



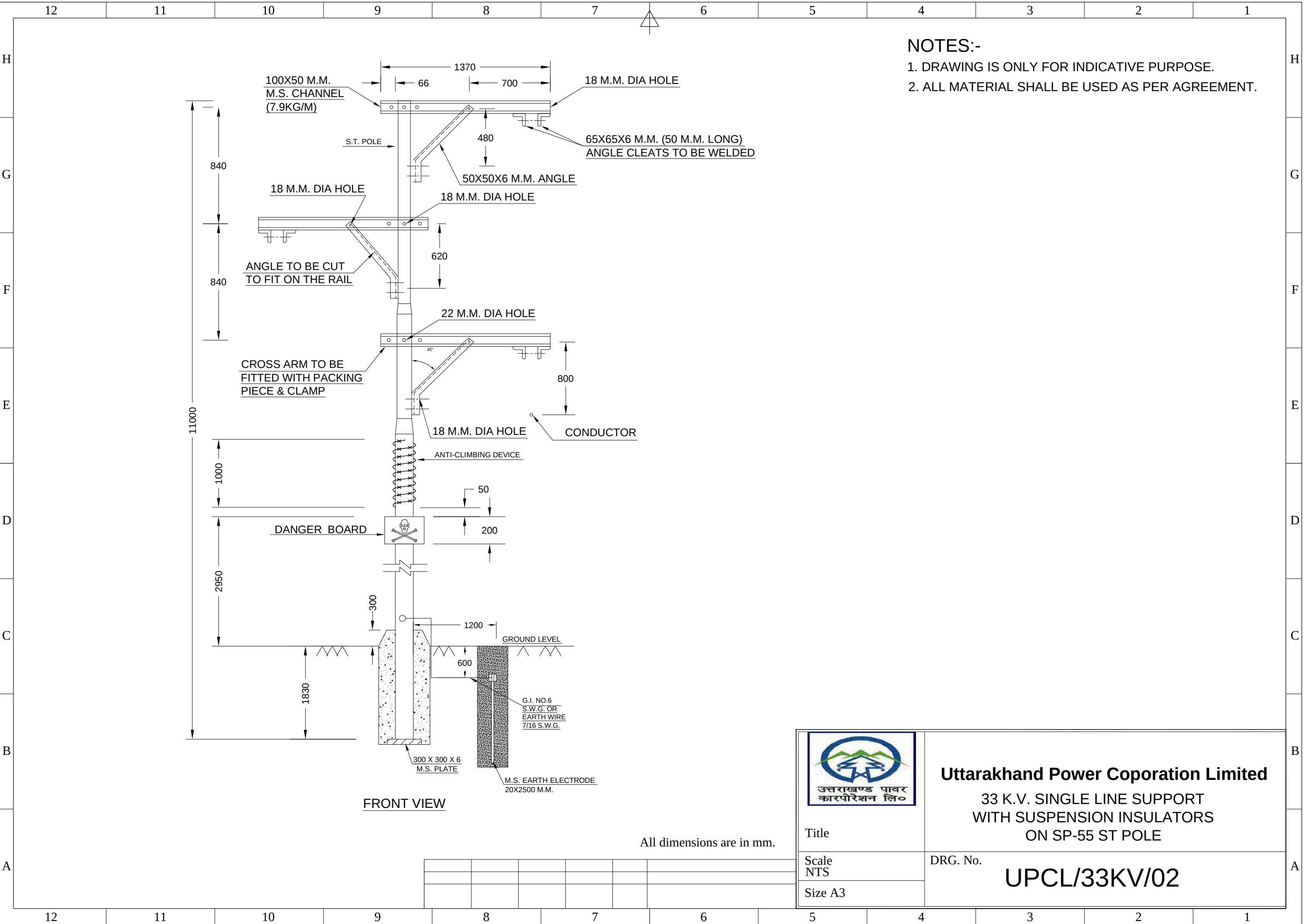
उत्तराखण्ड पावर
कारपोरेशन लि०

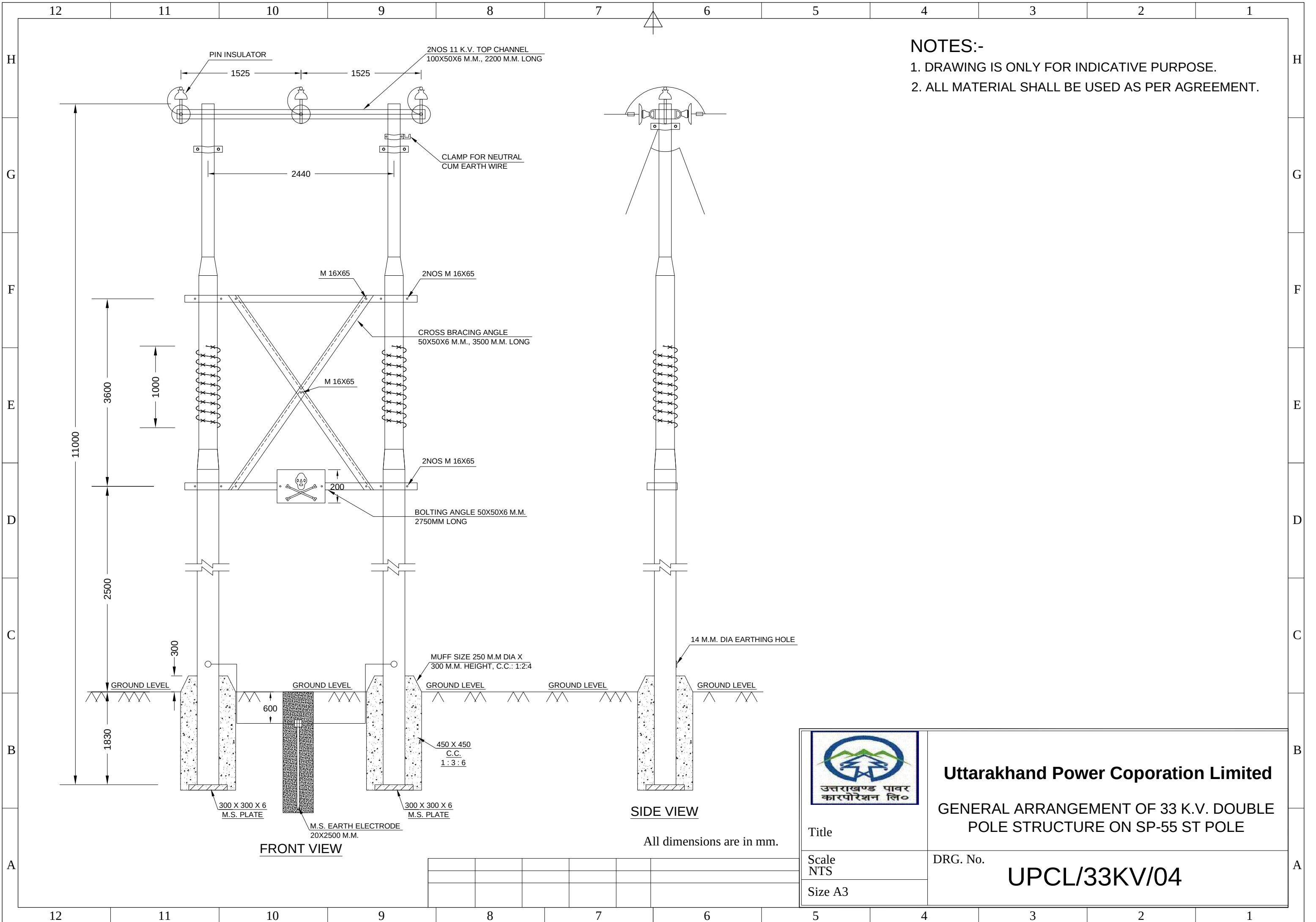
Uttarakhand Power Corporation Limited

GENERAL ARRANGEMENT OF 33 K.V. SINGLE POLE STRUCTURE ON SP-55 ST POLE

DRG. No.

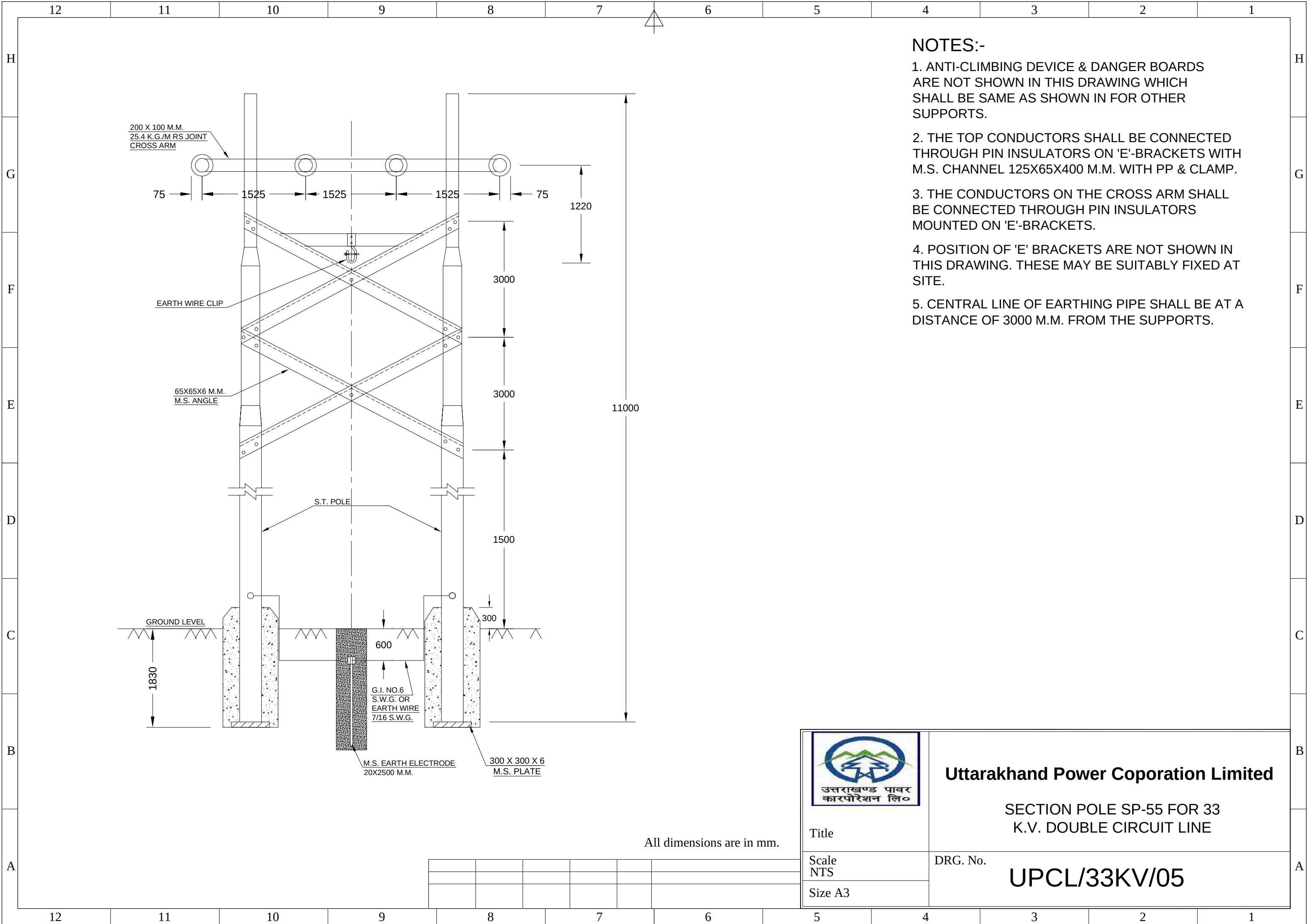
UPCL/33KV/01

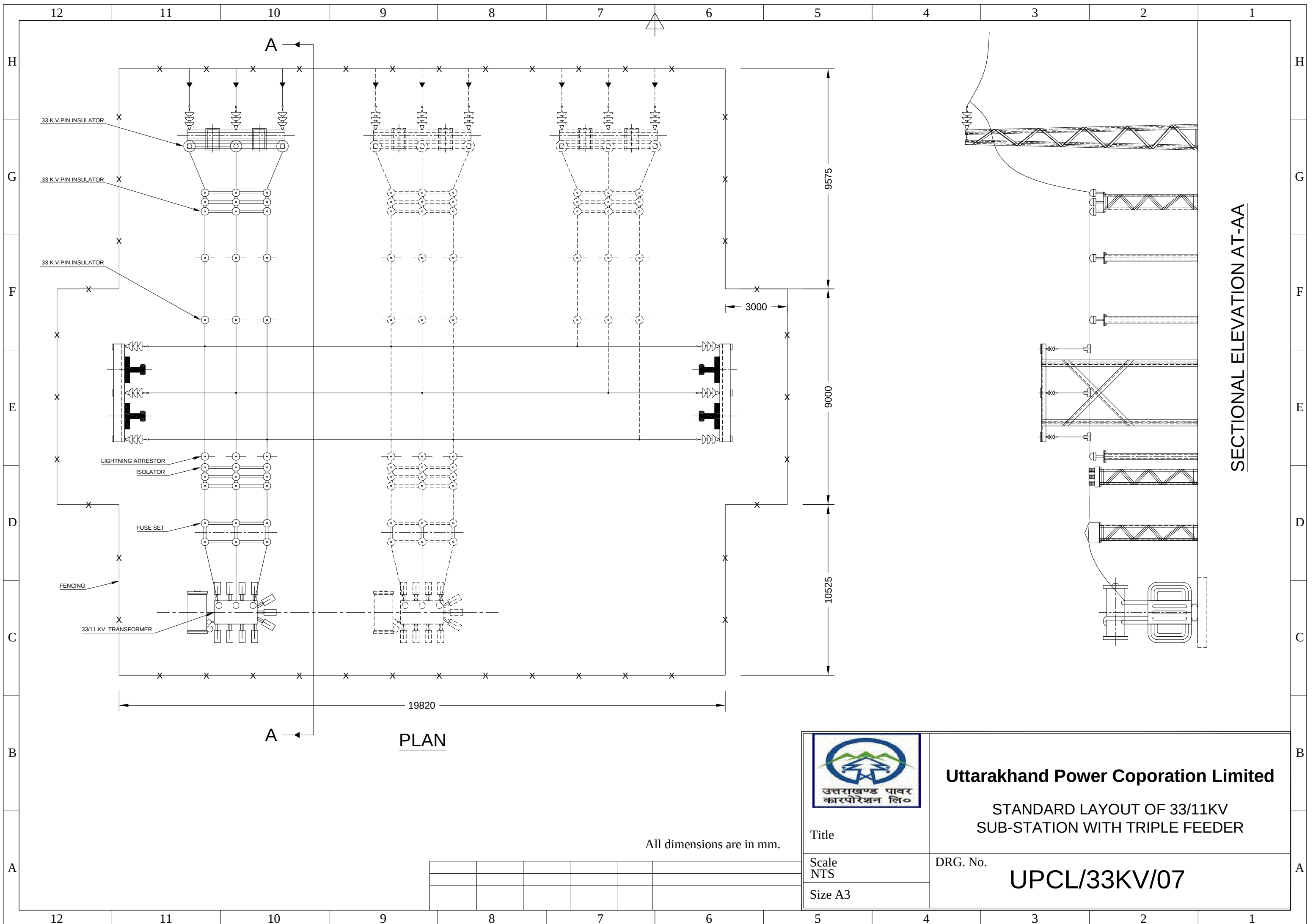


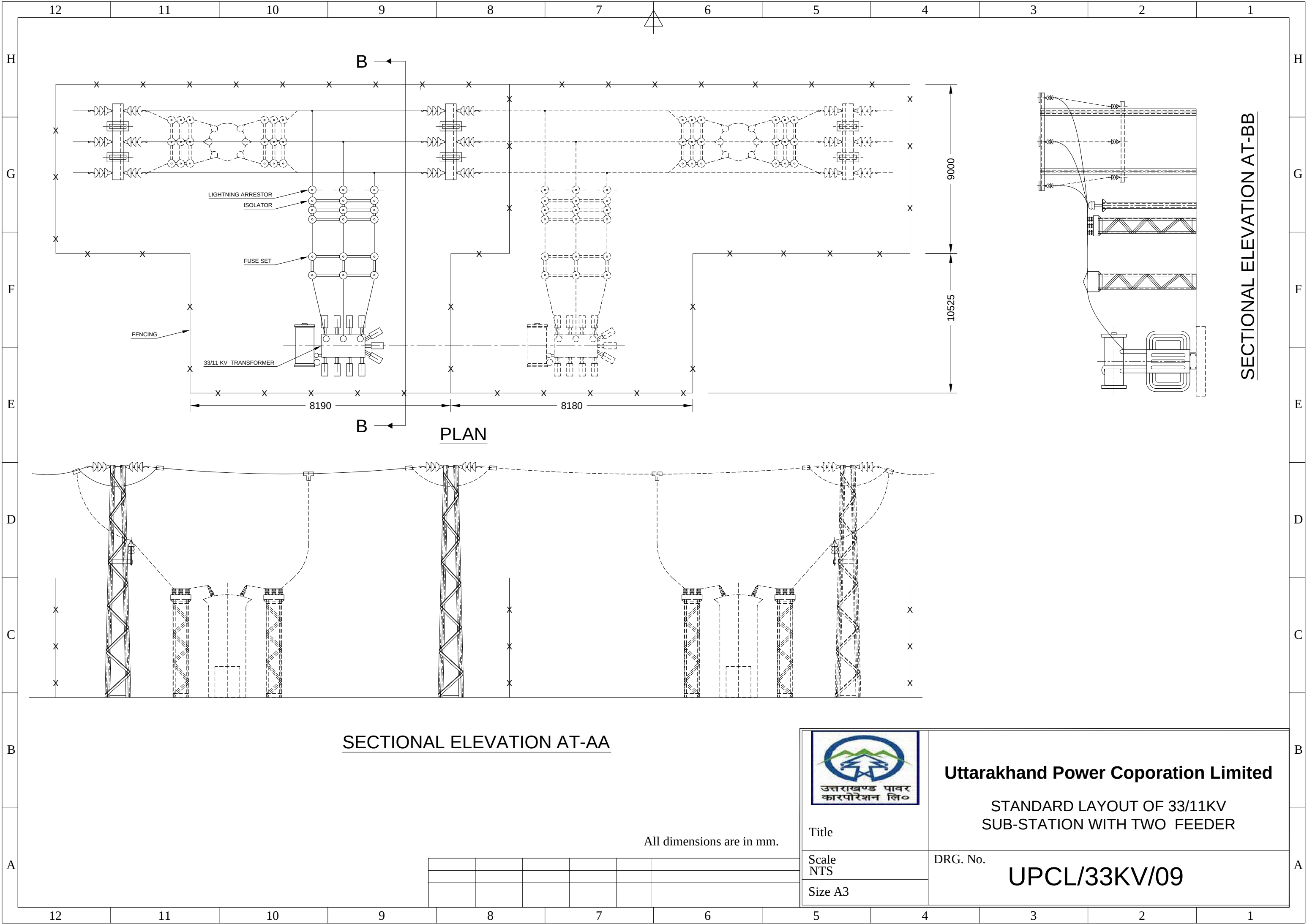


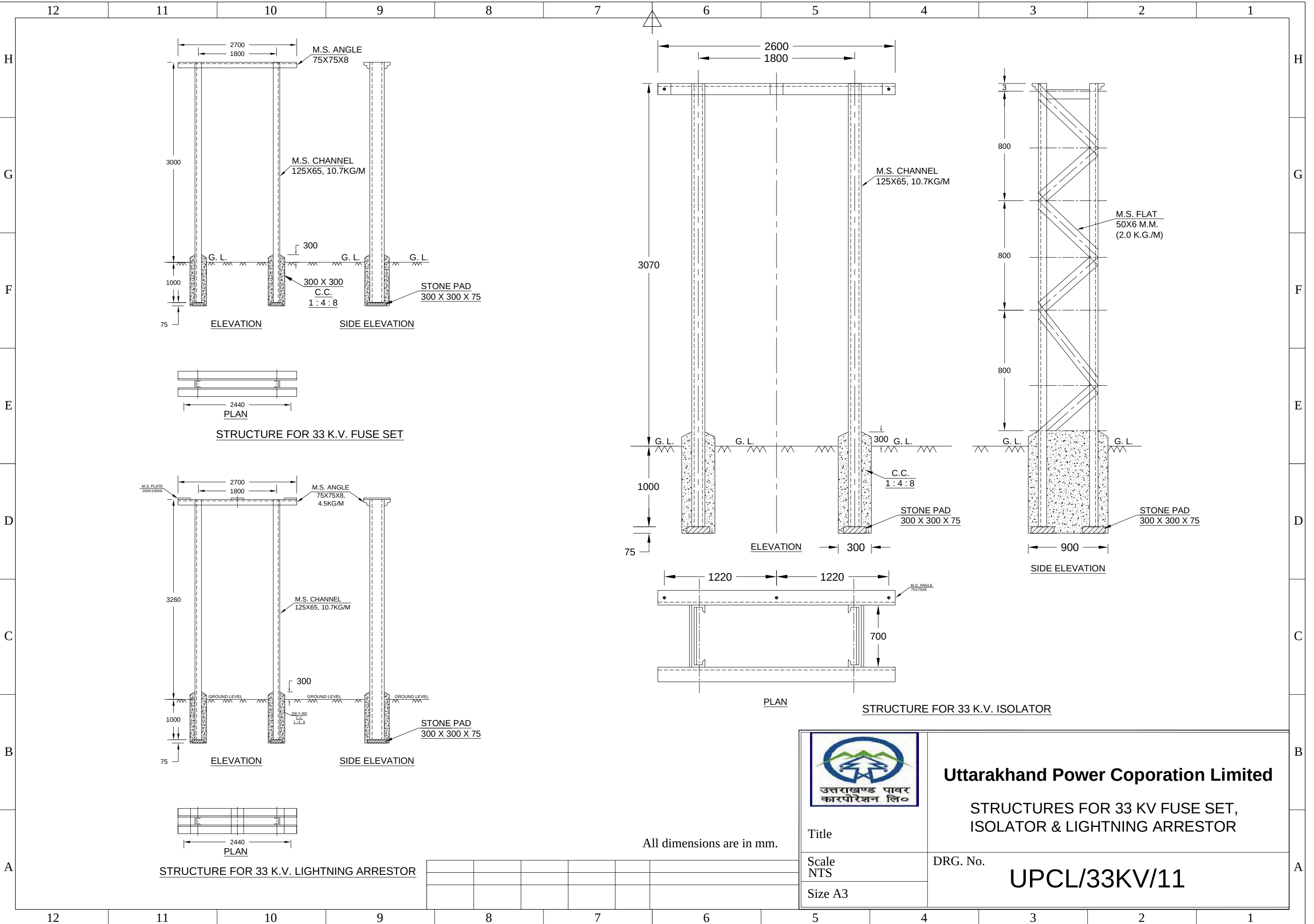
NOTES:-
1. DRAWING IS ONLY FOR INDICATIVE PURPOSE.
2. ALL MATERIAL SHALL BE USED AS PER AGREEMENT.

	Uttarakhand Power Coporation Limited	
	GENERAL ARRANGEMENT OF 33 K.V. DOUBLE POLE STRUCTURE ON SP-55 ST POLE	
	Title	DRG. No.
Scale NTS	UPCL/33KV/04	
Size A3		



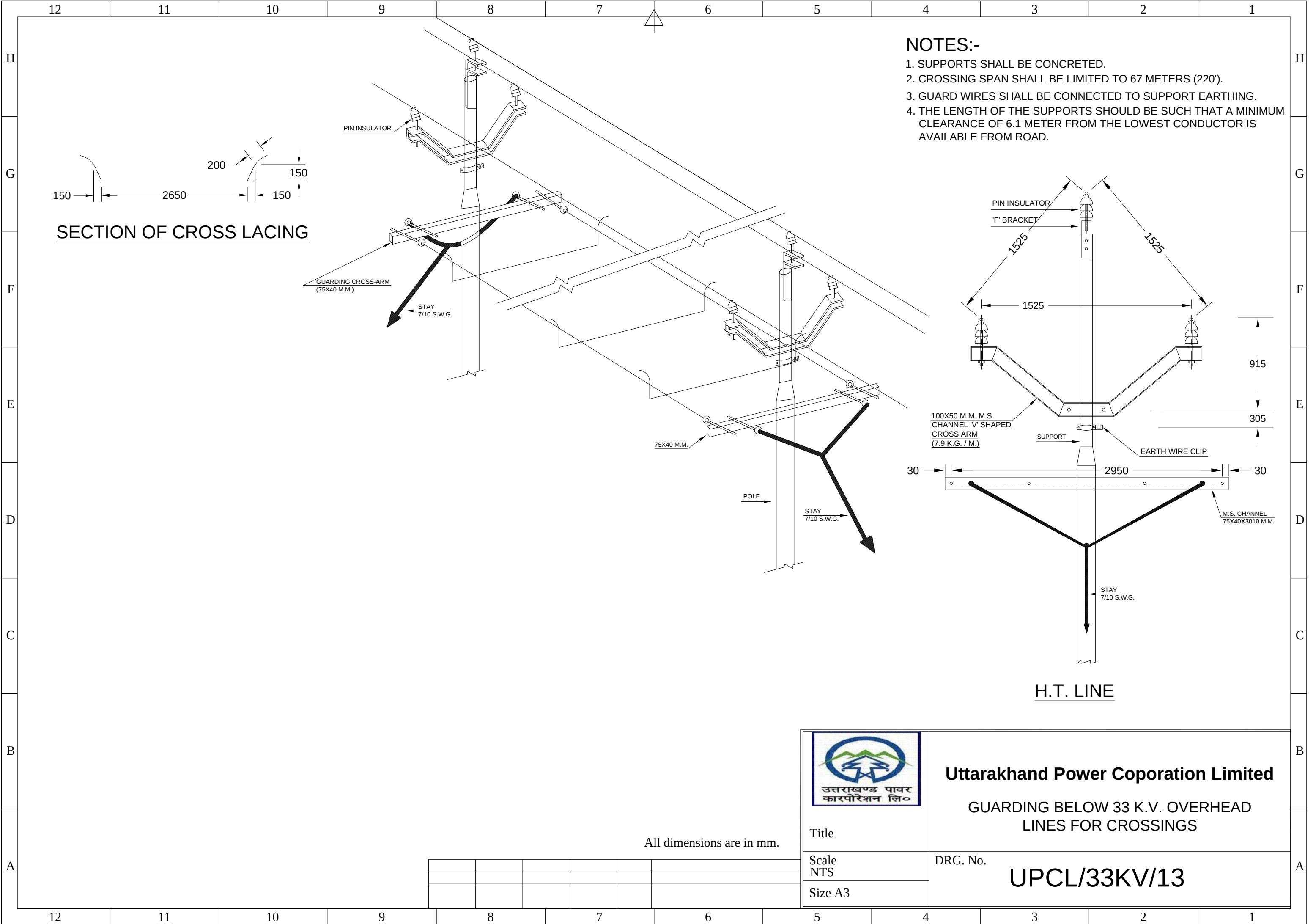


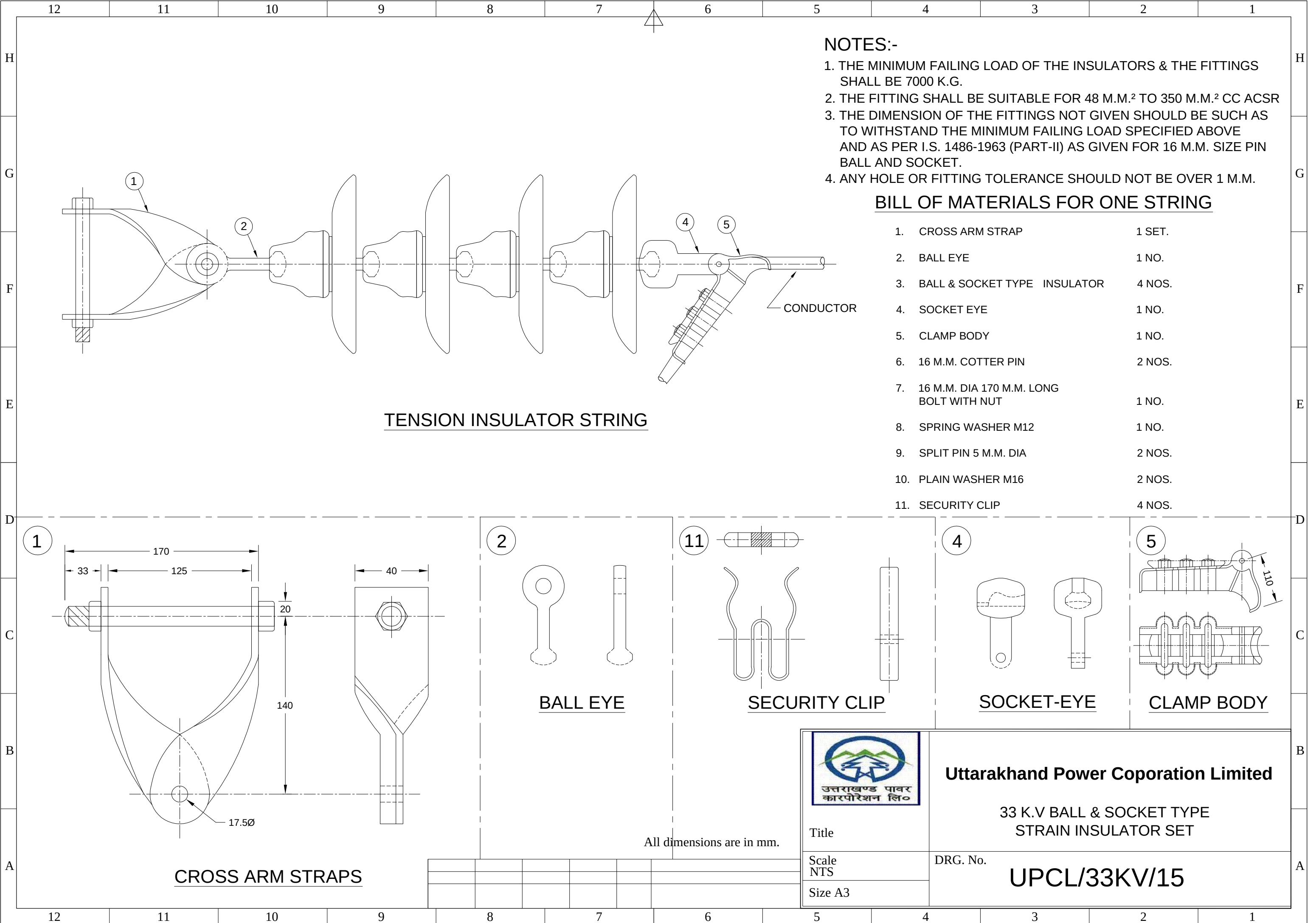




 उत्तराखण्ड पावर कारपोरेशन लि०	Uttarakhand Power Coporation Limited	
	STRUCTURES FOR 33 KV FUSE SET, ISOLATOR & LIGHTNING ARRESTOR	
	Title	DRG. No.
Scale NTS	UPCL/33KV/11	
Size A3		

All dimensions are in mm.





NOTES:-

1. THE MINIMUM FAILING LOAD OF THE INSULATORS & THE FITTINGS SHALL BE 7000 K.G.
2. THE FITTING SHALL BE SUITABLE FOR 48 M.M.² TO 350 M.M.² CC ACSR
3. THE DIMENSION OF THE FITTINGS NOT GIVEN SHOULD BE SUCH AS TO WITHSTAND THE MINIMUM FAILING LOAD SPECIFIED ABOVE AND AS PER I.S. 1486-1963 (PART-II) AS GIVEN FOR 16 M.M. SIZE PIN BALL AND SOCKET.
4. ANY HOLE OR FITTING TOLERANCE SHOULD NOT BE OVER 1 M.M.

BILL OF MATERIALS FOR ONE STRING

1.	CROSS ARM STRAP	1 SET.
2.	BALL EYE	1 NO.
3.	BALL & SOCKET TYPE INSULATOR	4 NOS.
4.	SOCKET EYE	1 NO.
5.	CLAMP BODY	1 NO.
6.	16 M.M. COTTER PIN	2 NOS.
7.	16 M.M. DIA 170 M.M. LONG BOLT WITH NUT	1 NO.
8.	SPRING WASHER M12	1 NO.
9.	SPLIT PIN 5 M.M. DIA	2 NOS.
10.	PLAIN WASHER M16	2 NOS.
11.	SECURITY CLIP	4 NOS.

TENSION INSULATOR STRING

CROSS ARM STRAPS

BALL EYE

SECURITY CLIP

SOCKET-EYE

CLAMP BODY



Uttarakhand Power Coporation Limited

33 K.V BALL & SOCKET TYPE
STRAIN INSULATOR SET

DRG. No.

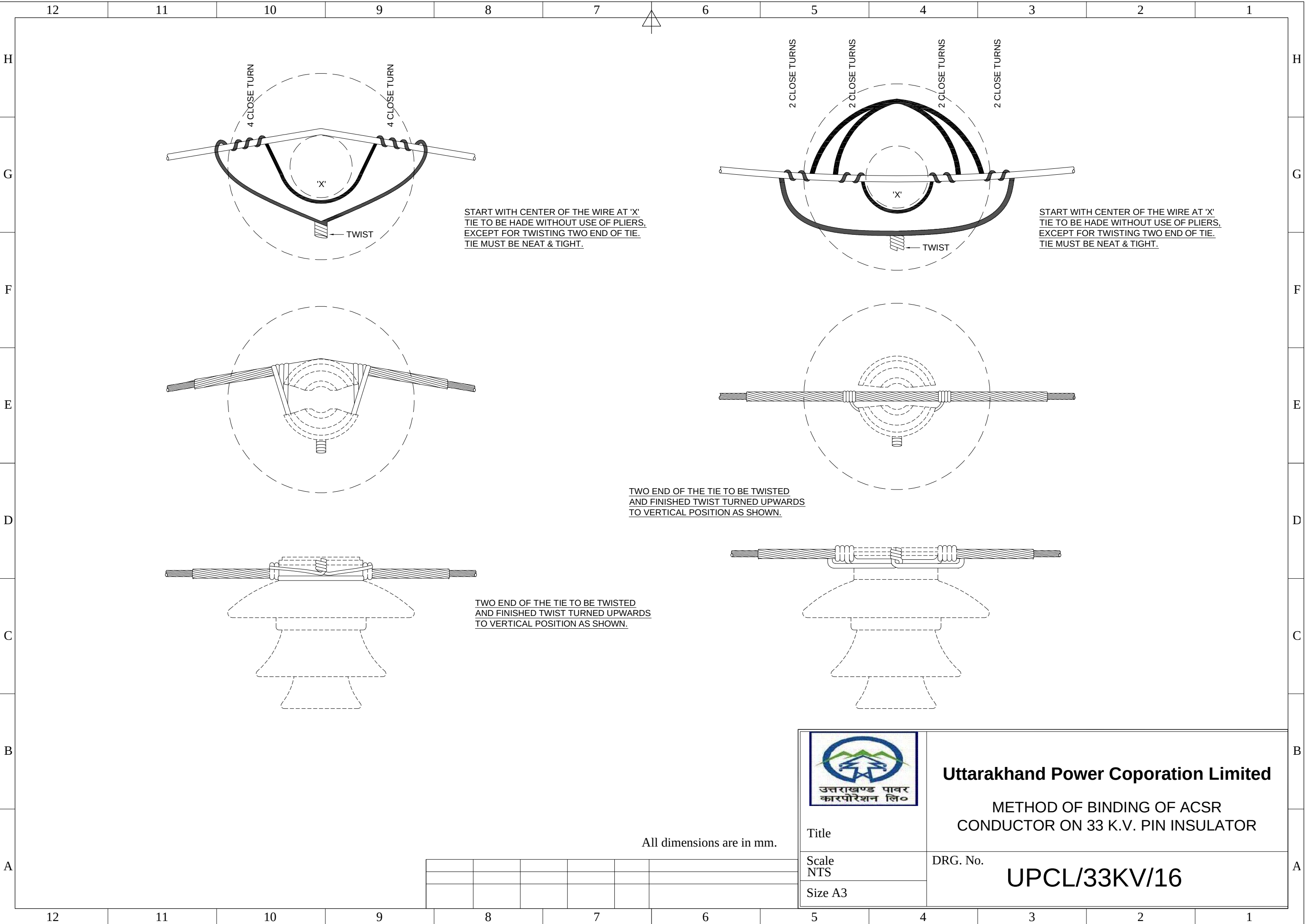
UPCL/33KV/15

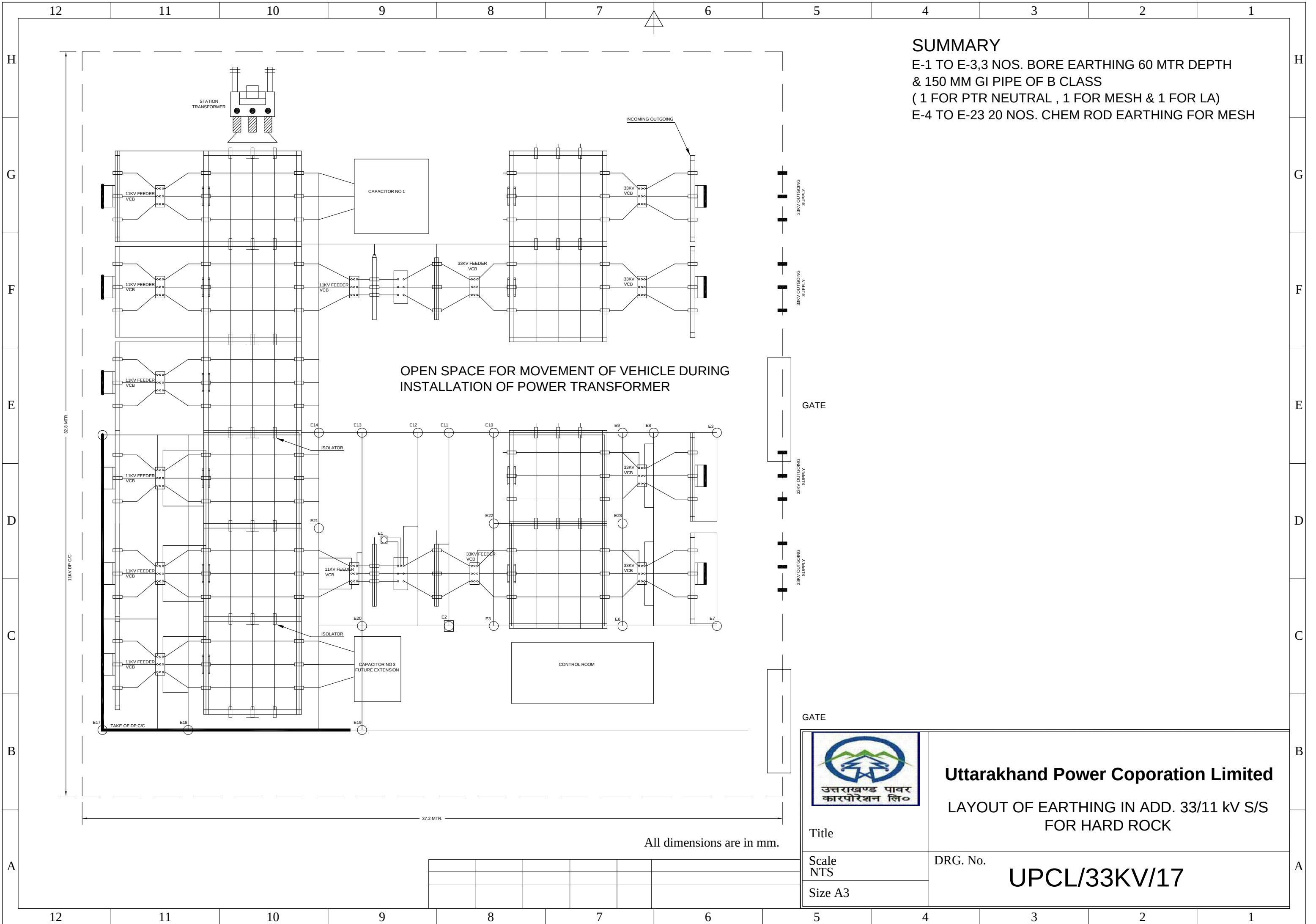
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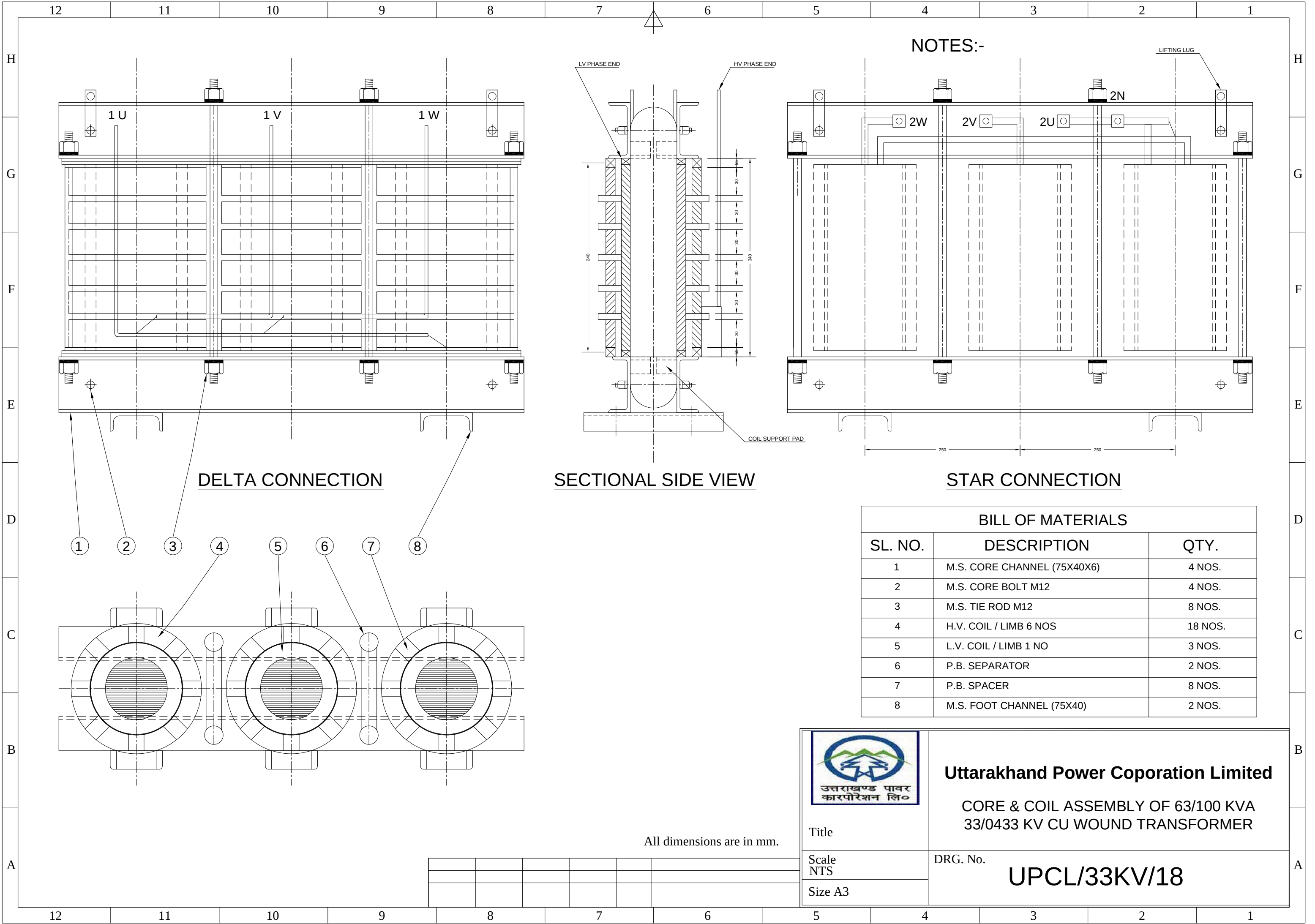
Scale
NTS

Size A3

All dimensions are in mm.





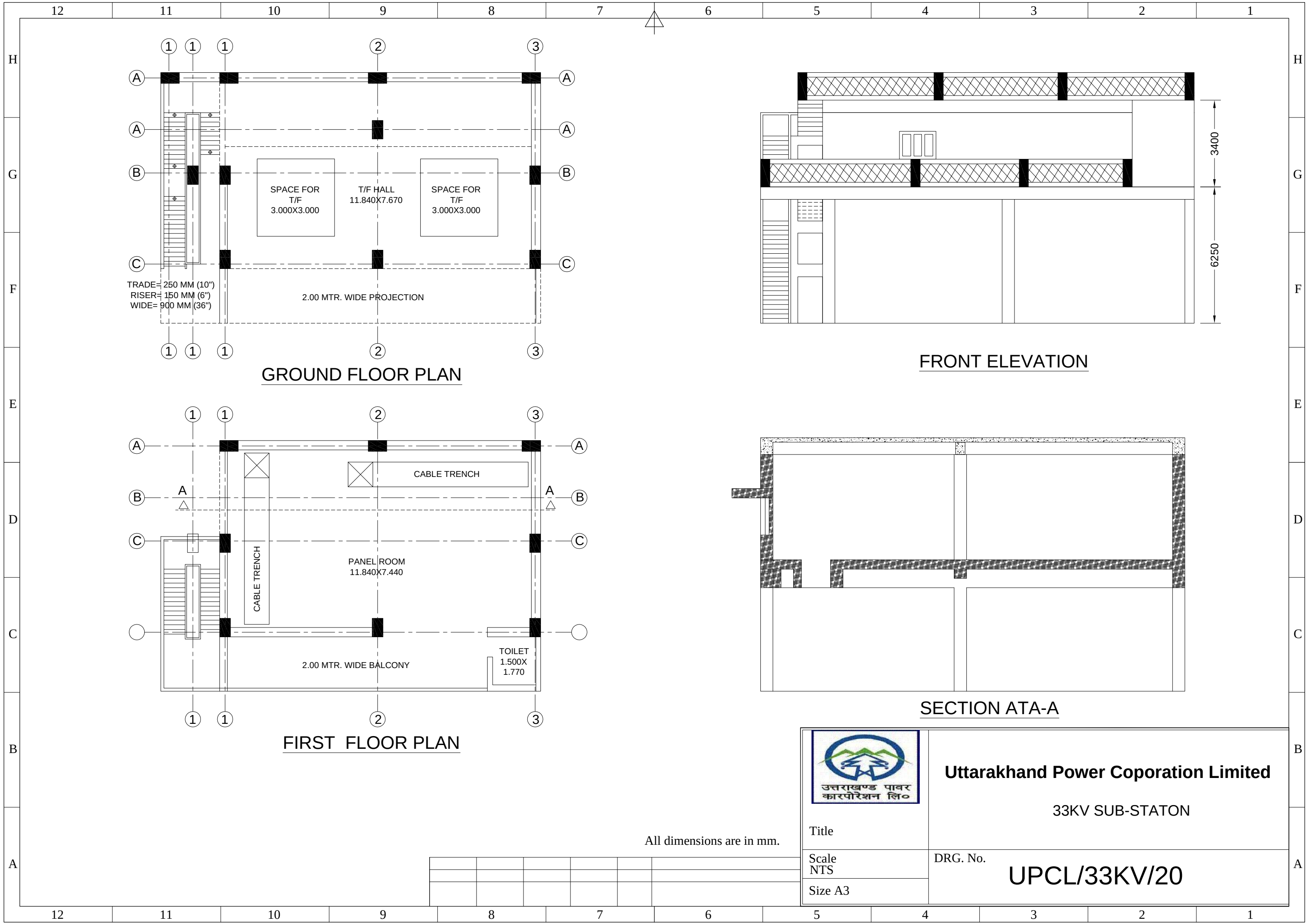


SECTIONAL SIDE VIEW

STAR CONNECTION

DELTA CONNECTION

All dimensions are in mm.



GROUND FLOOR PLAN

FRONT ELEVATION

FIRST FLOOR PLAN

SECTION ATA-A



Uttarakhand Power Coporation Limited

33KV SUB-STATON

Title

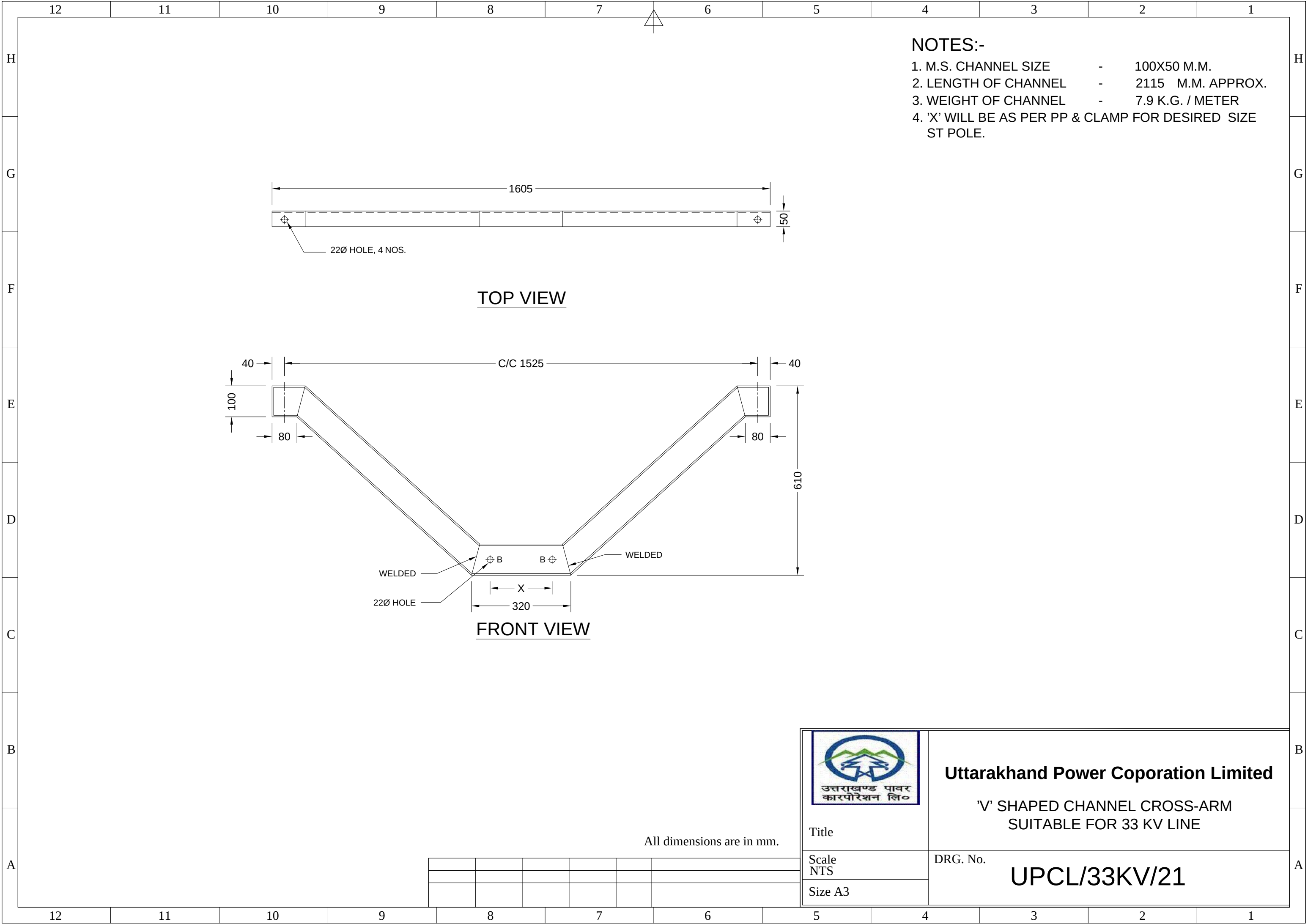
Scale
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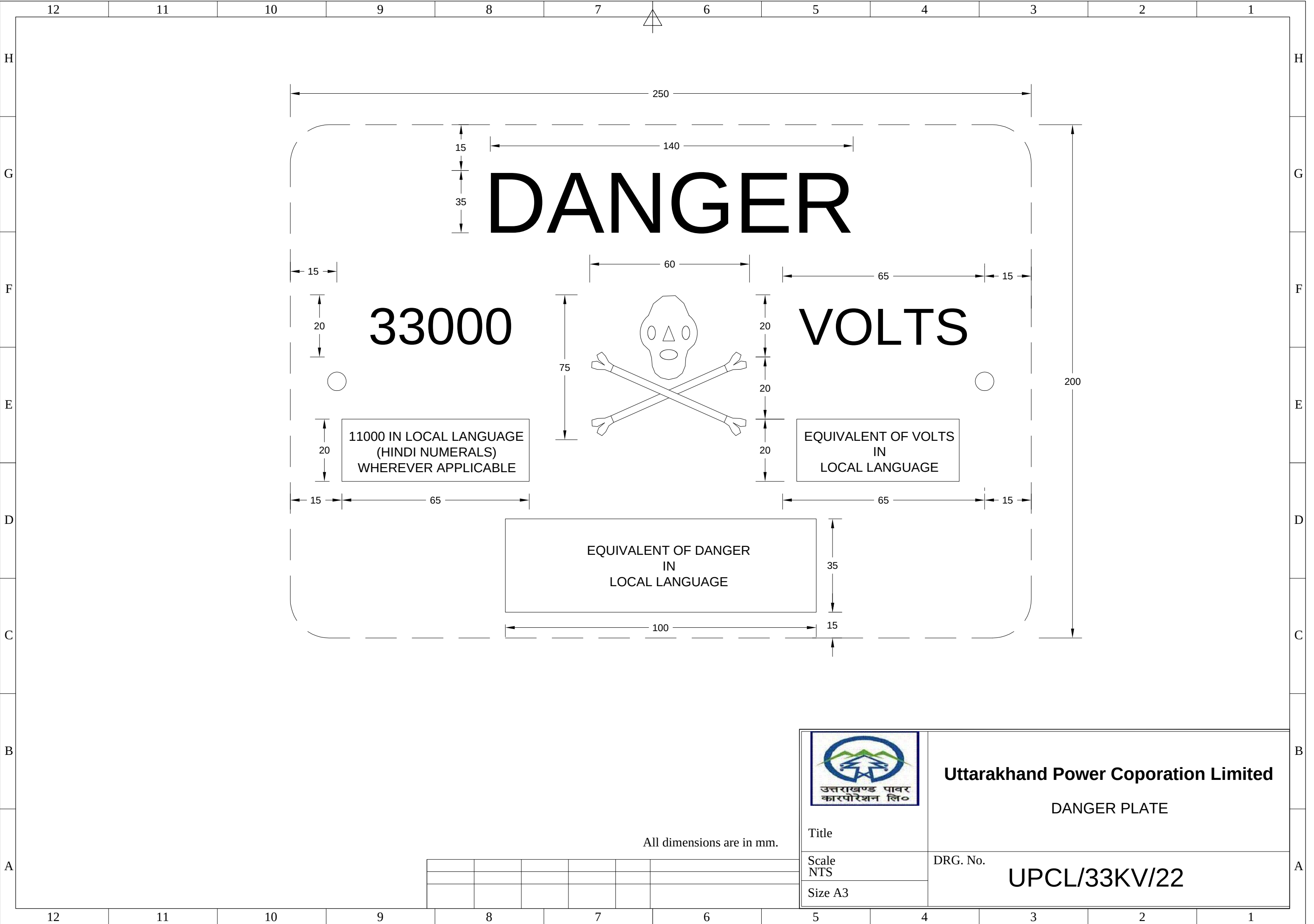
Size A3

DRG. No.

UPCL/33KV/20

All dimensions are in mm.





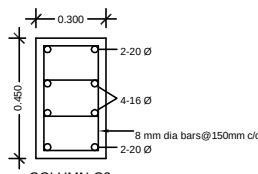


उत्तराखण्ड पावर
कारपोरेशन लि०

UPCL/33KV/23

1. SUPPORTS SHALL BE CONCRETED.
2. CROSSING SPAN SHALL BE LIMITED TO 67 METERS (220').
3. GUARD WIRES SHALL BE CONNECTED TO SUPPORT EARTHING.
4. THE LENGTH OF THE SUPPORTS SHOULD BE SUCH THAT A MINIMUM CLEARANCE OF 6.1 METER FROM THE LOWEST CONDUCTOR IS AVAILABLE FROM ROAD.





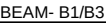
ALL TRANS BARS 8 DIA @150 C/C

COLUMN DETAILS



Figure 10 illustrates the reinforcement details of the beam. The diagram shows a cross-section of a beam with reinforcement bars. Key details include: 50% bar cracked, 2.25 Ø + 2.25 Ø, 10 Ø Shear Stirrups @ 150 c/c, 10 Ø Shear Stirrups @ 200 c/c, and 10 Ø Shear Stirrups @ 150 c/c. A horizontal axis 'X' is indicated.

BEAM - B4



<u>DOOR/WINDOW DETAILS</u>		
1.	D	1.50X2.40
2.	D1	1.25X2.40
3.	D2	1.00X2.40
4.	D3	0.75X2.40
5.	W	1.80X1.50
6.	W1	1.20X1.50
7.	W2	0.75X1.50
8.	V	0.60X0.45

All dimensions are in mm.



Uttarakhand Power Coporation Limited
DRAWING OF SWITCH GEAR ROOM BUILDING
FOR 33/11 KV LAWHRAG IRHET-TCIRTSID ,
ANALKAS ARORAM NOITATSBUS

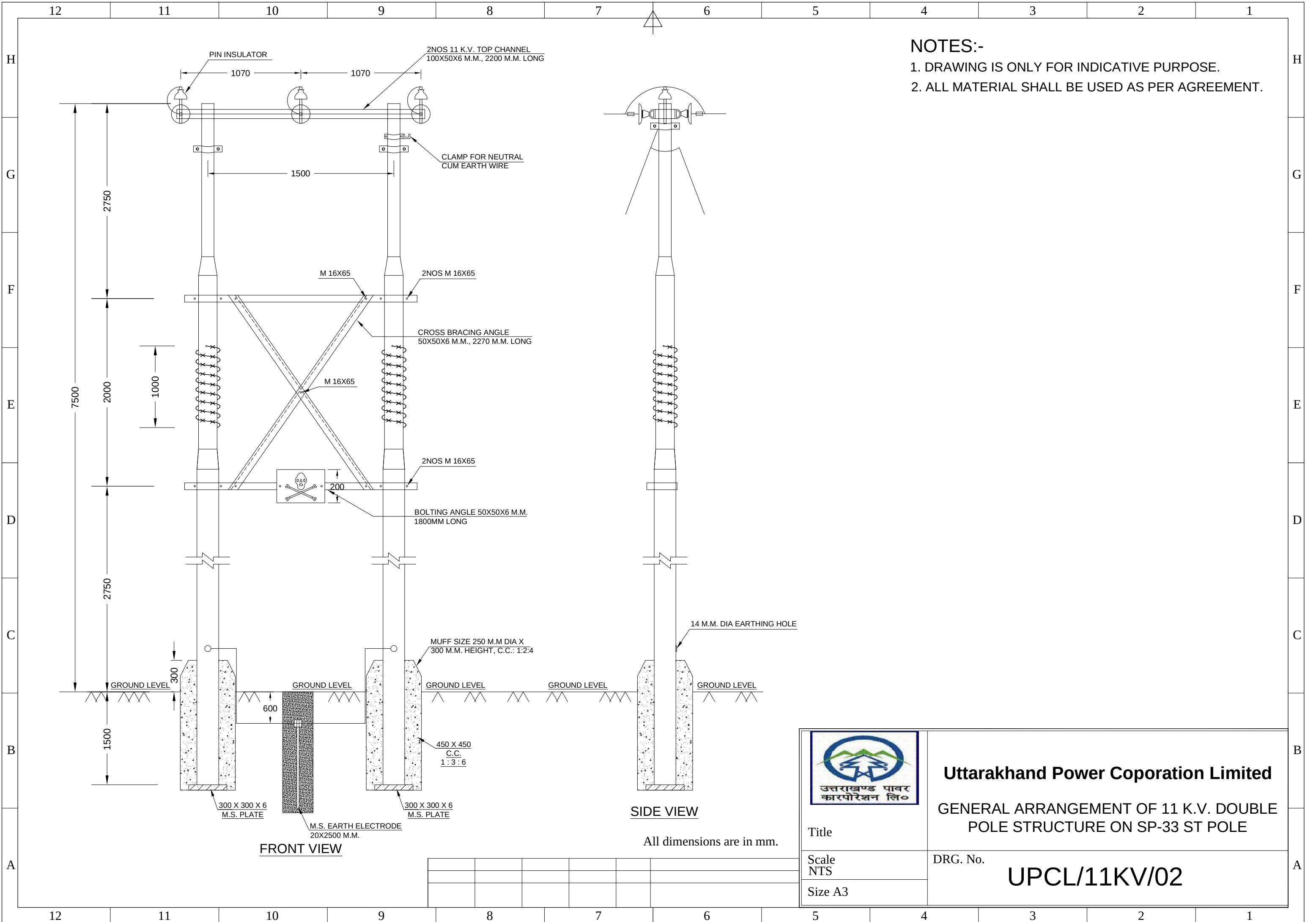
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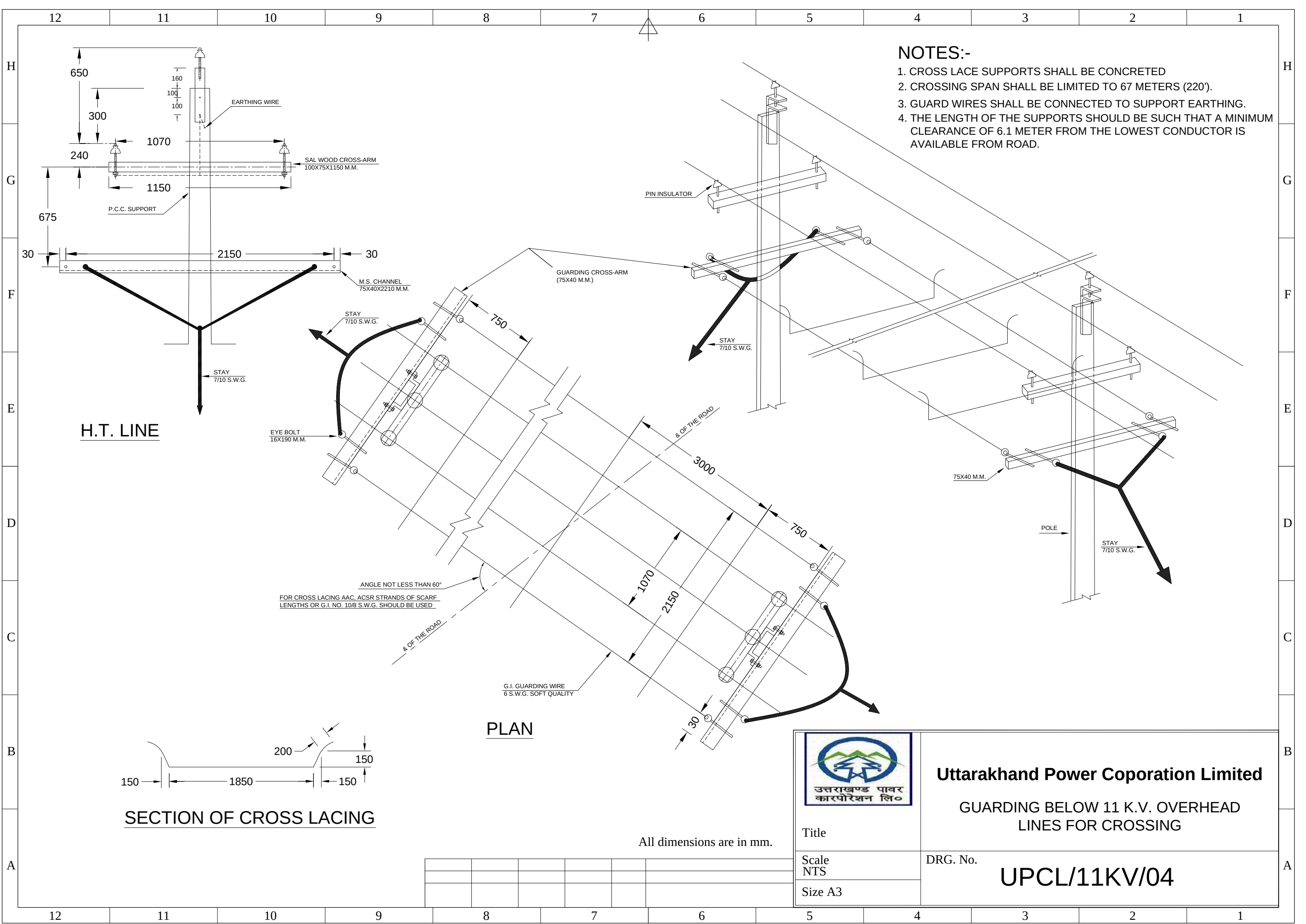
UPCL/33KV/24

Title

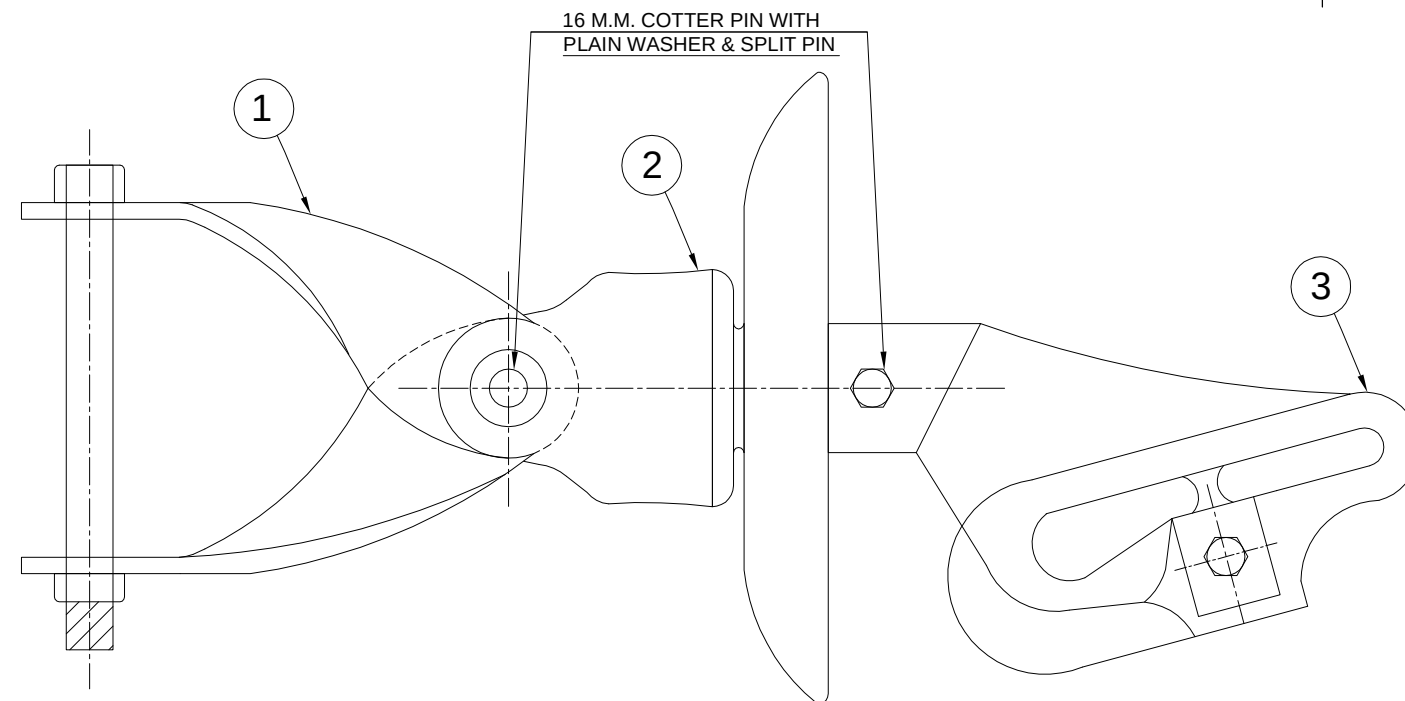
Scale
NTS

Size A3





- NOTES:-
1. CROSS LACE SUPPORTS SHALL BE CONCRETED
 2. CROSSING SPAN SHALL BE LIMITED TO 67 METERS (220').
 3. GUARD WIRES SHALL BE CONNECTED TO SUPPORT EARTHING.
 4. THE LENGTH OF THE SUPPORTS SHOULD BE SUCH THAT A MINIMUM CLEARANCE OF 6.1 METER FROM THE LOWEST CONDUCTOR IS AVAILABLE FROM ROAD.



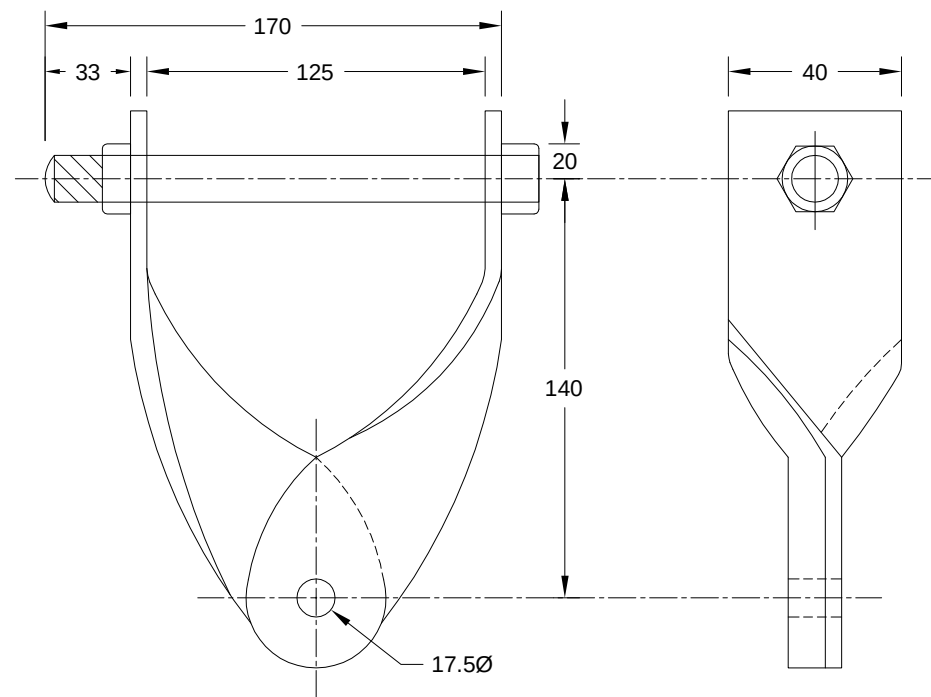
TENSION INSULATOR STRING

NOTES:-

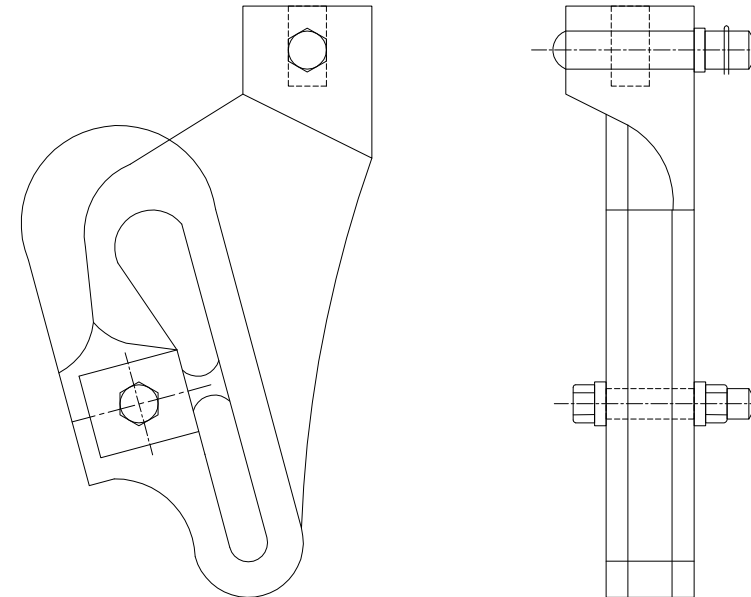
1. THE MINIMUM FAILING LOAD OF THE INSULATORS & THE FITTINGS SHALL BE 4500 K.G.
2. THE FITTING SHALL BE SUITABLE FOR 20 M.M.² TO 30 M.M.² CC ACSR
3. THE DIMENSION OF THE FITTINGS NOT GIVEN SHOULD BE SUCH AS TO WITHSTAND THE MINIMUM FAILING LOAD SPECIFIED ABOVE AND SUITABLE FOR CAP & TONGUE DIMENSIONS OF THE INSULATORS.

BILL OF MATERIALS FOR ONE STRING

1.	CROSS ARM STRAP	1 SET.
2.	TONGUE & CLEVIS TYPE DISC INSULATOR	1 NO.
3.	16 M.M. COTTER PIN	2 NOS.
4.	SNAIL TYPE STRAIN CLAMP	1 NO.
5.	16 M.M. DIA 170 M.M. LONG BOLT WITH NUT	1 NO.
6.	SPRING WASHER	1 NO.
7.	SPLIT PIN 5 M.M. DIA	2 NOS.
8.	PLAIN WASHER	2 NOS.

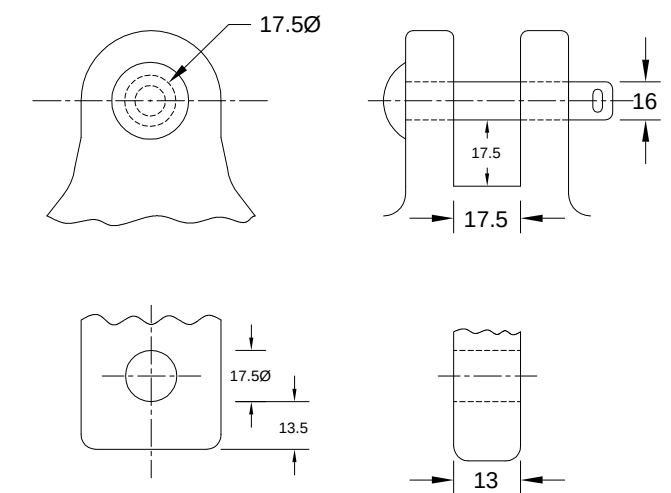


CROSS ARM STRAPS



STRAIN CLAMP

All dimensions are in mm.



INSULATOR CAP & TONGUE

**Uttarakhand Power Corporation Limited**

11 K.V. CLEVIS & TONGUE TYPE STRAIN INSULATOR SET

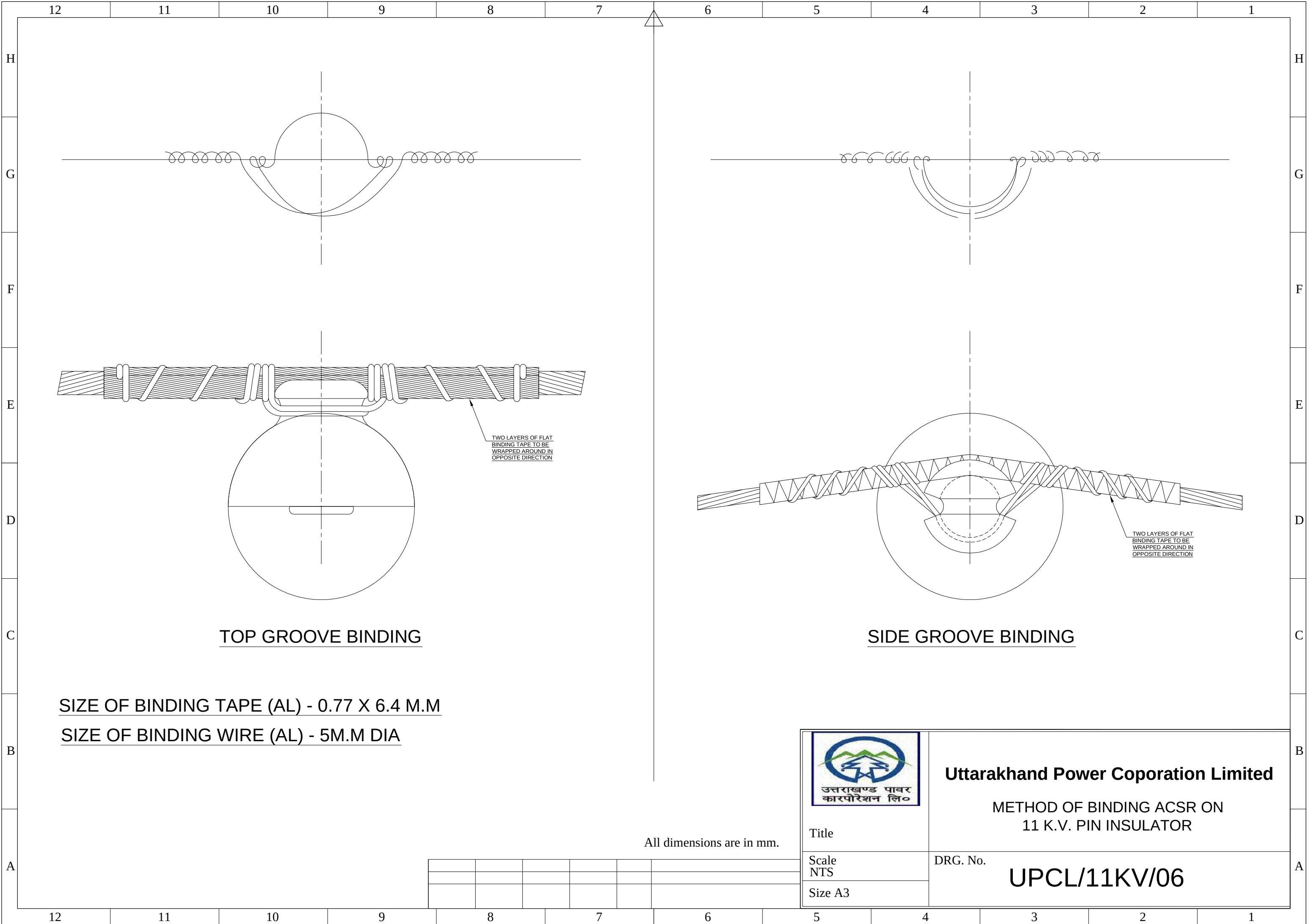
Title

Scale
NTS

Size A3

	DRG. No.
--	----------

UPCL/11KV/05



TOP GROOVE BINDING

SIDE GROOVE BINDING

SIZE OF BINDING TAPE (AL) - 0.77 X 6.4 M.M

SIZE OF BINDING WIRE (AL) - 5M.M DIA

All dimensions are in mm.



Uttarakhand Power Coporation Limited

METHOD OF BINDING ACSR ON
11 K.V. PIN INSULATOR

DRG. No.

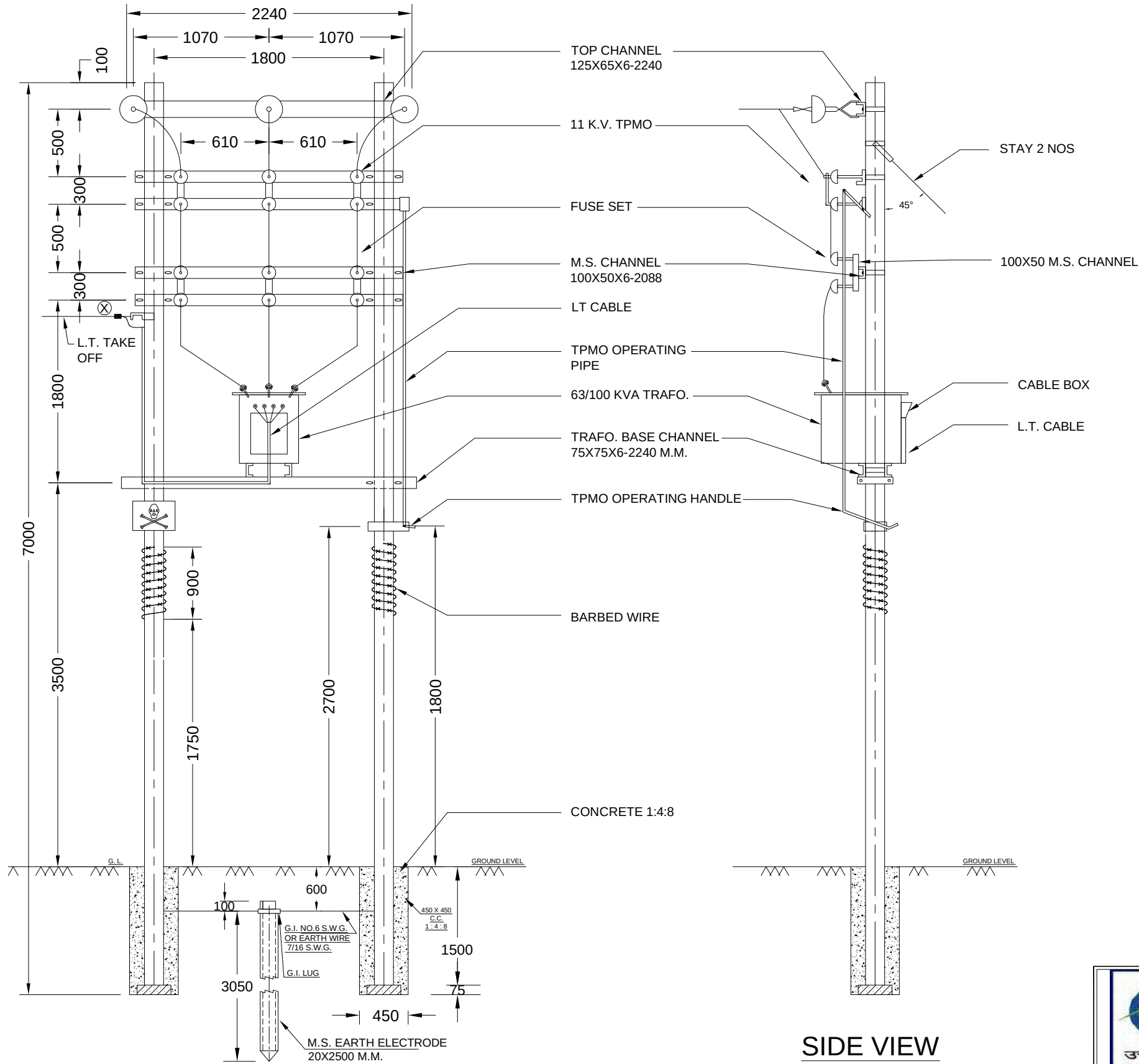
UPCL/11KV/06

Title

Scale

NTS

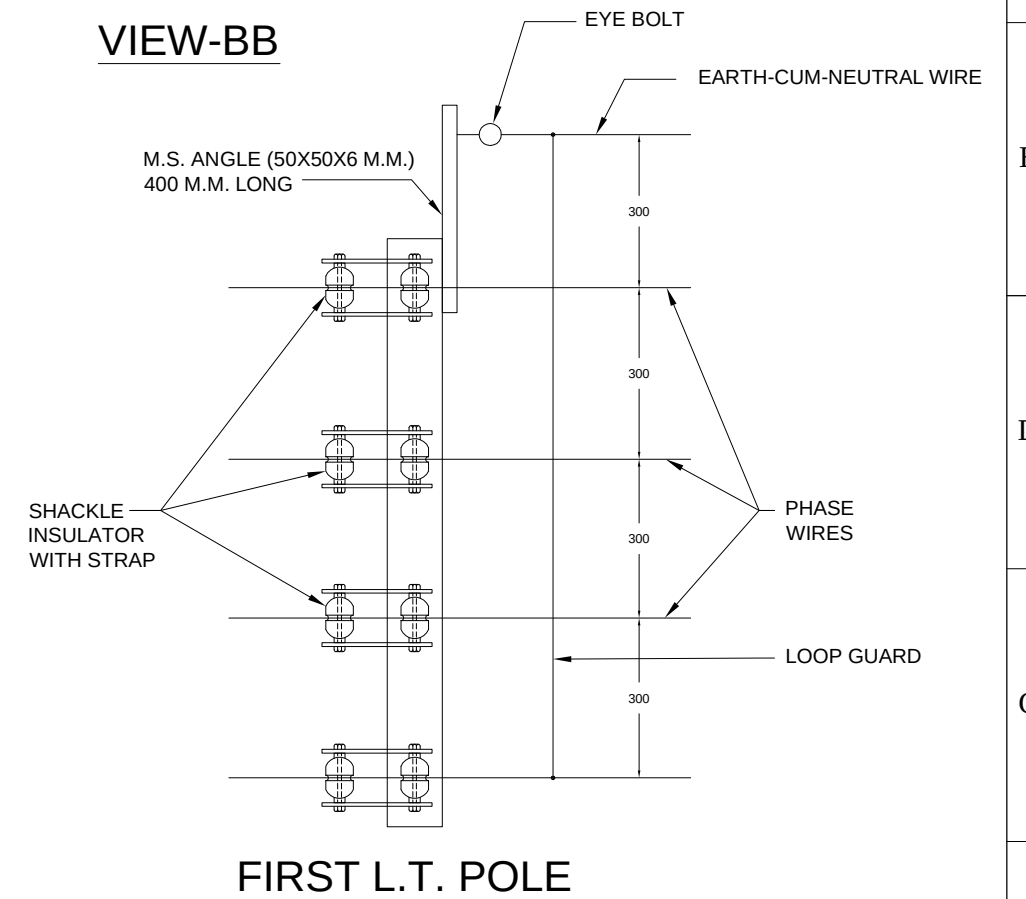
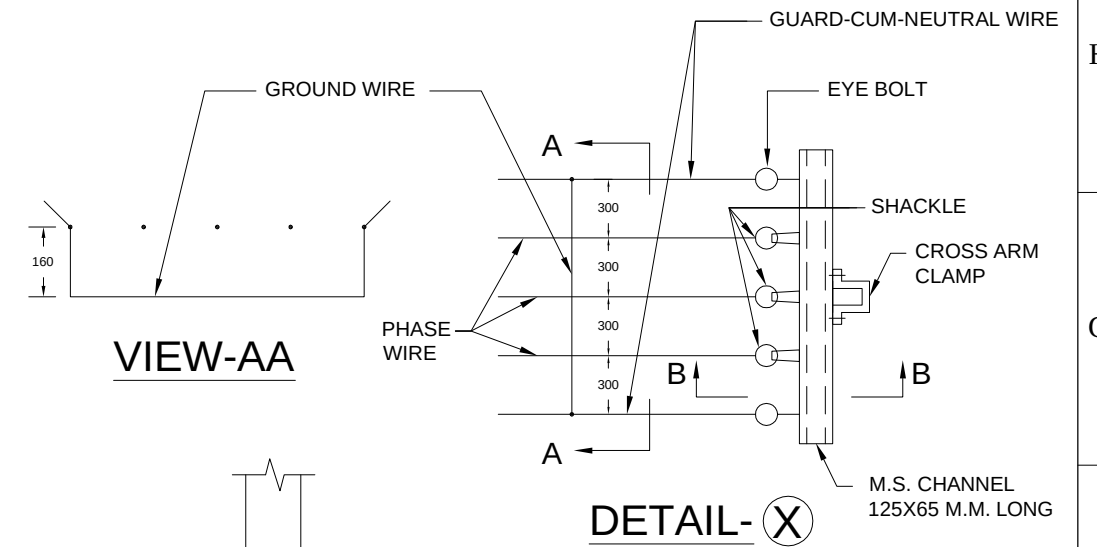
Size A3



FRONT VIEW

SIDE VIEW

All dimensions are in mm.



FIRST L.T. POLE



Uttarakhand Power Corporation Limited

11/0.4 K.V. 25/63/100 KVA POLE
MOUNTED SUB-STATION
(WITH 8.5 M.M. PCC POLES)

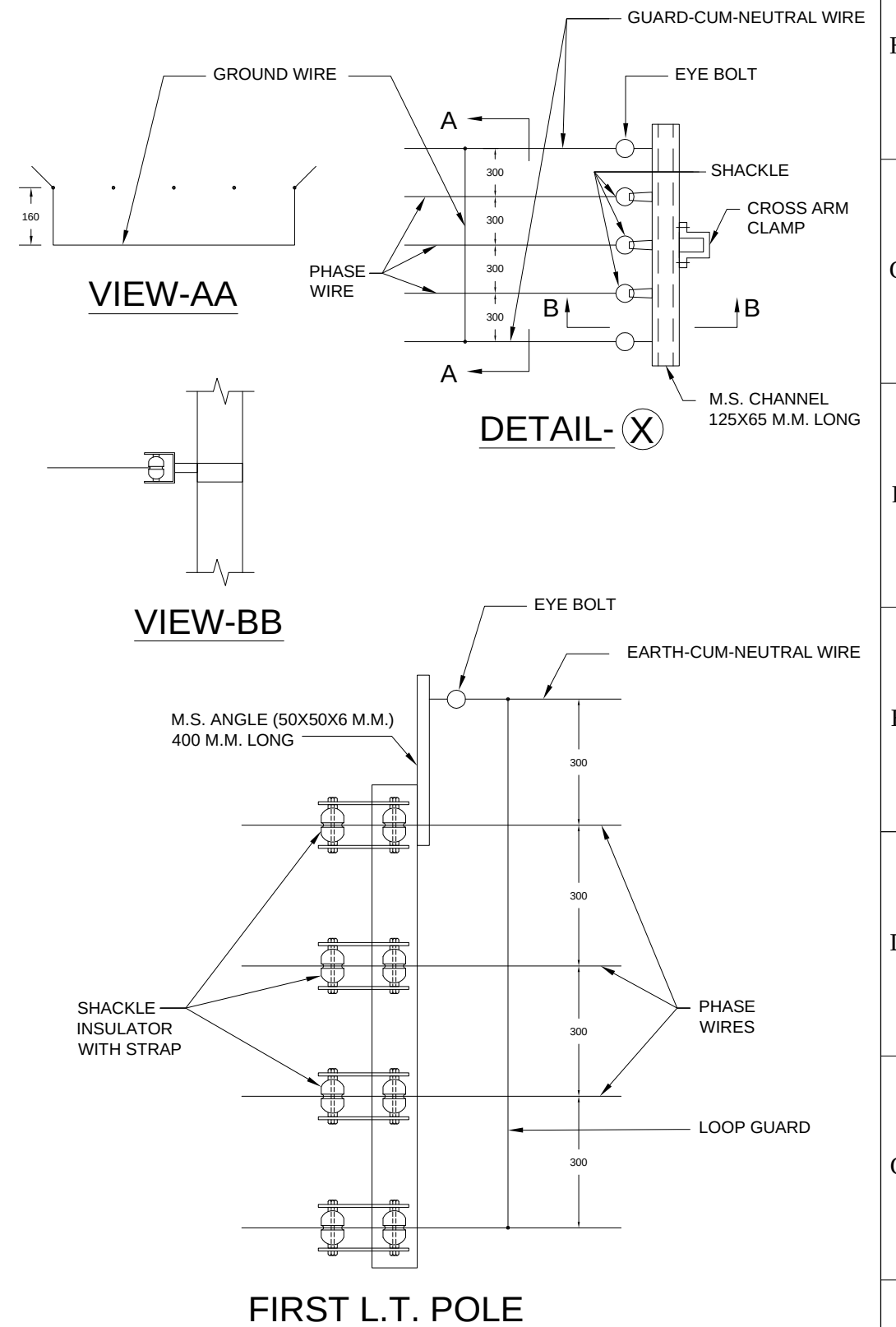
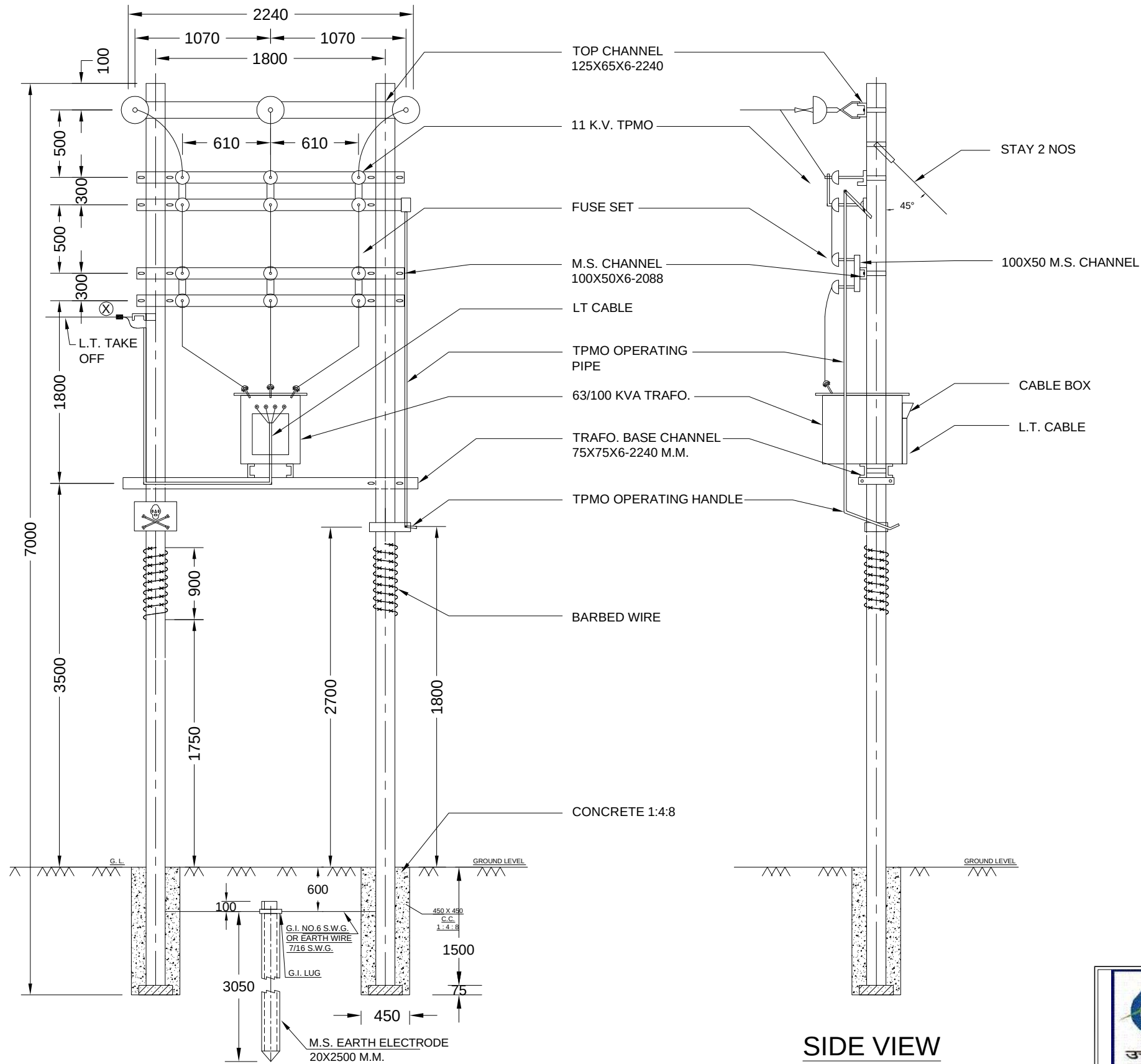
Title

Scale
NTS

Size A3

DRG. No.

UPCL/11KV/07



Uttarakhand Power Coporation Limited

11/0.4 K.V. 25/63/100 KVA POLE
MOUNTED SUB-STATION
(WITH 9 M.M. PCC POLES)

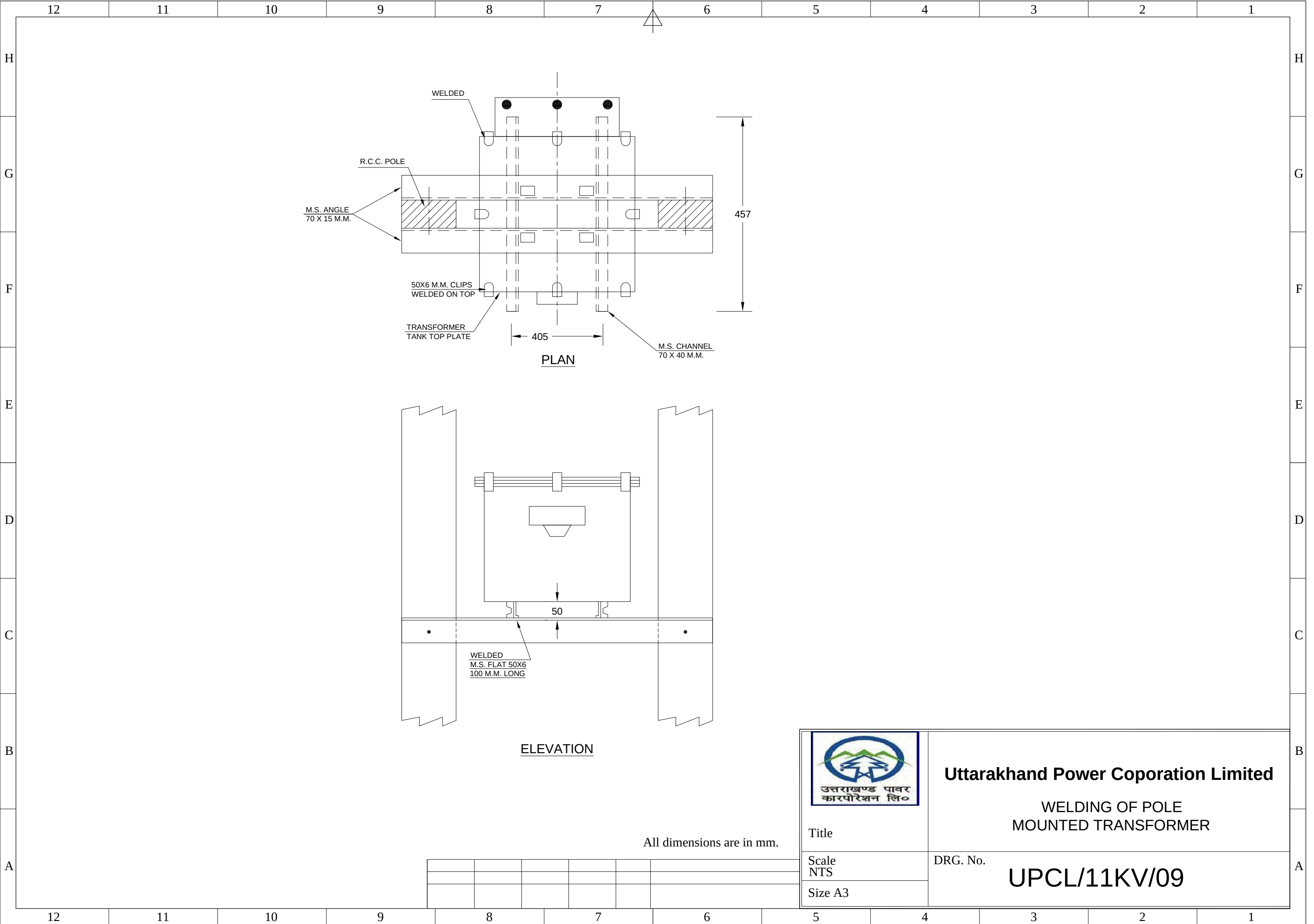
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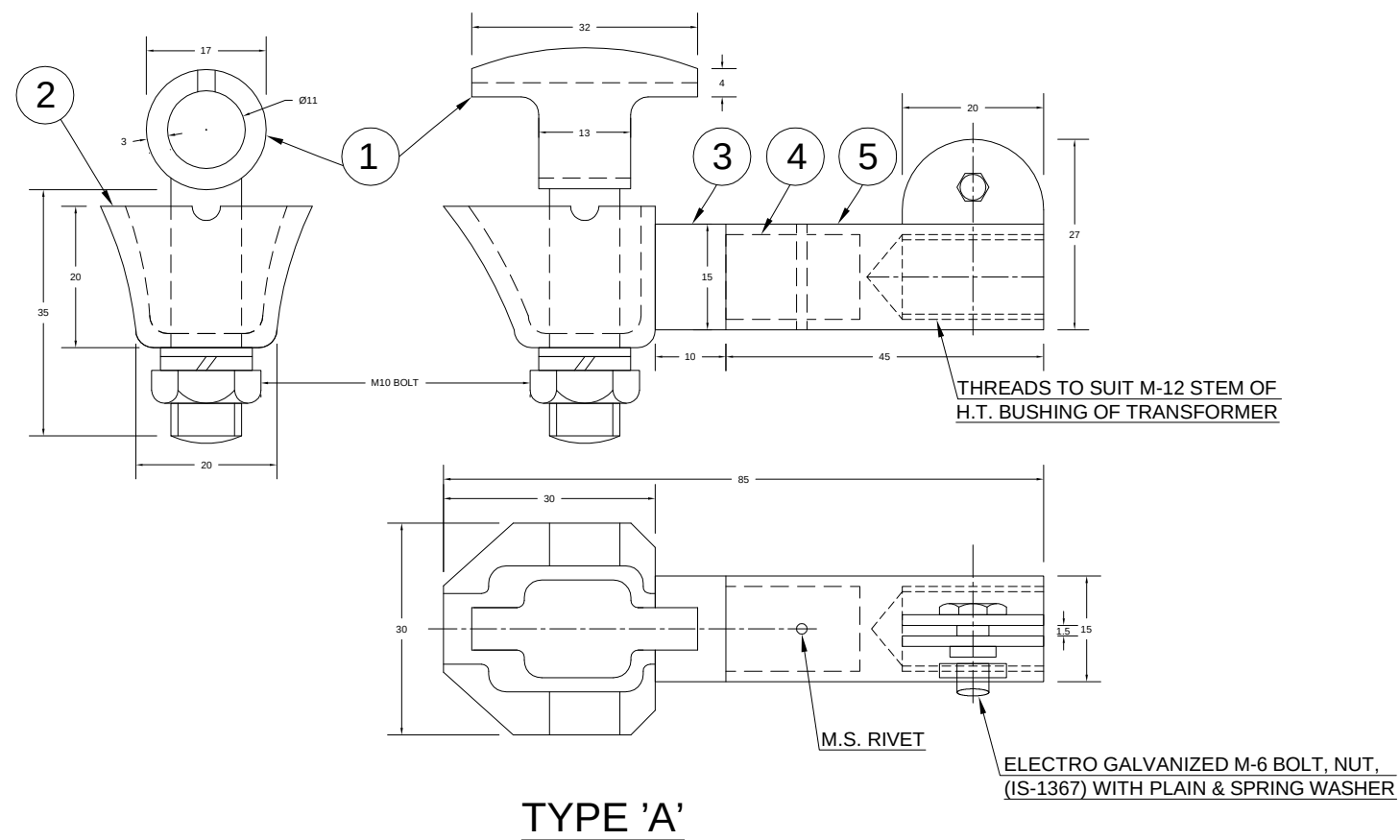
Scale
NTS

Size A3

DRG. No.

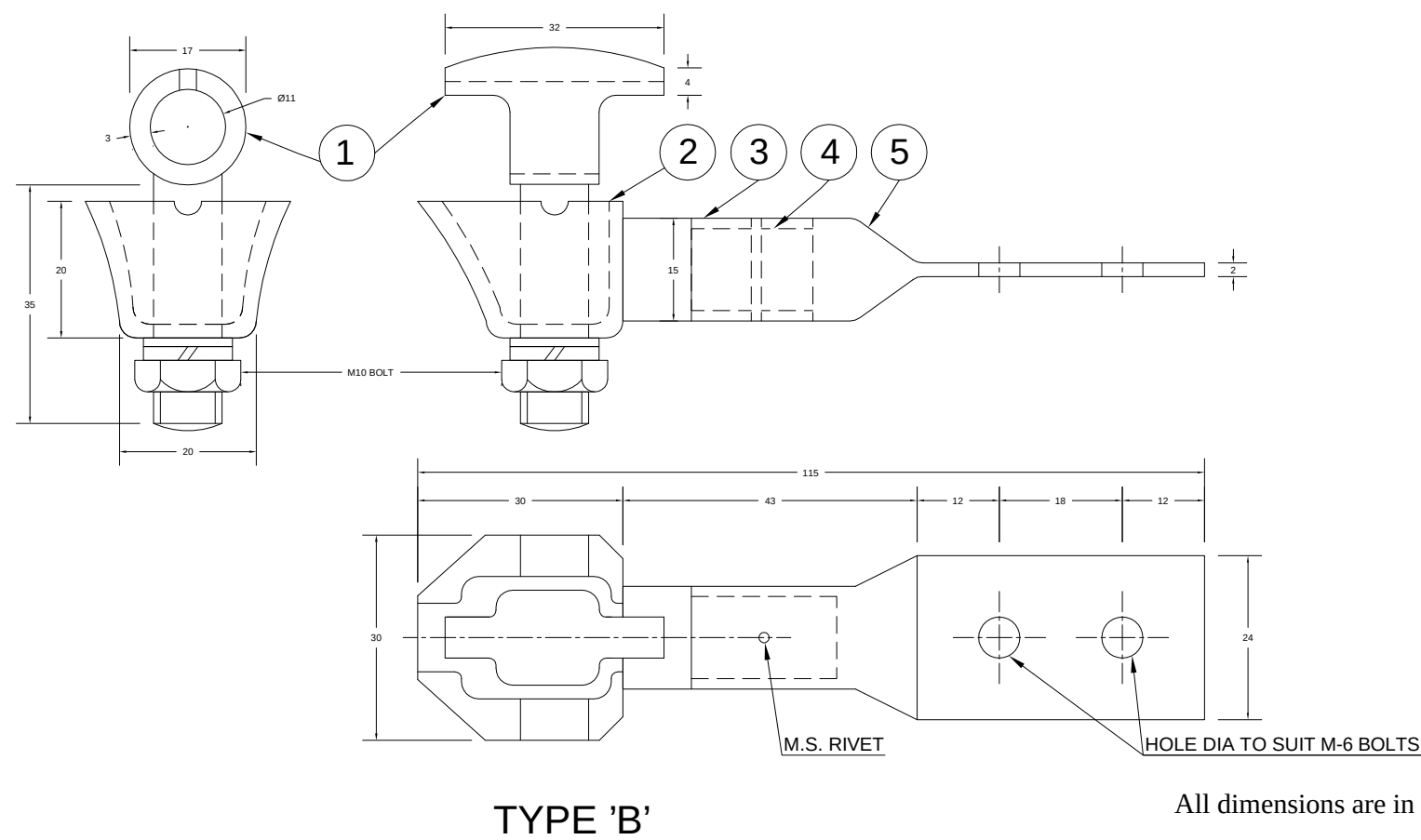
UPCL/11KV/08





NOTES:-

1. ALLUMINIUM ALLOY 'A-II' CONNECTOR GRIP WITH ELECTRIC GALVANIZED M10 BOLT, NUT WITH PLAIN & SPRING WASHER TO GRIP THE CONDUCTOR IN HORIZONTAL & VERTICAL DIRECTIONS.
2. ALLUMINIUM ALLOY 'A-II' (IS:617 - 1975) BODY
3. EPOXY SEAL TO GUARD AGAINST ATMOSPHERIC EFFECTS.
4. HIGH PRESSURE FIT JOINT BETWEEN ALLUMINIUM ALLOY AND BRONZE COMPONENTS OF THE CONNECTOR.
5. HIGH STRENGTH, CORROSION RESISTANT BRONZE BODY.



All dimensions are in mm.

**Uttarakhand Power Corporation Limited**

BIMETALLIC CONNECTOR (H.T.) FOR 11 K.V. DISTRIBUTION TRANSFORMERS

Title

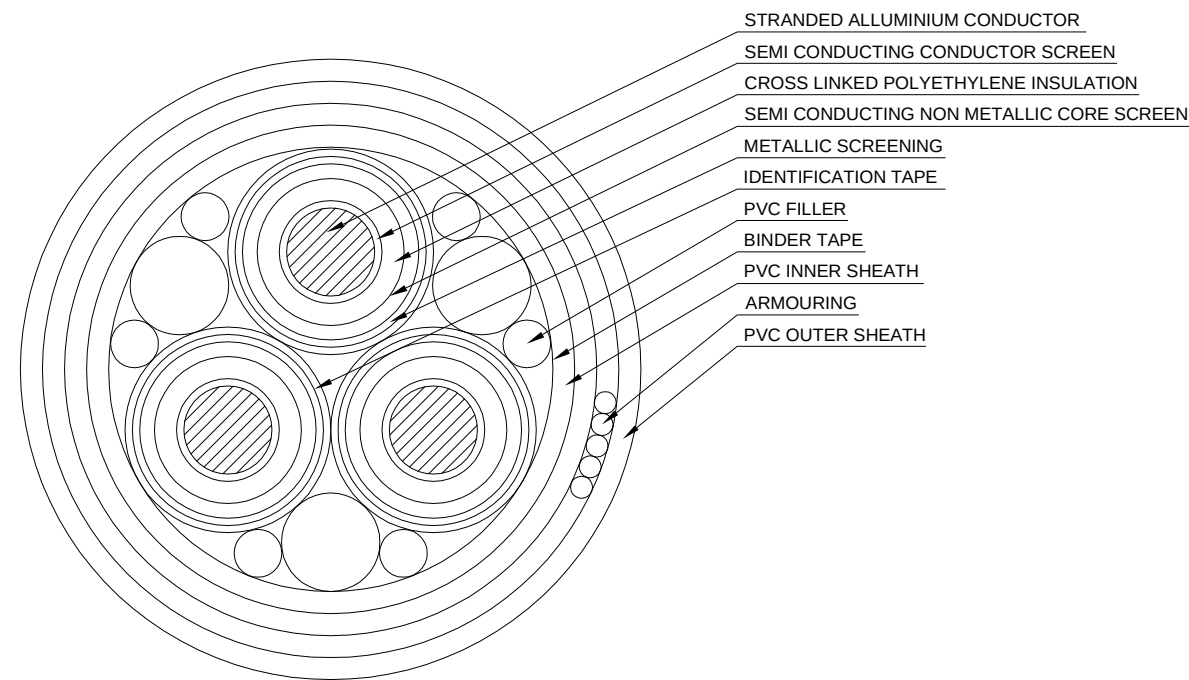
Scale
NTS

Size A3

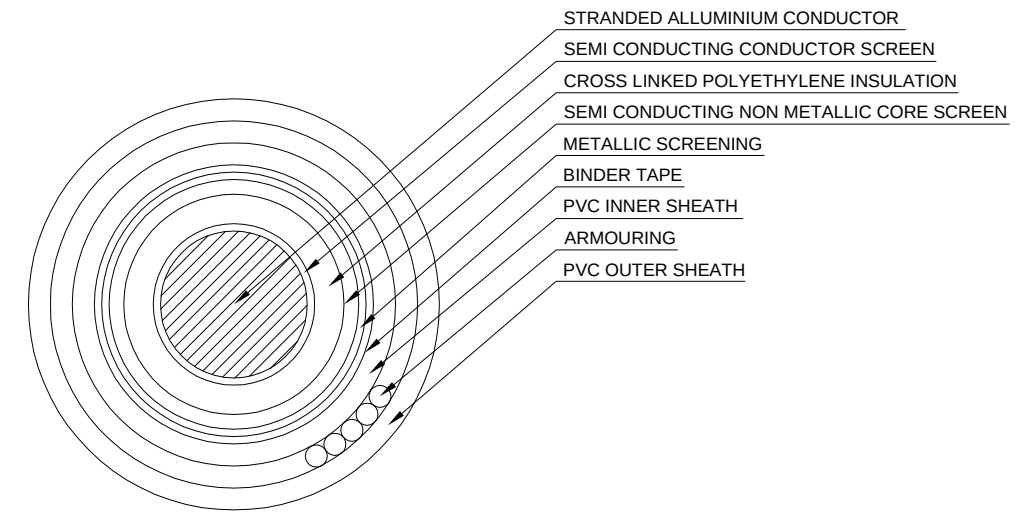
DRG. No.

UPCL/11KV/11

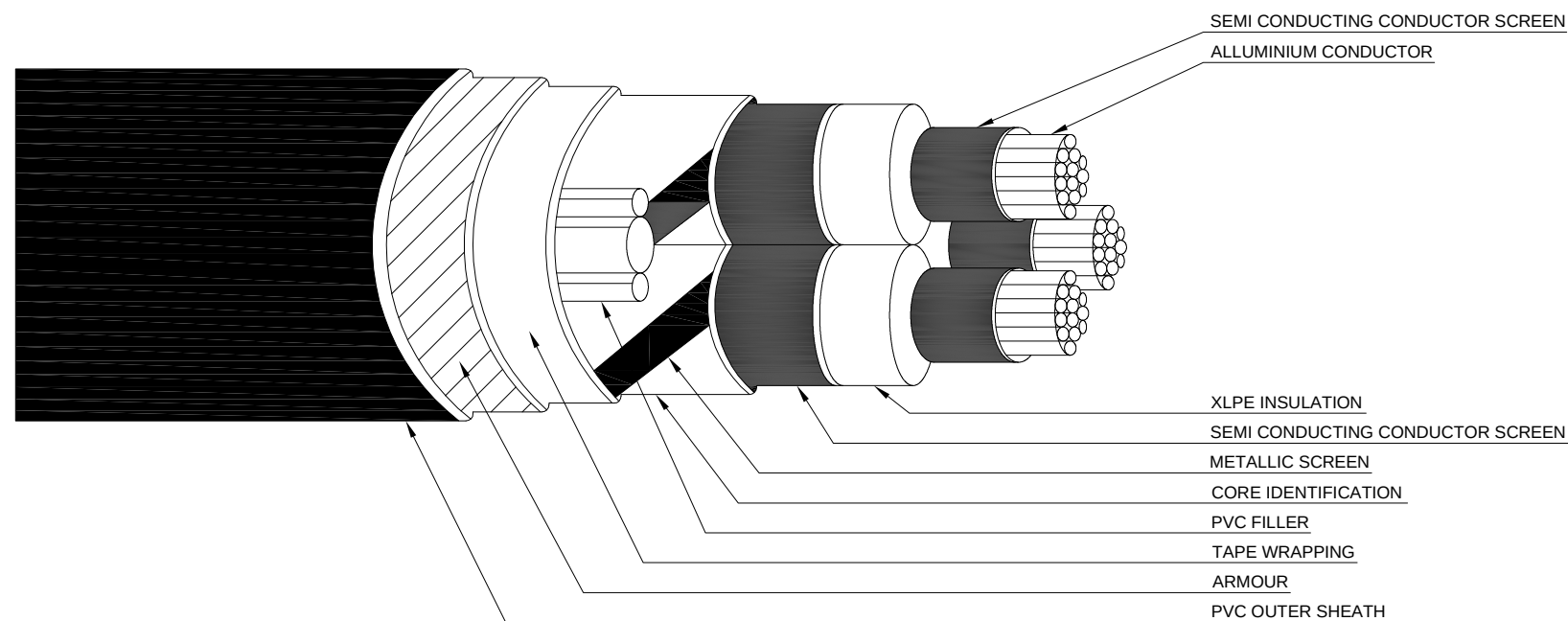
CROSS SECTIONAL VIEWS OF HT XLPE CABLE



3 CORE HT XLPE CABLE



SINGLE CORE HT XLPE CABLE



3 CORE HT XLPE CABLE

All dimensions are in mm.

**Uttarakhand Power Corporation Limited**

CROSS SECTION VIEW OF HT XLPE CABLE

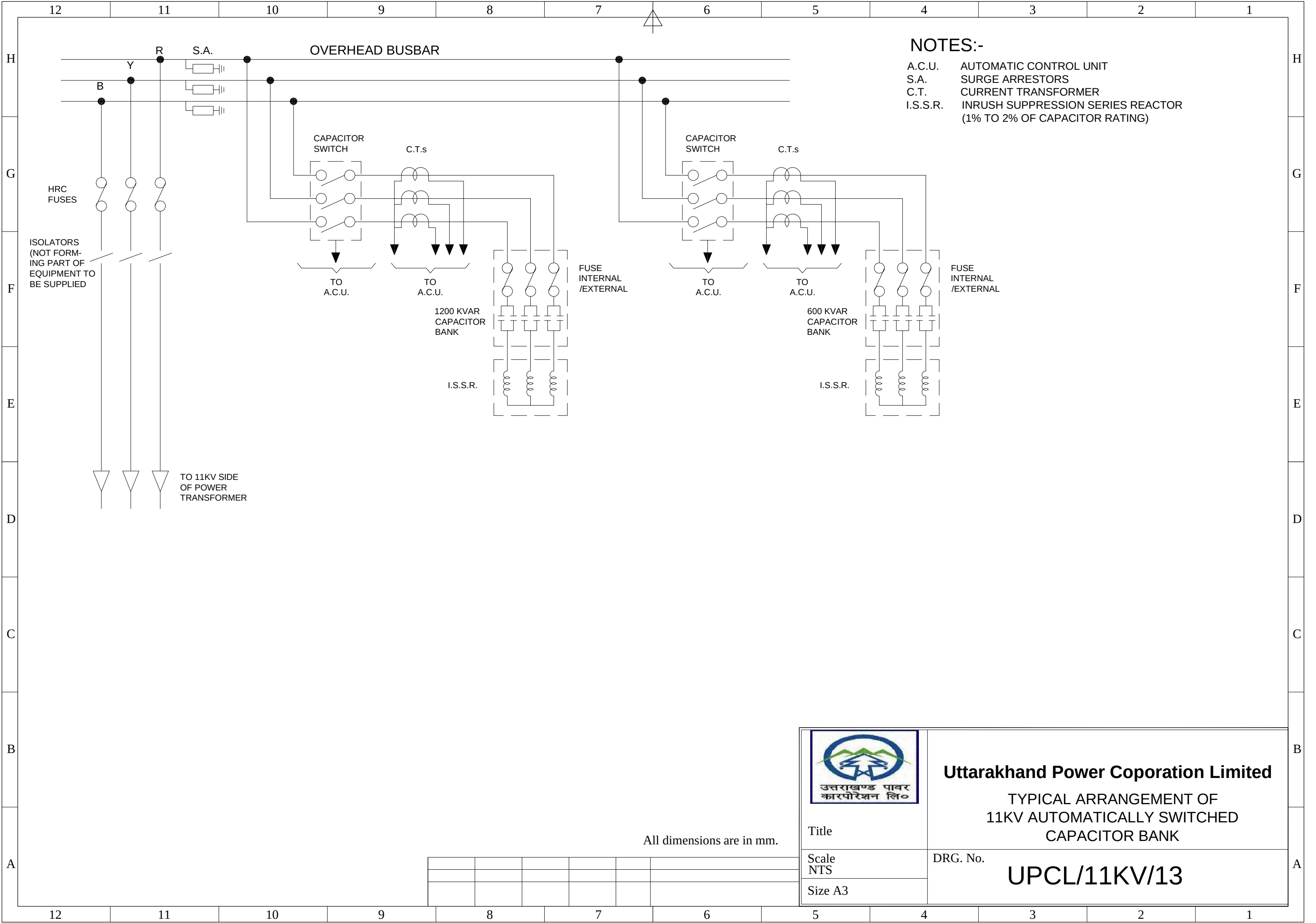
Title

Scale
NTS

Size A3

DRG. No.	
----------	--

UPCL/11KV/12



NOTES:-
A.C.U. AUTOMATIC CONTROL UNIT
S.A. SURGE ARRESTORS
C.T. CURRENT TRANSFORMER
I.S.S.R. INRUSH SUPPRESSION SERIES REACTOR
(1% TO 2% OF CAPACITOR RATING)



Uttarakhand Power Coporation Limited
TYPICAL ARRANGEMENT OF
11KV AUTOMATICALLY SWITCHED
CAPACITOR BANK

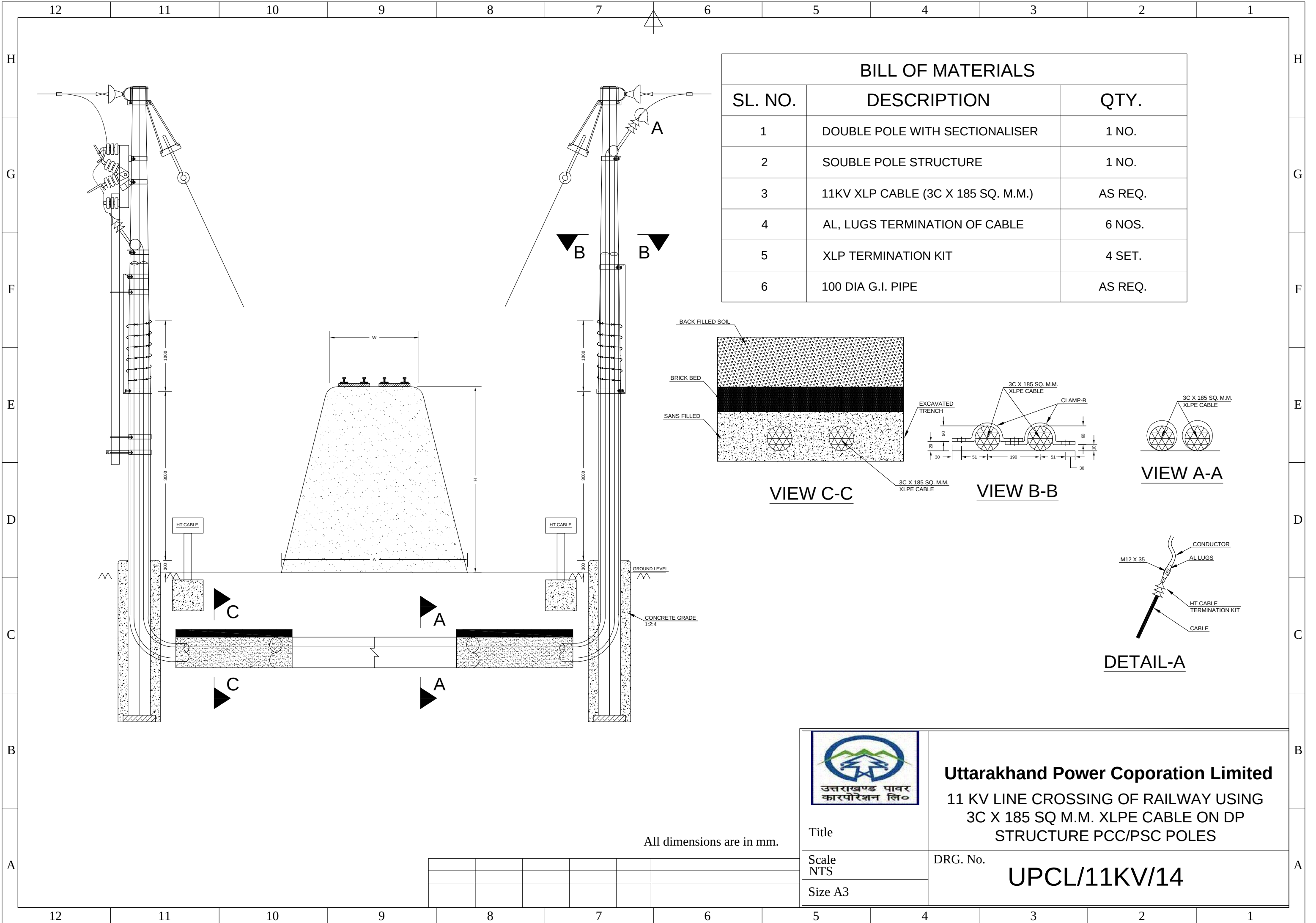
DRG. No.
UPCL/11KV/13

Title

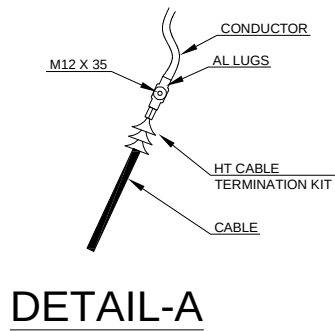
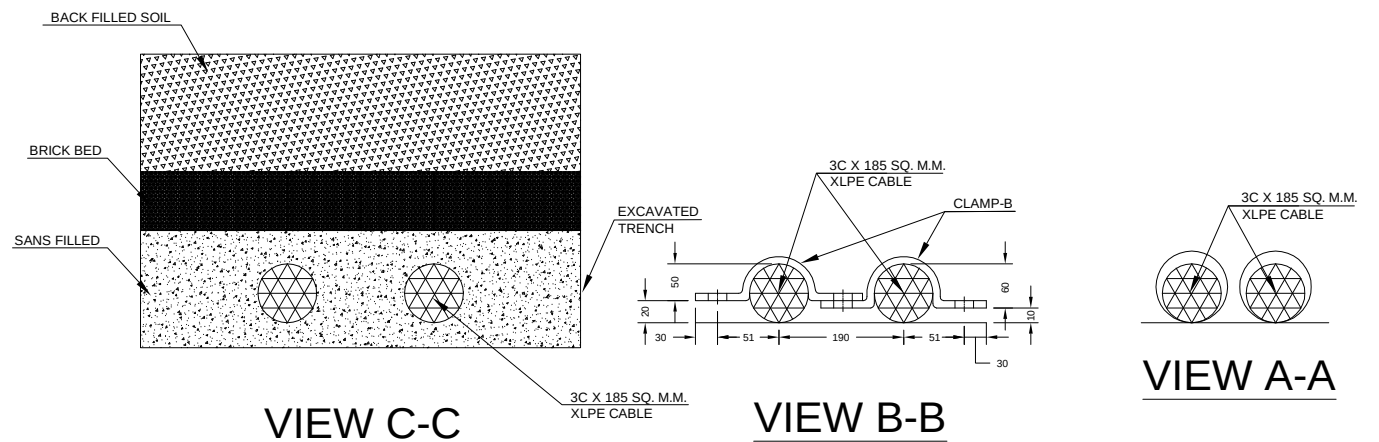
Scale
NTS

Size A3

All dimensions are in mm.

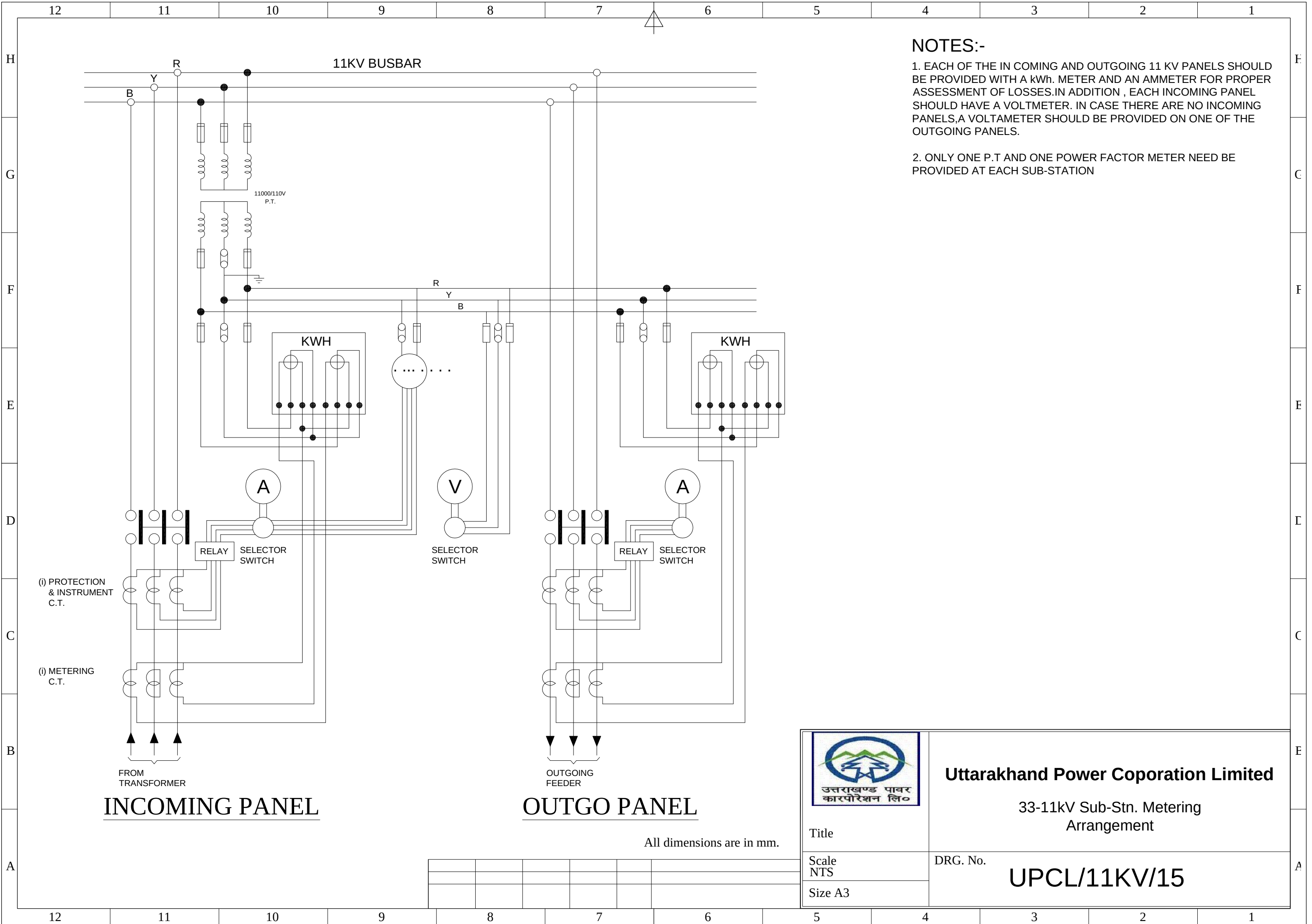


BILL OF MATERIALS		
SL. NO.	DESCRIPTION	QTY.
1	DOUBLE POLE WITH SECTIONALISER	1 NO.
2	SOUBLE POLE STRUCTURE	1 NO.
3	11KV XLP CABLE (3C X 185 SQ. M.M.)	AS REQ.
4	AL, LUGS TERMINATION OF CABLE	6 NOS.
5	XLP TERMINATION KIT	4 SET.
6	100 DIA G.I. PIPE	AS REQ.



	Uttarakhand Power Coporation Limited
11 KV LINE CROSSING OF RAILWAY USING 3C X 185 SQ M.M. XLPE CABLE ON DP STRUCTURE PCC/PSC POLES	
Title	DRG. No.
Scale NTS	UPCL/11KV/14
Size A3	

All dimensions are in mm.



- NOTES:-**
1. EACH OF THE IN COMING AND OUTGOING 11 KV PANELS SHOULD BE PROVIDED WITH A kWh. METER AND AN AMMETER FOR PROPER ASSESSMENT OF LOSSES.IN ADDITION , EACH INCOMING PANEL SHOULD HAVE A VOLTMETER. IN CASE THERE ARE NO INCOMING PANELS,A VOLTMETER SHOULD BE PROVIDED ON ONE OF THE OUTGOING PANELS.
 2. ONLY ONE P.T AND ONE POWER FACTOR METER NEED BE PROVIDED AT EACH SUB-STATION



Uttarakhand Power Coporation Limited

33-11kV Sub-Stn. Metering
Arrangement

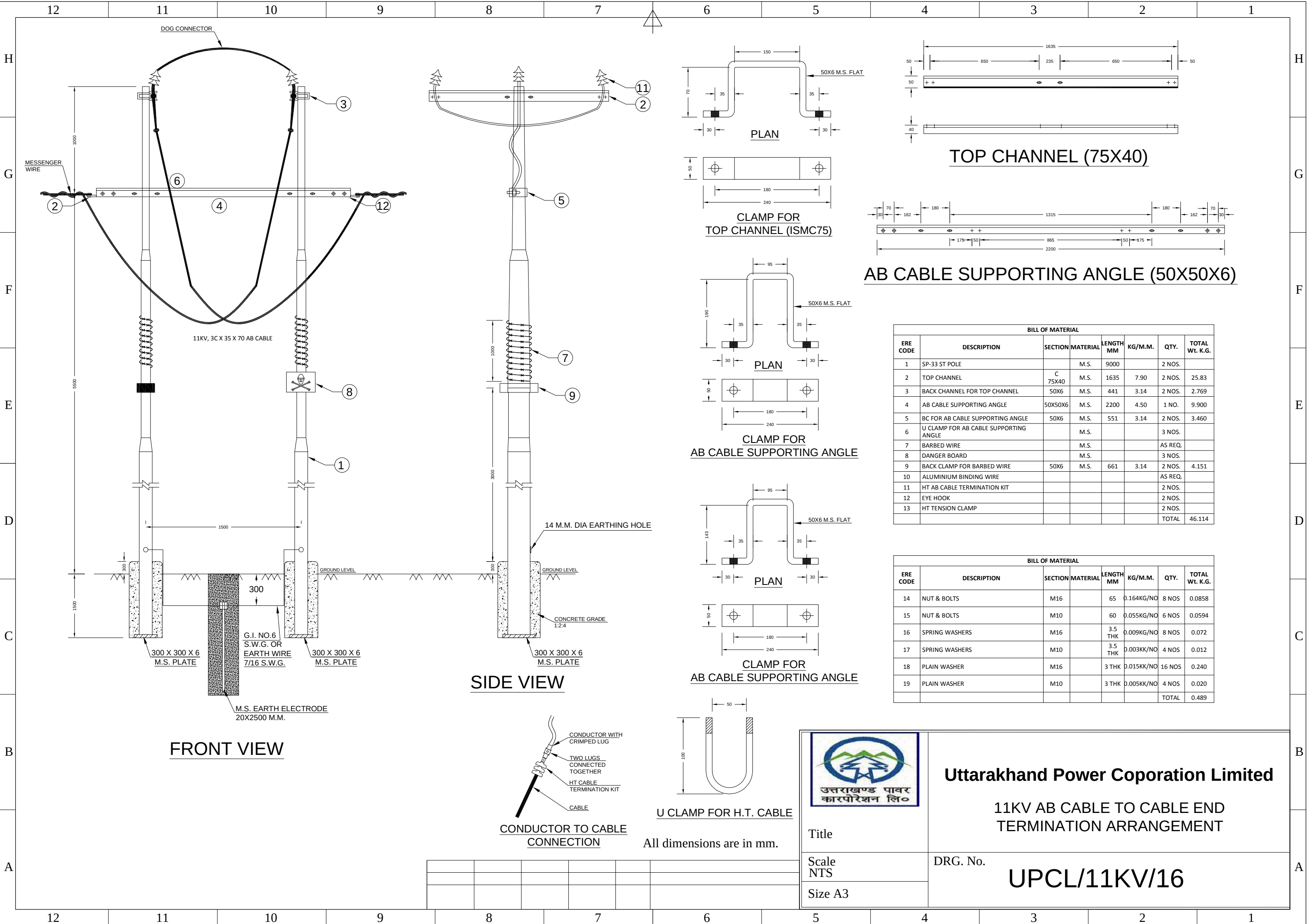
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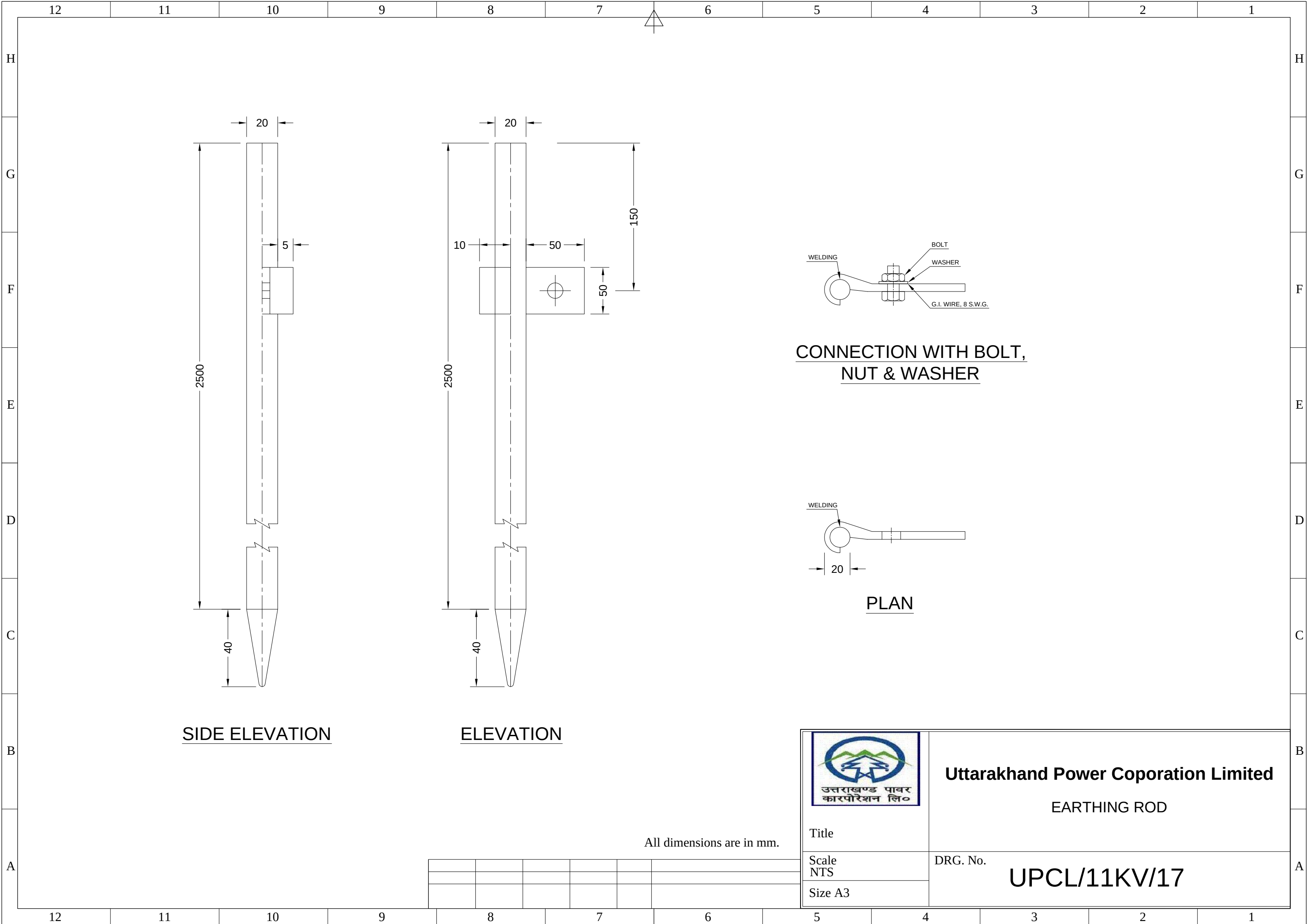
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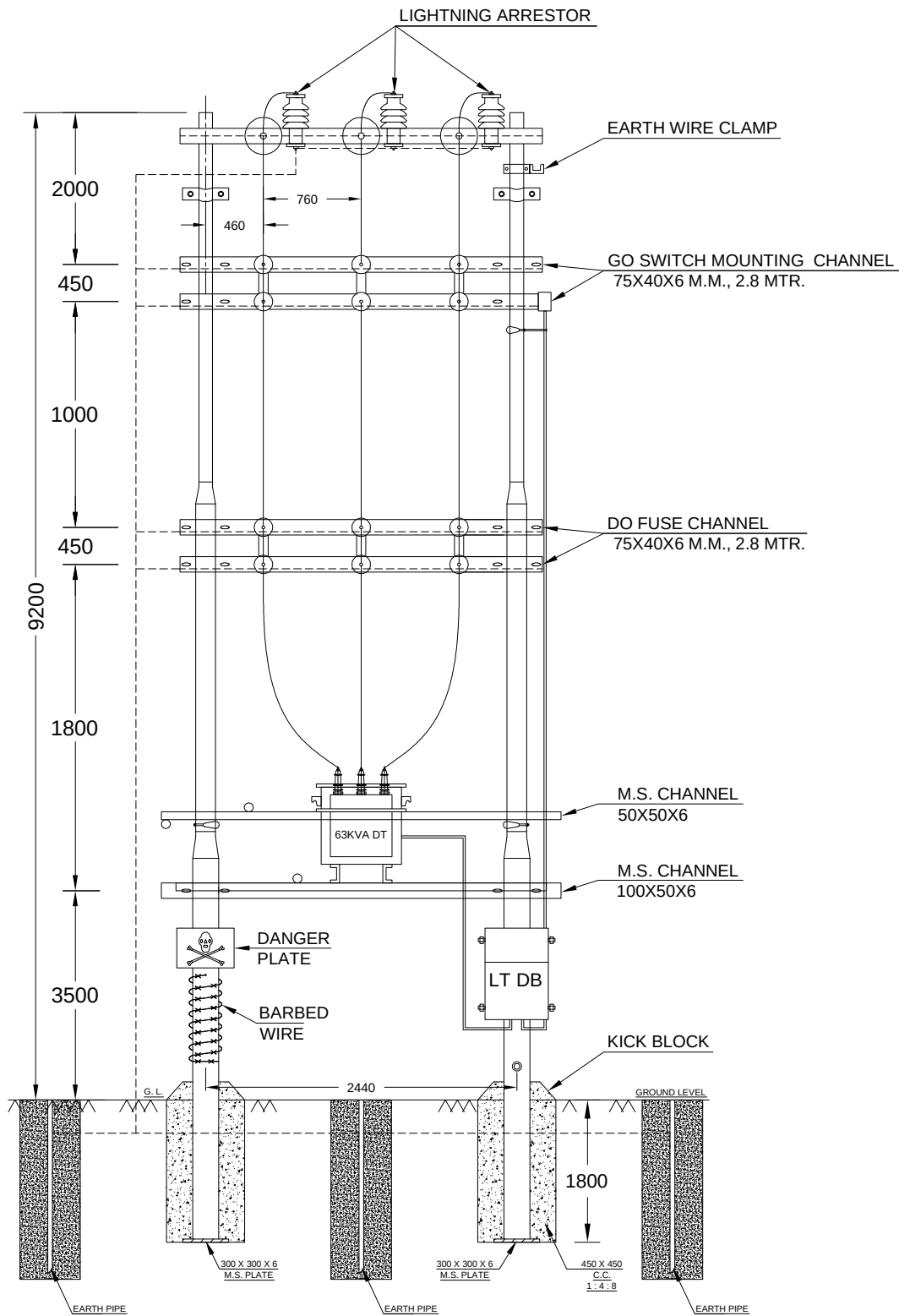
Size A3

DRG. No.

UPCL/11KV/15







ELEVATION

All dimensions are in mm.



Uttarakhand Power Coporation Limited

GENERAL ARRANGEMENT OF
DISTRIBUTION TRANSFORMER ON
SP-55 DOUBLE POLE STRUCTURE

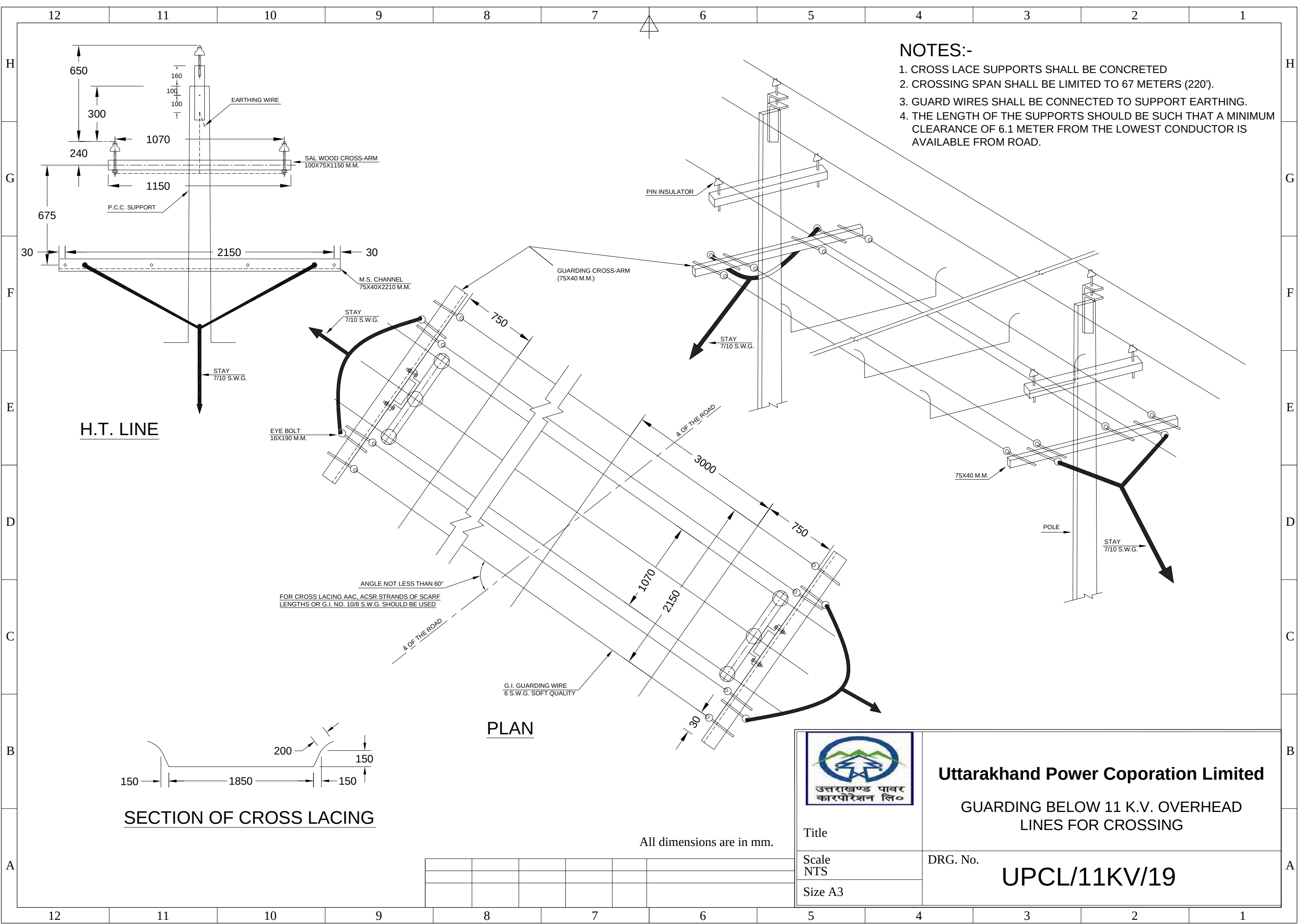
Title

Scale
NTS

Size A3

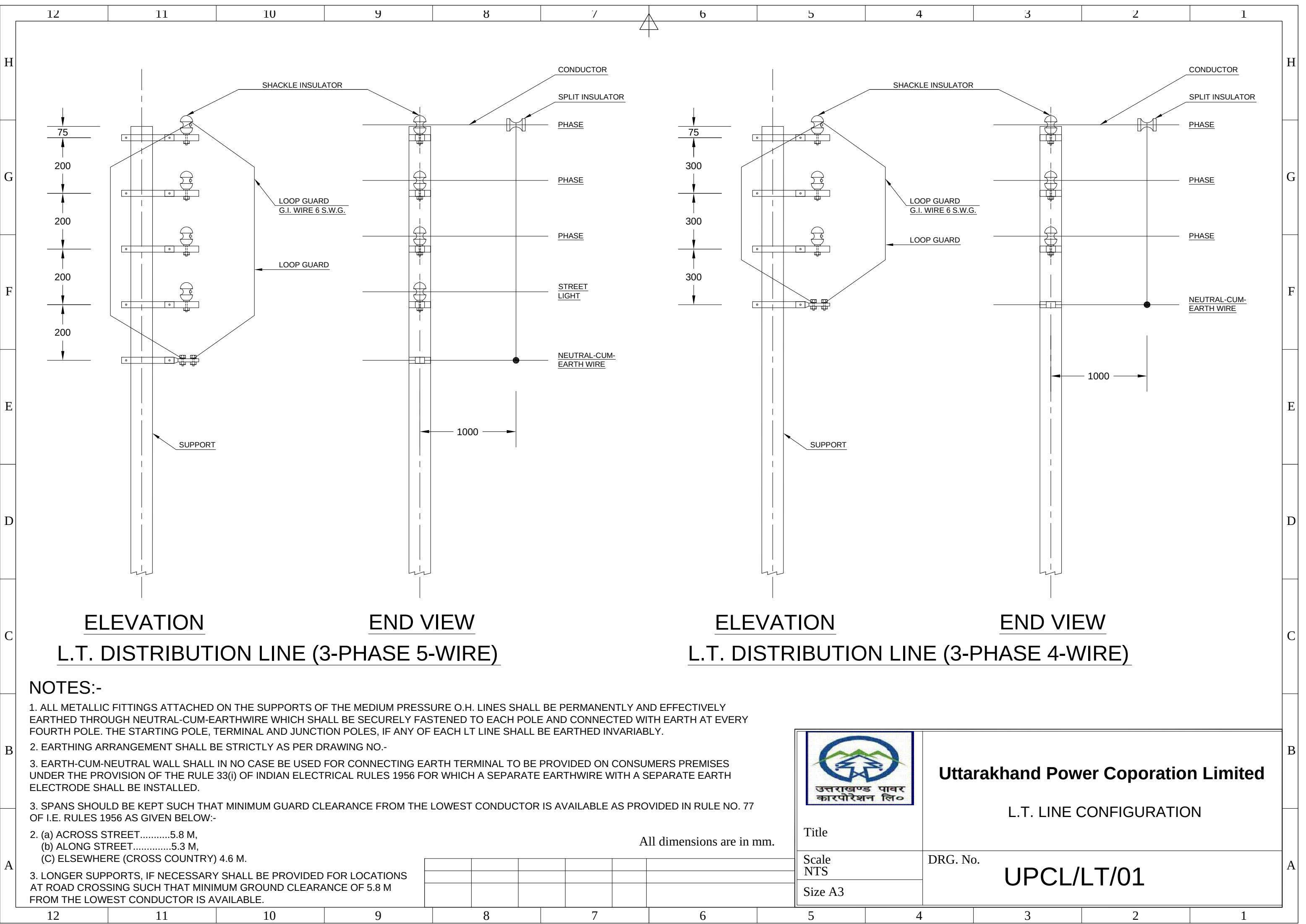
DRG. No.

UPCL/11KV/18



 उत्तराखण्ड पावर कारपोरेशन लि०	Uttarakhand Power Coporation Limited	
	GUARDING BELOW 11 K.V. OVERHEAD LINES FOR CROSSING	
	Title Scale NTS Size A3	DRG. No. UPCL/11KV/19

All dimensions are in mm.



ELEVATION
END VIEW
L.T. DISTRIBUTION LINE (3-PHASE 5-WIRE)

ELEVATION
END VIEW
L.T. DISTRIBUTION LINE (3-PHASE 4-WIRE)

- NOTES:-**
- 1. ALL METALLIC FITTINGS ATTACHED ON THE SUPPORTS OF THE MEDIUM PRESSURE O.H. LINES SHALL BE PERMANENTLY AND EFFECTIVELY EARTHED THROUGH NEUTRAL-CUM-EARTHWIRE WHICH SHALL BE SECURELY FASTENED TO EACH POLE AND CONNECTED WITH EARTH AT EVERY FOURTH POLE. THE STARTING POLE, TERMINAL AND JUNCTION POLES, IF ANY OF EACH LT LINE SHALL BE EARTHED INVARIABLY.
 - 2. EARTHING ARRANGEMENT SHALL BE STRICTLY AS PER DRAWING NO.-
 - 3. EARTH-CUM-NEUTRAL WALL SHALL IN NO CASE BE USED FOR CONNECTING EARTH TERMINAL TO BE PROVIDED ON CONSUMERS PREMISES UNDER THE PROVISION OF THE RULE 33(i) OF INDIAN ELECTRICAL RULES 1956 FOR WHICH A SEPARATE EARTHWIRE WITH A SEPARATE EARTH ELECTRODE SHALL BE INSTALLED.
 - 3. SPANS SHOULD BE KEPT SUCH THAT MINIMUM GUARD CLEARANCE FROM THE LOWEST CONDUCTOR IS AVAILABLE AS PROVIDED IN RULE NO. 77 OF I.E. RULES 1956 AS GIVEN BELOW:-
 - 2. (a) ACROSS STREET.....5.8 M,
 - (b) ALONG STREET.....5.3 M,
 - (C) ELSEWHERE (CROSS COUNTRY) 4.6 M.
 - 3. LONGER SUPPORTS, IF NECESSARY SHALL BE PROVIDED FOR LOCATIONS AT ROAD CROSSING SUCH THAT MINIMUM GROUND CLEARANCE OF 5.8 M FROM THE LOWEST CONDUCTOR IS AVAILABLE.

All dimensions are in mm.



Uttarakhand Power Coporation Limited

L.T. LINE CONFIGURATION

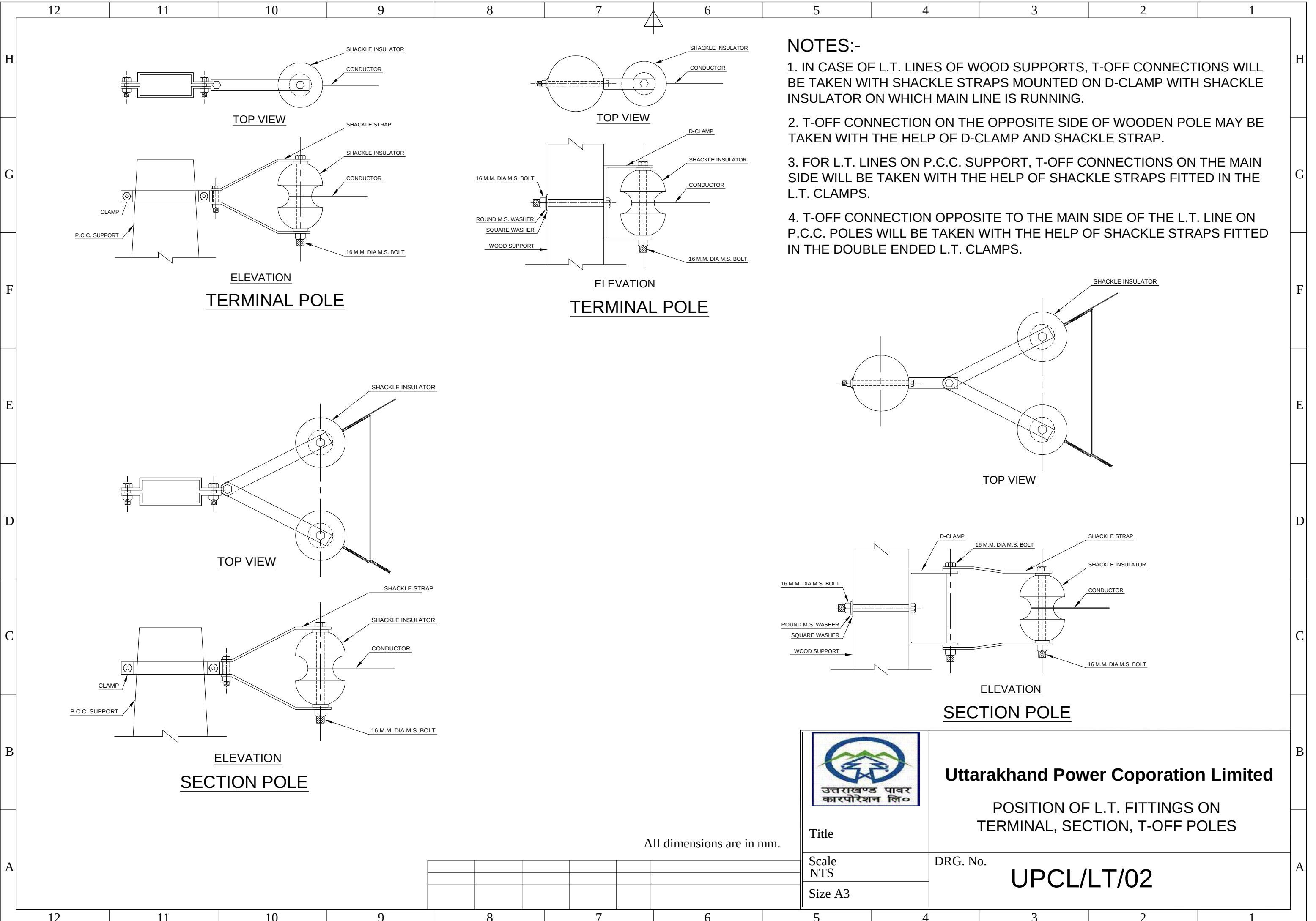
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Scale
NTS

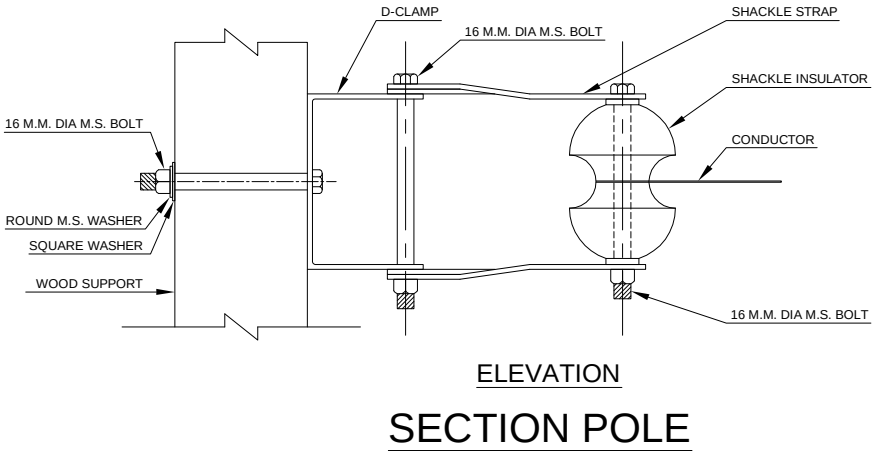
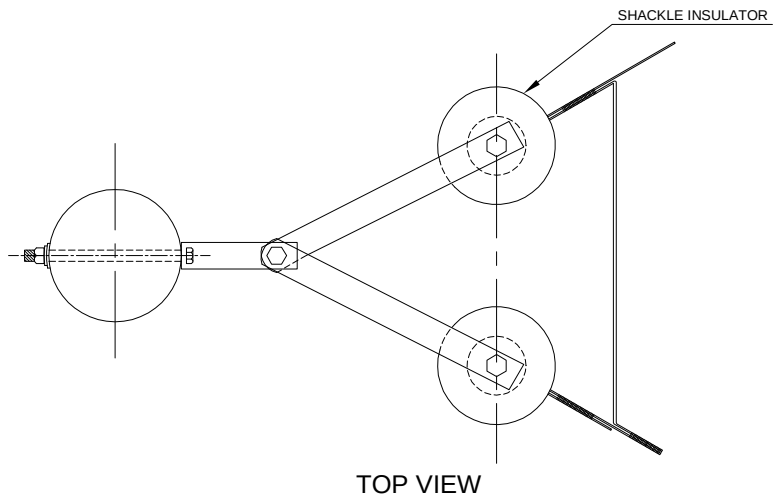
Size A3

DRG. No.

UPCL/LT/01

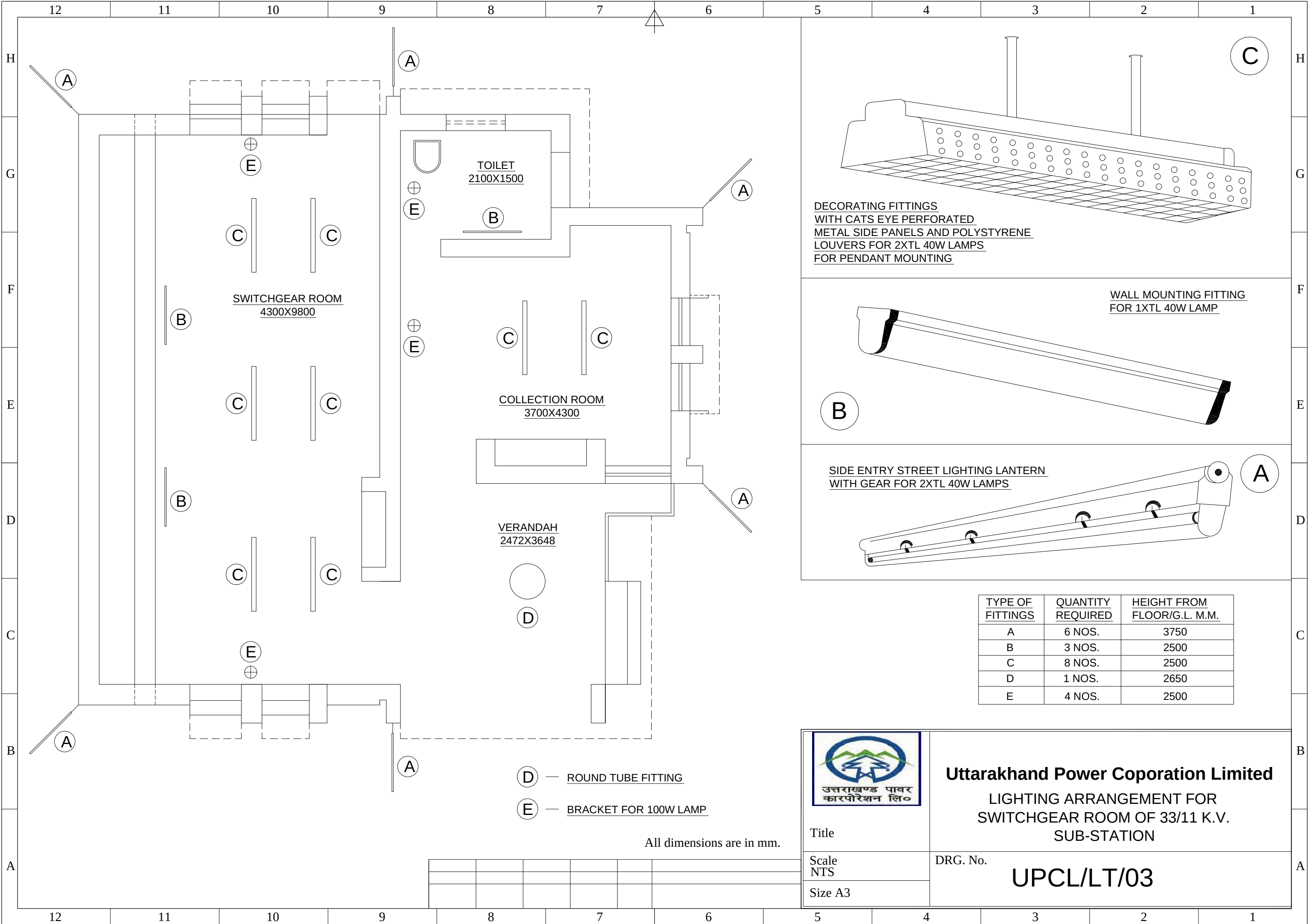


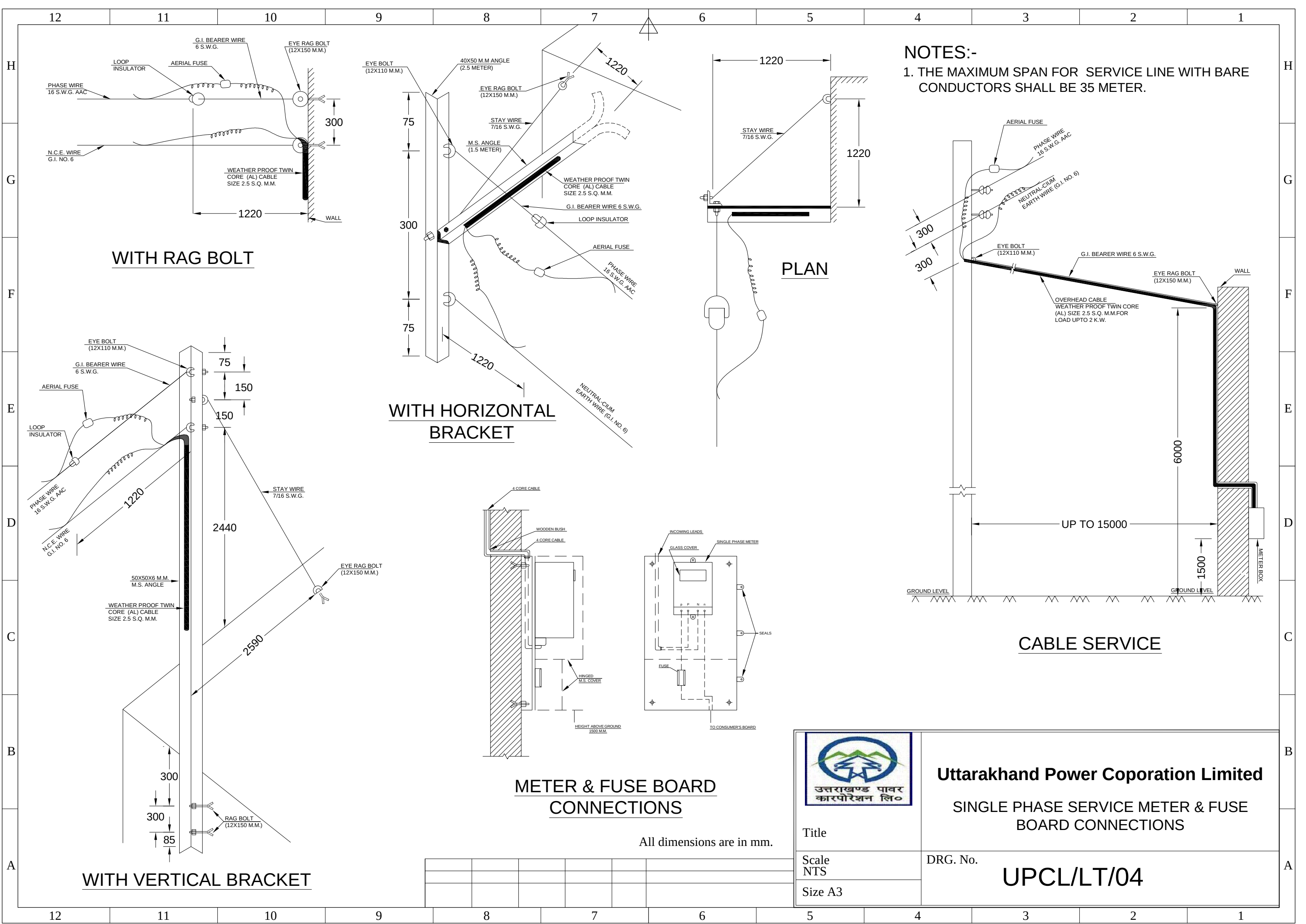
- NOTES:-**
- 1. IN CASE OF L.T. LINES OF WOOD SUPPORTS, T-OFF CONNECTIONS WILL BE TAKEN WITH SHACKLE STRAPS MOUNTED ON D-CLAMP WITH SHACKLE INSULATOR ON WHICH MAIN LINE IS RUNNING.
 - 2. T-OFF CONNECTION ON THE OPPOSITE SIDE OF WOODEN POLE MAY BE TAKEN WITH THE HELP OF D-CLAMP AND SHACKLE STRAP.
 - 3. FOR L.T. LINES ON P.C.C. SUPPORT, T-OFF CONNECTIONS ON THE MAIN SIDE WILL BE TAKEN WITH THE HELP OF SHACKLE STRAPS FITTED IN THE L.T. CLAMPS.
 - 4. T-OFF CONNECTION OPPOSITE TO THE MAIN SIDE OF THE L.T. LINE ON P.C.C. POLES WILL BE TAKEN WITH THE HELP OF SHACKLE STRAPS FITTED IN THE DOUBLE ENDED L.T. CLAMPS.



 उत्तराखण्ड पावर कारपोरेशन लि०	Uttarakhand Power Coporation Limited	
	POSITION OF L.T. FITTINGS ON TERMINAL, SECTION, T-OFF POLES	
	Title Scale NTS Size A3	DRG. No. UPCL/LT/02

All dimensions are in mm.





NOTES:-
1. THE MAXIMUM SPAN FOR SERVICE LINE WITH BARE CONDUCTORS SHALL BE 35 METER.

WITH RAG BOLT

WITH HORIZONTAL BRACKET

PLAN

CABLE SERVICE

METER & FUSE BOARD CONNECTIONS

All dimensions are in mm.



Uttarakhand Power Coporation Limited

SINGLE PHASE SERVICE METER & FUSE BOARD CONNECTIONS

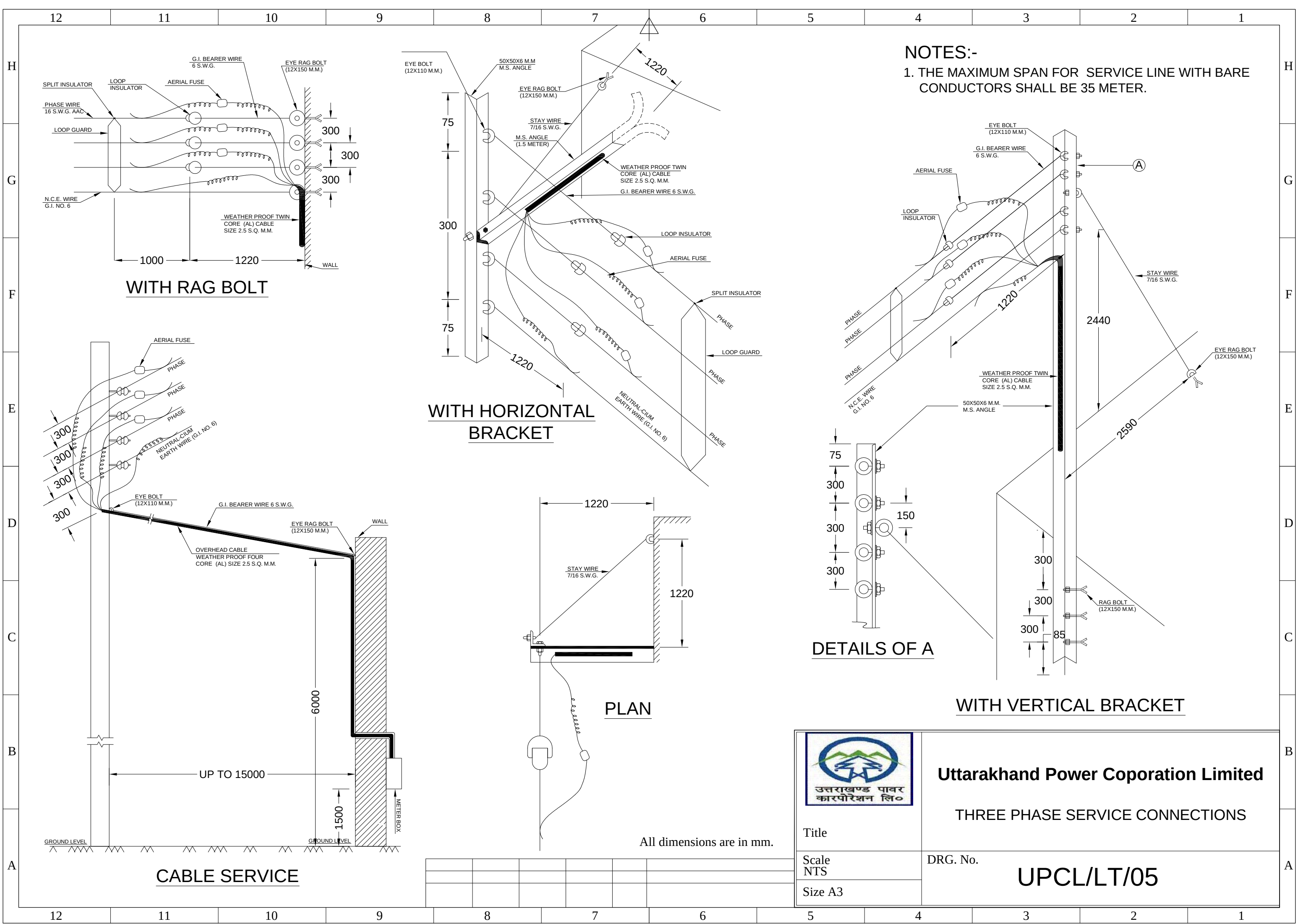
Title

Scale
NTS

Size A3

DRG. No.

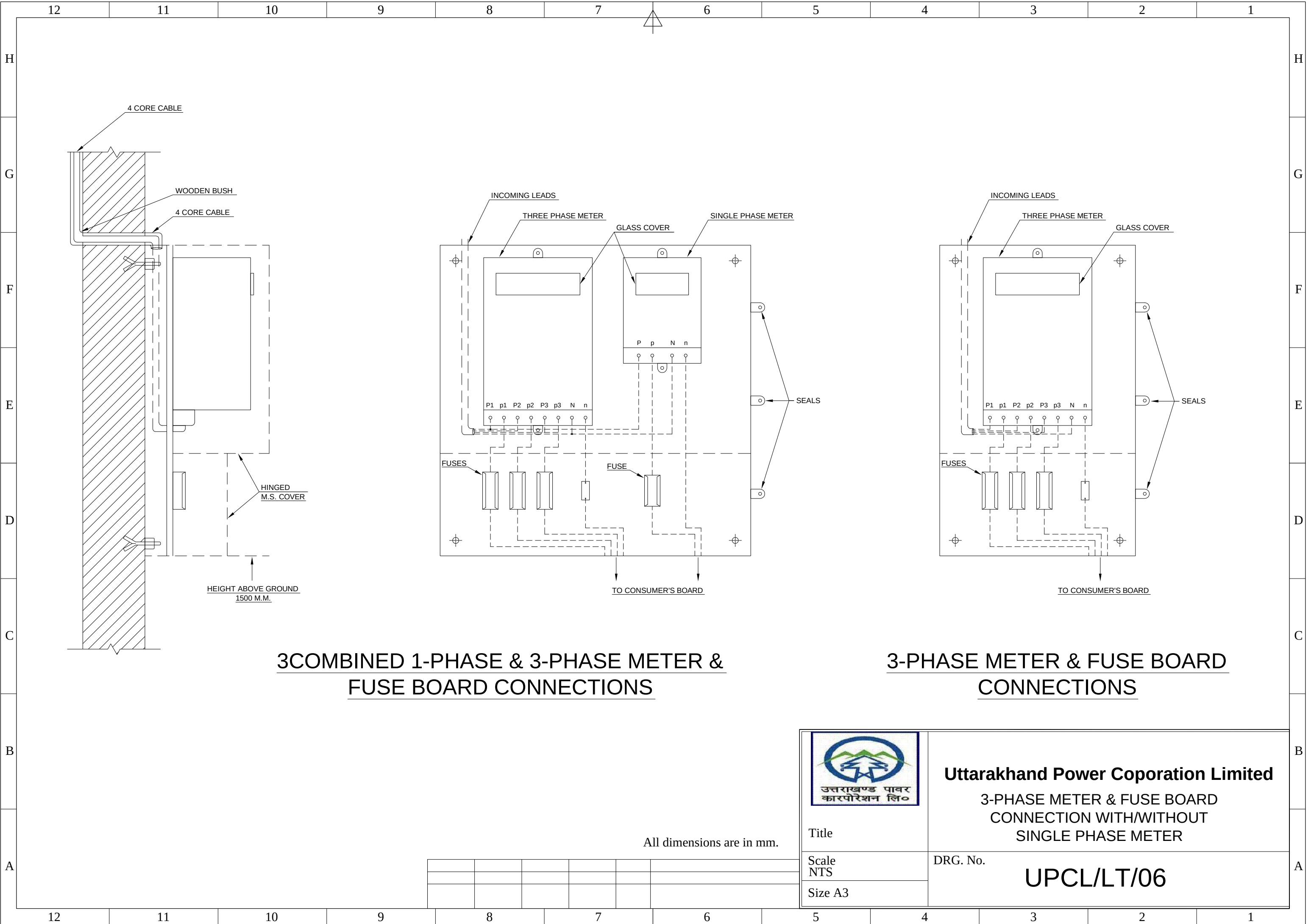
UPCL/LT/04

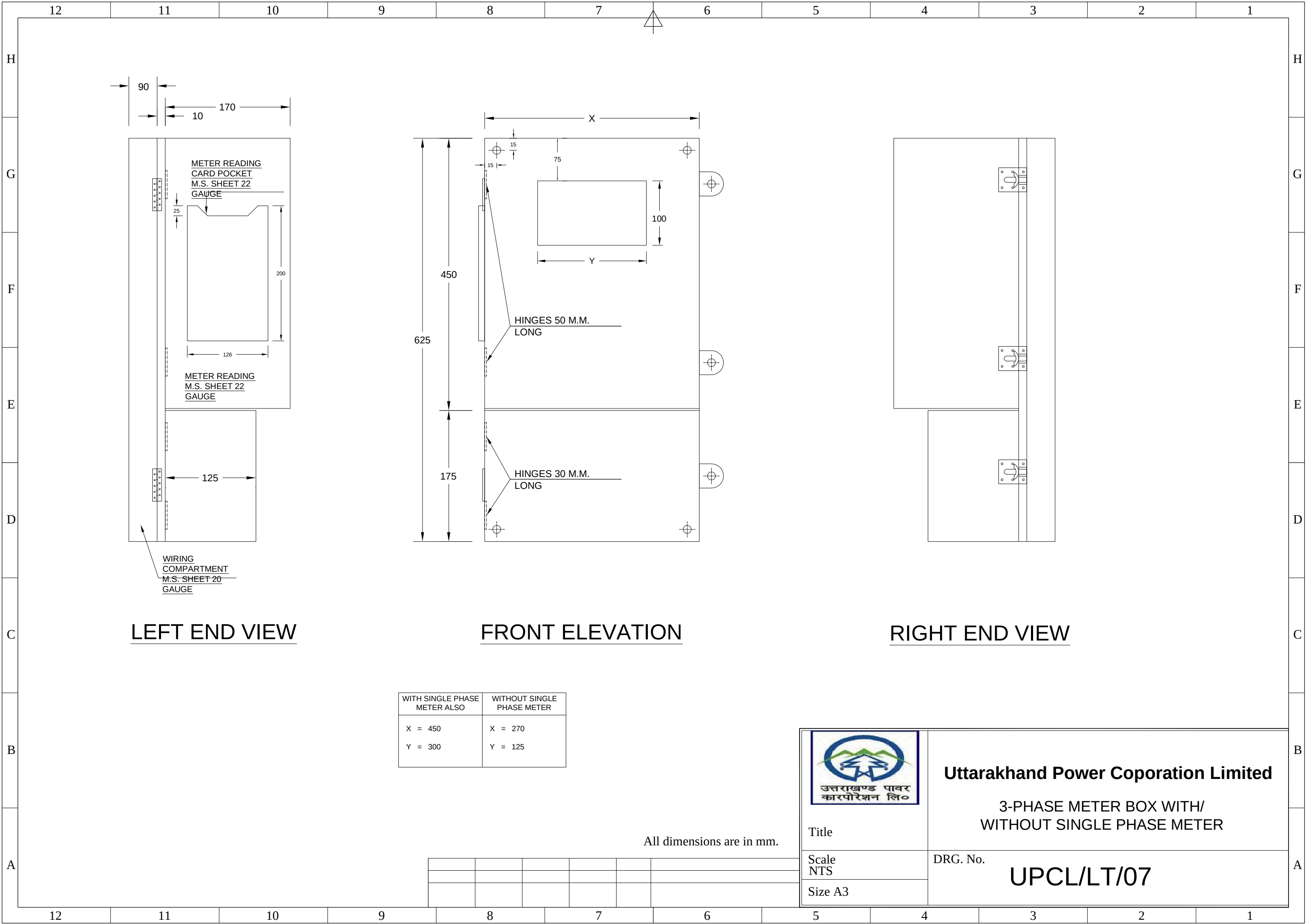


H
G
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D
C
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A

H
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D
C
B
A

 उत्तराखण्ड पावर कारपोरेशन लि०		Uttarakhand Power Coporation Limited	
Title		THREE PHASE SERVICE CONNECTIONS	
Scale NTS		DRG. No.	
Size A3		UPCL/LT/05	





LEFT END VIEW

FRONT ELEVATION

RIGHT END VIEW

WITH SINGLE PHASE METER ALSO	WITHOUT SINGLE PHASE METER
X = 450	X = 270
Y = 300	Y = 125

All dimensions are in mm.



उत्तराखण्ड पावर कारपोरेशन लि०

Uttarakhand Power Coporation Limited

3-PHASE METER BOX WITH/
WITHOUT SINGLE PHASE METER

Title

Scale
NTS

Size A3

DRG. No.

UPCL/LT/07



Title

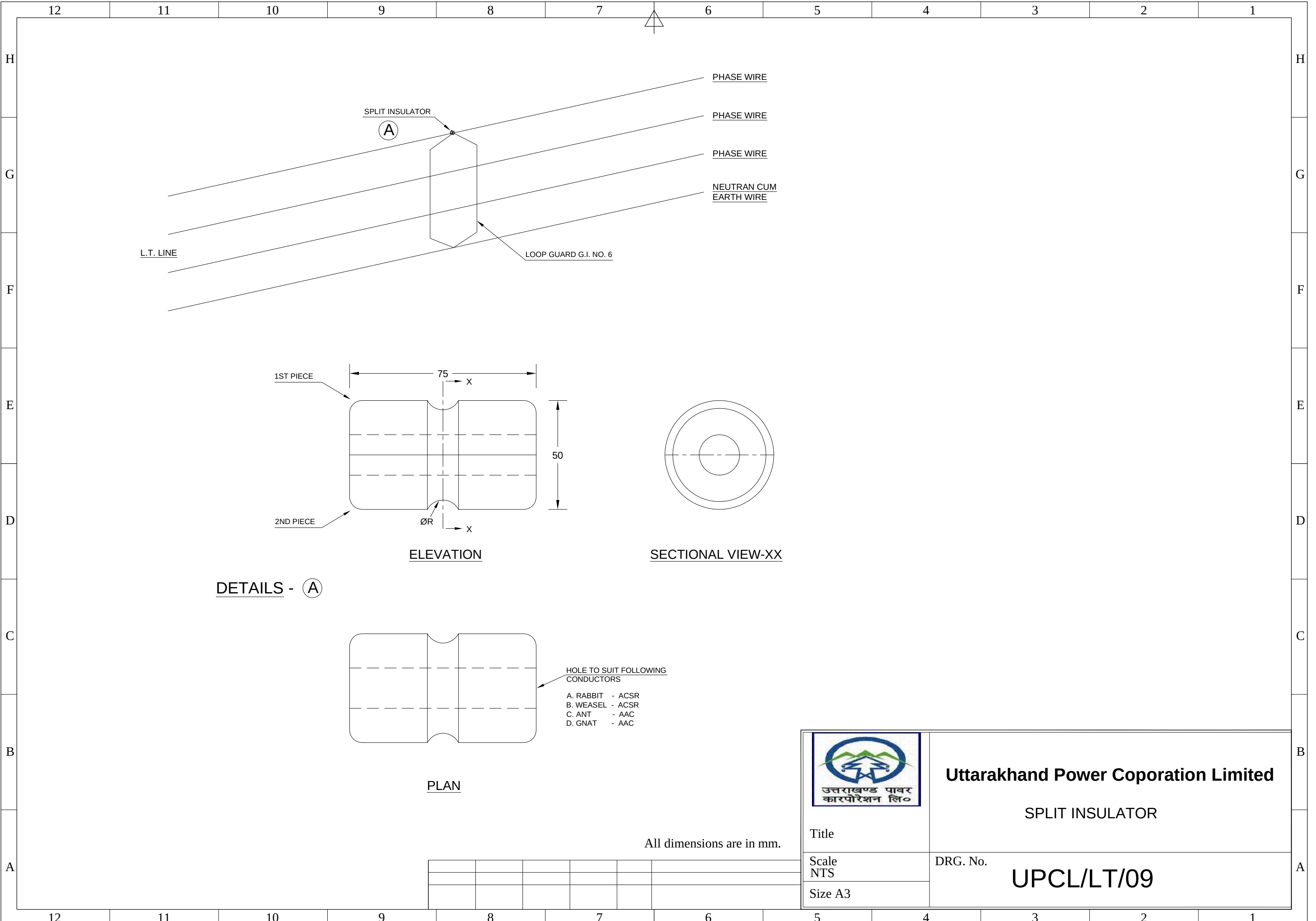
Scale
NTS

Size A3

DRG. No.

UPCL/LT/08

All dimensions are in mm.



Uttarakhand Power Coporation Limited

SPLIT INSULATOR

Title

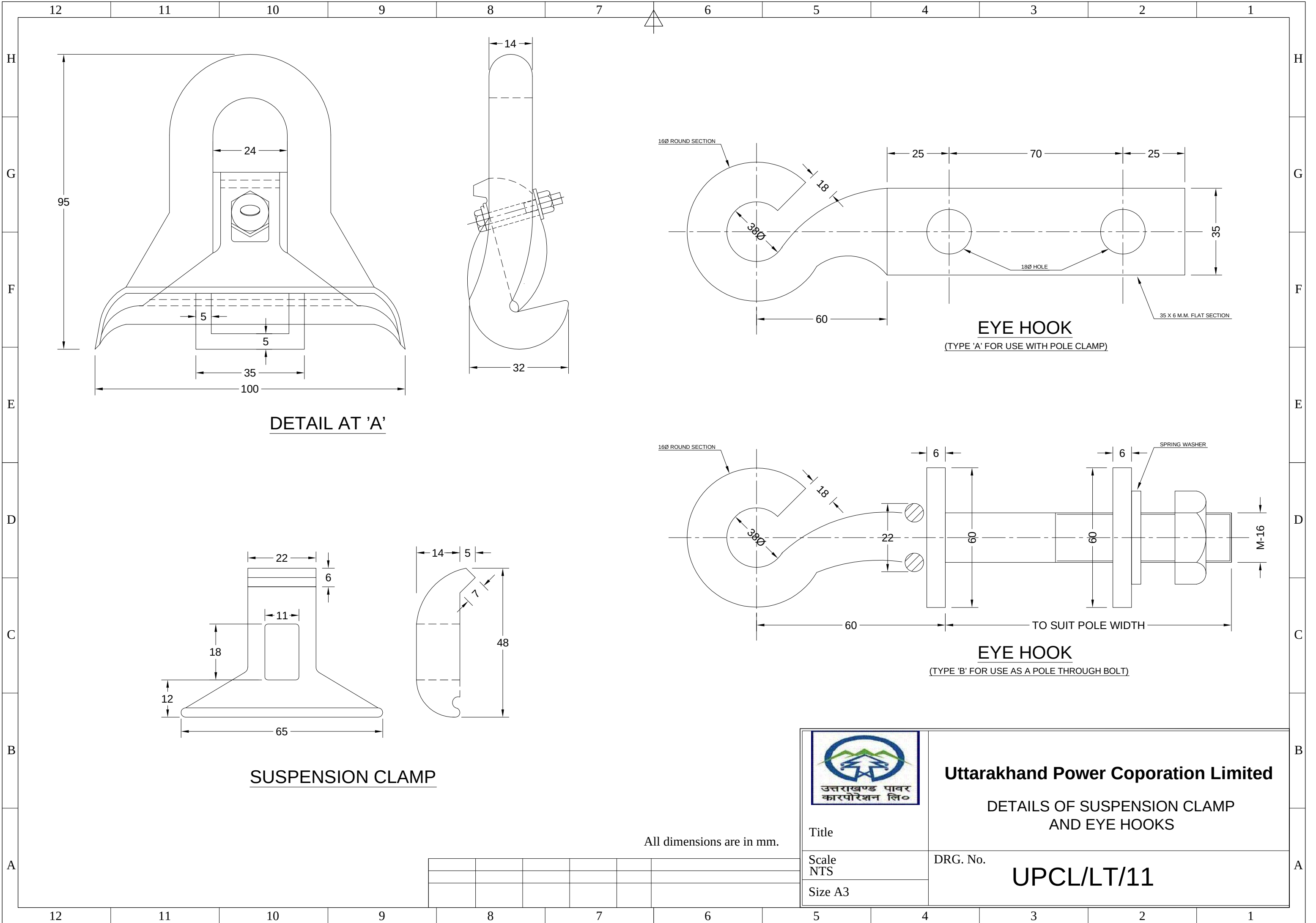
Scale
NTS

Size A3

DRG. No.

UPCL/LT/09

All dimensions are in mm.



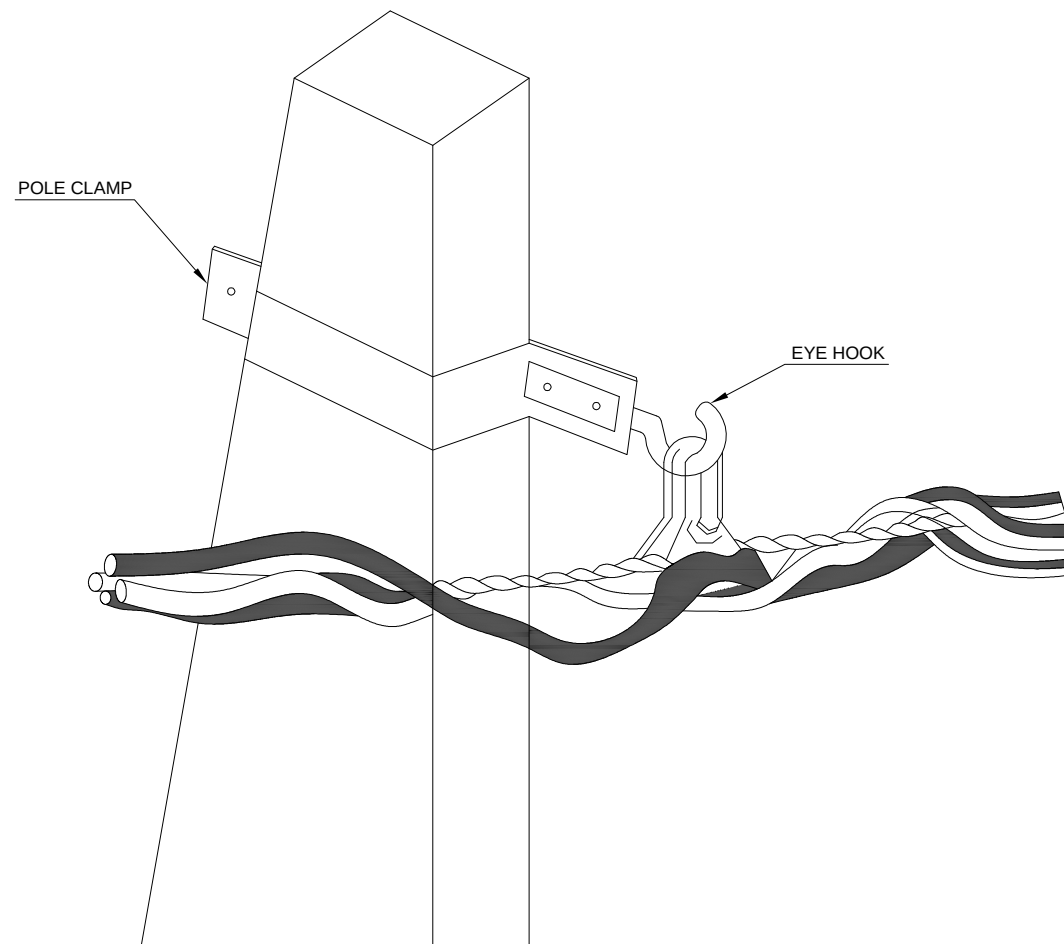


FIG. 2 (a)

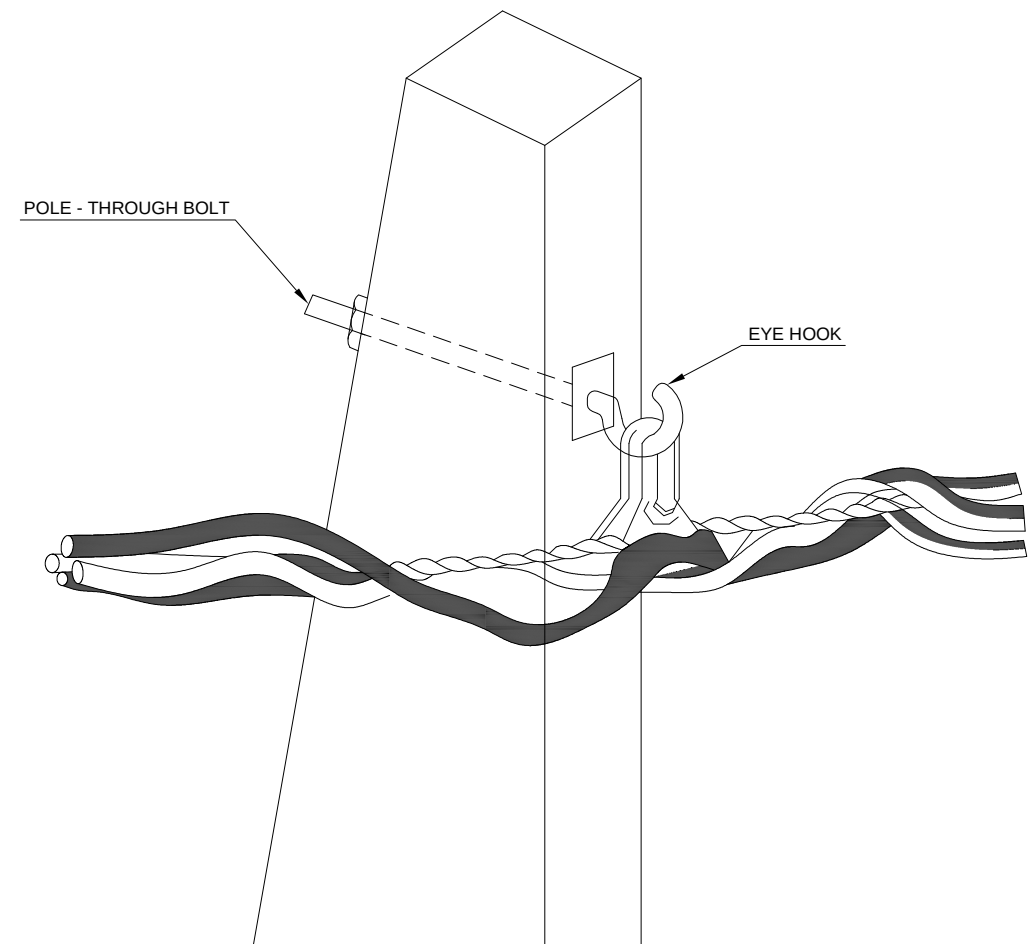


FIG. 2 (b)

FIG. 2 (a) & 2 (b) SHOWING THE SUSPENSION CLAMP
IN POSITION WITH TWO TYPE OF EYE HOOKS.



Uttarakhand Power Coporation Limited

SUSPENSION CLAMP IN POSITION WITH
TWO TYPE OF EYE HOOKS.

Title

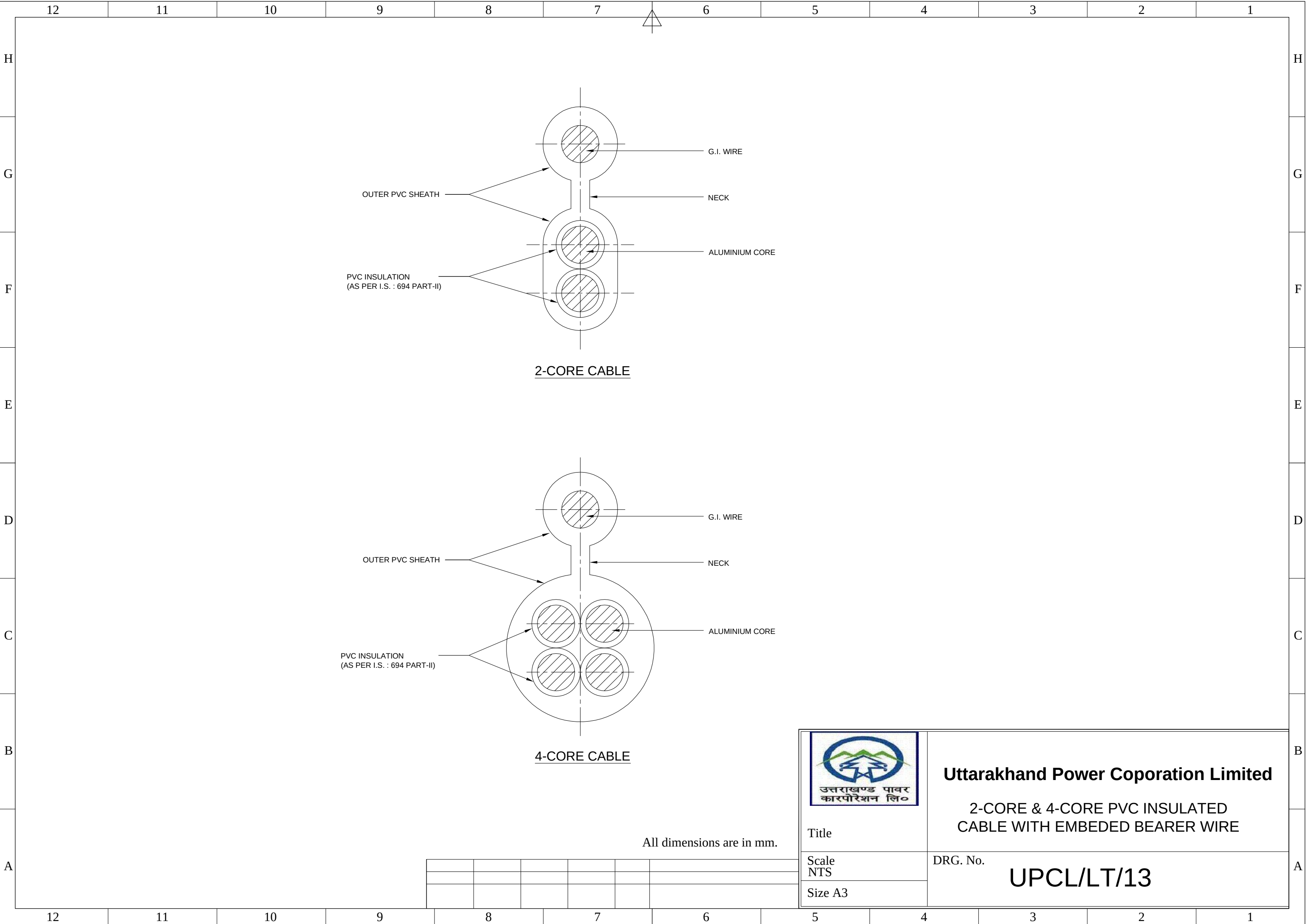
Scale
NTS

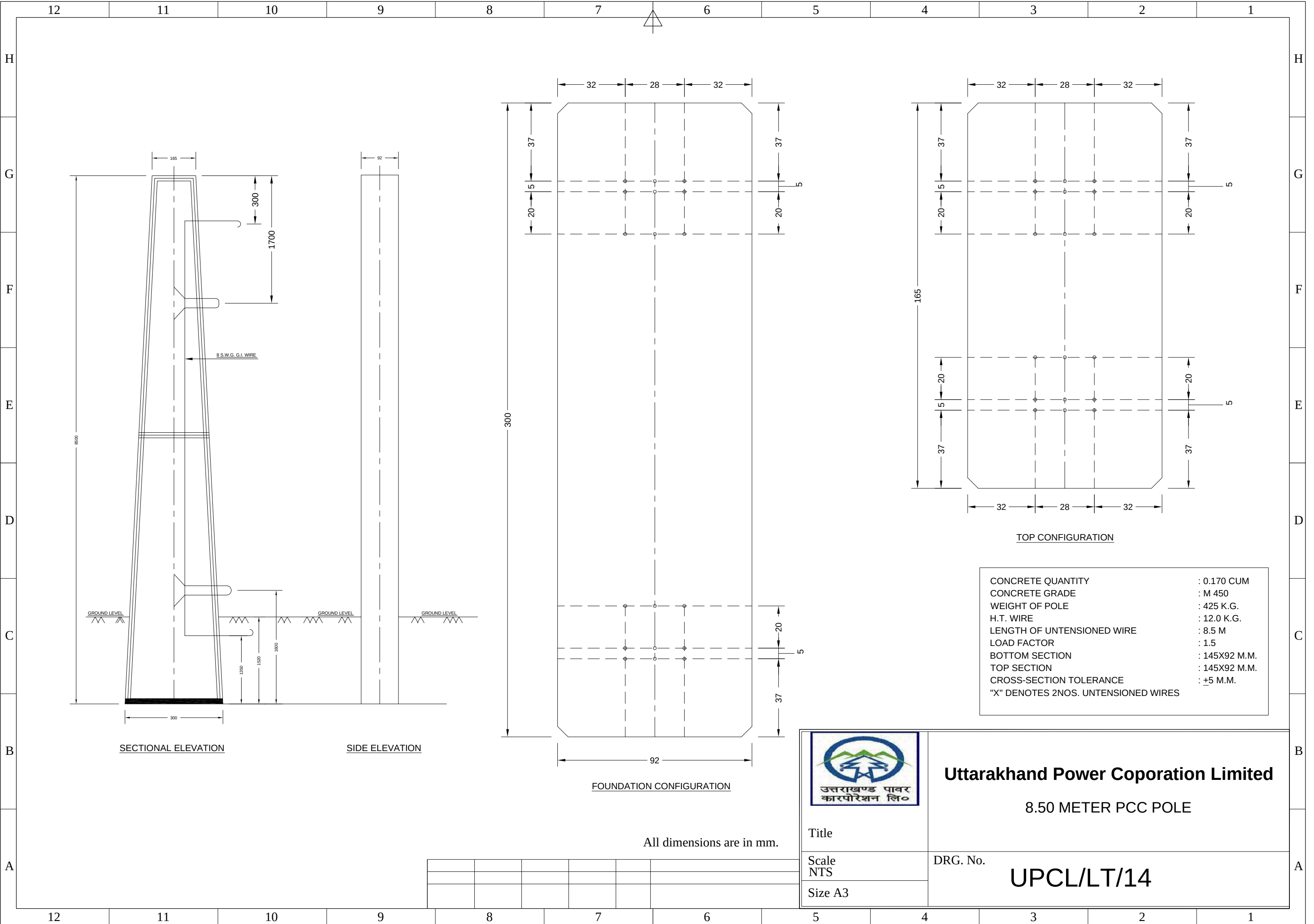
Size A3

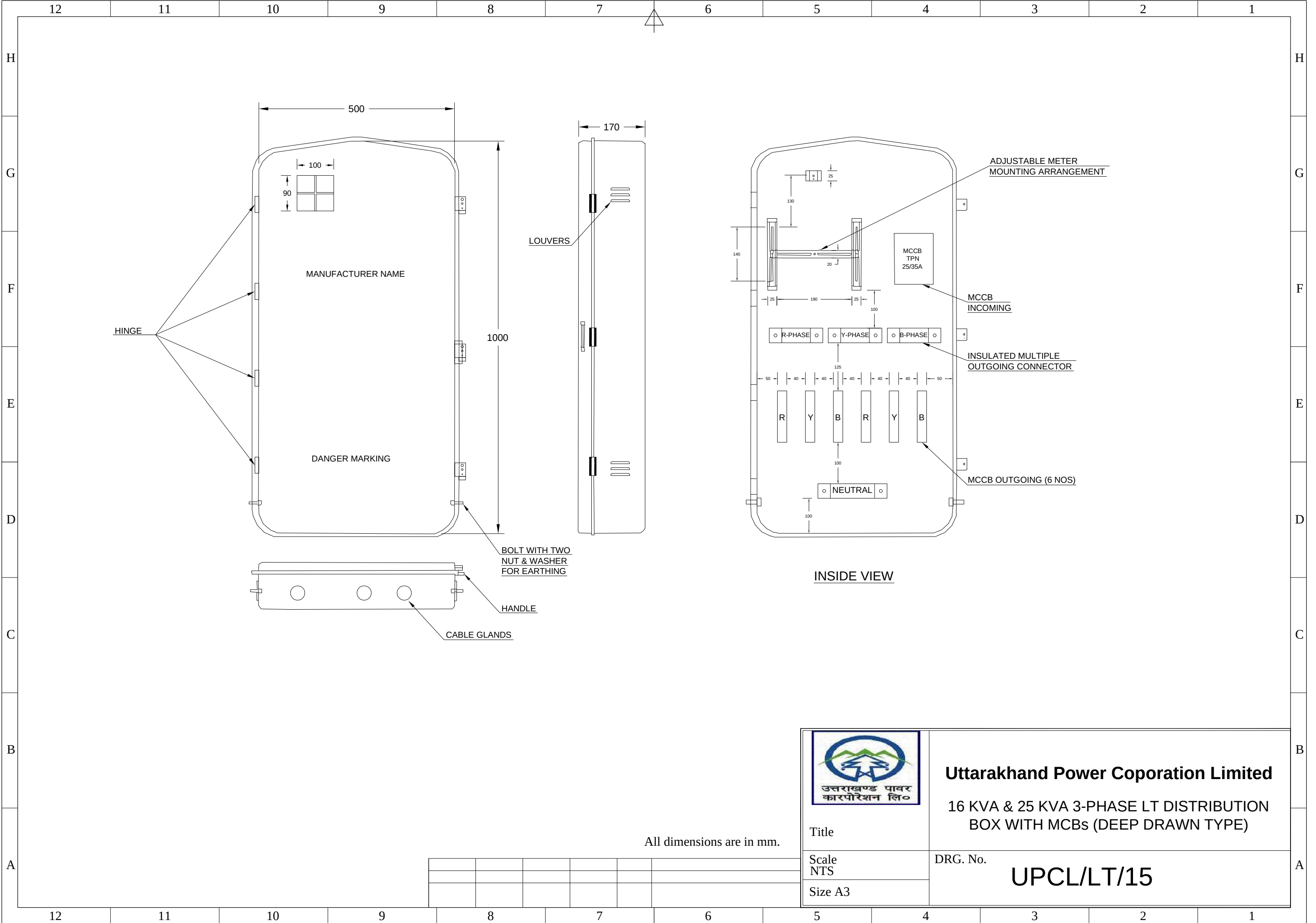
DRG. No.

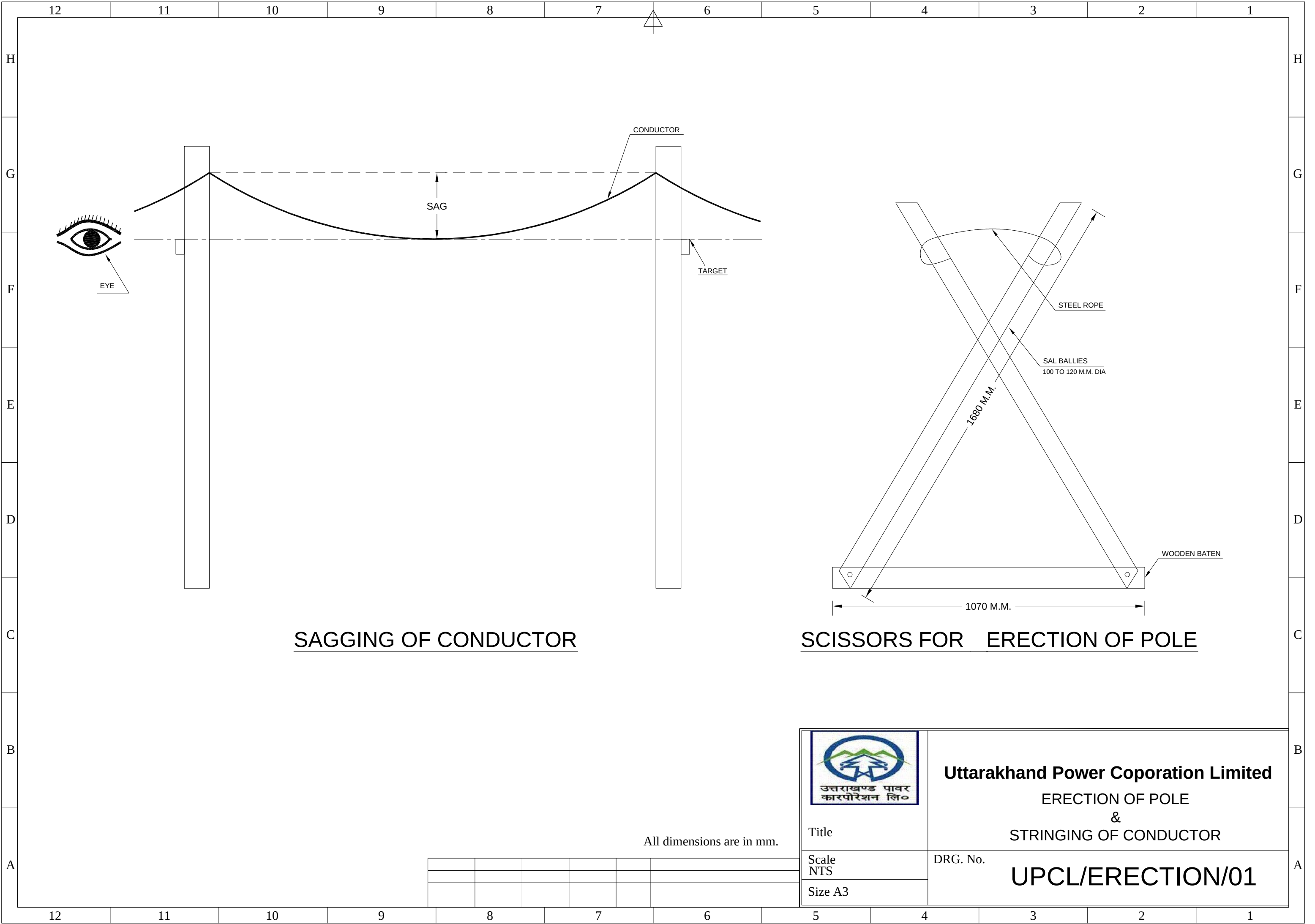
UPCL/LT/12

All dimensions are in mm.









SAGGING OF CONDUCTOR

SCISSORS FOR ERECTION OF POLE



Uttarakhand Power Coporation Limited
ERECTION OF POLE
&
STRINGING OF CONDUCTOR

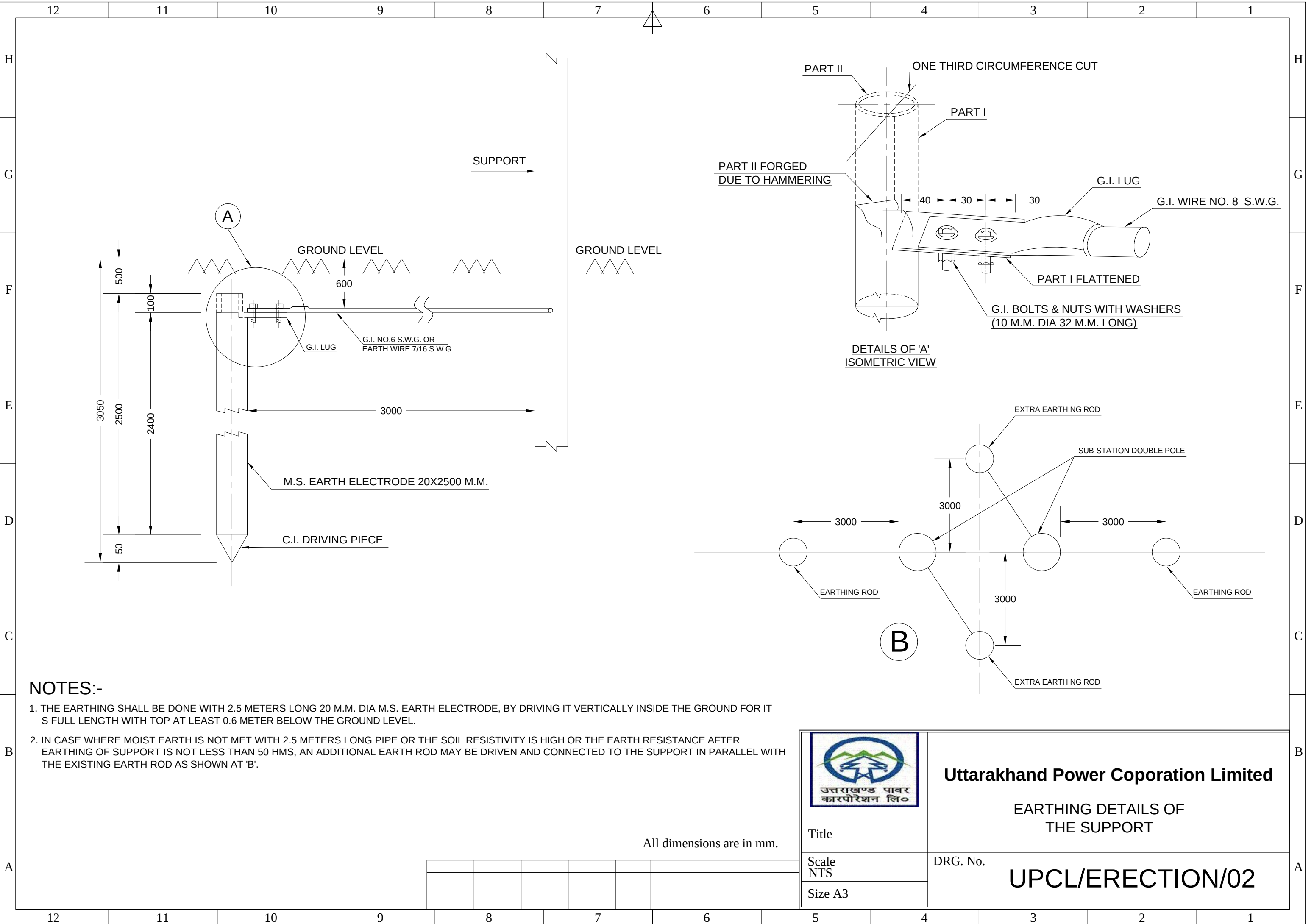
DRG. No. **UPCL/ERECTION/01**

Title

Scale
NTS

Size A3

All dimensions are in mm.



NOTES:-

1. THE EARTHING SHALL BE DONE WITH 2.5 METERS LONG 20 M.M. DIA M.S. EARTH ELECTRODE, BY DRIVING IT VERTICALLY INSIDE THE GROUND FOR ITS FULL LENGTH WITH TOP AT LEAST 0.6 METER BELOW THE GROUND LEVEL.
2. IN CASE WHERE MOIST EARTH IS NOT MET WITH 2.5 METERS LONG PIPE OR THE SOIL RESISTIVITY IS HIGH OR THE EARTH RESISTANCE AFTER EARTHING OF SUPPORT IS NOT LESS THAN 50 HMS, AN ADDITIONAL EARTH ROD MAY BE DRIVEN AND CONNECTED TO THE SUPPORT IN PARALLEL WITH THE EXISTING EARTH ROD AS SHOWN AT 'B'.

All dimensions are in mm.

	Uttarakhand Power Coporation Limited
Title	EARTHING DETAILS OF THE SUPPORT
Scale NTS	DRG. No.
Size A3	UPCL/ERECTION/02