

<p>NOTE : DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS. For EPC Contracts Only</p> <p>Drawing approval subject to valid vendor registration</p> <p>TO BE CHECKED DURING ACCEPTANCE TESTS.</p>						
<p>DRAWING COVER SHEET WITH REVISION STATUS</p>						
Sr. No.	DRAWING NUMBER	DESCRIPTION	REV. NO.	REVISION DETAILS		
1	001 / 120 / 31813	LIST OF DRAWING	0	-		
2	002 / 31813	GENERAL ARRANGEMENT	0	-		
3	003 / 120 / 31813	ARRESTER NAME PLATE	0	-		
4	004 / 120 / 31813	GENERAL ARRANGEMENT DRAWING AND SCHEMATIC DIAGRAM	0	-		
5	005 / 120 / 31813	INSULATING BASE ASSY. AND SURGE COUNTER MOUNTING DETAILS	0	-		
6	006 / 120 / 31813	CROSS SECTIONAL VIEW AND PRESSURE RELIEF ARRANGEMENT	0	-		
7	007 / 120 / 31813	PORCELAIN INSULATOR	0	-		
8	008/ 120 / 31813	TOP TERMINAL PLATE	0	-		
9	009 / 120 / 31813	MIN. RECOMMENDED CLEARANCES	0	-		
10	010 / 120 / 31813	V - I & V-T CHARACTERISTICS	0	-		
11	011 / 120 / 31813	ZnO ELEMENT	0	-		
12	015 / 120 / 31813	S4/GTP/AP/TRANSCO/120KV-SMI/31/POR/002	0	-		
<p>1) Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators in the substation during foundation works to ensure safe live to ground clearances as per IE rules.</p> <p>2) Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings, the EPC contractors shall be instructed to supply the same in line with CT/PT/CVT/Isolators requirement and compatibility.</p>						
<p>Chief Engineer Projects</p>						
CUSTOMER		TRANSMISSION CORPORATION OF ANDHRA PRADESH			TITLE: DRAWING COVER SHEET WITH REVISION STATUS	
3		THIRD ANGLE PROJECTION	INITIALS	NAME	CG Power and Industrial Solutions Limited	
2		SCALE: NTS	DRN	NNJ	LOG-THING ARRESTER DIVISION, AMBAD, NASK	
1		ALL DIM. UNLESS OTHERWISE SPECIFIED.	CHD	PSB	DRG NO. : 001 / 120 / 31813	
NO	REVISION	DATE	APPD	NJ	REV 0	
4		DATE: 11.05.2022			CGI.W.D.: APTRANSCO_STD_120KV_SH.1 OF 1	
A3 287 / 420 : DIVISION - LIGHTNING ARRESTER		5		4		

IF IN DOUBT, ASK

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NOTE:

1. RATED VOLTAGE : 120kV
2. CREEPAGE (min) : 4495mm(31mm/kV)
3. WEIGHT (Approx) : 120±10%kg
4. CANTILEVER STRENGTH : 150kg (DIFLECTION LESS THAN 200mm).

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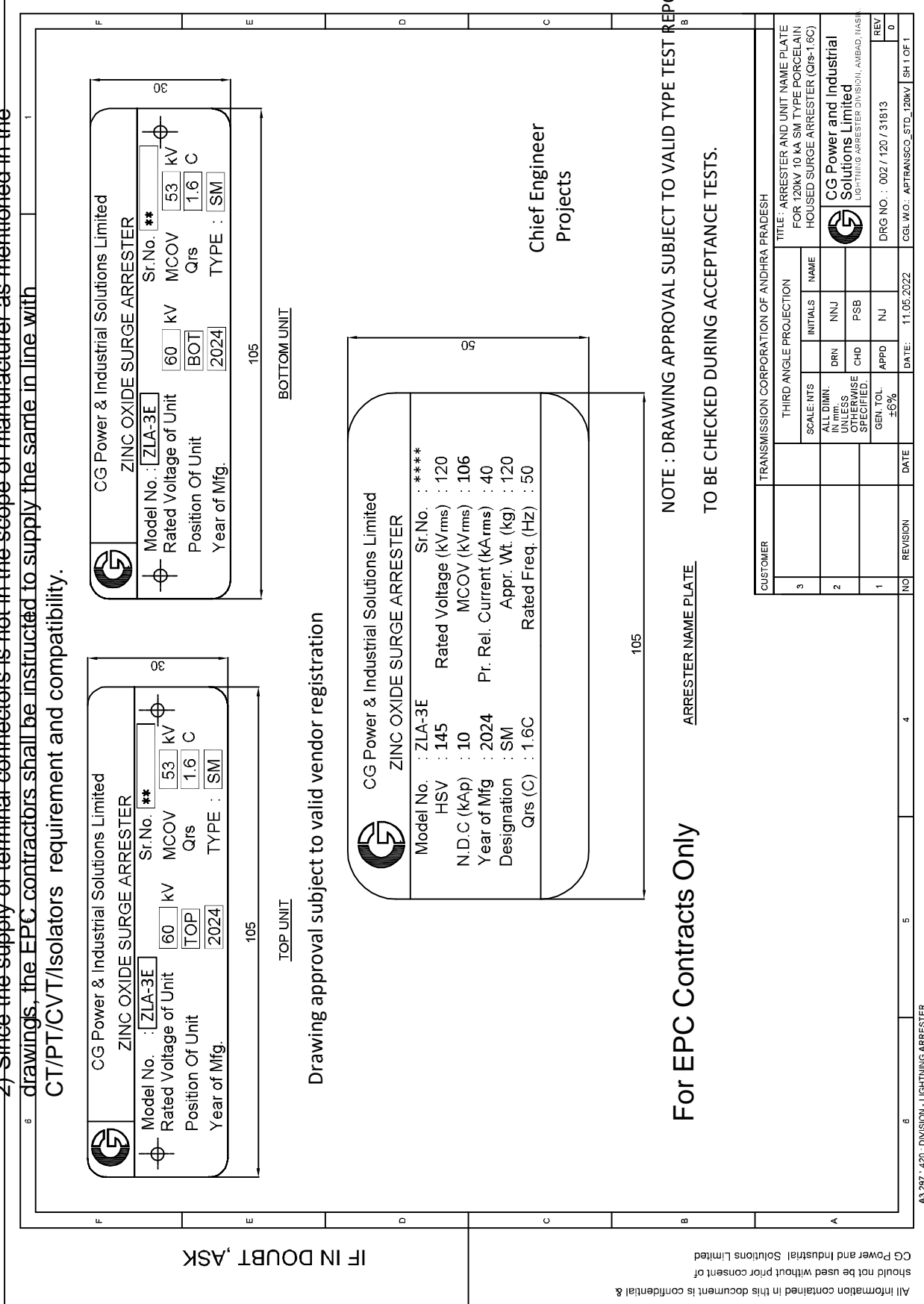
BILL OF MATERIAL					
ITEM NO.	ITEM	MATERIAL	1	2	3
1	LINE TERMINAL (PAD)	MS H.D.G.			
2	FLANGE	AL. ALLOY			
3	INSULATOR	PORCELAIN (BROWN)			
4	FRP TUBE	FIBER REINFORCED PLASTIC			
5	ZnO ELEMENT	ZnO & ADDITIVES			
6	INTERCONNECTING PLATE	MS H.D.G.			
7	BASE PLATE	MS H.D.G.			
8	BASE INSULATOR	NYLON			
9	CONNECTING LINK (L-1.5 M)	70 SQ. mm Cu STANDARD PVC INSULATED CABLE			
10	SURGE COUNTER	MS H.D.G.			
11	ARRESTER NAME PLATE	ALUMINIUM			
12	M12 BOLT	M.S.			
13	SUPPORT STRUCTURE/ ADAPTER STOOL	IN CGPISL SCOPE			

CUSTOMER	TRANSMISSION CORPORATION OF ANDHRA PRADESH				
3	THIRD ANGLE PROJECTION	SCALE: NTS	INITIALS	NAME	TITLE: GENERAL ARRANGEMENT FOR 120KV, 10KA, SM-TYPE PORCELAIN HOUSED SURGE ARRESTER(Cs-16C)
2	ALL DIM. UNLESS OTHERWISE SPECIFIED.	DRN	NINJ		<p>CG Power and Industrial Solutions Limited LIGHTNING ARRESTER DIVISION, AMBAD, NASK</p>
1	GEN. TOL. ±6%	APPD	NJ		
NO	REVISION	DATE	DATE	DATE	DRG NO. : 002 / 31813
6	A3 287' - 420' DIVISION - LIGHTNING ARRESTER	11.05.2022	11.05.2022	11.05.2022	CGI.W.D. : APTRANSCO_STD_120KV_SH 1 OF 1

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ARRESTER NAME PLATE

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CUSTOMER		THIRD ANGLE PROJECTION		TITLE: ARRESTER AND UNIT NAME PLATE FOR 120KV 10 KA SM TYPE PORCELAIN HOUSED SURGE ARRESTER (Qrs-1.6C)	
NO	REVISION	SCALE: NTS	INITIALS	NAME	REV
3		ALL DIMS. IN UNLESS OTHERWISE SPECIFIED.	DRN	NNJ	0
2		GEN. TOL. ±0.6%	CHD	PSB	0
1		DATE: 11.05.2022	APPD	NJ	0
NO	REVISION	DATE	DATE	DATE	DRG NO. : 002 / 120 / 31813
TRANSMISSION CORPORATION OF ANDHRA PRADESH					CGI.W.D.: APTRANSO_STD_120KV_SH.1 OF 1

A3 287 / 425 : DIVISION - LIGHTNING ARRESTER

CG Power and Industrial Solutions Limited
LOG-THING ARRESTER DIVISION, AMBADI (NASK)

1) Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators in the substation during foundation works to ensure safe live to ground clearances as per IE rules.

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NOTE:

- RANGE OF METER : 0 ~ 5mA.
* 0 ~ 3mA GREEN ZONE &
* 3 ~ 5mA RED ZONE.
- HOUSING :-
* MATERIAL : MS HDG
* PROTECTION : IP 67.
- WEIGHT OF S.C. : 2kg APPROX.
- MODEL NO. : SC 23-1
- ELECTROMECHANICAL TYPE.
- GASKET : BUTYL RUBBER
- SURGE COUNTER SHOULD BE INSTALLED MINIMUM 1.5 METER FROM GROUND LEVEL.
- HOUSING IS ACTING AS EARTH CONDUCTOR FOR SURGE COUNTER

Sr.No.	Designation
1	Leakage current meter
2	Surge counter - cyclometric type (Electro mechanical Type)
3	Line terminal (HV Terminal)
4	Earth terminal (Suitable for M10)
5	Mounting bracket
6	MS Housing (HDG)

FROM ARRESTER BOTTOM.

SCHEMATIC DIAGRAM

Customer: TRANSMISSION CORPORATION OF ANDHRA PRADESH

Title: GENERAL ARRANGEMENT DRAWING OF SURGE COUNTER

Scale: NTS

Initials: DRN, NIJ, CHD, PSB, APPD, NJ

Rev: 0

Date: 11.05.2022

DRG NO.: 004 / 120 / 31813

CGI W/O.: APTRANSO_STD_120KV_SH 1 OF 1

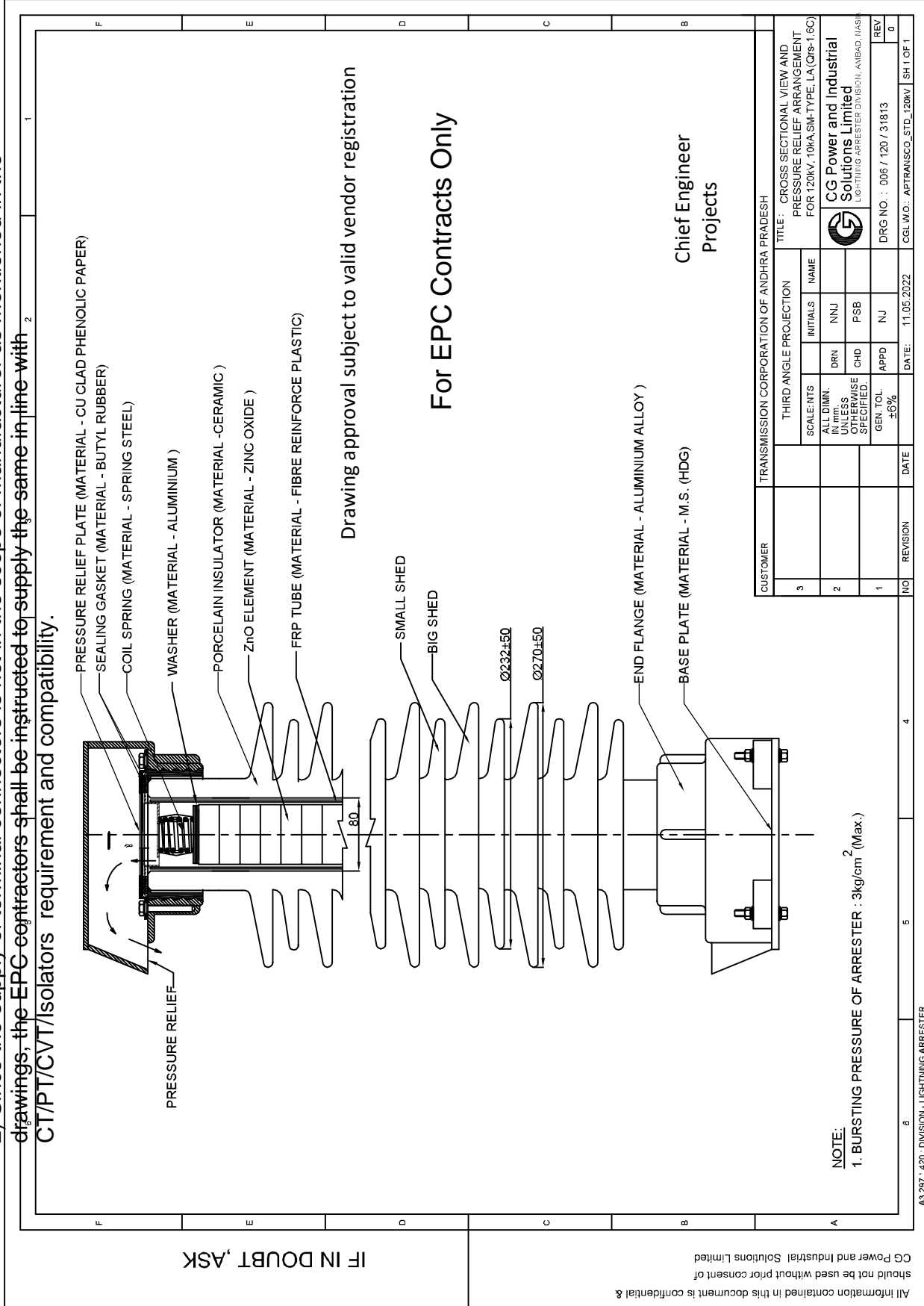
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Chief Engineer
Projects

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Chief Engineer
Projects

CUSTOMER		THIRD ANGLE PROJECTION		SCALE: NTS		INITIALS		NAME	
3				ALL DIMS. IN UNLESS OTHERWISE SPECIFIED.	DRN	NNJ			
2				GEN. TOL. ±6%	CHD	PSB			
1				DATE: 11.05.2022	APPD	NJ			
NO	REVISION	DATE							

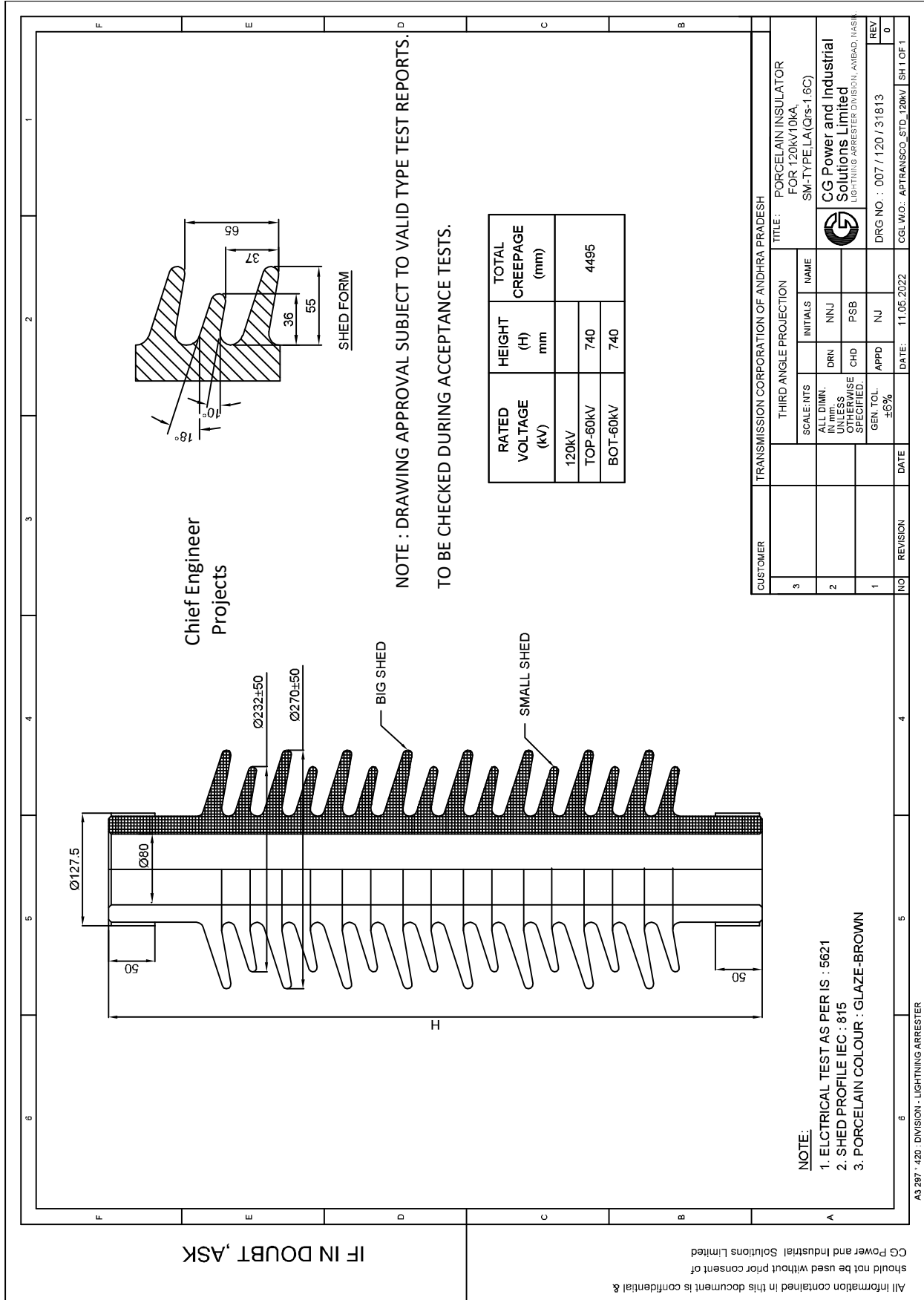
TRANSMISSION CORPORATION OF ANDHRA PRADESH
 TITLE : CROSS SECTIONAL VIEW AND PRESSURE RELIEF ARRANGEMENT FOR 120KV, 10KA, SM-TYPE, LA.(QIS-1,5C)
CG Power and Industrial Solutions Limited
 LIGHTNING ARRESTER DIVISION, AMBAD, NASK
 DRG NO : 006 / 120 / 31813
 REV 0
 CGI.W.D. : APTRANSCO STD_120KV_SH.1 OF 1

NOTE:
1. BURSTING PRESSURE OF ARRESTER : 3kg/cm² (Max.)

A3 287 / 428 / DIVISION - LIGHTNING ARRESTER

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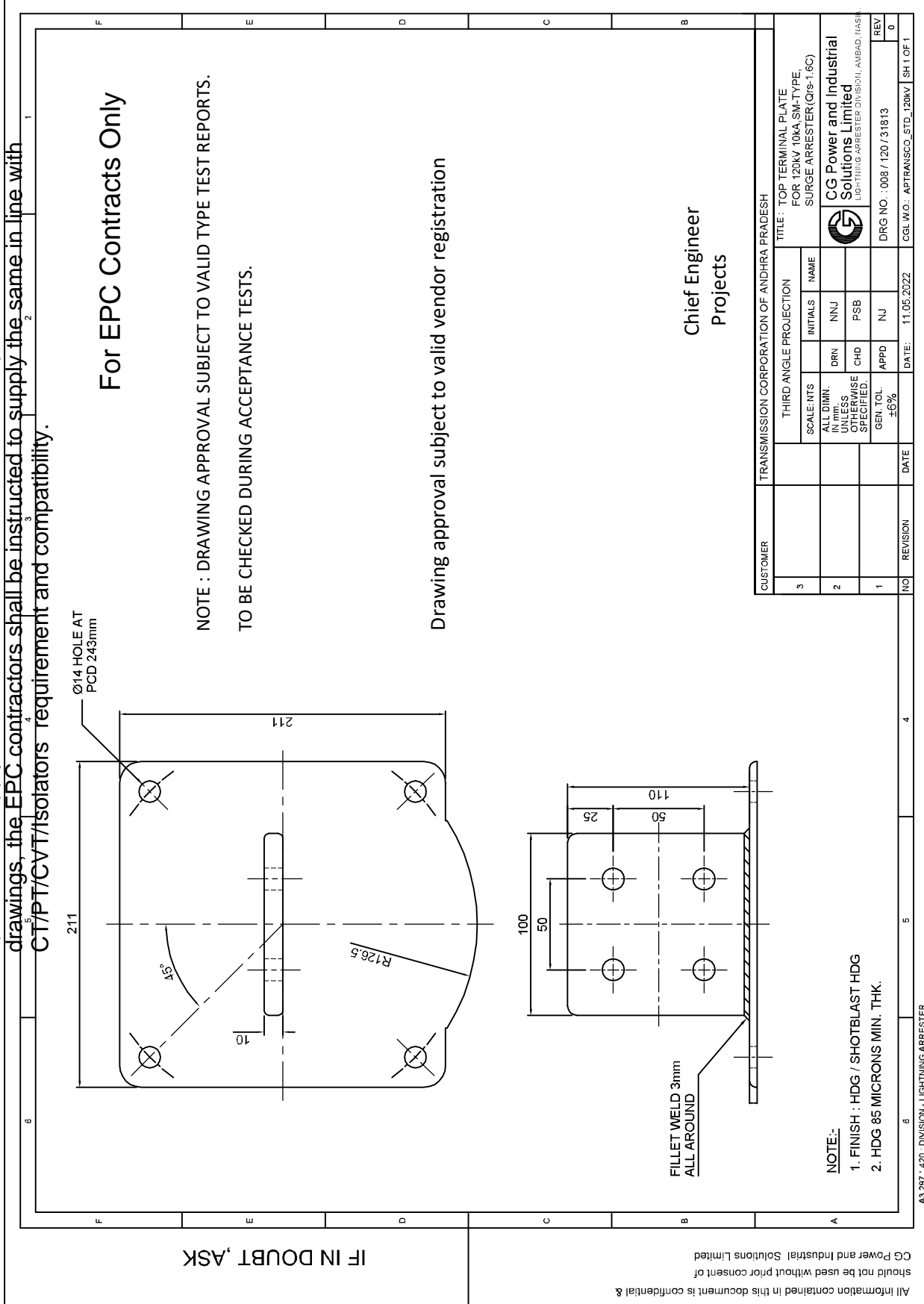
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CUSTOMER	TRANSMISSION CORPORATION OF ANDHRA PRADESH		THIRD ANGLE PROJECTION		SCALE: NTS	INITIALS	NAME
3			DRN	NNJ	ALL DIM. IN UNLESS OTHERWISE SPECIFIED.		
2			CHD	PSB	GEN. TOL. ±6%		
1			APPD	NJ			
NO	REVISION	DATE	DATE: 11.05.2022		DRG NO : 007 / 120 / 31813		

NO	REVISION	DATE	DATE	DATE
3				
2				
1				

TITLE: PORCELAIN INSULATOR FOR 120KV/10KA SM-TYPE LA(Qs-1.6C)
 CG Power and Industrial Solutions Limited
 LOG-TYPING ARRESTER DIVISION, AMBAID, NASKH
 A3 287 / 428 / DIVISION - LIGHTNING ARRESTER

- 1) Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators in the substation during foundation works to ensure safe live to ground clearances as per IE rules.
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Chief Engineer
Projects

CUSTOMER	TRANSMISSION CORPORATION OF ANDHRA PRADESH		
NO	REVISION	DATE	DATE
3			
2			
1			
NO	REVISION	DATE	DATE

THIRD ANGLE PROJECTION		INITIALS	NAME
SCALE: NTS	DRN	NNJ	
ALL DIM. IN UNLESS OTHERWISE SPECIFIED.	CHD	PSB	
GEN. TOL. ±0.6%	APPD	NJ	
TITLE : TOP TERMINAL PLATE FOR 120KV 10KA SM-TYPE SURGE ARRESTER(Q/s-1.6C)			
CG Power and Industrial Solutions Limited			
LOG-TYPE ARRESTER DIVISION, AMBAAD (NASK)			
DRG NO. : 008 / 120 / 31813			
REV 0			
CGI.W.D. : APTRANSO STD. 120KV SH.1 OF.1			

NOTE:-
1. FINISH : HDG / SHOTBLAST HDG
2. HDG 85 MICRONS MIN. THK.

A3 287 / 425 : DIVISION - LIGHTNING ARRESTER

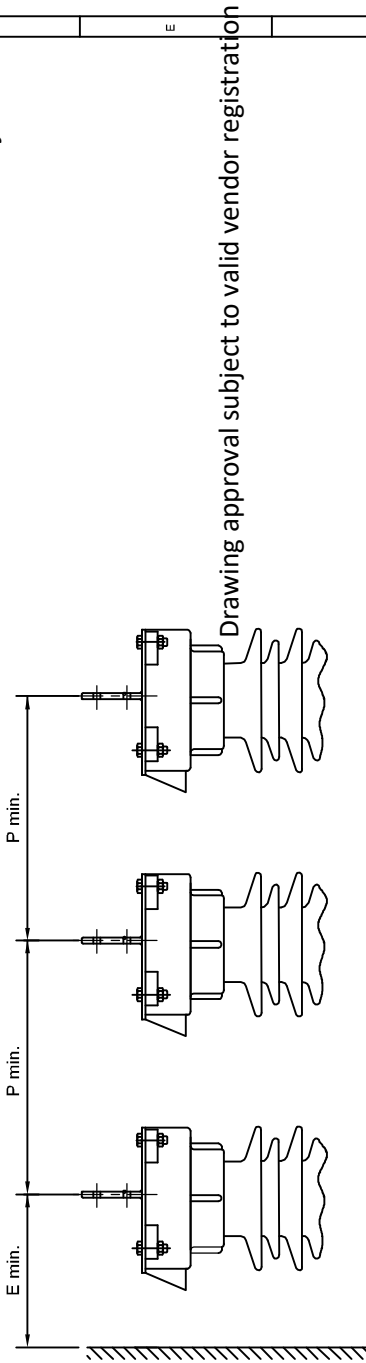
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For EPC Contracts Only



E min. - MINIMUM RECOMMENDED CLEARANCES BETWEEN CENTRE OF ARRESTER AND EARTHED OBJECT.
 P min. - MINIMUM RECOMMENDED CLEARANCE BETWEEN TWO ADJACENT PHASE OF ARRESTER.

TABLE

SR.NO.	LA RATED VOLTAGE (kV)	E min. (mm)	P min. (mm)
1.	120	1500	1700

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CUSTOMER	TRANSMISSION CORPORATION OF ANDHRA PRADESH				TITLE	MIN. RECOMMENDED CLEARANCES			
3	THIRD ANGLE PROJECTION				SCALE: NTS	INITIALS	NAME		
2	ALL DIMEN. IN UNLESS OTHERWISE SPECIFIED.				DRN	NNJ			
1	GEN. TOL. ±0.6%				CHD	PSB			
NO	REVISION	DATE	DATE	DATE	APPD	NJ	DRG NO. : 009 / 120 / 31813	REV	0

Chief Engineer
 Projects

CG Power and Industrial Solutions Limited
 LOGGING ARRESTER DIVISION, AMBAD, NASKI

A3 287 / 425 : DIVISION - LIGHTNING ARRESTER

CGI.W.D. : APTRANSCO STD_120KV_SH 1 OF 1

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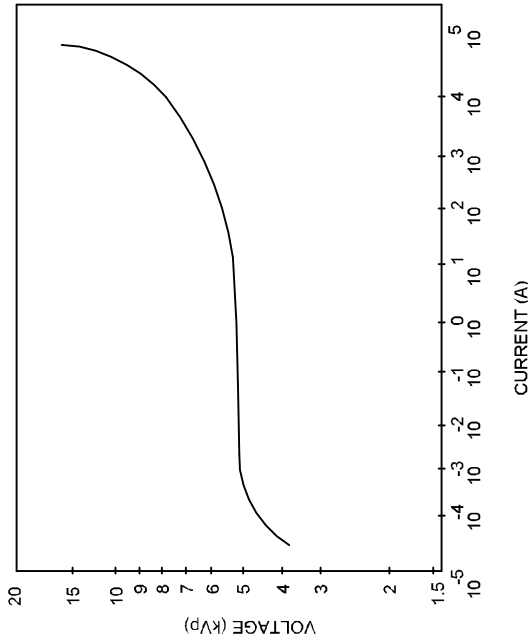
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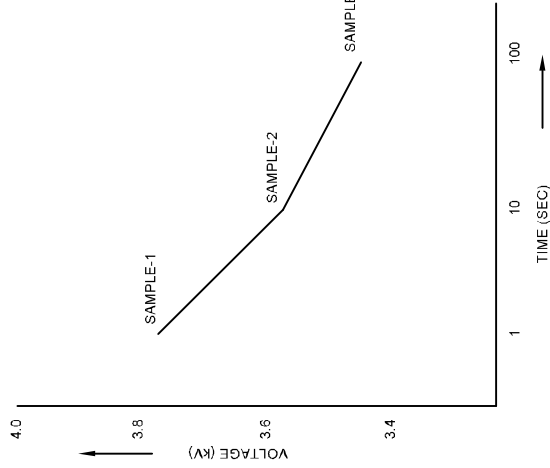
POWER FREQUENCY VOLTAGE Vs CURRENT CHARACTERISTICS

IF IN DOUBT, ASK



- NOTE :
1. $U_f = 3kV$
 2. $U_c = 2.8kV$
 3. $NDC = 10kAp$
 4. FOLLOWING GRAPH REPRESENTS ONLY FOR SINGLE ZnO BLOCK FOR OFFERED RATING.

POWER FREQUENCY VOLTAGE Vs TIME CHARACTERISTICS



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Chief Engineer
Projects

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CUSTOMER	TRANSMISSION CORPORATION OF ANDHRA PRADESH			TITLE: V-I, I & V-T CHARACTERISTICS	
3	SCALE: NTS	INITIALS	NAME		
2	ALL DIMS. IN UNLESS OTHERWISE SPECIFIED.	DRN	NNJ		
1	GEN. TOL. ±6%	CHD	PSB		
NO	DATE	APPD	NJ	DRG NO. : 010 / 120 / 31813	REV 0
4	11.05.2022			CGI.W.D. : APTRANSCO_STD_120KV	SH 1 OF 1

A3 287 / 425 : DIVISION - LIGHTNING ARRESTER

CG Power and Industrial Solutions Limited
LOGGING ARRESTER DIVISION, AMBAD, NASHIK

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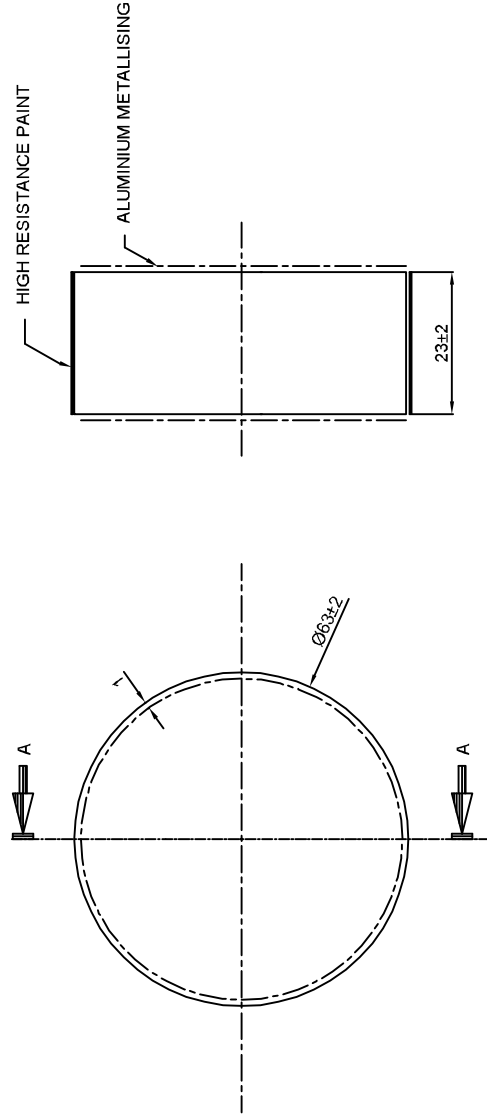
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ZnO ELEMENT TYPE D6

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SECTION AA

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Projects

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- NOTE :**
1. RATED VOLTAGE : 3kVrms
 2. MCOV : 2.80 kVrms
 3. NDC : 10kA
 4. ARRESTER CLASS : STATION
 5. DESIGNATION : SM
 6. Qrs : ±1.6C
 7. Wth : 7kJ/kV
 8. LINE DISCHARGE CLASS : CLASS 3 [AS PER IEC 60099-4 (2009)]

CUSTOMER	THIRD ANGLE PROJECTION			TITLE	
NO	REVISION	DATE	SCALE: NTS	INITIALS	NAME
3			ALL DIMEN. IN UNLESS OTHERWISE SPECIFIED.	DRN	NNJ
2			GEN. TOL. ±0.6%	CHD	PSB
1				APPD	NJ
NO		REVISION	DATE	DATE	11.05.2022

TRANSMISSION CORPORATION OF ANDHRA PRADESH		ZnO ELEMENT FOR CL-3 SM TYPE SURGE ARRESTER	
CG Power and Industrial Solutions Limited		LOG-THING ARRESTER DIVISION, AMBAAD (NASHIK)	
DRG NO. : 011 / 120 / 31813		REV 0	
CGI.W.D. : APTRANSCO STD_120KV		SH.1 OF 1	

A3 287 / 428 : DIVISION - LIGHTNING ARRESTER

For EPC Contracts Only

S4/GTP/APTRANSCO/120kV-SM/31/POR/002

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Sr. No	Description	132kV
1	Name of Manufacturer	CG Power and Industrial Solutions Limited
2	Arrester Class & Type	Station Class, Gapless type
3	Applicable Standard	IEC 60099-4 (2014)
4	Rated Arrester Voltage (kV)	120
5	Maximum continuous operating Voltage (kV)	106
6	Nominal Discharge current (kA) with 8/20 micro-sec wave	10
7	Designation of Arrester	Station Class, Gapless type, SM Type
8	a. Thermal Energy Rating Wth in kJ/kV of Ur b. Repetitive charge transfer rating (Qrs) in coulomb c. Line Discharge Class	≥ 7 kJ/kV: Qrs: 1.6C Class 3 [As per IEC 60099-4 (2009)]
9	Maximum Switching current impulse residual voltage at	
	i) 1000Amps	294
	ii) 500Amps	280
	iii) 250Amps	260
10	Maximum steep current impulse residual voltage with 1/20 micro second current wave at 10kA (kVp)	386
11	Maximum residual voltage with 8/20 micro-sec wave (kVp)	
	i) 5 kA	333
	ii) 10kA	355
	III) 20kA	390
12	Safe Fault current (kArms)	40kArms at 0. 2sec
13	Lightning Impulse withstand voltage of Arrester Housing with 1.2/50 micro-second wave (kVp)	650
14	One minute power frequency withstand voltage of housing (Dry/Wet) - kVrms	275
15	High current short duration impulse withstand level with 4/10 micro-sec wave (kA) Peak	100
16	Pressure Relief Class	A

For EPC Contracts Only

S4/GTP/APTRANSCO/120kV-SM/31/POR/002

17	Over-voltage withstand Capability kVp	
	0.1 second	220
	1 second	212
	10seconds	203
	100seconds	190
18	a) Reference Voltage (kV)	>= 120kV
	b) Reference current (mA)	5 mAp
19	Number of units per phase and rating of each unit.	2(each of 60kV)
20	Minimum total creepage distance (mm)	4495 (31mm/kV)
21	Leakage current (mA)	<= 3 mAp
22	Total weight of Arrester (kg)	120kG ± 10%
23	Maximum cantilever strength of Surge Arrester (Including wind load)	150kG with deflection less than 20mm
24	Overall Height of Surge Arresters (mm)	Ref GA Drg.
25	Maximum distance recommended from equipment to be protected by Surge Arrester (mm)	As per IE rules
26	Minimum distance between grounded object	As per IE rules
27	Minimum distance between arrester phase legs	As per IE rules
29	Seismic Acceleration	0.3g
28	Any other particulars	No
29	Max. radio interference voltage for frequency between 0.5 MHz and 2 MHz. in all positions	Less than 2500µV
30	Corona Extinction Voltage	92kVrms
31	Partial Discharge Level at 1.05*MCOV	Less than 10pC

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