN BY:	RE	CHECKED BY:	-	APPROVED BY:	-	DRAWING NO.	S351PP105
REV. NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK	ISSUE APPROV	P.O. BOX 669 CHOUTEAU, OK 74337



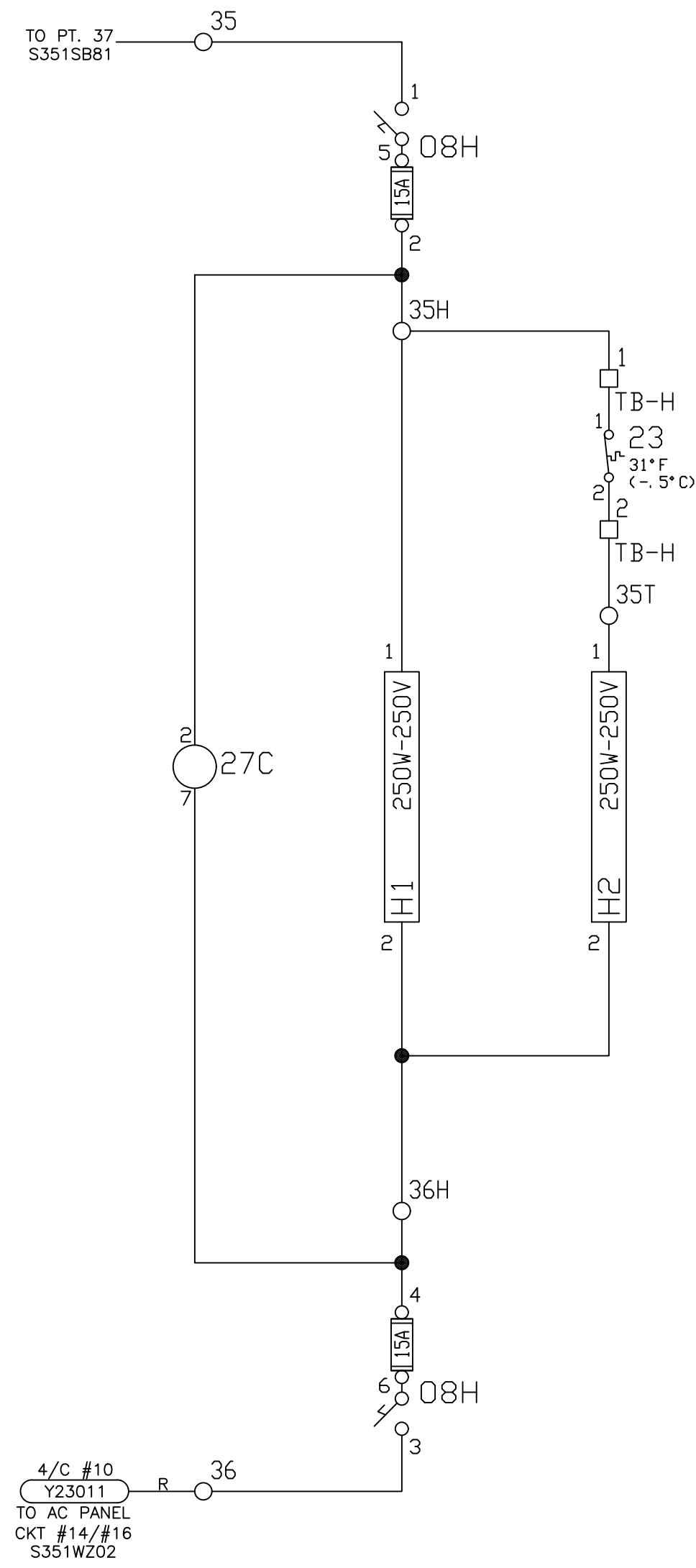
REFERENCE DRAWINGS:
 S351DT01 CABLE SCHEDULE 2023 CONSTRUCTION
 S351SB82 69KV BKR 81 HEATER CIRCUIT & ALARMS
 S351SD001 CAP BANK SEL 487V PRL. PROTECTION
 S351SD002 BKR FAIL RELAY 69KV BKR 81
 S351SO17 ONE-LINE DIAGRAM CAP BANK AND CITY 69KV
 S351SO18 THREE-LINE DIAGRAM GRDA 69KV CAPACITOR BANK
 S351WB81 WIRING DIAGRAM 69KV CIRCUIT BREAKER 81
 S351WP104 WIRING DIAGRAM PNL 104 - 69KV CAPACITOR BANK & 138KV BUS DIFFERENTIAL
 S351WP104-2 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 2 OF 3)
 S351WP104-3 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 3 OF 3)
 S351WZ02 CONTROL BUILDING AC/DC PANEL

PNL #104
 69kV BKR. 81

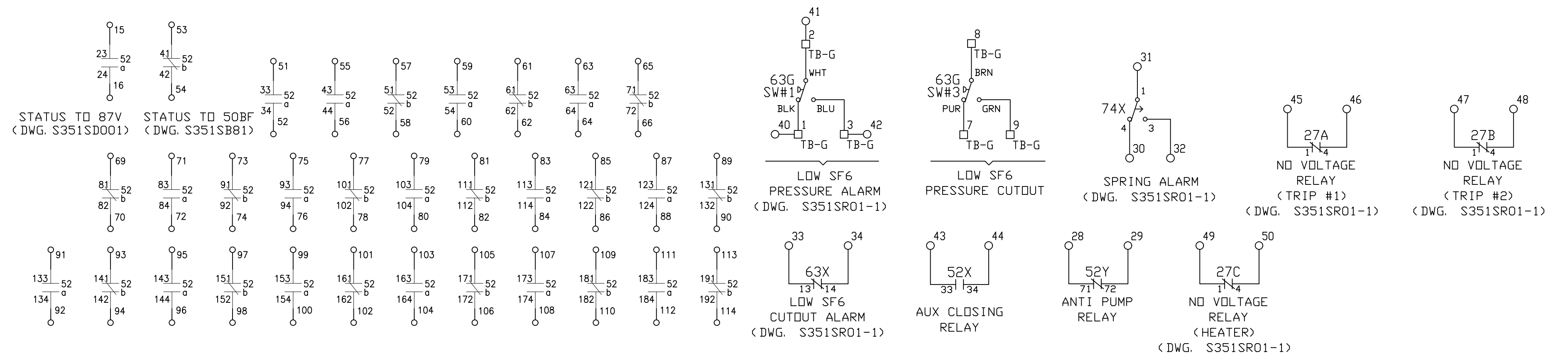
DESCRIPTION: ISSUED FOR BID					
1	RF022-01145	8/24/2023	NC	BE	TM NC
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION					
0	RF022-01145	5/9/23	NC	BE	TM NC
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFTL	DESIGN CHECK
					ISSUE APPROVD

GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69KV			
DC SCHEMATIC 69kV BKR 81 PNL #104 TRIP, CLOSE & MOTOR CIRCUITS			
ENGINEER: NC	SCALE: NONE	DATE: 5/9/23	REV.
DRAWN BY: BE	DRAWING NO. S351SB81		1
CHECKED BY: LA/CP	APPROVED BY: NC	OLD DRAWING NO.:	





AC CIRCUIT



SPARE AUXILIARY SWITCHES

CUSTOMER ALARMS

REFERENCE DRAWINGS:

- S351SB81 69kV BKR 81 TRIP, CLOSE & MOTOR CIRCUITS
- S351SD001 CAP BANK SEL 487V PRI. PROTECTION
- S351SD002 BKR FAIL RELAY 69kV BKR 81
- S351SO17 ONE-LINE DIAGRAM CAP BANK AND CITY 69kV
- S351SO18 THREE-LINE DIAGRAM GRDA 69kV CAPACITOR BANK
- S351SR01-1 ANNUNCIATOR SCHEMATIC (SHEET 1)
- S351WB81 WIRING DIAGRAM 69kV CIRCUIT BREAKER 81
- S351WP104 WIRING DIAGRAM PANEL 104 - 69kV CAPACITOR BANK & 138kV BUS DIFFERENTIAL
- S351WP104-2 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 2 OF 3)
- S351WP104-3 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 3 OF 3)
- S351WZ02 CONTROL BUILDING AC/DC PANEL

ISSUED FOR BID

GRAND RIVER DAM AUTHORITY
STILLWATER KINZIE INTERCONNECT S351
STILLWATER, OKLAHOMA 138/69kV

DC SCHEMATIC
69kV BKR 81 PNL #104
HEATER CIRCUIT & ALARMS

DESCRIPTION: ISSUED FOR BID						
1	RF022-01145	8/24/2023	NC	BE	TM	NC
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION						
0	RF022-01145	5/9/23	NC	BE	TM	NC
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPROVD

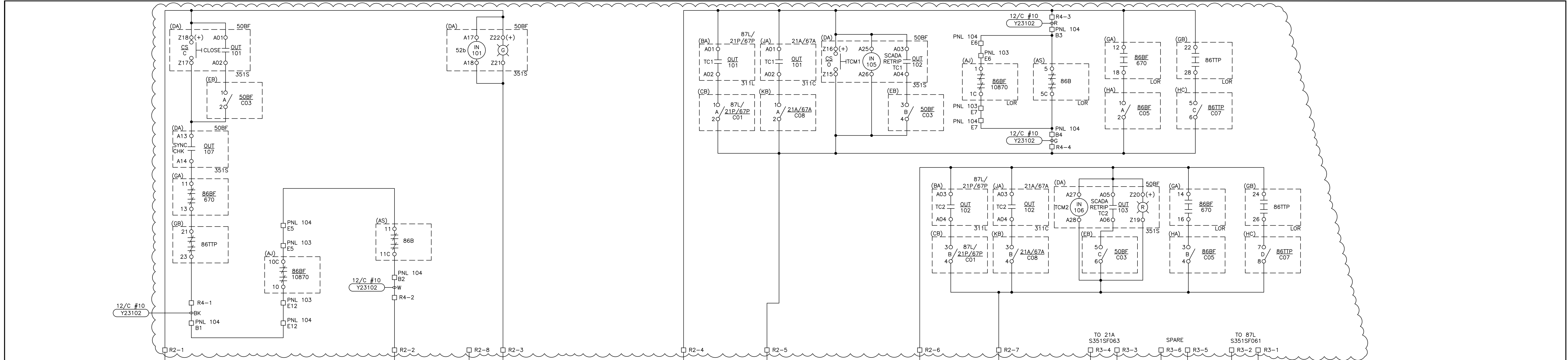
ENGINEER: NC	SCALE: NONE	DATE: 5/9/23	REV.
DRAWN BY: BE	DRAWING NO. S351SB82		1
CHECKED BY: LA/CP	APPROVED BY: NC	OLD DRAWING NO.:	



4555 W Memorial Rd.
Oklahoma City, OK 73142



P.O. BOX 669
CHOUTEAU, OK 74337



PANEL 105
BREAKER 670

NOTES:

- RELAYS ARE SHOWN DE-ENERGIZED, WITH THE BREAKER IN THE OPEN POSITION, CLOSING SPRINGS DISCHARGED AND WITH NO GAS.

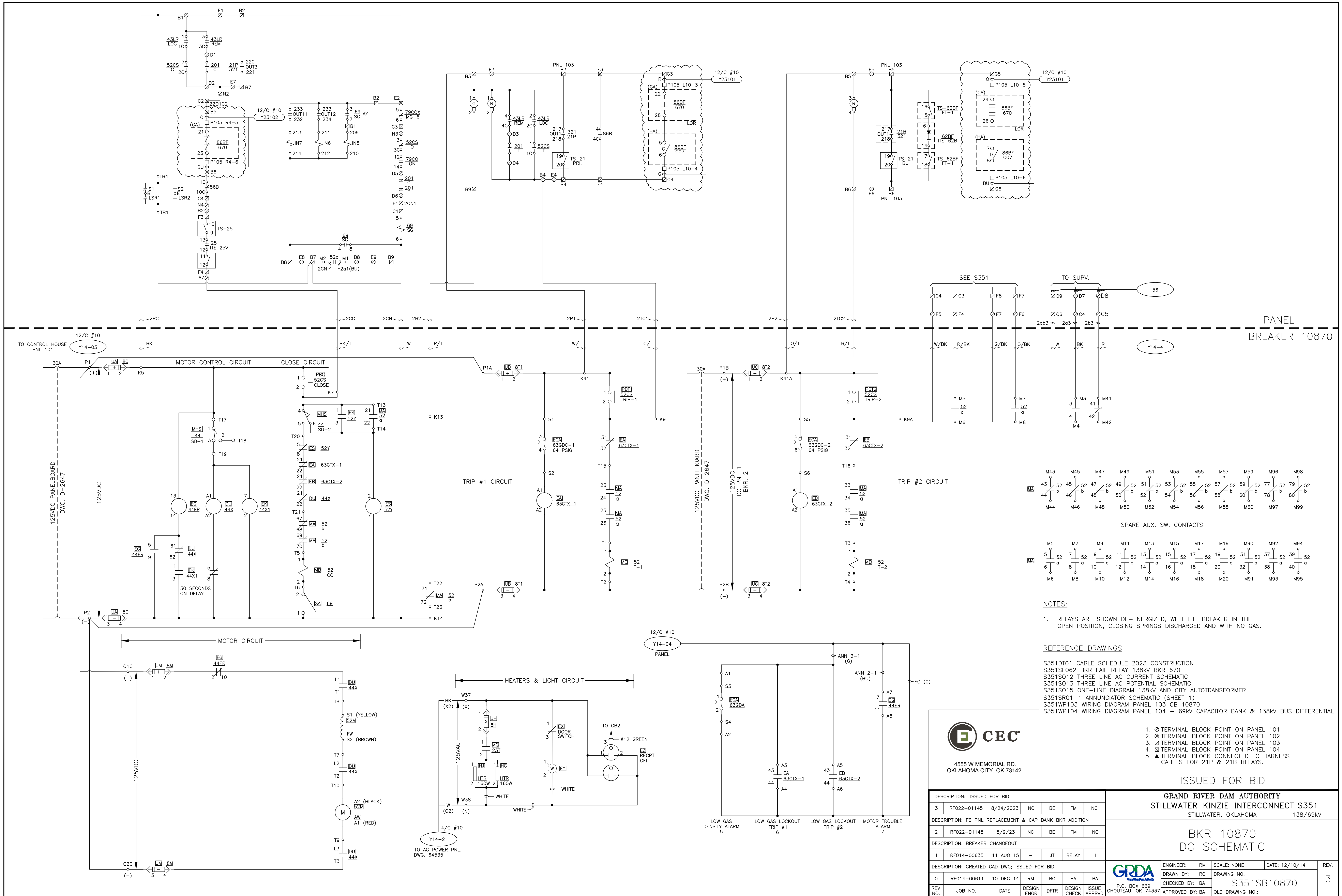
REFERENCE DRAWINGS

- S351DT01 CABLE SCHEDULE 2023 CONSTRUCTION
- S351SF061 PRIMARY RELAY 138kV FDR 6
- S351SF062 BKR FAIL RELAY 138kV BKR 670
- S351SF063 ALTERNATE RELAY 138kV FDR 6
- S351S012 THREE LINE AC CURRENT SCHEMATIC
- S351S013 THREE LINE AC POTENTIAL SCHEMATIC
- S351S015 ONE-LINE DIAGRAM 138kV AND CITY AUTOTRANSFORMER
- S351SR01-1 ANNUNCIATOR SCHEMATIC (SHEET 1)
- S351WP105-1 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 1 OF 2)
- S351WP105-2 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 2 OF 2)



ISSUED FOR BID

DESCRIPTION: ISSUED FOR BID						GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kV			
3	RF022-01145	8/24/2023	NC	BE	TM	NC	BKR 670 DC SCHEMATIC		
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION									
2	RF022-01145	5/9/23	NC	BE	TM	NC	ENGINEER: RM SCALE: NONE DATE: 12/10/14 DRAWN BY: RC DRAWING NO. CHECKED BY: BA S351SB670 P.O. BOX 669 CHOUTEAU, OK 74337 APPROVED BY: BA OLD DRAWING NO.:		
DESCRIPTION: BREAKER CHANGEOUT									
1	RF014-00635	11 AUG 15	-	JT	RELAY	I	ENGINEER: RM SCALE: NONE DATE: 12/10/14 DRAWN BY: RC DRAWING NO. CHECKED BY: BA S351SB670 P.O. BOX 669 CHOUTEAU, OK 74337 APPROVED BY: BA OLD DRAWING NO.:		
DESCRIPTION: CREATED CAD DWG; ISSUED FOR BID									
0	RF014-00611	10 DEC 14	RM	RC	BA	BA	ENGINEER: RM SCALE: NONE DATE: 12/10/14 DRAWN BY: RC DRAWING NO. CHECKED BY: BA S351SB670 P.O. BOX 669 CHOUTEAU, OK 74337 APPROVED BY: BA OLD DRAWING NO.:		
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION									
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK	ISSUE APPROV	3		



- NOTES:**
- RELAYS ARE SHOWN DE-ENERGIZED, WITH THE BREAKER IN THE OPEN POSITION, CLOSING SPRINGS DISCHARGED AND WITH NO GAS.

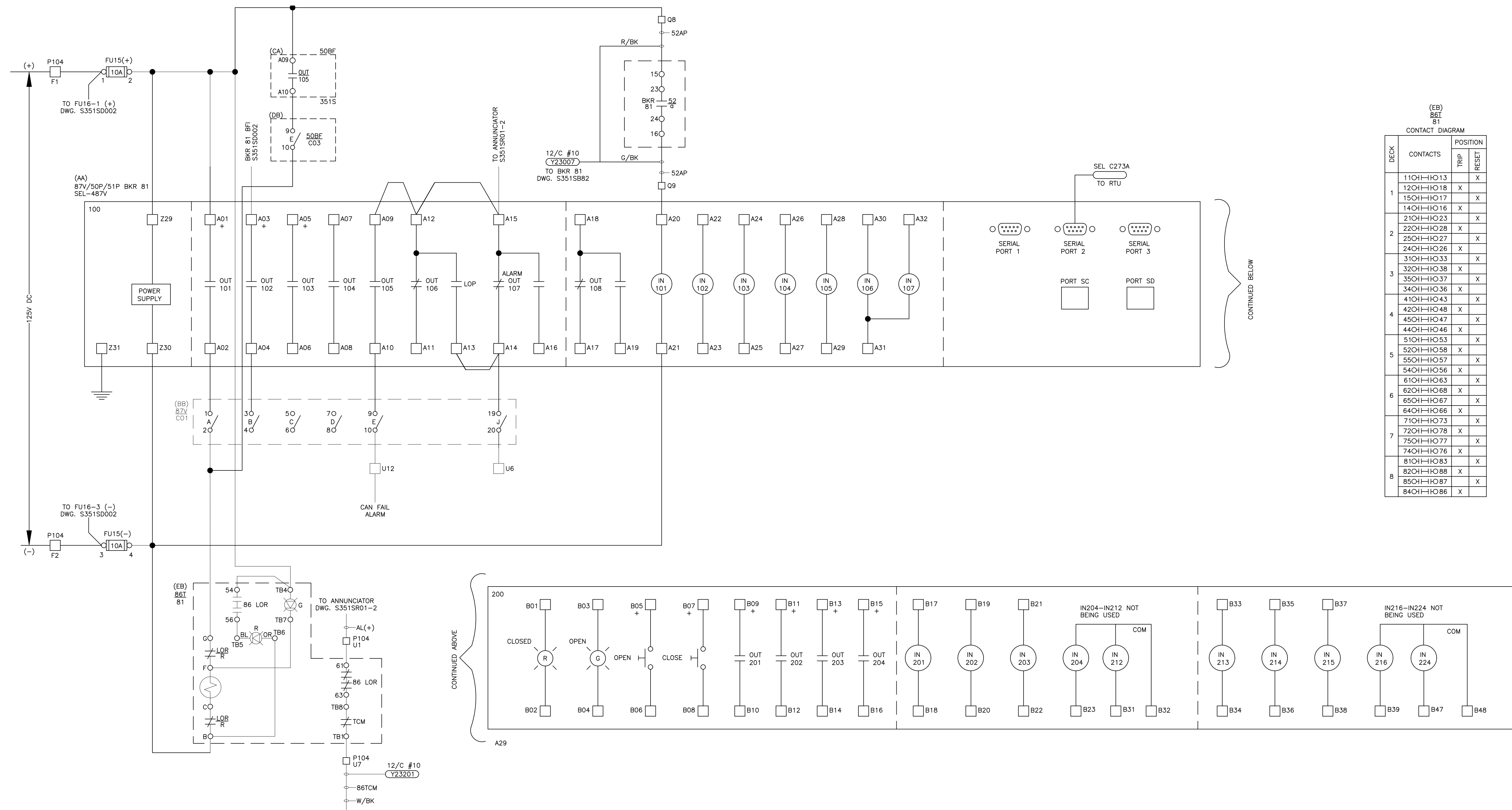
- REFERENCE DRAWINGS**
- S351D01 CABLE SCHEDULE 2023 CONSTRUCTION
 - S351SF062 BKR FAIL RELAY 138kV BKR 670
 - S351SO12 THREE LINE AC CURRENT SCHEMATIC
 - S351SO13 THREE LINE AC POTENTIAL SCHEMATIC
 - S351SO15 ONE-LINE DIAGRAM 138kV AND CITY AUTOTRANSFORMER
 - S351SR01-1 ANNUNCIATOR SCHEMATIC (SHEET 1)
 - S351WP103 WIRING DIAGRAM PANEL 103 CB 10870
 - S351WP104 WIRING DIAGRAM PANEL 104 - 69kV CAPACITOR BANK & 138kV BUS DIFFERENTIAL



ISSUED FOR BID

DESCRIPTION:	ISSUED FOR BID					
3	RF022-01145	8/24/2023	NC	BE	TM	NC
DESCRIPTION:	F6 PNL REPLACEMENT & CAP BANK BKR ADDITION					
2	RF022-01145	5/9/23	NC	BE	TM	NC
DESCRIPTION:	BREAKER CHANGEOUT					
1	RF014-00635	11 AUG 15	-	JT	RELAY	I
DESCRIPTION:	CREATED CAD DWG; ISSUED FOR BID					
0	RF014-00611	10 DEC 14	RM	RC	BA	BA
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK	ISSUE APPROV

GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kV	
BKR 10870 DC SCHEMATIC	
ENGINEER: RM DRAWN BY: RC CHECKED BY: BA APPROVED BY: BA	SCALE: NONE DATE: 12/10/14 DRAWING NO.: S351SB10870 OLD DRAWING NO.:
P.O. BOX 669 CHOUTEAU, OK 74337	REV. 3



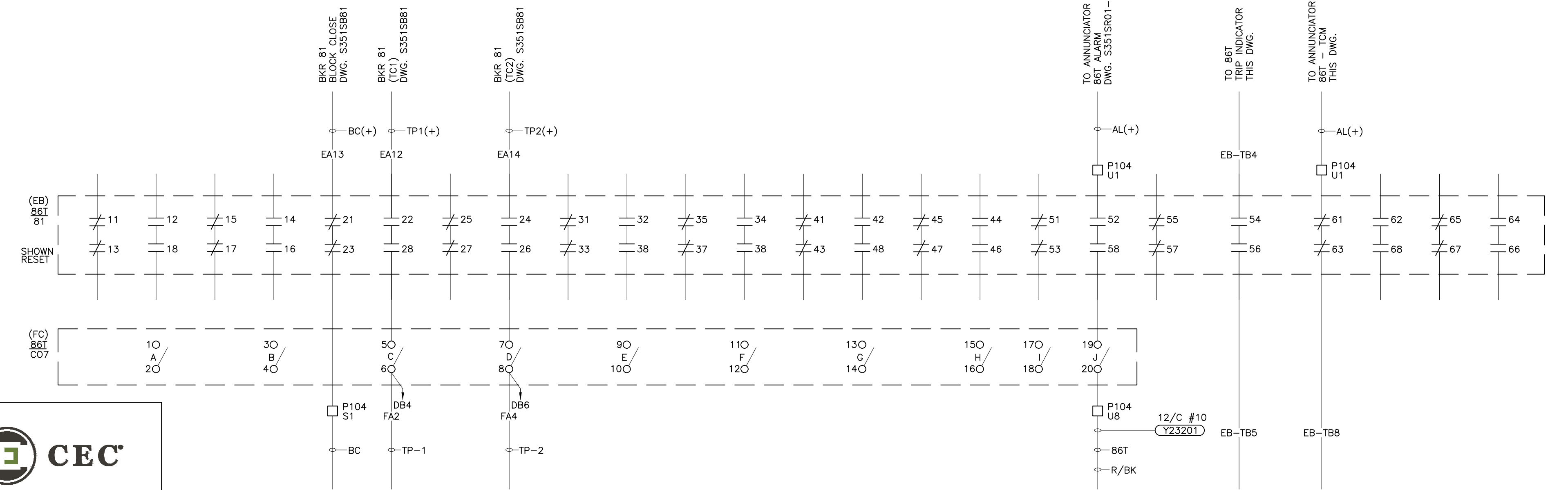
(EB) 86T 81

CONTACT DIAGRAM

DECK	CONTACTS	POSITION	TRIP	RESU
1	110H-I1013	X		
	120H-I1018	X		
	150H-I1017	X		
	140H-I1016	X		
2	210H-I1023	X		
	220H-I1028	X		
	250H-I1027	X		
	240H-I1026	X		
3	310H-I1033	X		
	320H-I1038	X		
	350H-I1037	X		
	340H-I1036	X		
4	410H-I1043	X		
	420H-I1048	X		
	450H-I1047	X		
	440H-I1046	X		
5	510H-I1053	X		
	520H-I1058	X		
	550H-I1057	X		
	540H-I1056	X		
6	610H-I1063	X		
	620H-I1068	X		
	650H-I1067	X		
	640H-I1066	X		
7	710H-I1073	X		
	720H-I1078	X		
	750H-I1077	X		
	740H-I1076	X		
8	810H-I1083	X		
	820H-I1088	X		
	850H-I1087	X		
	840H-I1086	X		

NOTES:
1. ALL DEVICES IN PNL 104 UNLESS OTHERWISE NOTED.

- REFERENCE DRAWINGS:
- S351DT01 CABLE SCHEDULE 2023 CONSTRUCTION
 - S351SB81 69kV BKR 81 TRIP, CLOSE & MOTOR CIRCUITS
 - S351SB82 69kV BKR 81 HEATER CIRCUIT & ALARMS
 - S351SD002 BKR FAIL RELAY 69kV BKR 81
 - S351SO17 ONE-LINE DIAGRAM CAP BANK AND CITY 69kV
 - S351SO18 THREE-LINE DIAGRAM GRDA 69kV CAPACITOR BANK
 - S351SR01-1 ANNUNCIATOR SCHEMATIC (SHEET 1)
 - S351SR01-2 ANNUNCIATOR SCHEMATIC (SHEET 2)
 - S351WB81 WIRING DIAGRAM 69kV CIRCUIT BREAKER 81
 - S351WP104 WIRING DIAGRAM PANNEL 104 - 69kV CAPACITOR BANK & 138kV BUS DIFFERENTIAL
 - S351WP104-2 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 2 OF 3)
 - S351WP104-3 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 3 OF 3)



ISSUED FOR BID

GRAND RIVER DAM AUTHORITY
STILLWATER KINZIE INTERCONNECT S351
STILLWATER, OKLAHOMA 138/69kV

CAP BANK SEL 487V
PRI PROTECTION PNL #104

DESCRIPTION: ISSUED FOR BID	1	RF022-01145	8/24/2023	NC	BE	TM	NC
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION	0	RF022-01145	5/9/23	NC	BE	TM	NC

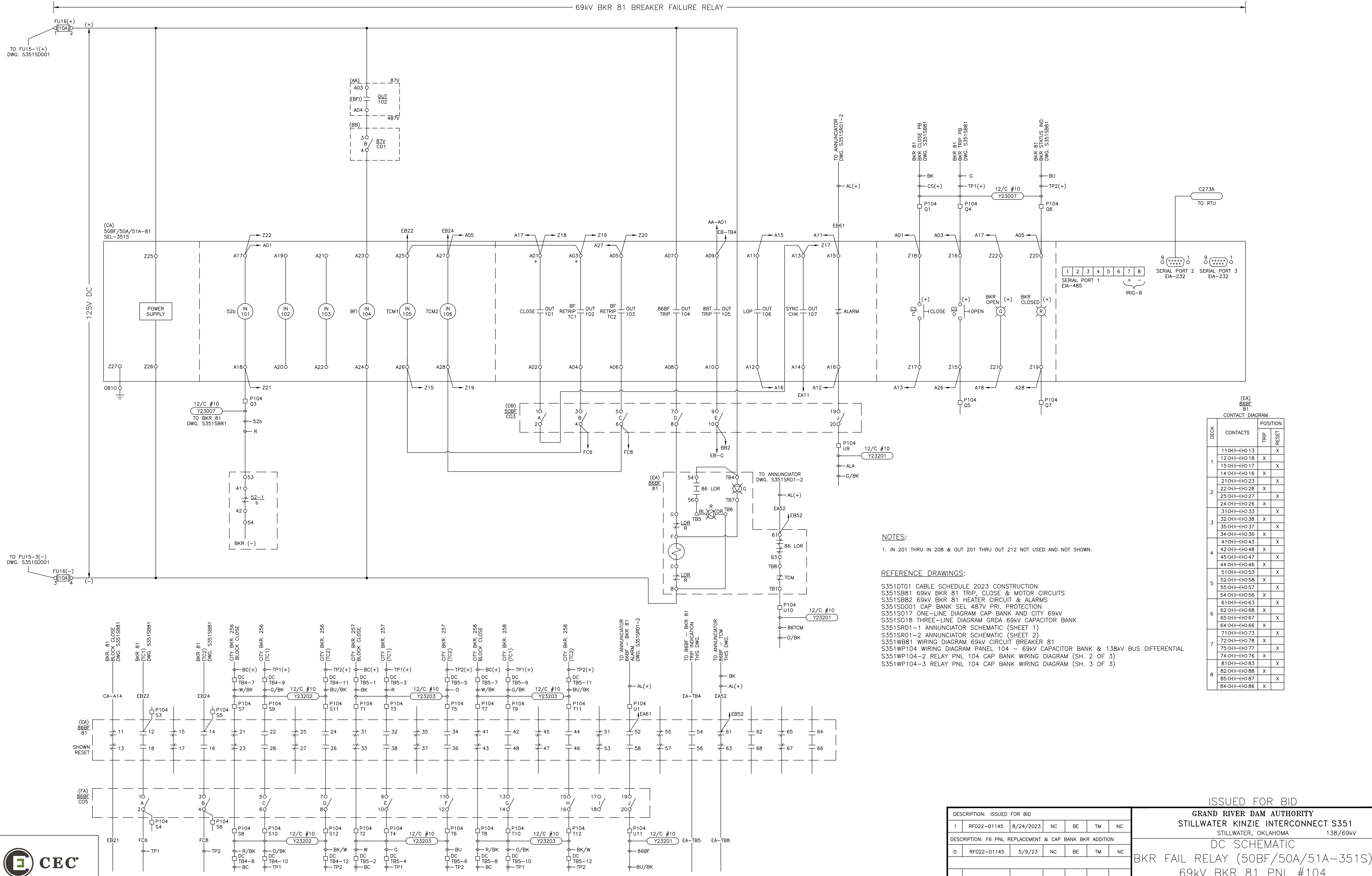
ENGINEER: NC	SCALE: NONE	DATE: 5/9/23	REV.
DRAWN BY: BE	DRAWING NO.		
CHECKED BY: LA/CP			
APPROVED BY: NC			

P.O. BOX 669
CHOUTEAU, OK 74337

S351SD001

1





(EA) 86BF 81 CONTACT DIAGRAM

DECK	CONTACTS	POSITION
1	11C H013	X
	12C H018	X
	15C H017	X
	14C H016	X
2	21C H023	X
	22C H028	X
	25C H027	X
	24C H026	X
3	31C H033	X
	32C H038	X
	35C H037	X
	34C H036	X
4	41C H043	X
	42C H048	X
	45C H047	X
	44C H046	X
5	51C H053	X
	52C H058	X
	55C H057	X
	54C H056	X
6	61C H063	X
	62C H068	X
	65C H067	X
	64C H066	X
7	71C H073	X
	72C H078	X
	75C H077	X
	74C H076	X
8	81C H083	X
	82C H088	X
	85C H087	X
	84C H086	X

NOTES:
1. IN 201 THRU IN 208 & OUT 201 THRU OUT 212 NOT USED AND NOT SHOWN.

- REFERENCE DRAWINGS:
- S351DT01 CABLE SCHEDULE 2023 CONSTRUCTION
 - S351SB81 69kV BKR 81 TRIP, CLOSE & MOTOR CIRCUITS
 - S351SB82 69kV BKR 81 HEATER CIRCUIT & ALARMS
 - S351SD001 CAP BANK SEL 487V PRI. PROTECTION
 - S351SO17 ONE-LINE DIAGRAM CAP BANK AND CITY 69KV
 - S351SO18 THREE-LINE DIAGRAM GRDA 69KV CAPACITOR BANK
 - S351SR01-1 ANNUNCIATOR SCHEMATIC (SHEET 1)
 - S351SR01-2 ANNUNCIATOR SCHEMATIC (SHEET 2)
 - S351WBB1 WIRING DIAGRAM 69KV CIRCUIT BREAKER 81
 - S351WP104 WIRING DIAGRAM PANEL 104 - 69KV CAPACITOR BANK & 138KV BUS DIFFERENTIAL
 - S351WP104-2 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 2 OF 3)
 - S351WP104-3 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 3 OF 3)



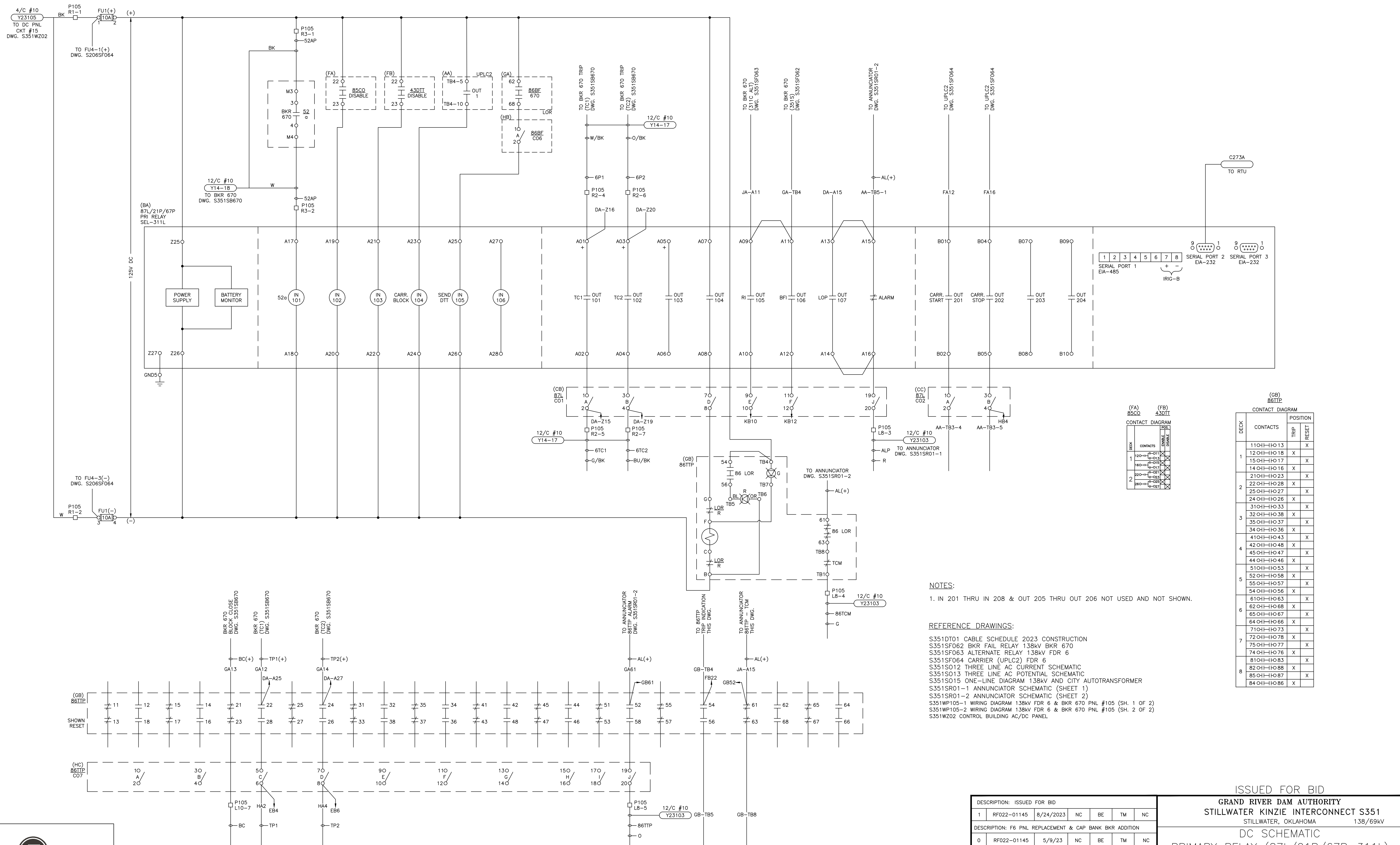
ISSUED FOR BID

GRAND RIVER DAM AUTHORITY
STILLWATER KINZIE INTERCONNECT S351
STILLWATER, OKLAHOMA 138/69KV

DC SCHEMATIC
BKR FAIL RELAY (50BF/50A/51A-351S)
69kV BKR 81 PNL #104

DESCRIPTION: ISSUED FOR BID	1	RF022-01145	8/24/2023	NC	BE	TM	NC
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION	0	RF022-01145	5/9/23	NC	BE	TM	NC

ENGINEER: NC SCALE: NONE DATE: 5/9/23 REV. 1
DRAWN BY: BE DRAWING NO. S351SD002
CHECKED BY: LA/CP
P.O. BOX 669 CHOUTEAU, OK 74337 APPROVED BY: NC



(FA) 85CO CONTACT DIAGRAM

CONTACTS	TRIP	RESET
120-H	01	X
120-H	02	X
120-H	03	X
120-H	04	X
120-H	05	X
120-H	06	X
120-H	07	X
120-H	08	X
120-H	09	X
120-H	10	X

(GB) 86TTP CONTACT DIAGRAM

DECK	CONTACTS	TRIP	RESET
1	110I-HO13	X	
1	120I-HO18	X	
1	150I-HO17	X	
1	140I-HO16	X	
2	210I-HO23	X	
2	220I-HO28	X	
2	250I-HO27	X	
2	240I-HO26	X	
3	310I-HO33	X	
3	320I-HO38	X	
3	350I-HO37	X	
3	340I-HO36	X	
4	410I-HO43	X	
4	420I-HO48	X	
4	450I-HO47	X	
4	440I-HO46	X	
5	510I-HO53	X	
5	520I-HO58	X	
5	550I-HO57	X	
5	540I-HO56	X	
6	610I-HO63	X	
6	620I-HO68	X	
6	650I-HO67	X	
6	640I-HO66	X	
7	710I-HO73	X	
7	720I-HO78	X	
7	750I-HO77	X	
7	740I-HO76	X	
8	810I-HO83	X	
8	820I-HO88	X	
8	850I-HO87	X	
8	840I-HO86	X	

NOTES:
1. IN 201 THRU IN 208 & OUT 205 THRU OUT 206 NOT USED AND NOT SHOWN.

REFERENCE DRAWINGS:
S351DT01 CABLE SCHEDULE 2023 CONSTRUCTION
S351SF062 BKR FAIL RELAY 138kV BKR 670
S351SF063 ALTERNATE RELAY 138kV FDR 6
S351SF064 CARRIER (UPLC2) FDR 6
S351S012 THREE LINE AC CURRENT SCHEMATIC
S351S013 THREE LINE AC POTENTIAL SCHEMATIC
S351S015 ONE-LINE DIAGRAM 138kV AND CITY AUTOTRANSFORMER
S351SR01-1 ANNUNCIATOR SCHEMATIC (SHEET 1)
S351SR01-2 ANNUNCIATOR SCHEMATIC (SHEET 2)
S351WP105-1 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 1 OF 2)
S351WP105-2 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 2 OF 2)
S351W202 CONTROL BUILDING AC/DC PANEL

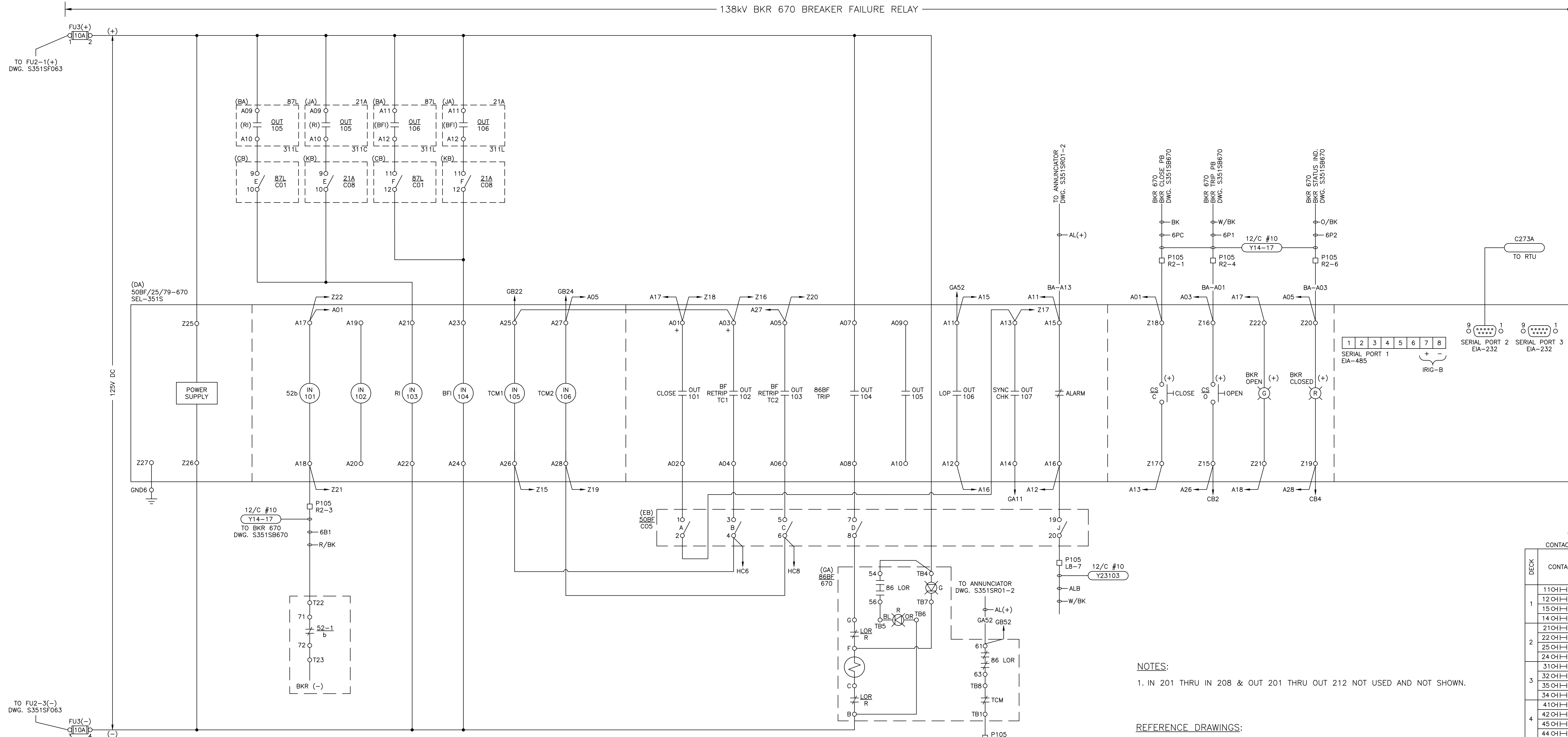


DESCRIPTION: ISSUED FOR BID						ISSUED FOR BID				
1	RF022-01145	8/24/2023	NC	BE	TM	NC	GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kV			
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION						DC SCHEMATIC				
0	RF022-01145	5/9/23	NC	BE	TM	NC	PRIMARY RELAY (87L/21P/67P-311L) 138kV FDR 6 PNL #105			
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK	ISSUE APPROV	ENGINEER: NC	SCALE: NONE	DATE: 5/9/23	REV. 1
							DRAWN BY: RE	DRAWING NO.	S351SF061	
							CHECKED BY: LA/CP	APPROVED BY: NC		



P.O. BOX 669
CHOUTEAU, OK 74337

138kV BKR 670 BREAKER FAILURE RELAY



(GA) 86BF 670 CONTACT DIAGRAM

DECK	CONTACTS	POSITION	
		TRIP	RESET
1	11OH-I13	X	
	12OH-I18	X	
	15OH-I17	X	
	14OH-I16	X	
2	21OH-I23	X	
	22OH-I28	X	
	25OH-I27	X	
	24OH-I26	X	
3	31OH-I33	X	
	32OH-I38	X	
	35OH-I37	X	
	34OH-I36	X	
4	41OH-I43	X	
	42OH-I48	X	
	45OH-I47	X	
	44OH-I46	X	
5	51OH-I53	X	
	52OH-I58	X	
	55OH-I57	X	
	54OH-I56	X	
6	61OH-I63	X	
	62OH-I68	X	
	65OH-I67	X	
	64OH-I66	X	
7	71OH-I73	X	
	72OH-I78	X	
	75OH-I77	X	
	74OH-I76	X	
8	81OH-I83	X	
	82OH-I88	X	
	85OH-I87	X	
	84OH-I86	X	

NOTES:
1. IN 201 THRU IN 208 & OUT 201 THRU OUT 212 NOT USED AND NOT SHOWN.

REFERENCE DRAWINGS:
S351DT01 CABLE SCHEDULE 2023 CONSTRUCTION
S351SF061 PRIMARY RELAY 138kV FDR 6
S351SF063 ALTERNATE RELAY 138kV FDR 6
S351SF064 CARRIER (UPLC2) FDR 6
S351SO12 THREE LINE AC CURRENT SCHEMATIC
S351SO13 THREE LINE AC POTENTIAL SCHEMATIC
S351SO15 ONE-LINE DIAGRAM 138kV AND CITY AUTOTRANSFORMER
S351SR01-1 ANNUNCIATOR SCHEMATIC (SHEET 1)
S351SR01-2 ANNUNCIATOR SCHEMATIC (SHEET 2)
S351WP105-1 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 1 OF 2)
S351WP105-2 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 2 OF 2)
S351WZ02 CONTROL BUILDING AC/DC PANEL



ISSUED FOR BID

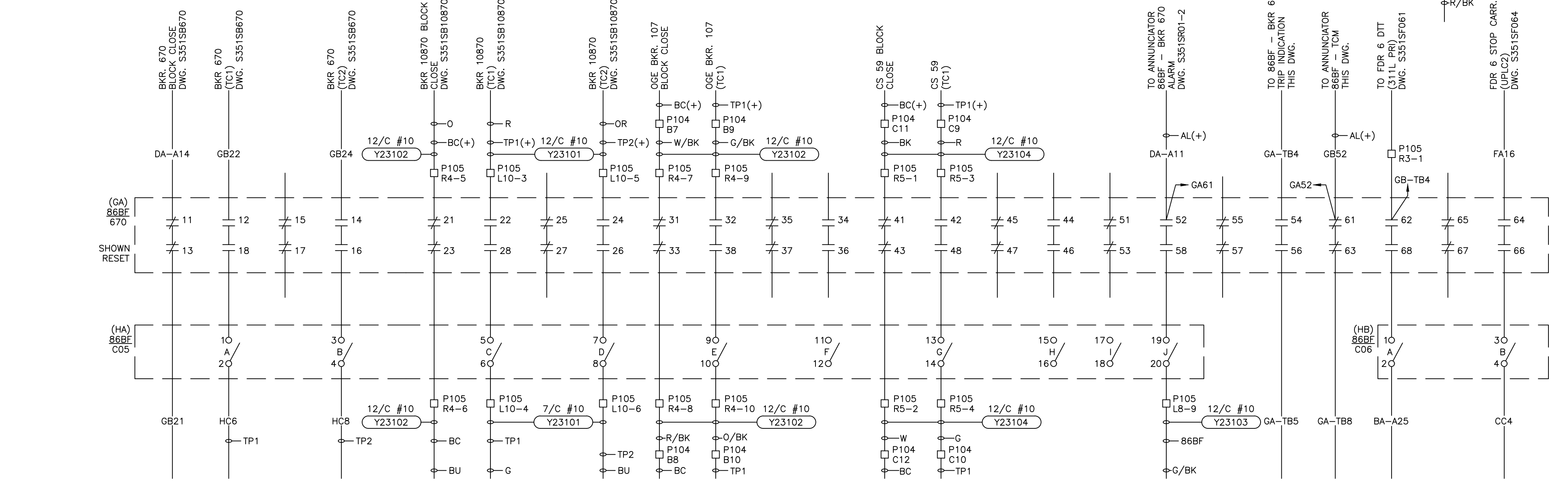
GRAND RIVER DAM AUTHORITY
STILLWATER KINZIE INTERCONNECT S351
STILLWATER, OKLAHOMA 138/69kV

DC SCHEMATIC
BKR FAIL RELAY (50BF/25/79-351S)
138kV BKR 670 PNL #105

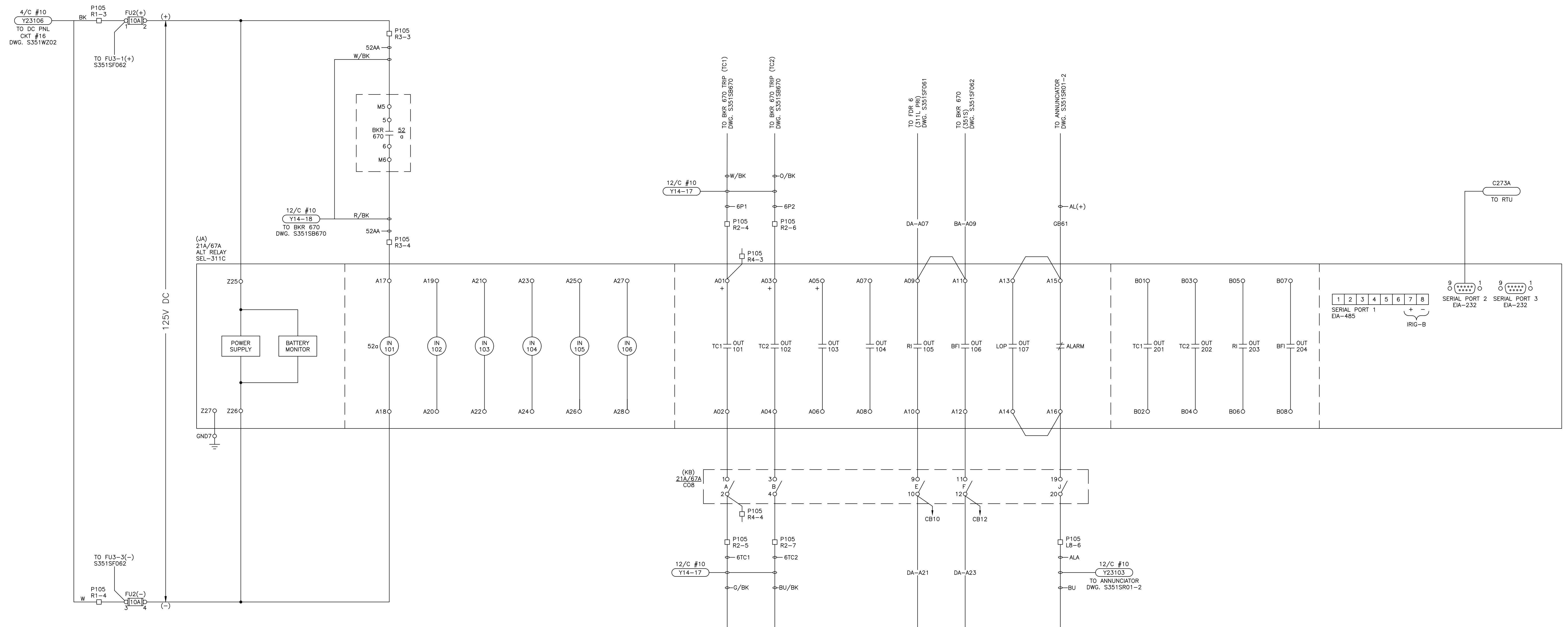
ENGINEER: NC SCALE: NONE DATE: 5/9/23 REV.
DRAWN BY: BE DRAWING NO.
CHECKED BY: LA/CP
P.O. BOX 669 CHOUTEAU, OK 74337 APPROVED BY: NC

S351SF062 1

DESCRIPTION:	ISSUED FOR BID
1	RF022-01145 8/24/2023 NC BE TM NC
DESCRIPTION:	F6 PNL REPLACEMENT & CAP BANK BKR ADDITION
0	RF022-01145 5/9/23 NC BE TM NC
REV. NO.	JOB NO. DATE DESIGN ENGR. DFR DESIGN CHECK. ISSUE APPROV.



138kV FDR 6 ALTERNATE RELAY



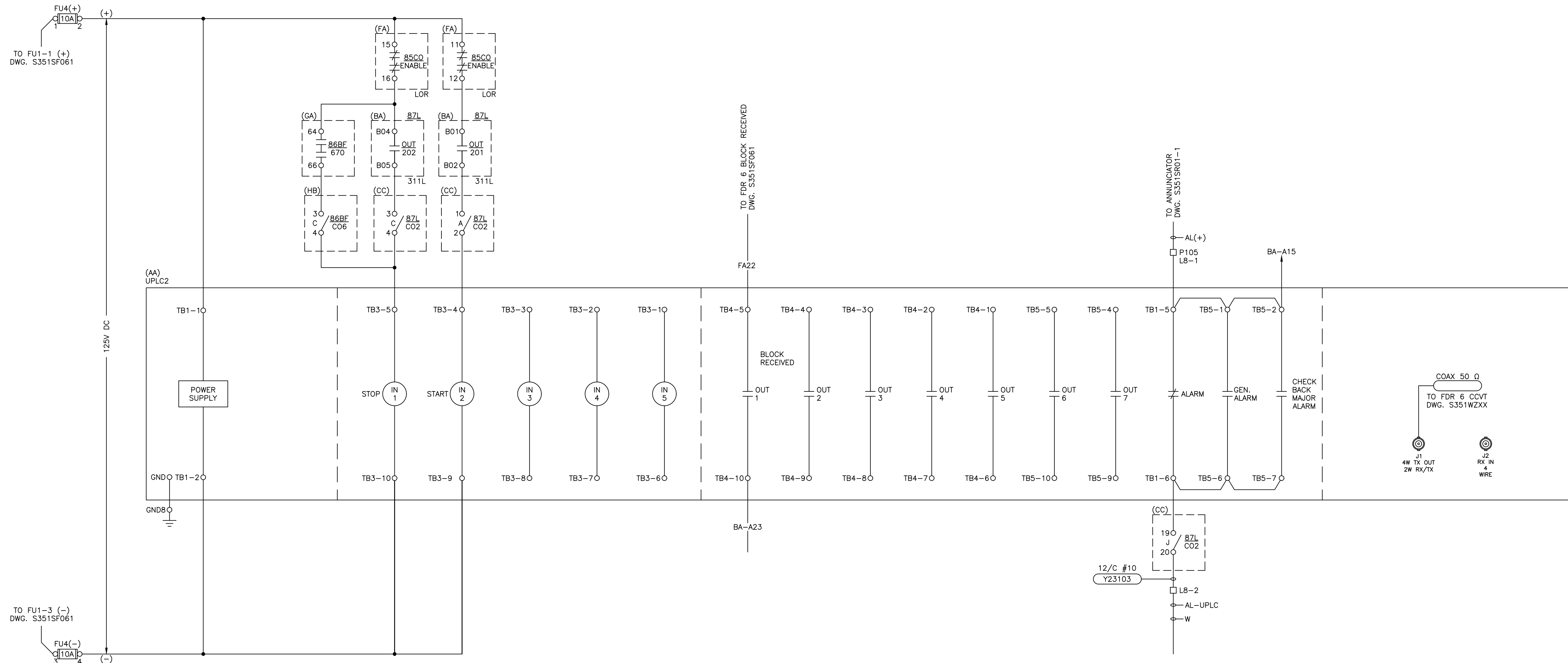
NOTES:
 1. IN 201 THRU IN 208 & OUT 205 THRU OUT 212 NOT USED AND NOT SHOWN.

REFERENCE DRAWINGS:
 S351DT01 CABLE SCHEDULE 2023 CONSTRUCTION
 S351SF061 PRIMARY RELAY 138kV FDR 6
 S351SF062 BKR FAIL RELAY 138kV BKR 670
 S351SO12 THREE LINE AC CURRENT SCHEMATIC
 S351SO13 THREE LINE AC POTENTIAL SCHEMATIC
 S351SO15 ONE-LINE DIAGRAM 138kV AND CITY AUTOTRANSFORMER
 S351SR01-1 ANNUNCIATOR SCHEMATIC (SHEET 1)
 S351SR01-2 ANNUNCIATOR SCHEMATIC (SHEET 2)
 S351WP105-1 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 1 OF 2)
 S351WP105-2 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 2 OF 2)
 S351WZ02 CONTROL BUILDING AC/DC PANEL

ISSUED FOR BID



DESCRIPTION: ISSUED FOR BID							GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kV			
1	RF022-01145	8/24/2023	NC	BE	TM	NC	DC SCHEMATIC ALTERNATE RELAY (21A/67A-311C) 138kV FDR 6 PNL #105			
0	RF022-01145	5/9/23	NC	BE	TM	NC	ENGINEER: NC SCALE: NONE DATE: 5/9/23 REV. DRAWN BY: RE DRAWING NO. CHECKED BY: LA/CP P.O. BOX 669 CHOUTEAU, OK 74337 APPROVED BY: NC			
REV. NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPROVD	S351SF063 1			



NOTES:

1. ALL EQUIPMENT IS ON PNL #105 UNLESS OTHERWISE NOTED.
2. PULSAR POWER LINE CARRIER MODEL US1NSM7AFSX
3. CARRIER FREQUENCIES TO BE ASSIGNED BY GRDA

REFERENCE DRAWINGS:

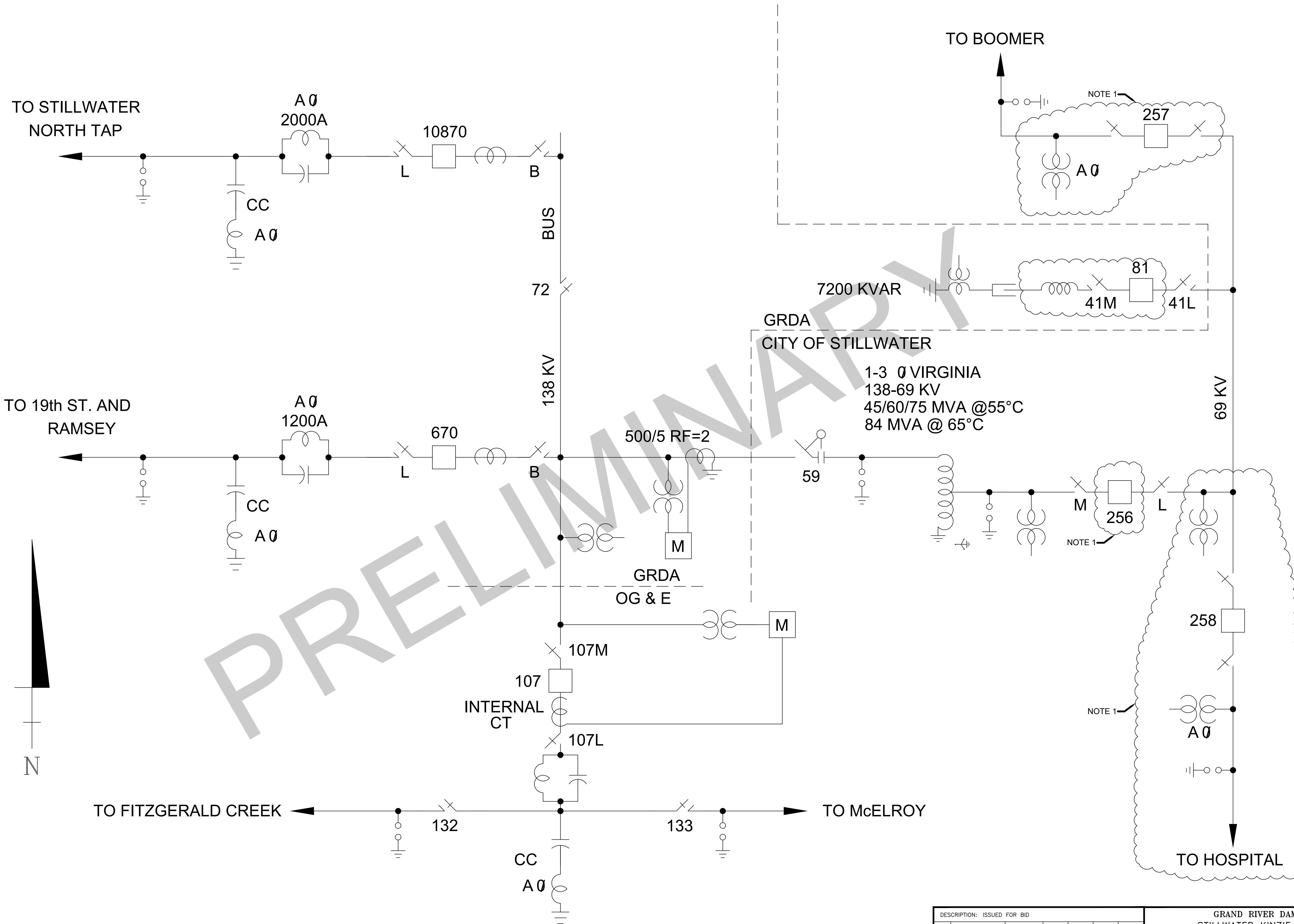
- S351DT01 CABLE SCHEDULE 2023 CONSTRUCTION
- S351SF061 PRIMARY RELAY 138kV FDR 6
- S351SF062 BKR FAIL RELAY 138kV BKR 670
- S351SO15 ONE-LINE DIAGRAM 138kV AND CITY AUTOTRANSFORMER
- S351SR01-1 ANNUNCIATOR SCHEMATIC (SHEET 1)
- S351SR01-2 ANNUNCIATOR SCHEMATIC (SHEET 2)
- S351WP105-1 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 1 OF 2)
- S351WP105-2 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 2 OF 2)
- S351W202 CONTROL BUILDING AC/DC PANEL

ISSUED FOR BID

DESCRIPTION: ISSUED FOR BID		GRAND RIVER DAM AUTHORITY	
1	RF022-01145	8/24/2023	NC BE TM NC
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION		STILLWATER KINZIE INTERCONNECT S351	
0	RF022-01145	5/9/23	NC BE TM NC
		STILLWATER, OKLAHOMA 138/69kV	
		DC SCHEMATIC	
		CARRIER (UPLC2)	
		PNL #105 FDR 6	
ENGINEER:	NC	SCALE: NONE	DATE: 5/9/23
DRAWN BY:	BE	DRAWING NO.	1
CHECKED BY:	LA/CP	S351SF064	
REV. NO.	JOB NO.	DATE	DESIGN ENGR
			DFT
			DESIGN CHECK
			ISSUE APPROVD
P.O. BOX 669		CHOUTEAU, OK 74337	
APPROVED BY: NC			



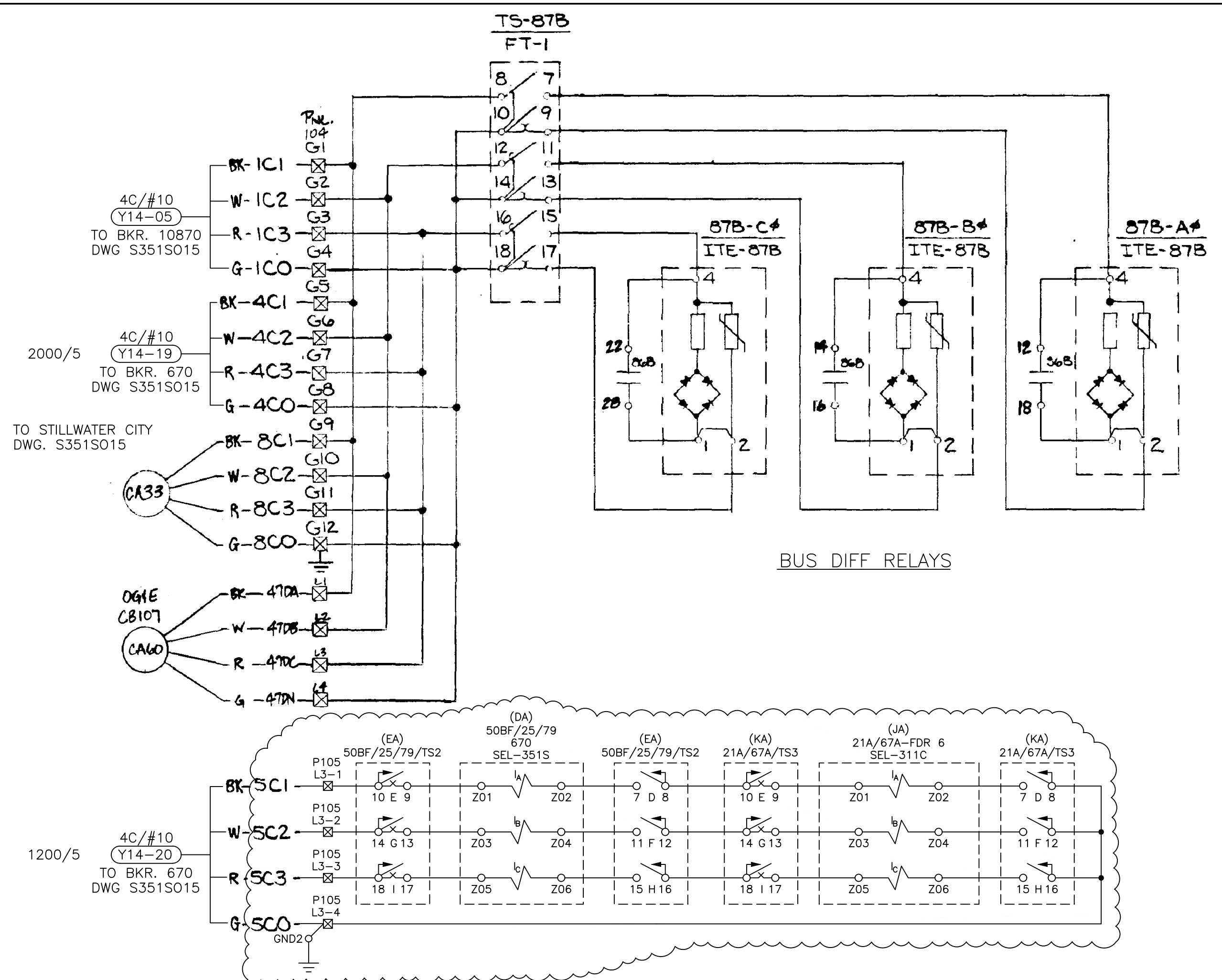
4555 W MEMORIAL RD.
OKLAHOMA CITY, OK 73142



NOTES:
 1. 2024 CONSTRUCTION TO BE PERFORMED BY CITY OF STILLWATER

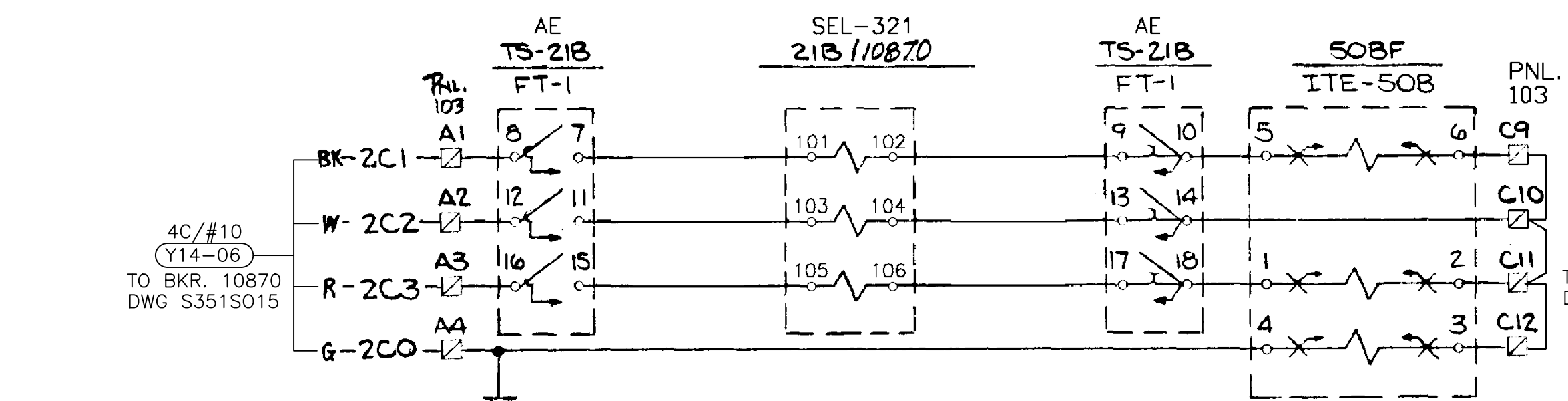
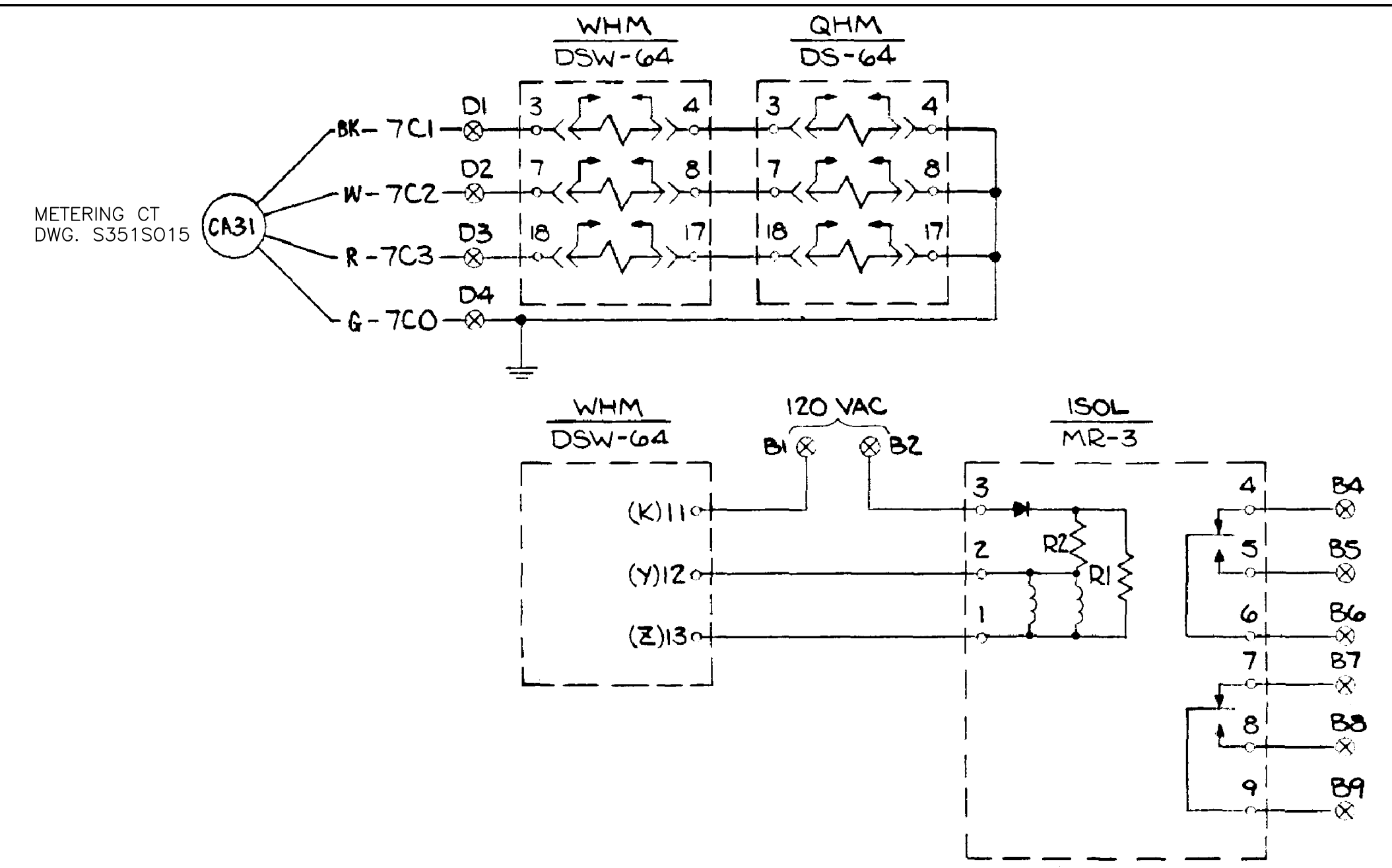
DESCRIPTION: ISSUED FOR BID							GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69KV				
11	RF022-01145	8/24/2023	NC	BE	LA	NC	ONE LINE DIAGRAM				
DESCRIPTION: CAPACITOR BANK BREAKER ADDITION											
10	RF022-01145	5/9/23	NC	RE	LA	NC					
DESCRIPTION: REV FDR 108 WAVETRAP AMPS							ENGINEER: -				
9	-	10/16	-	JT	-	CTR	SCALE: NONE		DATE: 3/2004	REV.	
DESCRIPTION: REV REPLACE METER CT/PT							DRAWN BY: JT		DRAWING NO.		SHEET 1 OF 1
8	-	4/16	-	JT	-	CTR	CHECKED BY: XXX		S351S001		
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPROVD	P.O. BOX 669 CHOUTEAU, OK 74337		APPROVED BY: CTR OLD DRAWING NO.:		



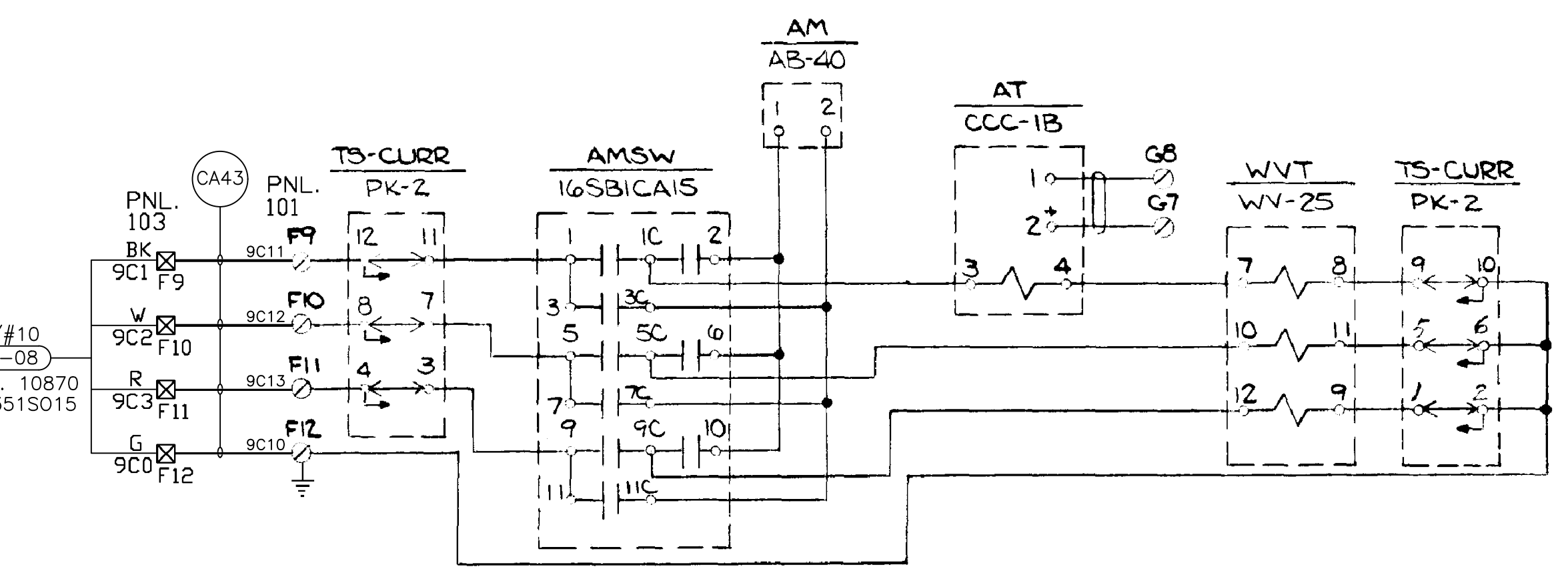


BUS DIFF RELAYS

LINE RELAYING FEEDER 6



LINE RELAYING FEEDER 108



LEGEND - 2023 CONSTRUCTION

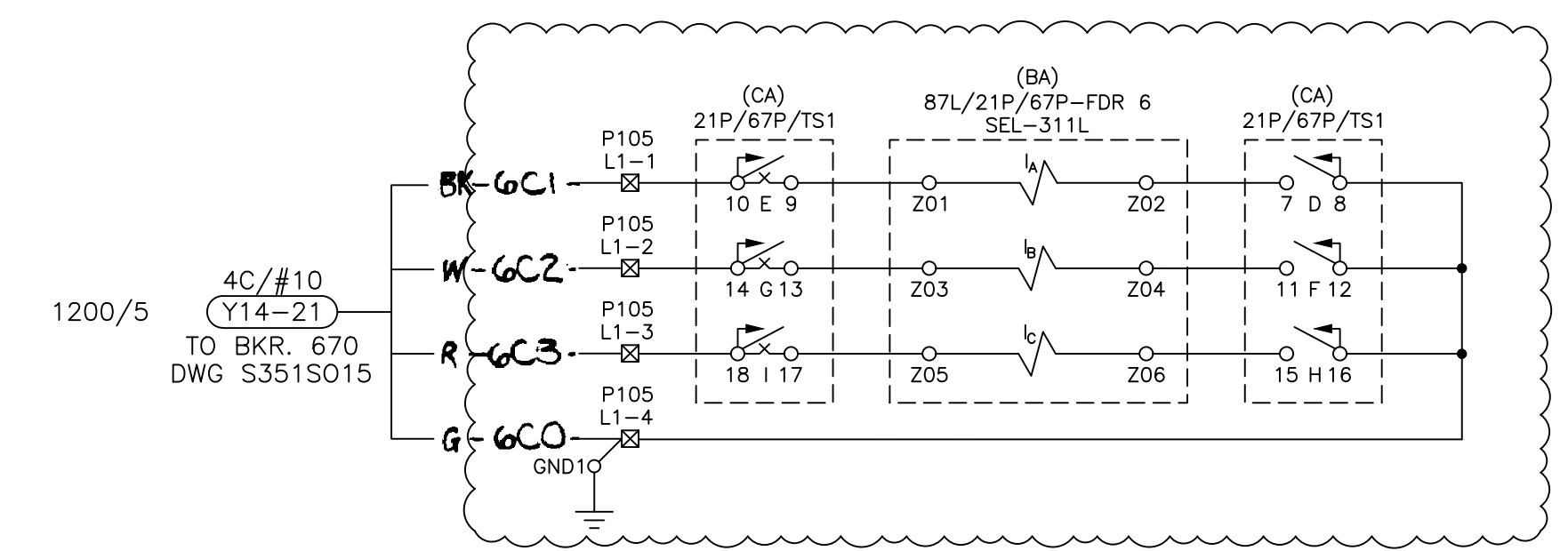
⊗ SHORTING TERMINAL BLOCK, PANEL 105

REFERENCE DRAWINGS

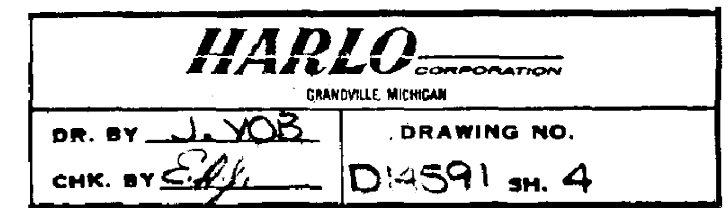
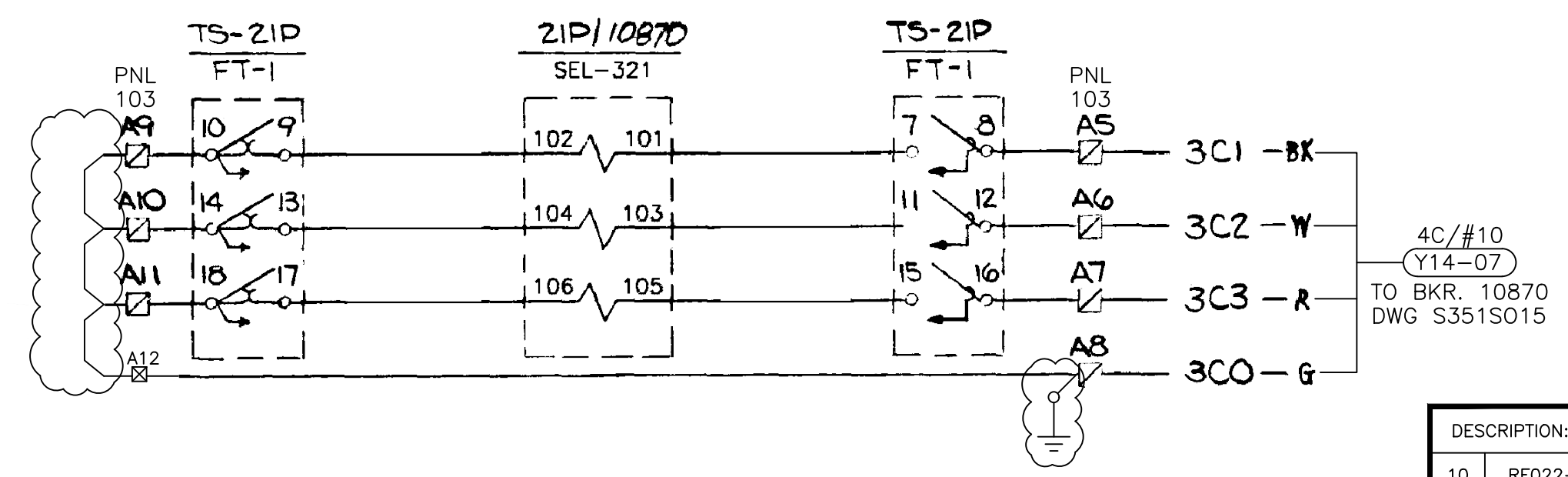
- S351DT01 CABLE SCHEDULE 2023 CONSTRUCTION
- S351SF061 PRIMARY RELAY 138KV FDR 6
- S351SF062 BKR FAIL RELAY 138KV BKR 670
- S351SF063 ALTERNATE RELAY 138KV FDR 6
- S351S013 THREE LINE AC POTENTIAL SCHEMATIC
- S351S015 ONE-LINE DIAGRAM 138KV AND CITY AUTOTRANSFORMER
- S351WP103 WIRING DIAGRAM PANEL 103 CB 10870
- S351WP105-1 WIRING DIAGRAM 138KV FDR 6 & BKR 670 PNL #105 (SH. 1 OF 2)
- S351WP105-2 WIRING DIAGRAM 138KV FDR 6 & BKR 670 PNL #105 (SH. 2 OF 2)

NOTE

- ⊙ - TERMINAL BLOCK POINT ON PANEL 101
- ⊗ - TERMINAL BLOCK POINT ON PANEL 102
- ⊠ - TERMINAL BLOCK POINT ON PANEL 103
- ⊞ - TERMINAL BLOCK POINT ON PANEL 104
- ▲ - TERMINAL BLOCK CONNECTED TO HARNESS CABLES FOR Z1P & Z1B RELAYS



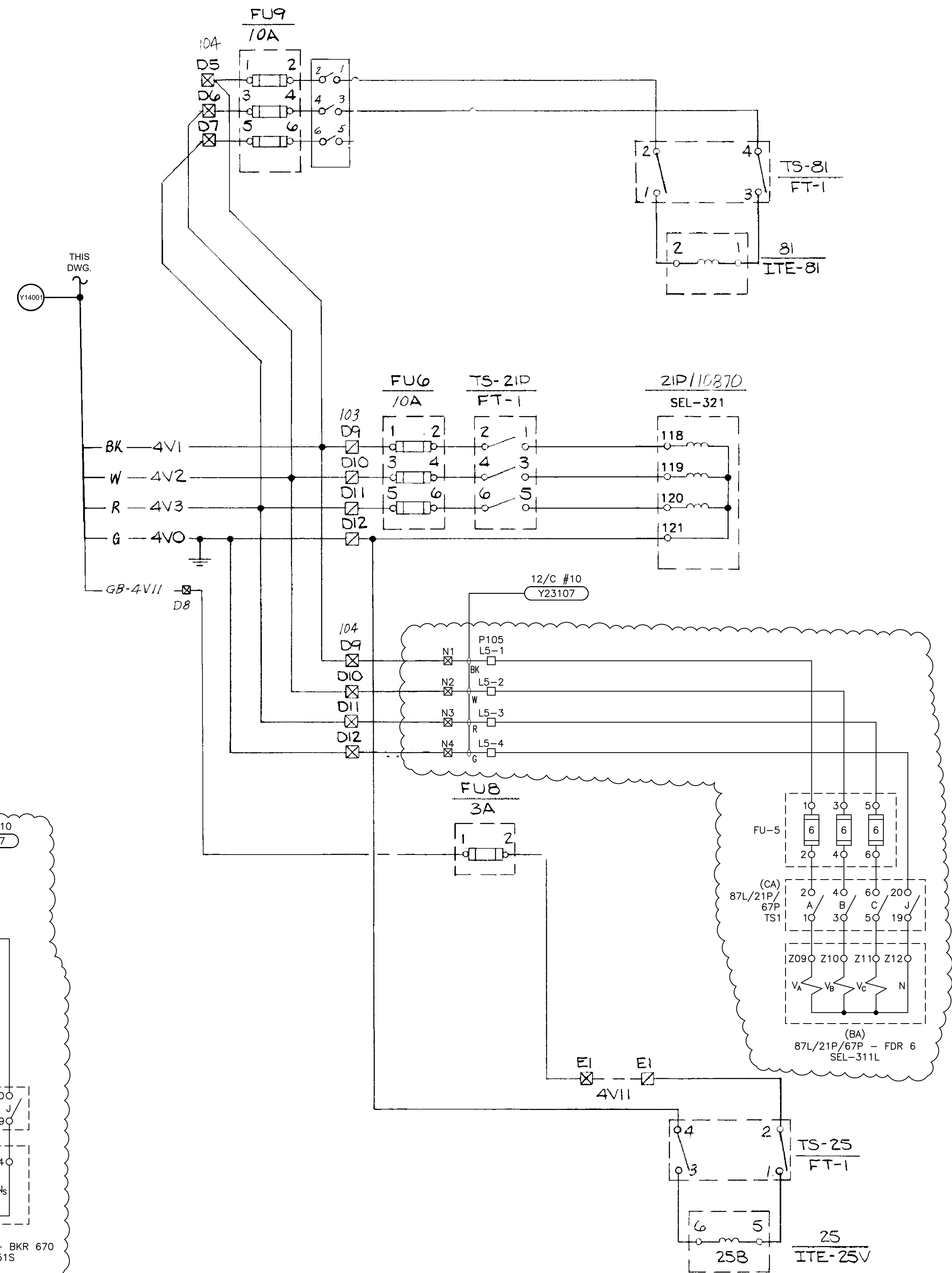
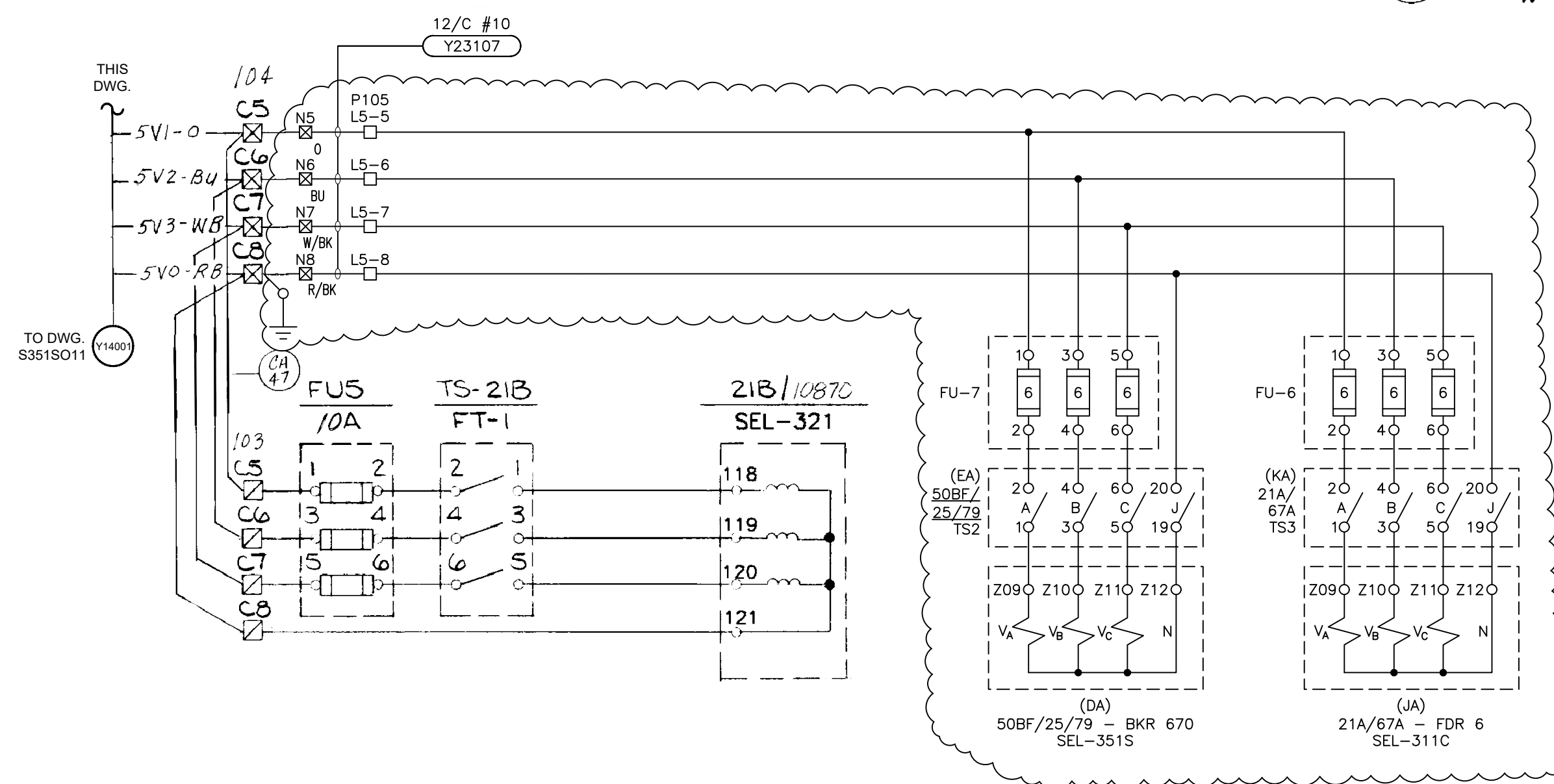
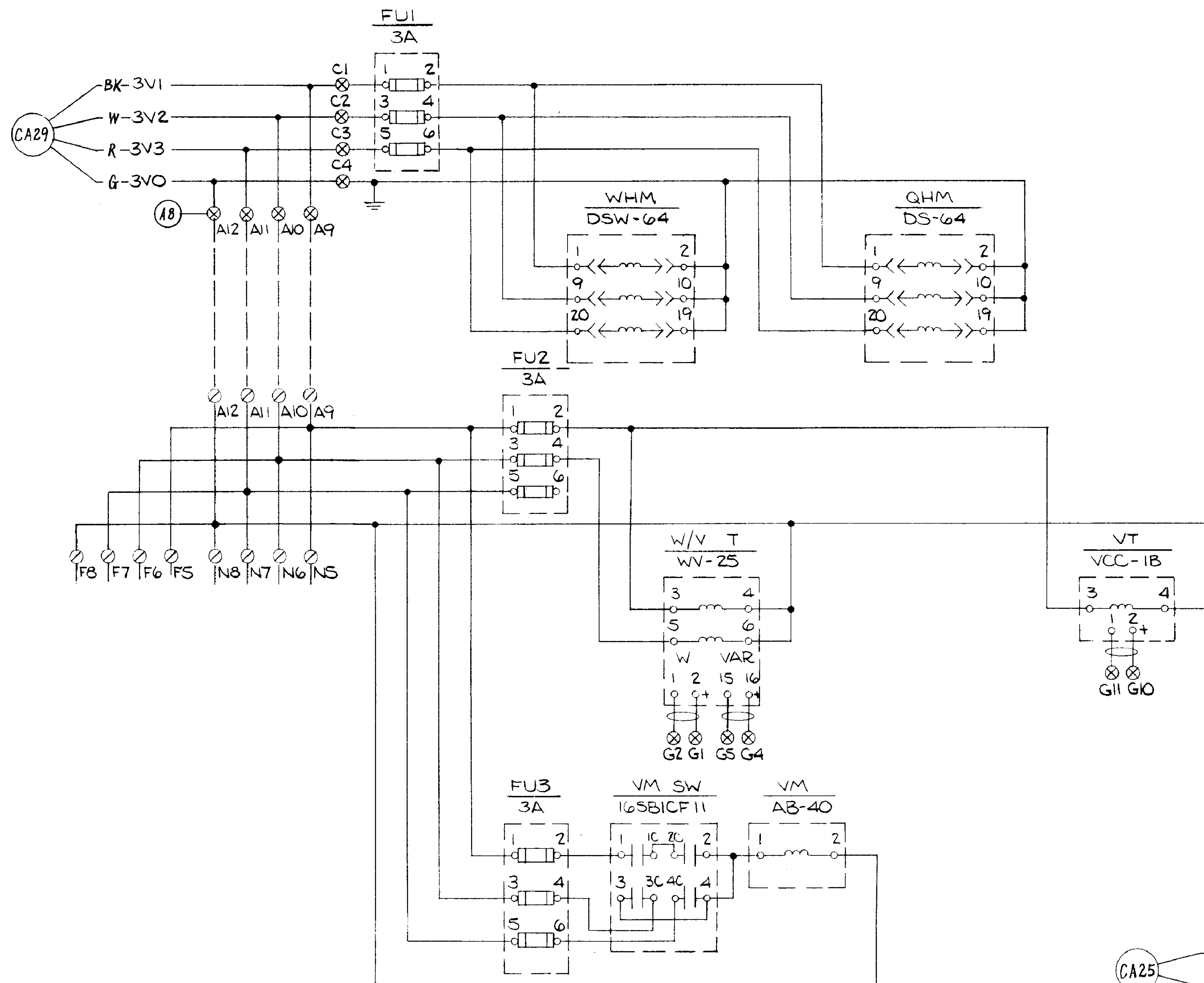
LINE RELAYING FEEDER 6



DESCRIPTION:	ISSUED FOR BID
10	RF022-01145 8/24/2023 NC BE TM NC
DESCRIPTION:	F6 PNL REPLACEMENT & CAP BANK BKR ADDITION
9	RF022-01145 5/9/23 NC BE TM NC
DESCRIPTION:	NEW TITLEBLOCK, ADDED REFERENCE DRAWINGS
8	- 14 JUL 15 - JT RELAY -
REV NO.	JOB NO. DATE DESIGN ENGR DFR DESIGN CHECK ISSUE APPROV

ISSUED FOR BID			
GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69KV			
THREE LINE AC CURRENT SCHEMATIC			
ENGINEER:	SCALE: NONE	DATE: 7/14/15	REV.
DRAWN BY: JT	DRAWING NO.	SHEET 1 OF 1	10
CHECKED BY:	S351S012		
APPROVED BY:	OLD DRAWING NO.:		



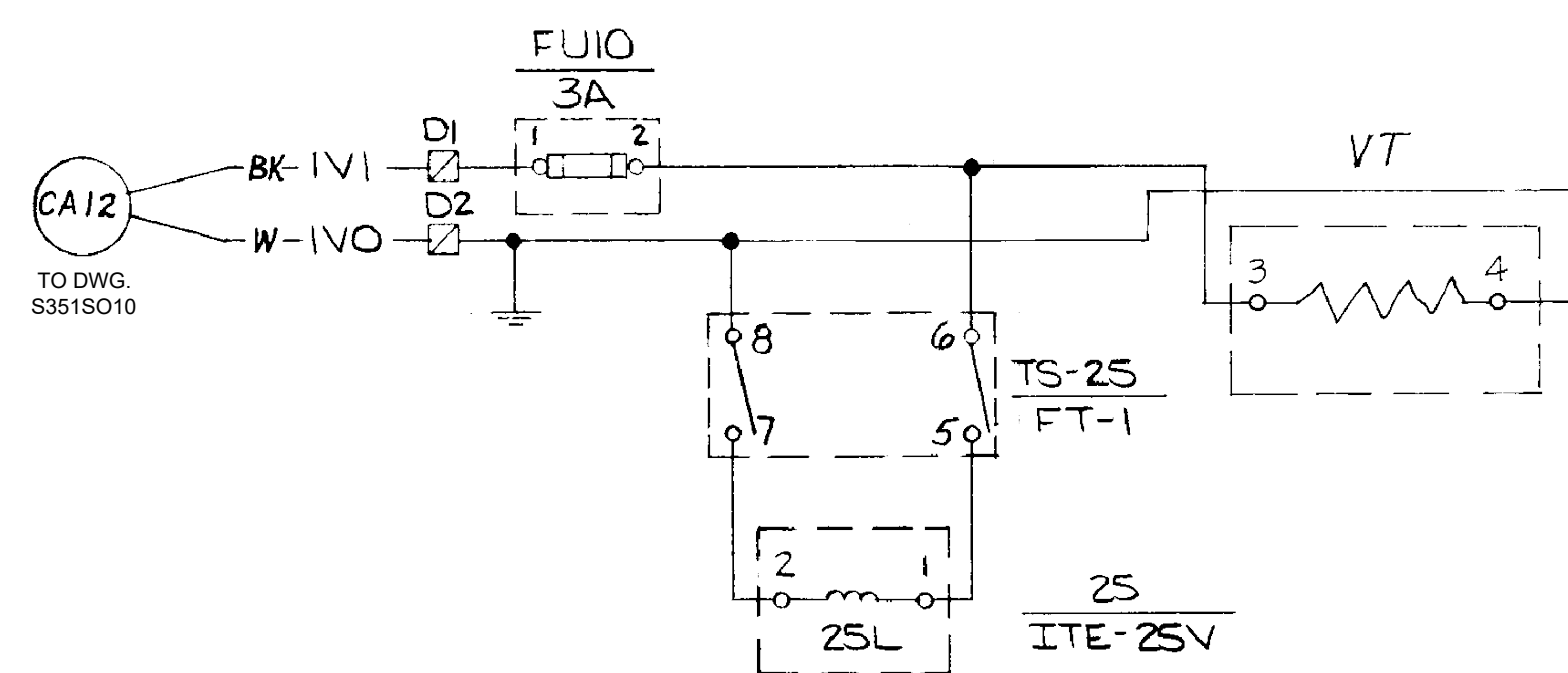


LEGEND - 2023 CONSTRUCTION
 □ TERMINAL BLOCK, PANEL 105

- NOTE**
- TERMINAL BLOCK POINT ON PANEL 101
 - ⊗-TERMINAL BLOCK POINT ON PANEL 102
 - ⊠-TERMINAL BLOCK POINT ON PANEL 103
 - ⊞-TERMINAL BLOCK POINT ON PANEL 104
 - ▲-TERMINAL BLOCK CONNECTED TO HARNESS CABLES FOR 21P & 21B RELAYS

REFERENCE DRAWINGS:

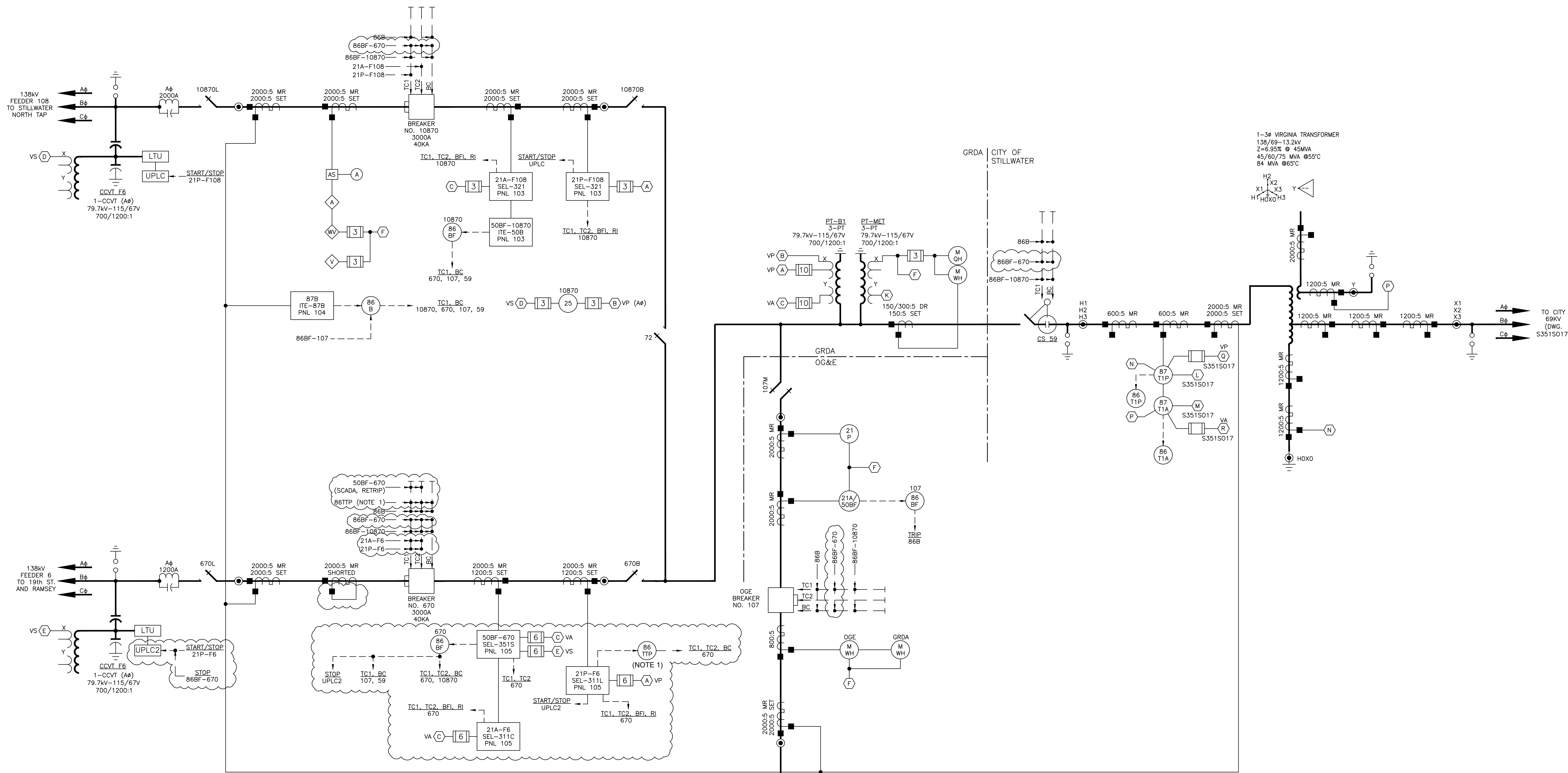
- S351DT01 CABLE SCHEDULE 2023 CONSTRUCTION
- S351SF061 PRIMARY RELAY 138kv FDR 6
- S351SF062 BKR FAIL RELAY 138kv BKR 670
- S351SF063 ALTERNATE RELAY 138kv FDR 6
- S351S012 THREE LINE AC CURRENT SCHEMATIC
- S351S015 ONE-LINE DIAGRAM 138kv AND CITY AUTOTRANSFORMER
- S351WP104 WIRING DIAGRAM PANEL 104 - 69kv CAPACITOR BANK & 138kv BUS DIFFERENTIAL
- S351WP105-1 WIRING DIAGRAM 138kv FDR 6 & BKR 670 PNL #105 (SH. 1 OF 2)
- S351WP105-2 WIRING DIAGRAM 138kv FDR 6 & BKR 670 PNL #105 (SH. 2 OF 2)



DESCRIPTION: ISSUED FOR BID						ISSUED FOR BID			
9	RF022-01145	8/24/2023	NC	BE	TM	NC	GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kv		
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION						THREE LINE AC POTENTIAL SCHEMATIC			
8	RF022-01145	5/9/23	NC	BE	TM	NC	ENGINEER: EJ SCALE: NONE DATE: 4/6/87 REV. DRAWN BY: JY DRAWING NO. SHEET 1 OF 1 CHECKED BY: EJ S351S013		
DESCRIPTION: NEW LOCATION FOR CCVT'S, NEW CABLE TO DIST. RELAYS						P.O. BOX 669 CHOUTEAU, OK 74337			
7	RF MAINTENANCE	26JAN15	RELAY	RC	BA	-	APPROVED BY: EJ OLD DRAWING NO.:		
DESCRIPTION: UPDATED									
6		7/07		JT					
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK	ISSUE APPROV			



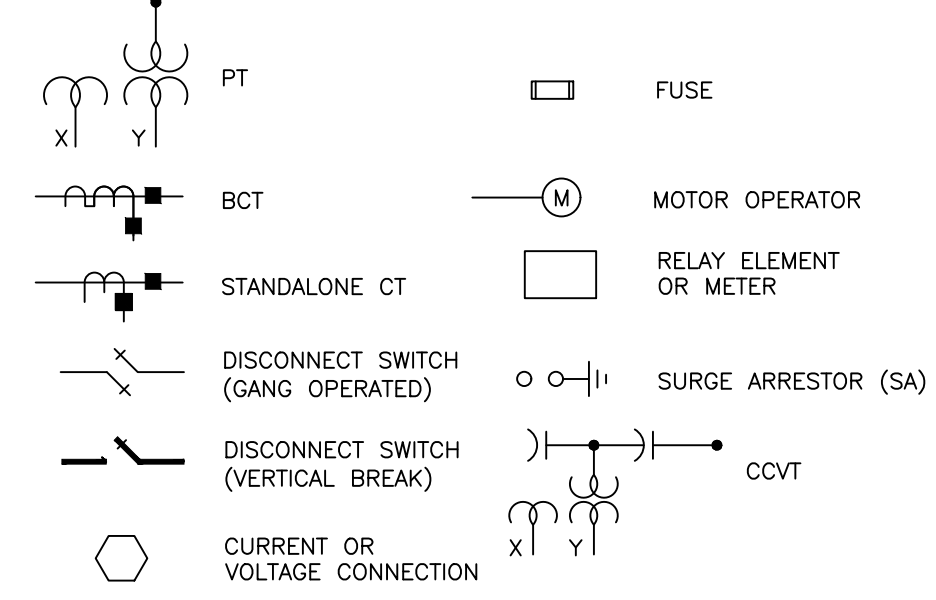
4555 W Memorial Rd.
Oklahoma City, OK 73142



DEVICE LEGEND

A	ALTERNATE	V _A	ALTERNATE VOLTAGE (3 PH)	86BF	BREAKER FAILURE TRIPPING LOCKOUT RELAY
BC	BLOCK CLOSE	V ₆	PRIMARY VOLTAGE (3 PH)	86B	BUS DIFFERENTIAL TRIPPING LOCKOUT RELAY
BF	BREAKER FAILURE	V ₅	SYNC VOLTAGE (A#)	86T _x	TRANSFORMER DIFFERENTIAL TRIPPING LOCKOUT RELAY
P	PRIMARY	21A	ALTERNATE LINE RELAY	87B	BUS DIFFERENTIAL RELAY
BF1	BREAKER FAILURE INITIATE	21P	PRIMARY LINE RELAY	87T _x	TRANSFORMER DIFFERENTIAL RELAY
BFT	BREAKER FAILURE TRIP	25	SYNC CHECK RELAY	87VP	CAPACITOR BANK VOLTAGE DIFFERENTIAL RELAY
RI	RECLOSE INITIATE	50BF	BREAKER FAILURE OVERCURRENT RELAY	86TTP	DIRECT TRANSFER TRIP LOCKOUT RELAY
TC1	TRIP COIL 1	51P	PHASE OVERCURRENT		
TC2	TRIP COIL 2	67	DIRECTIONAL OVERCURRENT		
VN	NEUTRAL VOLTAGE	79	RECLOSE		

SYMBOL LEGEND



NOTES:

- 86TTP LOCKOUT WIRED BUT WILL REMAIN OUT OF SERVICE UNTIL FIBER CAN BE INSTALLED ON FEEDER 6.

ISSUED FOR BID

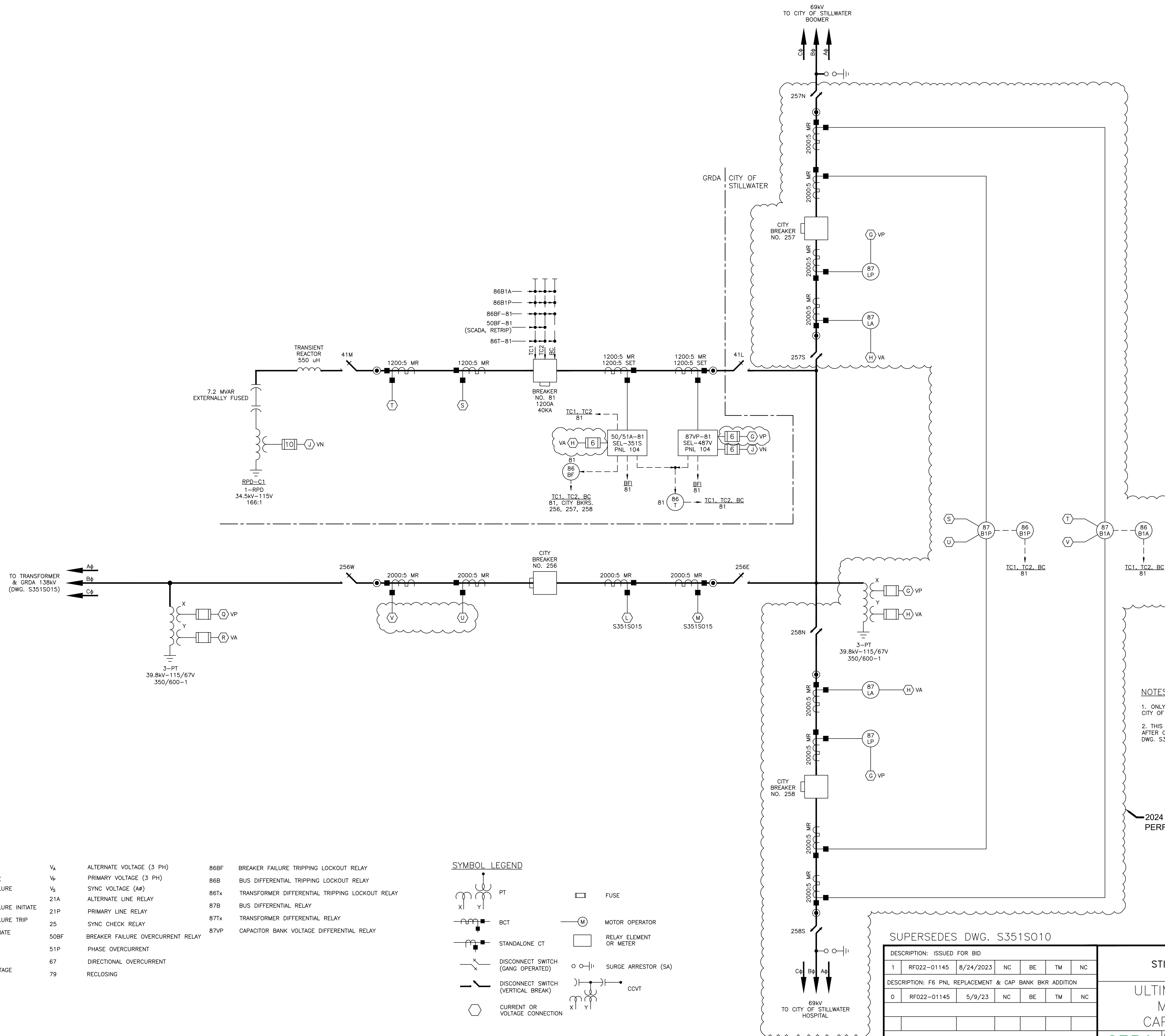
GRAND RIVER DAM AUTHORITY
STILLWATER KINZIE INTERCONNECT S351
STILLWATER, OKLAHOMA 138/69kV

ONE-LINE DIAGRAM
METERING & RELAYING
138kV AND CITY AUTOTRANSFORMER

DESCRIPTION: ISSUED FOR BID					
5	RF022-01145	8/24/2023	NC	BE	TM NC
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION					
4	RF022-01145	5/9/23	NC	BE	TM NC
DESCRIPTION: MISC. CORRECTIONS, NEW TITLEBLOCK					
3		7/13/15		JT	
DESCRIPTION: R/P 138kV PCB 10870					
2		1/14			
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK

ENGINEER: NC	SCALE: NONE	DATE: 10/10/22	REV.
DRAWN BY: RE	DRAWING NO.	SHEET 1 OF 1	5
CHECKED BY:	S351S015		
APPROVED BY:	OLD DRAWING NO.:		





NOTES:

1. ONLY GRDA TRIPS ARE SHOWN ON THIS DRAWING. SEE CITY OF STILLWATER ONE-LINE DIAGRAM FOR CITY TRIPS.
2. THIS DRAWING SHOWS THE STATION CONFIGURATION AFTER CITY OF STILLWATER 2024 CONSTRUCTION. SEE DWG. S351S017-TEMP FOR PREVIOUS CONFIGURATION.

2024 CONSTRUCTION TO BE PERFORMED BY CITY OF STILLWATER

DEVICE LEGEND

A	ALTERNATE	V _a	ALTERNATE VOLTAGE (3 PH)
BC	BLOCK CLOSE	V _p	PRIMARY VOLTAGE (3 PH)
BF	BREAKER FAILURE	V _s	SYNC VOLTAGE (A#)
P	PRIMARY	21A	ALTERNATE LINE RELAY
BFI	BREAKER FAILURE INITIATE	21P	PRIMARY LINE RELAY
BFT	BREAKER FAILURE TRIP	25	SYNC CHECK RELAY
Ri	RECLOSE INITIATE	50BF	BREAKER FAILURE OVERCURRENT RELAY
TC1	TRIP COIL 1	51P	PHASE OVERCURRENT
TC2	TRIP COIL 2	67	DIRECTIONAL OVERCURRENT
VN	NEUTRAL VOLTAGE	79	RECLOSE

SYMBOL LEGEND

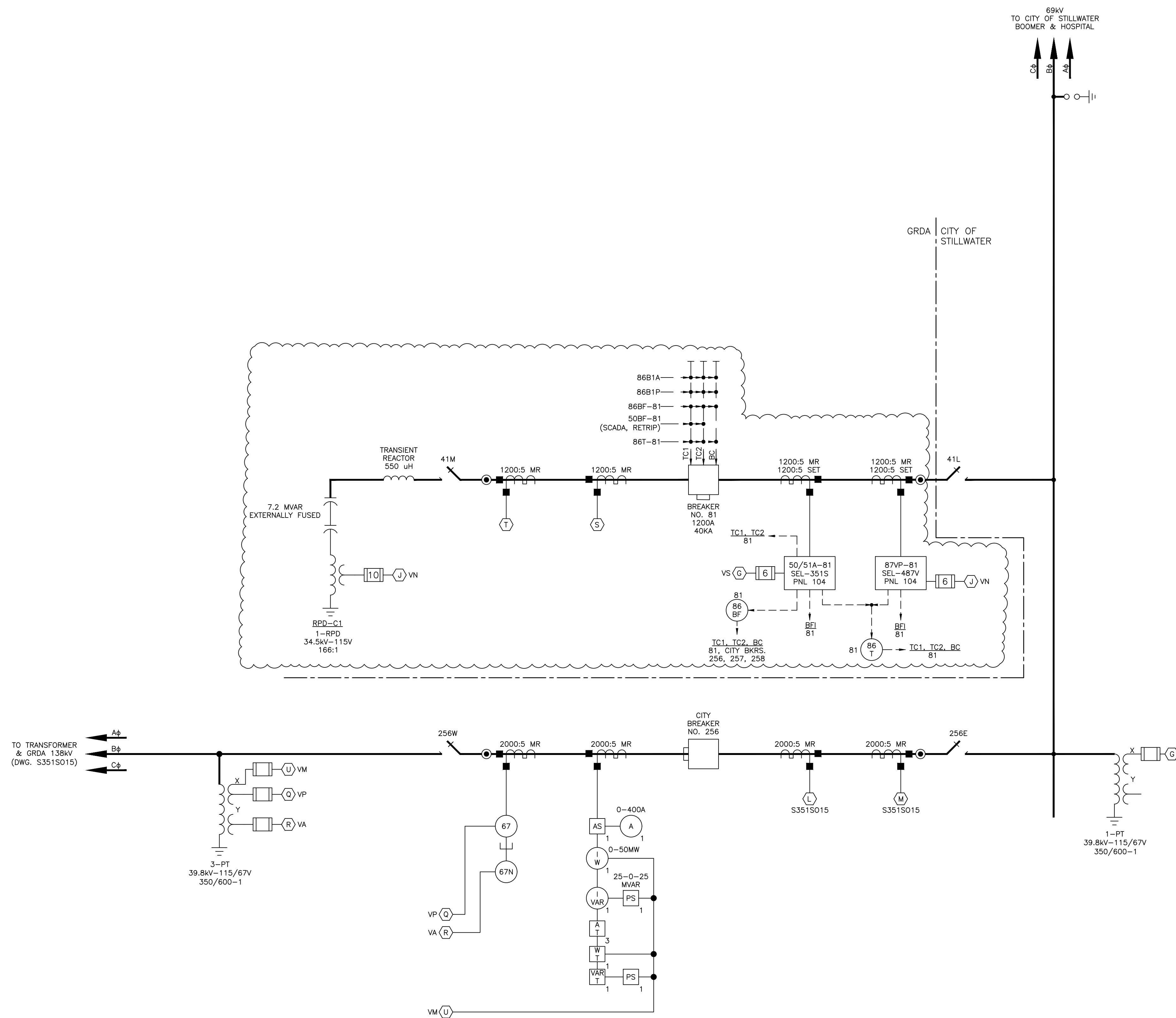
	PT		FUSE
	BCT		MOTOR OPERATOR
	STANDALONE CT		RELAY ELEMENT OR METER
	DISCONNECT SWITCH (GANG OPERATED)		SURGE ARRESTOR (SA)
	DISCONNECT SWITCH (VERTICAL BREAK)		CCVT
	CURRENT OR VOLTAGE CONNECTION		

SUPERSEDES DWG. S351S010

DESCRIPTION: ISSUED FOR BID	
1	RF022-01145 8/24/2023 NC BE TM NC
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION	
0	RF022-01145 5/9/23 NC BE TM NC
REV NO.	JOB NO. DATE DESIGN ENGR DFTD DESIGN CHECK ISSUE APPROVD

ISSUED FOR BID			
GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kV			
ULTIMATE ONE-LINE DIAGRAM METERING & RELAYING CAP BANK AND CITY 69kV			
ENGINEER: NC	SCALE: NONE	DATE: 5/9/23	REV.
DRAWN BY: RE	DRAWING NO.	SHEET - OF -	1
CHECKED BY: LA	S351S017		
APPROVED BY: NC	OLD DRAWING NO.:		



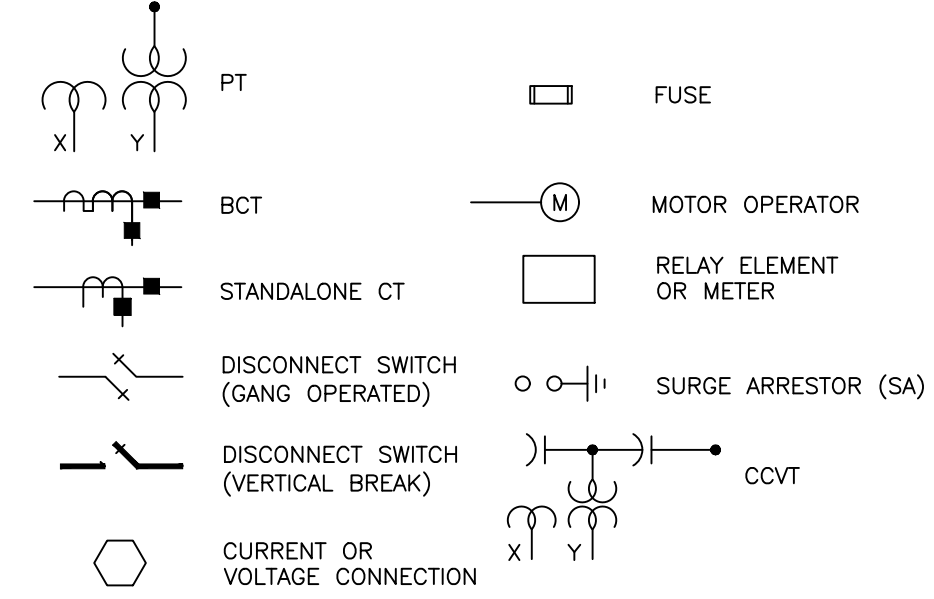


- NOTES:**
1. ONLY GRDA TRIPS ARE SHOWN ON THIS DRAWING. SEE CITY OF STILLWATER ONE-LINE DIAGRAM FOR CITY TRIPS.
 2. THIS DRAWING SHOWS THE STATION CONFIGURATION PRIOR TO CITY OF STILLWATER 2024 CONSTRUCTION. SEE DWG. S351S017 FOR ULTIMATE CONFIGURATION.

DEVICE LEGEND

A	ALTERNATE	V _A	ALTERNATE VOLTAGE (3 PH)
BC	BLOCK CLOSE	V _P	PRIMARY VOLTAGE (3 PH)
BF	BREAKER FAILURE	V _S	SYNC VOLTAGE (A#)
P	PRIMARY	21A	ALTERNATE LINE RELAY
BFI	BREAKER FAILURE INITIATE	21P	PRIMARY LINE RELAY
BFT	BREAKER FAILURE TRIP	25	SYNC CHECK RELAY
Ri	RECLOSE INITIATE	50BF	BREAKER FAILURE OVERCURRENT RELAY
TC1	TRIP COIL 1	51P	PHASE OVERCURRENT
TC2	TRIP COIL 2	67	DIRECTIONAL OVERCURRENT
VN	NEUTRAL VOLTAGE	79	RECLOSE

SYMBOL LEGEND



SUPERSEDES DWG. S351S010

ISSUED FOR BID

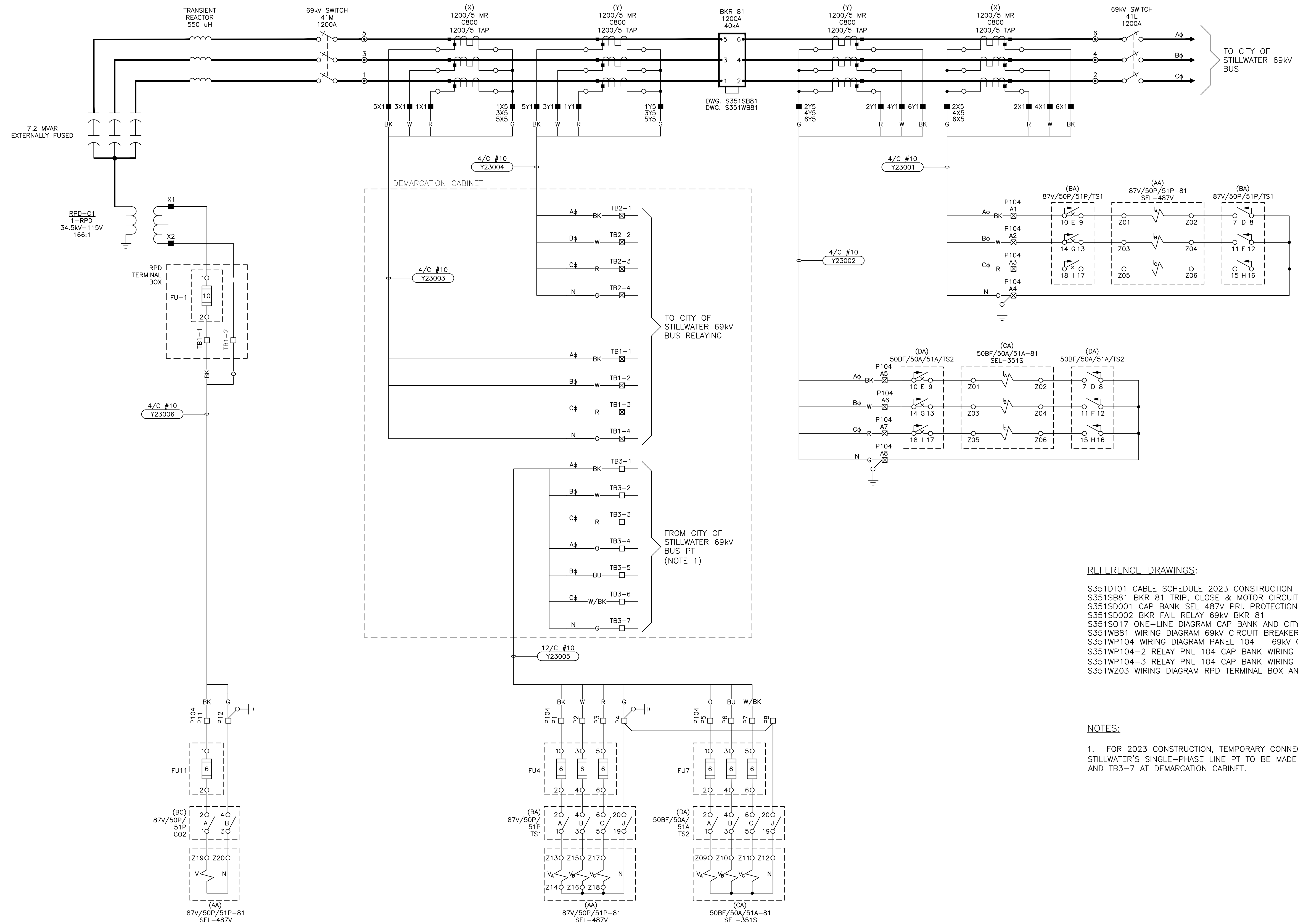
DESCRIPTION: ISSUED FOR BID						
1	RF022-01145	8/24/2023	NC	BE	TM	NC
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION						
0	RF022-01145	5/9/23	NC	BE	TM	NC
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK	ISSUE APPROV

GRAND RIVER DAM AUTHORITY
 STILLWATER KINZIE INTERCONNECT S351
 STILLWATER, OKLAHOMA 138/69kV

ONE-LINE DIAGRAM
 METERING & RELAYING
 CAP BANK AND CITY 69kV

ENGINEER: NC SCALE: NONE DATE: 5/9/23 REV.
 DRAWN BY: RE DRAWING NO. SHEET - OF -
 CHECKED BY: LA S351S017-TEMP 1
 APPROVED BY: NC OLD DRAWING NO.:
 P.O. BOX 669
 CHOUTEAU, OK 74337





REFERENCE DRAWINGS:

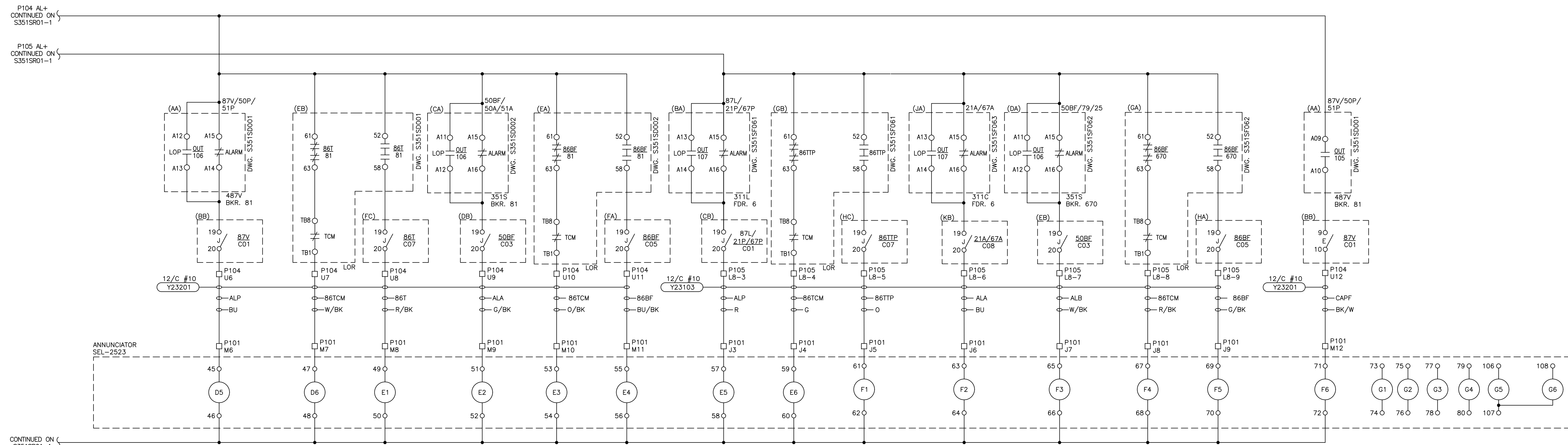
- S351DT01 CABLE SCHEDULE 2023 CONSTRUCTION
- S351SB81 BKR 81 TRIP, CLOSE & MOTOR CIRCUITS
- S351SD001 CAP BANK SEL 487V PRI. PROTECTION
- S351SD002 BKR FAIL RELAY 69kV BKR 81
- S351SO17 ONE-LINE DIAGRAM CAP BANK AND CITY 69kV
- S351WB81 WIRING DIAGRAM 69kV CIRCUIT BREAKER 81
- S351WP104 WIRING DIAGRAM PANEL 104 - 69kV CAPACITOR BANK & 138kV BUS DIFFERENTIAL
- S351WP104-2 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 2 OF 3)
- S351WP104-3 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 3 OF 3)
- S351WZ03 WIRING DIAGRAM RPD TERMINAL BOX AND DEMARCATON CABINET

NOTES:

1. FOR 2023 CONSTRUCTION, TEMPORARY CONNECTION TO CITY OF STILLWATER'S SINGLE-PHASE LINE PT TO BE MADE AT POINTS TB3-4 AND TB3-7 AT DEMARCATON CABINET.



DESCRIPTION: ISSUED FOR BID						ISSUED FOR BID			
1	RF022-01145	8/24/2023	NC	BE	TM	NC	GRDA GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kV		
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION						THREE-LINE DIAGRAM GRDA 69kV CAPACITOR BANK			
0	RF022-01145	5/9/23	NC	BE	TM	NC	ENGINEER: NC SCALE: NONE DATE: 5/9/23 REV. DRAWN BY: BE DRAWING NO. CHECKED BY: LA/CP S351S018 APPROVED BY: NC OLD DRAWING NO.: 1		
REV. NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK	ISSUE APPROVD	P.O. BOX 669 CHOUTEAU, OK 74337		



NOTES:
 1. ALARMS G1 THRU G6 ARE NOT DISPLAYED ON PANEL FRONT.

REFERENCE DRAWINGS:
 S351D01 CABLE SCHEDULE 2023 CONSTRUCTION
 S351SD001 CAP BANK SEL 487V PRL PROTECTION
 S351SD002 BKR FAIL RELAY 69kv BKR 81
 S351SF061 PRIMARY RELAY 138kv FDR 6
 S351SF062 BKR FAIL RELAY 138kv BKR 670
 S351SF063 ALTERNATE RELAY 138kv FDR 6
 S351SR01-1 ANNUNCIATOR SCHEMATIC (SHEET 1)
 S351WP101 TERMINAL BLOCK WIRING DIAGRAM PANEL 101
 S351WP102 WIRING DIAGRAM PANEL 101
 S351WP104 WIRING DIAGRAM PANEL 104 - 69kv CAPACITOR BANK & 138kv BUS DIFFERENTIAL
 S351WP104-2 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 2 OF 3)
 S351WP104-3 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 3 OF 3)
 S351WP105-1 WIRING DIAGRAM 138kv FDR 6 & BKR 670 PNL #105 (SH. 1 OF 2)
 S351WP105-2 WIRING DIAGRAM 138kv FDR 6 & BKR 670 PNL #105 (SH. 2 OF 2)



DESCRIPTION: ISSUED FOR BID						ISSUED FOR BID				
1	RF022-01145	8/24/2023	NC	BE	TM	NC	GRDA GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kv			
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION						ANNUNCIATOR SCHEMATIC (SHEET 2) PNL 101				
0	RF022-01145	5/9/23	NC	BE	TM	NC	ENGINEER: NC SCALE: NONE DATE: 5/9/23 REV. DRAWN BY: BE DRAWING NO. S351SR01-2 1 CHECKED BY: LA/CP P.O. BOX 669 CHOUTEAU, OK 74337 APPROVED BY: NC			
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPROVD				

	1	2	3	4	5	6
A	BKR 10870 LOCAL CONTROL		PNL 103 RELAY INOPERATIVE	PNL 104 RELAY INOPERATIVE	BATTERY GROUND	BKR 107 86BF LOCKOUT TRIP
B	BKR 10870 MOTOR TROUBLE	BKR 670 MOTOR TROUBLE		BKR 10870 86BF LOCKOUT TRIP	BUS DIFFERENTIAL LOCKOUT TRIP	BREAKER 81 LOW GAS
C	BKR 10870 LOW SF6 GAS/LO	BKR 670 LOW SF6 GAS/LO	FDR 6 UPLC ALARM	FDR 108 UPLC ALARM	BREAKER 81 LOW GAS LOCKOUT	BREAKER 81 SPRING DISCHARGE
D	BATTERY LOW VOLTAGE	BATTERY LOSS OF AC	BATTERY HIGH VOLTAGE SHUTDOWN	BREAKER 81 LOSS OF VOLTAGE	86V/50P/51P-BKR 81 RELAY INOPERATIVE PNL 104	86T-81 LOR TCM PNL 104
E	86T-81 LOR TRIP PNL 104	50BF/50A/51A-BKR 81 RELAY INOPERATIVE PNL 104	86BF-81 LOR TCM PNL 104	86BF-81 LOR TRIP PNL 104	87L/21P/67P-FDR 6 RELAY INOPERATIVE PNL 105	86TTP-FDR 6 LOR TCM PNL 105
F	86TTP-FDR 6 LOR TRIP PNL 105	21A/67A-FDR 6 RELAY INOPERATIVE PNL 105	50BF/25/79-BKR 670 RELAY INOPERATIVE PNL 105	86BF-670 LOR TCM PNL 105	86BF-670 LOR TRIP PNL 105	CAPACITOR BANK CAN FAILURE

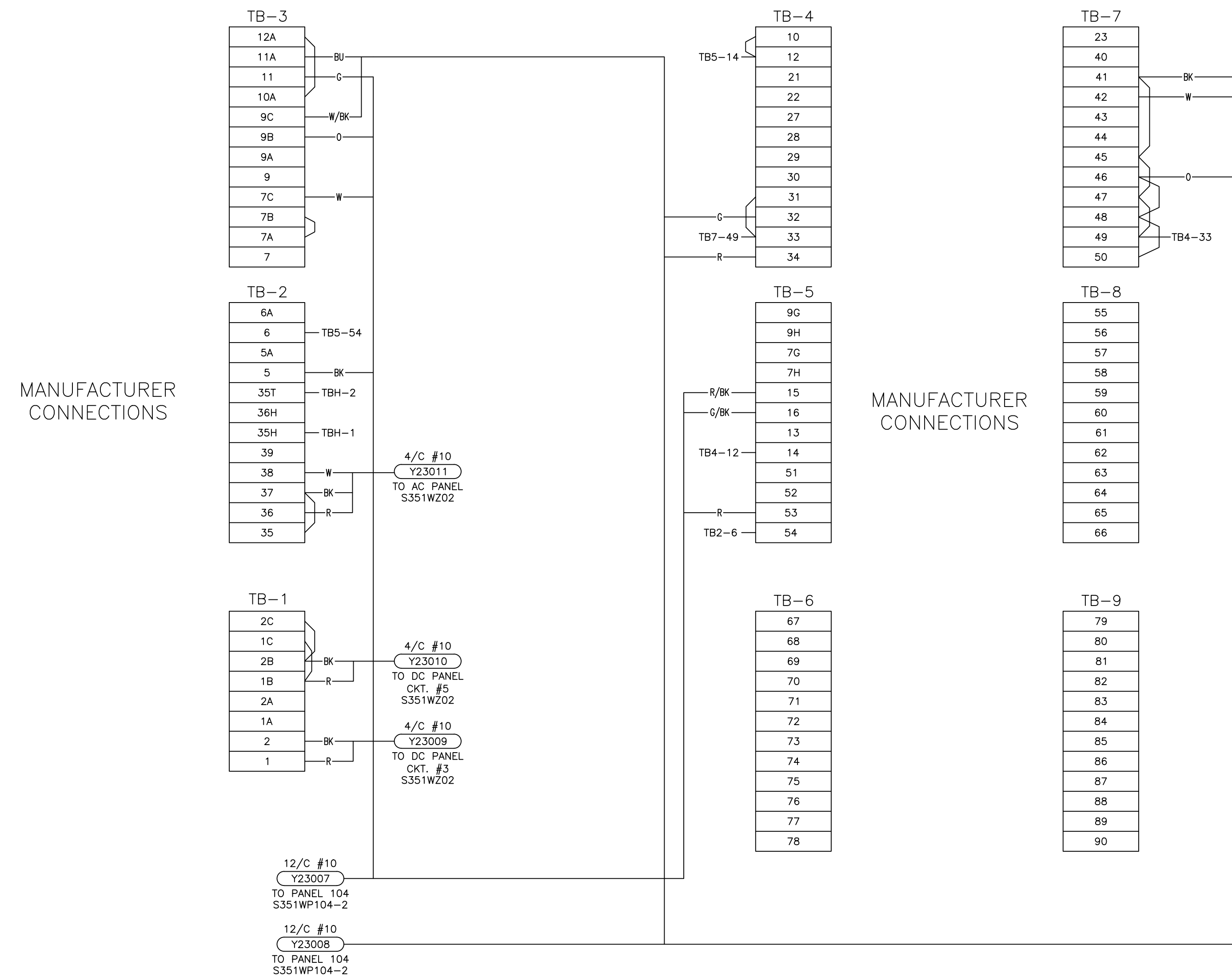
ANNUNCIATOR SEL-2523



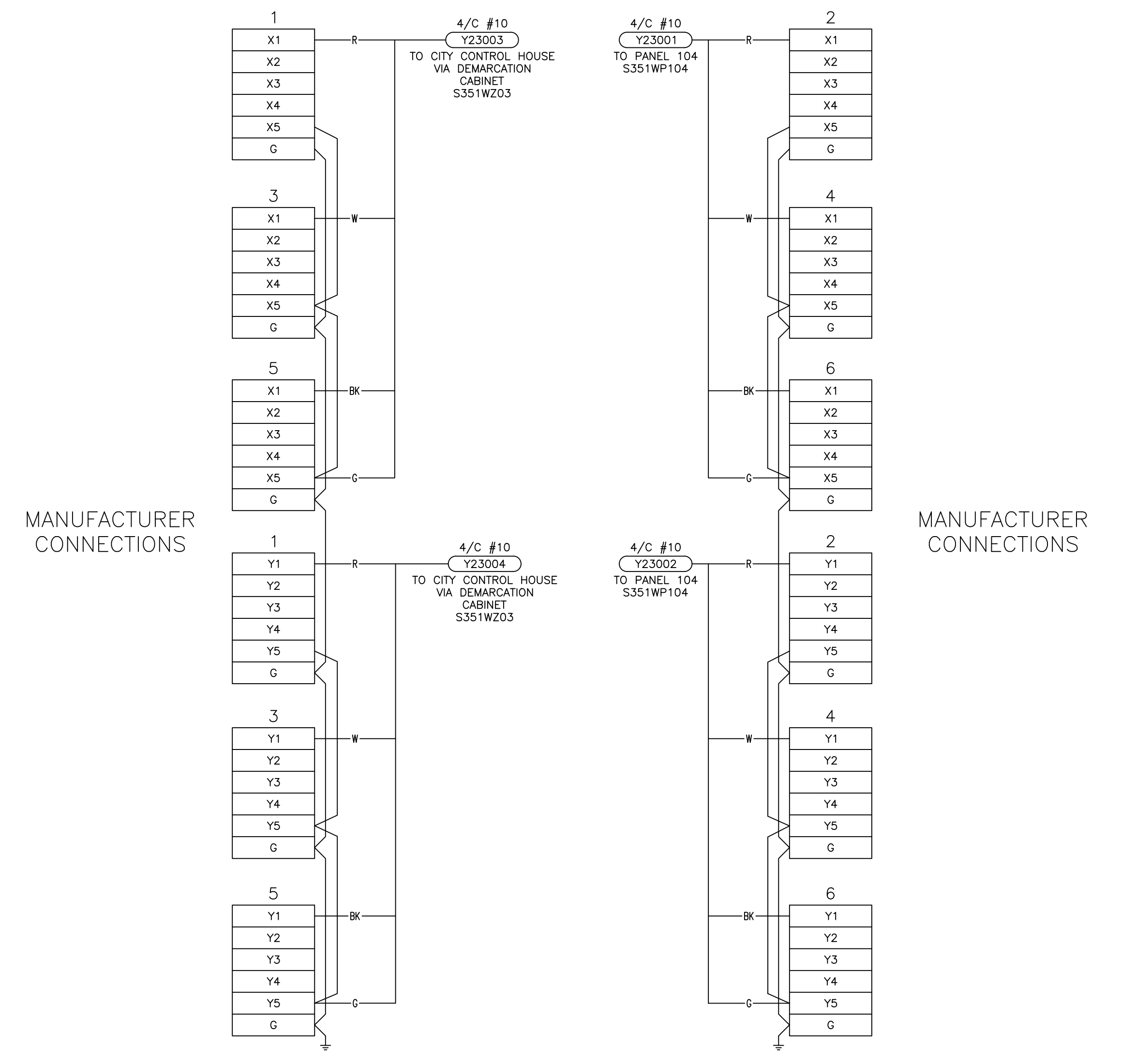
4555 W MEMORIAL RD.
OKLAHOMA CITY, OK 73142

ISSUED FOR CONSTRUCTION

DESCRIPTION: ISSUED FOR BID							GRAND RIVER DAM AUTHORITY		
7	RF022-01145	8/24/2023	NC	BE	TM	NC	STILLWATER KINZIE INTERCONNECT S351		
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION							STILLWATER, OKLAHOMA 138/69kV		
6	RF022-01145	5/9/23	NC	BE	TM	NC	ANNUNCIATOR NAMEPLATE		
DESCRIPTION: REVISED "B6", "C5", "C6"									
5	-	15 NOV 16	-	JT	RELAY	-			
DESCRIPTION: REVISED "C4"									
4	-	16 AUG 16	-	JT	RELAY	-			
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPROVD			
							GRDA		
							ENGINEER: SCALE: NONE DATE: 7/16/13 REV. 7		
							DRAWN BY: DRAWING NO. S351SR01		
							CHECKED BY: P.O. BOX 669 CHOUTEAU, OK 74337		
							APPROVED BY:		



MANUFACTURER CONNECTIONS

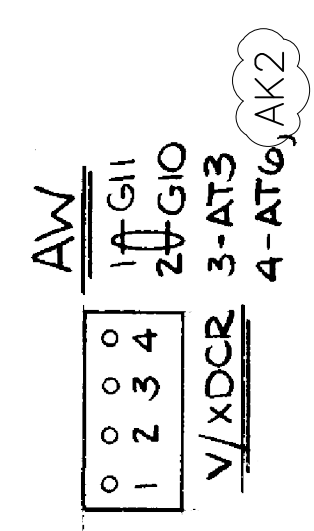
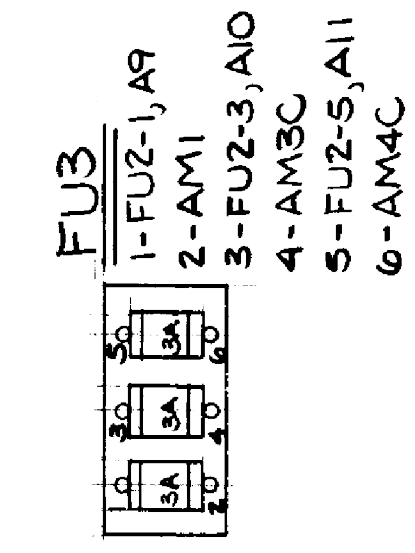
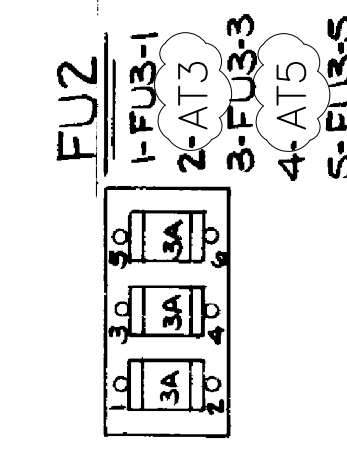
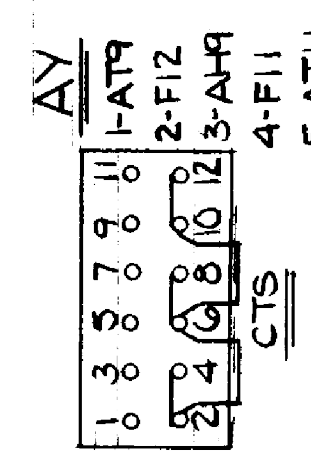
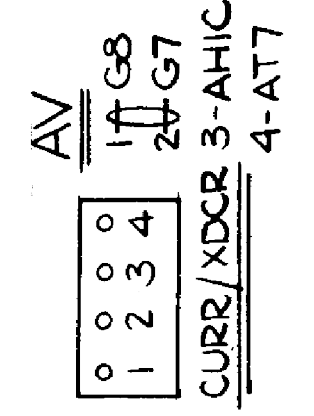
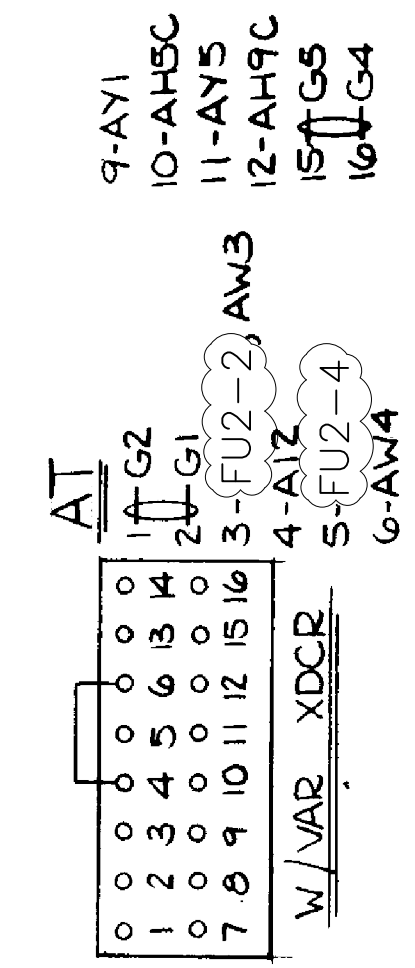
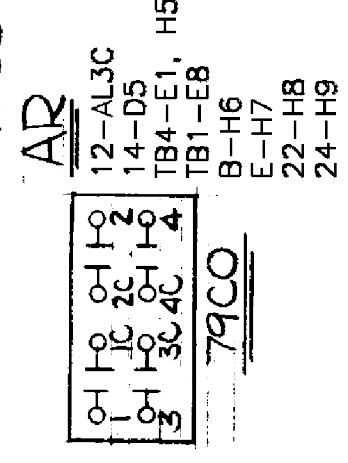
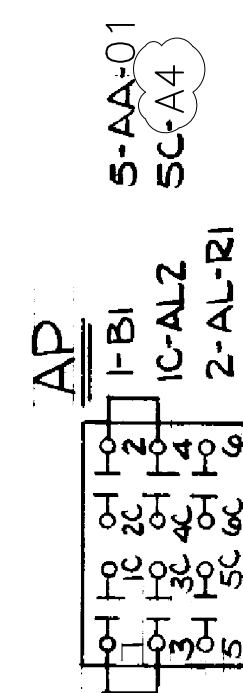
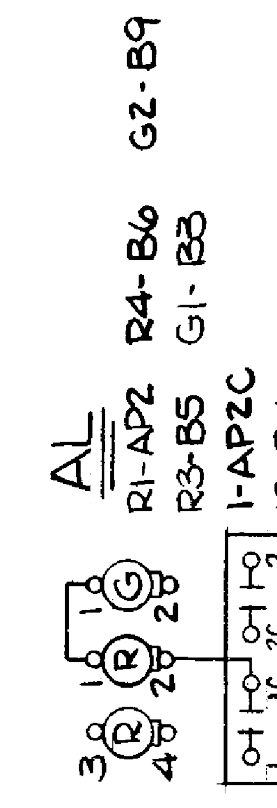
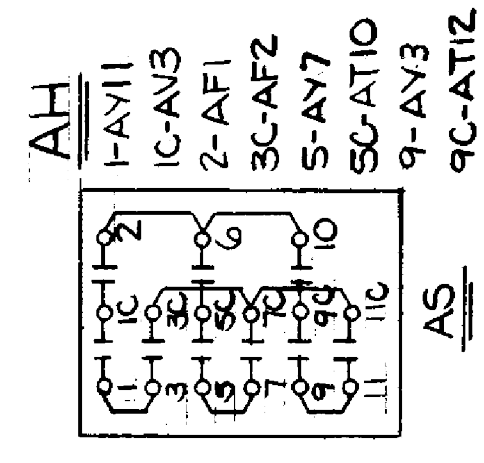
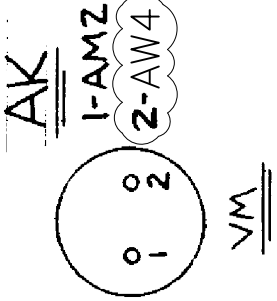
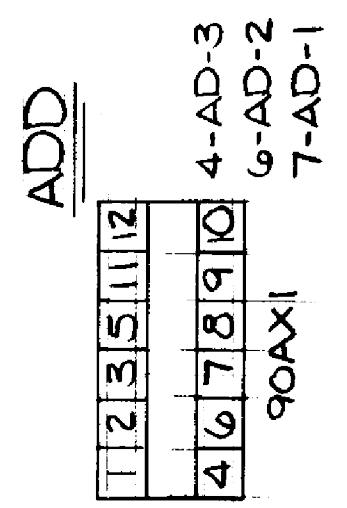
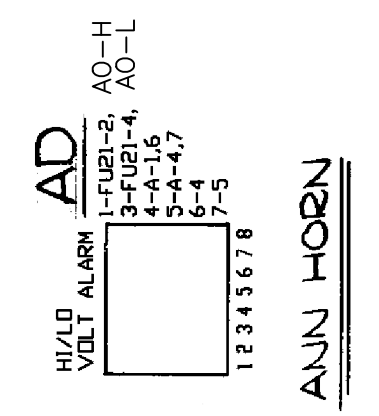
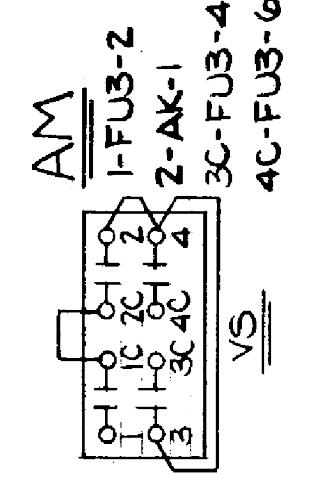
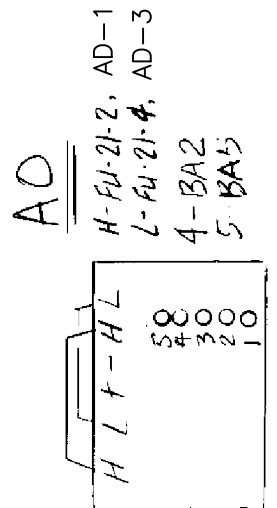
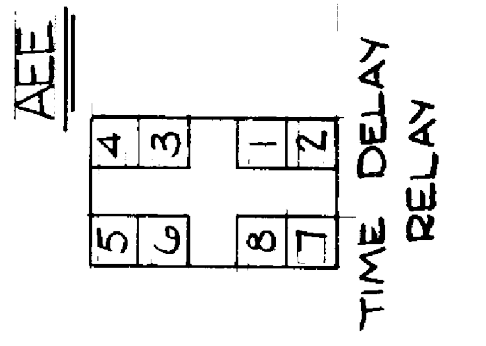
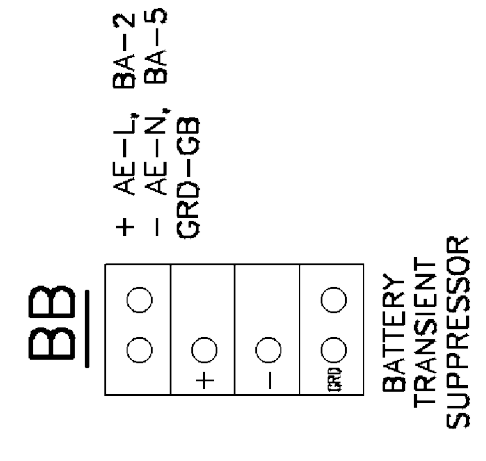
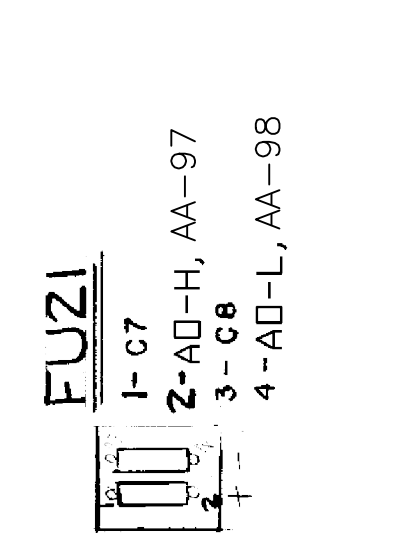
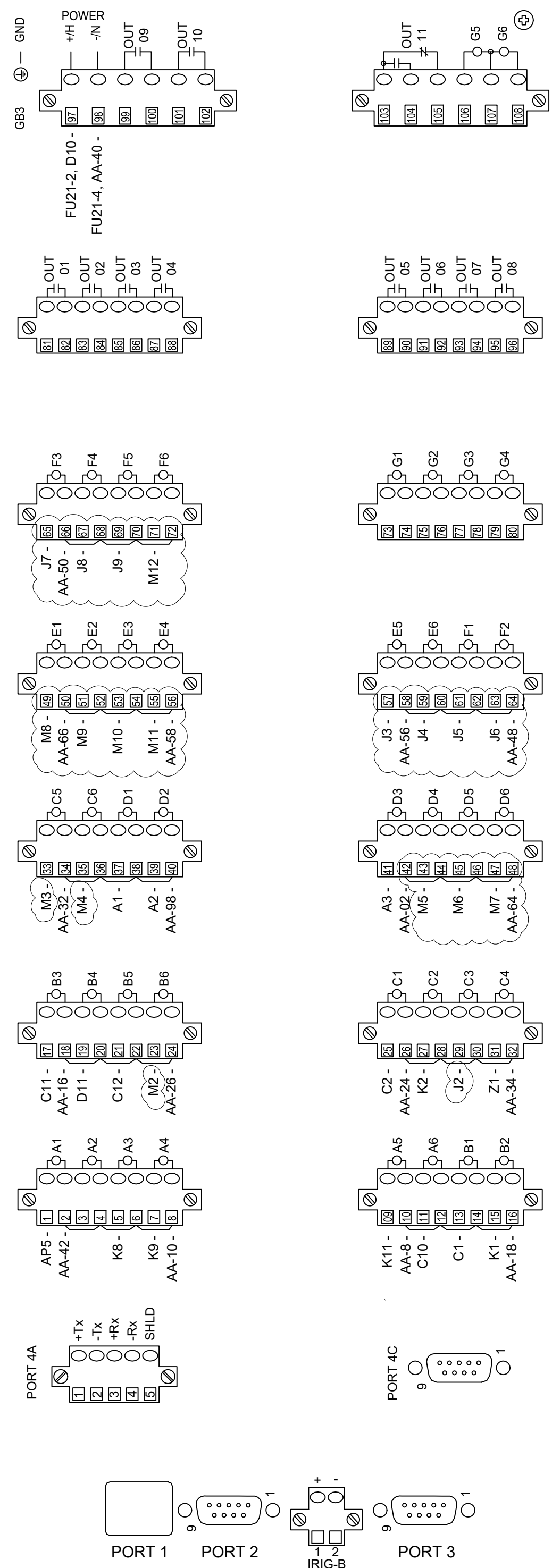


DESCRIPTION: ISSUED FOR BID							ISSUED FOR BID			
1	RF022-01145	8/24/2023	NC	BE	TM	NC	GRDA GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kV			
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION							WIRING DIAGRAM 69kV CIRCUIT BREAKER 81			
0	RF022-01145	5/9/23	NC	BE	TM	NC	ENGINEER: NC SCALE: NONE DATE: 5/9/23 REV. DRAWN BY: BE DRAWING NO. S351WB81 CHECKED BY: TM P.O. BOX 669 CHOUTEAU, OK 74337 APPROVED BY: NC			
REV. NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK	ISSUE APPROV				



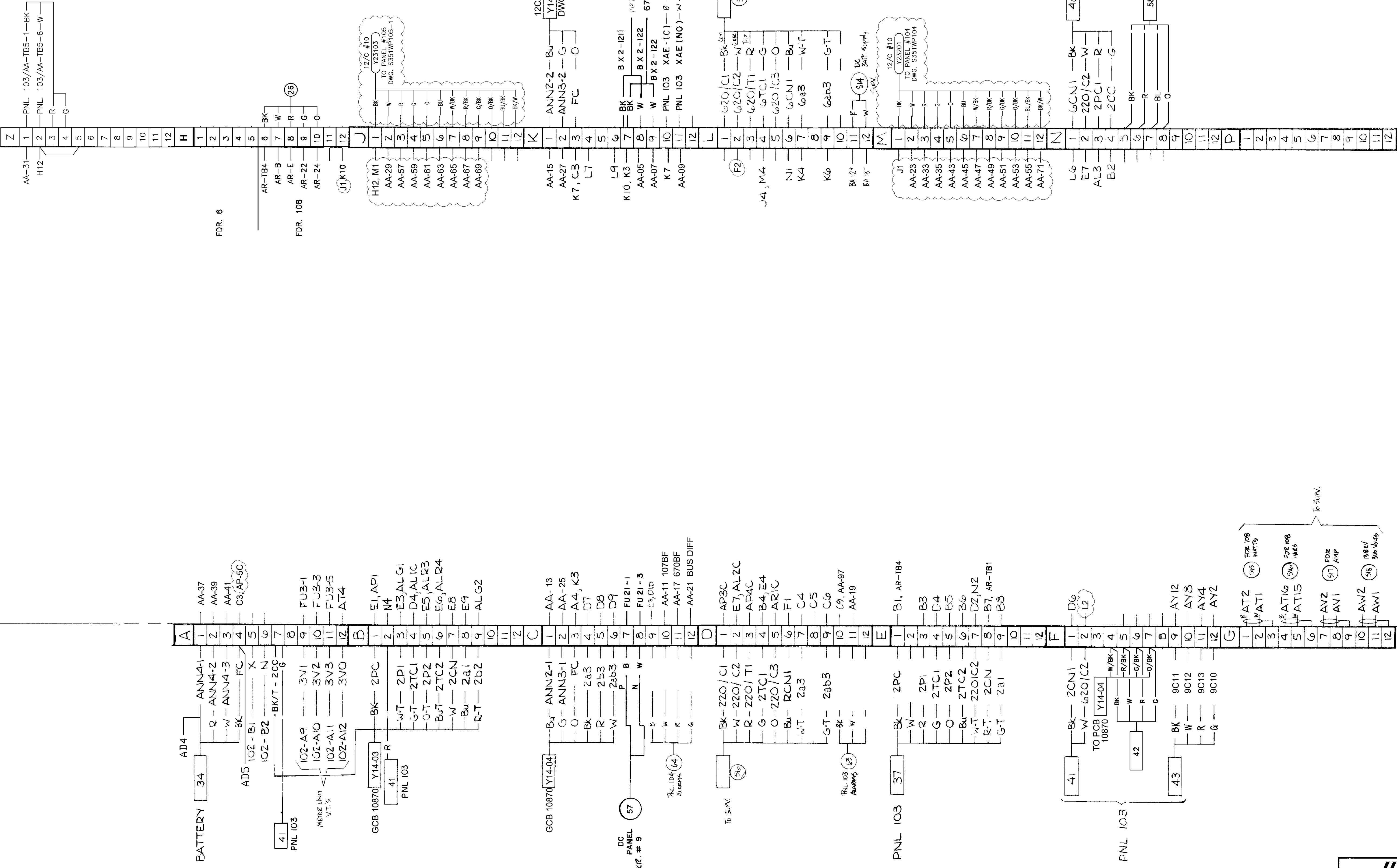
4555 W MEMORIAL RD.
OKLAHOMA CITY, OK 73142

AA
SEL 2323





4555 W MEMORIAL RD.
OKLAHOMA CITY, OK 73142



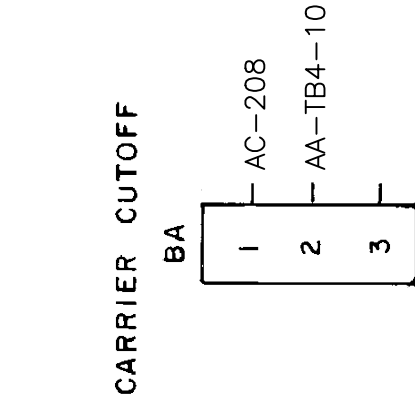
PANEL 101 - REAR VIEW

ISSUED FOR BID

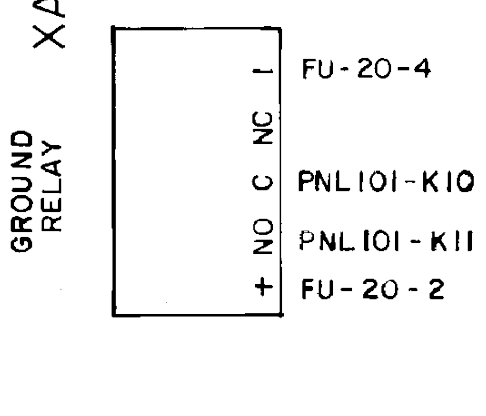
DESCRIPTION: ISSUED FOR BID	2	RF022-01145	8/24/2023	NC	BE	TM	NC
DESCRIPTION: REVISED PER RELAY NOTES	1	RF022-01145	5/9/23	NC	BE	TM	NC
DESCRIPTION: REVISED PER RELAY NOTES	J	-	16 AUG 16	-	JT	RELAY	-
DESCRIPTION: REVISED PER RELAY NOTES	I	-	03 AUG 15	-	JT	RELAY	-
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK	ISSUE APPROV	

HARLO CORPORATION SMALL BUSINESS ENTERPRISE		
DR. BY: J. YOB	DRAWING NO. D14591 SH. 10	REV H
CHK. BY: [Signature]		

GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69KV			
TERMINAL BLOCK WIRING DIAGRAM PANEL 101			
ENGINEER: [Signature]	SCALE: NONE	DATE: 4/27/87	REV. 2
DRAWN BY: [Signature]	DRAWING NO. S351WP101		
CHECKED BY: [Signature]	P.O. BOX 669 CHOUTEAU, OK 74337		
APPROVED BY: [Signature]			

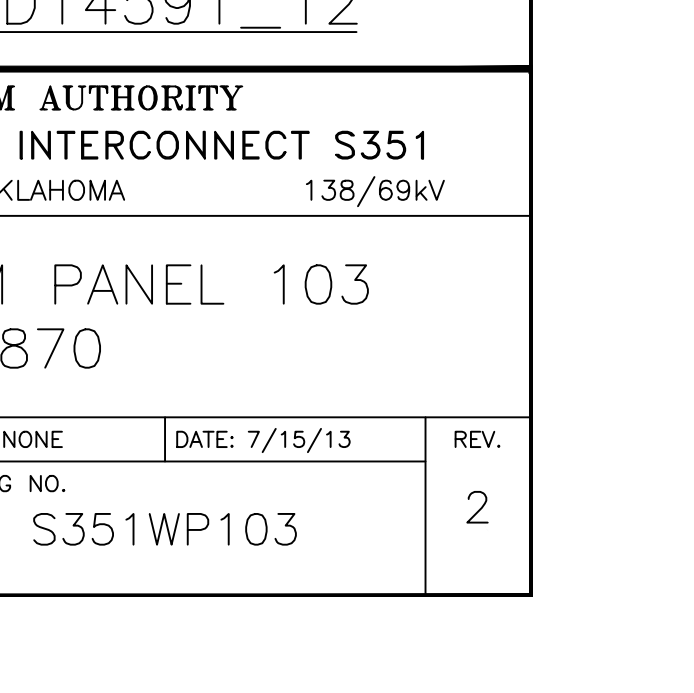
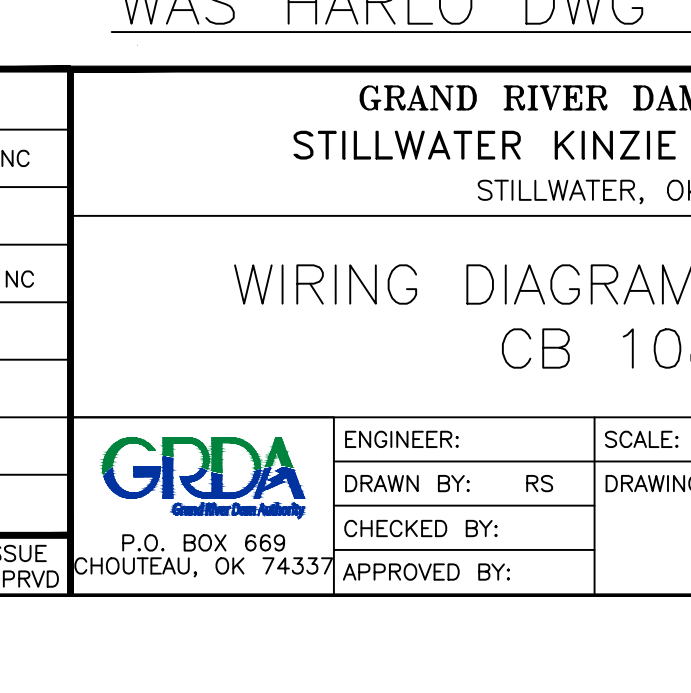
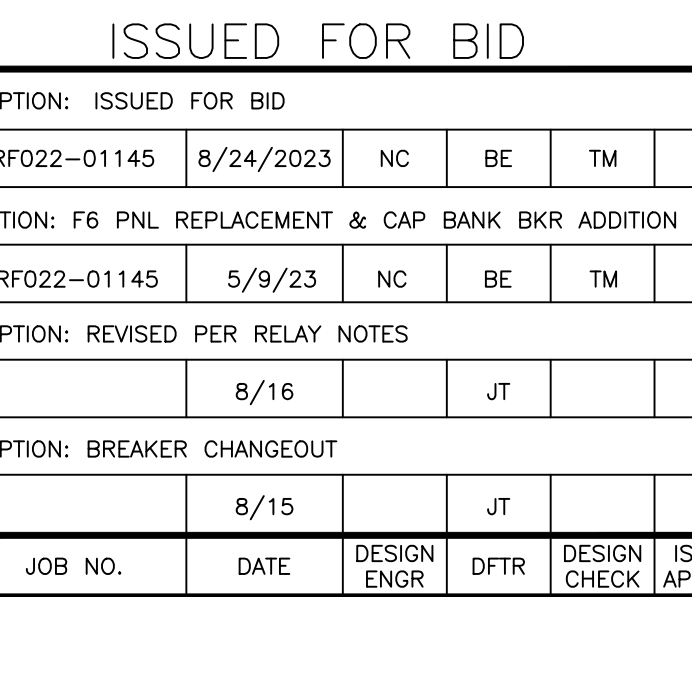
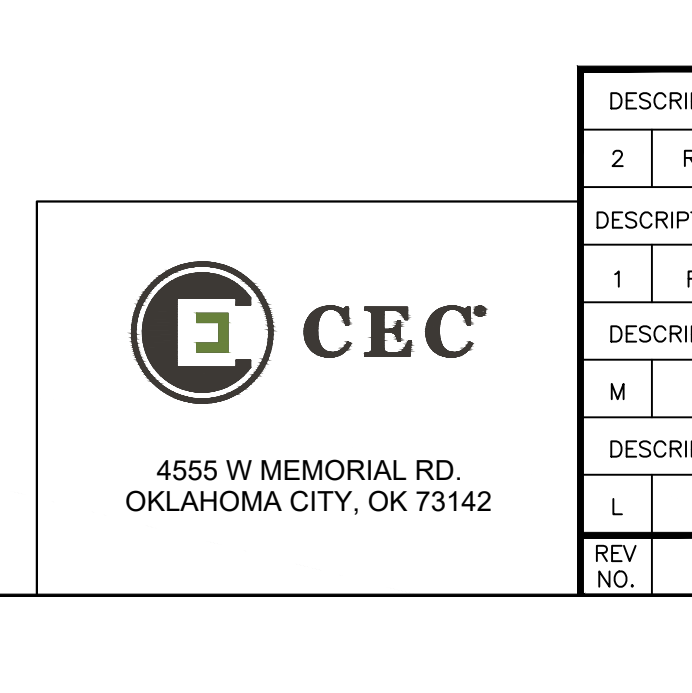
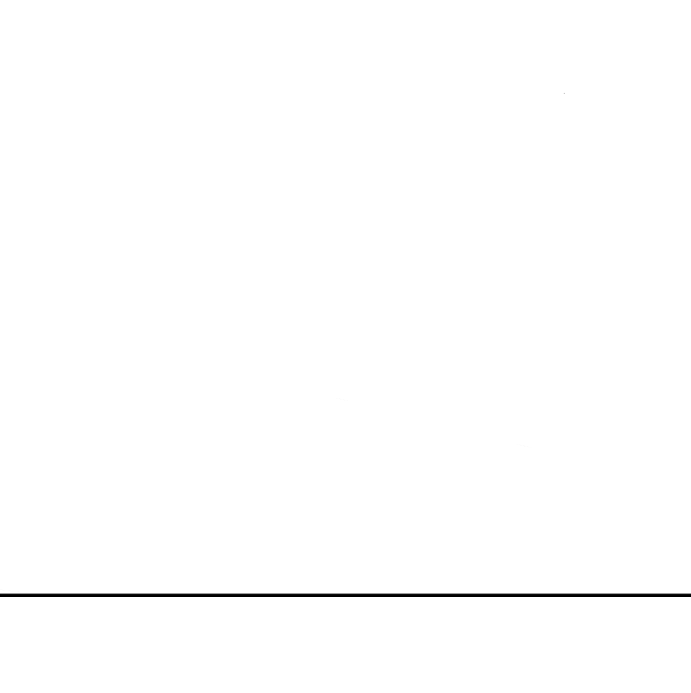
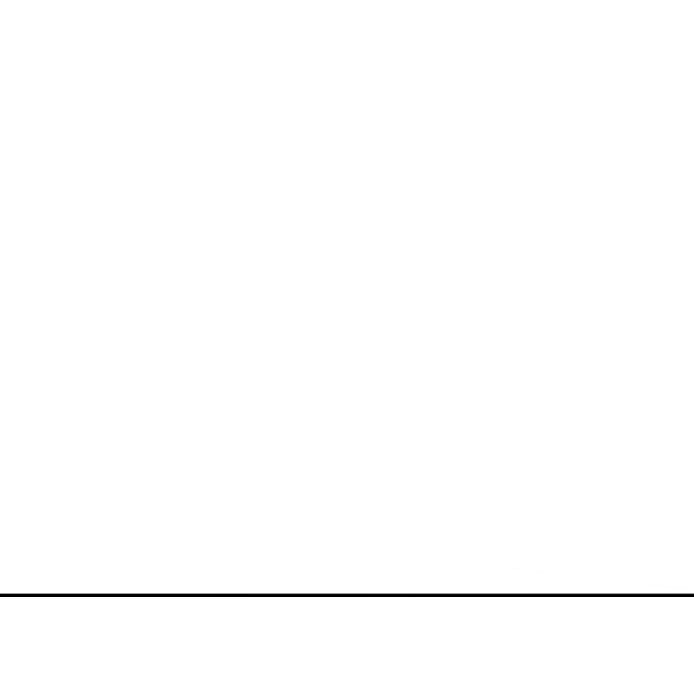
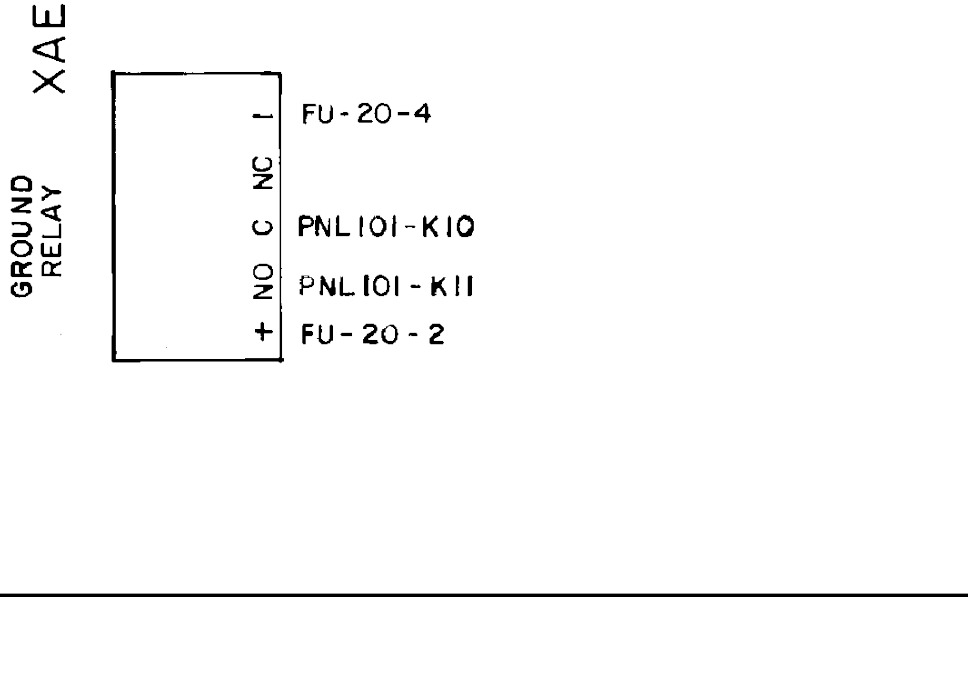
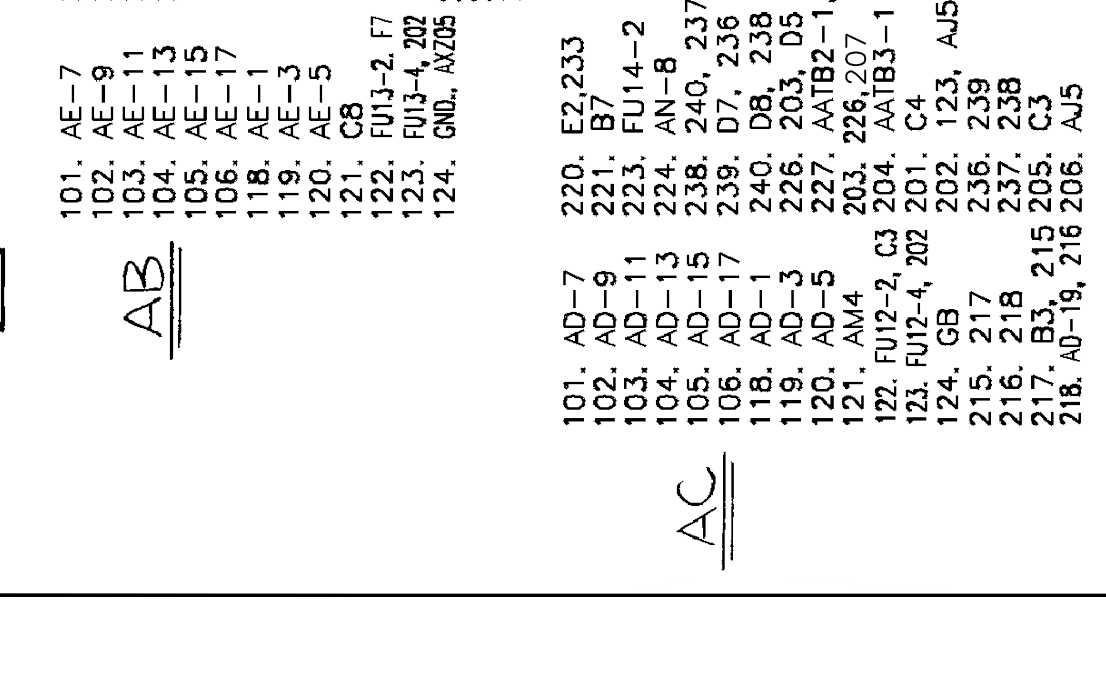
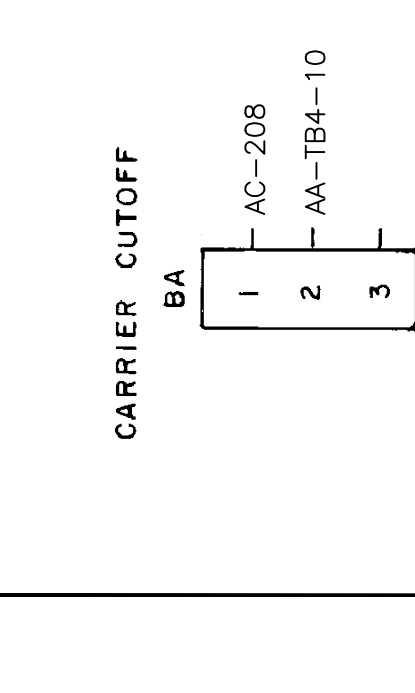
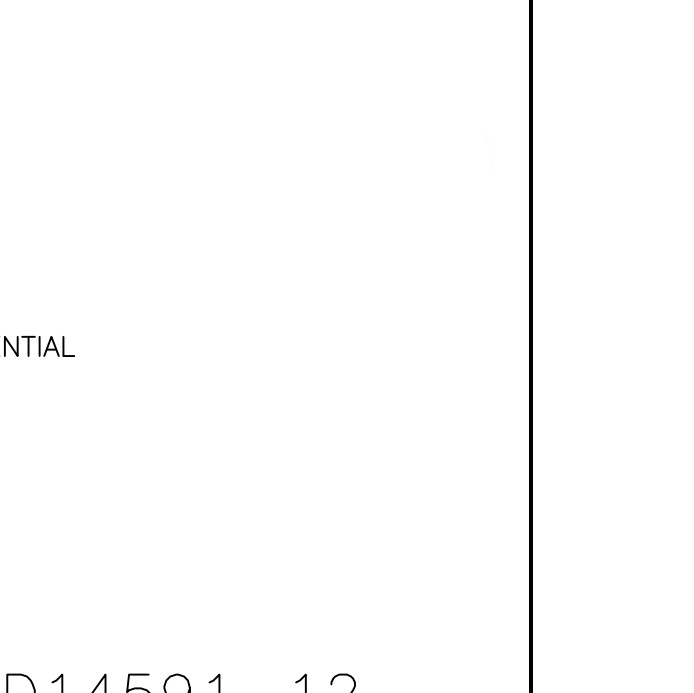
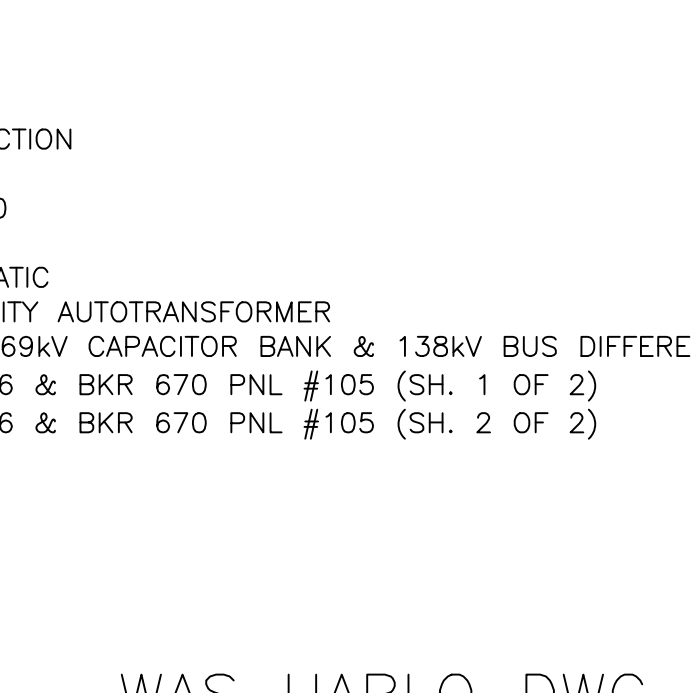
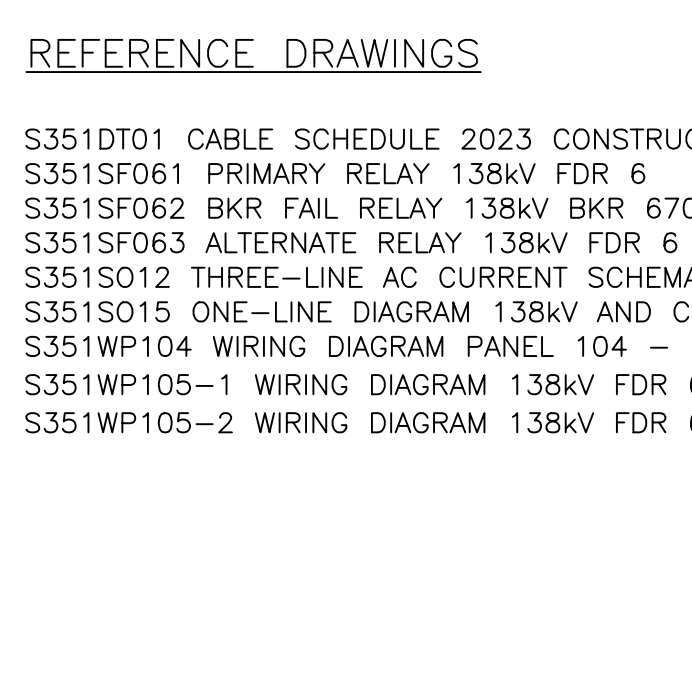
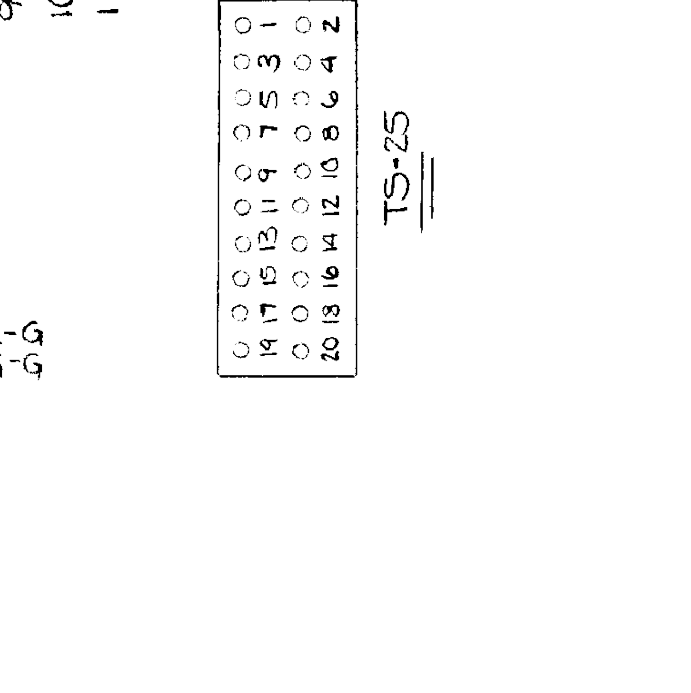
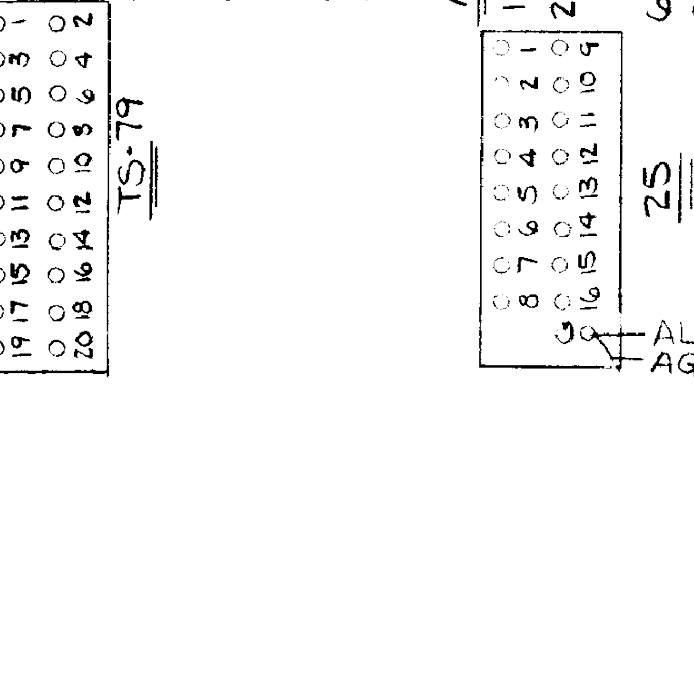
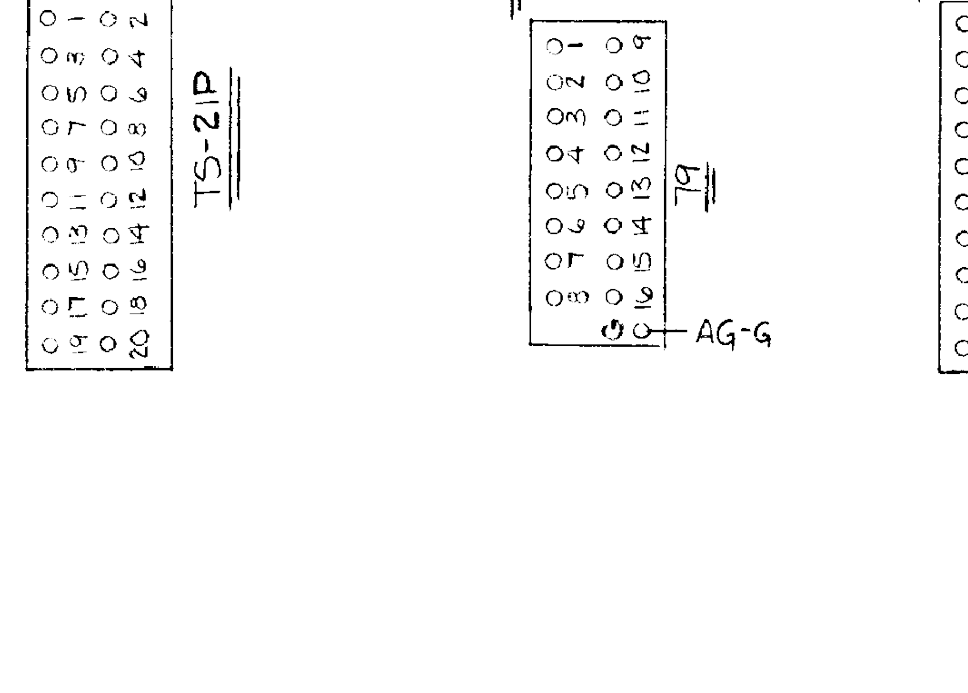
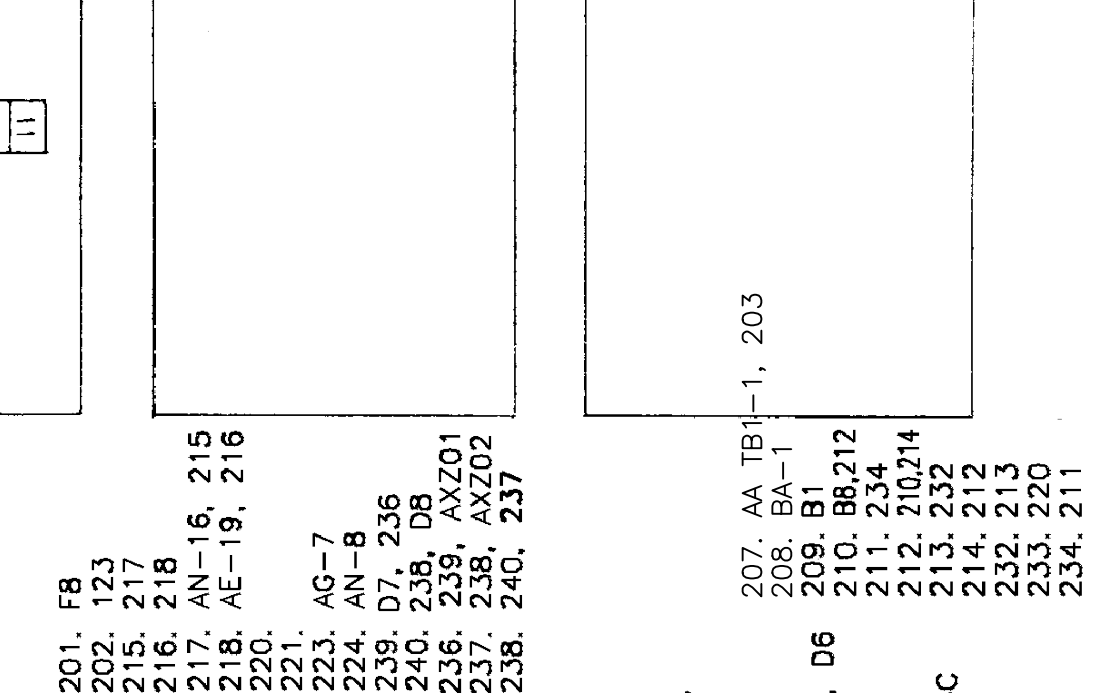
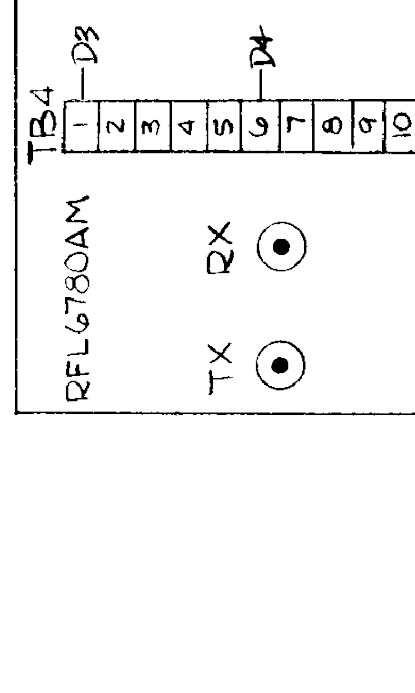
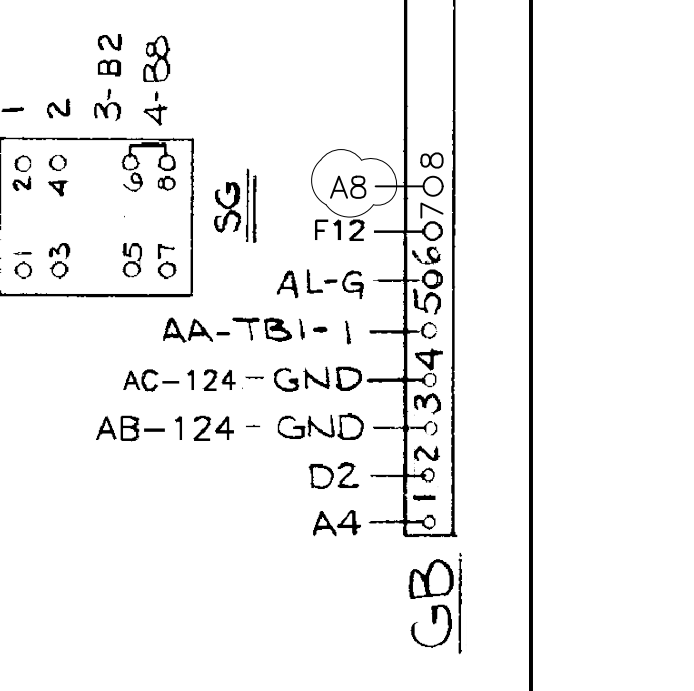
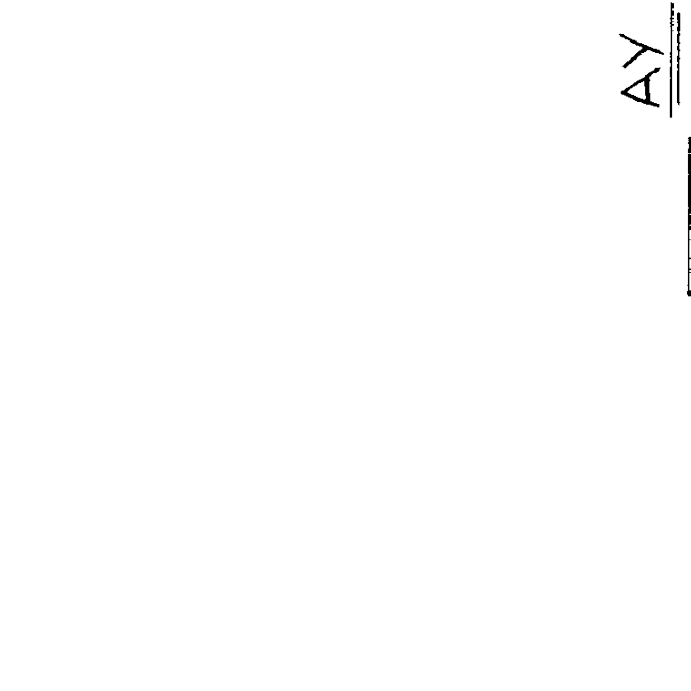
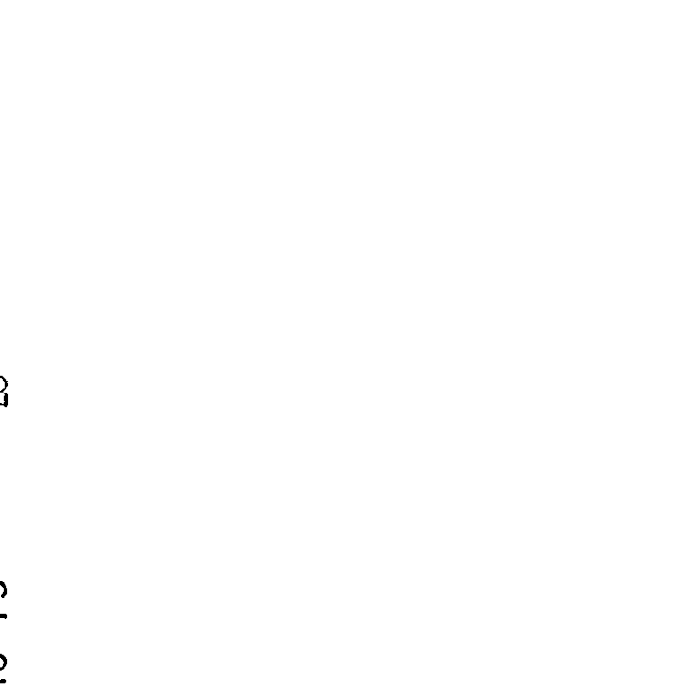
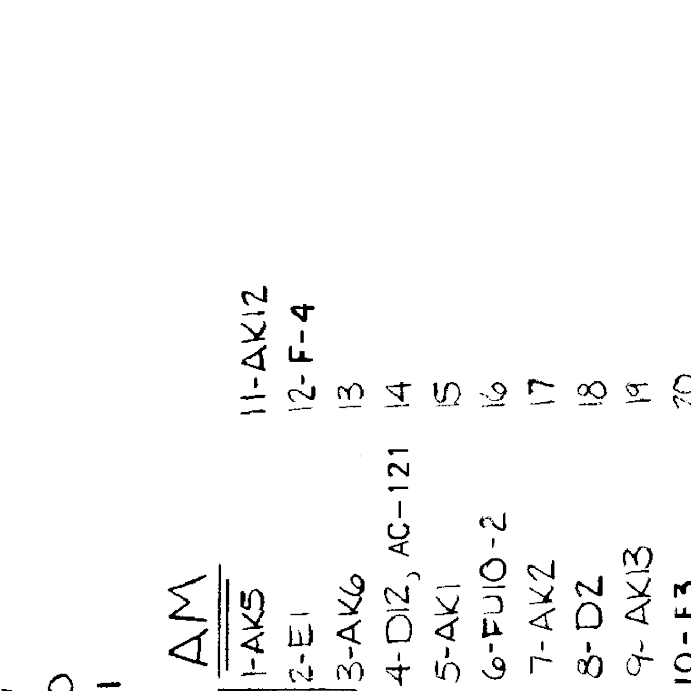
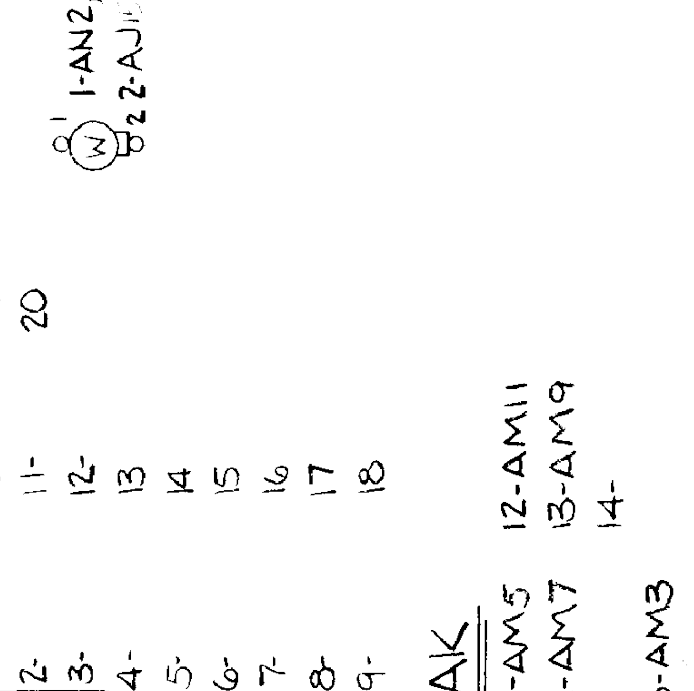
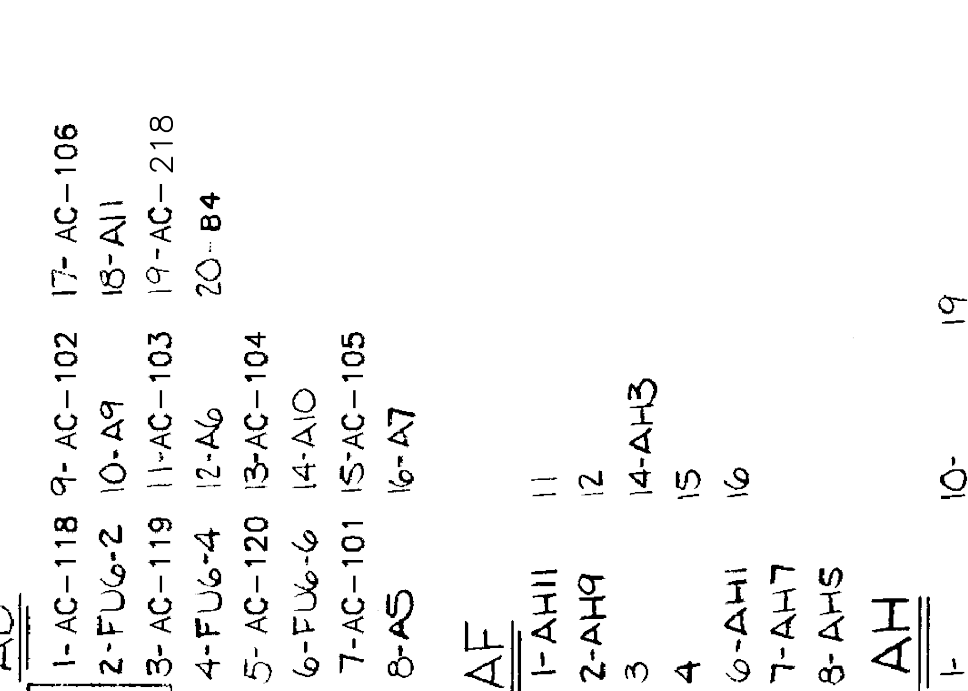
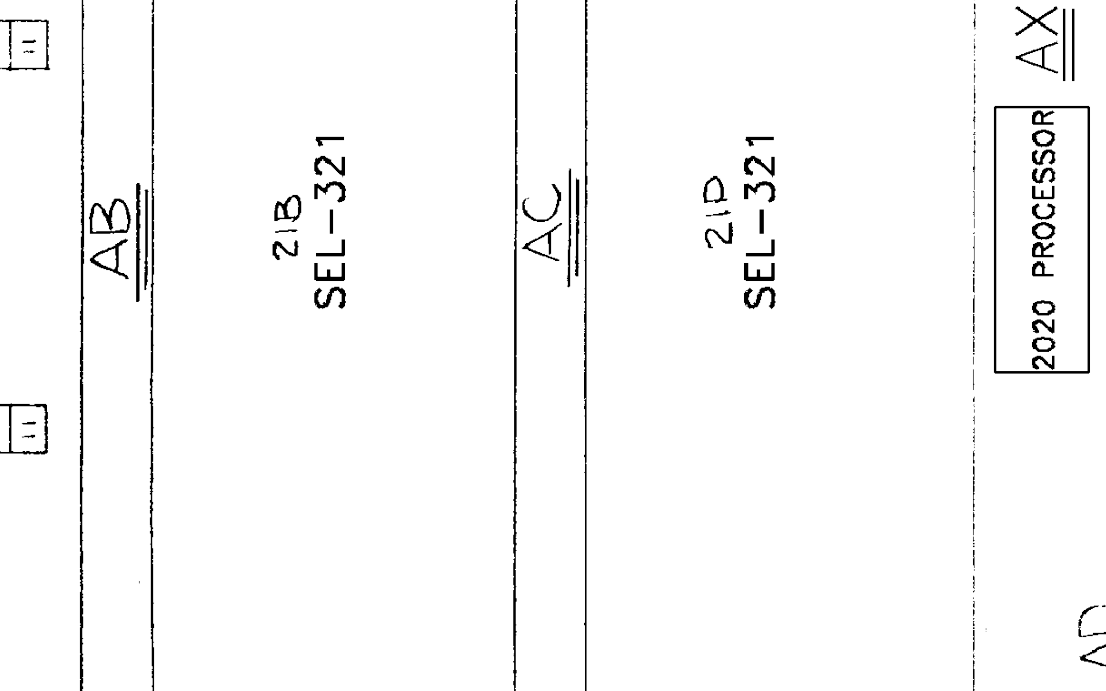
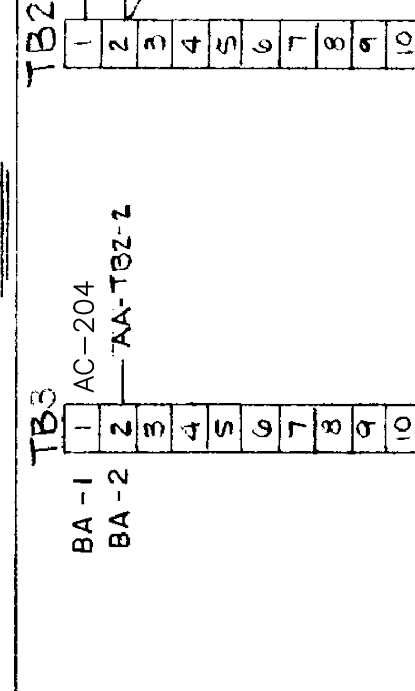
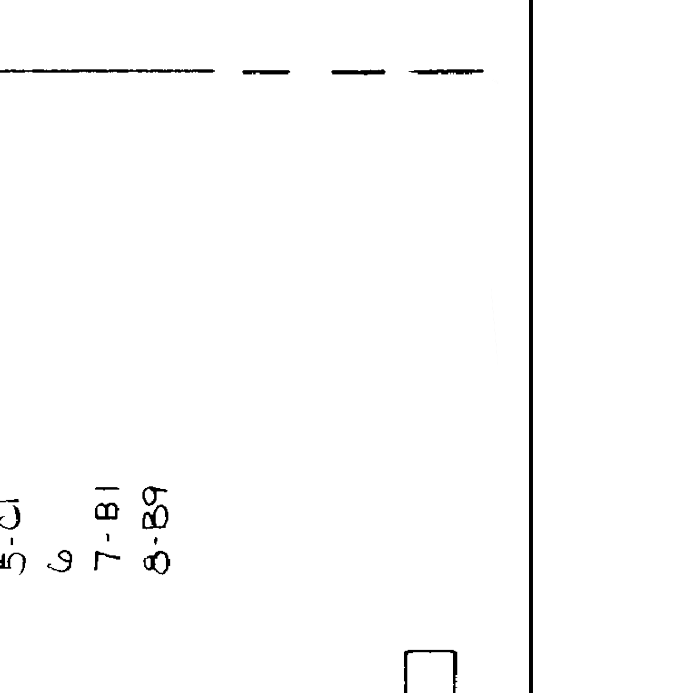
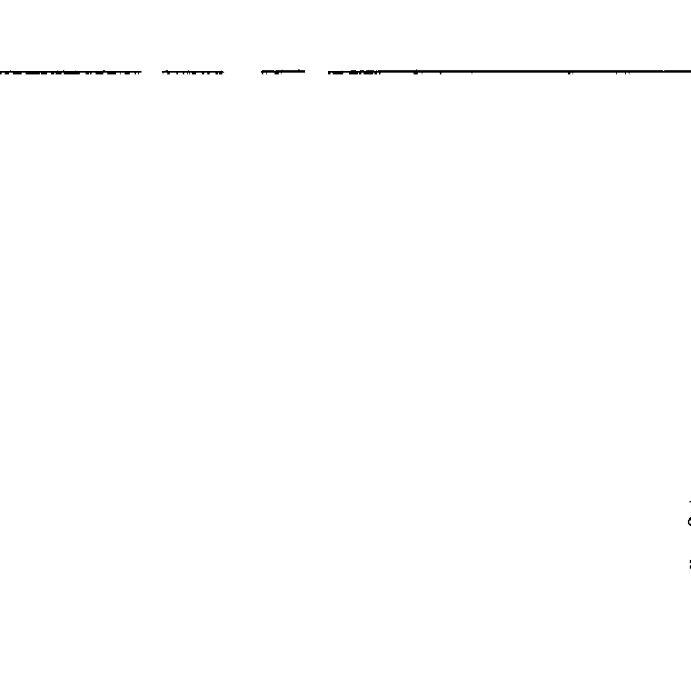
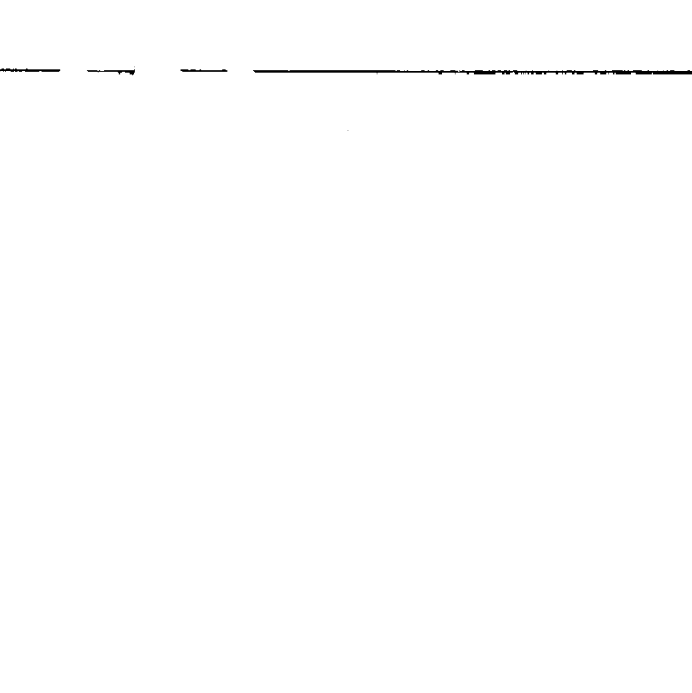
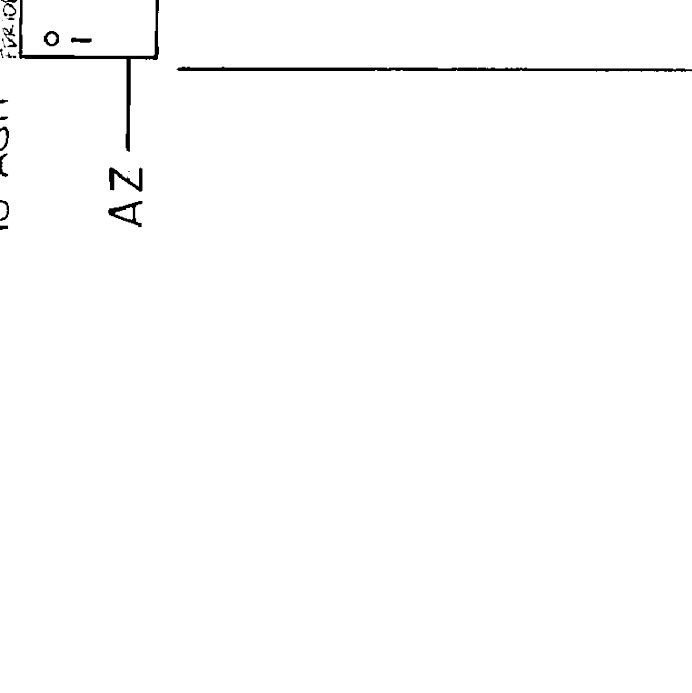
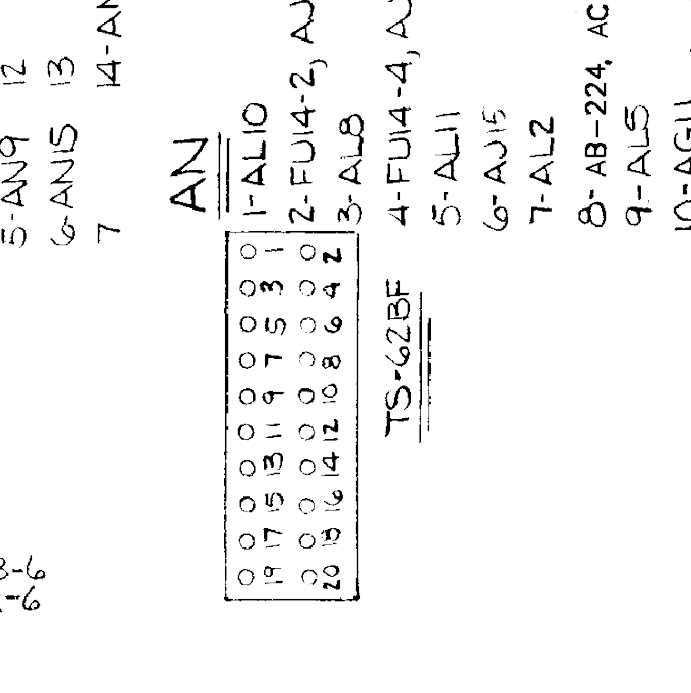
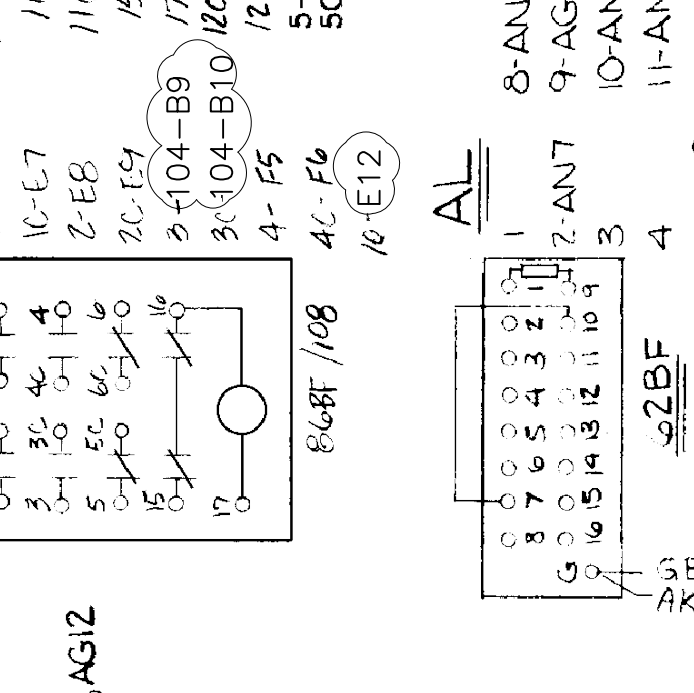
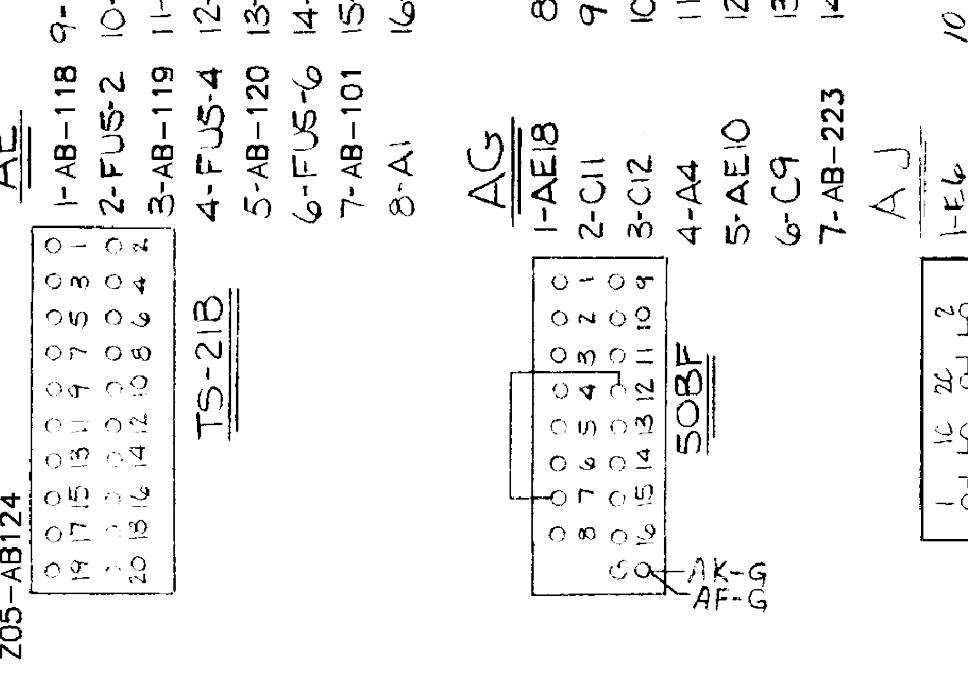
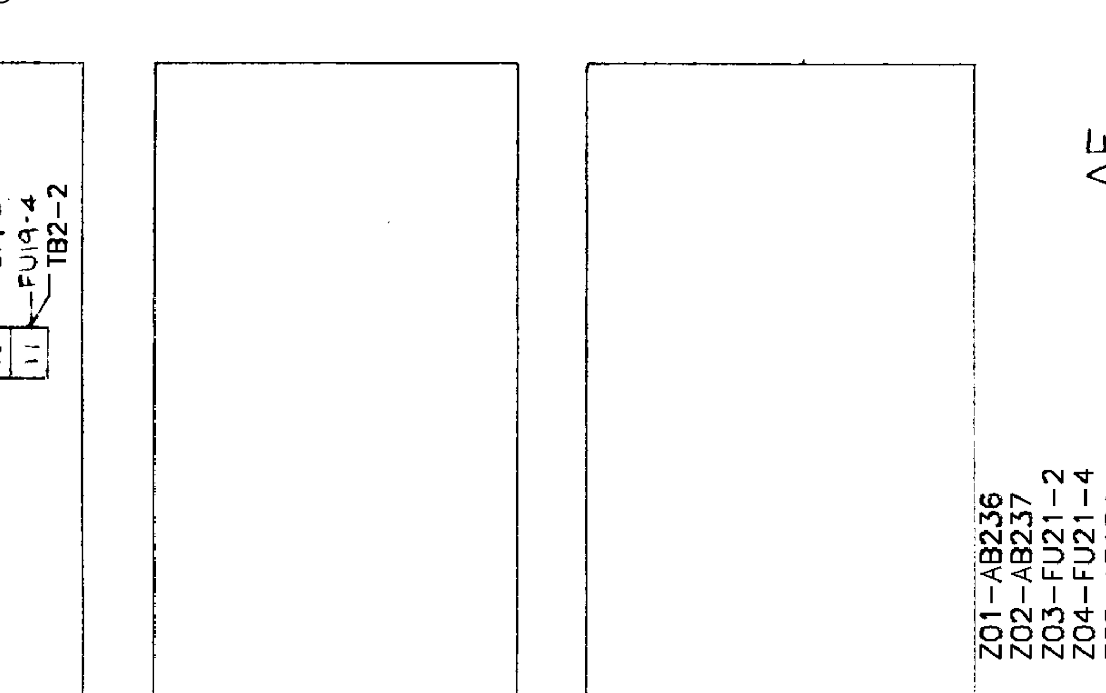
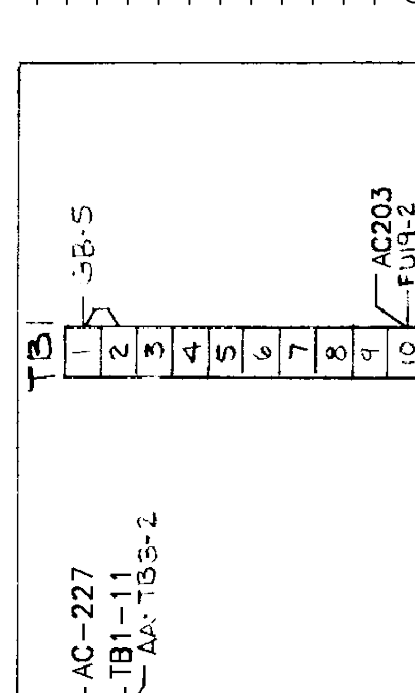
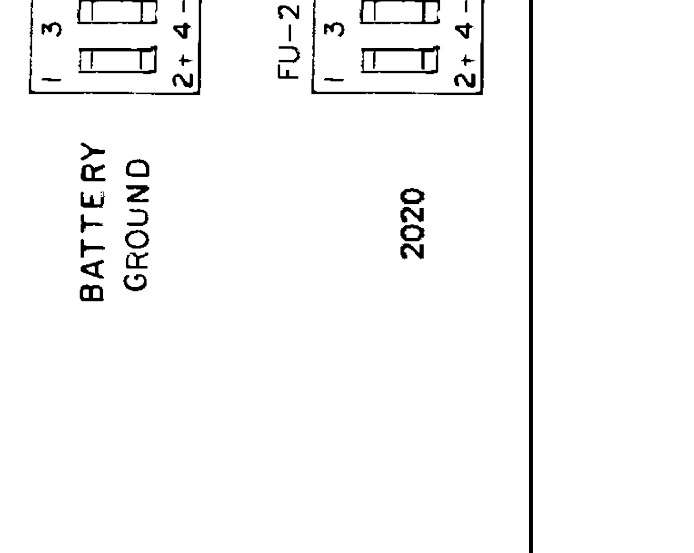
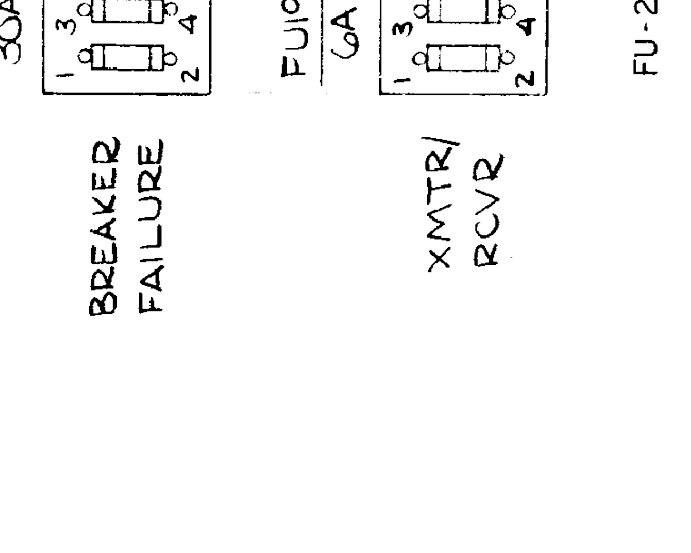
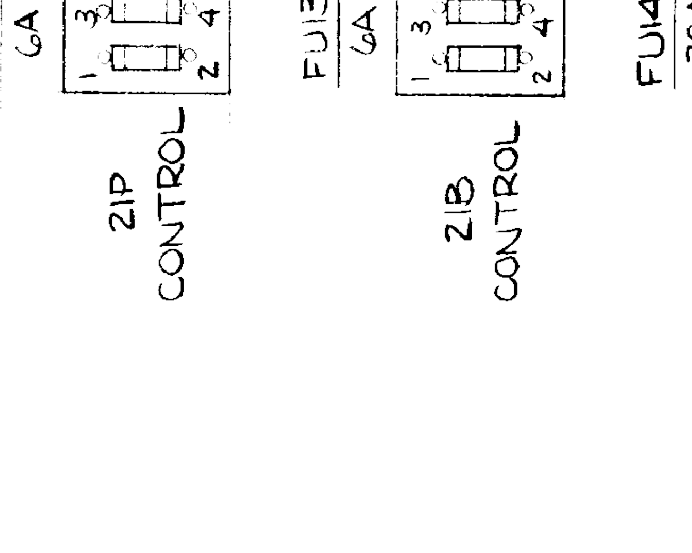
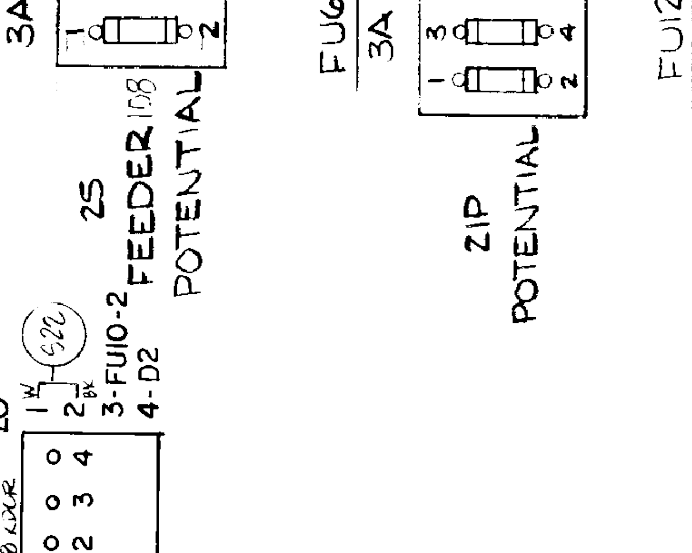
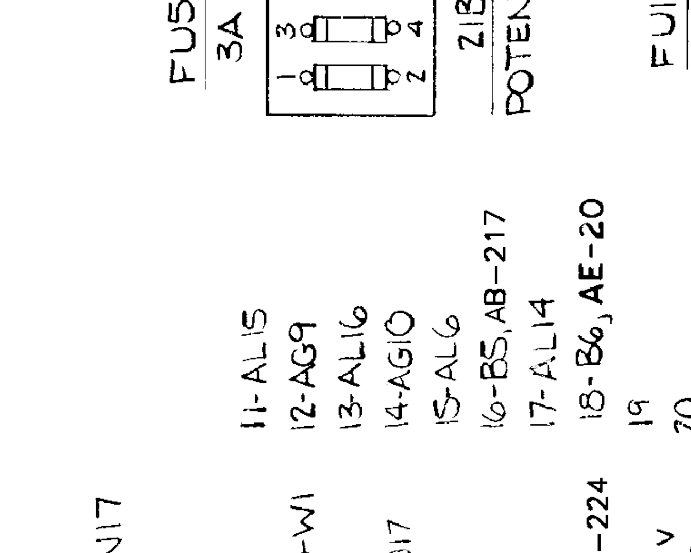
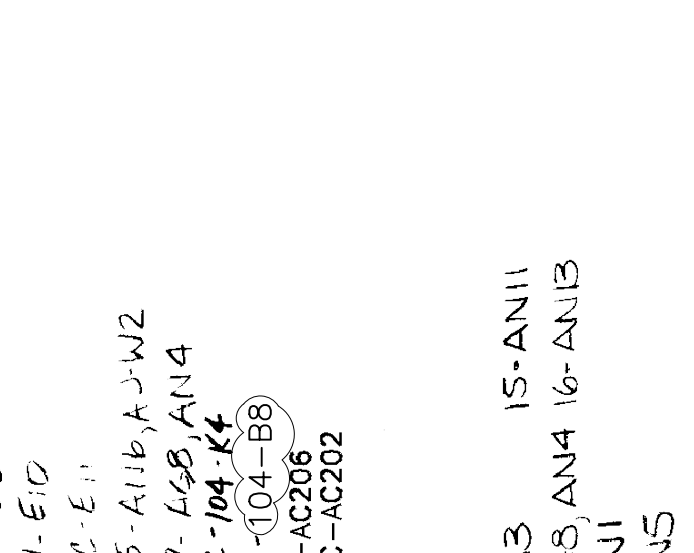
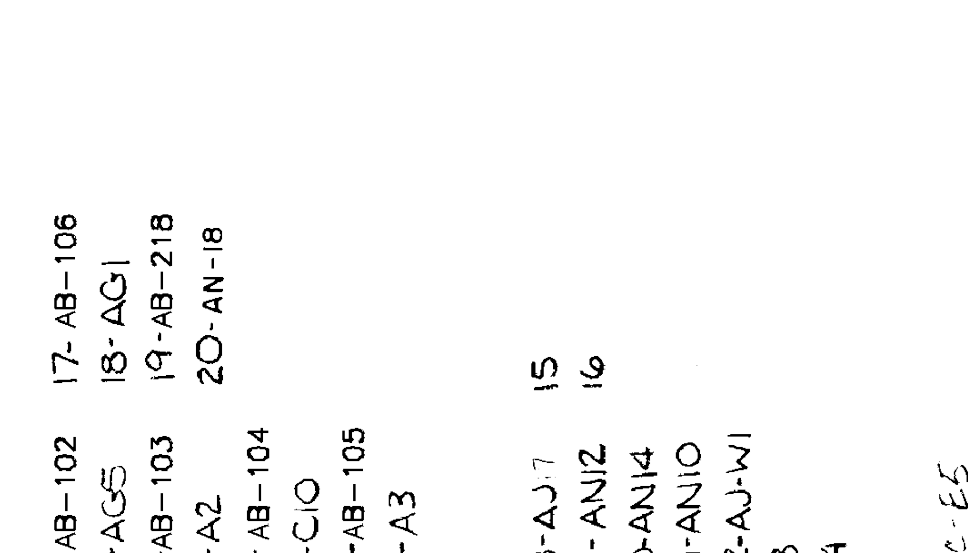
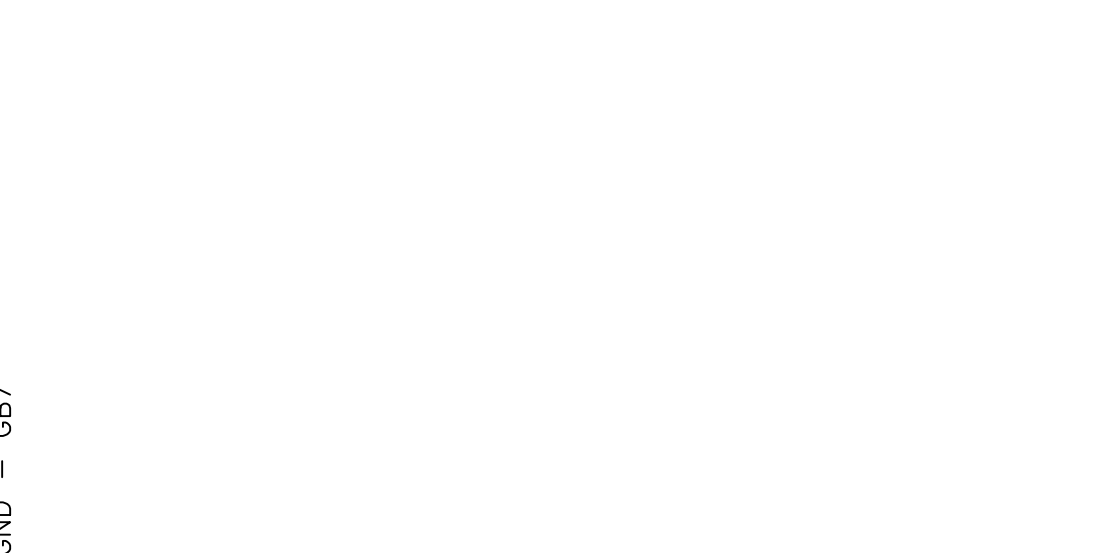


- AB**
- 101. AE-7 201. FB
 - 102. AE-9 202. 123
 - 103. AE-11 215. 217
 - 104. AE-13 216. 218
 - 105. AE-15 217. AN-16, 215
 - 106. AE-17 218. AE-19, 216
 - 107. AE-19 219. 220
 - 108. AE-21 220. 221
 - 109. AE-23 221. AG-7
 - 110. AE-25 222. AN-8
 - 111. AE-27 223. 236
 - 112. AE-29 224. D7, 236
 - 113. AE-31 225. 236, D8
 - 114. AE-33 226. 236, AXZ01
 - 115. AE-35 227. 236, AXZ02
 - 116. AE-37 228. 240, 237
 - 117. AE-39 229. 240, 237
 - 118. AE-41 230. 240, 237
 - 119. AE-43 231. 240, 237
 - 120. AE-45 232. 240, 237
 - 121. CB 233. 240, 237
 - 122. FUJ-2 F1 239. D7, 236
 - 123. FUJ-4, 202 240. 236, D8
 - 124. GND, A005 236. 238, AXZ02
 - 237. 238, AXZ02
 - 238. 240, 237
- AC**
- 101. AD-7 220. E2, 233
 - 102. AD-9 221. B7
 - 103. AD-11 223. FU14-2
 - 104. AD-13 224. AN-8
 - 105. AD-15 225. 238, 240, 237
 - 106. AD-17 226. D8, 238
 - 107. AD-19 227. 240, 238
 - 108. AD-21 228. 240, 238
 - 109. AD-23 229. 240, 238
 - 110. AD-25 230. 240, 238
 - 111. AD-27 231. 240, 238
 - 112. AD-29 232. 240, 238
 - 113. AD-31 233. 240, 238
 - 114. AD-33 234. 240, 238
 - 115. AD-35 235. 240, 238
 - 116. AD-37 236. 240, 238
 - 117. AD-39 237. 240, 238
 - 118. AD-41 238. 240, 238
 - 119. AD-43 239. 240, 238
 - 120. AD-45 240. 240, 238
- AD**
- 1-AC-118 9-AC-102 17-AC-106
 - 2-FUG-2 10-AG 15-A11
 - 3-AC-119 11-AC-103 19-AC-218
 - 4-FUG-4 12-AG 20-84
 - 5-AC-120 13-AC-104
 - 6-FUG-6 14-A10
 - 7-AC-101 15-AC-105
 - 8-AS 16-A7
- AE**
- 1-AB-118 9-AB-102 17-AB-106
 - 2-FUG-2 10-AGS 15-AG1
 - 3-AB-119 11-AB-103 19-AB-218
 - 4-FUG-4 12-A2 20-AN-18
 - 5-AB-120 13-AB-104
 - 6-FUG-6 14-C10
 - 7-AB-101 15-AB-105
 - 8-A1 16-A3
- AG**
- 1-AE1 15
 - 2-C11 16
 - 3-C12 17
 - 4-AA 18
 - 5-AE10 19
 - 6-C9 20
 - 7-AB-223 21
- AJ**
- 1-AG 19
 - 2-EB 20
 - 3-EB 21
 - 4-EB 22
 - 5-EB 23
 - 6-EB 24
 - 7-EB 25
 - 8-EB 26
 - 9-EB 27
 - 10-EB 28
 - 11-EB 29
 - 12-EB 30
 - 13-EB 31
 - 14-EB 32
 - 15-EB 33
 - 16-EB 34
 - 17-EB 35
 - 18-EB 36
 - 19-EB 37
 - 20-EB 38
- AK**
- 1-AM11 12-AM11
 - 2-AM7 13-AM9
 - 3-AM6 14-
 - 4-D12, AC-121 15
 - 5-AK1 16
 - 6-FUJ-2 17
 - 7-AK2 18
 - 8-DZ 19
 - 9-AK3 20
 - 10-F3 21
- AL**
- 1-AL1 12-AM11
 - 2-E1 13-AM9
 - 3-AK6 14-
 - 4-D12, AC-121 15
 - 5-AK1 16
 - 6-FUJ-2 17
 - 7-AK2 18
 - 8-DZ 19
 - 9-AK3 20
 - 10-F3 21
- AM**
- 1-AM11 12-AM11
 - 2-AM7 13-AM9
 - 3-AM6 14-
 - 4-D12, AC-121 15
 - 5-AK1 16
 - 6-FUJ-2 17
 - 7-AK2 18
 - 8-DZ 19
 - 9-AK3 20
 - 10-F3 21
- AN**
- 1-AN12 11-AL15
 - 2-F-4 12-AG9
 - 3-AL6 13-AL6
 - 4-FU14-4, AJ17 14-AG10
 - 5-AJ1 15-AL6
 - 6-AJ15 16-ES, AB-217
 - 7-AL2 17-AL14
 - 8-AB-224, AC-224 18-B6, AE-20
 - 9-AL5 19
 - 10-AG11 20
- AO**
- 1-AN12, AG12
 - 2-AJ1
- AP**
- 1-AN12, AG12
 - 2-AJ1
- AQ**
- 1-AN12, AG12
 - 2-AJ1
- AR**
- 1-AN12, AG12
 - 2-AJ1
- AS**
- 1-AN12, AG12
 - 2-AJ1
- AT**
- 1-AN12, AG12
 - 2-AJ1
- AV**
- 1-AN12, AG12
 - 2-AJ1
- AW**
- 1-AN12, AG12
 - 2-AJ1
- AX**
- 1-AN12, AG12
 - 2-AJ1
- AY**
- 1-AN12, AG12
 - 2-AJ1
- AZ**
- 1-AN12, AG12
 - 2-AJ1



- BA**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BB**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BC**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BD**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BE**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BF**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BG**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BH**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BI**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BJ**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BK**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BL**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BM**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BN**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BO**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BP**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BQ**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BR**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BS**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BT**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BU**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BV**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BW**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BX**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BY**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- BZ**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-

- CB**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CC**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CD**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CE**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CF**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CG**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CH**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CI**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CJ**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CK**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CL**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CM**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CN**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CO**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CP**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CQ**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CR**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CS**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CT**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CU**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CV**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CW**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CX**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CY**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-
- CZ**
- 1-AC-208
 - 2-AA-TB4-10
 - 3-



REFERENCE DRAWINGS

- S351D101 CABLE SCHEDULE 2023 CONSTRUCTION
- S351SF061 PRIMARY RELAY 138kV FDR 6
- S351SF062 BKR FAIL RELAY 138kV BKR 670
- S351SF063 ALTERNATE RELAY 138kV FDR 6
- S351S012 THREE-LINE AC CURRENT SCHEMATIC
- S351S015 ONE-LINE DIAGRAM 138kV AND CITY AUTOTRANSFORMER
- S351WP104 WIRING DIAGRAM PANEL 104 - 69kV CAPACITOR BANK & 138kV BUS DIFFERENTIAL
- S351WP105-1 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 1 OF 2)
- S351WP105-2 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 2 OF 2)

ISSUED FOR BID

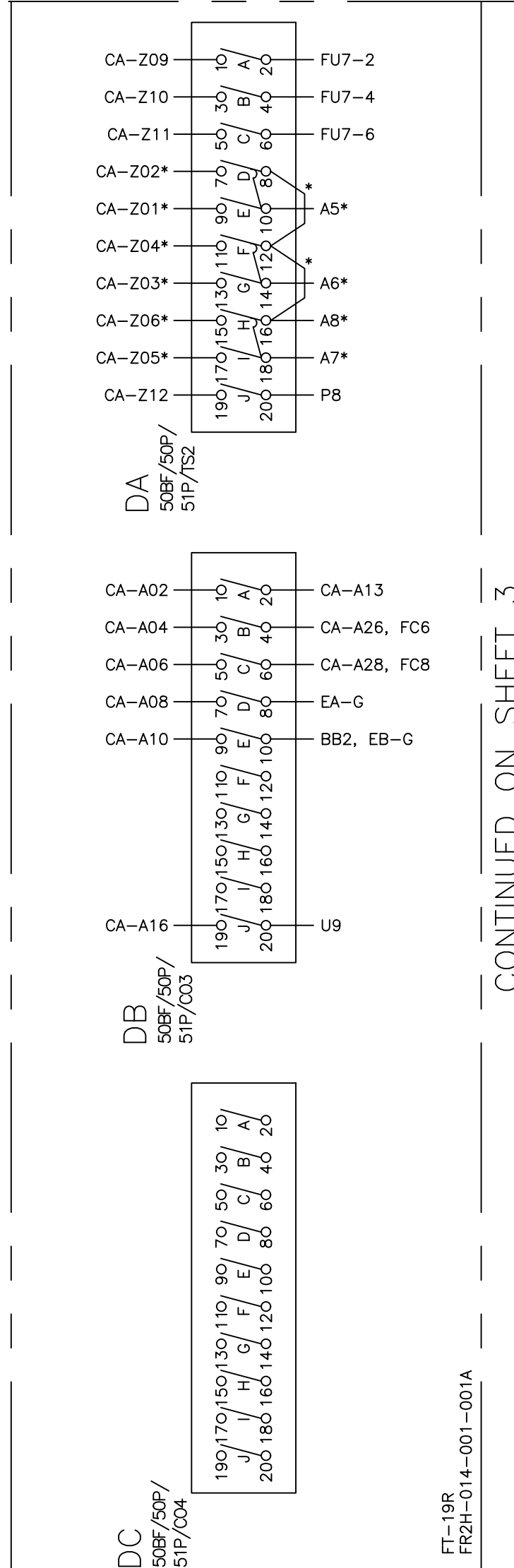
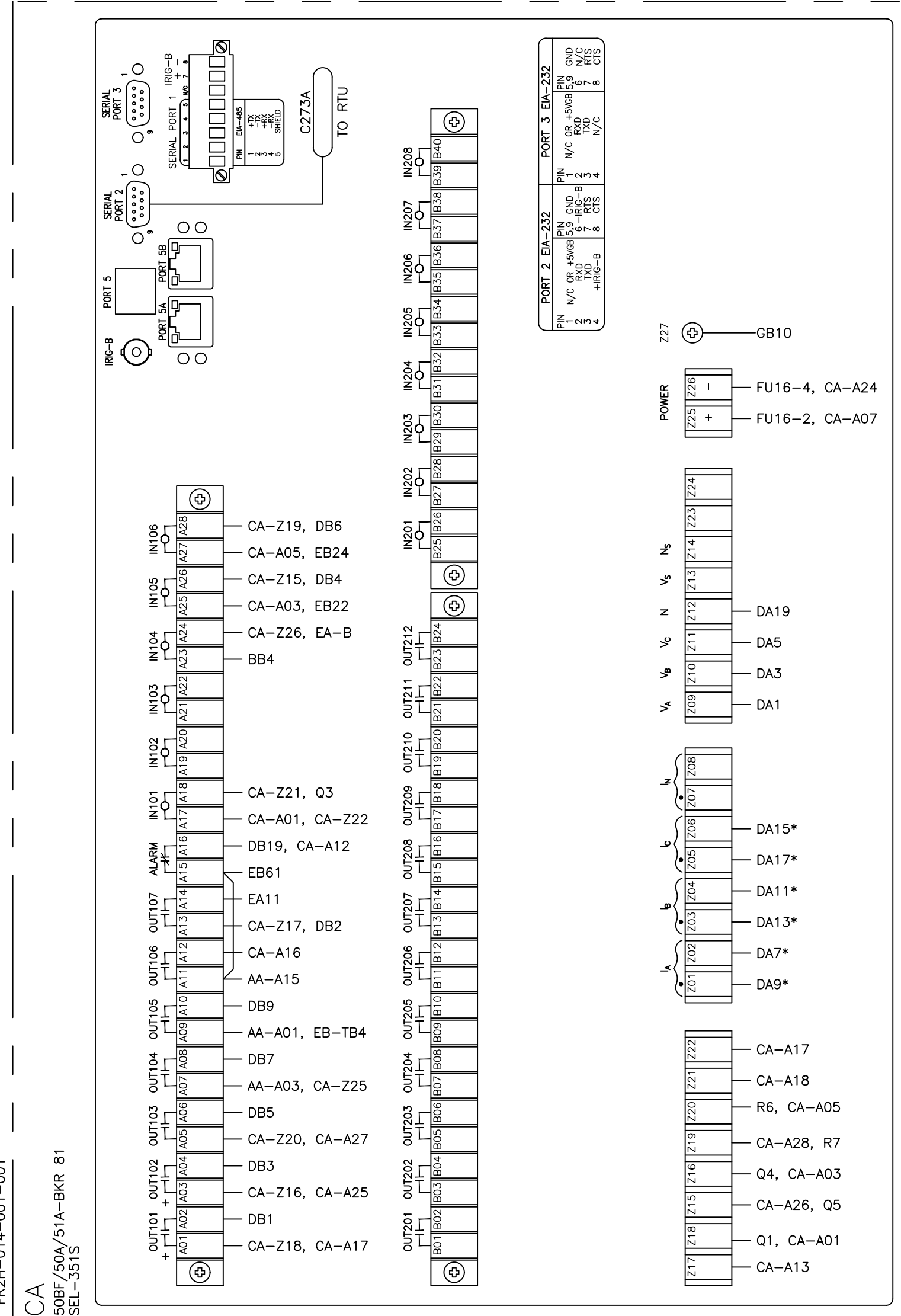
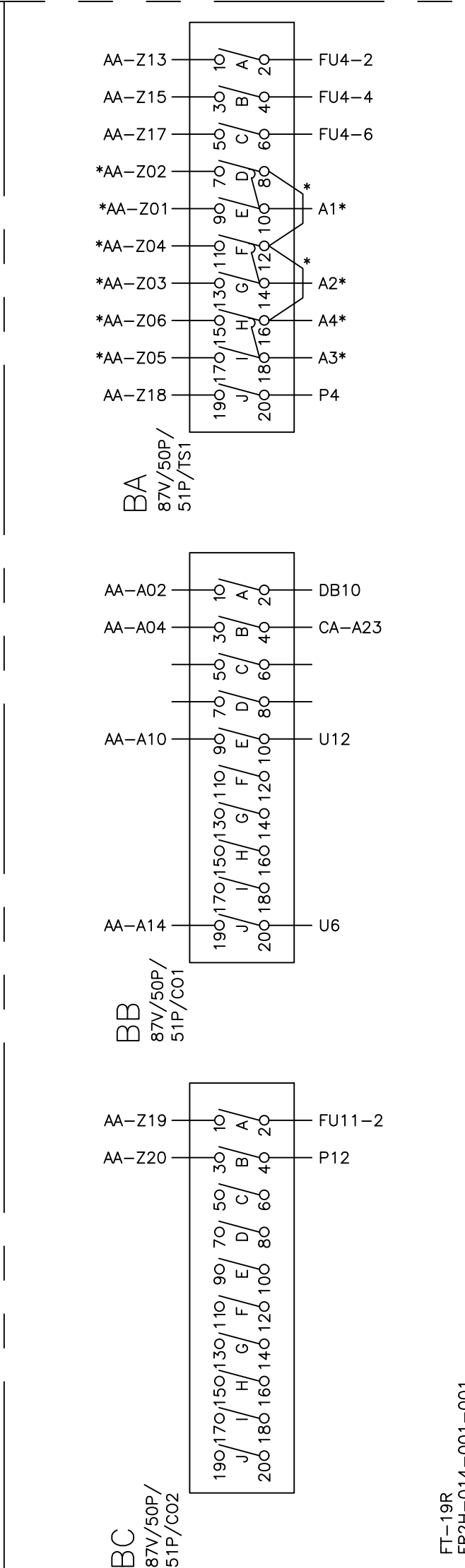
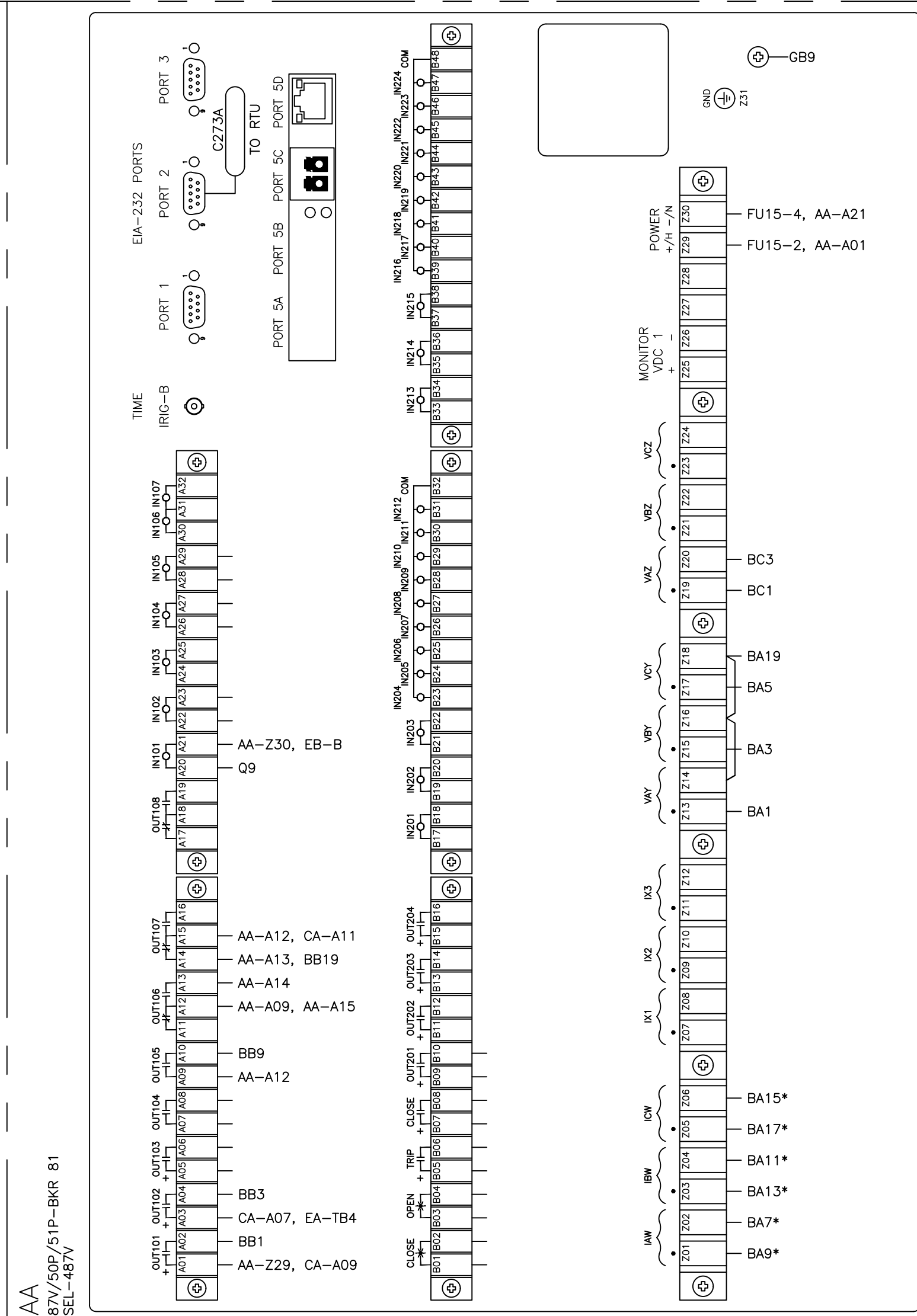
WAS HARLO DWG D14591_12



DESCRIPTION: ISSUED FOR BID	RF022-01145	8/24/2023	NC	BE	TM	NC
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION	RF022-01145	5/9/23	NC	BE	TM	NC
DESCRIPTION: REVISED PER RELAY NOTES		8/16		JT		
DESCRIPTION: BREAKER CHANGEOUT		8/15		JT		
REV. NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK	ISSUE APPROV

GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kV	
WIRING DIAGRAM PANEL 103 CB 10870	
ENGINEER: RS	SCALE: NONE
DRAWN BY: RS	DATE: 7/15/13
CHECKED BY:	DRAWING NO.
APPROVED BY:	S351WP103
P.O. BOX 669 CHOUTEAU, OK 74337	REV. 2

PNL 104 CAP BANK



- REFERENCE DRAWINGS:
- S351DT01 CABLE SCHEDULE 2023 CONSTRUCTION
 - S351SD001 CAP BANK SEL-487V PRI. PROTECTION PANEL 104
 - S351SD002 DC SCHEMATIC BKR FAIL RELAY (50BF/50A/51A-351S) 69kV BKR 81 PNL #104
 - S351SO15 ONE-LINE DIAGRAM 138kV AND CITY AUTOTRANSFORMER
 - S351SO18 THREE-LINE DIAGRAM GRDA 69kV CAPACITOR BANK
 - S351SR01-1 ANNUNCIATOR SCHEMATIC (SHEET 1)
 - S351SR01-2 ANNUNCIATOR SCHEMATIC (SHEET 2)
 - S351WP101 TERMINAL BLOCK WIRING DIAGRAM PANEL 101
 - S351WP101-2 WIRING DIAGRAM PANEL 101
 - S351WP104 WIRING DIAGRAM PANEL 104 - 69kV CAPACITOR BANK & 138kV BUS DIFFERENTIAL
 - S351WP104-3 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 3 OF 3)
 - S351WP105-1 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 1 OF 2)
 - S351WP105-2 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 2 OF 2)
 - S351WZ02 CONTROL BUILDING AC/DC PANEL

DESCRIPTION:	ISSUED FOR BID
1	RF022-01145 8/24/2023 NC BE TM NC
DESCRIPTION:	F6 PNL REPLACEMENT & CAP BANK BKR ADDITION
0	RF022-01145 5/9/23 NC BE TM NC
REV NO.	JOB NO. DATE DESIGN ENGR DFTS DESIGN CHECK ISSUE APPROVD

ISSUED FOR BID

GRAND RIVER DAM AUTHORITY
STILLWATER KINZIE INTERCONNECT S351
STILLWATER, OKLAHOMA 138/69kV

RELAY PNL 104 CAP BANK
WIRING DIAGRAM (SH. 2 OF 3)

ENGINEER: NC SCALE: NONE DATE: 5/9/23 REV.
DRAWN BY: BE DRAWING NO.
CHECKED BY: TM S351WP104-2 1
APPROVED BY: NC

GRDA
P.O. BOX 669
CHOUTEAU, OK 74337

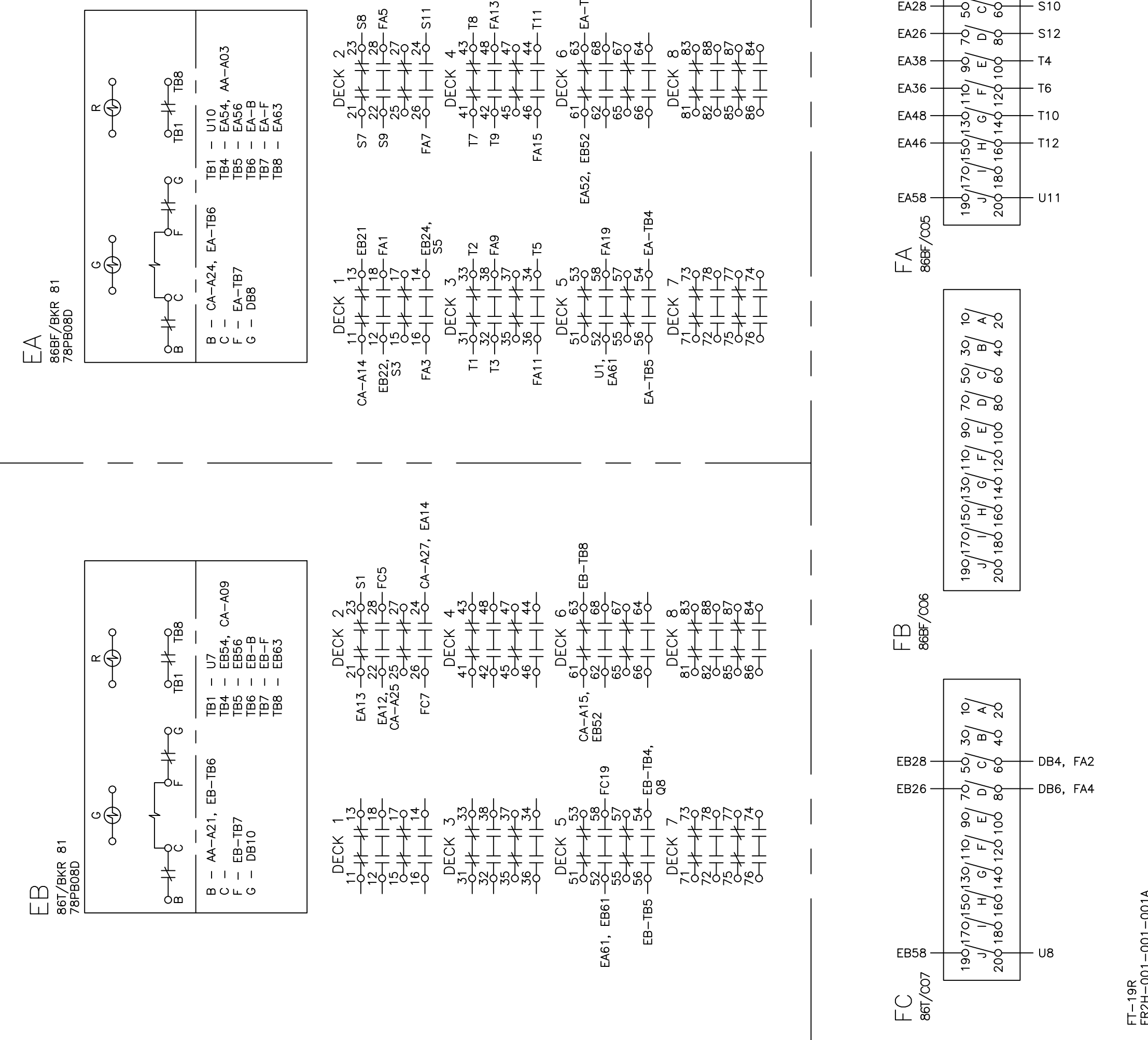


4555 W MEMORIAL RD
OKLAHOMA CITY, OK 73142

CONTINUED ON SHEET 3

FT-19R
FR2H-014-001-001A

CONTINUED ON SHEET 2



REFERENCE DRAWINGS:

- S351DT01 CABLE SCHEDULE 2023 CONSTRUCTION
- S351SD001 CAP BANK SEL-487V PRI. PROTECTION PANEL 104
- S351SD002 DC SCHEMATIC BKR FAIL RELAY (50BF/50A/51A-351S) 69kV BKR 81 PNL #104
- S351SO15 ONE-LINE DIAGRAM 138kV AND CITY AUTOTRANSFORMER
- S351SO18 THREE-LINE DIAGRAM GRDA 69kV CAPACITOR BANK
- S351SR01-1 ANNUNCIATOR SCHEMATIC (SHEET 1)
- S351SR01-2 ANNUNCIATOR SCHEMATIC (SHEET 2)
- S351WP101 TERMINAL BLOCK WIRING DIAGRAM PANEL 101
- S351WP101-2 WIRING DIAGRAM PANEL 101
- S351WP104 WIRING DIAGRAM PANEL 104 - 69kV CAPACITOR BANK & 138kV BUS DIFFERENTIAL
- S351WP104-2 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 2 OF 3)
- S351WP105-1 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 1 OF 2)
- S351WP105-2 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 2 OF 2)
- S351WZ02 CONTROL BUILDING AC/DC PANEL



REV NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPROVD

ISSUED FOR BID

GRAND RIVER DAM AUTHORITY
STILLWATER KINZIE INTERCONNECT S351
STILLWATER, OKLAHOMA 138/69kV

RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 3 OF 3)

DESCRIPTION: ISSUED FOR BID	1	RF022-01145	8/24/2023	NC	BE	TM	NC
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION	0	RF022-01145	5/9/23	NC	BE	TM	NC

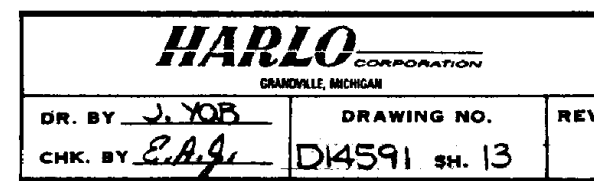
ENGINEER: NC	SCALE: NONE	DATE: 5/9/23	REV.
DRAWN BY: BE	CHECKED BY: TM	APPROVED BY: NC	1

S351WP104-3

GRDA
P.O. BOX 669
CHOUTEAU, OK 74337

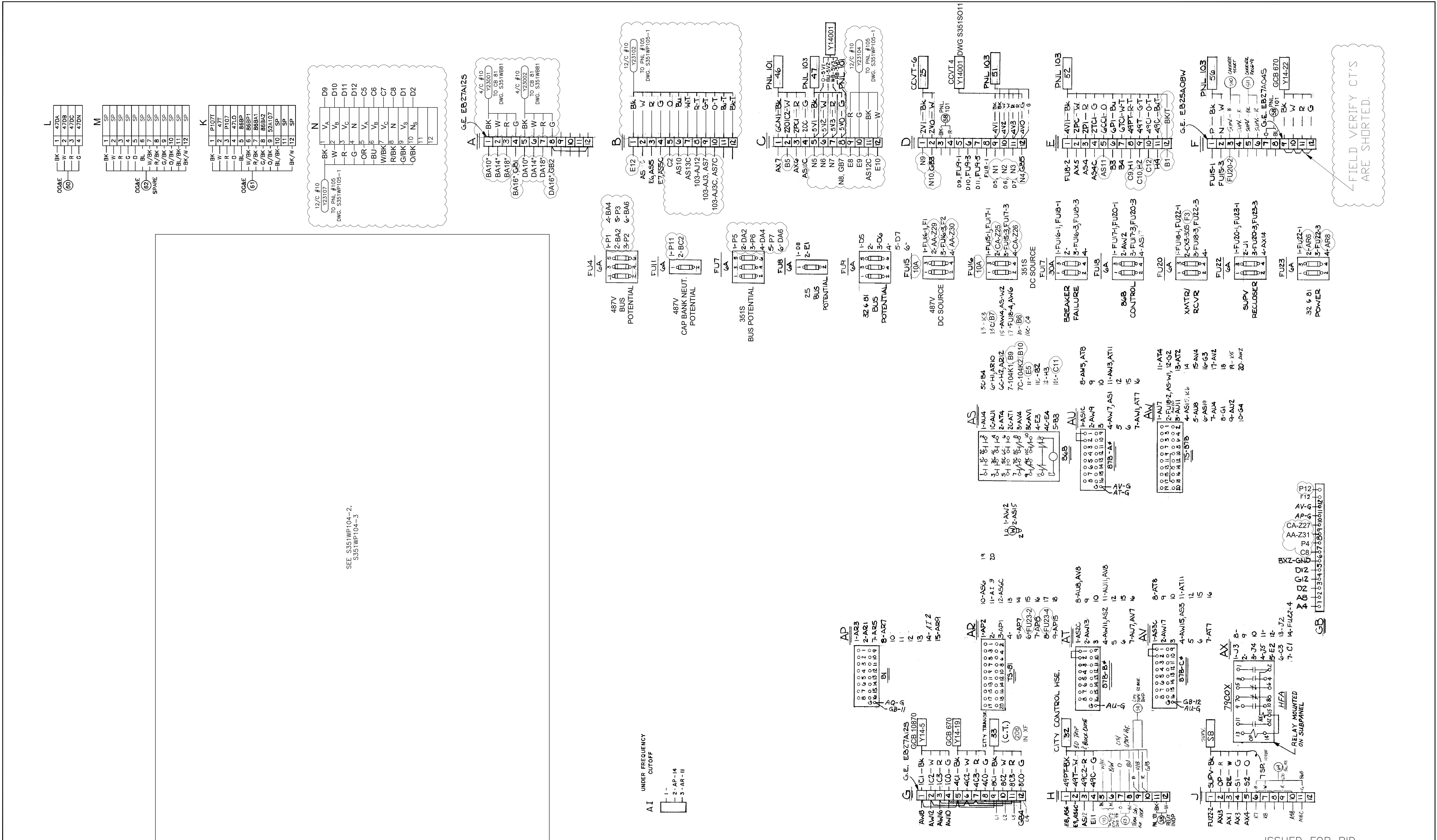
FT-19R
FRPH-001-001-001A

REFERENCE DRAWINGS
 S351SO12 THREE LINE AC CURRENT SCHEMATIC
 S351SO15 OGE INTERCONNECT ONLINE DIAGRAM METERING & RELAYING
 S351WP101 WIRING DIAGRAM PANEL 101



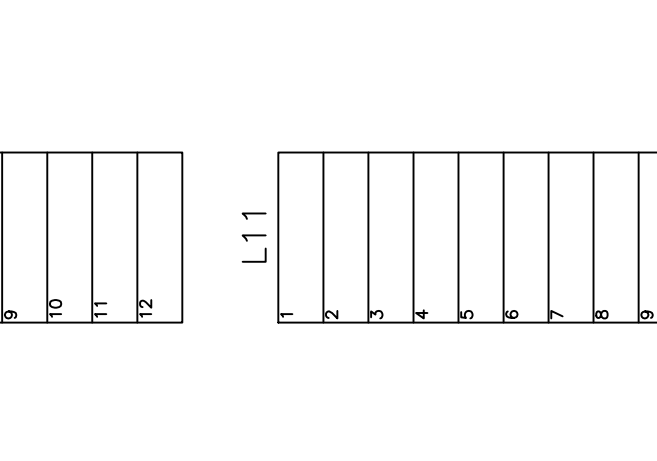
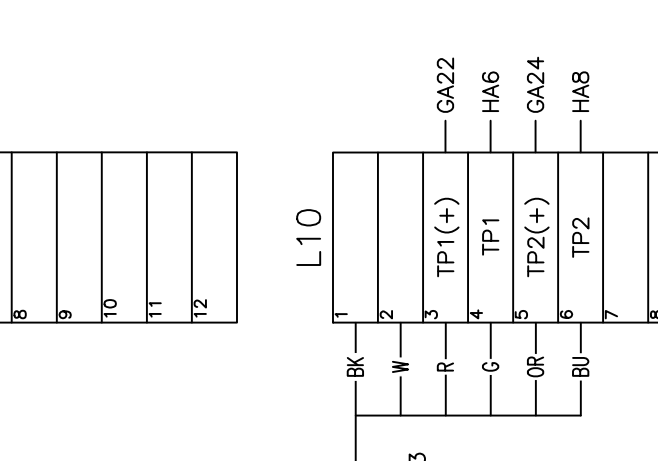
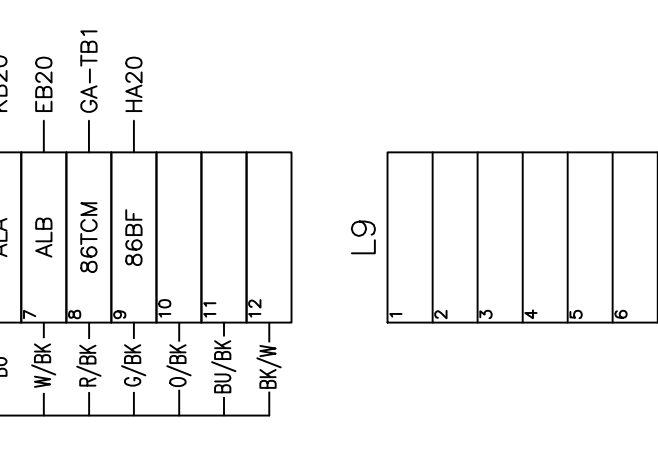
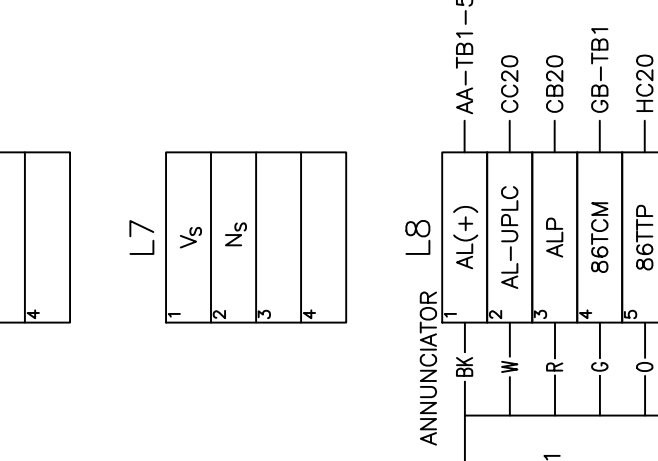
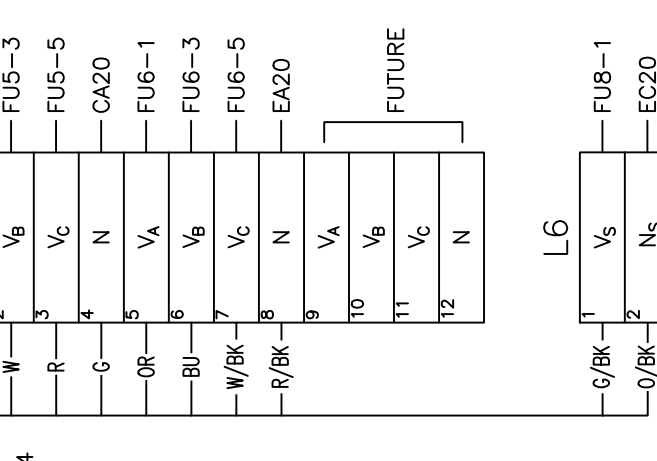
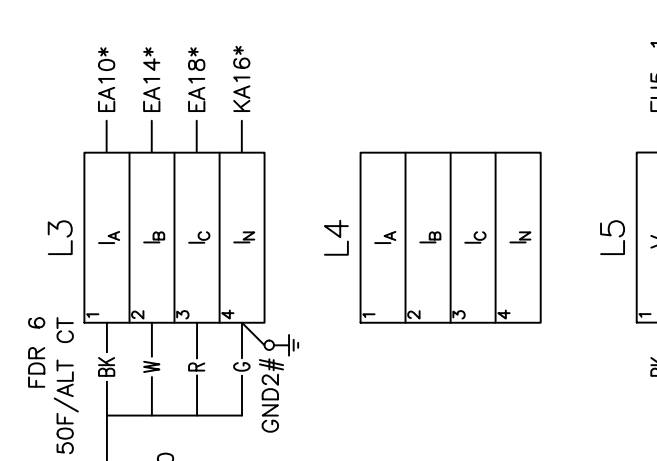
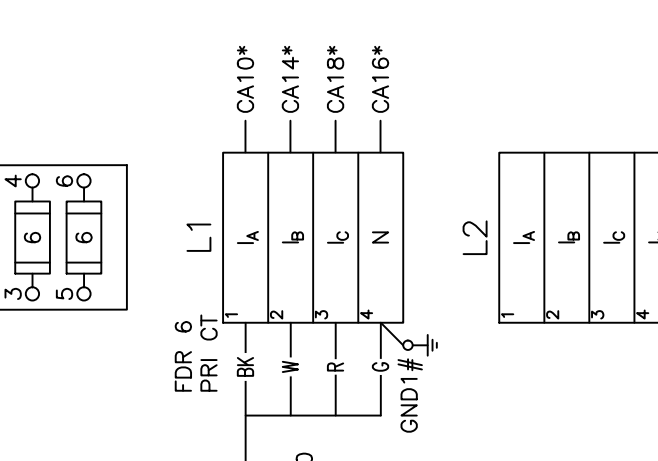
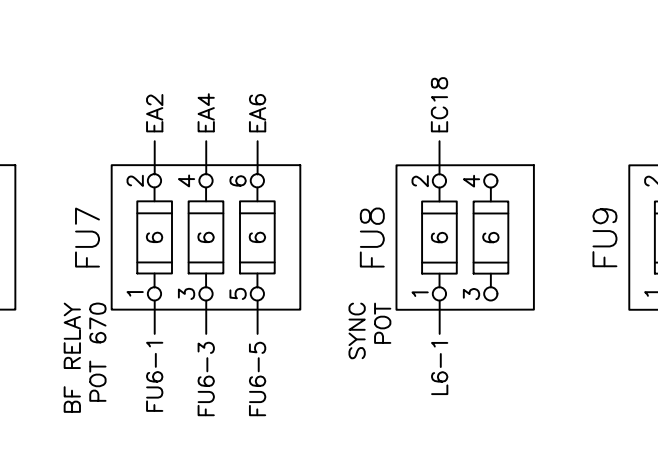
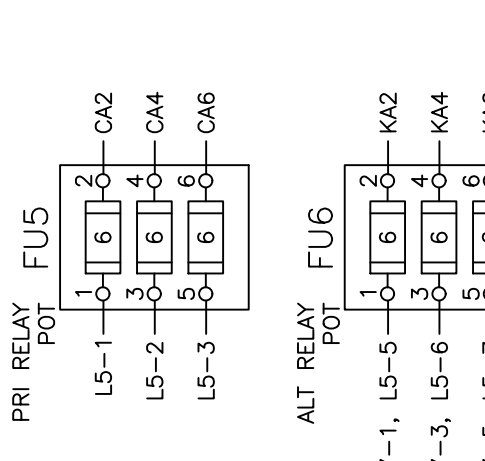
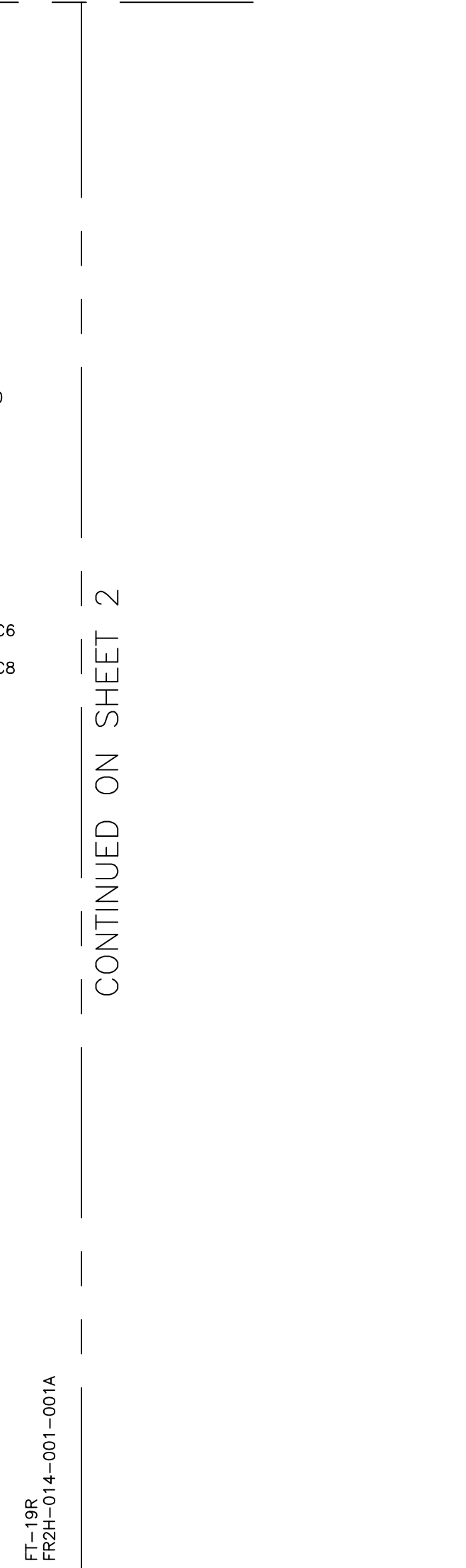
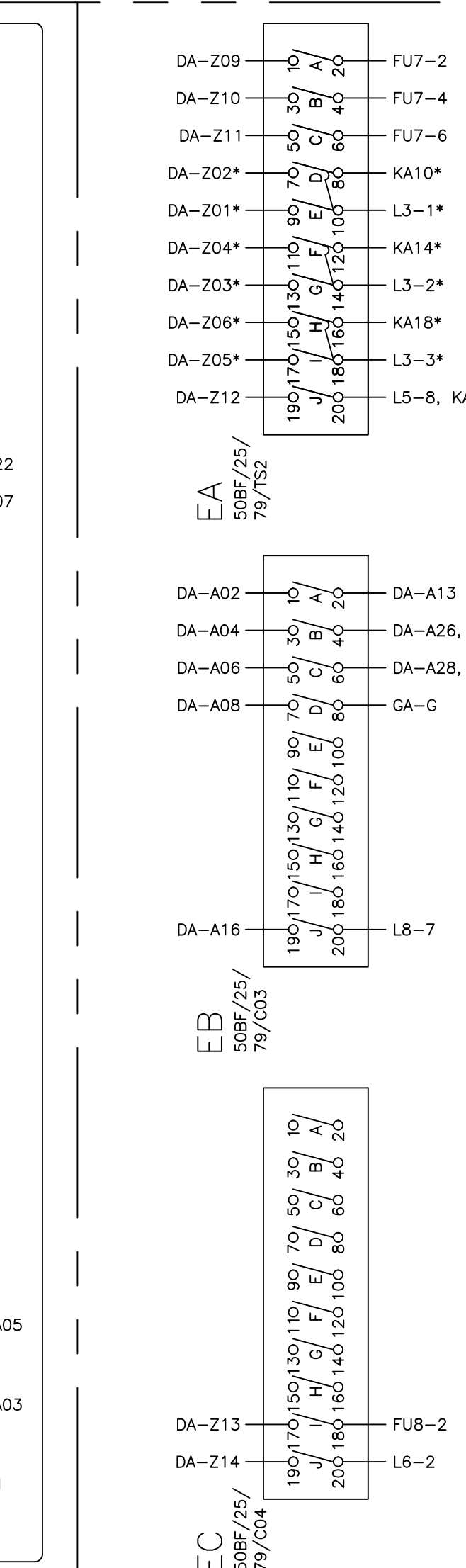
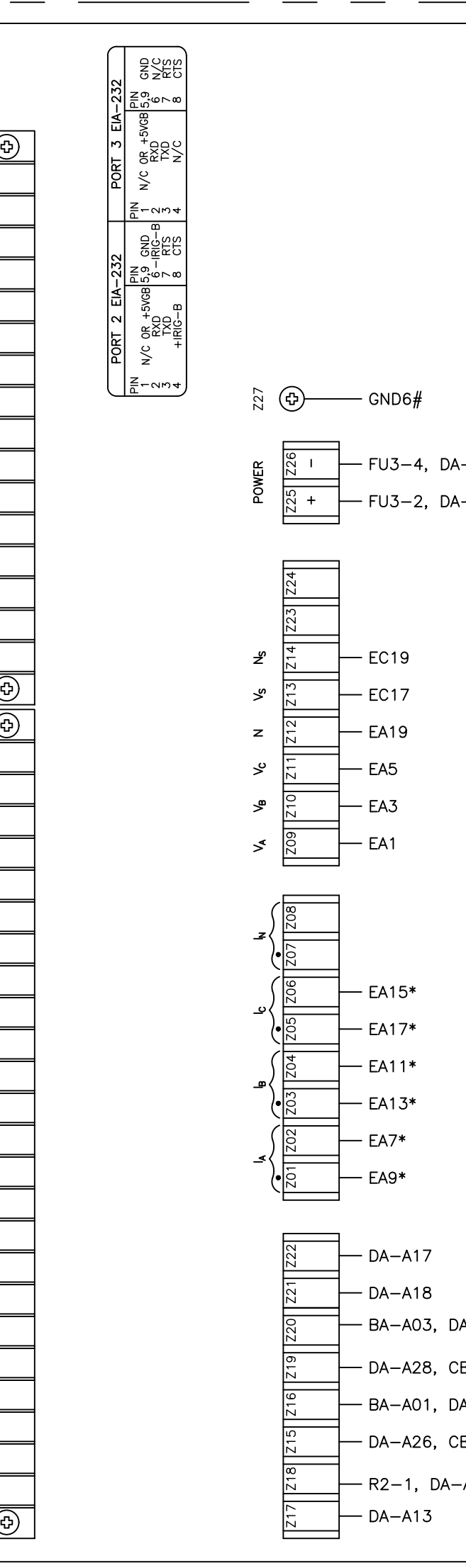
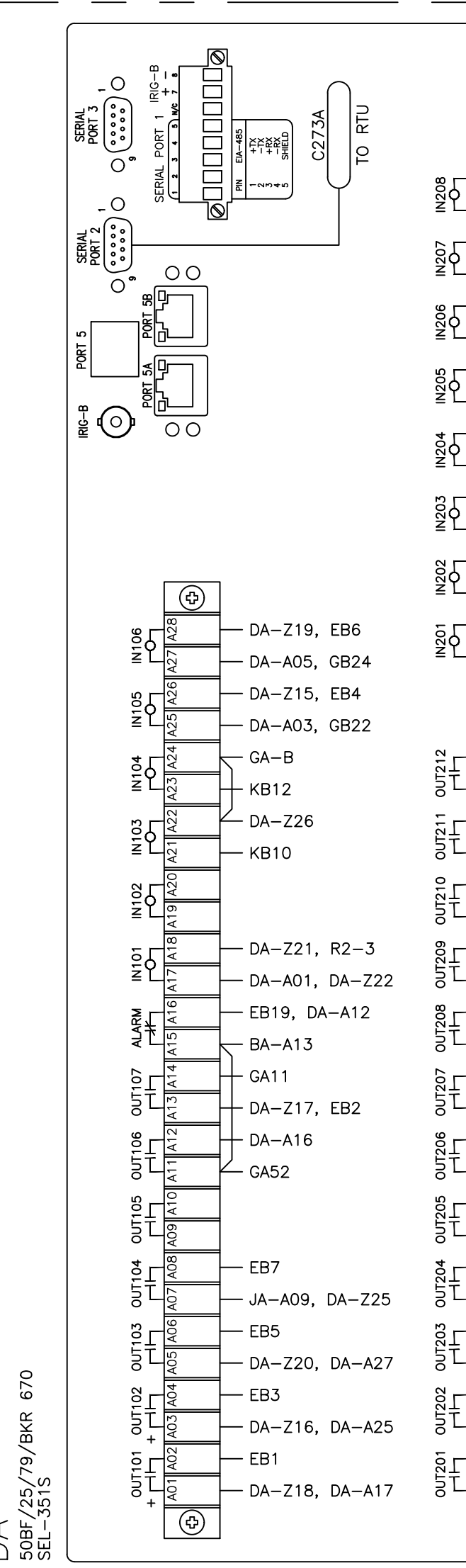
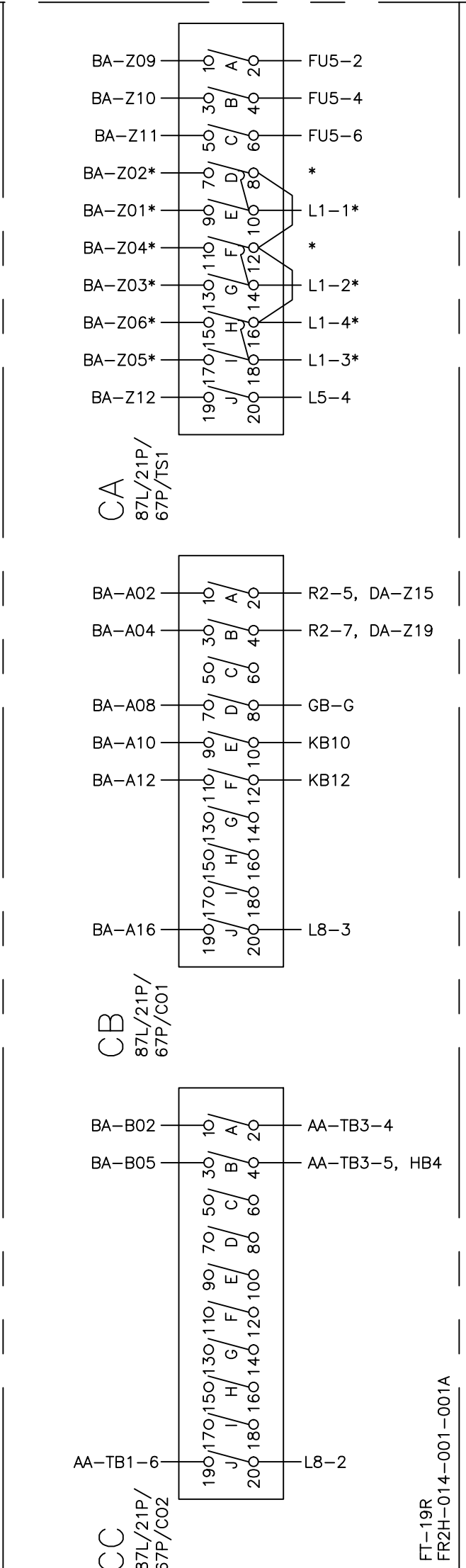
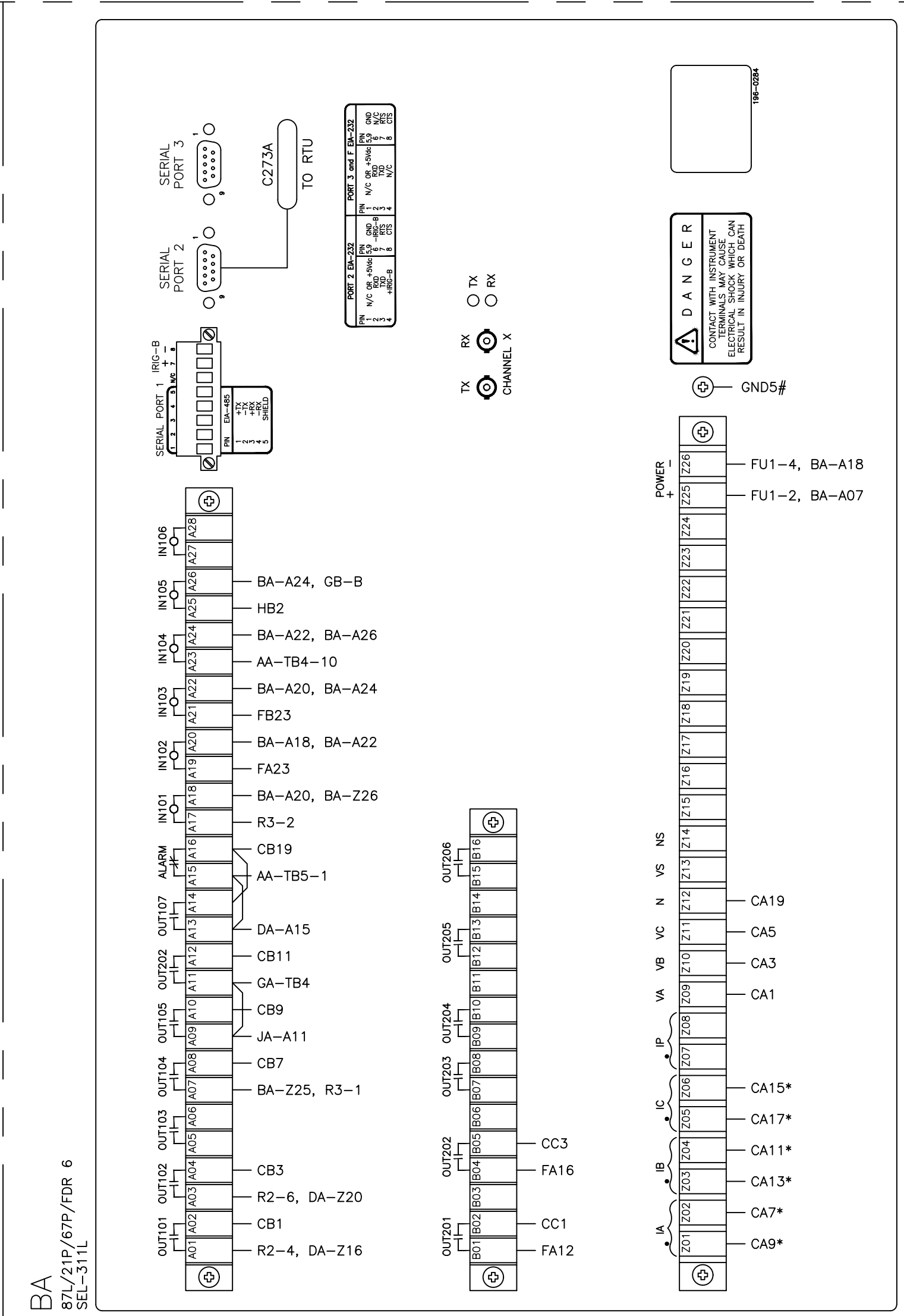
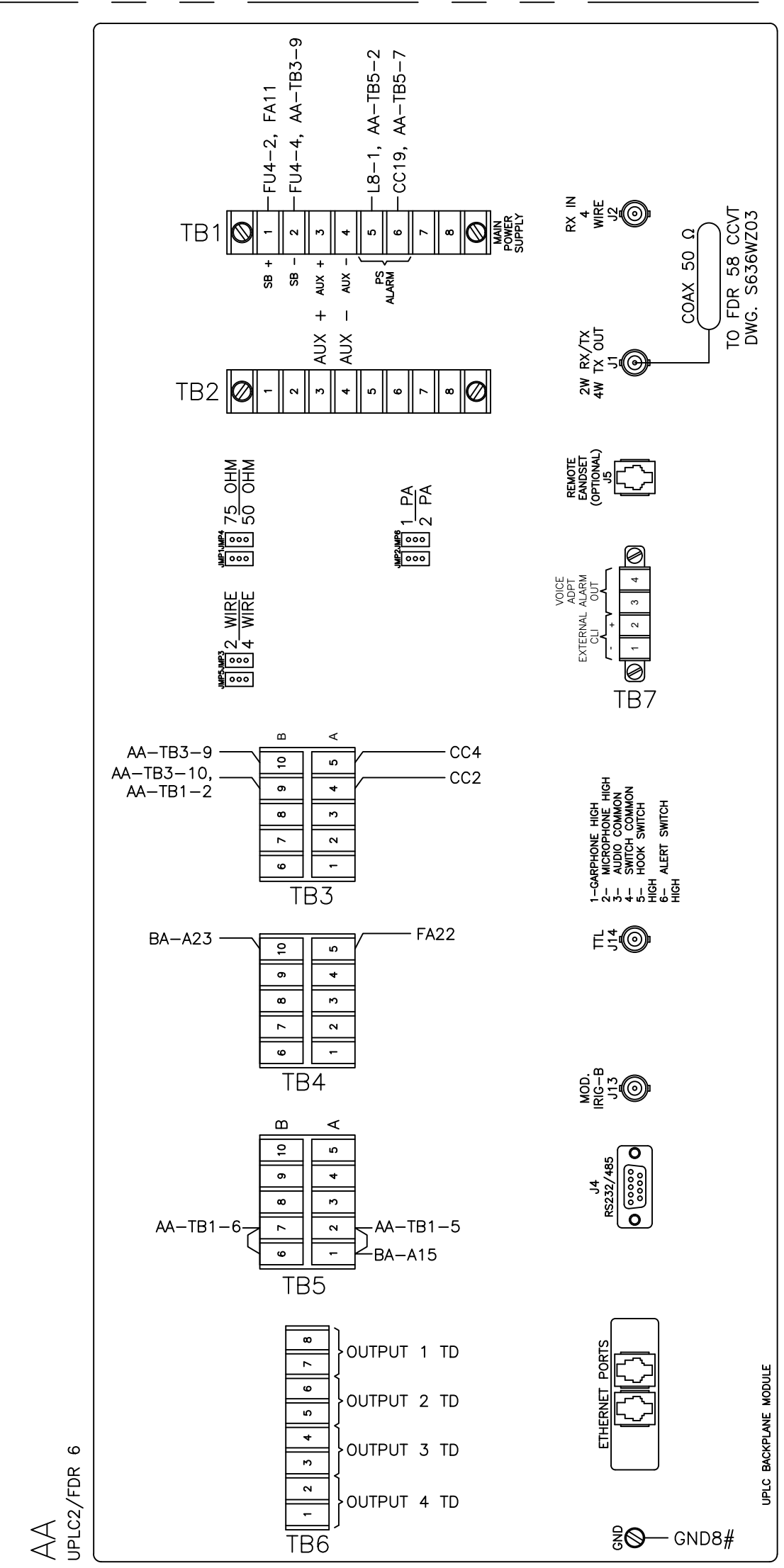
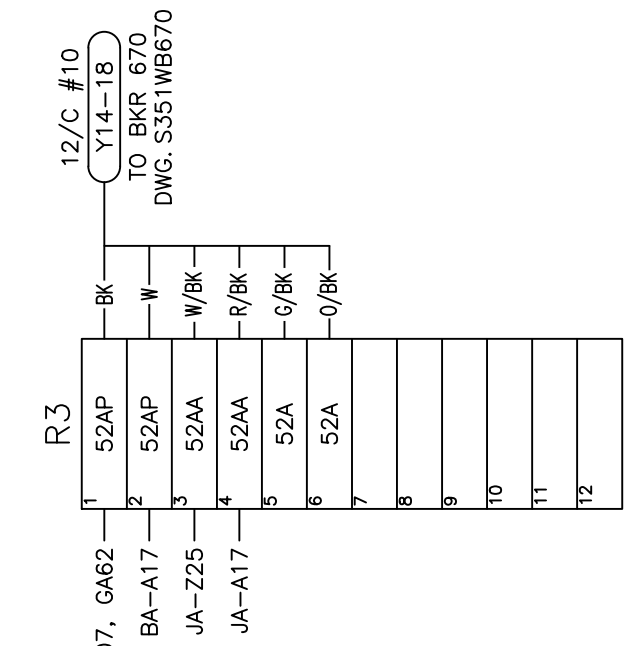
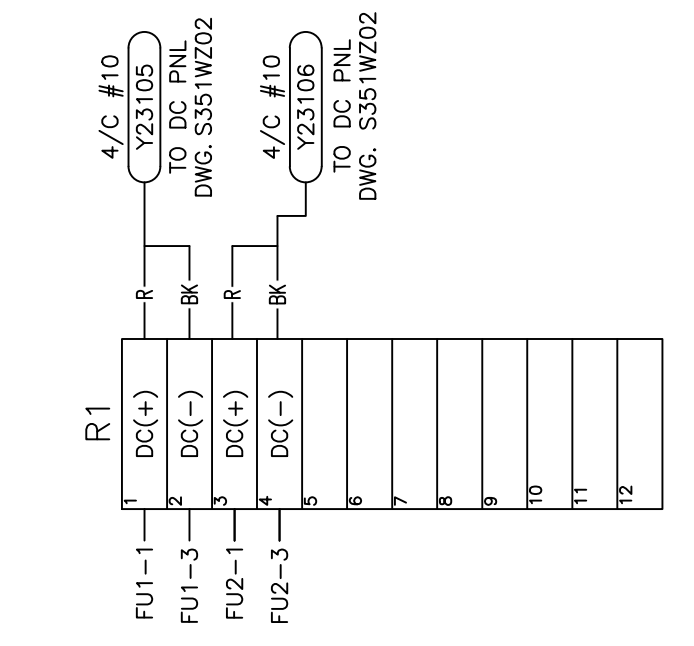
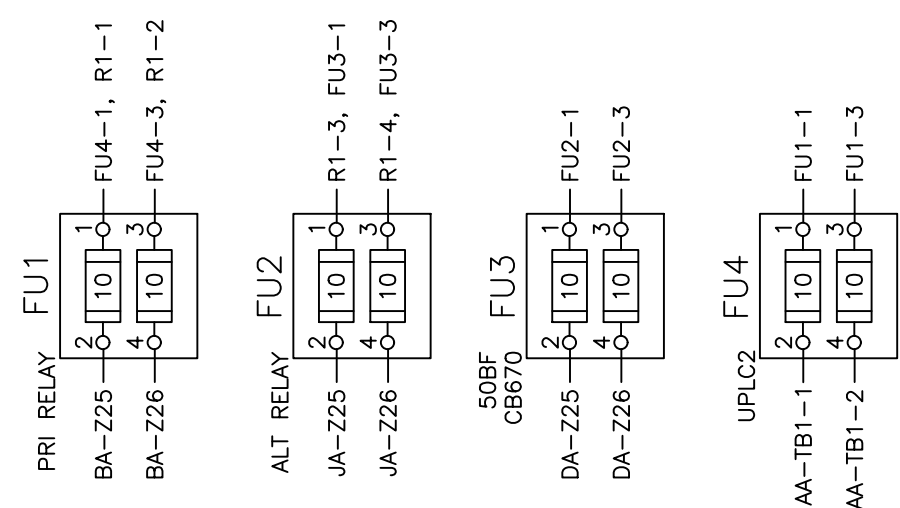
DESCRIPTION:	ISSUED FOR BID				
2	RF022-01145	8/24/2023	NC	BE	TM NC
DESCRIPTION:	F6 PNL REPLACEMENT & CAP BANK BKR ADDITION				
1	RF022-01145	5/9/23	NC	BE	TM NC
DESCRIPTION:	REVISED "AA"				
L	-	16 AUG 16	-	JT	RELAY -
DESCRIPTION:	BREAKER CHANGEOUT				
K	-	03 AUG 15	-	JT	RELAY -
REV. NO.	JOB NO.	DATE	DESIGN ENGR	DFTFR	DESIGN CHECK

GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69KV			
WIRING DIAGRAM PANEL 104 - 69KV CAPACITOR BANK & 138KV BUS DIFFERENTIAL			
ENGINEER:	SCALE: NONE	DATE: 5/11/87	REV.
DRAWN BY:	DRAWING NO.		2
CHECKED BY:	S351WP104		
APPROVED BY:	P.O. BOX 669 CHOUTEAU, OK 74337		



ISSUED FOR BID

PNL #105 138kV FDR 6 & BKR 670



REFERENCE DRAWINGS:
 S351DT01 CABLE SCHEDULE 2023 CONSTRUCTION
 S351SF061 PRIMARY RELAY 138kV FDR 6
 S351SF062 BKR FAIL RELAY 138kV BKR 670
 S351SF063 ALTERNATE RELAY 138kV FDR 6
 S351SF064 CARRIER (UPLC2) FDR 6
 S351SO12 THREE LINE AC CURRENT SCHEMATIC
 S351SO13 THREE LINE AC POTENTIAL SCHEMATIC
 S351SO15 ONE-LINE DIAGRAM 138kV AND CITY AUTOTRANSFORMER
 S351SR01-1 ANNUNCIATOR SCHEMATIC (SHEET 1)
 S351SR01-2 ANNUNCIATOR SCHEMATIC (SHEET 2)
 S351WP101 TERMINAL BLOCK WIRING DIAGRAM PANEL 101
 S351WP101-2 WIRING DIAGRAM PANEL 101
 S351WP103 WIRING DIAGRAM PANEL 103 CB 10870
 S351WP104 WIRING DIAGRAM PANEL 104 - 69kV CAPACITOR BANK & 138kV BUS DIFFERENTIAL
 S351WP104-2 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 2 OF 3)
 S351WP104-3 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 3 OF 3)
 S351WP105-2 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 2 OF 2)
 S351WZ02 CONTROL BUILDING AC/DC PANEL



REV NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK	ISSUE APPROV
1	RF022-01145	8/24/2023	NC	BE	TM	NC
0	RF022-01145	5/9/23	NC	BE	TM	NC

ISSUED FOR BID

GRAND RIVER DAM AUTHORITY
 STILLWATER KINZIE INTERCONNECT S351
 STILLWATER, OKLAHOMA 138/69kV

WIRING DIAGRAM
 138kV FDR 6 & BKR 670
 PNL #105 (SHEET 1 OF 2)

ENGINEER: NC SCALE: NONE DATE: 5/9/23 REV.
 DRAWN BY: BE DRAWING NO. SHEET 1 OF 2
 CHECKED BY: TM
 P.O. BOX 669 CHOUTEAU, OK 74337
 APPROVED BY: NC

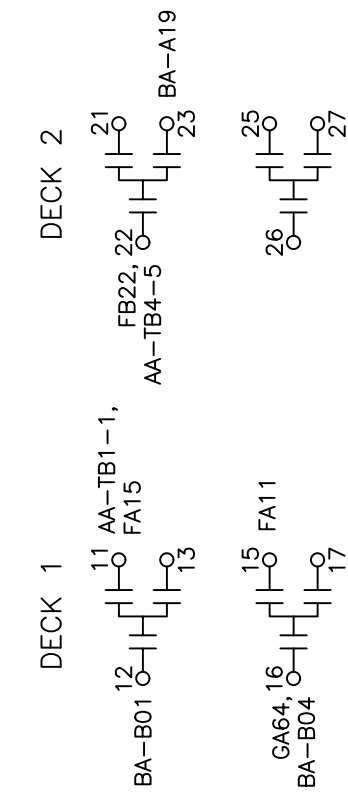
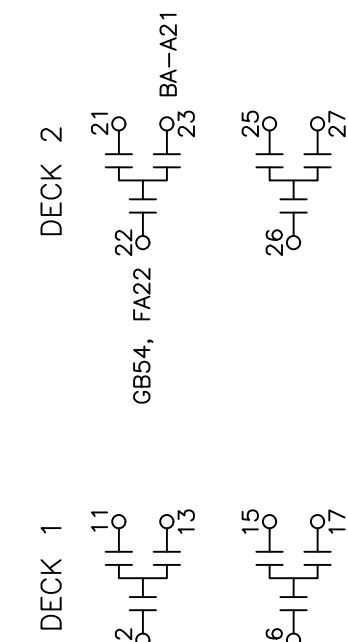
ALL WIRING SHALL BE GRAY SIS
 AWG-14 WIRING SPECIFICATION
 * GRAY SIS AWG-12-CURRENT
 # GREEN SIS AWG-12 GROUND

CONTINUED ON SHEET 2

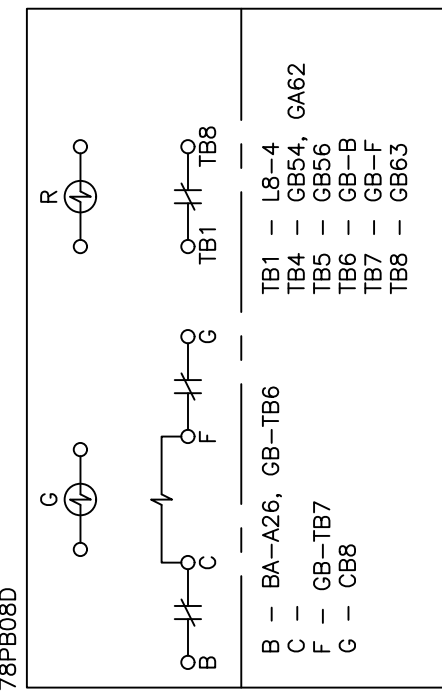
CONTINUED ON SHEET 1

FB
4.3DIT/FDR 6
24202B

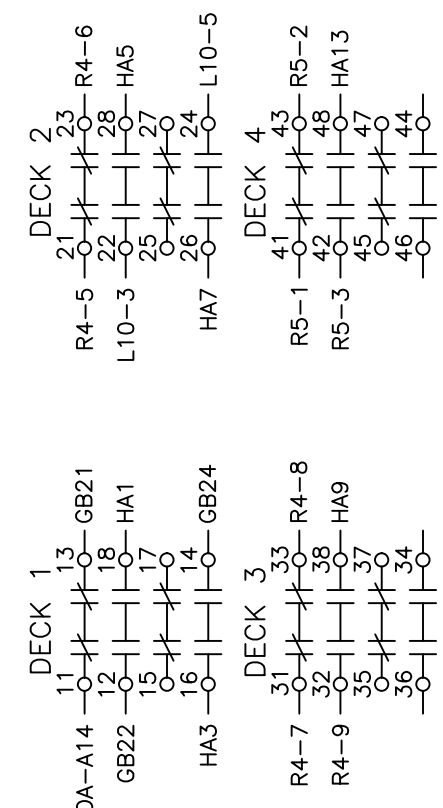
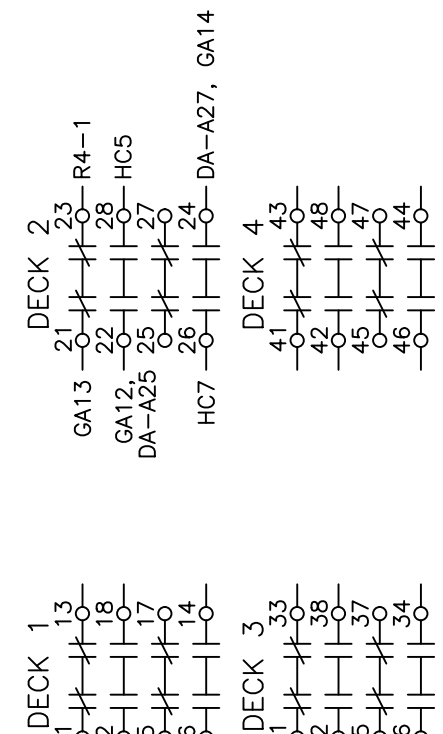
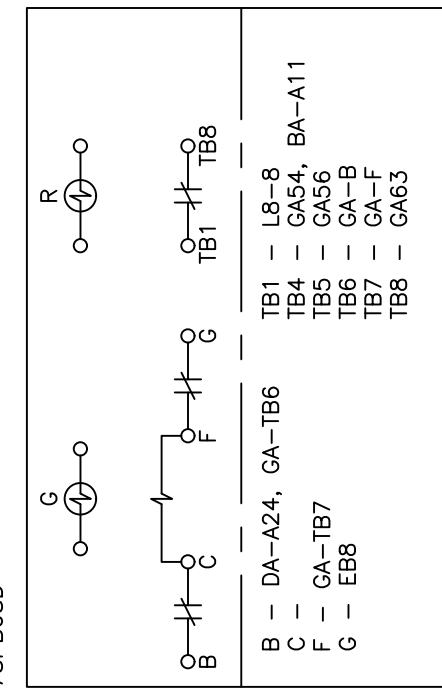
FA
85CO/FDR 6
24202B



GB
86TTP/FDR 6
78F606D



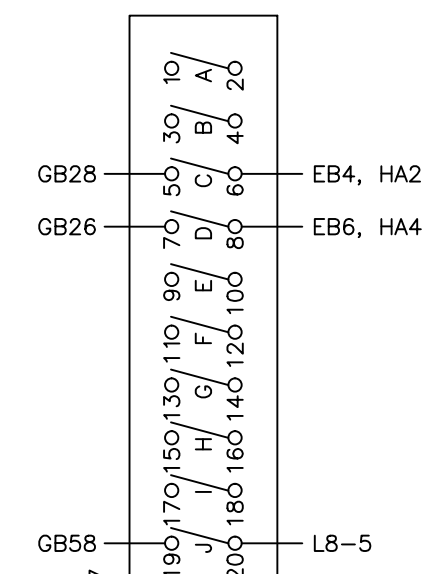
GA
86BF/670
78F606D



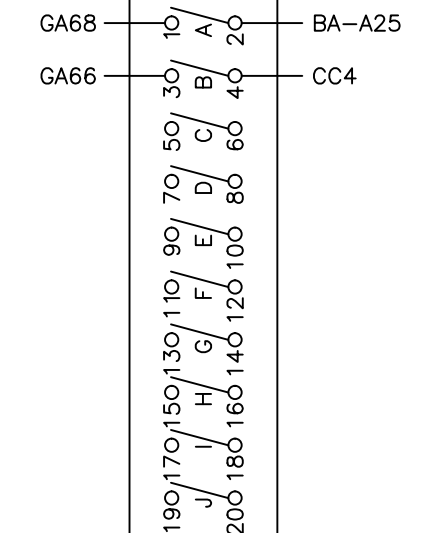
REFERENCE DRAWINGS:

- S351DT01 CABLE SCHEDULE 2023 CONSTRUCTION
- S351SF061 PRIMARY RELAY 138kV FDR 6
- S351SF062 BKR FAIL RELAY 138kV BKR 670
- S351SF063 ALTERNATE RELAY 138kV FDR 6
- S351SF064 CARRIER (UPLC2) FDR 6
- S351SO12 THREE LINE AC CURRENT SCHEMATIC
- S351SO13 THREE LINE AC POTENTIAL SCHEMATIC
- S351SO15 ONE-LINE DIAGRAM 138kV AND CITY AUTOTRANSFORMER
- S351SR01-1 ANNUNCIATOR SCHEMATIC (SHEET 1)
- S351SR01-2 ANNUNCIATOR SCHEMATIC (SHEET 2)
- S351WP101 TERMINAL BLOCK WIRING DIAGRAM PANEL 101
- S351WP101-2 WIRING DIAGRAM PANEL 101
- S351WP103 WIRING DIAGRAM PANEL 103 CB 10870
- S351WP104 WIRING DIAGRAM PANEL 104 - 69kV CAPACITOR BANK & 138kV BUS DIFFERENTIAL
- S351WP104-2 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 2 OF 3)
- S351WP104-3 RELAY PNL 104 CAP BANK WIRING DIAGRAM (SH. 3 OF 3)
- S351WP105-1 WIRING DIAGRAM 138kV FDR 6 & BKR 670 PNL #105 (SH. 1 OF 2)
- S351WZ02 CONTROL BUILDING AC/DC PANEL

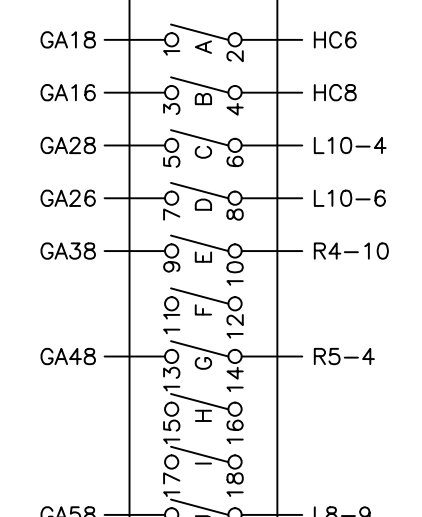
HC
86TTP/CO7



HB
86BF/CO6

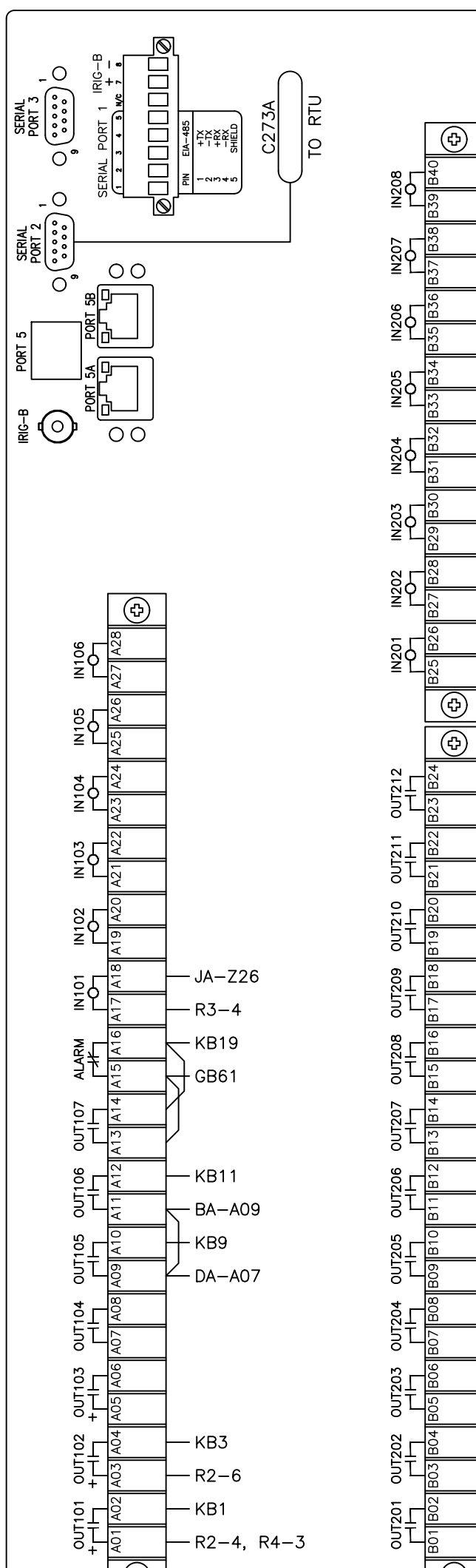


HA
86BF/CO5

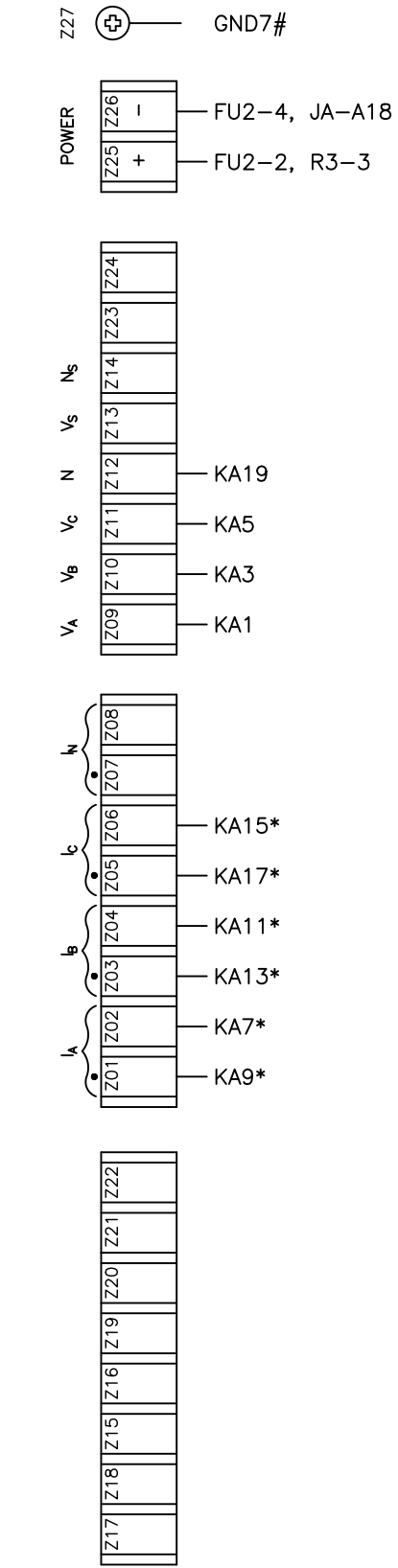


FT-19R
FR2H-001-001-001A

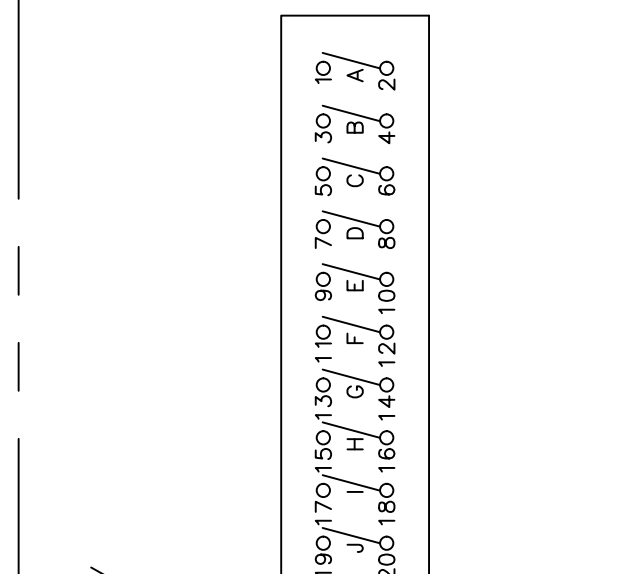
JA
21A/67A/FDR 6
SEL-311C



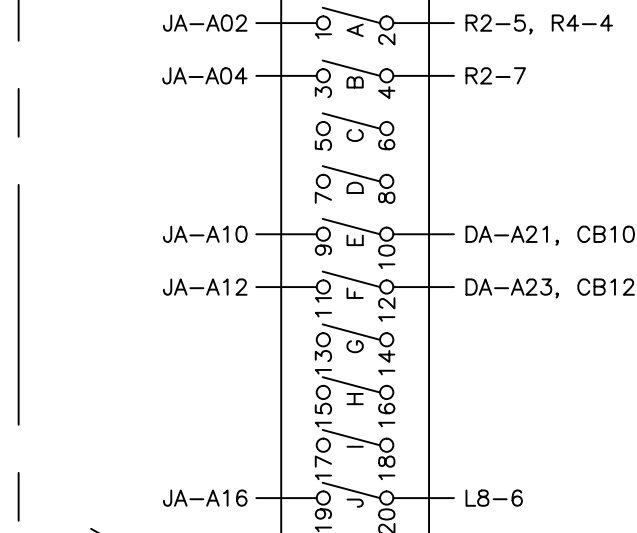
PORT Z EA-232
PORT Z EA-232



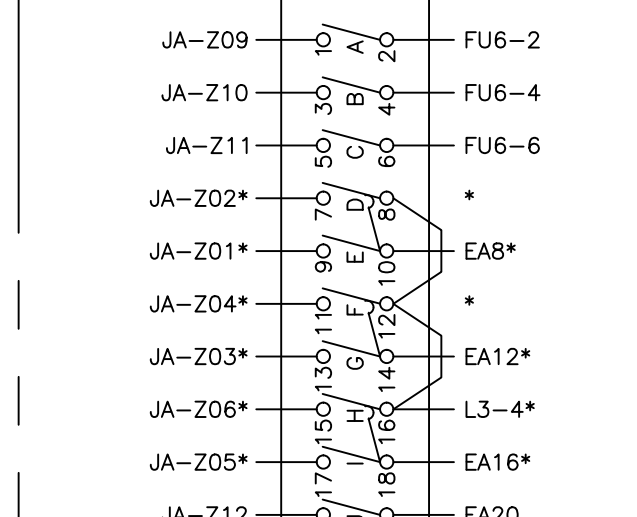
KC
21A/67A/
CO8



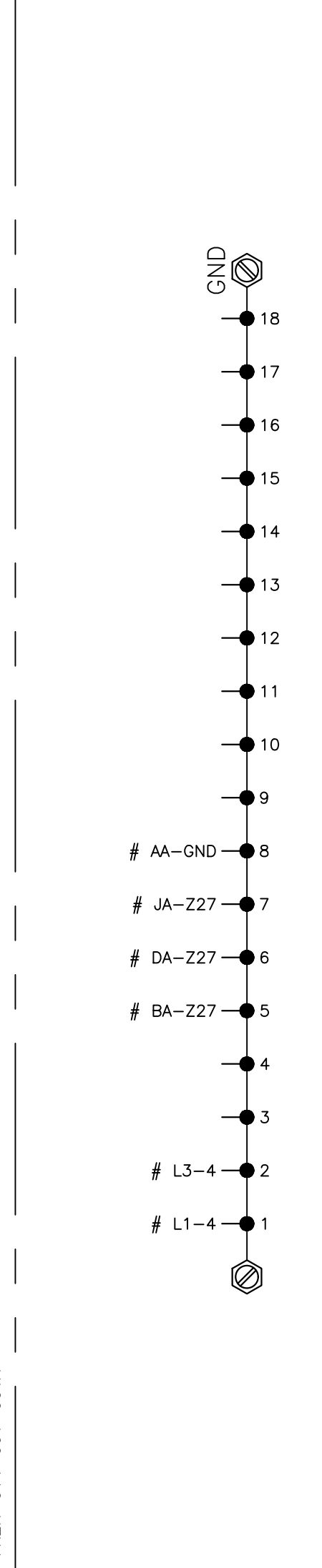
KB
21A/67A/
CO8



KA
21A/67A/
TS3



FT-19R
FR2H-014-001-001A



4555 W MEMORIAL RD.
OKLAHOMA CITY, OK 73142

REV NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK	ISSUE APPROV

ISSUED FOR BID

GRAND RIVER DAM AUTHORITY
STILLWATER KINZIE INTERCONNECT S351
STILLWATER, OKLAHOMA 138/69kV

WIRING DIAGRAM
161kV FDR 6 & BKR 670
PNL #105 (SHEET 2 OF 2)

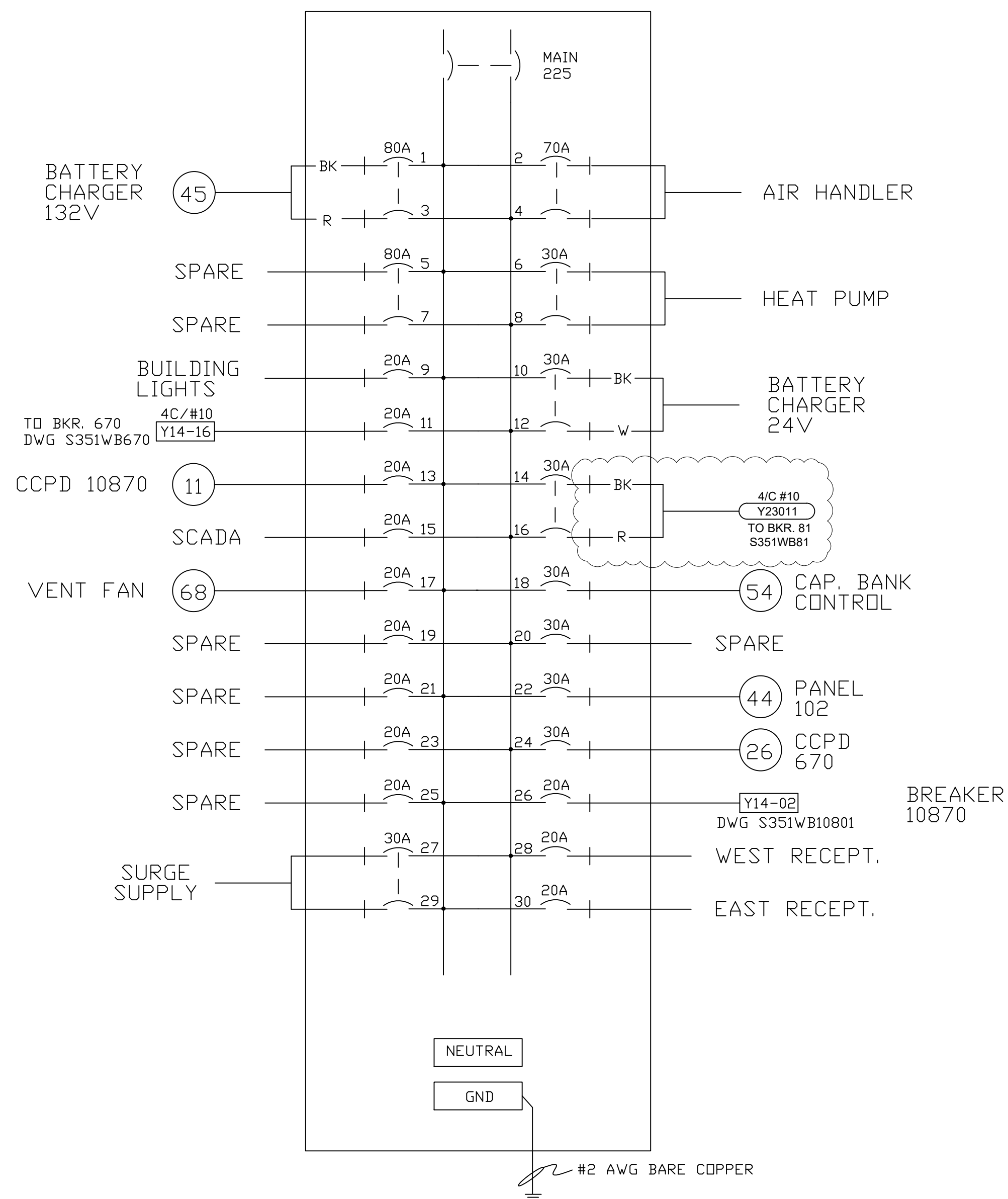
ENGINEER: NC
DRAWN BY: BE
CHECKED BY: TM
APPROVED BY: NC

SCALE: NONE
DATE: 5/9/23
SHEET 2 OF 2

REV. 1

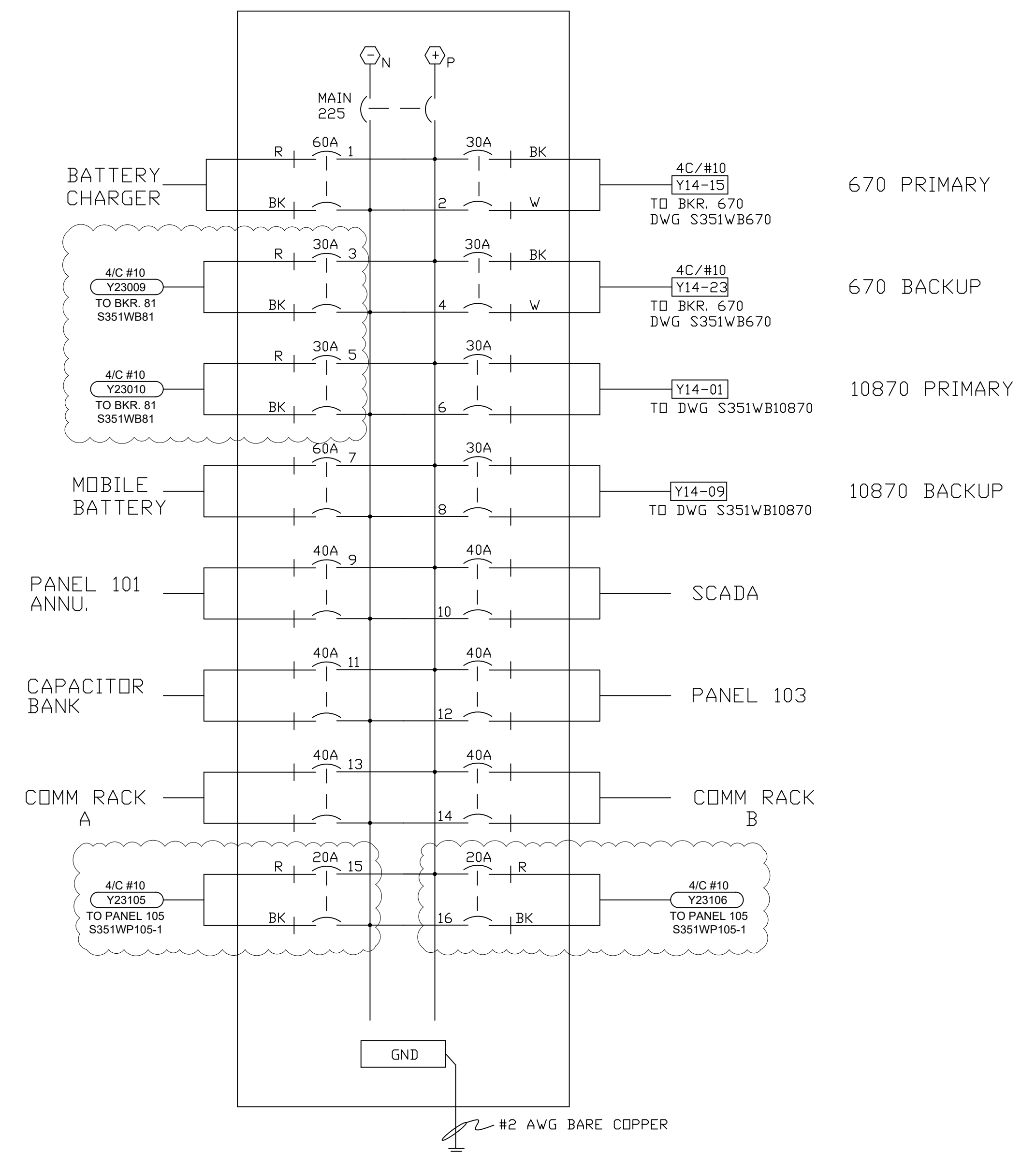
P.O. BOX 669
CHOUTEAU, OK 74337

ALL WIRING SHALL BE GRAY SIS
AWG-14 WIRING SPECIFICATION
* GRAY SIS AWG-12-CURRENT
GREEN SIS AWG-12 GROUND



120/240VAC 1-PHASE PANELBOARD AC4

AC4



125VDC PANELBOARD

DC1



4555 W MEMORIAL RD.
OKLAHOMA CITY, OK 73142

DESCRIPTION: ISSUED FOR BID						
4	RF022-01145	8/24/2023	NC	BE	TM	NC
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION						
3	RF022-01145	5/9/23	NC	BE	TM	NC
BREAKER CHANGEOUT						
2	RF014-00635	04 AUG 15	-	JT	RELAY	-
ASBUILT						
1	-	1/5/05	-	RLS	-	-
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPROVD

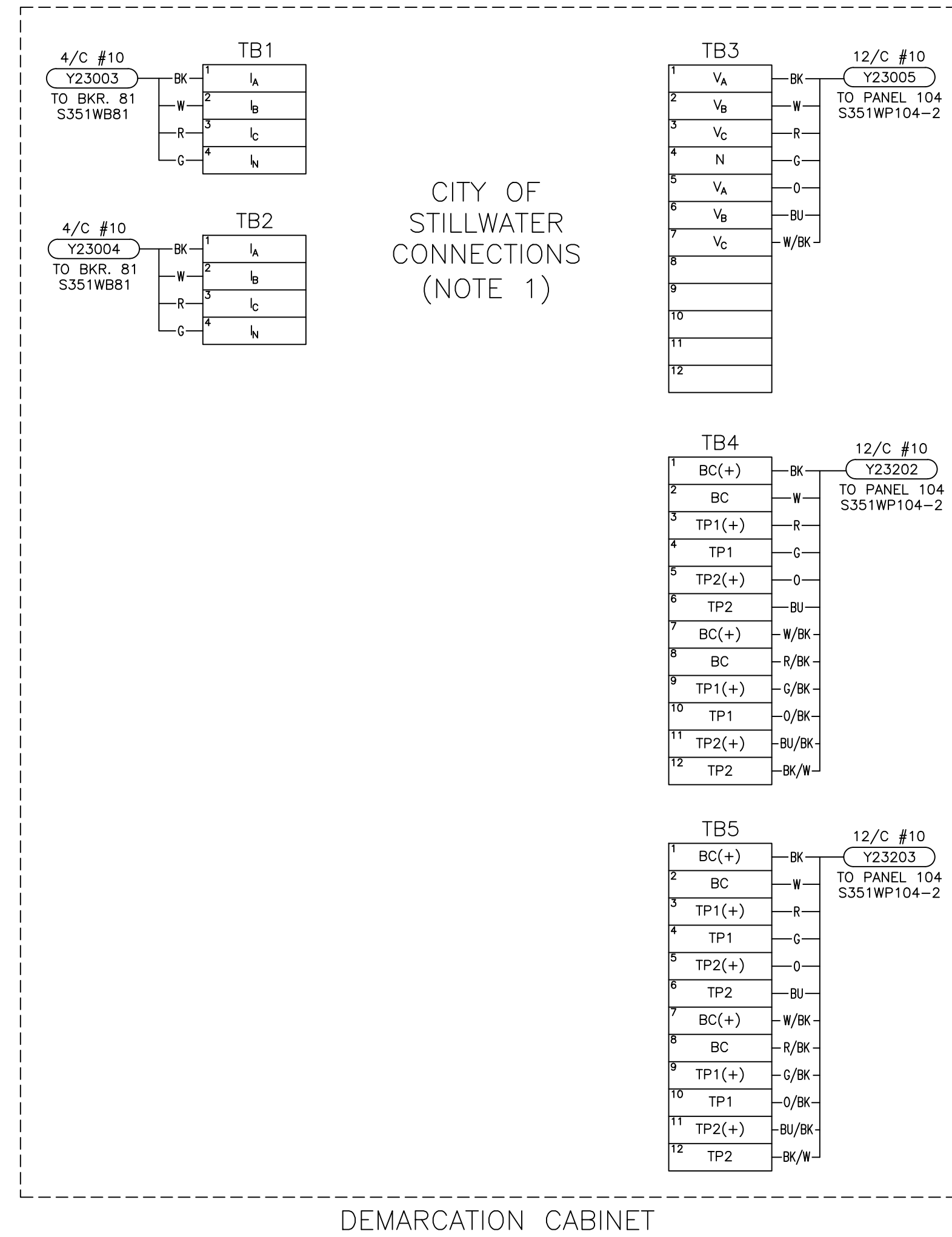
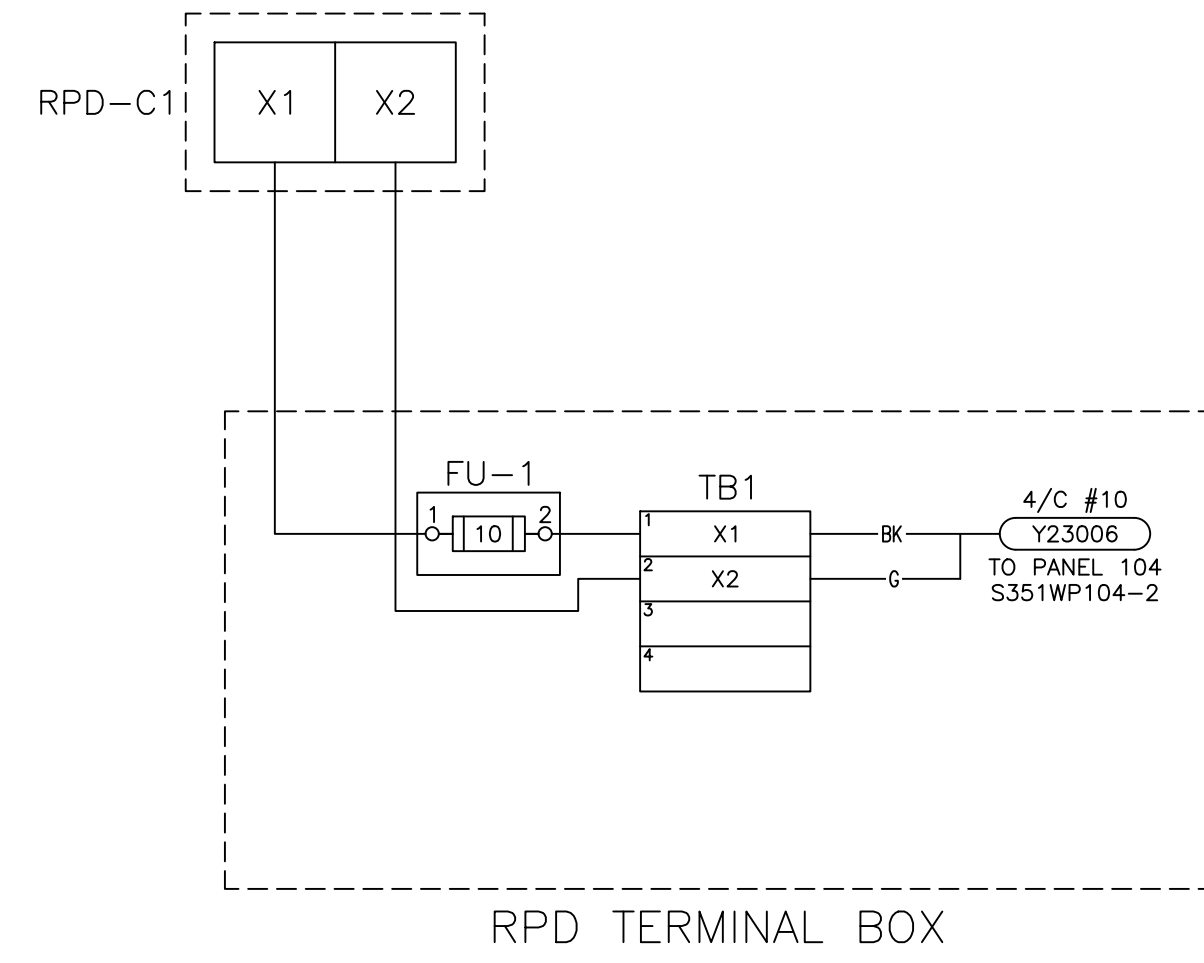
ISSUED FOR BID

GRAND RIVER DAM AUTHORITY
STILLWATER KINZIE INTERCONNECT S351
STILLWATER, OKLAHOMA 138/69KV

CONTROL BUILDING
AC/DC PANEL

GRDA
P.O. BOX 669
CHOUTEAU, OK 74337

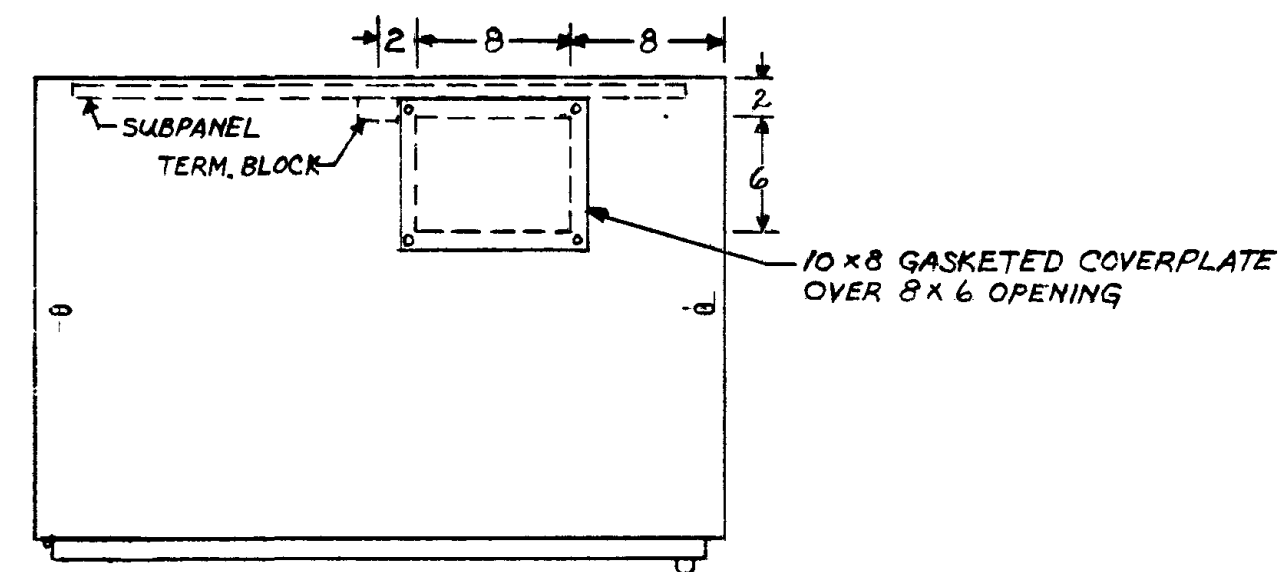
ENGINEER:	SCALE: NONE	DATE: 1/5/05	REV.
DRAWN BY: RLS	DRAWING NO.		4
CHECKED BY:	S351WZ02		
APPROVED BY:	OLD DRAWING NO: D-2647		



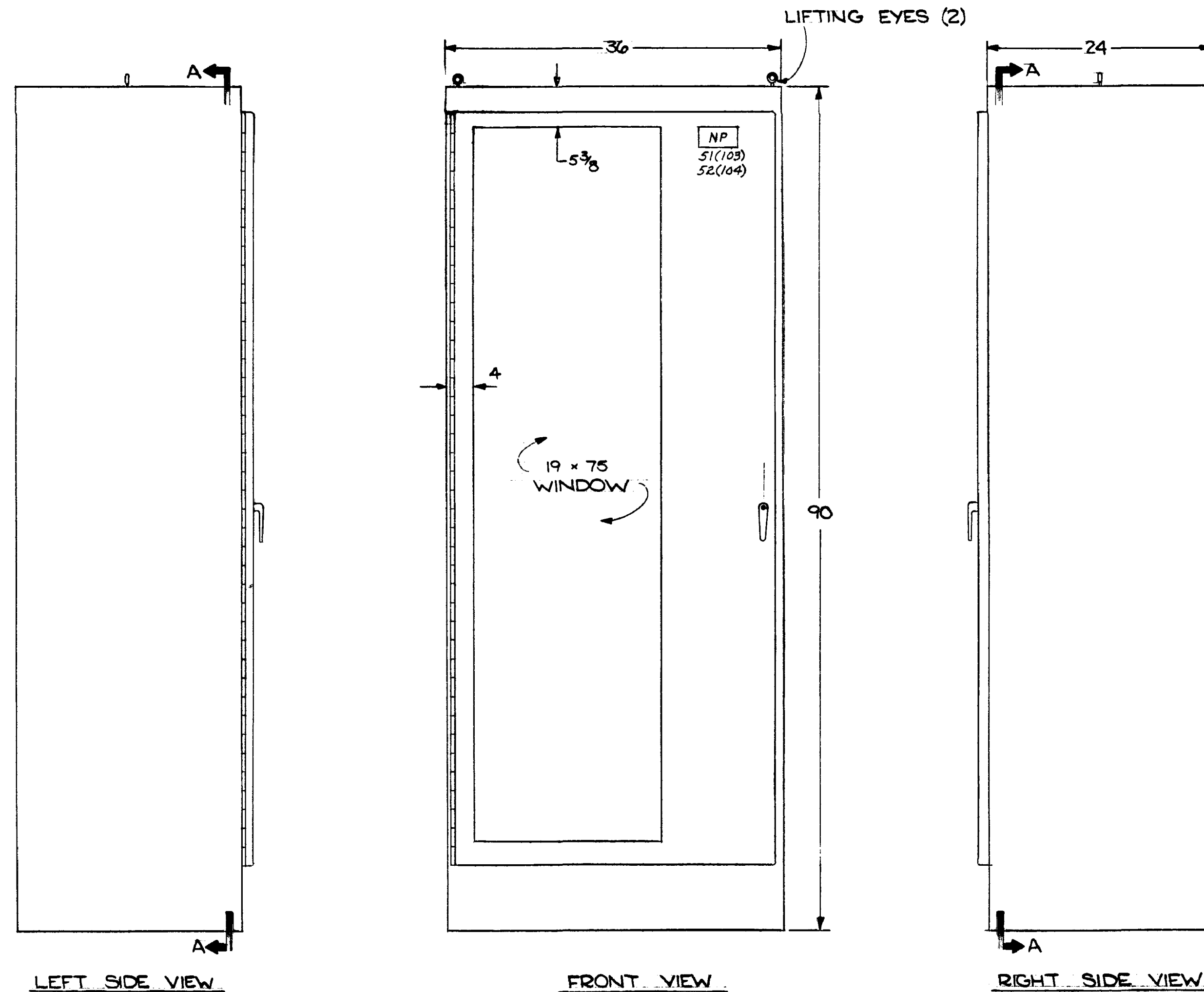
NOTES:
 1. FOR 2023 CONSTRUCTION, TEMPORARY CONNECTION TO CITY OF STILLWATER'S SINGLE-PHASE LINE PT TO BE MADE AT POINTS TB3-4 AND TB3-7 AT DEMARCATION CABINET.



DESCRIPTION: ISSUED FOR BID							ISSUED FOR BID			
1	RF022-01145	8/24/2023	NC	BE	TM	NC	GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kV			
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION							WIRING DIAGRAM RPD TERMINAL BOX AND DEMARCATION CABINET			
0	RF022-01145	5/9/23	NC	BE	TM	NC	ENGINEER: NC SCALE: NONE DATE: 5/9/23 REV.			
							DRAWN BY: BE DRAWING NO. S351WZ03			
							CHECKED BY: TM			
							P.O. BOX 669 CHOUTEAU, OK 74337			
							APPROVED BY: NC			
REV. NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPROVD				



TOP VIEW

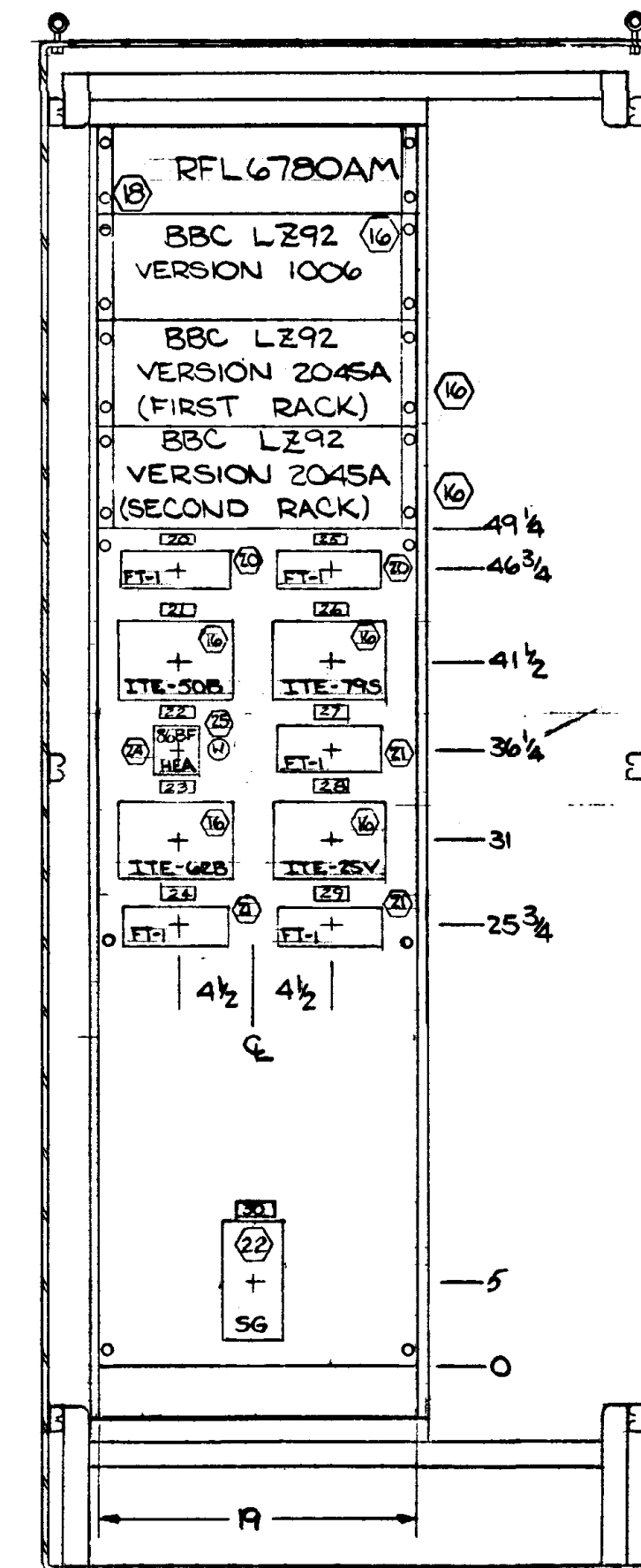


LEFT SIDE VIEW

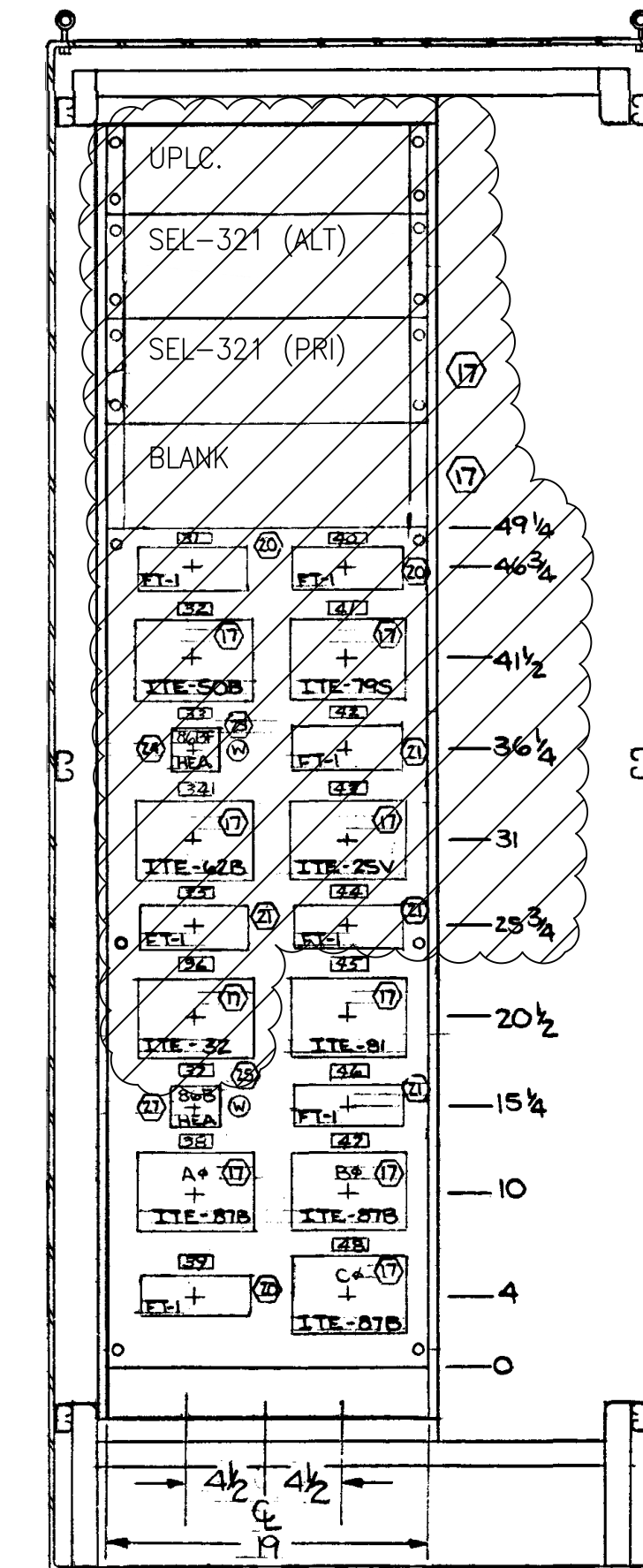
FRONT VIEW

RIGHT SIDE VIEW

2 REQUIRED FOR PANELS 103 & 104



OCB 10870
SECTION A-A
PANEL 103

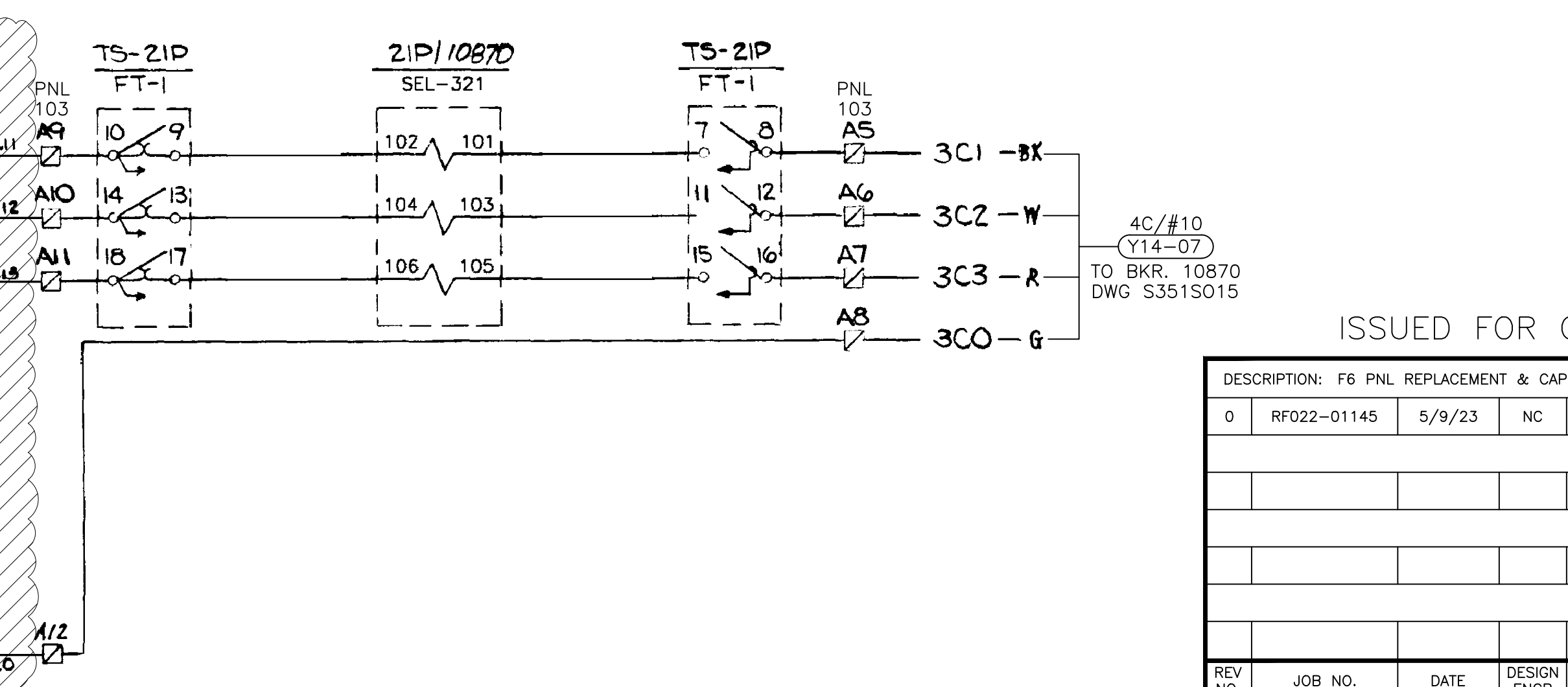
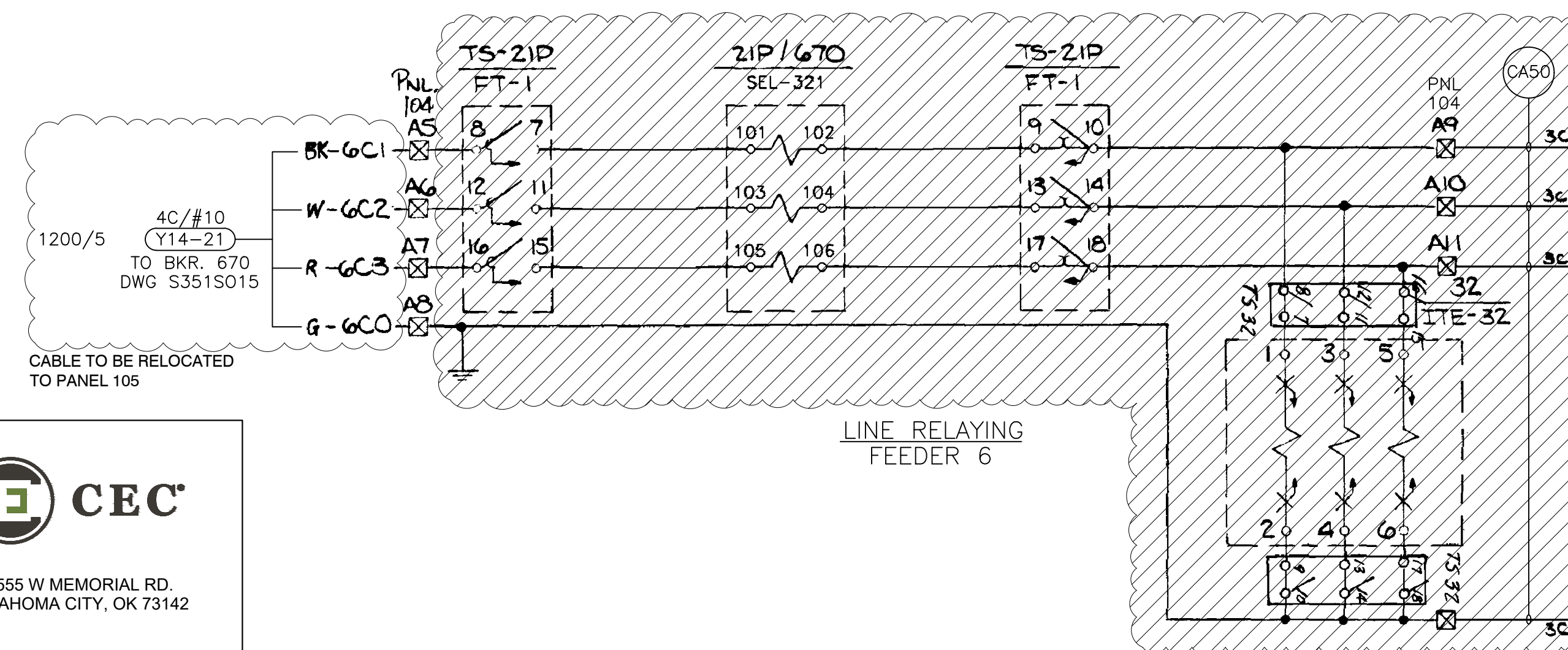
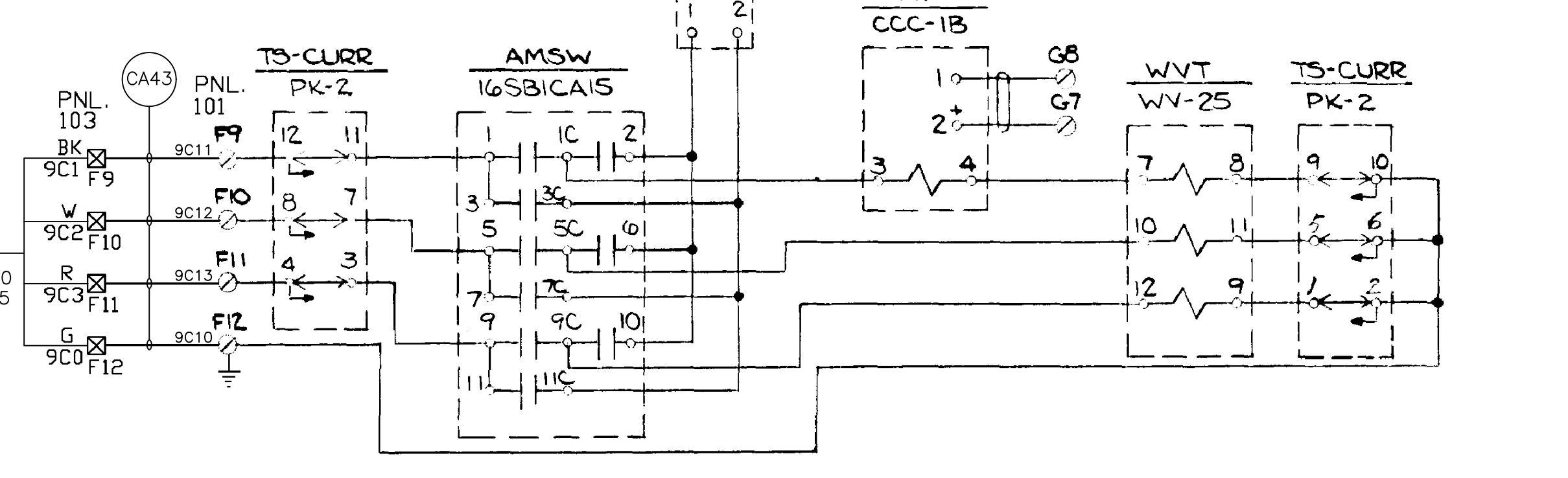
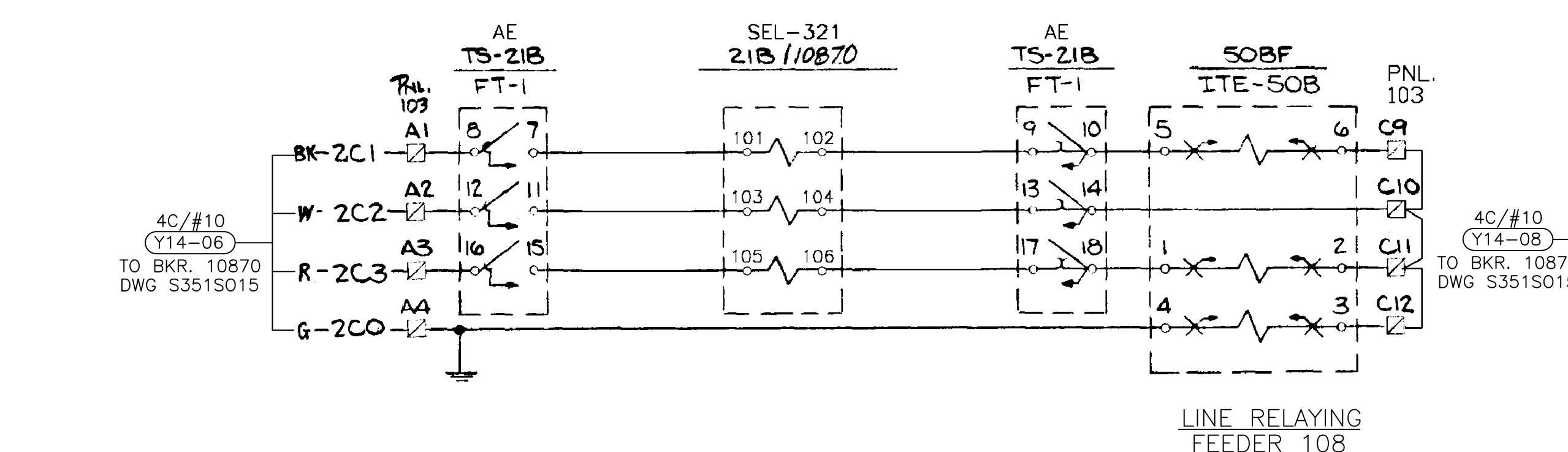
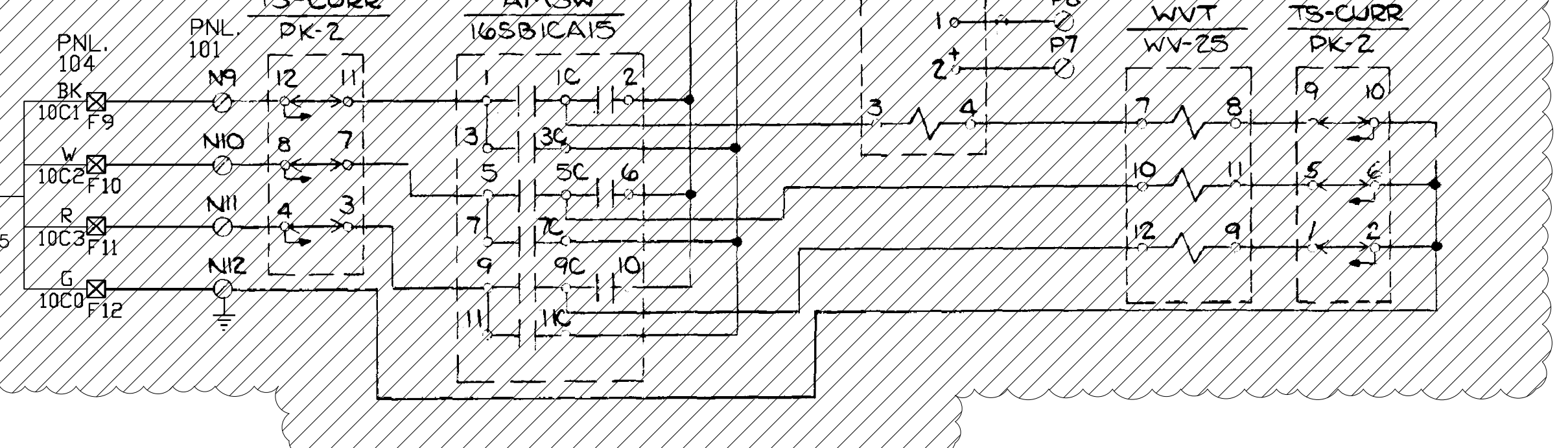
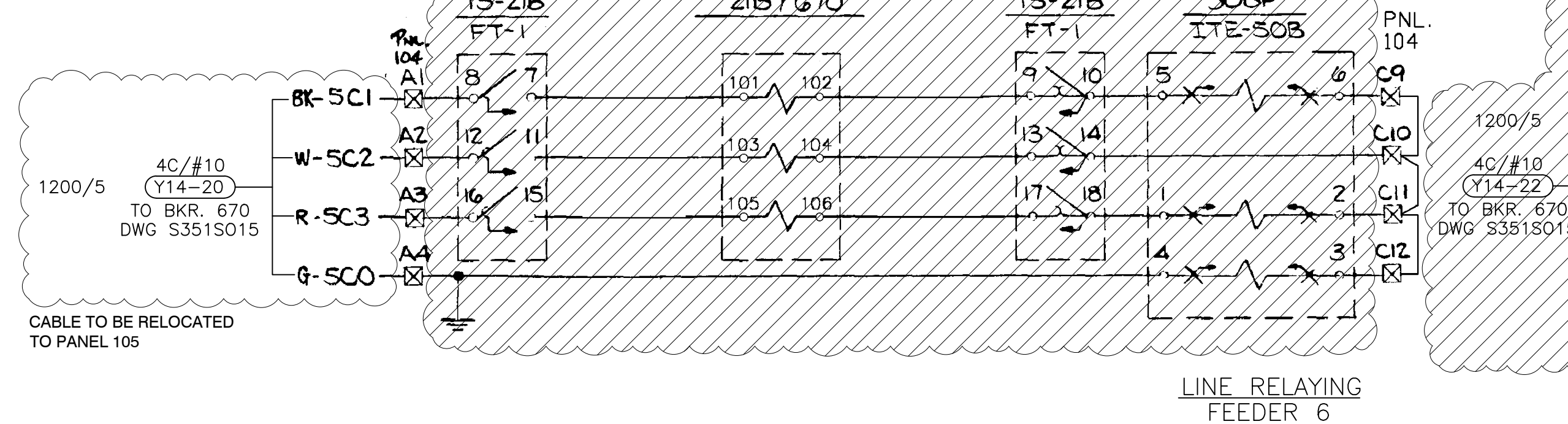
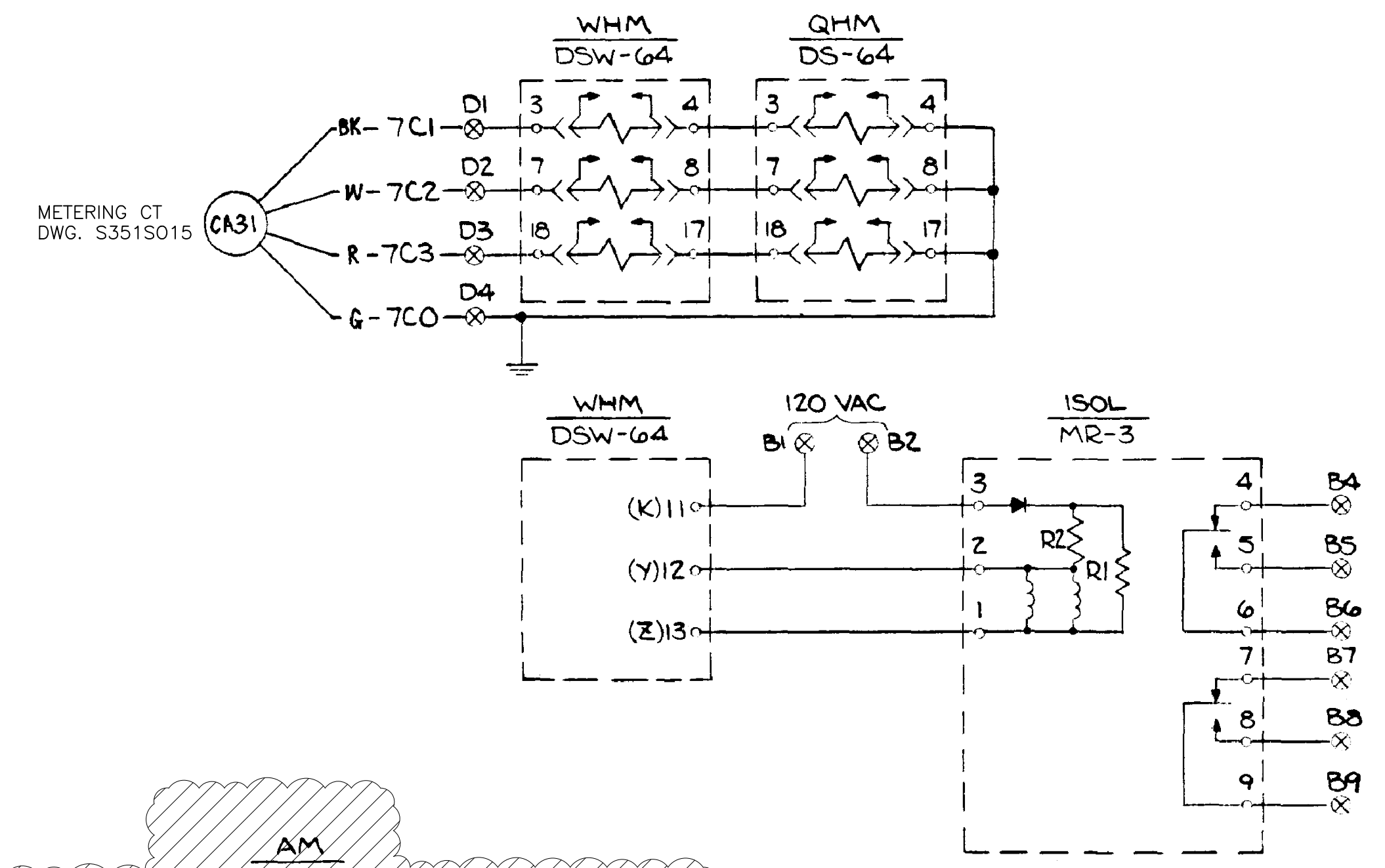
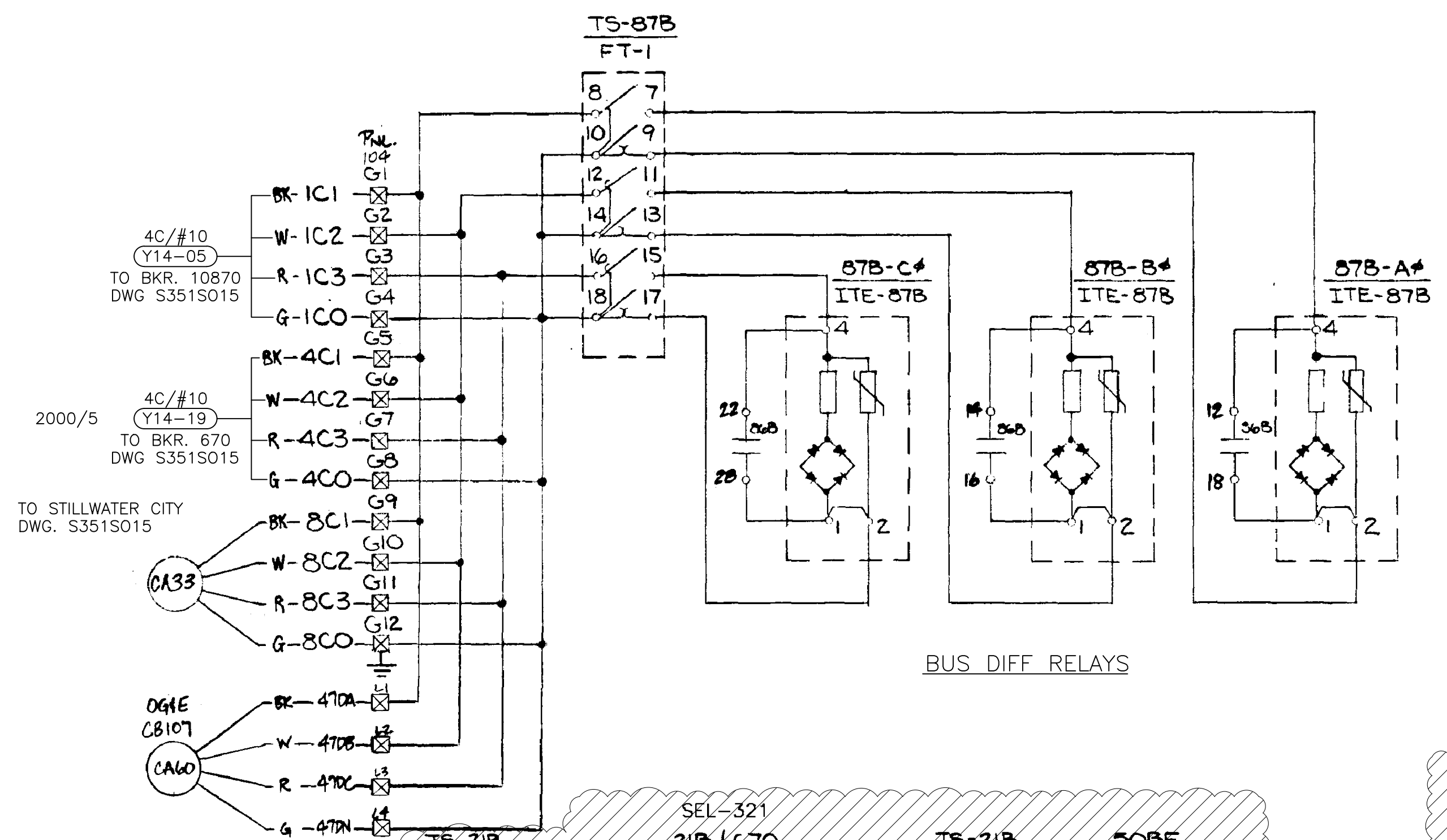


OCB 670
SECTION A-A
PANEL 104

NOTE
 1. STRUCTURES ARE HOFFMAN ENGINEERING NEMA 12 ENCLOSURE, CAT. # A-903624FS WITH SWING-OUT RACK MTG. FRAME, CAT. # A-903650F19
 2. STRUCTURES TO BE PAINTED AS FOLLOWS:
 EXTERIOR - ANSI-61 GRAY LACQUER
 INTERIOR - HOFFMAN WHITE ENAMEL
 3. ○ - HARLO BILL OF MATERIAL ITEM NO.



DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION						ISSUED FOR CONSTRUCTION				
0	RF022-01145	5/9/23	NC	RE	TM	NC	GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69KV			
							STEEL DETAILS & ELEVATIONS FOR PANELS 103 & 104 DEMOLITION			
							ENGINEER: NC SCALE: NONE DATE: 5/9/23 REV. 0			
							DRAWN BY: RE CHECKED BY: TM S351PP001-DEMO			
							P.O. BOX 669 CHOUTEAU, OK 74337 APPROVED BY: NC			



REFERENCE DRAWINGS

S351S015 OGE INTERCONNECT ONE-LINE DIAGRAM METERING & RELAYING

S351S014 AC SCHEMATIC DIAGRAM

- NOTE
- ⊙ - TERMINAL BLOCK POINT ON PANEL 101
 - ⊗ - TERMINAL BLOCK POINT ON PANEL 102
 - ⊠ - TERMINAL BLOCK POINT ON PANEL 103
 - ⊡ - TERMINAL BLOCK POINT ON PANEL 104
 - ⊞ - TERMINAL BLOCK CONNECTED TO HARNESS CABLES FOR 21P & 21B RELAYS

HARLO CORPORATION

DR. BY: J. JOE

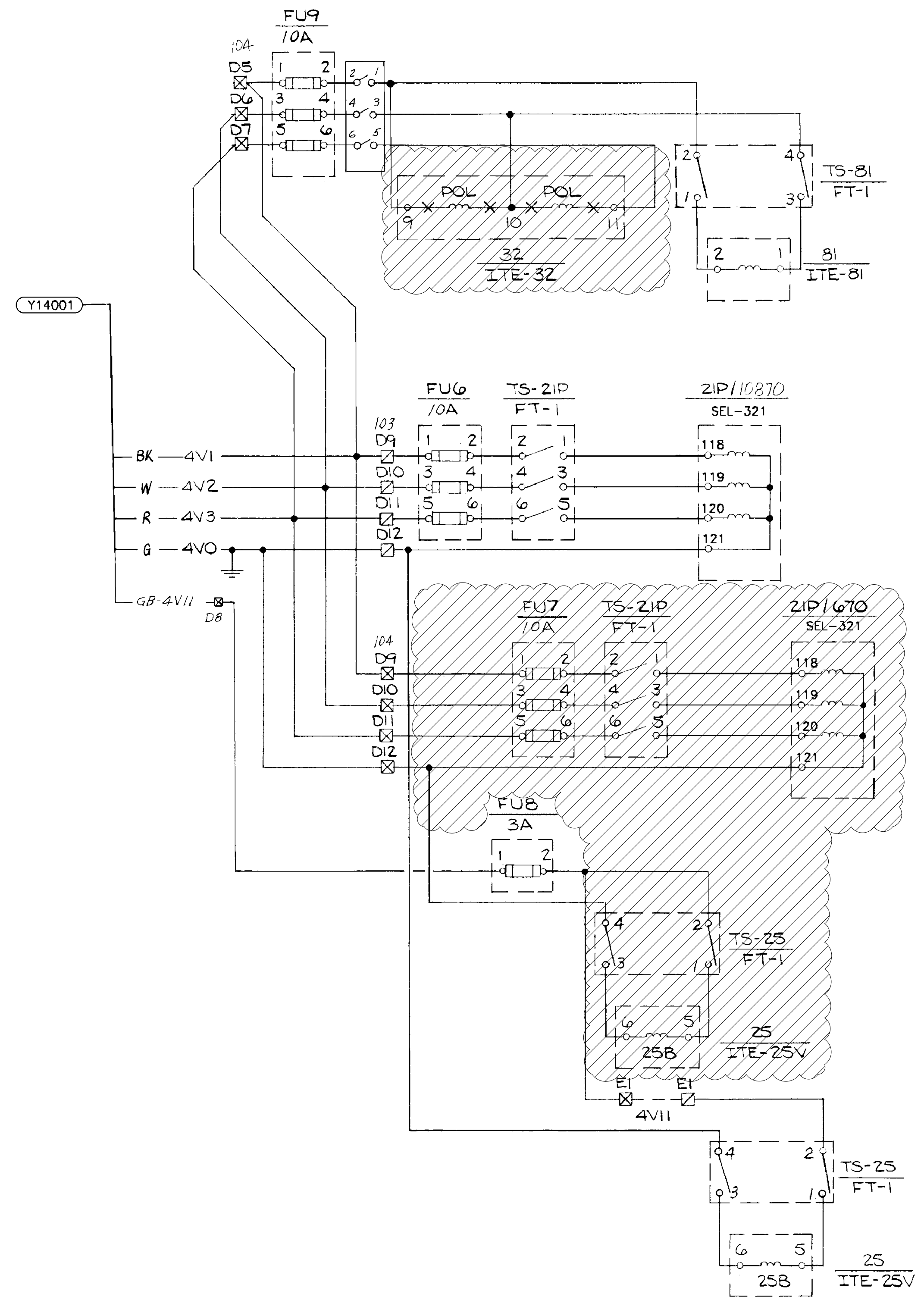
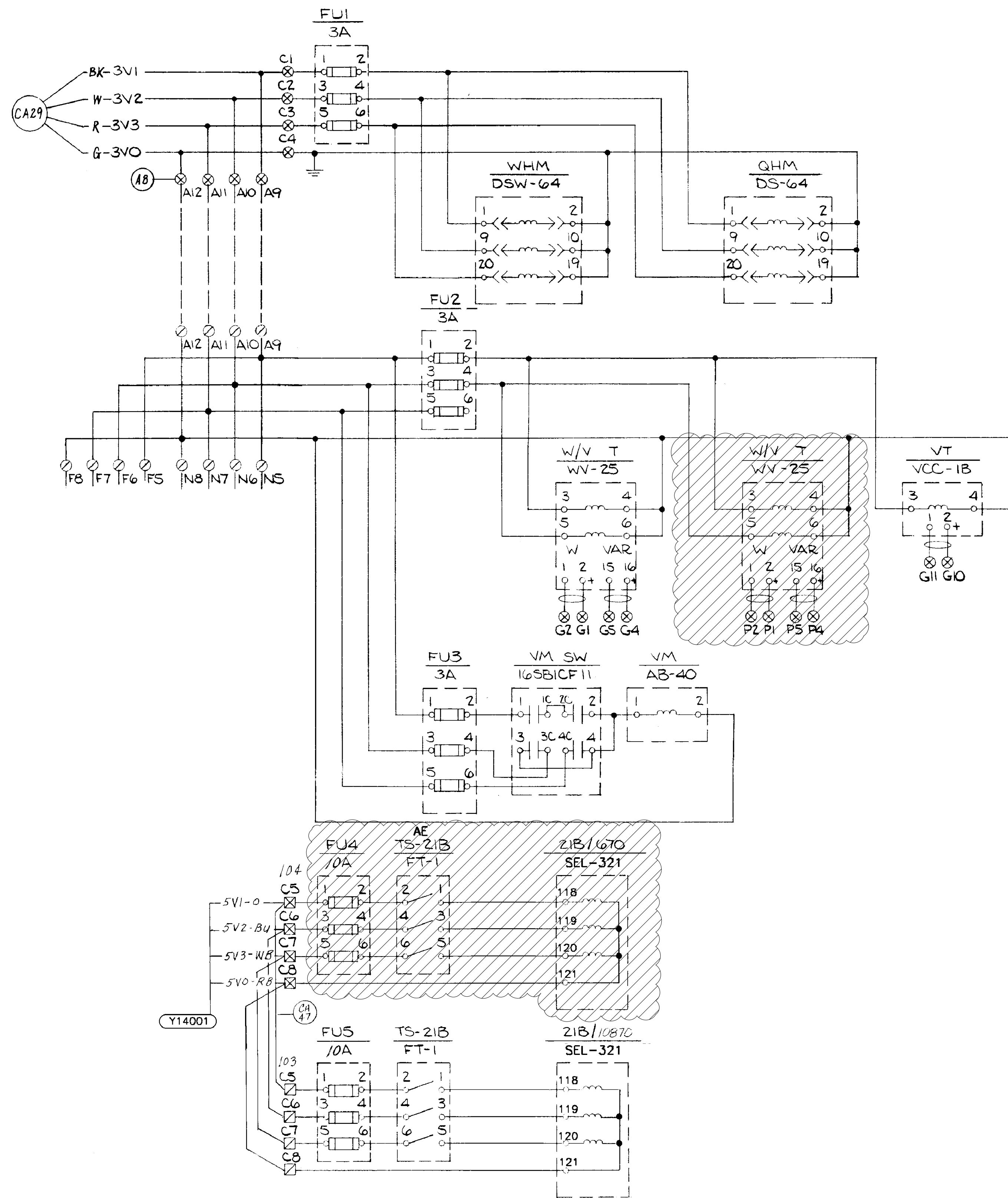
CHK. BY: S. J.

DRAWING NO. D-4591 SH. 4

ISSUED FOR CONSTRUCTION

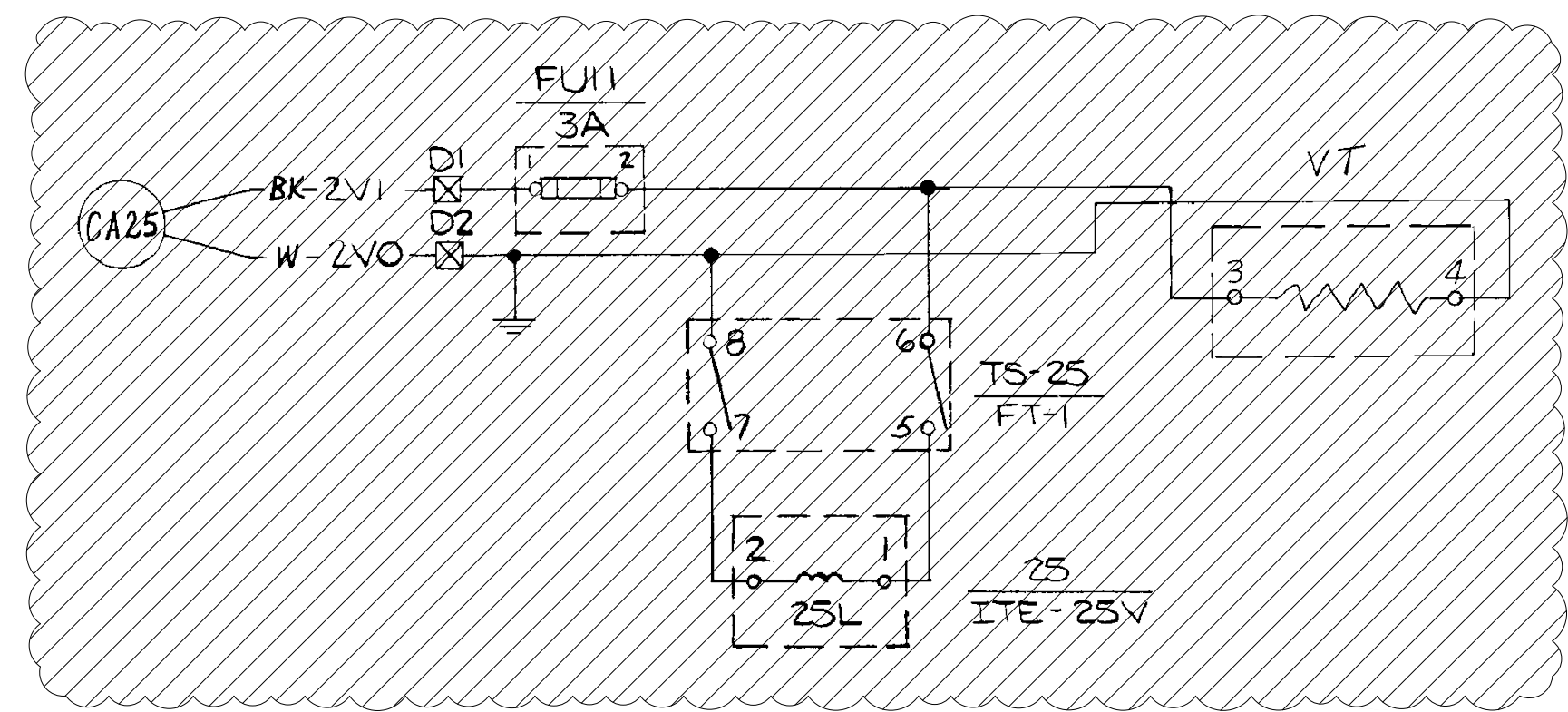
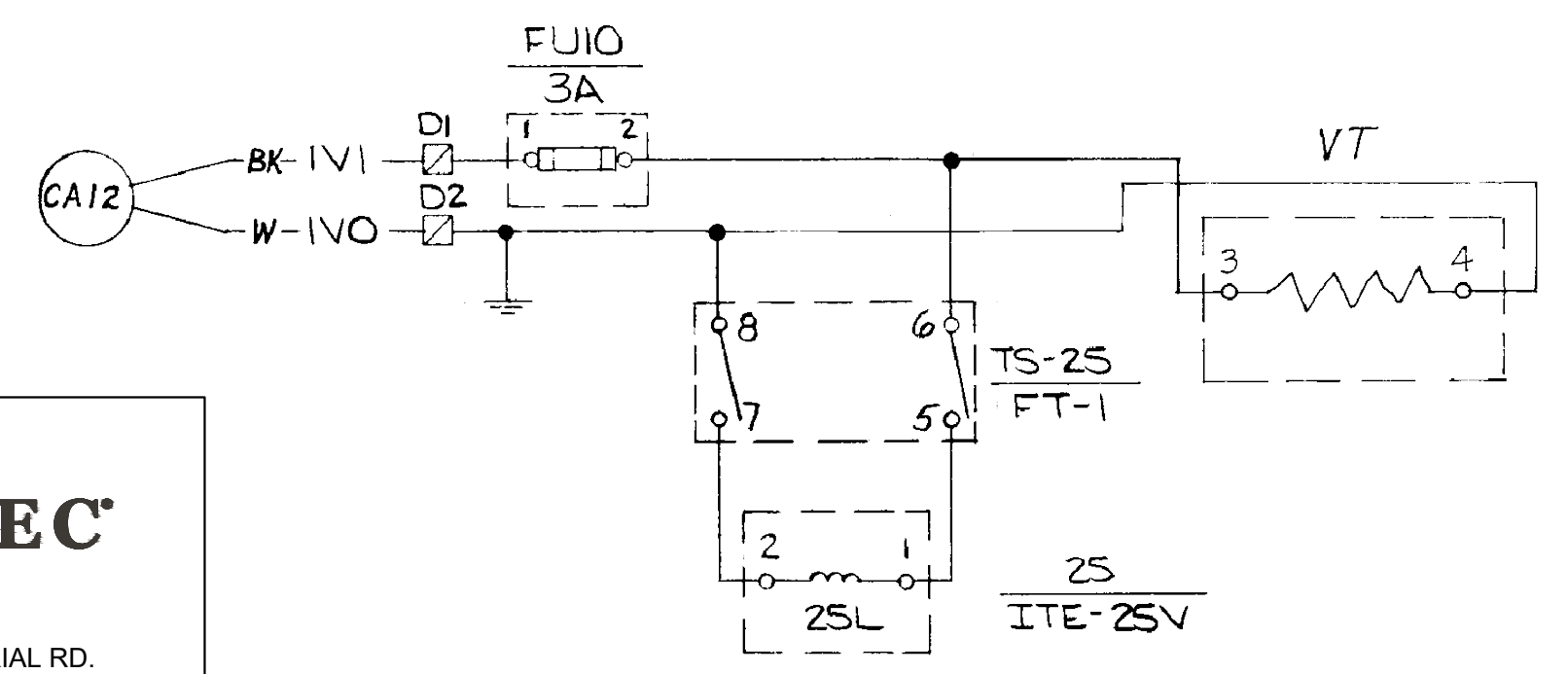
DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION						GRAND RIVER DAM AUTHORITY			
0	RF022-01145	5/9/23	NC	BE	TM	NC	STILLWATER KINZIE INTERCONNECT S351		
							STILLWATER, OKLAHOMA 138/69KV		
							THREE LINE AC CURRENT SCHEMATIC DEMOLITION		
ENGINEER: NC		SCALE: NONE		DATE: 5/9/23		REV. 0			
DRAWN BY: BE		DRAWING NO. S351S012-DEMO		CHECKED BY: TM		P.O. BOX 669 CHOUTEAU, OK 74337			
REV. NO.		JOB NO.		DATE		DESIGN ENGR		DESIGN CHECK	





NOTE

- ⊙-TERMINAL BLOCK POINT ON PANEL 101
- ⊗-TERMINAL BLOCK POINT ON PANEL 102
- ⊚-TERMINAL BLOCK POINT ON PANEL 103
- ⊠-TERMINAL BLOCK POINT ON PANEL 104
- ▲-TERMINAL BLOCK CONNECTED TO HARNESS CABLES FOR 21P & 21B RELAYS



REFERENCE DRAWINGS:
 S351S010 THREE PHASE AC SCHEMATIC
 S351S011 THREE-LINE BUS CCVT'S

LEGEND:
 [Hatched Box] NEW CONSTRUCTION
 [Cross-hatched Box] REMOVALS

ISSUED FOR CONSTRUCTION

DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION				GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69KV			
0	RF022-01145	5/9/23	NC	BE	TM	NC	
THREE LINE AC POTENTIAL SCHEMATIC DEMOLITION							
ENGINEER:	NC	SCALE:	NONE	DATE:	5/9/23	REV.	
DRAWN BY:	BE	DRAWING NO.	S351S013-DEMO				0
CHECKED BY:	TM	P.O. BOX 669 CHOUTEAU, OK 74337		APPROVED BY:		NC	
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPROVD	



	1	2	3	4	5	6
A	BKR 10870 LOCAL CONTROL	BKR 670 LOCAL CONTROL	PNL 103 RELAY INOPERATIVE	PNL 104 RELAY INOPERATIVE	BATTERY GROUND	BKR 107 86BF LOCKOUT TRIP
B	BKR 10870 MOTOR TROUBLE	BKR 670 MOTOR TROUBLE	BKR 670 86BF LOCKOUT TRIP	BKR 10870 86BF LOCKOUT TRIP	BUS DIFFERENTIAL LOCKOUT TRIP	C.S. 81 LOW GAS
C	BKR 10870 LOW SF6 GAS/LO	BKR 670 LOW SF6 GAS/LO	FDR 6 UPLC ALARM	FDR 108 UPLC ALARM	C.S. 81 LOW GAS LOCKOUT	C.S. 81 TCM
D	BATTERY LOW VOLTAGE	BATTERY LOSS OF AC	BATTERY HIGH VOLTAGE SHUTDOWN			
E						
F						

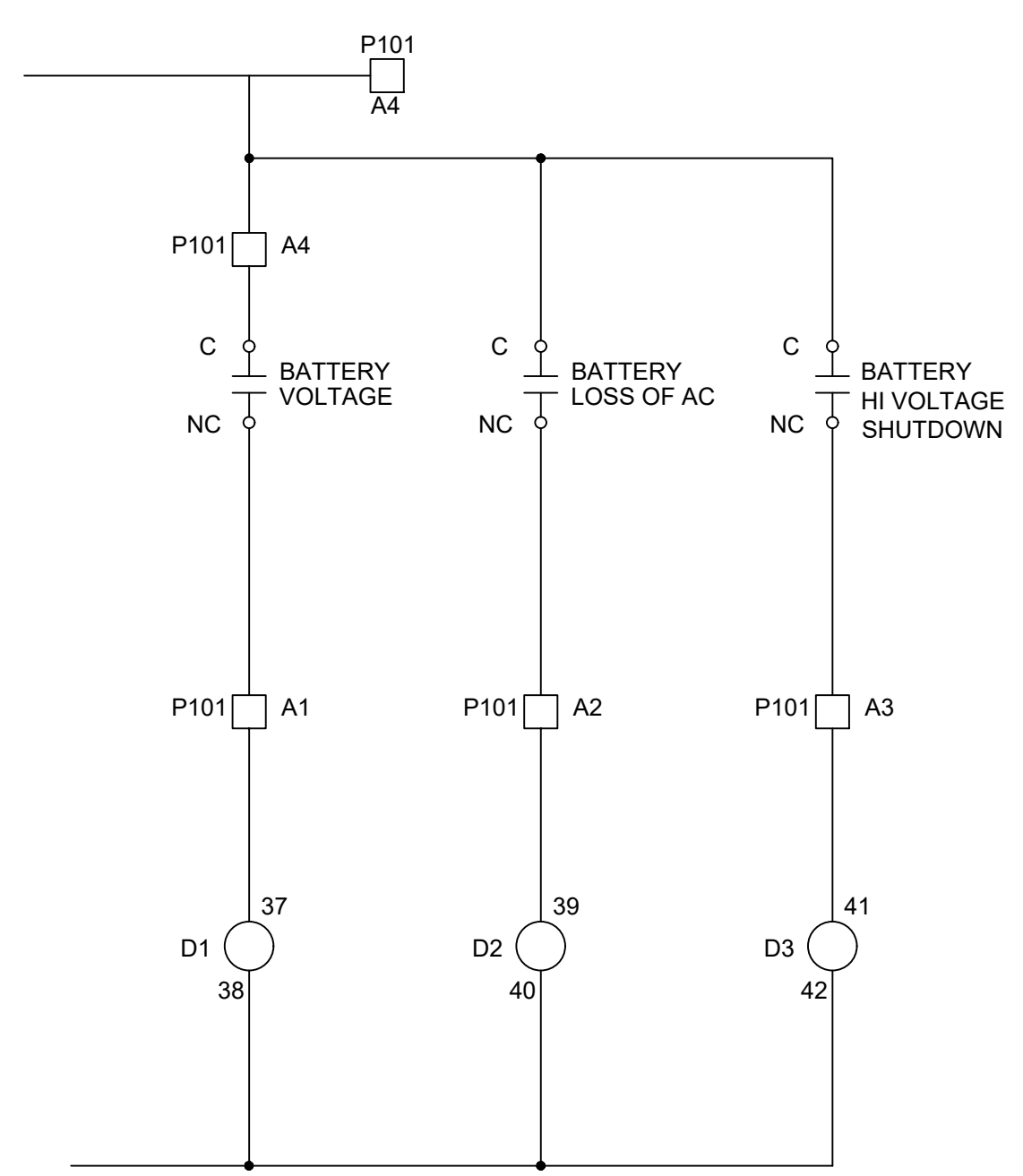
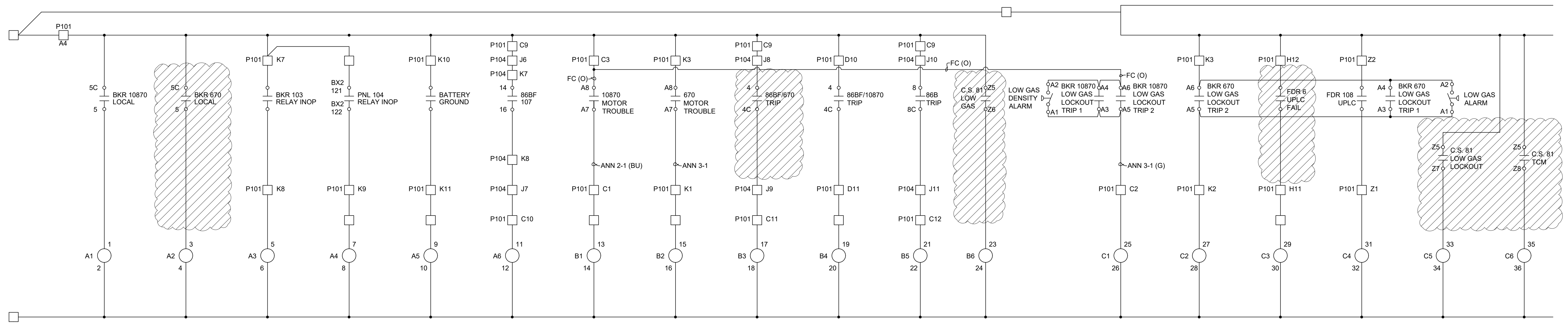
ANNUNCIATOR SEL-2523



4555 W MEMORIAL RD.
OKLAHOMA CITY, OK 73142

ISSUED FOR CONSTRUCTION

DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION							GRAND RIVER DAM AUTHORITY			
0	RF022-01145	5/9/23	NC	BE	TM	NC	STILLWATER KINZIE INTERCONNECT S351			
							STILLWATER, OKLAHOMA 138/69kV			
							ANNUNCIATOR NAMEPLATE DEMOLITION			
							ENGINEER: NC	SCALE: NONE	DATE: 5/9/23	REV.
							DRAWN BY: BE	DRAWING NO.		0
							CHECKED BY: TM		S351SR01-DEMO	
							APPROVED BY: NC			
REV. NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPROVD	P.O. BOX 669 CHOUTEAU, OK 74337			

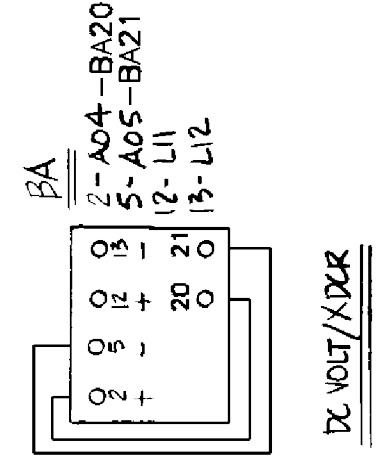
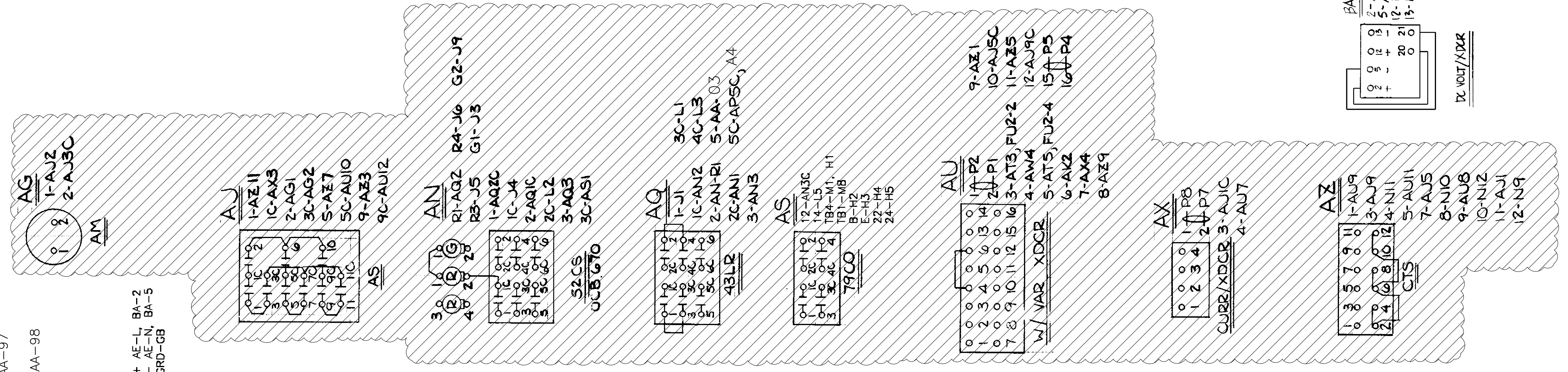
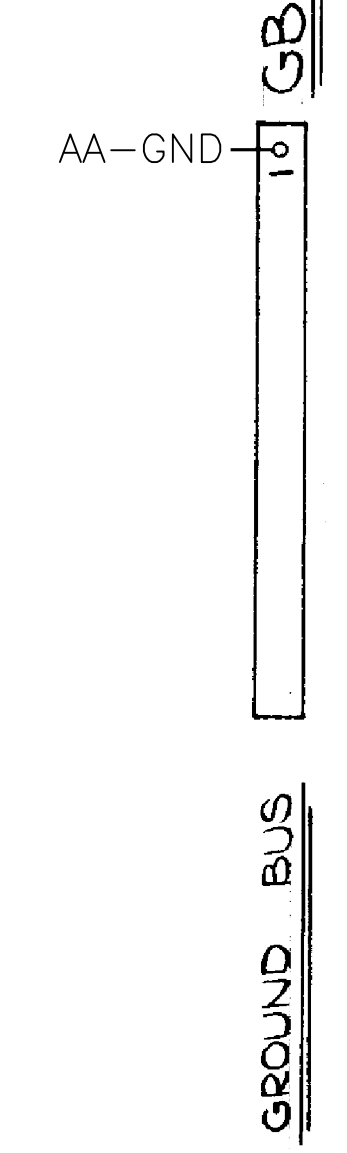
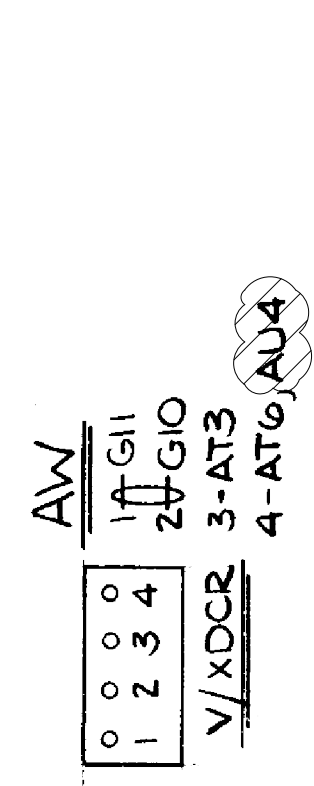
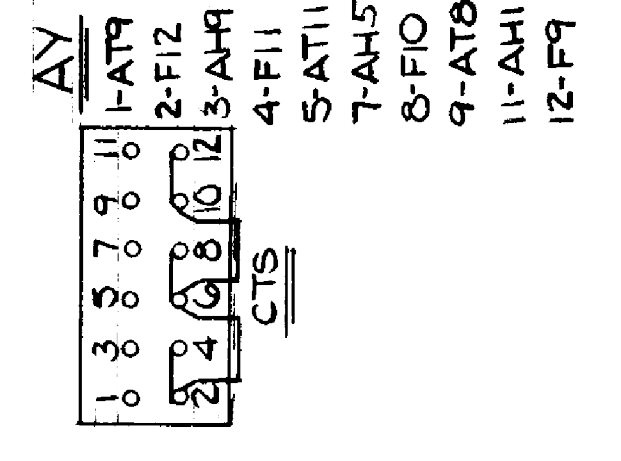
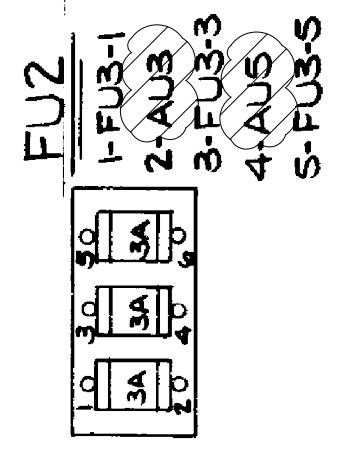
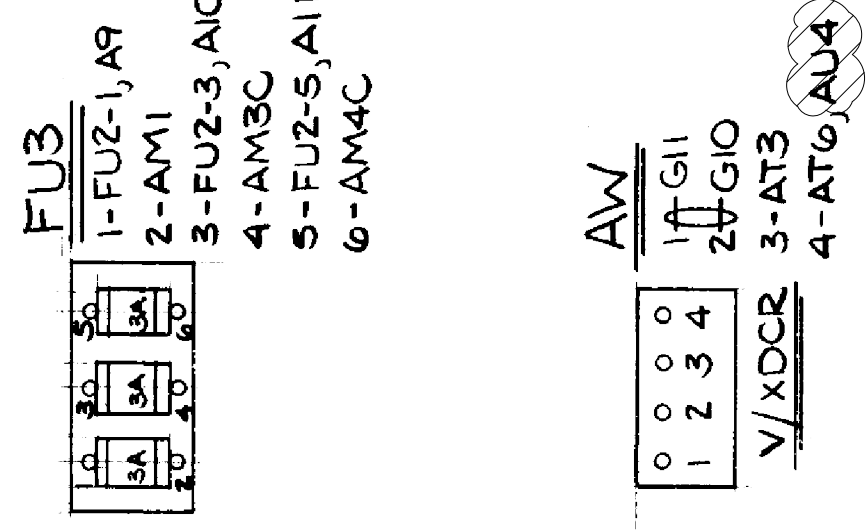
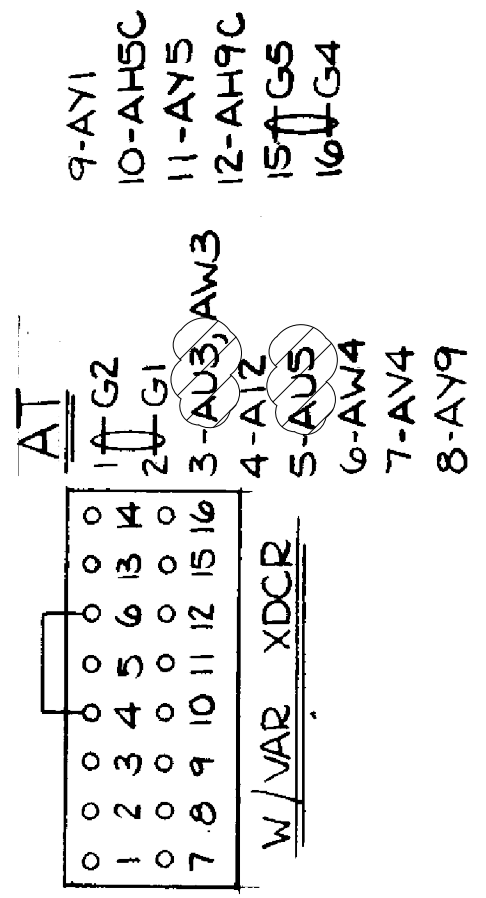
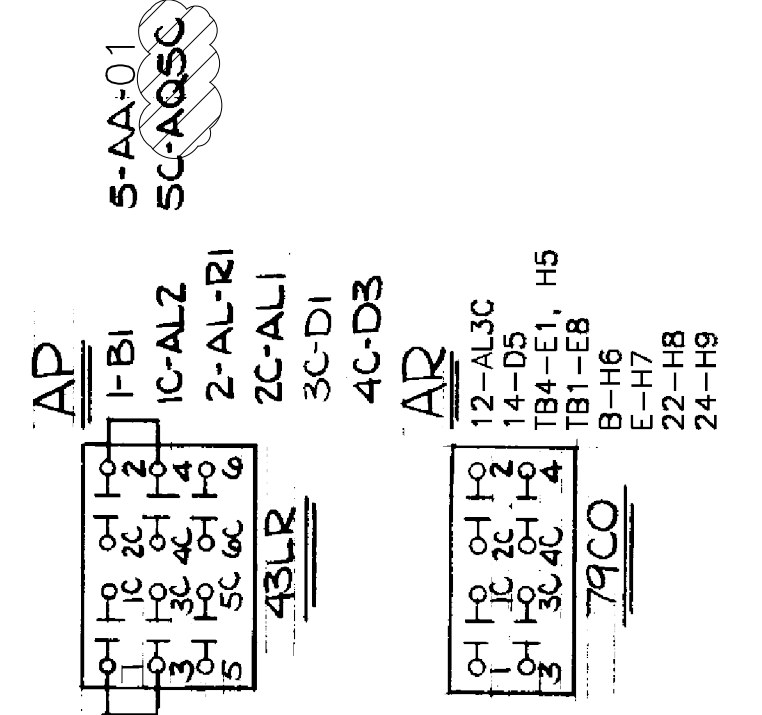
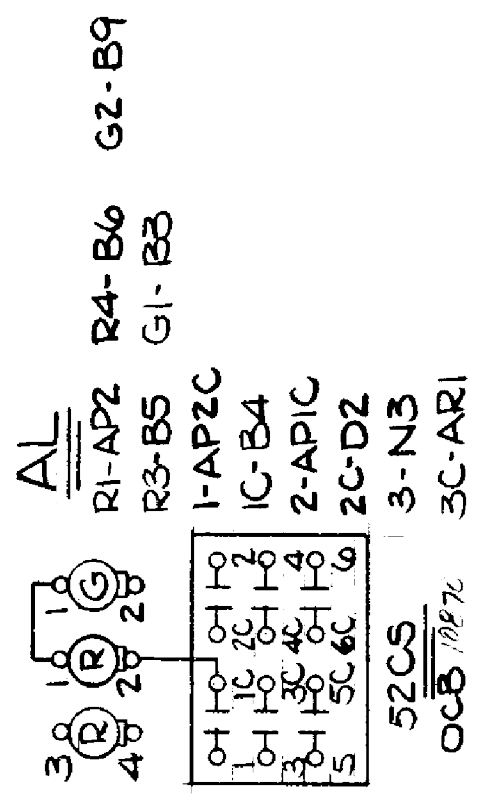
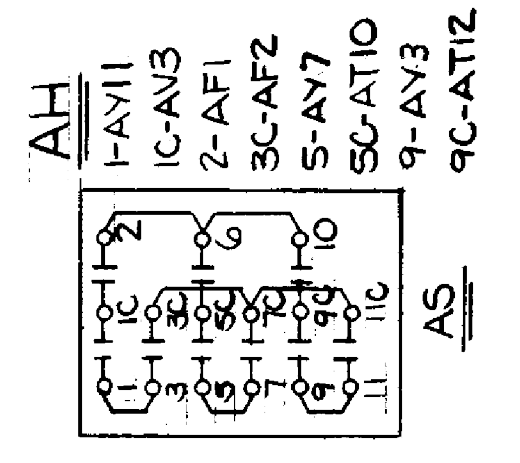
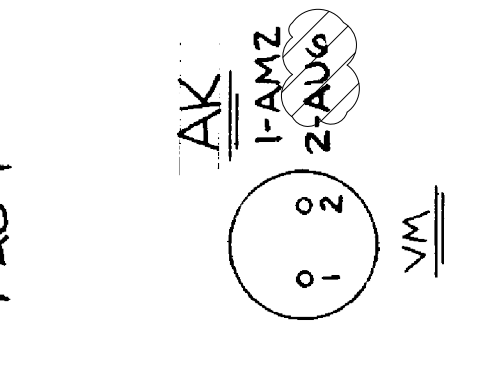
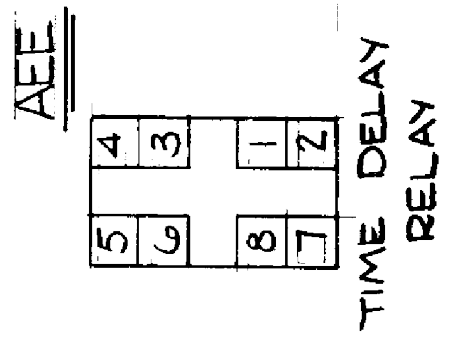
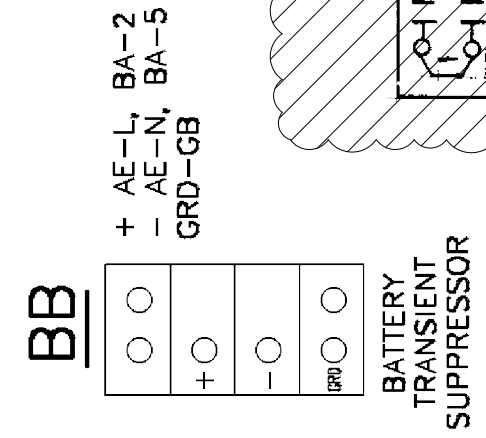
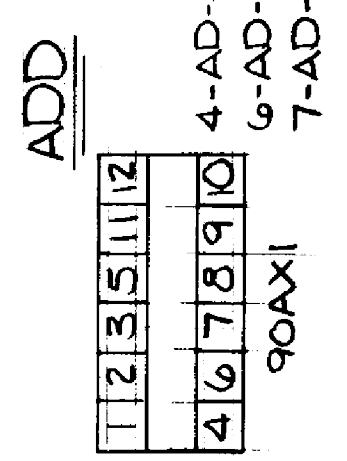
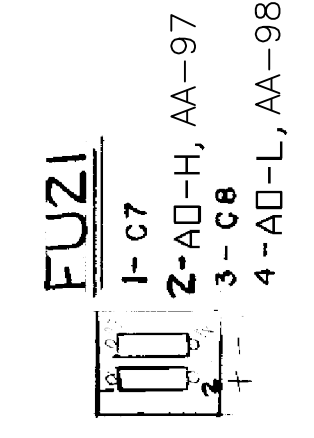
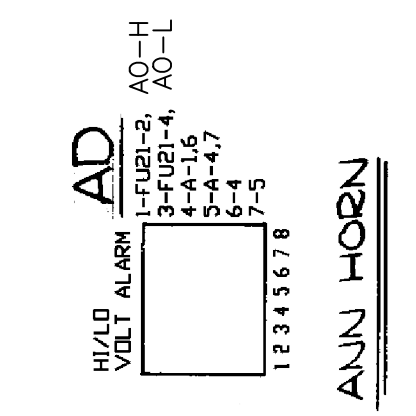
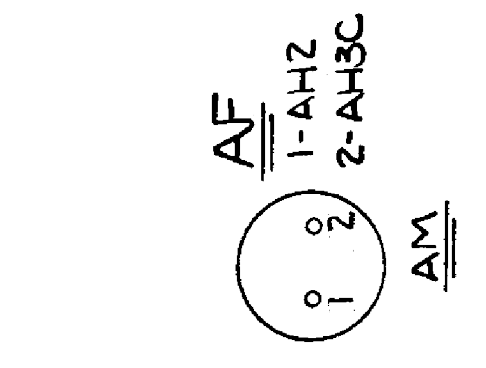
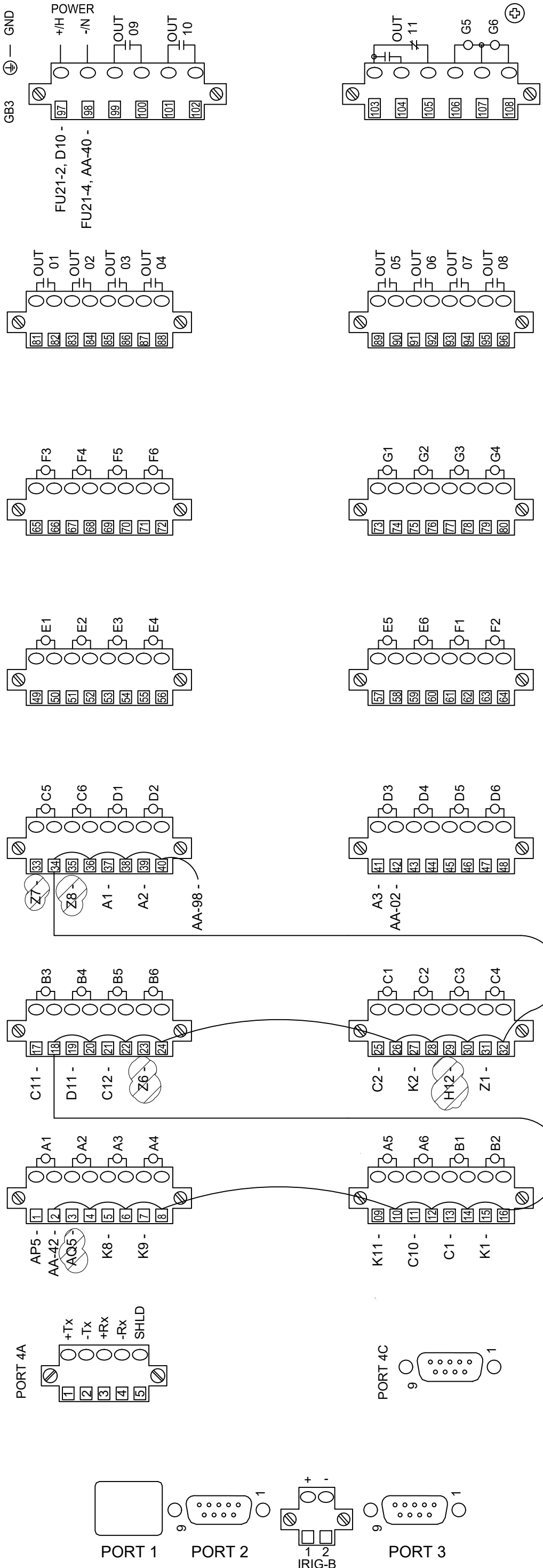


ISSUED FOR CONSTRUCTION

DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION							GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69kV			
0	RF022-01145	5/9/23	NC	BE	TM	NC	ANNUNCIATOR SCHEMATIC PNL 101 DEMOLITION			
REV. NO.	JOB NO.	DATE	DESIGN ENGR	DFTR	DESIGN CHECK	ISSUE APPROVD	GRDA P.O. BOX 669 CHOUTEAU, OK 74337	ENGINEER: NC DRAWN BY: BE CHECKED BY: TM APPROVED BY: NC	SCALE: NONE DATE: 5/9/23 DRAWING NO. S351SR01-1-DEMO	REV. 0

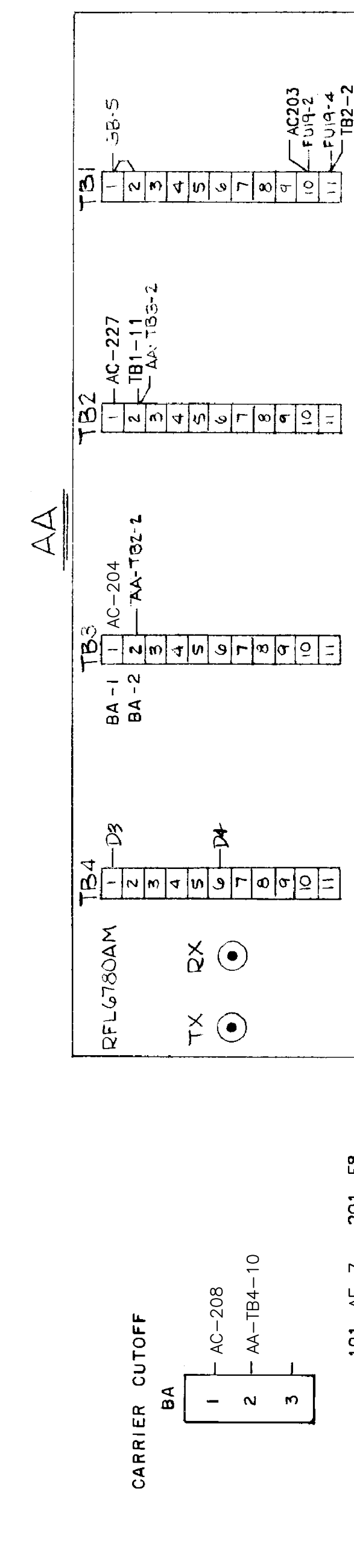
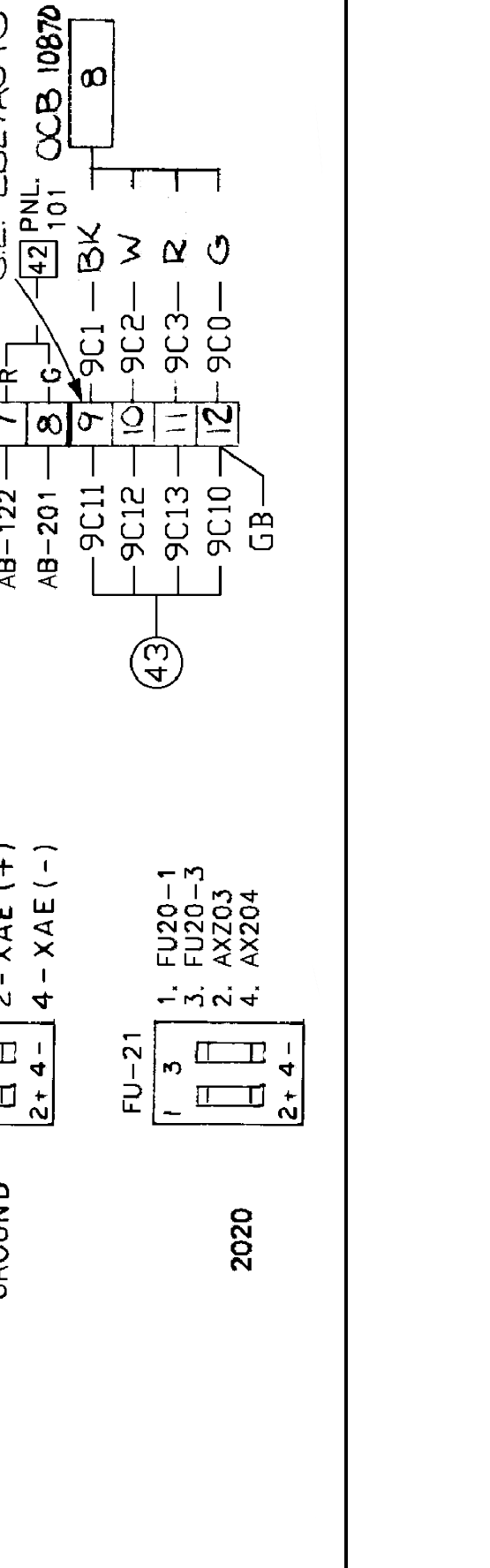
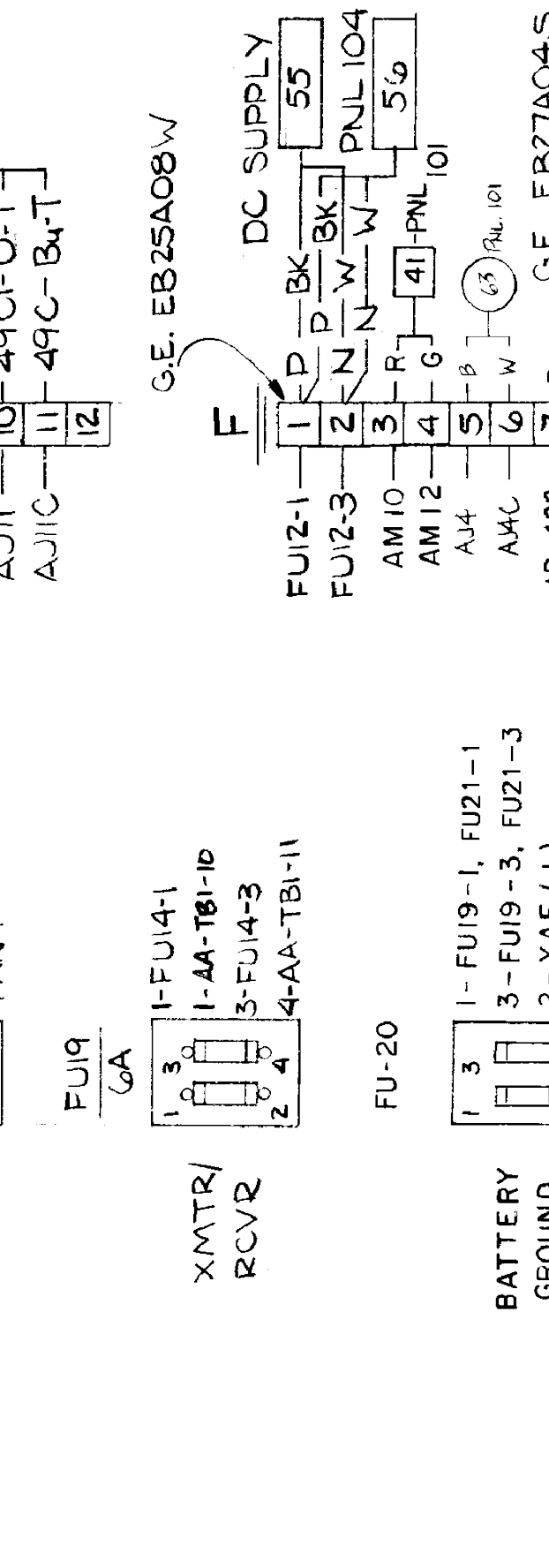
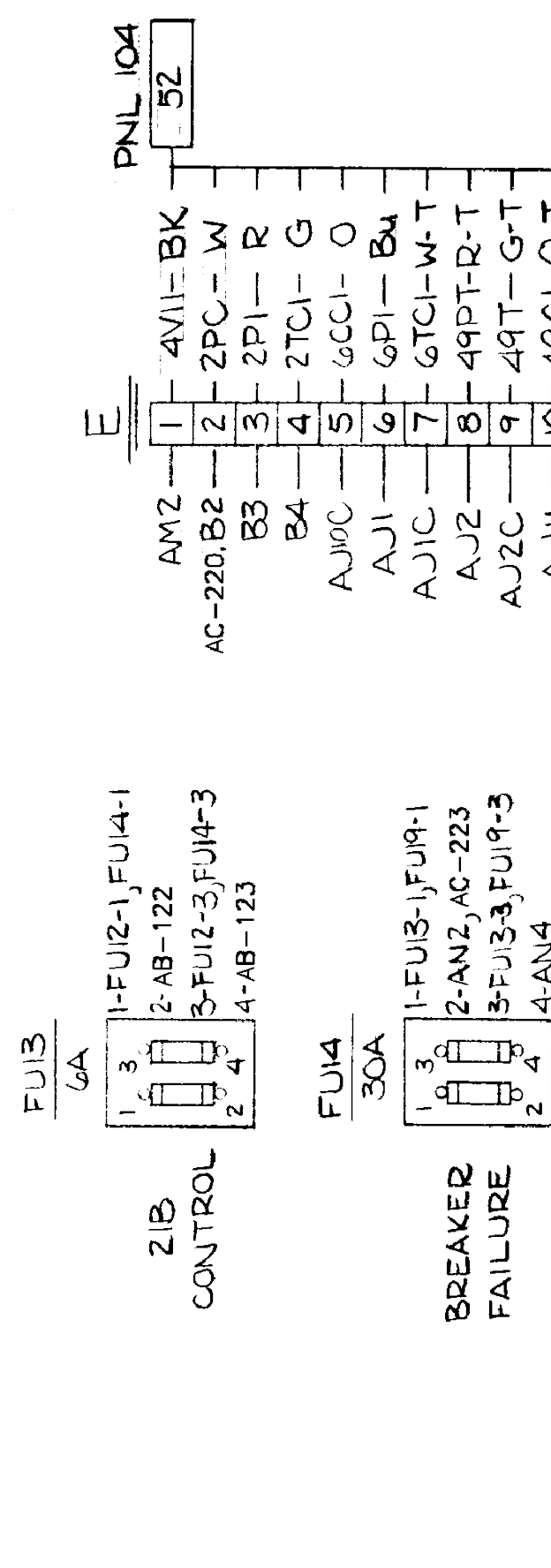
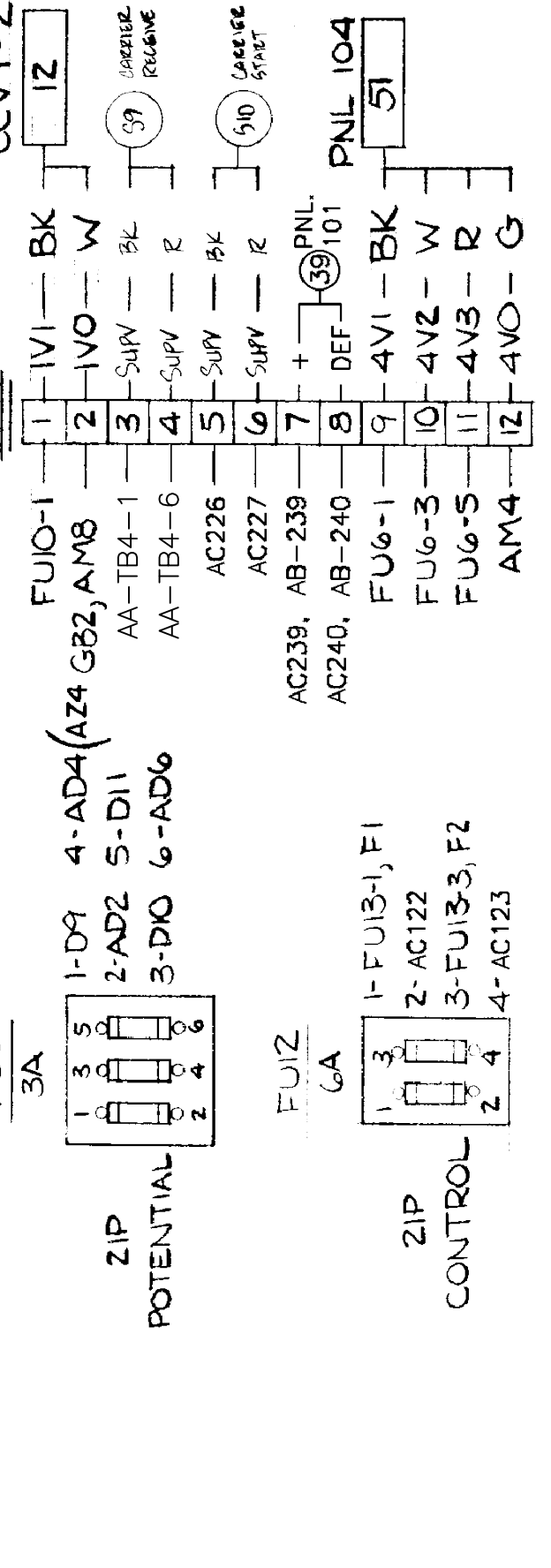
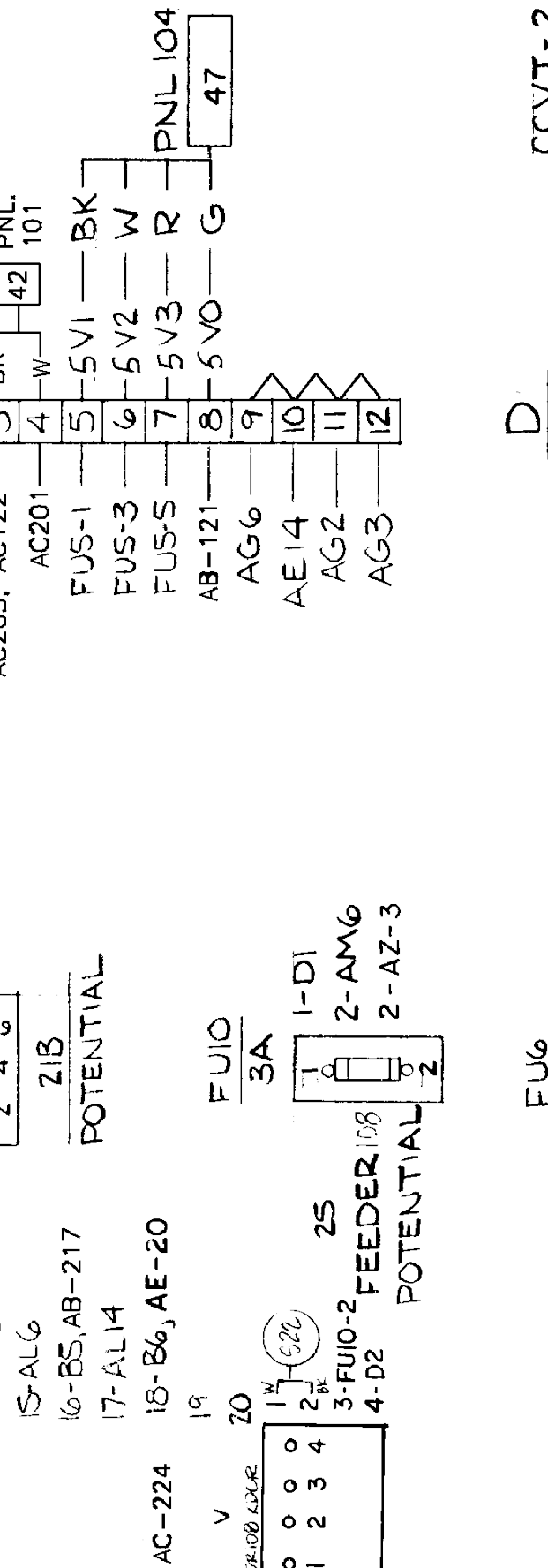
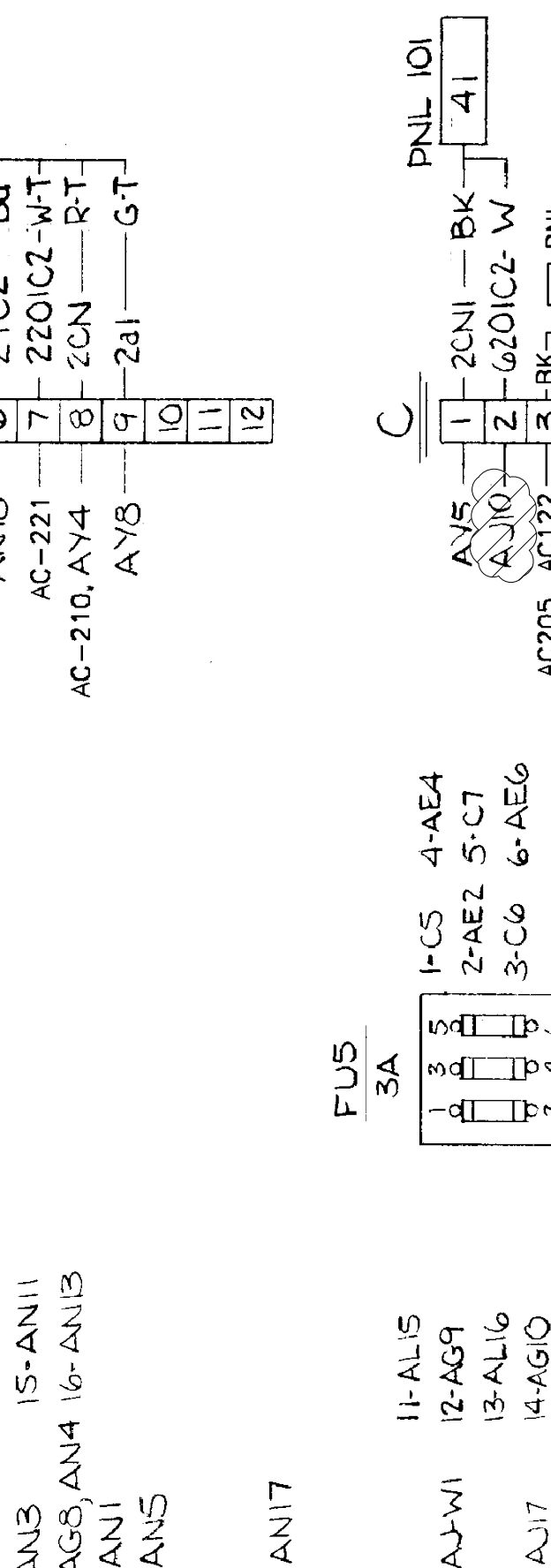
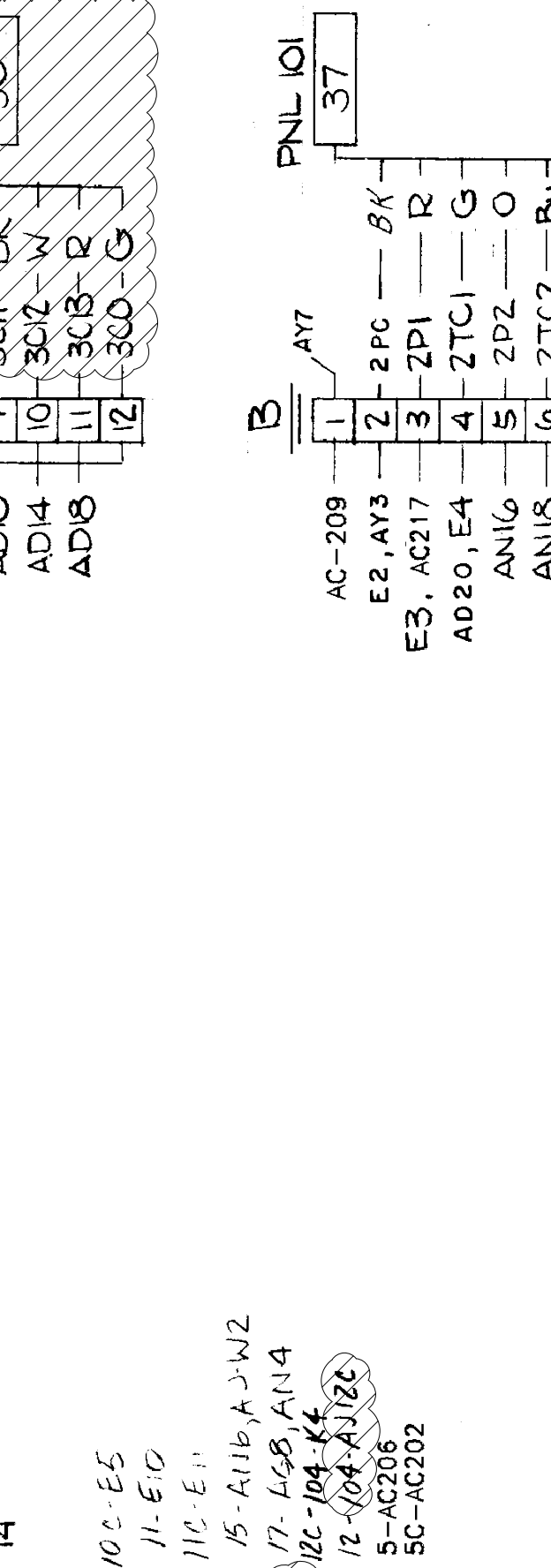
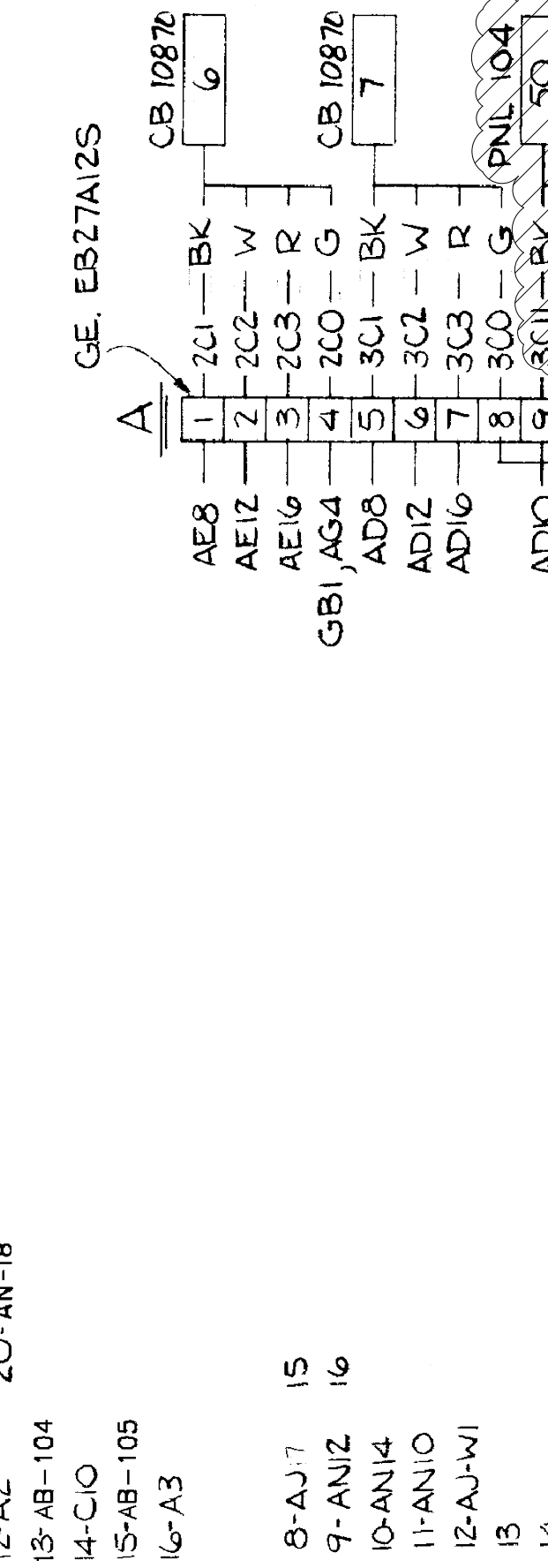
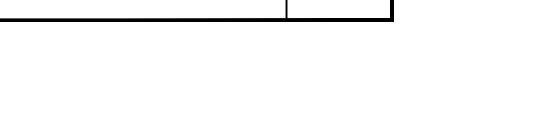
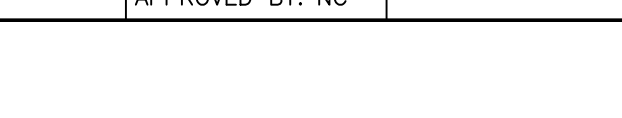
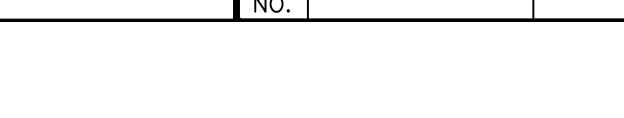
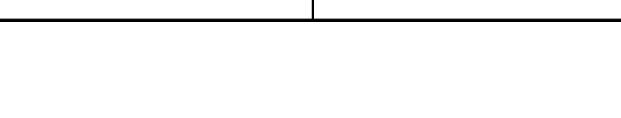
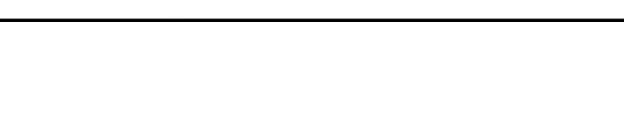
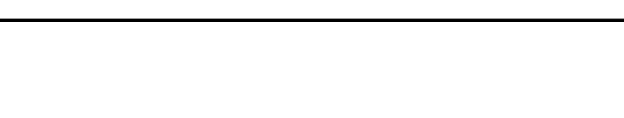
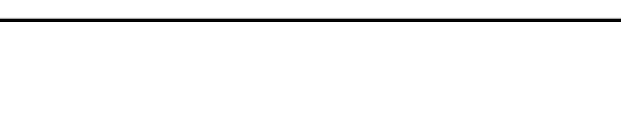
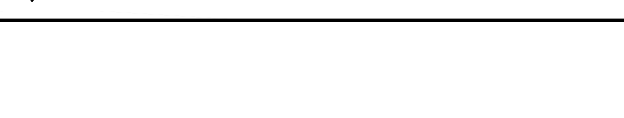
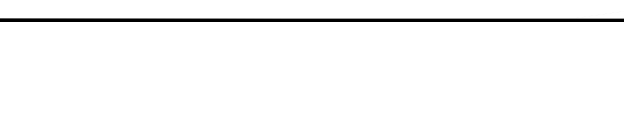
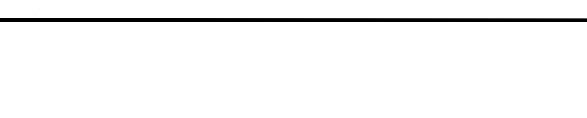
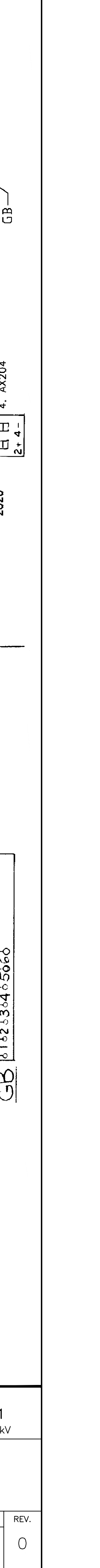
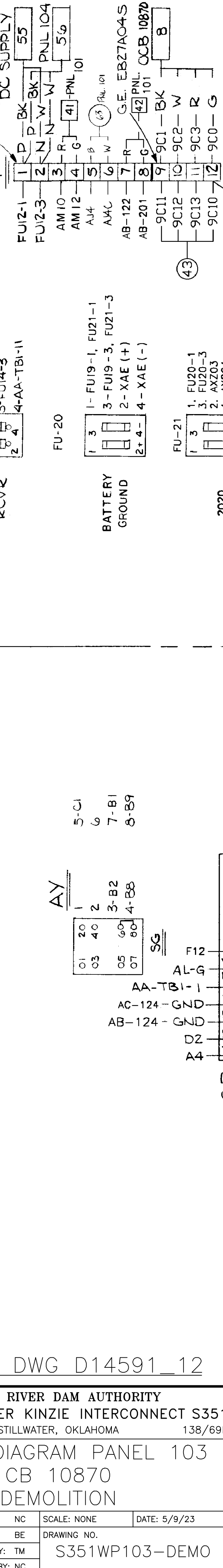
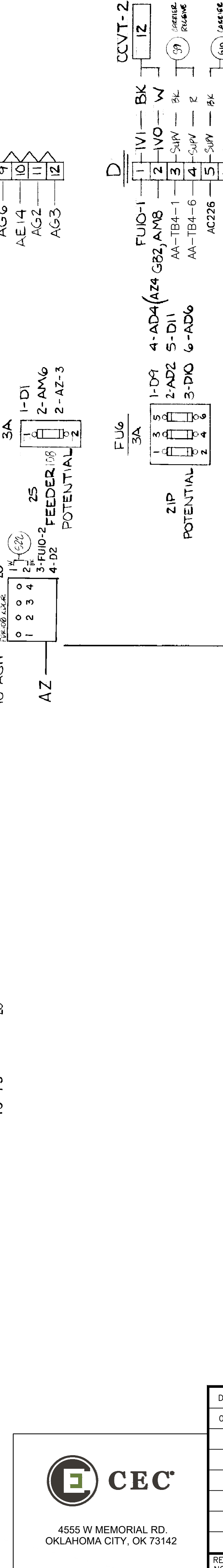
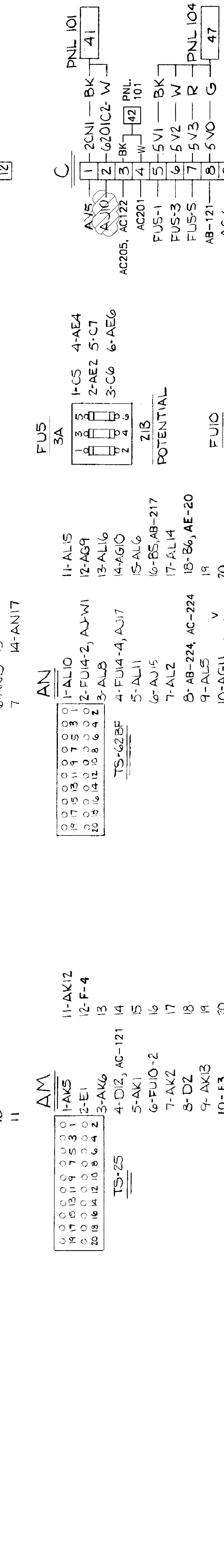
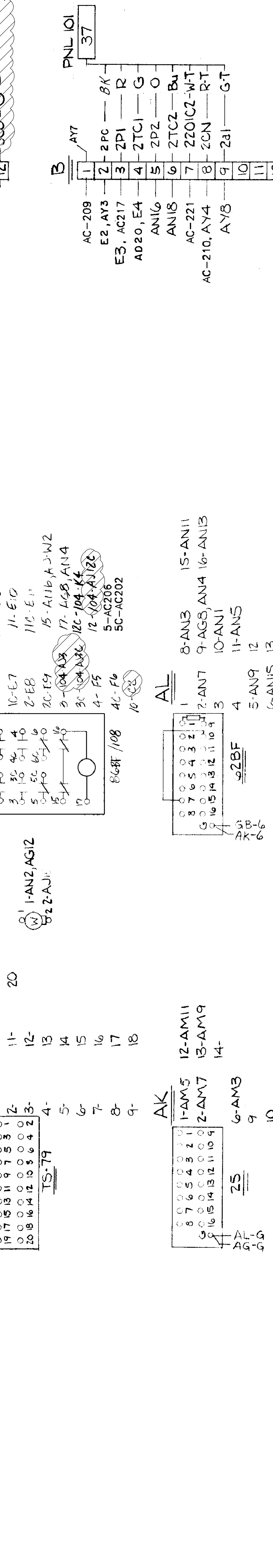
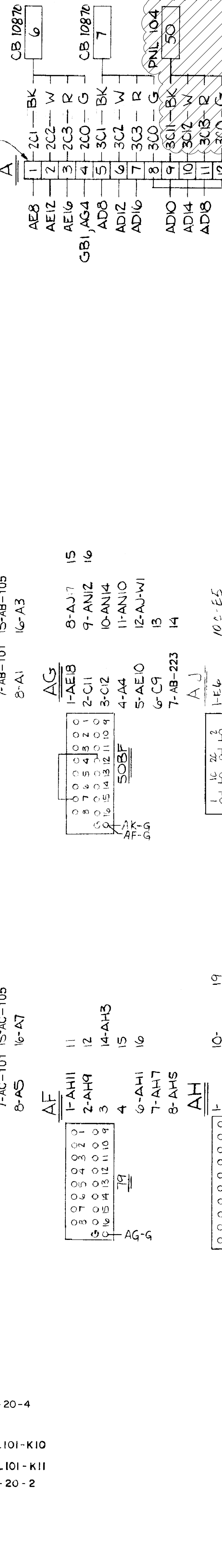
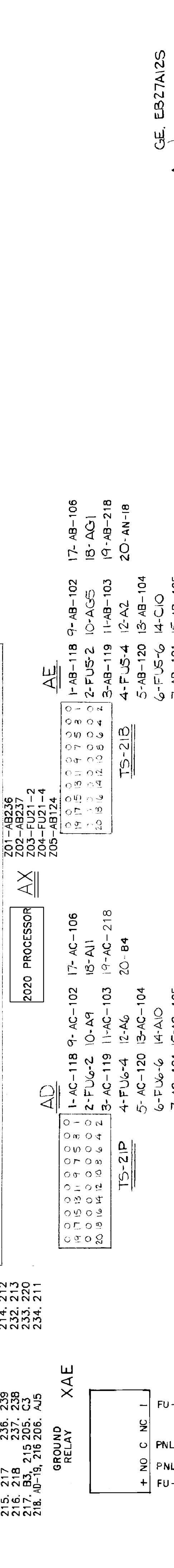
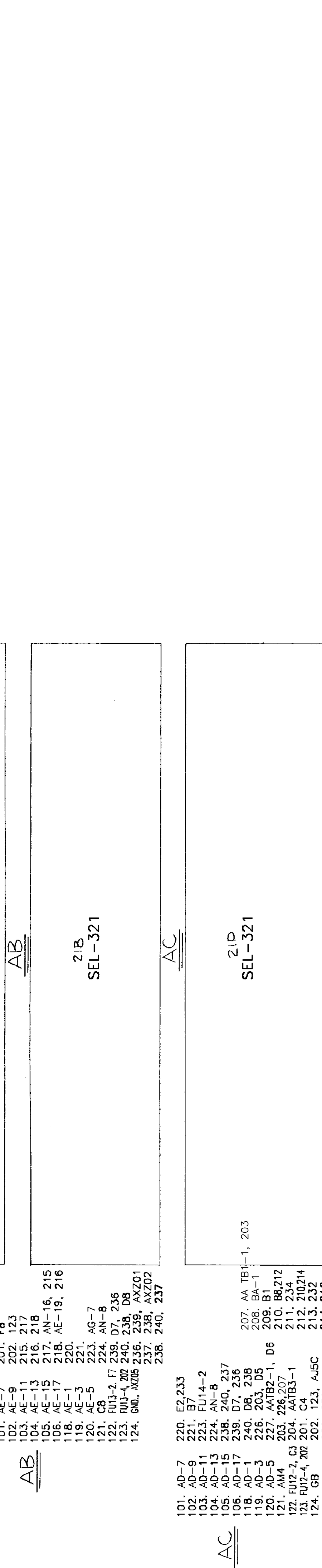
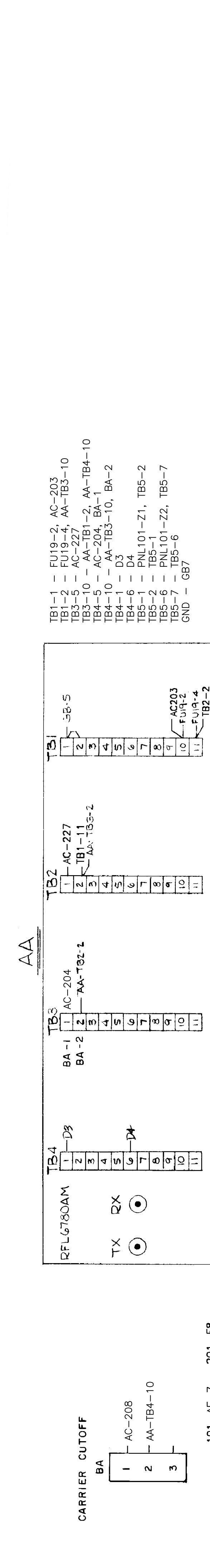


AA
SEL 2323



DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION						GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69KV			
0	RF022-01145	5/9/23	NC	BE	TM	NC	WIRING DIAGRAM PANEL 101 DEMOLITION		
REV NO.	JOB NO.	DATE	DESIGN ENGR	DFT	DESIGN CHECK	ISSUE APPROV	ENGINEER: NC DRAWN BY: BE CHECKED BY: TM APPROVED BY: NC		
P.O. BOX 669 CHOUTEAU, OK 74337							SCALE: NONE	DATE: 5/9/23	REV. 0
							S351WP101-2-DEMO		

ISSUED FOR CONSTRUCTION

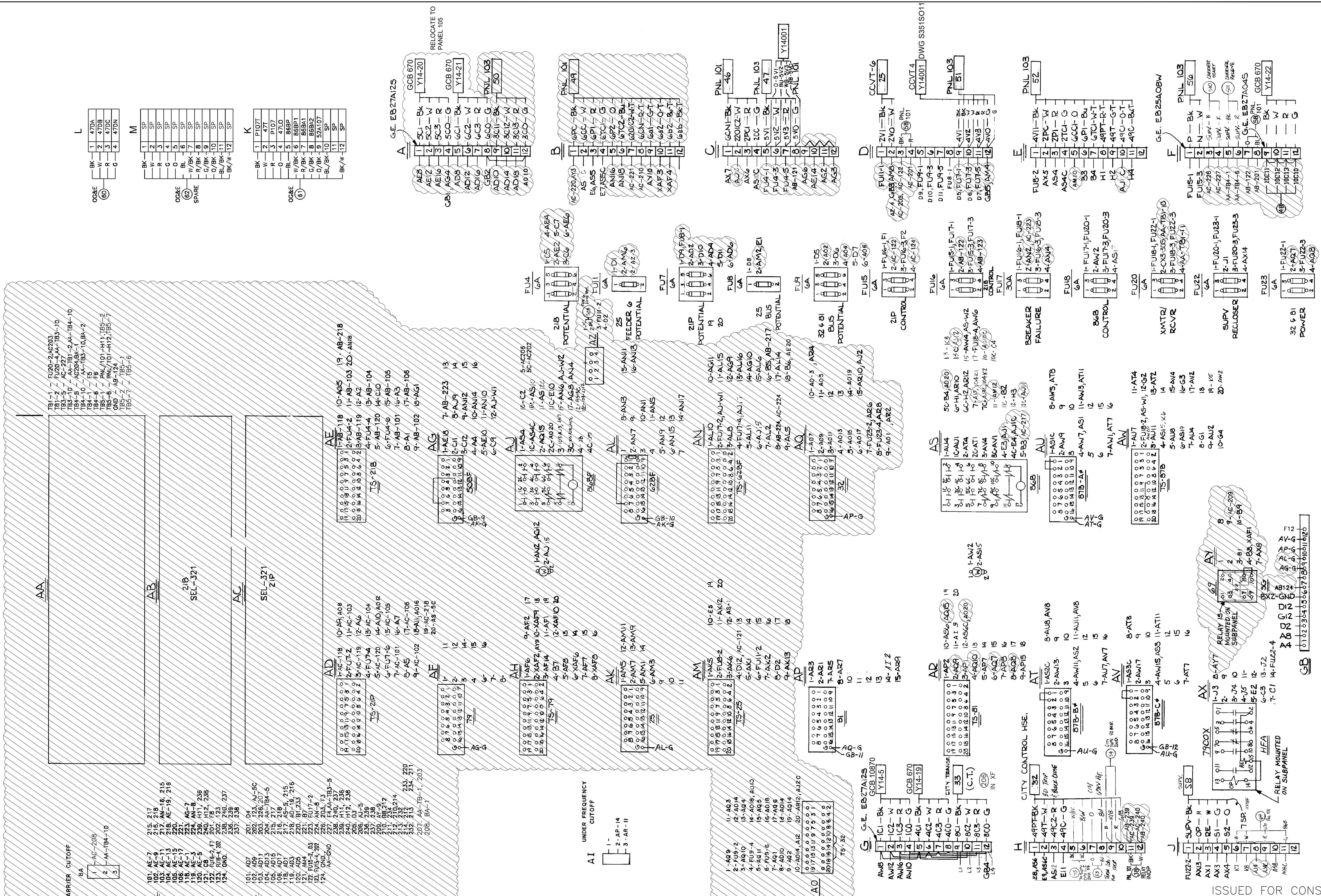


REFERENCE DRAWINGS
S351S012 THREE LINE AC CURRENT SCHEMATIC
S351S015 OGE INTERCONNECT ON-LINE DIAGRAM METERING & RELAYING
S351WP101 WIRING DIAGRAM PANEL 101

DR. BY: J. YOB	DRAWING NO. D4591	REV. 13
CHK. BY: E.A.	SH. 13	

REV. NO.	JOB NO.	DATE	DESIGN ENGR.	DFT	DESIGN CHECK	ISSUE APPROV.

DESCRIPTION: F6 PNL REPLACEMENT & CAP BANK BKR ADDITION		GRAND RIVER DAM AUTHORITY STILLWATER KINZIE INTERCONNECT S351 STILLWATER, OKLAHOMA 138/69KV	
0	RF022-01145	5/9/23	NC BE TM NC
WIRING SCHEMATIC PANEL 104 - CB 670 DEMOLITION		ENGINEER: NC	SCALE: NONE
DRAWN BY: BE		DATE: 5/9/23	REV. 0
CHECKED BY: TM		DRAWING NO.	
APPROVED BY: NC		S351WP104-DEMO	
P.O. BOX 669 CHOUTEAU, OK 74337		APPROVED BY: NC	



ISSUED FOR CONSTRUCTION