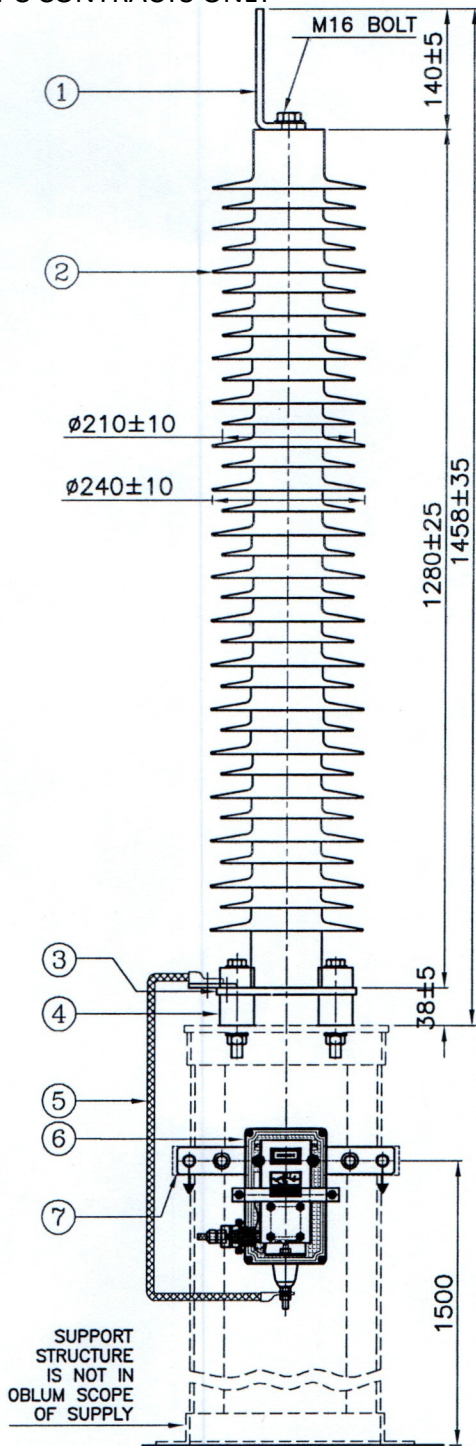


NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST

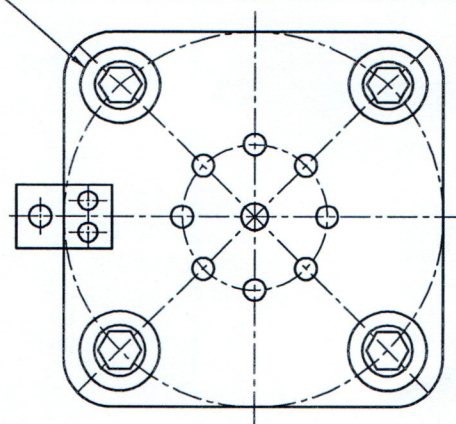
REPORTS TO BE CHECKED DURING ACCEPTANCE TESTS

8306708/2024/EEMRT-ENE51

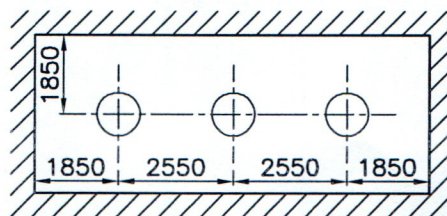
2. FOR EPC CONTRACTS ONLY



4-INSULATING BASES ON PCD 205mm AT 90°
4-HOLES Ø17 ON PCD 205mm ON SUPPORT STRUCTURE



ARRESTER BASE MOUNTING DETAILS



MINIMUM CLEARANCE FROM EARTHED OBJECTS AND BETWEEN PHASES

CANTILEVER STRENGTH : 150Kgf
DEFLECTION : 200mm
CREEPAGE DISTANCE : 3625mm (25mm/kV)
SHORT CIRCUIT CURRENT : 40 kA FOR 0.2 SEC
ALL METAL PARTS ARE HARD DIP GALVANIZED
WEIGHT OF THE ARRESTER : 45 KGS ± 10%

Chief Engineer/Projects
APTRANSCO/VIS/Vijayawada.

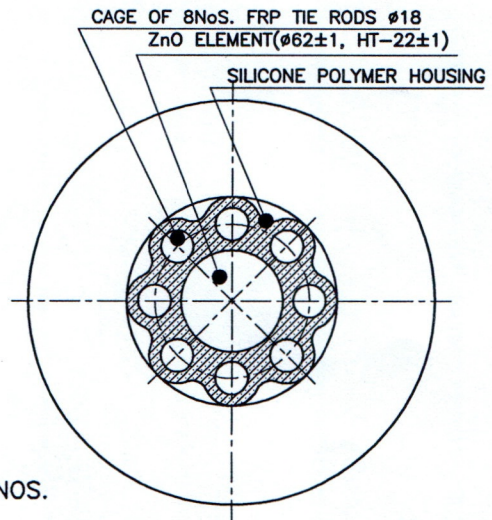
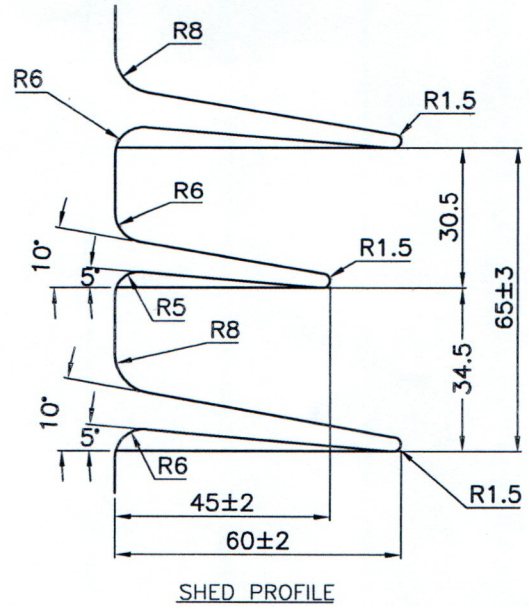
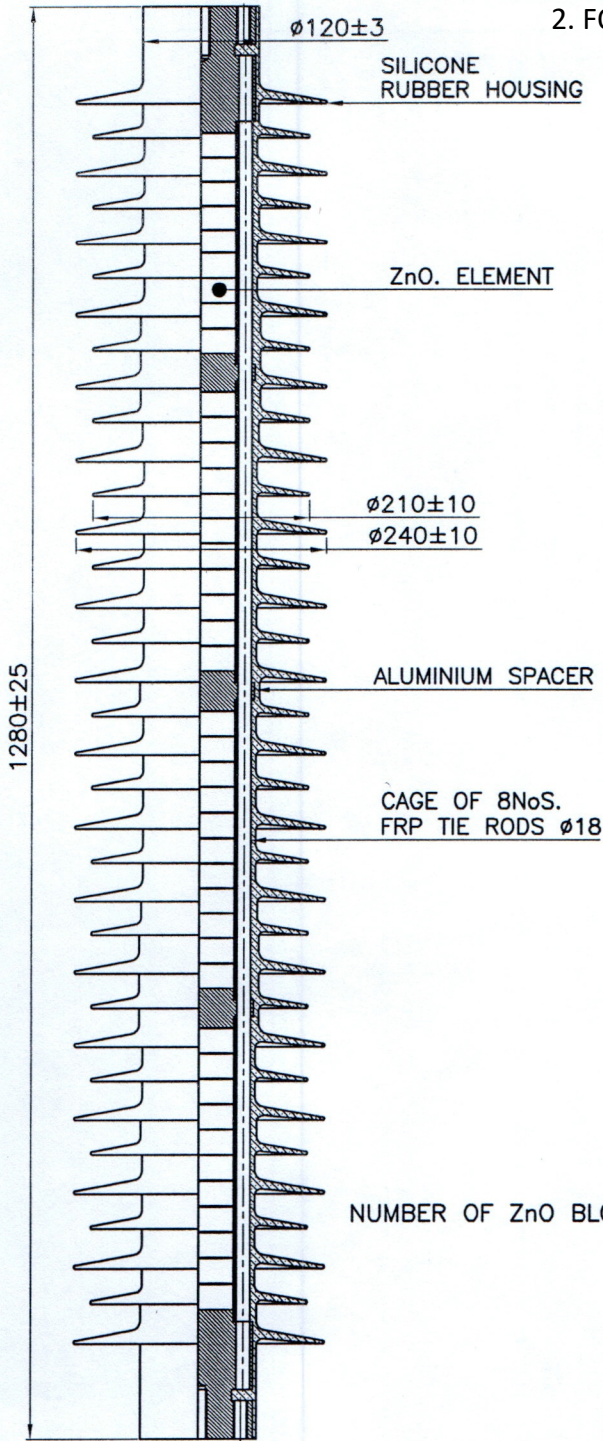
- 7. EARTHING FLAT (MS HDG)
- 6. SURGE MONITOR WITH MILLI AMMETER
- 5. CONNECTING LEAD (70Sq.mm INSULATED COPPER CABLE 2M LENGTH)
- 4. INSULATING BASE(POLYCARBONATE)
- 3. BASE PLATE (MS HDG 8mm THICK)
- 2. SILICONE POLYMER HOUSING
- 1. TERMINAL PAD(MS HDG)

- 1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers in the Substation during foundation works to ensure safe live to ground clearance as per IE rules.
- 2. Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings. The EPC contractor shall be instructed to supply the same in line with CT/PT/CVT/Isolator/IVT/LA/Breakers requirement and compatibility.

PROJECT NAME : AS APPLICABLE
END CUSTOMER: APTRANSCO

TITLE: 120kV-10kA SILICONE POLYMER METAL-OXIDE SURGE ARRESTER		MODEL : PBC	
DRG. NO.: PBC-SM-120SCCM DRN. BY: <i>KUMAR</i>		REV. No.: 0	DATE: 31/01/2024
SCALE: N.T.S.	APPRD. BY: <i>[Signature]</i>	OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED, A-16 & 17 ASSISTED PRIVATE INDUSTRIAL ESTATE, BALANAGAR, HYDERABAD-37, TELANGANA, (INDIA).	
ALL DIMENSIONS ARE IN m.m.			

8306708/2024/EEMRT-ENE51



NUMBER OF ZnO BLOCKS : 40 NOS.

CAGE CONSTRUCTION DESIGN-B

- a. TIE RODS AS A CAGE AROUND THE ZnO. ELEMENTS TO HOLD THE ZnO. ELEMENTS
- b. THE SILICONE RUBBER INJECTED AROUND THE ZnO. ELEMENTS AND FRP TIE RODS
- c. THE SHORT CIRCUIT THROUGH THE ZnO. ELEMENTS COMMUTES OUTSIDE BY CRACKING AND TEARING OF THE SILICONE RUBBER

**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

PROJECT NAME : AS APPLICABLE
END CUSTOMER: APTRANSCO

TITLE:
TYPICAL CROSS SECTION OF 120kV METAL OXIDE SURGE ARRESTER

MODEL : PBC

REV. No.: 0

DATE: 31/01/2024

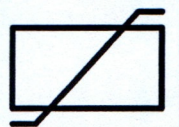
DRG. NO.: PBC-SM-CS-120

DRN. BY: *KUMAR*

OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED,
A-16 & 17 ASSISTED PRIVATE INDUSTRIAL ESTATE,
BALANAGAR, HYDERABAD-37,
TELANGANA, (INDIA).

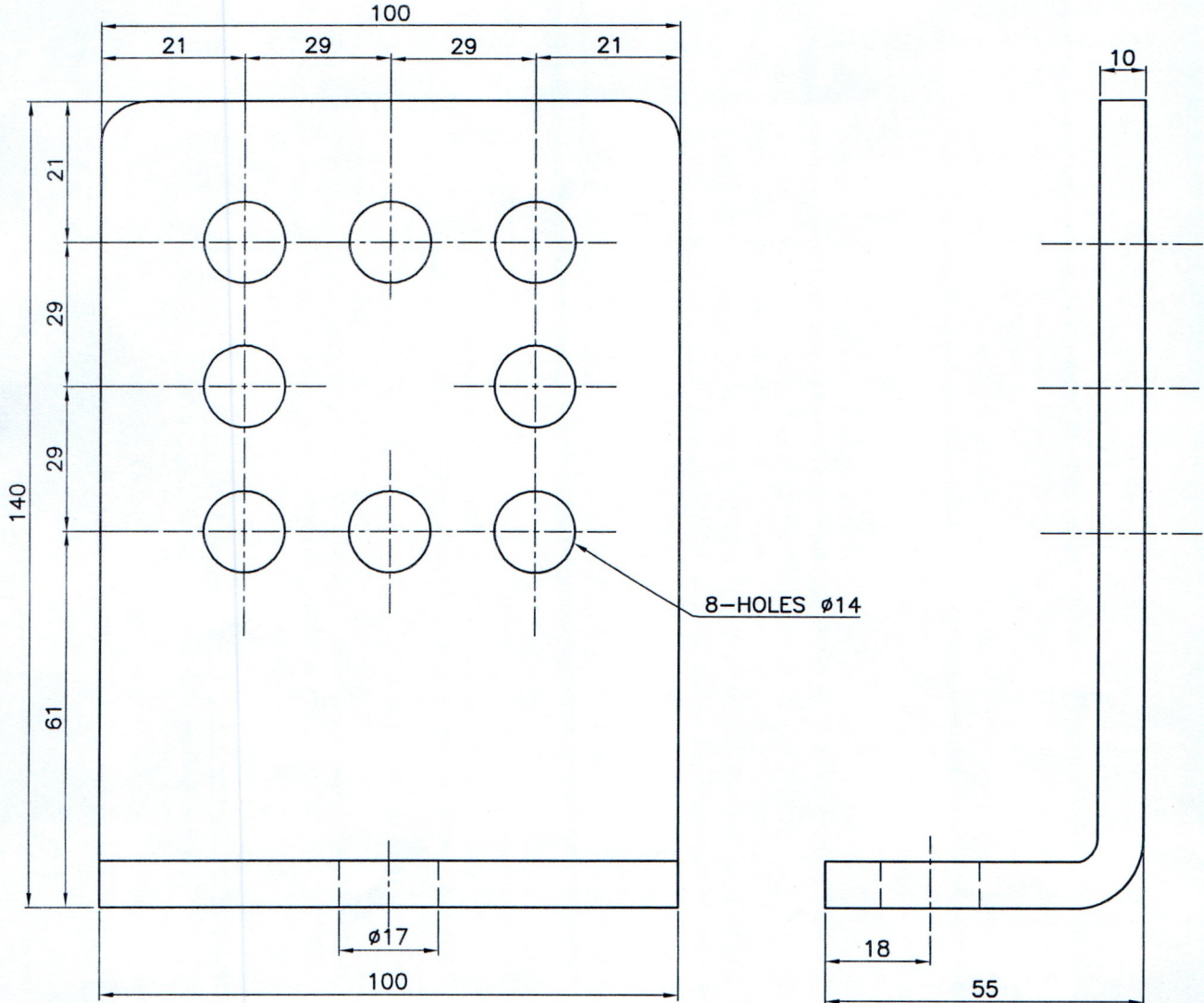
SCALE: N.T.S.

APPRD. BY: *AD*



ALL DIMENSIONS ARE IN m.m.

NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS
2. FOR EPC CONTRACTS ONLY



ELEVATION

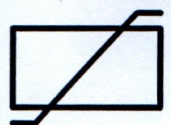
SIDE VIEW

1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers in the Substation during foundation works to ensure safe live to ground clearance as per IE rules.
2. Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings. The EPC contractor shall be instructed to supply the same in line with CT/PT/CVT/Isolator/IVT/LA/Breakers requirement and compatibility.

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

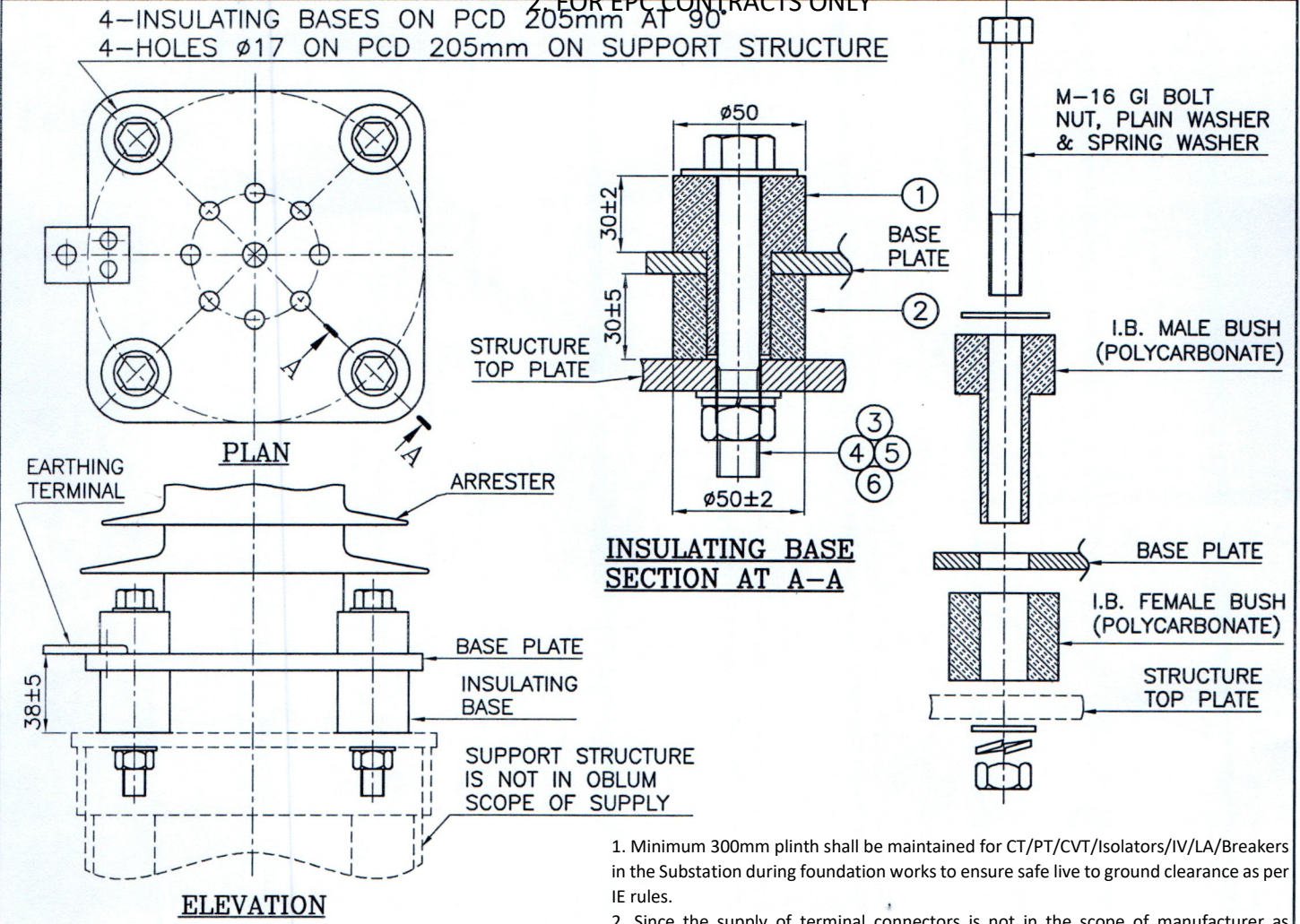
PROJECT NAME : AS APPLICABLE
END CUSTOMER: APTRANSCO

TITLE: TERMINAL PAD		MATL.: 100x10mm MS HDG FLAT	
DRG. No.: TP-100(58)		REV. No.: 0	DATE : 31/01/2024
SCALE: N.T.S.		OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED	
ALL DIMENSIONS ARE IN m.m. WITH A TOLERANCE OF ±2%		A-16&17 ASSISTED PRIVATE INDUSTRIAL ESTATE BALANAGAR, HYDERABAD-37, TELANGANA. (INDIA)	



8306708/2024/EEMRT-ENE51

2 - FOR EPC CONTRACTS ONLY



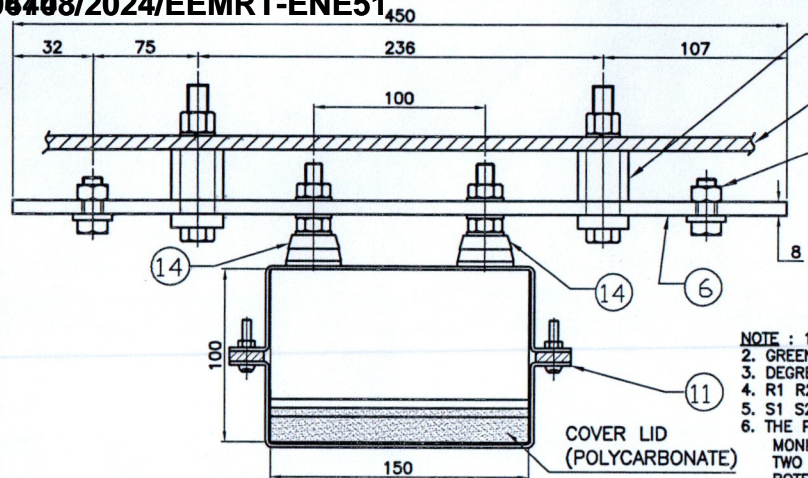
Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

6.	M16 SPRING WASHER	4 Nos.	MS HDG
5.	M16 PLAIN WASHER	4 Nos.	MS HDG
4.	M16 NUT	4 Nos.	MS HDG
3.	M16 BOLT	4 Nos.	MS HDG
2.	FEMALE BUSH	4 Nos.	POLYCARBONATE
1.	MALE BUSH	4 Nos.	POLYCARBONATE
S.No.	DESCRIPTION	QUANTITY	MATERIAL

PROJECT NAME : AS APPLICABLE
END CUSTOMER: APTRANSCO

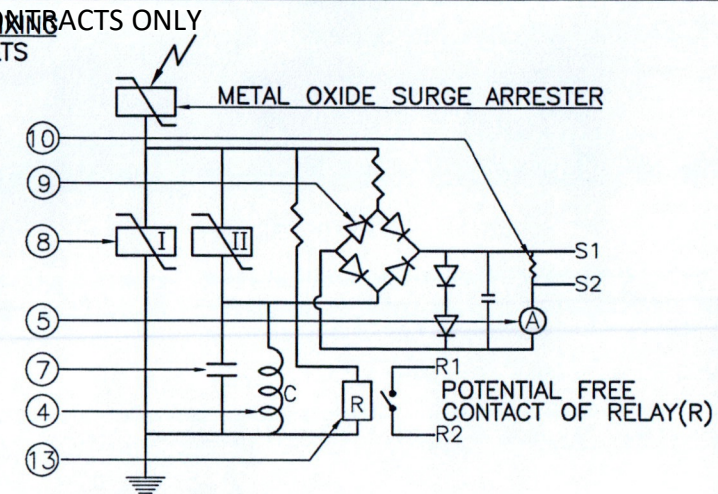
TITLE: INSULATING BASE		MATL. : POLYCARBONATE	
DRG. NO.: IB-60216		REV. No.: 0	DATE: 31/01/2024
SCALE: N.T.S.		OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED, A-16 & 17 ASSISTED PRIVATE INDUSTRIAL ESTATE, BALANAGAR, HYDERABAD-37, TELANGANA. (INDIA)	
ALL DIMENSIONS ARE IN m.m.			

8306708/2024/EEMRT-ENE51



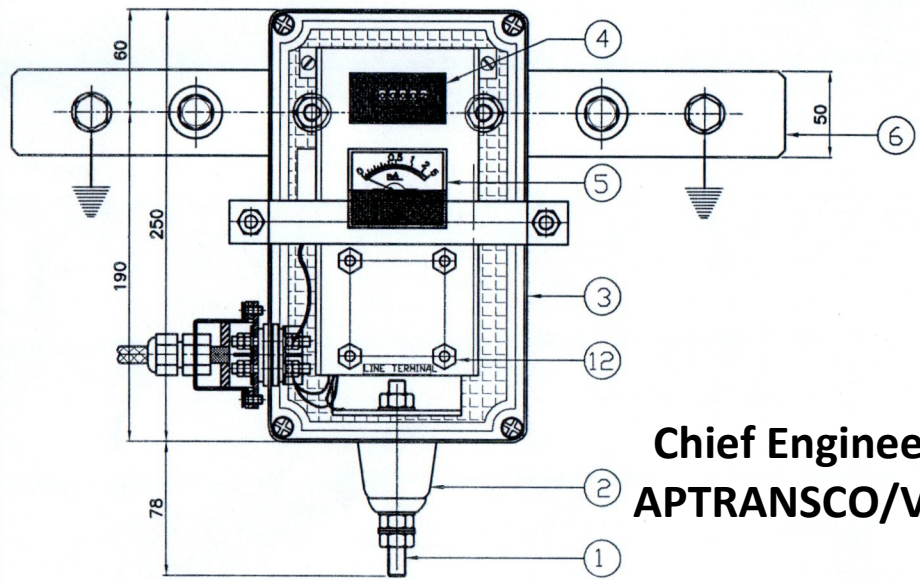
PLAN

INSULATOR FOR SURGE COUNTER FOR EAC CONTRACTS ONLY
 TO SUPPORT STRUCTURE WITH M12 BOLTS
 SUPPORT STRUCTURE ANGLE OR FLAT
 TWO EARTHING CONNECTIONS

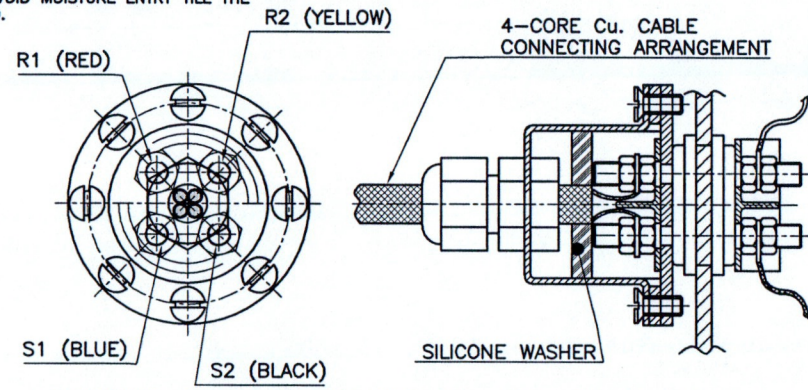


INTERNAL CIRCUIT DIAGRAM OF SCCM.

- NOTE : 1. DO NOT OPEN THE SEALED UNIT
 2. GREEN BAND : 0 TO 2mA - RED BAND : 2 TO 5mA
 3. DEGREE OF PROTECTION : IP-67
 4. R1 R2 POTENTIAL FREE CONTACT FOR COUNTER
 5. S1 S2 CONTACTS FOR MILLI AMMETER (0-3mA ANALOGUE OUTPUT)
 6. THE POTENTIAL FREE CONTACT IS TERMINATED IN THE SURGE MONITOR HOUSING WITH 4-TERMINALS (TWO FOR COUNTER TWO FOR AMMETER. THE DRAWING IS SHOWN WITH THE POTENTIAL FREE CONTACT TERMINATION
 7. THE WIRE COMING OUT IS FROM THE TWO SETS OF TERMINALS FROM INSIDE OF SURGE MONITOR TO OUTSIDE THE ENCLOSURE BY A SEALED ARRANGEMENT TO SHOW THE CONNECTION EXTERNALLY.
 8. THE WIRE COMING OUT IS ONLY TO INFORM THE SITE ENGINEER THE CABLE TO BE USED AFTER REMOVING THE SHORT LENGTH OF THE WIRE TO BE THROWN. REMOVE THE COVER OF THE POTENTIAL FREE CONTACT FOR CONNECTING R1, R2 AND S1, S2 AS PER THE SAMPLE TEMPORARILY CONNECTED WHICH IS TO BE DISCARDED
 9. THE SHORT WIRE IS KEPT TO AVOID MOISTURE ENTRY TILL THE SURGE MONITOR IS CONNECTED.



ELEVATION



COLOUR INDICATION FOR R1, R2, S1 & S2

Chief Engineer/Projects
 APTRANSCO/VIS/Vijayawada.

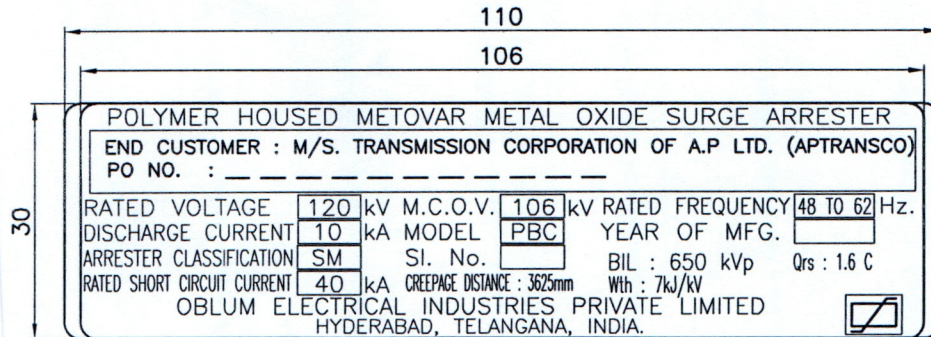
- | | | |
|--|------------------------------------|--------------------|
| 6. EARTHING FLAT | 12. TIE RODS | 14. EARTH TERMINAL |
| 5. MILLI AMMETER 0 - 5mA | 11. CLAMPING BRACKET FOR ENCLOSURE | 13. RELAY |
| 4. ELECTROMAGNETIC COUNTER | 10. RESISTOR | |
| 3. ENCLOSURE (ACRYLONITRILE BUTADIENE STYRENE) | 9. BRIDGE RECTIFIER | |
| 2. ABS INSULATOR MOULDED WITH SILICONE RUBBER | 8. ZnO. ELEMENTS | |
| 1. LINE TERMINAL | 7. CAPACITOR | |

PROJECT NAME : AS APPLICABLE		MATL. : -----	
END CUSTOMER: APTRANSCO		REV. No. : 0	DATE : 31/01/2024
TITLE: SURGE COUNTER MILLI AMMETER WITH RELAY FOR POTENTIAL FREE CONTACT FOR COUNTER		DR. OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED, A-16 & 17 ASSISTED PRIVATE INDUSTRIAL ESTATE, BALANAGAR, HYDERABAD-37, TELANGANA. (INDIA)	
DRG. No.: SCCM-13	DRN. BY: <i>[Signature]</i>	APPRD. BY: <i>[Signature]</i>	
SCALE: N.T.S		ALL DIMENSIONS ARE IN m.m. WITH A TOLERANCE OF ±5%	

8306708/2024/EEMRT-ENE51

NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST

- REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS
- 2. FOR EPC CONTRACTS ONLY



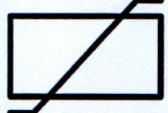
ENGRAVED WHITE LETTERS ARE IN BLACK BACKGROUND

1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers in the Substation during foundation works to ensure safe live to ground clearance as per IE rules.
2. Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings. The EPC contractor shall be instructed to supply the same in line with CT/PT/CVT/Isolator/IVT/LA/Breakers requirement and compatibility.

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

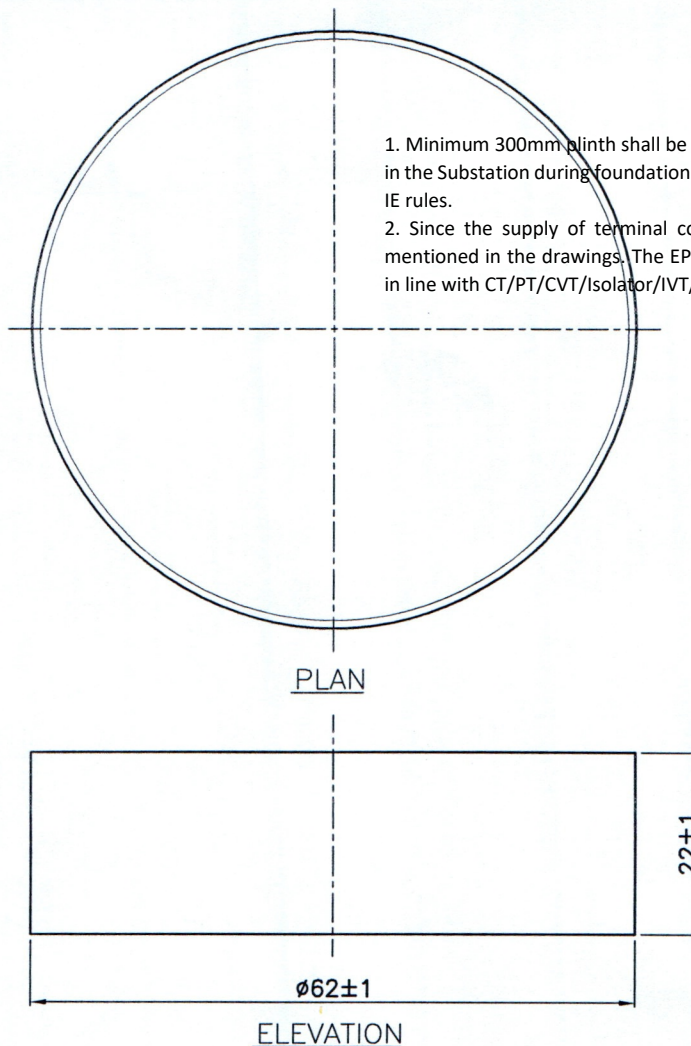
PROJECT NAME : AS APPLICABLE
END CUSTOMER: APTRANSCO

TITLE: <h2 style="text-align: center;">NAME PLATES</h2>	MATL: 0.5mm ALUMINIUM SHEET REV. No.: 0 DATE: 31/01/2024
DRG. No.: PBC-SM-NP-120 SCALE: N.T.S. ALL DIMENSIONS ARE IN m.m. WITH A TOLERANCE OF ±2%	DRN. BY: <i>J. KUMAR</i> APPRD. BY: <i>[Signature]</i> OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED A-16&17 ASSISTED PRIVATE INDUSTRIAL ESTATE BALANAGAR, HYDERABAD-37, TELANGANA, (INDIA).



8306708/2024/EMRT/ENE/01 TO BE CHECKED DURING ACCEPTANCE TESTS

2. FOR EPC CONTRACTS ONLY



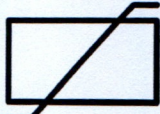
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2. Since the supply of terminal connectors is not in the scope of manufacturer mentioned in the drawings, The EPC contractor shall be instructed to supply the same in line with CT/PT/CVT/Isolator/IVT/LA/Breakers requirement and compatibility.

NOTES :

1. RATED VOLTAGE (U_r) : 3kV RMS
2. NOMINAL DISCHARGE CURRENT (I_n) : 10 kA PEAK
3. MAXIMUM CONTINUOUS OPERATING VOLTAGE (U_c) : 2.55kV RMS
4. REF. STANDARD : IEC:60099-4-2014
5. STATION MEDIUM DUTY (SM)
6. RATED THERMAL ENERGY W_{th} : 7kJ/kV
7. REPETITIVE CHARGE TRANSFER RATING Q_{rs} : 1.6 C

**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

PROJECT NAME : AS APPLICABLE
END CUSTOMER: APTRANSCO

TITLE: METAL OXIDE VARISTOR		MATL.: METAL OXIDE	
DRG. NO.: MOV-062SM		REV. No.: 0	DATE: 31/01/2024
SCALE: N.T.S.		OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED, A-16 & 17 ASSISTED PRIVATE INDUSTRIAL ESTATE, BALANAGAR, HYDERABAD-37, TELANGANA. (INDIA)	
ALL DIMENSIONS ARE IN m.m.			



OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED

A-16 & 17, Assisted Private Industrial Estate, Balanagar, Hyderabad - 500 037. Telangana (INDIA)

Phone : 23771880, 23774184, 23772708, Fax : 0091 (040) 23771106

E-MAIL : sales@oblum.co.in, exports@oblum.co.in, technical@oblum.co.in Website : www.oblum.co.in



ISO 9001 : 2015

Surge Arresters

PROJECT NAME	:	AS APPLICABLE
END CUSTOMER	:	APTRANSCO

GUARANTEED TECHNICAL PARTICULARS FOR 120 KV 10 KA CLASS-III(SM) METAL OXIDE GAPLESS SURGE ARRESTER

Sl.no	Description	120 KV 10 KA –CLASS-III(SM)
1.	Name of Manufacturer	M/s. OBLUM electrical industries private Limited
2.	Arrester Class and Type	Station Class & Gapless Type
3.	Applicable Standard	IEC 60099-4(2014) & IS-15086(Part-IV) of 2017
4.	Rated Arrestor Voltage (kV)	120 kV
5.	Maximum Continuous Operating Voltage (MCOV)(kV)	106 kV rms
6.	Nominal Discharge Current (kA) with 8/20 μsec wave	10 kA
7.	Arrester Classification	Station Medium duty(SM)
8.	a) Thermal Energy rating Wth in KJ/KV of Ur b) Repetitive Charge transfer rating (Qrs) in coulomb	7 kJ/kV (OD TEST) 1.6C
9.	Maximum switching current impulse residual voltage at i) 1000 Amps. ii) 250 Amps	294kVp NA
10.	Maximum residual voltage with 1 μ second current wave at 10kA(kV _{Peak})	386 kV _{Peak}
11.	Maximum residual voltage with 8/20 (kV _{Peak}) μsecwave i) 5kA ii) 10kA iii) 20kA	333 kV _{Peak} 355 kV _{Peak} 390 kV _{Peak}
12.	Safe Fault Current (kA)	40 kA
13.	Lightning Impulse withstand voltage of Arrester housing with 1.2/50 μsecond wave (kV _{Peak})	650 kV _{Peak}
14.	One minute power frequency withstand voltage of housing (dry/wet)-kv(rms)	275 kVrms
15.	High Current short duration impulse withstand level with 4/10 μsecond wave (kA _{Peak})	100 kA _{Peak}
16.	Pressure Relief Class	40KA @ 0.2sec
17.	Over-voltage withstand Capability (kV _{Peak}) with prior duty a) 10 seconds b) 1 seconds c) 0.1 seconds	203 kV _{Peak} 212 kV _{Peak} 220 kV _{Peak}
18.	a) Reference Voltage(kV) b) Reference current	Greater than the rated voltage of arrester 3 mA
19.	Number of Units per phase & rating of each unit	Single unit of 120kv
20.	Minimum Creepage distance mm(min)	3625mm
21.	Leakage Current (mA)	Ir=Less than 500 μAmps Ic=About 1500 μAmps
22.	Total weight of Arrester (kGS)	45kgs±10%
23.	Maximum Cantilever strength of Surge Arrester (including wind load)	150kgf deflection 200mm
24.	Overall height of Surge Arresters(mm)	1280±25 mm(without substool)
25.	Maximum distance recommended from equipment to be protected by Surge Arrester(mm)	3 mtrs
26.	Minimum distance between grounded object (mm)	1850mm
27.	Minimum distance between Arrester phase legs (mm)	2550 mm
28.	Any other particulars	Will be provided , if required

Chief Engineer/Projects

APTRANSCO/Vs/Vijayawada

Sl.no	Additional Data	Value
1	Maximum partial discharge level at 1.05 COV	Less than 10pC
2	Seismic acceleration	0.3g horizontal
3	Terminal connector is suitable for ACSR conductor size	Terminal pad drawing is attached Note : terminal connector is removed from Oblum scope
4	Silicone content	Min 30%
5	Glass content in FRP rods and tubes	Min 70% of boron free ECR glass
6	Maximum RIV at 1.1 times phase voltage (micro volts)	500micro volts @ 92kVrms

NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST

8306708/2024/EE/MT-ENES1 REPORTS TO BE CHECKED DURING ACCEPTANCE TESTS

2. FOR EPC CONTRACTS ONLY

**OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED**

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Phone : 23771880, 23774184, 23772708, Fax : 0091 (040) 23771106

E-MAIL : sales@oblum.co.in, exports@oblum.co.in, technical@oblum.co.in Website : www.oblum.co.in

Surge Arresters



ISO 9001 : 2015

**SCHEDULE OF GUARANTEED TECHNICAL PARTICULARS
FOR SURGE MONITOR**

Sl. No.	Description	Technical Particulars
Counter Operation:		
1	Make	Oblum Electrical Industries Private Limited.
2	Model	SCCM-13
3	Type	Non-Reset, cyclometric counter
4	Sensitivity of Surge Counter (min. current at which the Counter operates)	100A (8/20 μ sec wave)
5	Nominal Discharge Current	10kA.
6	Max. Current to be withstood by the Surge Monitor	100kA.
7	Counter operation	One count per Surge.
Operation of Current Meter:		
8	Safe Leakage Current Indication	0 to 2 mA (Green Band).
9	Indication of deterioration of Surge Arrester	2 to 5 mA (Red Band).
10	Net. Weight	3.5 kGS. (approx.).
11	Protection of surge counter enclosure	IP-67

For OBLUM ELECTRICAL INDUSTRIES PVT.LTD.


 AUTHORISED SIGNATORY

1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers in the Substation during foundation works to ensure safe live to ground clearance as per IE rules.

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**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**