

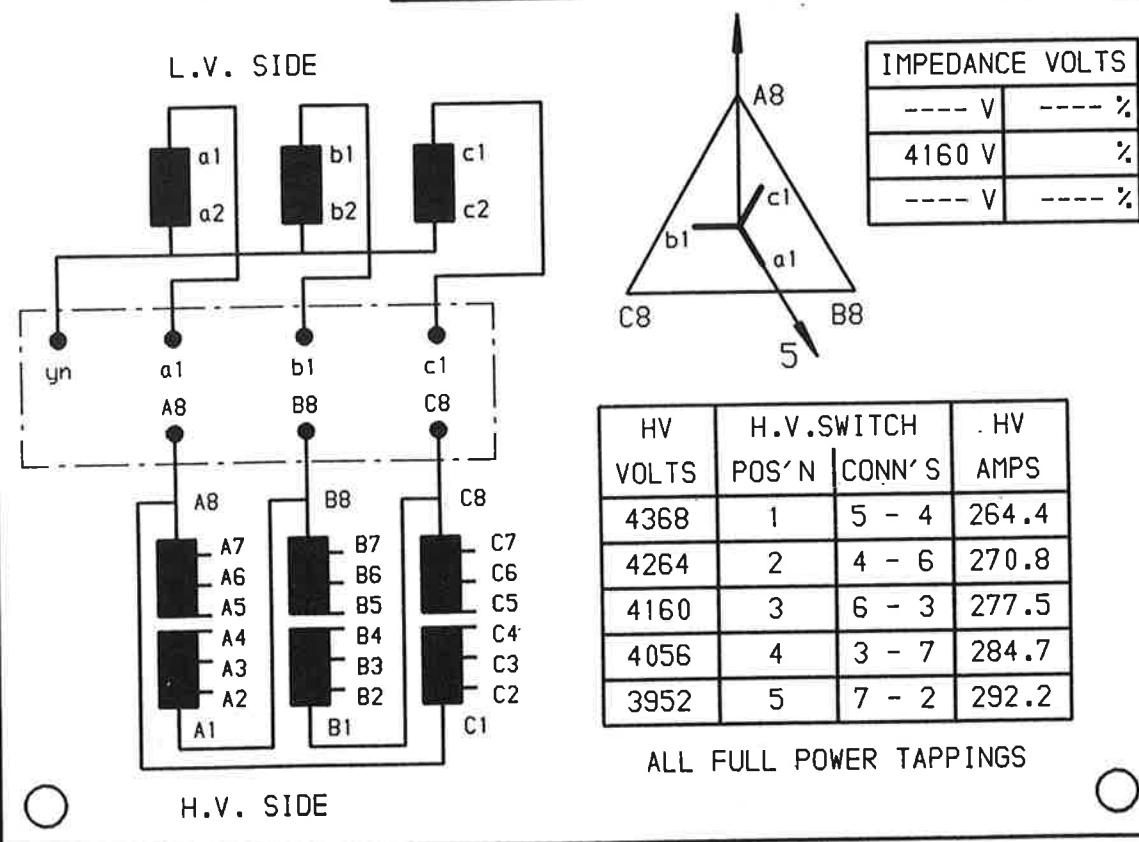


**BRUSH TRANSFORMERS LIMITED**  
Loughborough  
England

TRANSFORMER TO B.S. 171 - 1978

kVA		2000	TYPE OF COOLING	ONAN
RATED VOLTS (NO LOAD)	H.V.	4160	RATED FREQUENCY Hz	60
	L.V.	455	YEAR OF MANUFACTURE	1993
RATED CURRENT (AMPERES)	H.V.	277.5	CONNECTION SYMBOL	Dyn 5
	L.V.	2537	UNTANKING MASS kg	2260
PHASES		3	TOTAL MASS kg	4620
OWNERS No.			OIL LITRES	944
INSULATION LEVEL	H.V.	60 kVp	MASS OF OIL kg	808
	L.V.	3 kV	DIAGRAM DRAWING No.	D6425246
INSULATION LIQUID RISE		60 °C	MAKERS SERIAL No.	74688/
WINDING RESISTANCE RISE		65 °C	TRANSPORTATION MASS kg	4620

MATERIAL :- 0.8 THK STAINLESS STEEL  
ALL MARKINGS SUNK BLACK  
ON A MATT SURFACE  
PLATE SIZE 220x154  
WITH FOUR HOLES Ø5.5  
AT 142x190 CTRS



AS BUILT

11
10
03 12
02 08
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This drawing is confidential and the copyright of  
HAWKER SIDDELEY  
**BRUSH TRANSFORMERS LIMITED**  
PO Box 20, Loughborough, Leics.  
LE11 1HN England  
Tel: Loughborough (0509) 611411  
Telex: 341094 BTL G  
Cables: Brushtran Labro Telex  
TeleFax (0509) 610550

DIMENSIONS IN MM UNLESS OTHERWISE STATED  
MANUFACTURING TOLERANCES TO BSD 942.  
WELDING TO PS 3001 AND TWD MANUAL  
SURFACE TEXTURE TO BSD 986.

FIRST ANGLE PROJECTION

APPROVED  
*Kevin O'Hara*

DRAWN BY  
R. HORNE  
DATE  
11/3/93

DIAGRAM  
PLATE

A3  
297 x 420

DRG No. D6425246



REF	DESCRIPTION	SHEET
<b>RELAYS</b>		
AS1-2	AUTO SYNCHRONISING RELAY	6
BTB1-2	BUS-TIE BREAKER SLAVE	6
BTS1-4	BUS-TIE SYNCHRONISING RELAY	6
FAST	FAIL TO AUTO SYNCHRONISE RELAY	6
G1B1-2	GENERATOR No.1 BREAKER SLAVE	6
G1N	GENERATOR No.1 NEUTRAL BREAKER SLAVE	6
G1S1-7	GENERATOR No.1 SYNCHRONISING	6
G2B1	GENERATOR No.2 BREAKER SLAVE	6
GTS1-4	GRID-TIE SYNCHRONISING	6
G2S1-7	GENERATOR No.2 SYNCHRONISING	6
GTB1-2	GRID-TIE BREAKER SLAVE	6
MS1-2	MANUAL SYNCHRONISING	6
SSB1	SECONDARY SUPPLY BREAKER SLAVE	6
GPFC	GRID-TIE POWER FACTOR CONTROL	6

REF	DESCRIPTION	SHEET
<b>AC RELAYS</b>		
G1VR	GENERATOR No.1 VOLTAGE RISE RELAY	5
G2VR	GENERATOR No.2 VOLTAGE RISE RELAY	5
LDB1	LEFT HAND DEAD BUS RELAY	5
LDB2	LEFT HAND DEAD BUS RELAY	5
RDB1	RIGHT HAND DEAD BUS RELAY	5
RDB2	RIGHT HAND DEAD BUS RELAY	5

REF	DESCRIPTION	SHEET
<b>SWITCHES &amp; PUSHBUTTONS</b>		
SW1	PLANT TRANSFORMER No.1 BREAKER SWITCH TRIP/N/CLOSE	7
SW2	GEN No.1 BREAKER SWITCH TRIP/N/CLOSE	7
SW3	SECONDARY SUPPLY BREAKER SWITCH TRIP/N/CLOSE	7
SW4	BUS-TIE BREAKER SWITCH TRIP/N/CLOSE	7
SW5	GRID-TIE BREAKER SWITCH TRIP/N/CLOSE	7
SW6	PLANT TRANSFORMER No.2 BREAKER SWITCH TRIP/N/CLOSE	7
SW7	GEN No.1 SYNCH SELECTOR SWITCH OFF/ON	6,7
SW8	BUS-TIE SYNCH SELECTOR SWITCH OFF/MANUAL	6,7
SW9	GRID-TIE SYNCH SELECTOR SWITCH OFF/MANUAL	6,7
SW10	SYNCHRONISING VOLTMETER SELECTOR SWITCH OFF/R/Y/B	5
SW11	DEAD BUS OVERRIDE OFF/ON	7
SW12	SYNCH SWITCH MANUAL/OFF/AUTO	6
SW13	SECONDARY SUPPLY VOLTMETER PHASE SELECTOR OFF/R/Y/B	4
SW14	GRID-TIE VOLTMETER PHASE SELECTOR OFF/R/Y/B	3
SW15	SECONDARY SUPPLY AMMETER PHASE SELECTOR OFF/R/Y/B	4
SW16	GRID-TIE AMMETER PHASE SELECTOR OFF/R/Y/B	3
SW17	GEN No.2 SYNCH SELECTOR SWITCH OFF/ON (FUTURE)	6,7
SW18	PLANT TRANSFORMER No.1 AMMETER PHASE SELECTOR OFF/R/Y/B	2
SW19	PLANT TRANSFORMER No.2 AMMETER PHASE SELECTOR OFF/R/Y/B	2
SW20	HEATER SWITCH OFF/ON	4
SW21	GEN No.2 BREAKER SWITCH TRIP/N/CLOSE (FUTURE)	7
PB1	LAMP TEST PUSHBUTTON	6

REF	DESCRIPTION	SHEET
<b>TRANSDUCERS</b>		
GTVT	GRID-TIE VOLTAGE TRANSDUCER	3
GTWT	GRID-TIE POWER TRANSDUCER	3
LBVT	LEFT HAND BUSBAR VOLTAGE TRANSDUCER	2
RBVT	RIGHT HAND BUSBAR VOLTAGE TRANSDUCER	2
SSVT	SECONDARY SUPPLY VOLTAGE TRANSDUCER	4

REF	DESCRIPTION	SHEET
<b>METERS</b>		
DF	DUAL FREQUENCY METER	5
DV	DUAL VOLTMETER	5
EXP	EXPORT KWHr & KVARHr METER (MAXIMUM DEMAND UNIT)	3
GTA	GRID-TIE AMMETER	3
G1KWHr	GENERATOR No.1 KWHr METER	7
G1KVARHr	GENERATOR No.2 KVARHr METER	7
GTPF	GRID-TIE POWER FACTOR METER	3
GTV	GRID-TIE VOLTMETER	3
GTW	GRID-TIE IMPORT/EXPORT WATTMETER	3
IMP	IMPORT KWHr & KVARHr METER (MAXIMUM DEMAND UNIT)	3
S	SYNCHROSCOPE	5
SSA	SECONDARY SUPPLY AMMETER	4
SSPF	SECONDARY SUPPLY POWER FACTOR INDICATOR	4
SSV	SECONDARY SUPPLY VOLTMETER	4
SSW	SECONDARY SUPPLY WATTMETER	4
T1KWHr	PLANT TRANSFORMER No.1 KW HOUR METER	2
T2KWHr	PLANT TRANSFORMER No.2 KW HOUR METER	2
T1A	PLANT TRANSFORMER No.1 AMMETER	2
T2A	PLANT TRANSFORMER No.2 AMMETER	2
T1PF	PLANT TRANSFORMER No.1 POWER FACTOR INDICATOR	2
T2PF	PLANT TRANSFORMER No.2 POWER FACTOR INDICATOR	2

REF	DESCRIPTION	TYPE	RATING	SHEET
FS1	L.H. BUSBAR	2F21	2 AMP	2
LK1	INSTRUMENTATION			2
FS2		2F21	2 AMP	2
FS3	R.H. BUSBAR	2F21	2 AMP	2
LK2	INSTRUMENTATION			2
FS4		2F21	2 AMP	2
FS5	GRID-TIE	2F21	2 AMP	3
LK3	INSTRUMENTATION			3
FS6		2F21	2 AMP	3
FS7	SECONDARY SUPPLY	2F21	2 AMP	4
LK4	INSTRUMENTATION			4
FS8		2F21	2 AMP	4
FS9	110V AC SUPPLY	16F21	16 AMP	4
LK5				4
FS10	ANTICONDENSATION HEATERS	4F21	4 AMP	4
LK6				4
FS11	INTERNAL LIGHTS	2F21	2 AMP	4
LK7				4
FS12	L.H. BUS V.T. SYNCHRONISING	2F21	2 AMP	5
LK8	CIRCUITS			5
FS13		2F21	2 AMP	5
FS14	GENERATOR No.1 V.T.	2F21	2 AMP	5
LK9	SYNCHRONISING CIRCUITS			5
FS15		2F21	2 AMP	5
FS16	R.H. BUS V.T. SYNCHRONISING	2F21	2 AMP	5
LK10	CIRCUITS			5
FS17		2F21	2 AMP	5
FS18	GRID V.T. SYNCHRONISING	2F21	2 AMP	5
LK11	CIRCUITS			5
FS19		2F21	2 AMP	5
FS20	GENERATOR No.2 V.T.	2F21	2 AMP	5
LK12	SYNCHRONISING CIRCUITS			5
FS21		2F21	2 AMP	5
FS22	GENERATOR No.2	2F21	2 AMP	5
LK13	INSTRUMENTATION			5
FS23		2F21	2 AMP	5
FS24	48V DC CONTROL CIRCUITS	2F21	2 AMP	5
FS25		2F21	2 AMP	5
FS26	48V INDICATION LAMPS	4F21	4 AMP	5
FS27		4F21	4 AMP	5

REF	DESCRIPTION	SHEET
<b>MISCELLANEOUS</b>		
AC	AUXILIARY CONTROLLER	3
D1-20	DIODES	6
DS1-2	DOOR MICROSWITCH	4
HTR1-3	ANTI-CONDENSATION HEATERS	4
ICT2	INTERPOSING CURRENT TRANSFORMER	3
MPFSP	MOTOTRISED POWER FACTOR SETTING POT.	3
LP1-20	MIMIC INDICATION LAMPS	6
IL1-2	INTERNAL LIGHTS	4
LPHTR	HEATER LIGHT	4
LPS1-2	SYNCHRONISING LAMPS	5
MAS100	AUTO SYNCHRONISER	5/7
MCS100	CHECK SYNCHRONISER	5/6/7
RV1-2	POTENTIOMETERS	3

**NOTES:-**

- ASSOCIATED DRAWINGS:
  - GENERAL ARRANGEMENT B9620849
  - TERMINAL ARRANGEMENT B9620851
  - GENERATOR No.1 CONTROL PANEL
  - GENERAL ARRANGEMENT B9620486
  - CIRCUIT DIAGRAM B9620487
  - TERMINAL ARRANGEMENT B9620488
- WIRING: WIRING TO CIRCUITS RATED OVER 6AMPS AND WIRING TO C.T.'S IS 2.5mm<sup>2</sup> (50/0.25) BLACK PVC INSULATED ie H1,H2,H3,H4 & ALL WIRES PREFIXED D EARTH WIRES ARE 2.5mm<sup>2</sup> (50/0.25) GREEN/YELLOW PVC INSULATED. ALL OTHER WIRING 1.5mm<sup>2</sup> (30/0.25) BLACK PVC INSULATED. ALL WIRING IS 600/1000V GRADE TO BS62.31 TYPE BK. (SHOPS TO REFER TO WIRING NOTES DRG E9620965)
- CABLE DUCTING TO BE OPEN SLOT, RIGID, GREY, SELF EXTINGUISHING PVC.
- TERMINAL DESIGNATIONS:
  - ⊙ OUTGOING TERMINALS
  - ⊙ INTERCONNECTION TERMINALS BETWEEN GCP1 AND MIMIC
  - ⊙ INTERCONNECTION TERMINALS BETWEEN GCP2 AND MIMIC
- FUSES AND LINK HOLDERS TO BE LEFT EMPTY READY FOR GENERATOR No.2 (FUTURE)
- ITEMS MARKED THUS \* ARE NOT OF BRUSH ELECTRICAL MACHINES LTD. SUPPLY.
- CUSTOMER WIRING SHOWN DASHED.



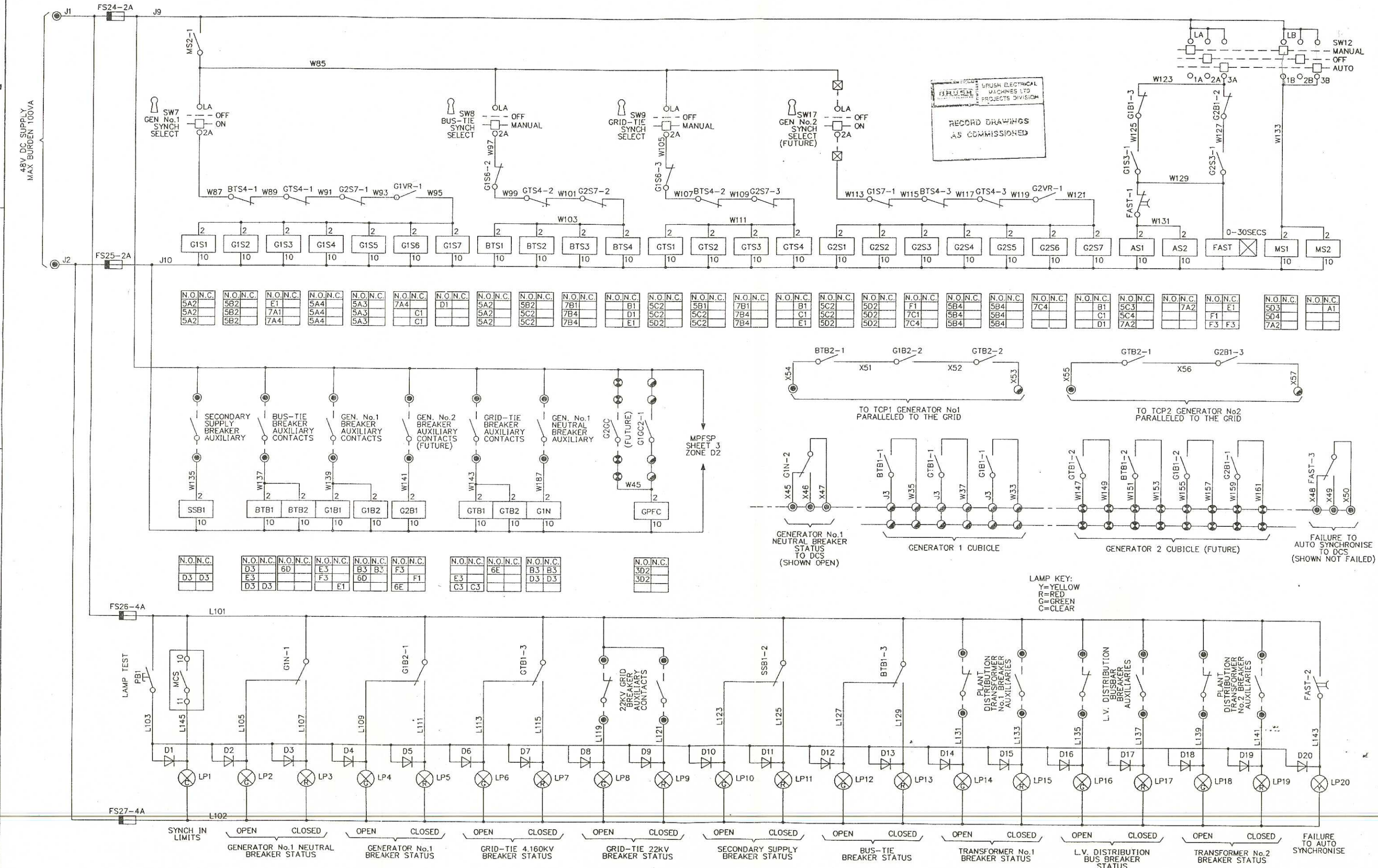
CUSTOMER:- VON ROLL  
 FOR:- TYNES BAY, BERMUDA.  
 I.C.D. CONTRACT No.:- 09/65002/JAB/APH  
 PROJECTS CONTRACT No.:- 01/25005



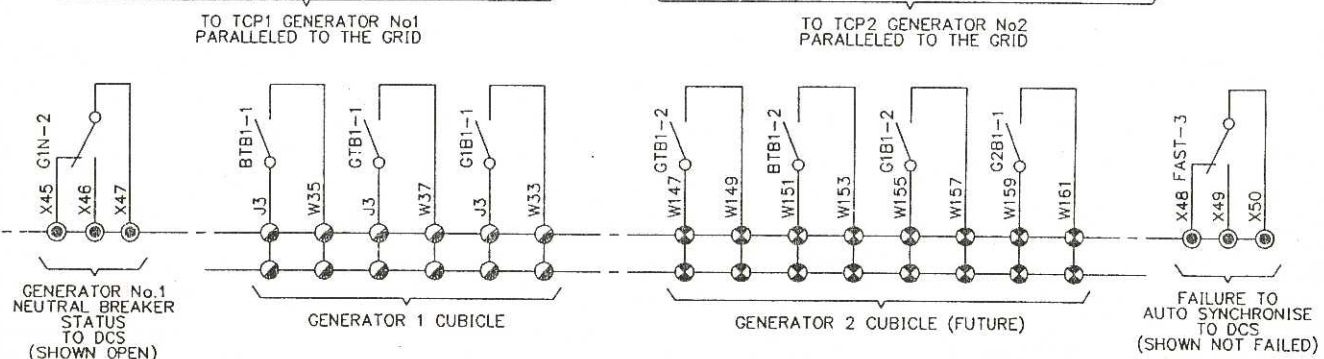








BRUSH ELECTRICAL MACHINES LTD  
 PROJECTS DIVISION  
 RECORD DRAWINGS  
 AS COMMISSIONED



DR'N	ZONE	CH'D	JAB	CARN	DATE	ISS	DR'N	ZONE	CH'D	JAB	CARN	DATE	ISS	DR'N	ZONE	CH'D	JAB	CARN	DATE	ISS	DR'N	ZONE	CH'D	JAB	CARN	DATE	ISS
ISS							DR'N	ZONE	CH'D	JAB	CARN	DATE	ISS	DR'N	ZONE	CH'D	JAB	CARN	DATE	ISS	DR'N	ZONE	CH'D	JAB	CARN	DATE	ISS
ISS							DR'N	ZONE	CH'D	JAB	CARN	DATE	ISS	DR'N	ZONE	CH'D	JAB	CARN	DATE	ISS	DR'N	ZONE	CH'D	JAB	CARN	DATE	ISS

**REVISIONS:**

- C BTB2,GTB2 ADDED GEN PARALLELED TO THE GRID SIGNALS ADDED
- B FAILURE TO AUTO SYNCH. CHANGEOVER CONTACT TO DCS ADDED.
- D WIRE NUMBER X53 WAS W33.

**APPENDIX:**

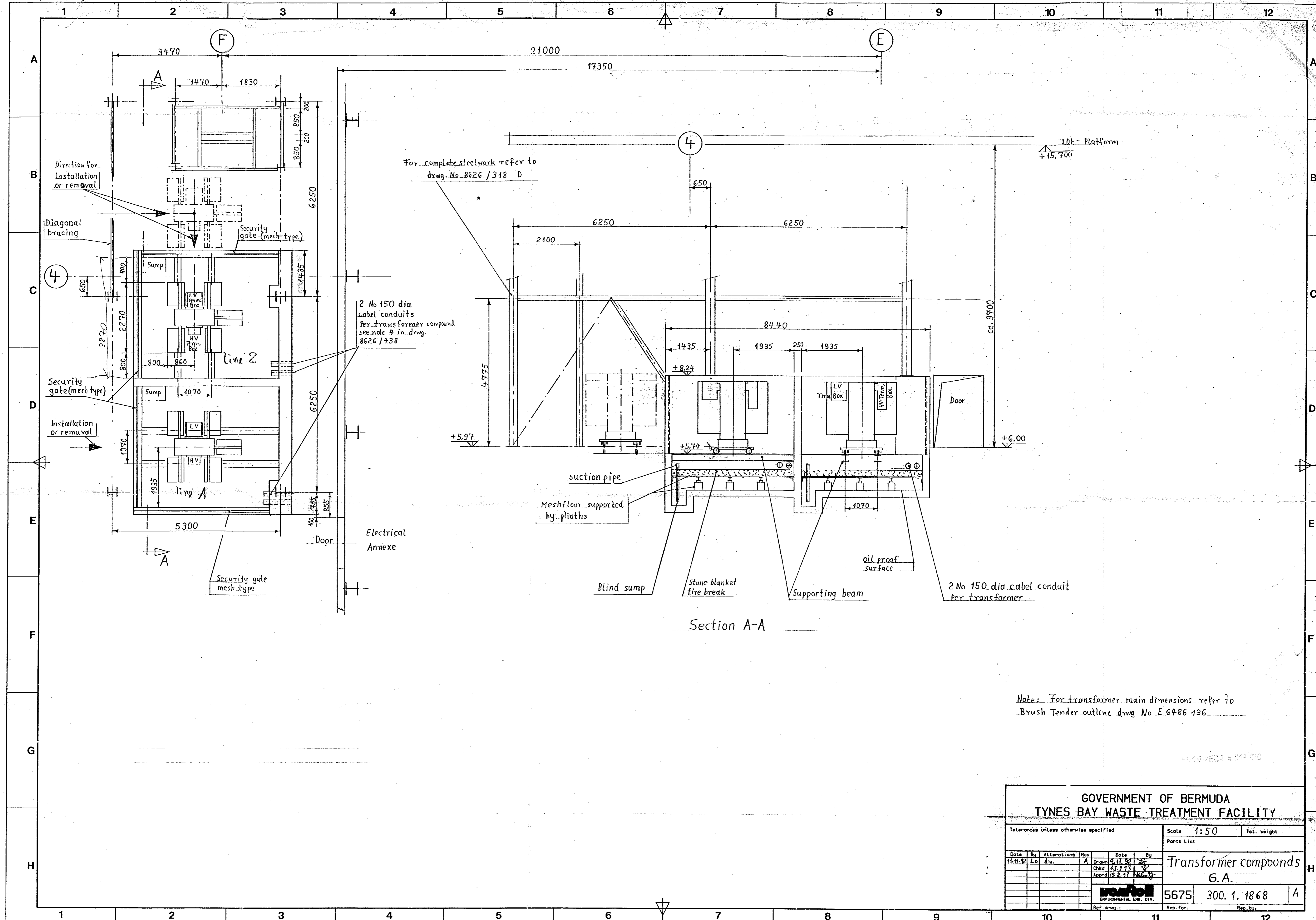
- DR'N FRC ZONE
- CH'D JAB CARN
- APP BLG DATE 16/6/94
- DR'N GM ZONE
- CH'D JAB CARN 09/7/89
- APP BLG DATE 17/5/93

**PROJECT INFORMATION:**

- CIRCUIT L
- 1st CONTRACT No. DRG. REF. 09/65002
- CAD. REF. 2085006D
- BRUSH ELECTRICAL MACHINES LTD
- LOUGHBOROUGH, ENGLAND.
- 1993
- BRUSH ELECTRICAL MACHINES LTD
- PROJECTS DIVISION
- CIRCUIT DIAGRAM OF MIMIC PANEL
- B 9620850
- SHEET 6 OF 7
- ISSUE D

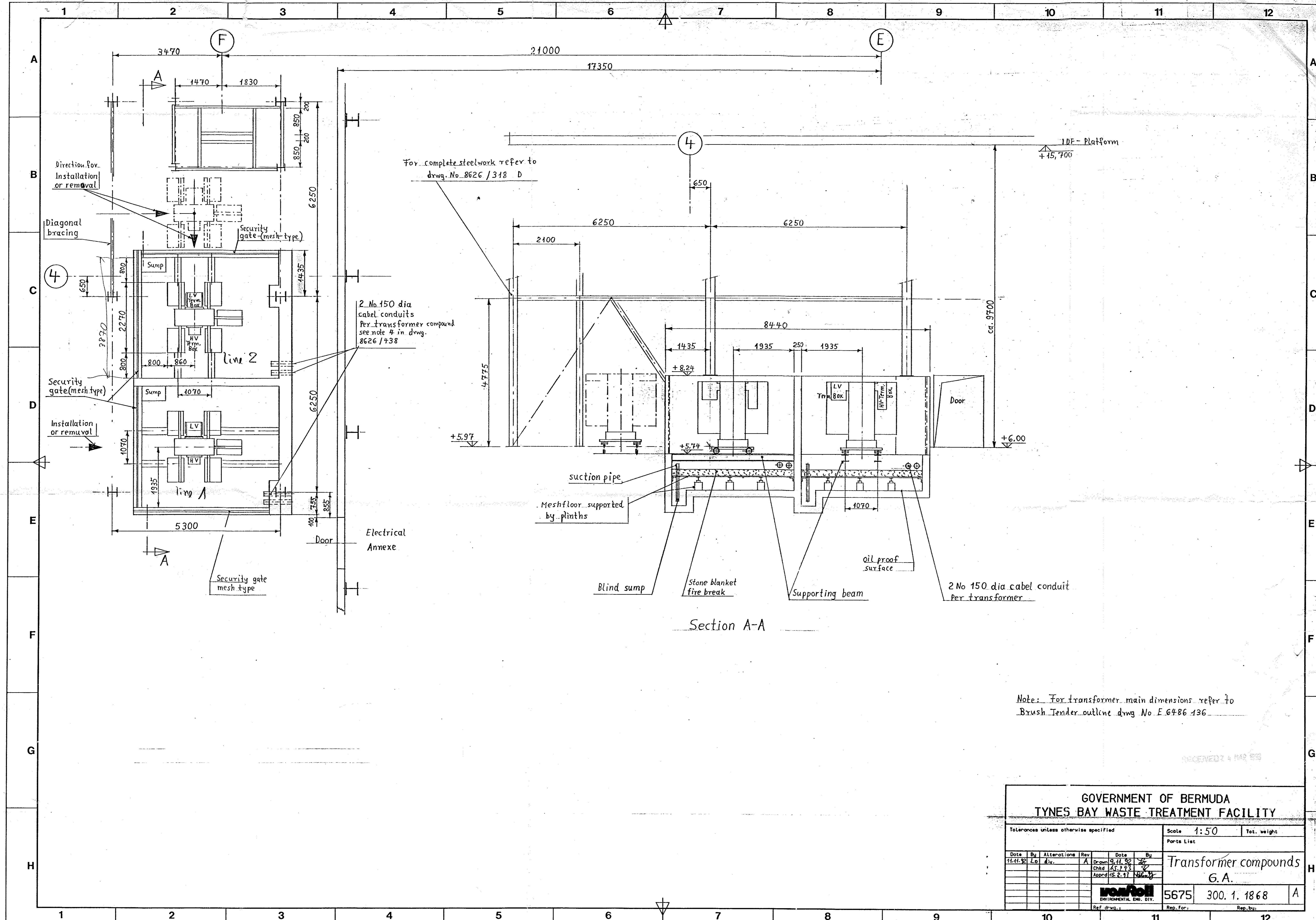






Note: For transformer main dimensions refer to Brush Tender outline drwg No. E.6486.136

GOVERNMENT OF BERMUDA										TYNES BAY WASTE TREATMENT FACILITY			
Tolerances unless otherwise specified										Scale 1:50		Tot. weight	
										Parts List			
Date	By	Alterations	Rev	Date	By	Transformer compounds							
11.11.92	Lo		A	09.11.92	GA								
						G.A.							
						5675 300.1.1868							
Ref. drwg.										Rep. for		Rep. by	



Note: For transformer main dimensions refer to Brush Tender outline drwg No. E.6486.136

GOVERNMENT OF BERMUDA										TYNES BAY WASTE TREATMENT FACILITY			
Tolerances unless otherwise specified										Scale 1:50		Tot. weight	
										Parts List			
Date	By	Alterations	Rev	Date	By	Transformer compounds							
11.11.92	Lo		A	09.11.92	GA								
						G.A.							
						5675 300.1.1868							
Ref. drwg.										Rep. for		Rep. by	