

Systems described are intended for Low Voltage Drawout Switchgear, however, may be applied to other types of equipment with proper consideration. Systems described apply to double end substations where Bus #1 is fed through main breaker #1, Bus #2 fed through main breaker #2, the two bus systems are connected through a tie breaker so as to be able to feed both Bus #1 and #2 from either main #1 or #2 but not both.

Ⓔ Six types of systems have been developed for ground fault protection. Each has their merits depending upon the conditions of the system and the desires of the customer. If application information is lacking then System #2 is preferred.

System #1 Single Bond (Single Point Grounding) only Ground Fault Protected Tie Breaker PBD-40044 Page 2
Main & Tie Breaker Wiring A44025-167-2D

Limitations: The system planning must be completely under the control of the application engineer and the neutrals must only be grounded at one point within the switchgear and no other grounds can be placed within the system or at the transformers.

System #2 Multiple Ground, Ground Fault Protected Tie Breaker (Bus entering top of tie) PBD-40044, Page 3
Main & Tie Breaker Wiring A44025-167-17A

Limitations: Breakers must be specially wired at Square D per special wiring. A special 5:5 CT must be ordered. Present supplier is EI.
Model: 81X-0500-05.

System #3 Multiple Ground, Tie Breaker not Ground Fault Protected PBD-40044 Page 4
Main Breaker Wiring A44025-167-2C-15E
Tie Breaker Wiring A44025-167-2A

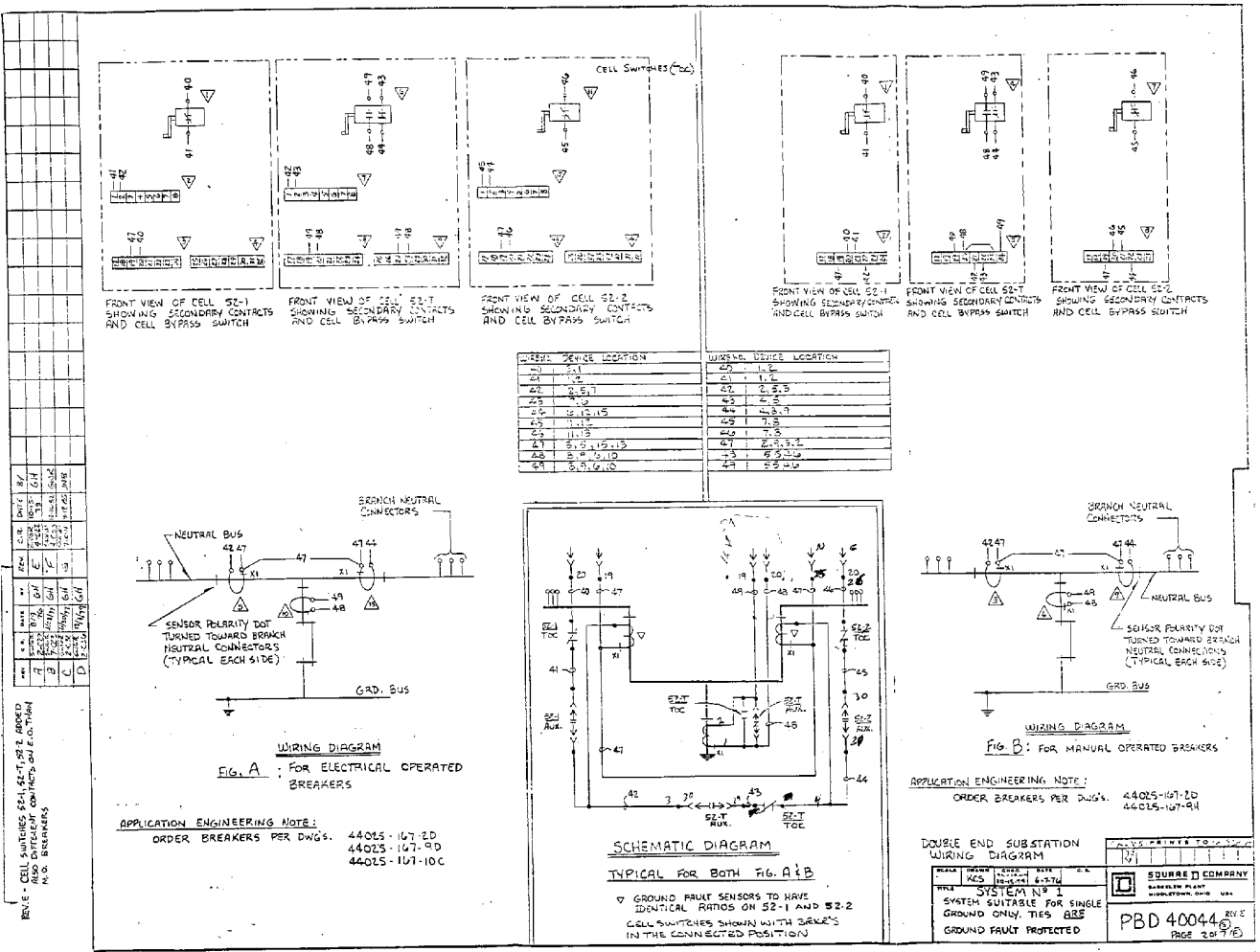
Limitations: Tie Breaker is not ground fault protected. If both busses #1 and #2 are fed from one main and a ground fault occurs in the bus on the down stream side of the tie then the main opens dropping power to both ends of the substation.

System #4 Unique System - Three supply system, two ties single bond - not suited for multiple grounds.

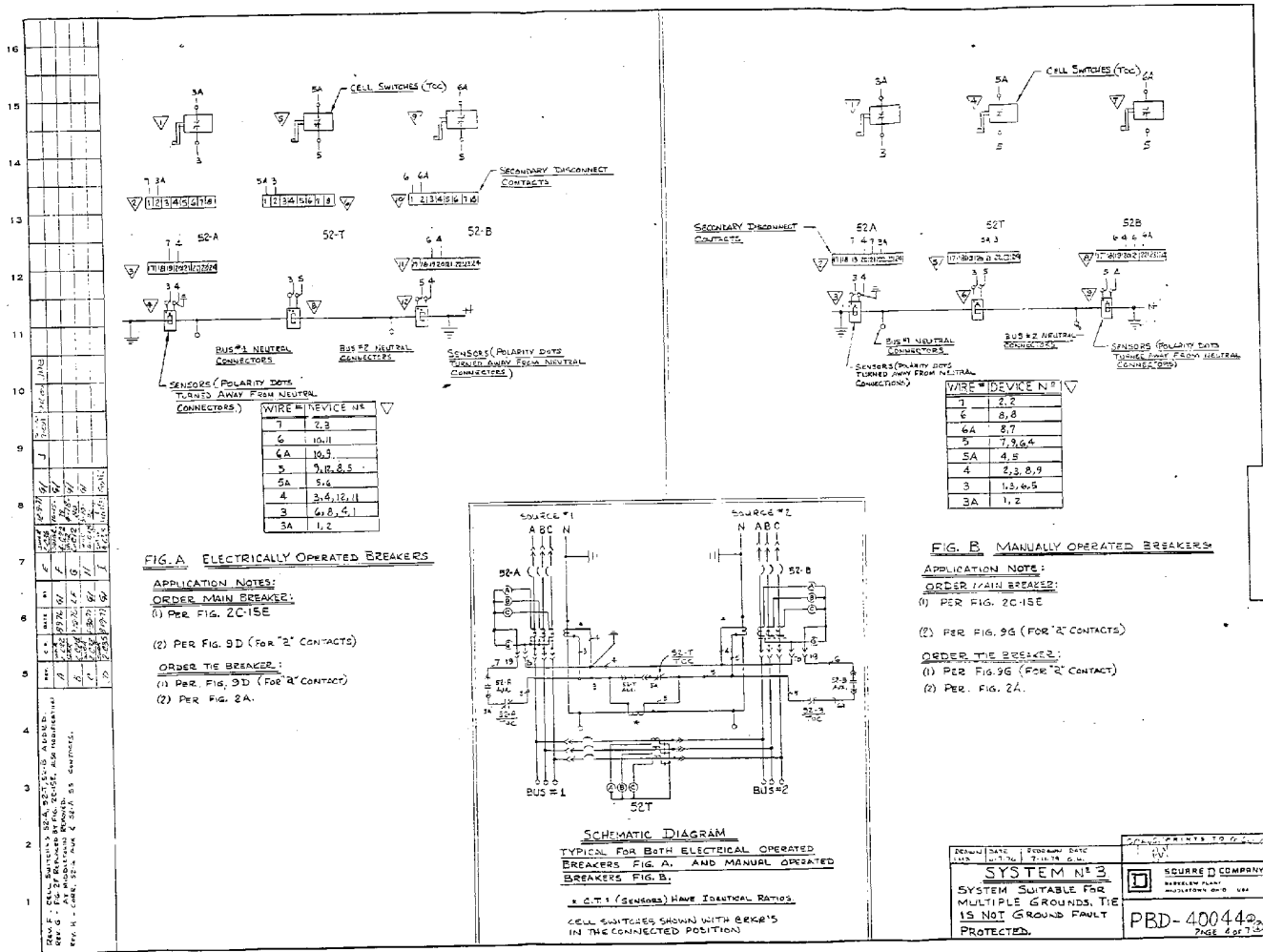
System #5 Unique System - Three supply system, two ties - System suitable for multiple grounds.

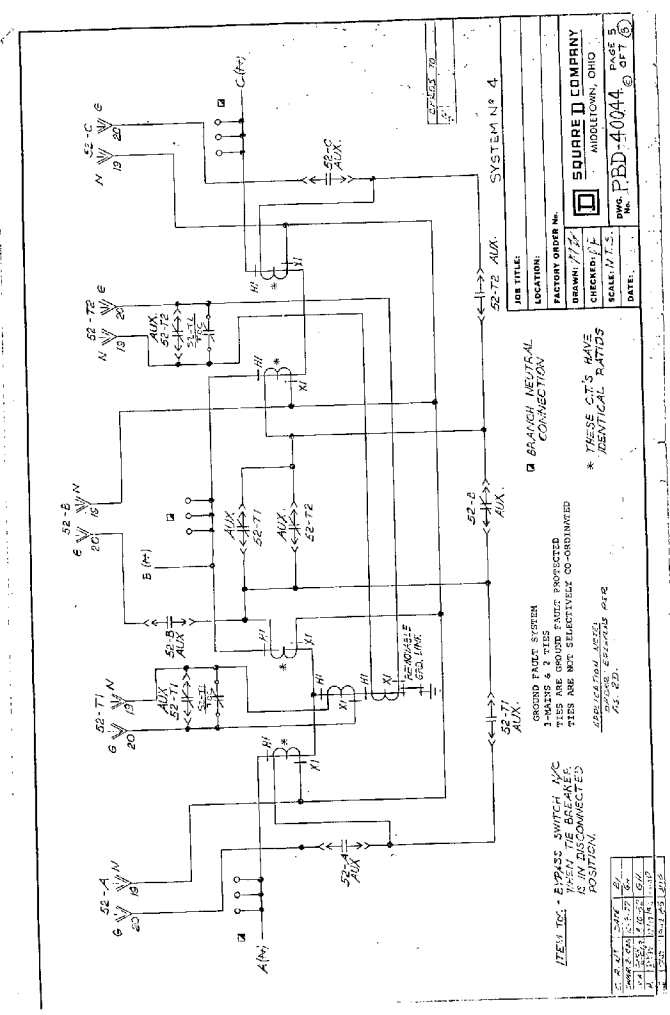
Ⓔ System #6 Multiple Ground - Ground Fault Protected Tie (Bus entering bottom of tie) - Main and Tie Wiring A44025-167-17A

REV.	C. R.	DATE	BY	DO NOT SCALE - WORK TO DIMENSIONS				
A	GWR	8-9-76	G.H.	STANDARD TOLERANCE UNLESS OTHERWISE SPECIFIED	LINEAL DIM.	TWO PLACE DECIMAL $\pm .020$ THREE PLACE DECIMAL $\pm .005$	 SQUARE D COMPANY BARKELEW PLANT MIDDLETOWN, OHIO USA	
B	GWR	6-30-77	G.H.		HOLE DIA.	FRACTIONAL, LETTER, OR NUMBERED DRILL $\pm .004$ THREE PLACE DECIMAL $\pm .002$		
C	GWR	12-9-77	G.H.		ANGLE	DIMENSIONED $\pm 1^\circ$ UNDIMENSIONED $90^\circ \pm 5^\circ$		
D	GWR	4-18-80	G.H.		SCALE	DRAWN		CHKD.
E	GWR	12-16-82	GWR		DATE	C. R.		
F	GWR	9-11-85	JNB					
PRINTS TO				TITLE GROUND FAULT PROTECTION			PBD 40044 Pg. 1 of 7 Ⓔ Ⓔ	
				USED ON LVDO DOUBLE END SUBSTATIONS				
				RAWSTOCK				



REV. 1 - CELL SWITCHES S2-1, S2-1T, S2-2 ADDED
 ALSO OUTLETS CONTACTS AND C.O.T.H.M.
 M.O. BREAKERS





JOB TITLE: _____
 LOCATION: _____
 FACTORY ORDER No. _____
 DRAWN: P/Z
 CHECKED: J/F
 SCALE: 1/12
 DATE: _____

SYSTEM No. 4
 52-AUX. NEUTRAL CONNECTION
 * THESE C.T.'S HAVE IDENTICAL RATIOS
 1-MAIN & 2-MAIN ARE GROUND FAULT PROTECTED
 TIES ARE NOT SELECTIVELY CO-ORDINATED
 1-MAIN & 2-MAIN ARE GROUND FAULT PROTECTED
 TIES ARE NOT SELECTIVELY CO-ORDINATED

1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10

