

AREVA

TENDER : Transmission corporation of Andhra Pradesh

DATE : 19/01/2010

TECHNICAL DATA SHEET OF CIRCUIT-BREAKER WITH SPRING MECHANISM

PROJECT : Nagari SS &
 CUSTOMER :
 COUNTRY : India

Particulars	UNIT
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Reference standard	IEC 62271-100
Number of poles per circuit-breaker	3
Number of interrupting units per pole	1
Capacitors in parallel with breaking chambers	No
Capacitor value per phase	NA
Type of control mechanism	SPRING
Circuit-breaker class	Outdoor
Minimum ambient temperature	-25
Maximum ambient temperature	50
Height of support structure	3300
Height of installation	1000
Phase spacing	>3000

Rated characteristics	
Main characteristics	
Rated voltage	245
Rated frequency	50
Rated continuous current	3150
Rated peak withstand current	100
Rated short-time withstand current	40
Rated duration of short-circuit	3
Rated insulation level (at sea level)	
Rated power frequency withstand voltage during 1 min	460
- phase/earth, phase/phase	460
Rated lightning impulse withstand voltage	1050
- phase/earth, phase/phase	1050
Rated switching impulse withstand voltage	1050
- across open contacts	1050
Us (kV p)	NA
- phase/earth	NA
- across open contacts	NA

Rated characteristics	
Rated short-circuit breaking current	40
First-pole-to-clear-factor	1.3
D.C component (% of the A.C component)	50
Peak value of rated short-circuit making current	100
Rated breaking current for short line faults	As per IEC
Rated out-of-phase breaking current	10
Rated voltage range factor	2
- Rated voltage at power frequency	283
Rated line-charging breaking current	125 (Class C2)
- Rated voltage range factor	1.4
- Rated voltage range factor	198

OPERATING TIMES	
Rated opening time from opening coil energizing to separation of the main contacts	27 (max)
Rated breaking time from opening coil energizing to arc extinction	50
Rated closing time from closing coil energizing to contact establishment	74
Time interval between phases during opening operation	3
Time interval between phases during closing operation	5
Time interval between chambers of one phase during opening operation	NA
Time interval between chambers of one phase during closing operation	NA

Breaking and Making Characteristics	
Rated short-circuit breaking current	40
Rated pole-to-clear-factor	1.3
D.C component (% of the A.C component)	50
Peak value of rated short-circuit making current	100
Rated breaking current for short line faults	As per IEC
Rated out-of-phase breaking current	10
Rated voltage range factor	2
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Standardised Guaranteed Technical Particulars and Drawings for 220KV Circuit Breaker (Areva Make).	APTRANSCO
STD/GTP-DWG/Approval No. 219-1-1	
Revision No. 0	
Prepared & Approved during October - 2011	

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 31/10/11
 CHIEF ENGINEER / CONSTRUCTION - APTRANSCO/WIDYUTH SOUTH ANDHRA

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Operation			
Protection level of control cubicle	IP55		
Protection level of spring mechanism cubicle	IP55		
Operation	Single/Three phase		
Rated operating sequence	0-0.3s-CO-3min-CO		
Rated operating sequence without motor supply	0-CO		
Radio interference level	<1000	(µV)	
Rated voltage range factor	1.1		
Test voltage	156	(kV)	
Test frequency	1	(MHz)	
Built-in closing resistors	No		
Insulators	6125	(mm)	
Creepage distance across terminals	6125	(mm)	
Creepage distance between live parts and earth	6125	(mm)	
Colors of insulators	Brown		
Insulating gas	SF6		
% SF6	100		
Rated absolute pressure at 20°C	0.75	(Mpa)	
Minimum absolute pressure at 20°C	0.61	(Mpa)	
Relative leakage rate	<1	(% per year)	
Number of disintegrators per circuit-breaker	3		
With pressure reading	Yes		
Pressure unit	Mpa (Abs)		
Safety device with pressure relief disc	Yes		
MECHANICAL DATA			
Horizontal seismic value	0.3	(g)	
Vertical seismic value	0.3	(g)	
Static terminal loads	125	(dan)	
- Horizontal longitudinal strength	100	(dan)	
- Horizontal transversal strength	125	(dan)	
- Vertical strength	125	(dan)	
LOW VOLTAGE SPECIFICATION			
Motor voltage	230 V ac	(V)	
Circuit motor protection	MCB		
Motor voltage minimum range	85	%	
Motor voltage maximum range	110	%	
Opening and closing voltage supply	220 V dc	(V)	
Control circuits protection	MCB		
Opening voltage minimum range	85	%	
Opening voltage maximum range	110	%	
Closing voltage minimum range	85	%	
Closing voltage maximum range	110	%	
Lighting circuit voltage	230 V ac	(V)	
Heating circuit voltage	230 V ac	(V)	
Heating-lighting circuits protection	MCB		
Local electrical control with two push-buttons	Yes		
Antipumping relay	Yes		
Local-remote selector switch	Yes		
Second electrical opening circuit	220 V dc	(V)	
Supervision of opening coils	Yes - Sup. relays not provided		
Supervision of closing coils	Yes - Sup. relays not provided		
Automatic opening when phase discordance through time delay relay	NA		
Signaling contacts of springs position	1 NO		
Number of available auxiliary NO contacts	10		
Number of available auxiliary NC contacts	NA		
Motor sequence for springs relay	Standard		
Type of terminals for customer connection	Standard		
Type of wiring in electrical cubicle	Black & White Text		
Position indicator Open/Closed	Black & White Text		
Indicator of spring position	Yes: Provision only		
Earthing pad of the electrical cubicle	Standard		

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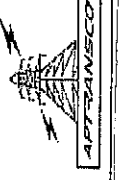
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				DATE	DETAILS	DATE
1	4211700APT-STDEDS14001	1 of 11	CONTENTS OF ELECTRICAL DRAWINGS	31.08.2011	ORIGINAL ISSUE	
2	4211700APT-STDEDS14001	2 of 11	GENERAL NOTES	31.08.2011	ORIGINAL ISSUE	
3	4211700APT-STDEDS14001	3 of 11	LEGEND	31.08.2011	ORIGINAL ISSUE	
4	4211700APT-STDEDS14001	4 of 11	CLOSING AND ANTI-PUMPING CIRCUIT	31.08.2011	ORIGINAL ISSUE	
5	4211700APT-STDEDS14001	5 of 11	TRIP SYSTEM 1 AND POLE DISCREPANCY	31.08.2011	ORIGINAL ISSUE	
6	4211700APT-STDEDS14001	6 of 11	TRIP SYSTEM 2	31.08.2011	ORIGINAL ISSUE	
7	4211700APT-STDEDS14001	7 of 11	REMOTE ALARMS	31.08.2011	ORIGINAL ISSUE	
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9	4211700APT-STDEDS14001	9 of 11	SPARE AUXILIARY CONTACTS	31.08.2011	ORIGINAL ISSUE	
10	4211700APT-STDEDS14001	10 of 11	TERMINAL BLOCK DETAILS	31.08.2011	ORIGINAL ISSUE	
11	4211700APT-STDEDS14001	11 of 11	TERMINAL BLOCK DETAILS	31.08.2011	ORIGINAL ISSUE	

245KV 40KA SF6 CB TYPE GL314 WITH 3 Nos. SPRING MECH.	
PROJECT	APTRANSCO STANDARD DRAWINGS
CONSULTANT	APTRANSCO STANDARD DRAWINGS
CONTRACTOR	APTRANSCO STANDARD DRAWINGS
CUSTOMER	APTRANSCO STANDARD DRAWINGS
P.O. REF.	APTRANSCO STANDARD DRAWINGS
SALE ORDER No.	APTRANSCO STANDARD DRAWINGS
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T&D	SCALE
Chennai India	/-
MODIFICATION	
DATE: 31.08.2011	
NAME: KRP	
APPROVED	
DATE: 31.08.2011	
NAME: AA	
CIRCUIT BREAKER	
TYPE : GL314 (245kv)	
CONTENTS OF	
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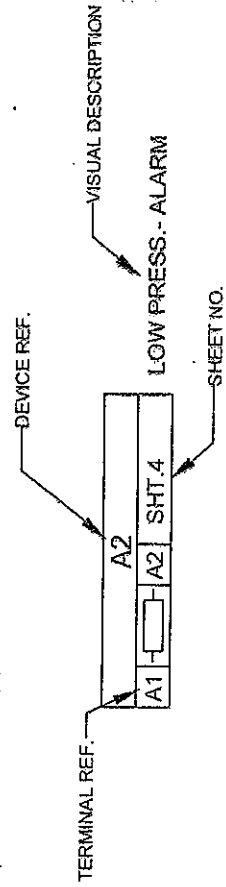


NOTES:

- 1) SCHEME SHOWS BREAKER TRIPPED, WITHOUT SF6 GAS PRESSURE AND CLOSING SPRING CHARGED
- 2) CONTACTORS SHOWN IN DE-ENERGISED CONDITION
- 3) PANEL WIRED WITH FRLS COPPER WIRE SIZE 2.5 Sq.mm
- 4) COLOUR OF WIRES: BLACK - AC CIRCUIT, GREY - DC CIRCUIT, GREEN - EARTH
- 5) CONTINUOUS POWER USED FOR SUPERVISION OF COILS SHOULD NOT EXCEED 4 WATT
- 6) ALL TERMINALS USED IN CONTROL CUBICLE ARE OF STUD TYPE ELMEX/CONNECTWELL TYPE CATM4/ CTSB4.
- 7) ALL TERMINALS USED IN MECHANISM CUBICLE ARE OF SCREW TYPE ELMEX/CONNECTWELL TYPE CUT4/ CTS4JN.
- 8) LOCATION REFERENCE
 - ⊙ — MULTICORE TERMINAL
 - DM — DENSI-METER
 - MC — MECHANISM CUBICLE
 - CC — CONTROL CUBICLE
- 9) GAS PRESSURE

SF6 PRESSURE MPa (ABSOLUTE) AT 20°C	
FILLING	0.75
ALARM (P1)	0.64
LOCKOUT (P2)	0.61

10) CROSS REFERENCE



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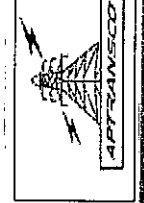
SPECIFICATION SHEET FOR MECHANISM CUBICLES - A, B & C

REF	DESCRIPTION	REF IN DWG	UNIT
ME2	GROUNDING	ME2	MEGA
ME3	GROUNDING	ME3	MEGA
ME4	GROUNDING	ME4	MEGA
ME5	GROUNDING	ME5	MEGA
ME6	GROUNDING	ME6	MEGA
ME7	GROUNDING	ME7	MEGA
ME8	GROUNDING	ME8	MEGA
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ME19	GROUNDING	ME19	MEGA
ME20	GROUNDING	ME20	MEGA
ME21	GROUNDING	ME21	MEGA
ME22	GROUNDING	ME22	MEGA
ME23	GROUNDING	ME23	MEGA
ME24	GROUNDING	ME24	MEGA
ME25	GROUNDING	ME25	MEGA

DC Control voltage: 220V DC
AC Control voltage: 240V AC

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SPECIFICATION SHEET FOR CONTROL CUBICLE

REF	DESCRIPTION	REF IN DWG	UNIT
ME1	MECHANISM	ME1	MEGA
ME2	MECHANISM	ME2	MEGA
ME3	MECHANISM	ME3	MEGA
ME4	MECHANISM	ME4	MEGA
ME5	MECHANISM	ME5	MEGA
ME6	MECHANISM	ME6	MEGA
ME7	MECHANISM	ME7	MEGA
ME8	MECHANISM	ME8	MEGA
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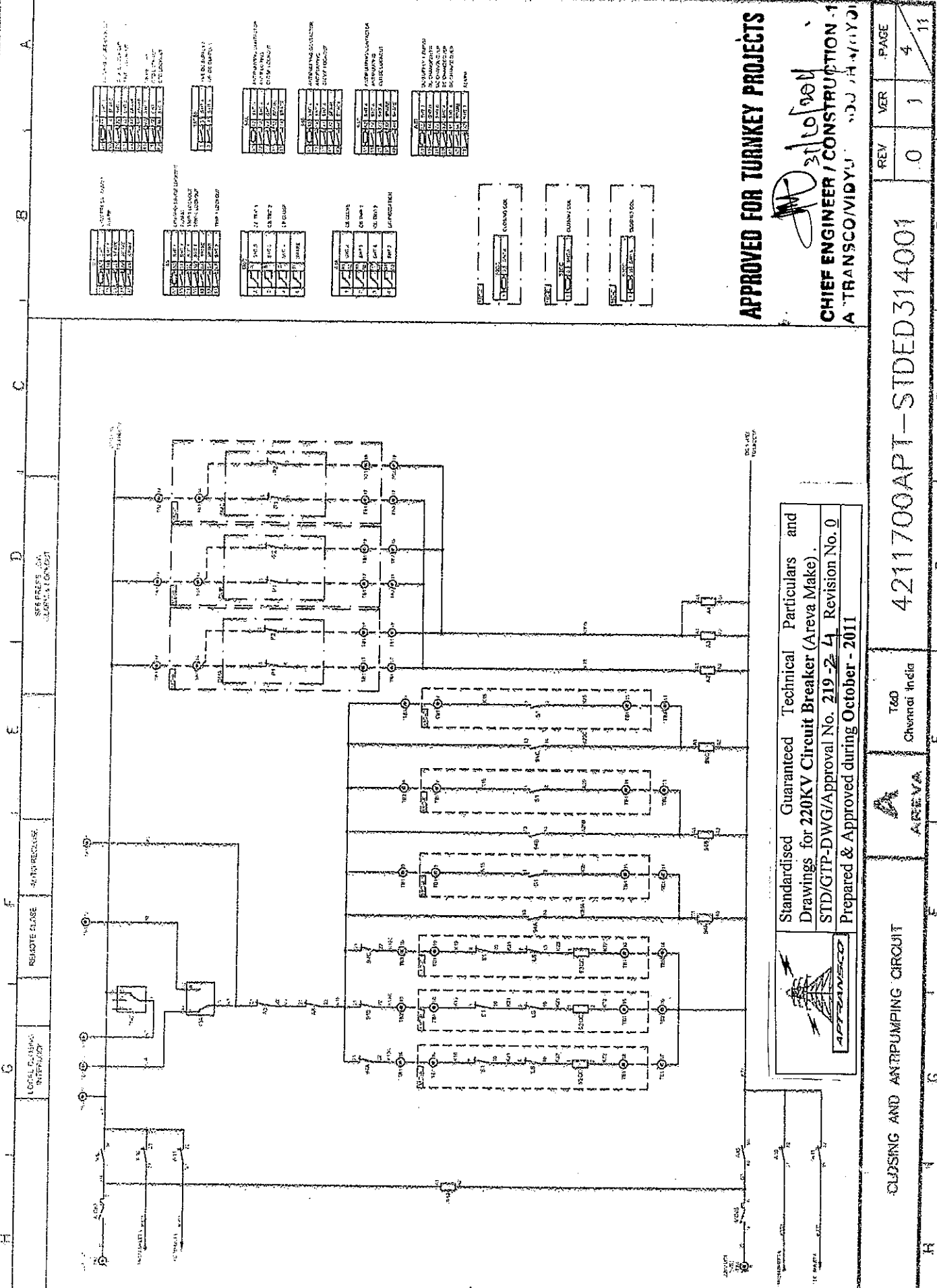
LEGEND

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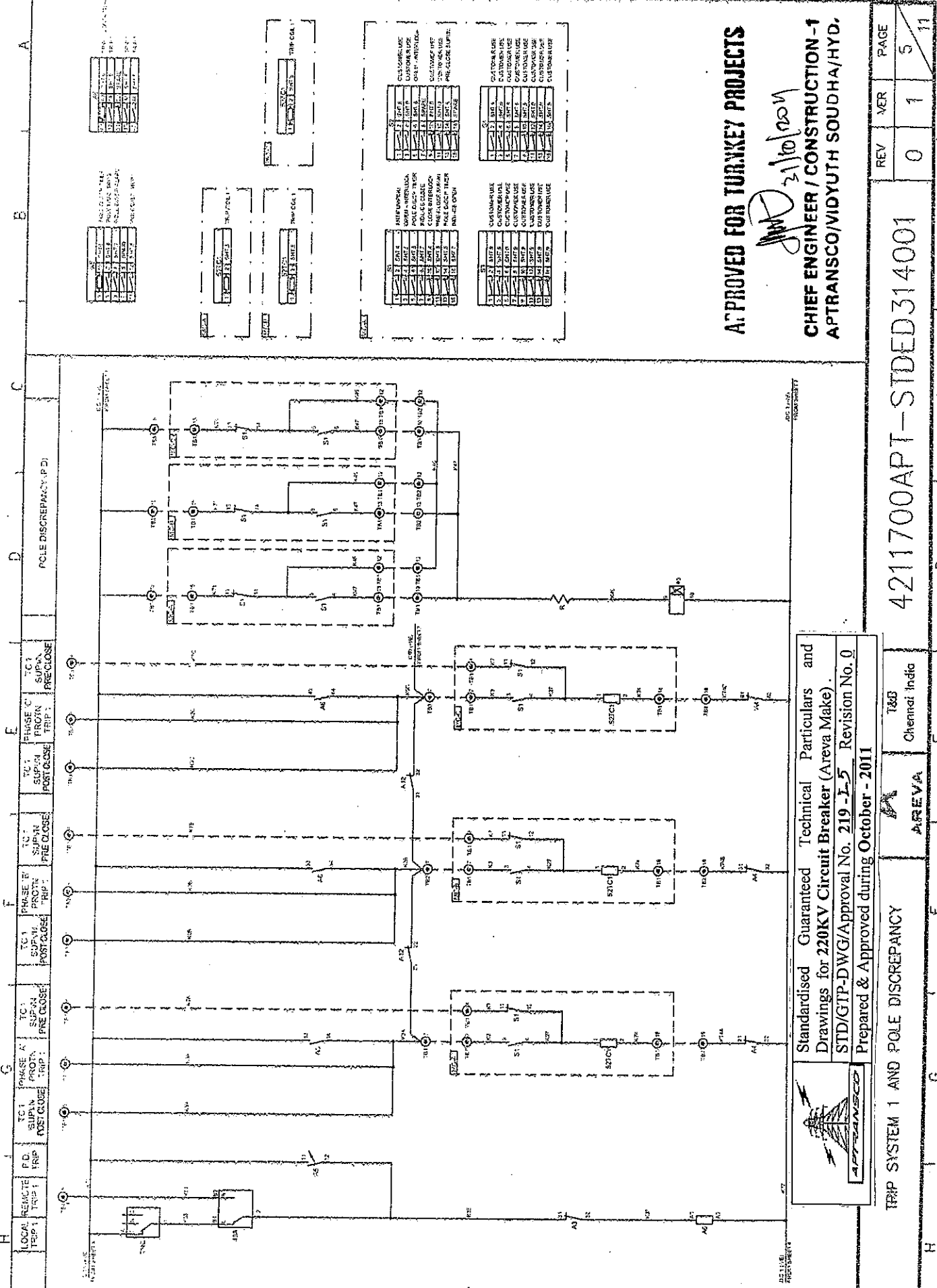


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CLOSING AND ANTI-PUMPING CIRCUIT

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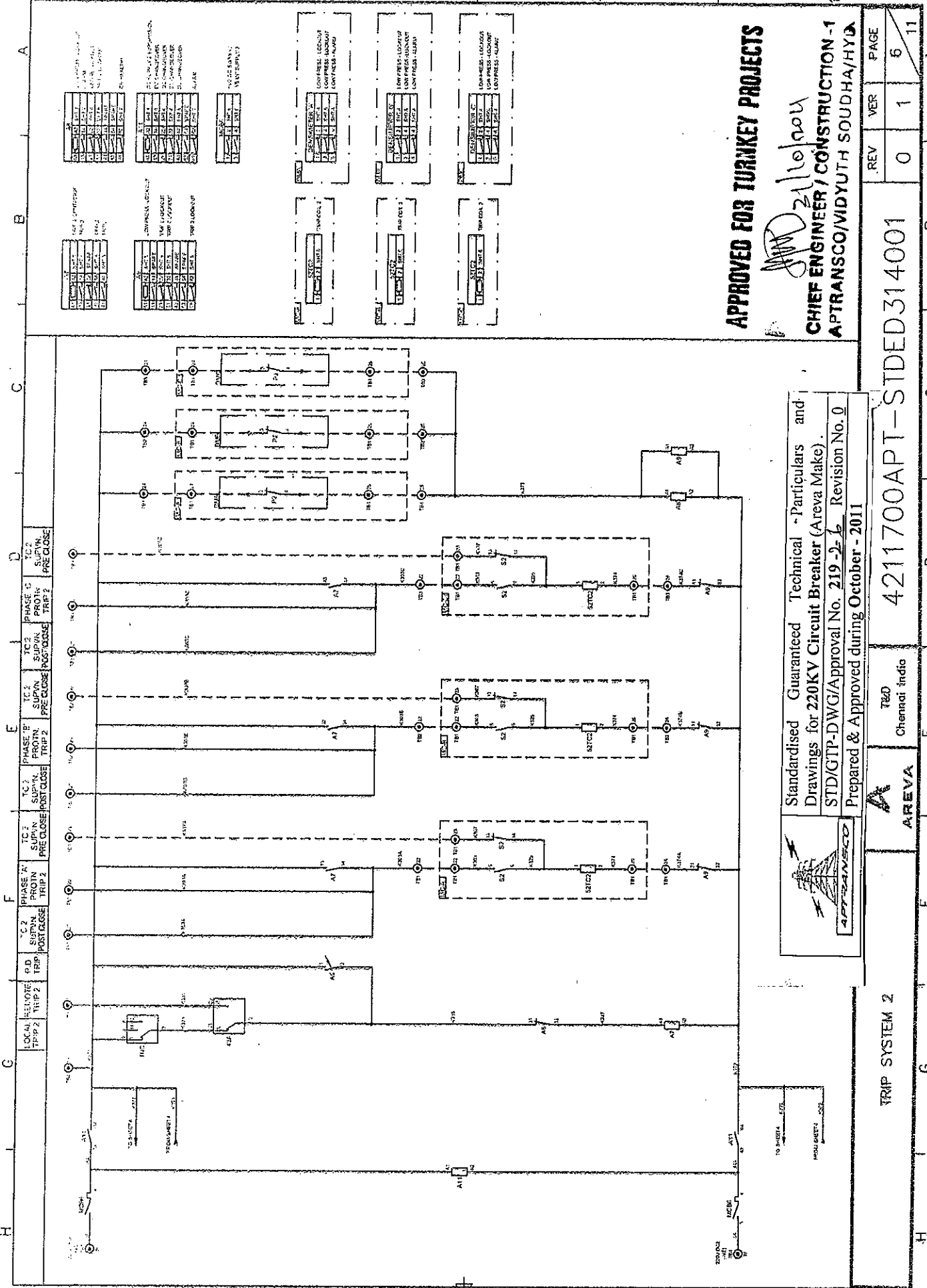
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TRIP SYSTEM 1 AND POLE DISCREPANCY

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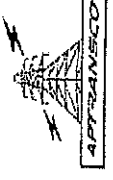


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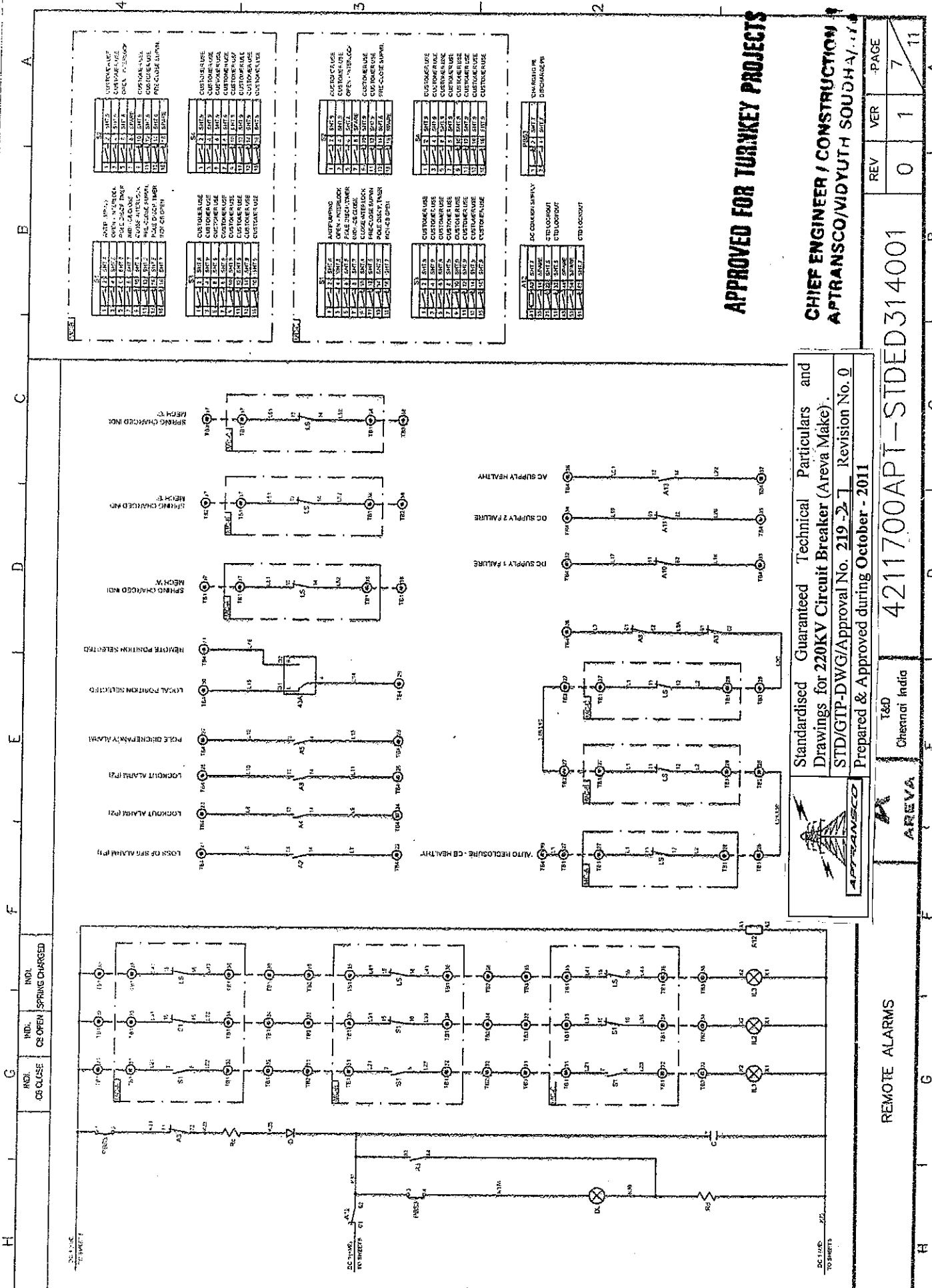
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TRIP SYSTEM 2

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REMOTE ALARMS

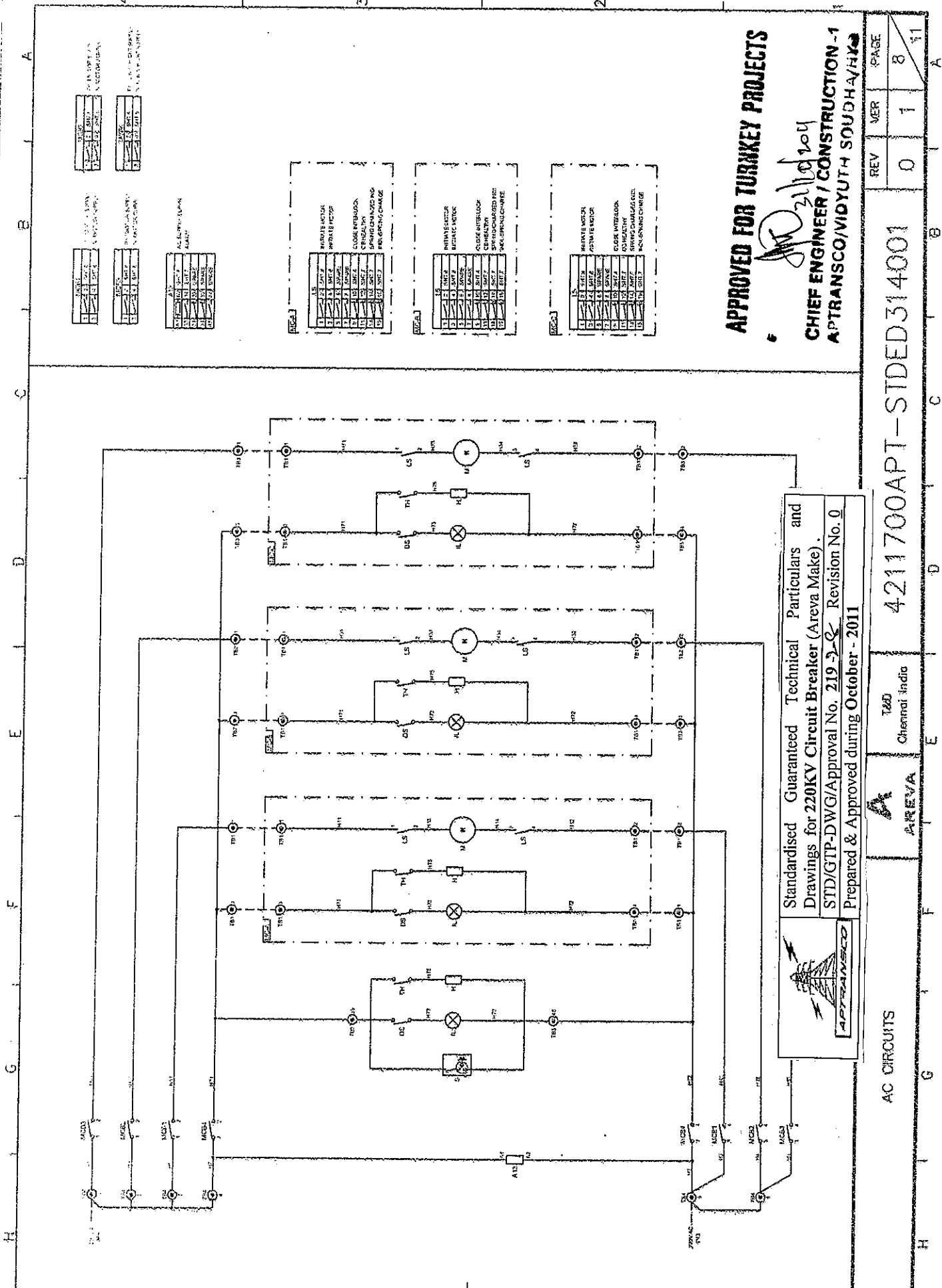
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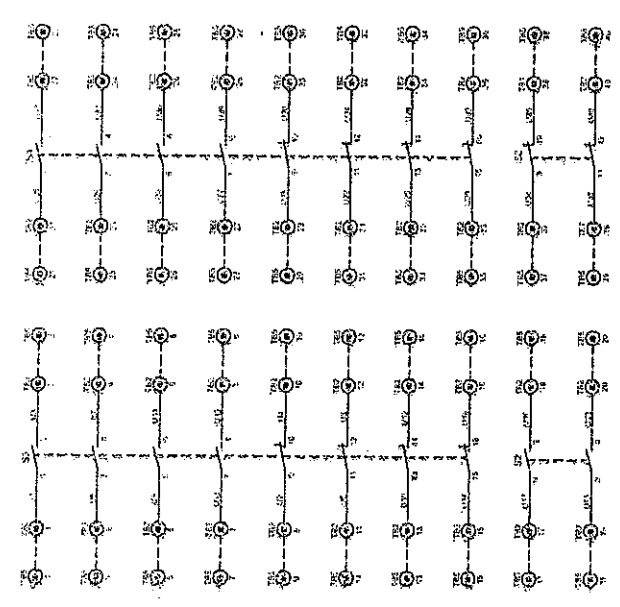
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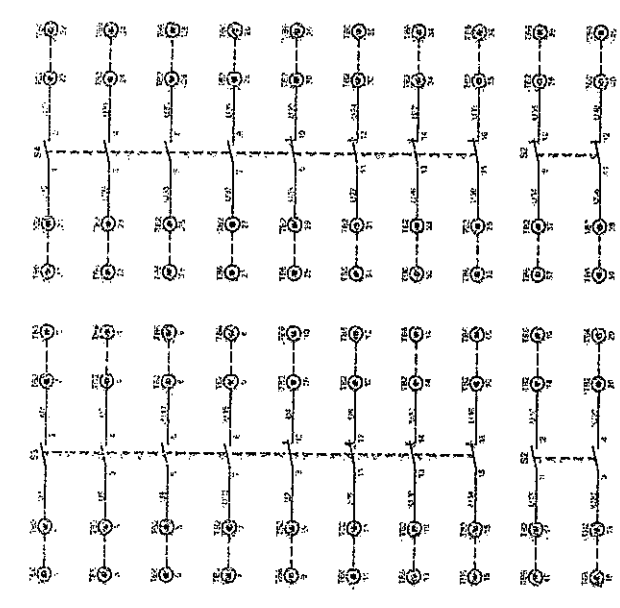
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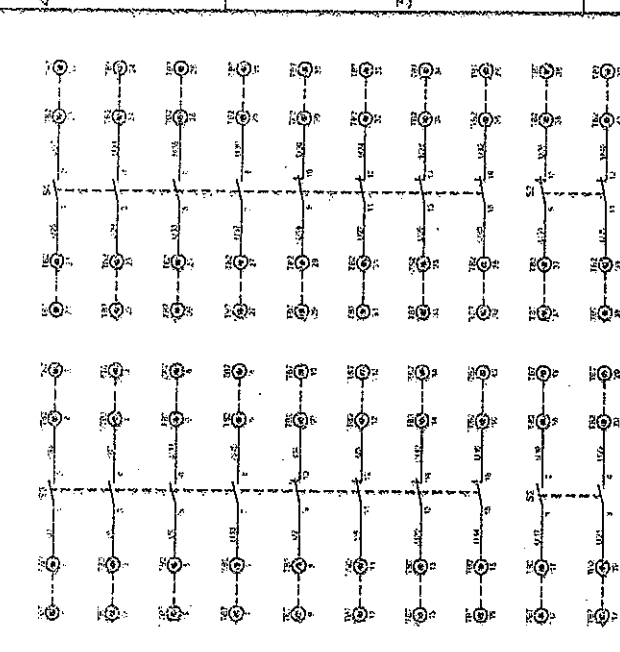
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MECHANISM - B - SPARE AUXILIARY CONTACTS




MECHANISM - C - SPARE AUXILIARY CONTACTS




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TERMINAL BLOCK DETAILS

AREVA

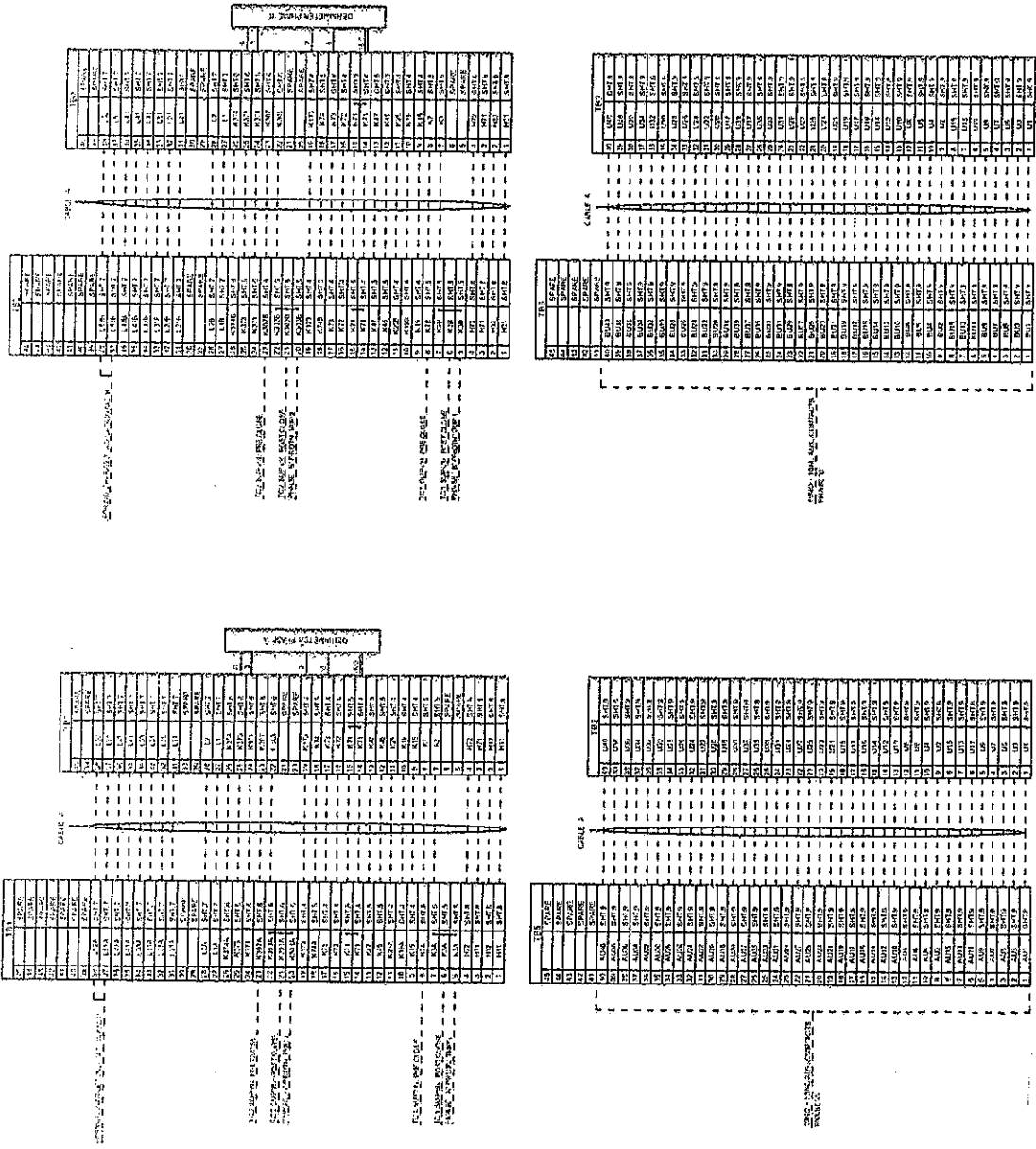
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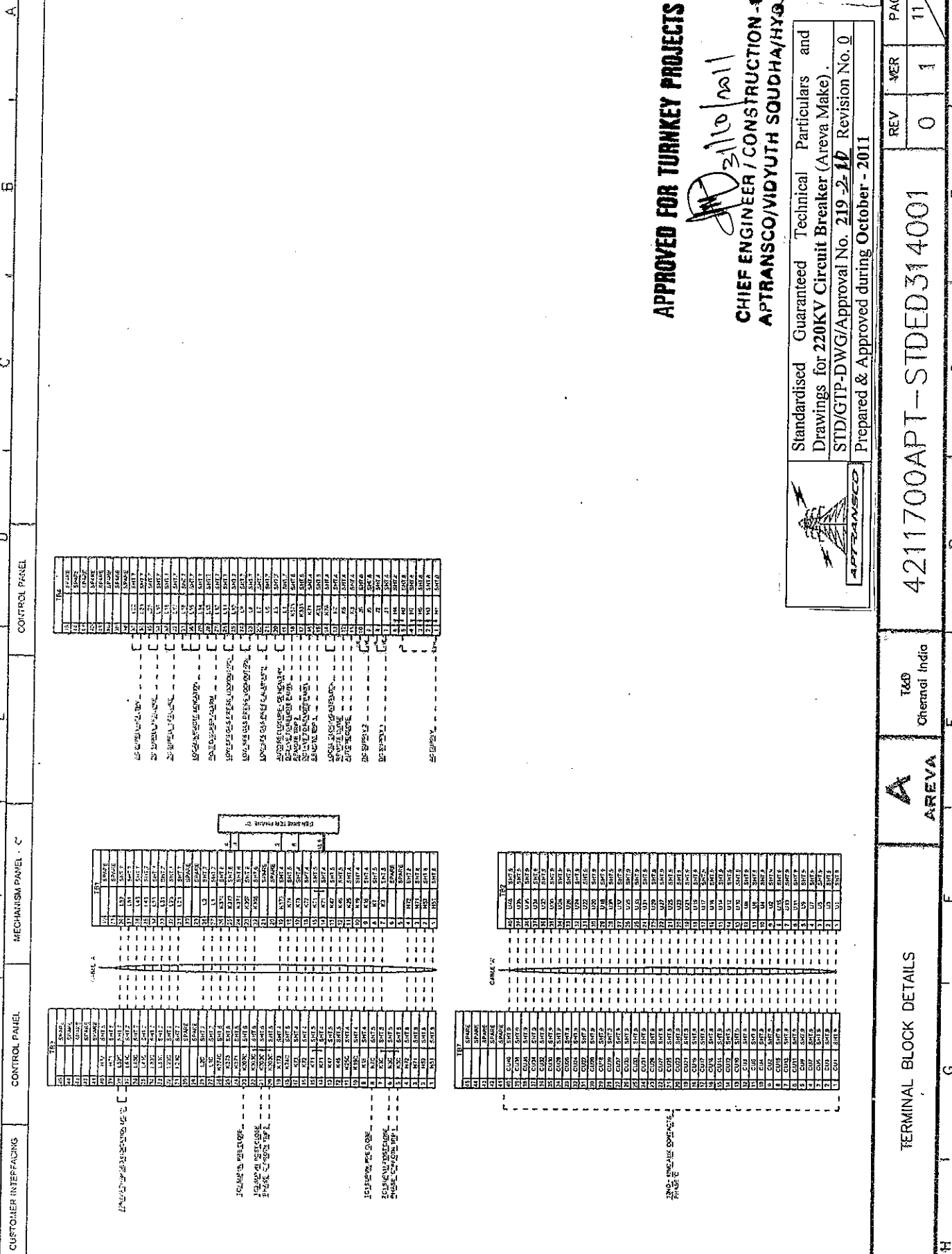
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 JMD 23/10/2011
 CHIEF ENGINEER / CONSTRUCTION -1
 APTRANSCO/VIDYUTH SOUDHA/HYD.

CABLE 'A' - 2 X 20 CORE ARMORED FRLS CABLE (70 METERS)
 (LENGTH SHOWN ARE ONLY INDICATIVE)




CUSTOMER INTERFACING		MECHANISM PANEL - P		CONTROL PANEL		MECHANISM PANEL - E	
1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64
65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	96
97	98	99	100	101	102	103	104
105	106	107	108	109	110	111	112
113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128
129	130	131	132	133	134	135	136
137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152
153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168
169	170	171	172	173	174	175	176
177	178	179	180	181	182	183	184
185	186	187	188	189	190	191	192
193	194	195	196	197	198	199	200



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APTRANSCO/VIDYUTH SQUADHA/HYD.



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 STD/GTP-DWG/Approval No. 219-2-10 Revision No. 0
 Prepared & Approved during October - 2011

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SL NO	DRAWING NO	SHT NO	TITLE	REV 3	REV 2	REV 1	REV 0
				DATE	DATE	DATE	DATE
1	4211700APT-STDGA314001	1 of 9	CONTENTS OF GENERAL ARRANGEMENT	31.08.2011			
2	4211700APT-STDGA314001	2 of 9	OUTLINE AND GENERAL ARRANGEMENT	31.08.2011			
3	4211700APT-STDGA314001	3 of 9	FOUNDATION PLAN	31.08.2011			
4	4211700APT-STDGA314001	4 of 9	SUPPORT STRUCTURE	31.08.2011			
5	4211700APT-STDGA314001	5 of 9	MECHANISM CUBICLE	31.08.2011			
6	4211700APT-STDGA314001	6 of 9	CONTROL CUBICLE	31.08.2011			
7	4211700APT-STDGA314001	7 of 9	EQUIPMENT LAYOUT OF MECHANISM CUBICLE	31.08.2011			
8	4211700APT-STDGA314001	8 of 9	EQUIPMENT LAYOUT OF CONTROL CUBICLE	31.08.2011			
9	4211700APT-STDGA314001	9 of 9	PLATFORM ASSEMBLY	31.08.2011			

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 STD/GTP-DWG/Approval No. 219-2-12- Revision No. 0
 Prepared & Approved during October - 2011

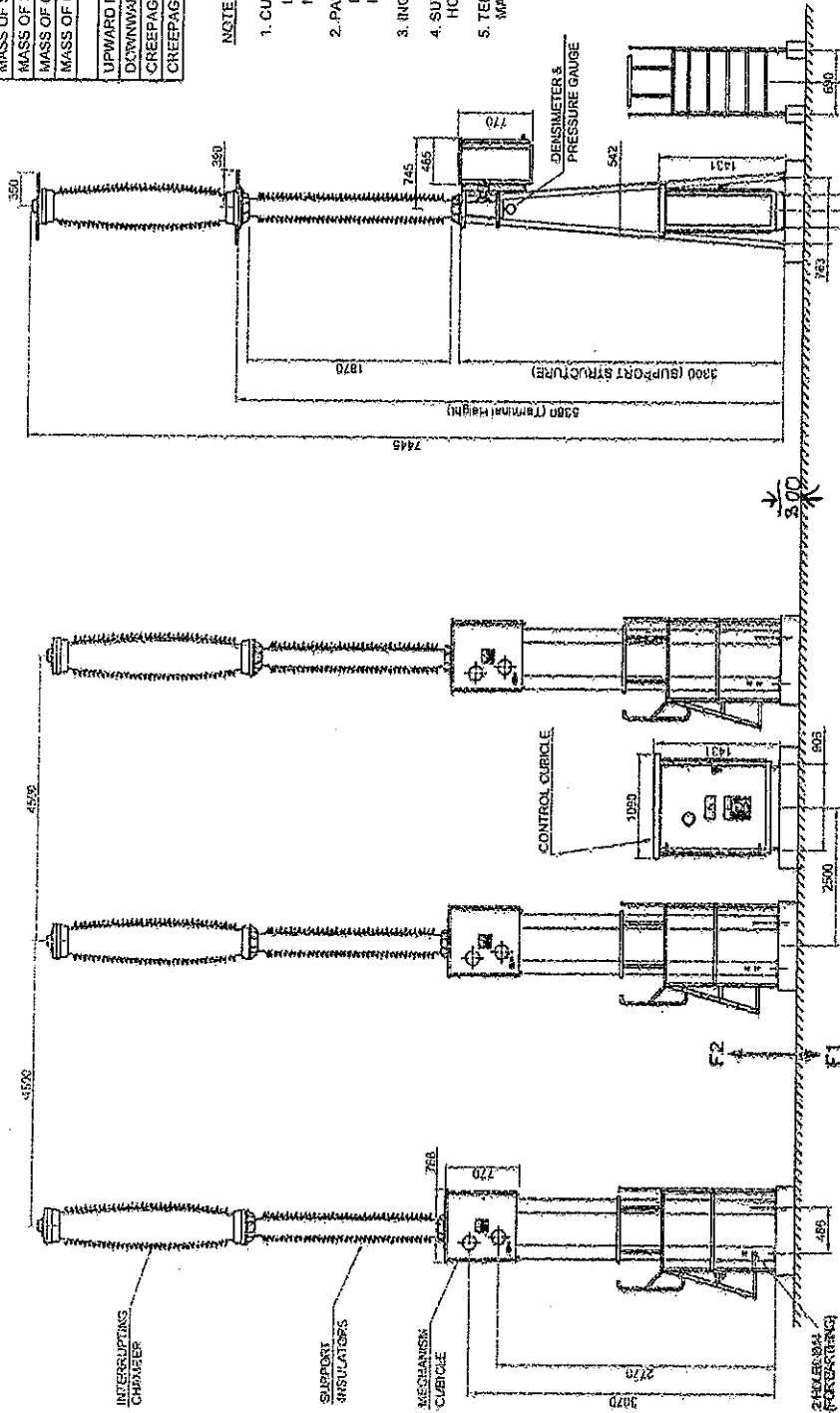
PROJECT		APTRANSCO STANDARD DRAWINGS	
CONSULTANT		APTRANSCO STANDARD DRAWINGS	
CONTRACTOR		APTRANSCO STANDARD DRAWINGS	
CUSTOMER		APTRANSCO STANDARD DRAWINGS	
P.O. REF.		APTRANSCO STANDARD DRAWINGS	
SALE ORDER No.		APTRANSCO STANDARD DRAWINGS	
As title specified.			
A	AREVA	A3	SCALE
TEO	Chennai India	/	/
MODIFICATION		CIRCUIT BREAKER	
DATE: 31.08.2011		TYPE : GL314 (245kV)	
NAME: KRP		CONTENTS OF	
APPROVED		GENERAL ARRANGEMENT	
DATE: 31.08.2011		PAGE	
NAME: AA		1 / 9	
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ALL DIMENSIONS ARE IN MM

PERMISSIBLE STRENGTH IN THE TERMINALS	125 d5d
HORIZONTAL TENSILE STRENGTH	702 d5d
TRANSVERSAL HORIZONTAL STRENGTH	125 d6d
VERTICAL STRENGTH	265 kg
MASS OF ONE COMPLETE POLE	160 kg
MASS OF SUPPORT STRUCTURE	150 kg
MASS OF SPRING CONTROL MECHANISM	3000 kg
MASS OF CIRCUIT BREAKER	1500 d5d
UPWARD F2	2200 d6d
DOWNWARD F1	6125/mks
CREEPAGE DISTANCE TO EARTH IN (mm)	6125 (min)
CREEPAGE DISTANCE BETWEEN TERMINALS IN (mm)	

- NOTE :-
1. CUBICLES SHEET THICKNESS SHALL BE OF LOAD BEARING MEMBERS : 3mm CR SHEET NON-L CAD BEARING MEMBERS : 2mm CR SHEET
 2. PAINT SHADE FOR EXTERIOR : 631 OF BS INTERIOR : GLOSSY WHITE
 3. INGRESS PROTECTION : IP 45
 4. SUPPORT STRUCTURE SHALL BE HOT DIP GALVANISED TO 070g/SM2
 5. TERMINAL CONNECTORS ARE NOT IN CS MANUFACTURER'S SCOPE OF SUPPLY



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JMD 23/10/11

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STD/GTP-DWG/Approval No. 219-2-13 Revision No. 0
Prepared & Approved during October - 2011



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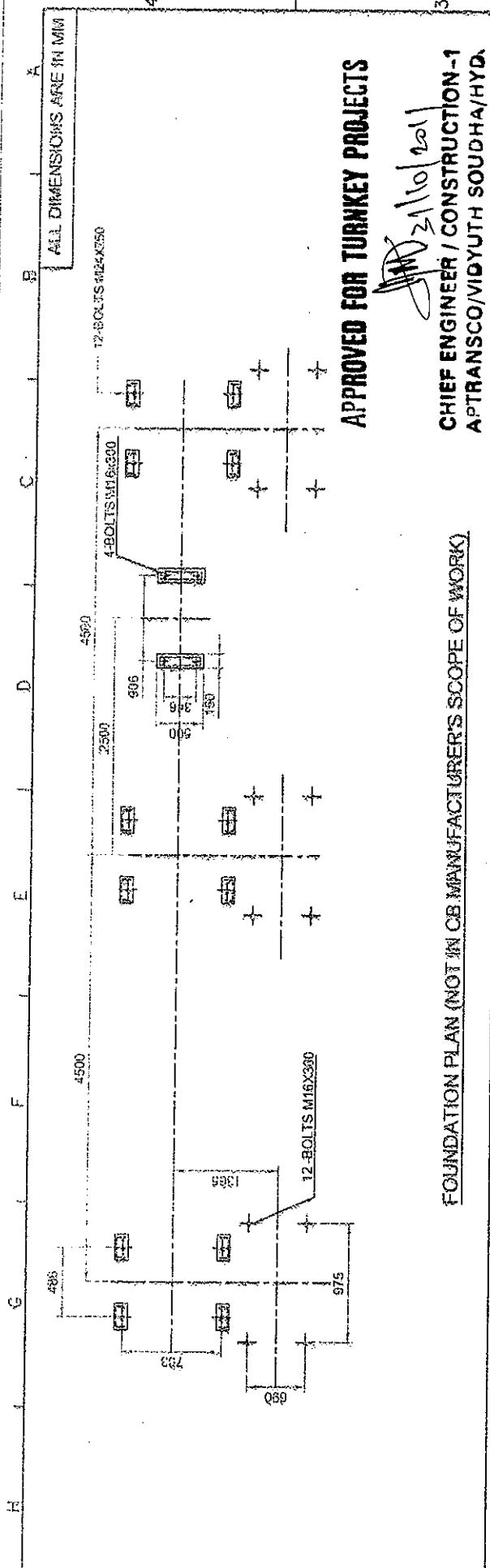
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Chennai India

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OUTLINE AND GENERAL ARRANGEMENT

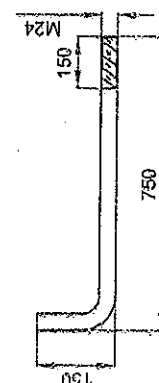
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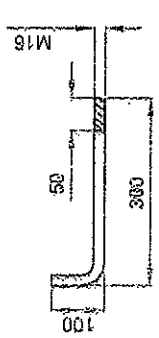


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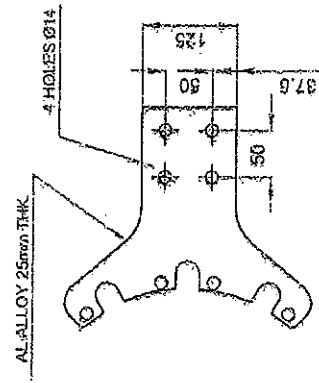
FOUNDATION PLAN (NOT IN CB MANUFACTURER'S SCOPE OF WORK)



FOUNDATION BOLT FOR SUPPORT STRUCTURE



FOUNDATION BOLT FOR CONTROL CUBICLE



TERMINAL PAD DETAILS

TRANSCO

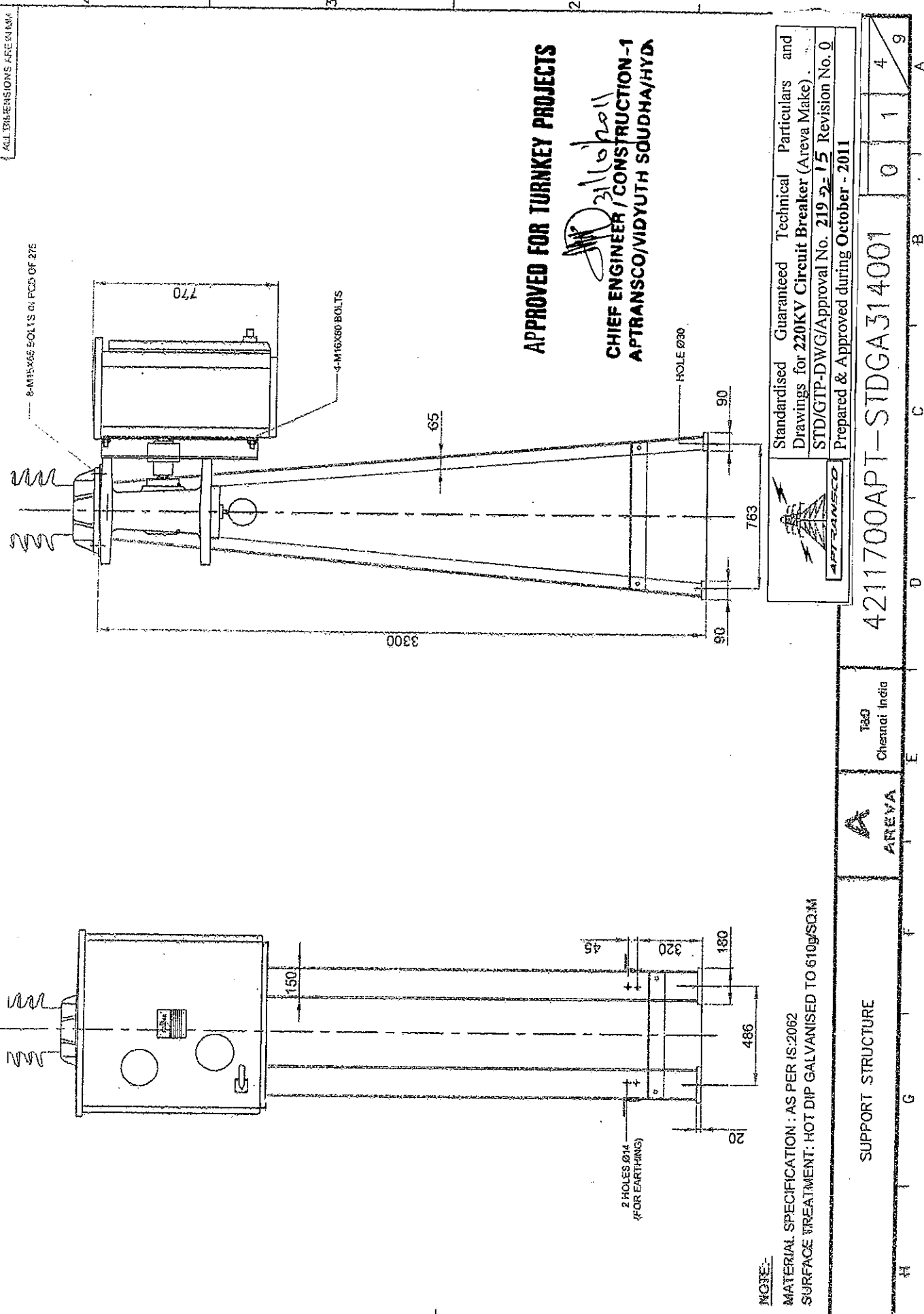
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 Prepared & Approved during October - 2011

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FOUNDATION PLAN	4211700APT--STDGA314001
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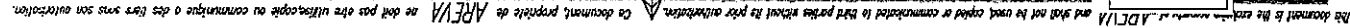
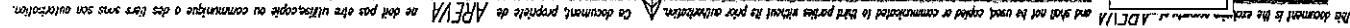
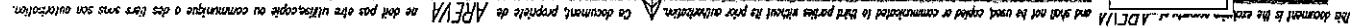
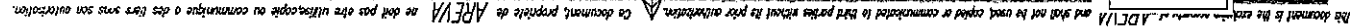
4211700APT - STDGA314001

SUPPORT STRUCTURE

NOTE:-
 MATERIAL SPECIFICATION : AS PER IS:2062
 SURFACE TREATMENT : HOT DIP GALVANISED TO 610g/SQ.M

0	1	4	9
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ALL DIMENSIONS ARE IN MM



TOP COVER
 FRONT DOOR
 BREAKER POSITION INDICATION (GLASS SEALED WITH RUBBER SEAL)
 SPRING CHARGE INDICATION
 PROVISION FOR PADLOCK

CLIP ON GASKET
 MATERIAL: EPDM
 FLAT GASKET

DOOR
 SIDE SHEET

ALL DIMENSIONS ARE IN MM

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 21/10/2011

NOTES:
 1. CUBICLE SHEET THICKNESS SHALL BE OF LOAD BEARING MEMBERS : 3mm CR SHEET NON-LOAD BEARING MEMBERS : 2mm CR SHEET
 2. PAINT SHADE FOR EXTERIOR : BS1 OF IS5 INTERIOR : GLOSSY WHITE
 3. INGRESS PROTECTION : IP 55
 4. 1 Kg. OF UNDRILLED GLAND PLATE OF SIZE 540 x 170, 3 mm CR THICK WILL BE PROVIDED

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MECHANISM CUBICLE

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Chemical India

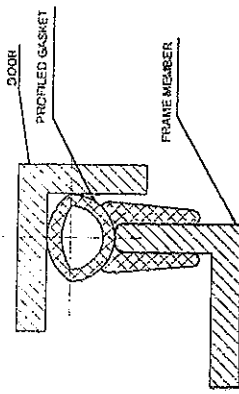
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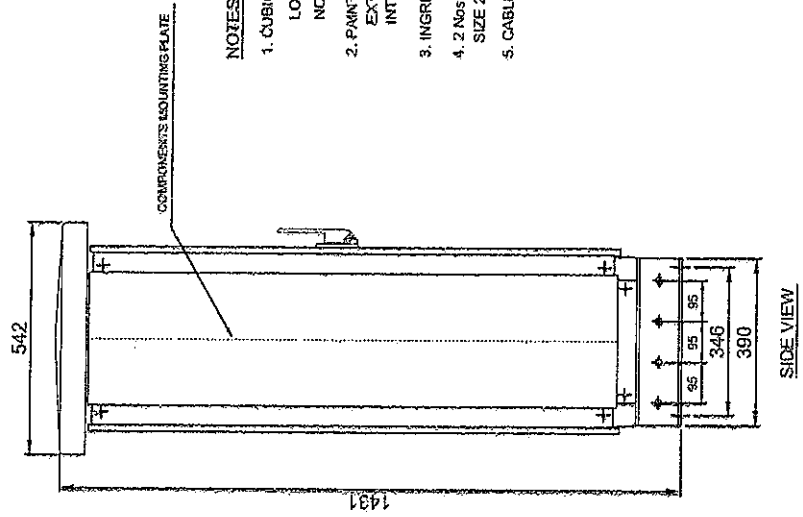
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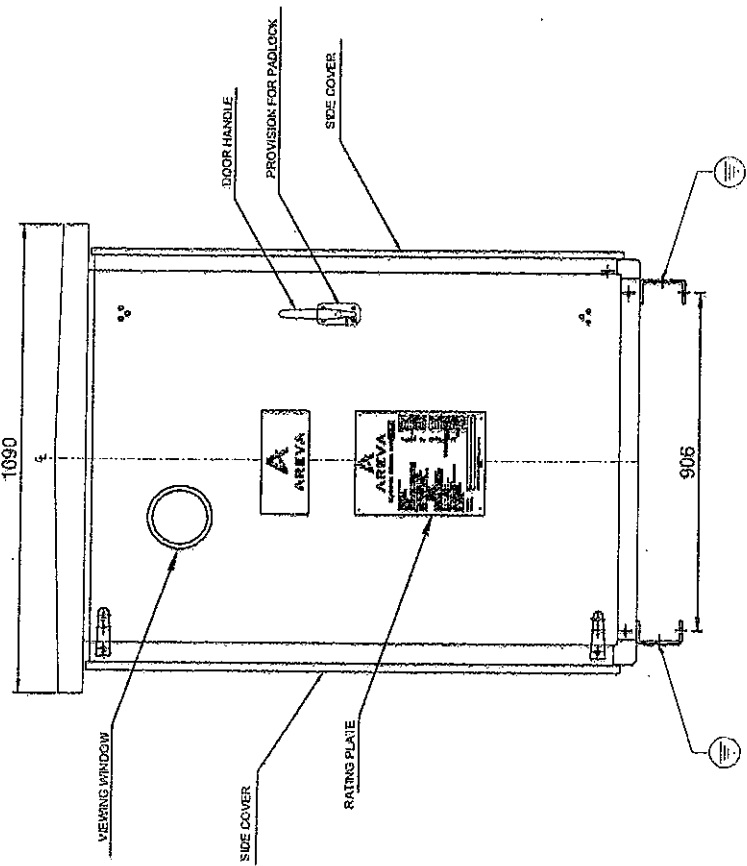
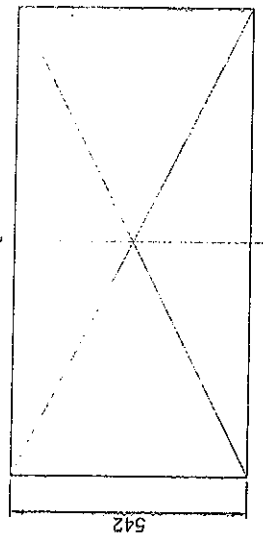
1. CUBICLE SHEET THICKNESS SHALL BE OF LOAD BEARING MEMBERS : 3mm OR SHEET NON-LOAD BEARING MEMBERS : 2mm OR SHEET
2. PAINT SHADE FOR EXTERIOR : 631 OF IS8 INTERIOR : GLOSSY WHITE
3. INGRESS PROTECTION : IP 55
4. 2 Nos. OF UNDRILLED GLAND PLATES OF SIZE 240 x 390, 3 mm OR THICK WILL BE PROVIDED
5. CABLE ENTRY : BOTTOM

GASKET FIXING DETAILS

CUPRO GASKET MATERIAL: EPDM



PLAN VIEW



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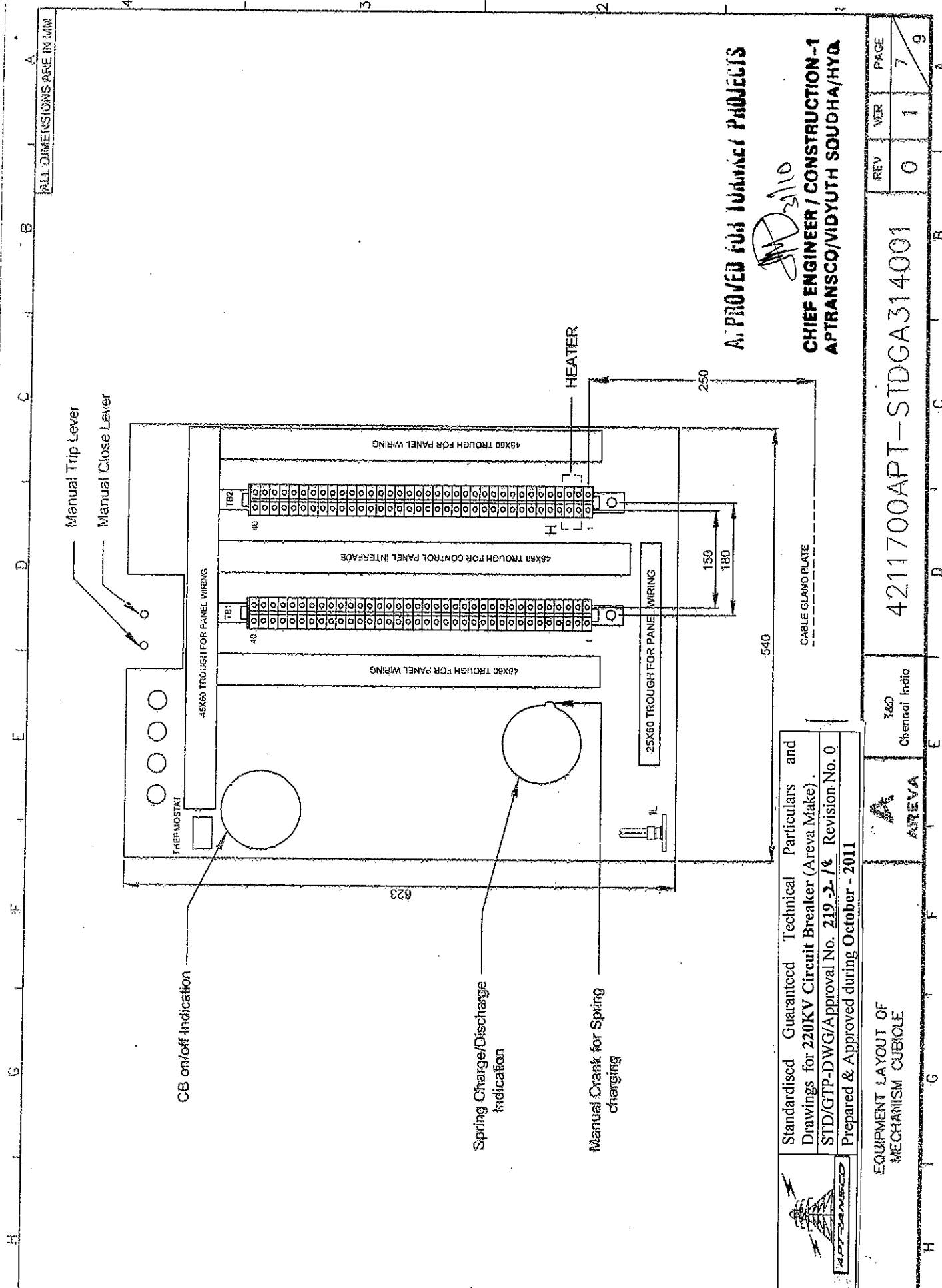
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CONTROL CUBICLE

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(Signature)
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EQUIPMENT LAYOUT OF MECHANISM CUBICLE		4211700APT-STDGA314001		REV	VER	PAGE
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