

		1	2	3	4	5	6	7	8	
A	B	C	D	E	F	G	H	I	J	
LEVEL	30000									
	1700	1700	1700	1700	1950	2200	2450	2700	2950	
	27500	25000	22500	20000	17500	15000	12500	10000	5000	
	3909	0000								
	FACE WIDTH	1700	1700	1700	1700	1950	2200	2450	2700	2950
		1700	1700	1700	1700	1950	2200	2450	2700	2950
		1700	1700	1700	1700	1950	2200	2450	2700	2950
		1700	1700	1700	1700	1950	2200	2450	2700	2950
		1700	1700	1700	1700	1950	2200	2450	2700	2950
	PLATFORM	WORKING PLATFORM	WORKING PLATFORM	WORKING PLATFORM	WORKING PLATFORM	WORKING PLATFORM	WORKING PLATFORM	WORKING PLATFORM	WORKING PLATFORM	WORKING PLATFORM
30 Mtr										
30 Mtr										
30 Mtr										
30 Mtr										
30 Mtr										
30 Mtr										
30 Mtr										
30 Mtr										
30 Mtr										
LEG JOINT NAME	A	B	C	D	E	F	G			
	A	B	C	D	E	F	G			
	A	B	C	D	E	F	G			
	A	B	C	D	E	F	G			
	A	B	C	D	E	F	G			
	A	B	C	D	E	F	G			
	A	B	C	D	E	F	G			
	A	B	C	D	E	F	G			
	A	B	C	D	E	F	G			
	A	B	C	D	E	F	G			
LEG LENGTH	5000	5000	5000	2500	2503	5000	5000	5000	5000	
	5000	5000	5000	2500	2503	5000	5000	5000	5000	
	5000	5000	5000	2500	2503	5000	5000	5000	5000	
	5000	5000	5000	2500	2503	5000	5000	5000	5000	
	5000	5000	5000	2500	2503	5000	5000	5000	5000	
	5000	5000	5000	2500	2503	5000	5000	5000	5000	
	5000	5000	5000	2500	2503	5000	5000	5000	5000	
	5000	5000	5000	2500	2503	5000	5000	5000	5000	
	5000	5000	5000	2500	2503	5000	5000	5000	5000	
	5000	5000	5000	2500	2503	5000	5000	5000	5000	
LEGS SIZE	75x75x6	75x75x6	100x100x8	110x110x12	120x120x12	130x130x12				
	75x75x6	75x75x6	100x100x8	110x110x12	120x120x12	130x130x12				
	75x75x6	75x75x6	100x100x8	110x110x12	120x120x12	130x130x12				
	75x75x6	75x75x6	100x100x8	110x110x12	120x120x12	130x130x12				
	75x75x6	75x75x6	100x100x8	110x110x12	120x120x12	130x130x12				
	75x75x6	75x75x6	100x100x8	110x110x12	120x120x12	130x130x12				
	75x75x6	75x75x6	100x100x8	110x110x12	120x120x12	130x130x12				
	75x75x6	75x75x6	100x100x8	110x110x12	120x120x12	130x130x12				
	75x75x6	75x75x6	100x100x8	110x110x12	120x120x12	130x130x12				
	75x75x6	75x75x6	100x100x8	110x110x12	120x120x12	130x130x12				
PANEL NO.	1	2	3	4	5	6	7	8	9	
	1	2	3	4	5	6	7	8	9	
	1	2	3	4	5	6	7	8	9	
	1	2	3	4	5	6	7	8	9	
	1	2	3	4	5	6	7	8	9	
	1	2	3	4	5	6	7	8	9	
	1	2	3	4	5	6	7	8	9	
	1	2	3	4	5	6	7	8	9	
	1	2	3	4	5	6	7	8	9	
	1	2	3	4	5	6	7	8	9	
LENGTH (METER)	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
DIAGONALS	50x50x4	55x55x4	55x55x5	65x65x5	60x60x5	60x60x5	70x70x5			
	50x50x4	55x55x4	55x55x5	65x65x5	60x60x5	60x60x5	70x70x5			
	50x50x4	55x55x4	55x55x5	65x65x5	60x60x5	60x60x5	70x70x5			
	50x50x4	55x55x4	55x55x5	65x65x5	60x60x5	60x60x5	70x70x5			
	50x50x4	55x55x4	55x55x5	65x65x5	60x60x5	60x60x5	70x70x5			
	50x50x4	55x55x4	55x55x5	65x65x5	60x60x5	60x60x5	70x70x5			
	50x50x4	55x55x4	55x55x5	65x65x5	60x60x5	60x60x5	70x70x5			
	50x50x4	55x55x4	55x55x5	65x65x5	60x60x5	60x60x5	70x70x5			
	50x50x4	55x55x4	55x55x5	65x65x5	60x60x5	60x60x5	70x70x5			
	50x50x4	55x55x4	55x55x5	65x65x5	60x60x5	60x60x5	70x70x5			
PANEL TOP- HORIZONTALS	50x50x4	50x50x4								
	50x50x4	50x50x4								
	50x50x4	50x50x4								
	50x50x4	50x50x4								
	50x50x4	50x50x4								
	50x50x4	50x50x4								
	50x50x4	50x50x4								
	50x50x4	50x50x4								
	50x50x4	50x50x4								
	50x50x4	50x50x4								
PANEL MID- HORIZONTALS	45x45x4	45x45x4	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
	45x45x4	45x45x4	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
	45x45x4	45x45x4	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
	45x45x4	45x45x4	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
	45x45x4	45x45x4	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
	45x45x4	45x45x4	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
	45x45x4	45x45x4	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
	45x45x4	45x45x4	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
	45x45x4	45x45x4	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
	45x45x4	45x45x4	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
PLAN BRACING	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
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	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
SEC. BRACING	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
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	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
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	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	
	45x45x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	50x50x4	

LIGHTENING ARRESTER (LA)

AVIATION LIGHT

MW ANTETENNA MOUNTING
ARRANGEMENT

GSM ANTETENNA MOUNTING
ARRANGEMENT

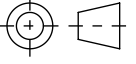
LADDER/CABLE PLAN

HORIZONTAL
CABLE GANTRY

FOUNDATION PLAN

SECTION C-C
SCALE 1 : 85

NOTE:-
ALL DIMENSIONS ARE IN MM

	NAME	SIGNATURE	DATE	TOLERANCE:	SCALE:1:110	DRW. NO:	DRW. NAME:
DRAWN BY:	PRAM	PRAM	29-11-2025	ISO 2768-m		IPS-30M-3L-BT-6G2M	30 METER TOWER
DESIGNED BY:	SUJITH	SUJITH	29-11-2025			REV 0	PROJECT NAME:
CHECKED BY:	SUJITH	SUJITH	29-11-2025			SHEET NO: 1 OF 1	BHUTAN TELECOM
						SIZE: A3	



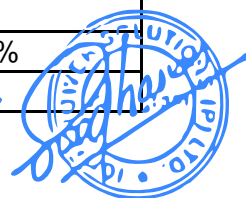
ICON POWER SOLUTIONS(P) LTD.
112-113,Sector-5,IMT Manesar,
Gurugram,Haryana,INDIA-122050
TEL : +91 124 4120600/01/02

ICON POWER SOLUTIONS PVT LTD

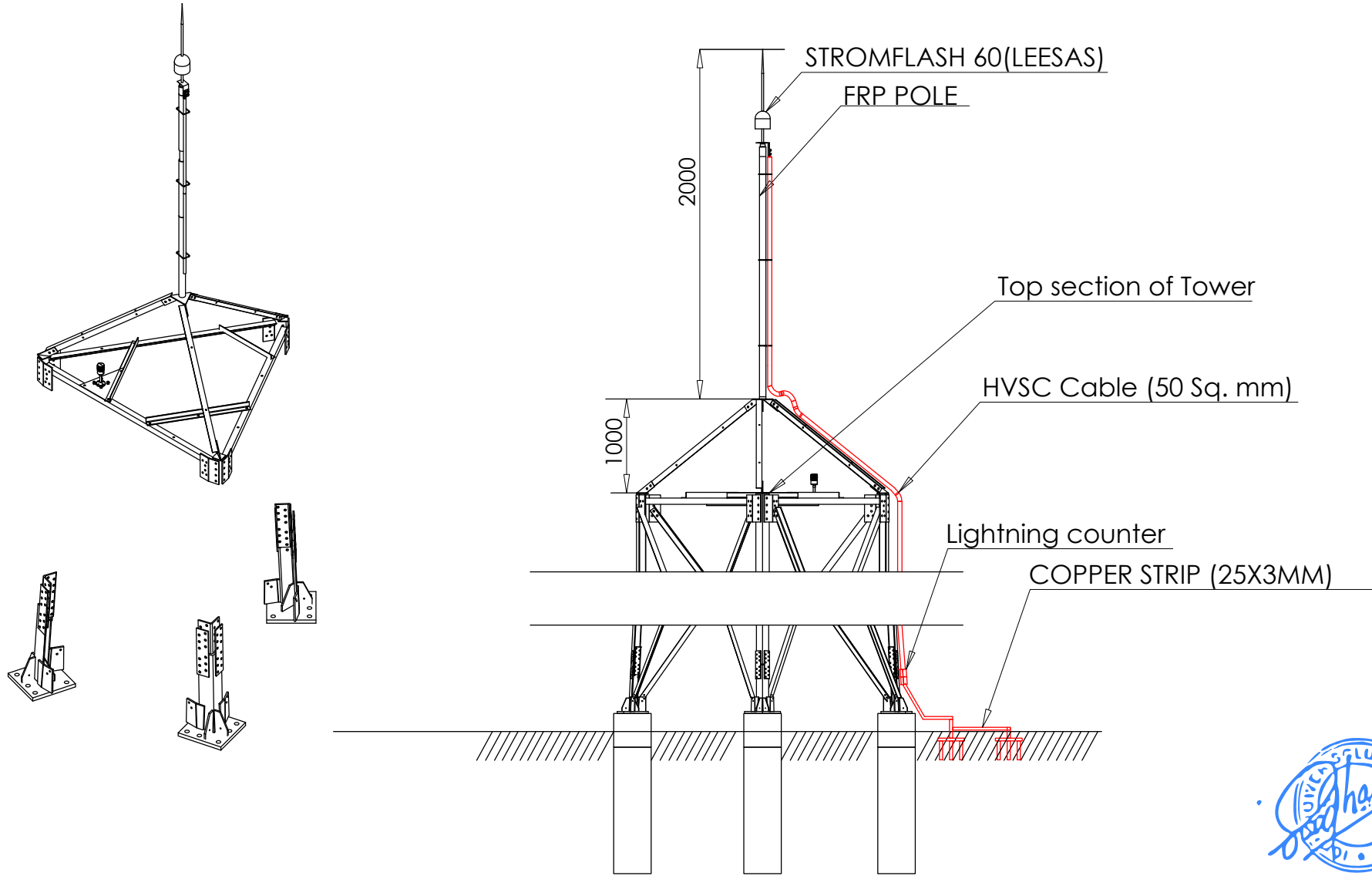
112 113, Sector 5, IMT Manesar, Gurgaon - 122050, Haryana

Technical Specification sheet of 30MTR 3 Legged Triangular Tower

S.No.		DESCRIPTION	DETAILS	REMARK
1		<u>DESIGN SPECIFICATION</u>	(ANSI/TIA-222G)	
	1.1	Design Wind Velocity		
		Survival	150 KMPH	
		Operational	105 KMPH	
	1.2	Twist & Sway	Less than <.5 degree	
	1.3	Factor of Safety	1.2 For Dead Load	
			1.6 For Wind Load	
	1.4	Antenna Loading		
		GSM Antenna	6 nos.	200 Kg
		RRU	6 nos.	90 Kg
		1.2 Dia MW Antenna	2nos.	100 Kg
	1.5	Antenna Pole Mount stand	As per requirement	
2		Obstruction Light System		
	2.1	No .Of Obstruction Light Lamp&Watts	1 No. LED Type	
	2.2	Power Cable Type&Length	2.5 Sqmm x 40 mtr. Length	2 core armoured
3		Lighting Protection & Earthing System(Grounding system)		
	3.1	Lightning Arrestor	Lightning Arrestor (ESE) STORMFLASH 60 (LEESAS)	1 nos with FRP mast and HVSC cable & Counter
4	4.1	Structure Of Tower	Self Suppprtng 3 legged Angular construction with vertical ladder in the center intergrated with cable tray & horizontal cable tray from tower to Building	
	4.2	Main Leg	90 Degree Angle	
	4.3	Bracing	90 Degree Angle	
	4.4	Climbing Ladder	450 mm Rung Width, 300mm Rung space & 700mm Hoop	
	4.5	Cable Tray Verticle	450 mm Width	along the tower Height
	4.6	Cable Tray Horizontal	450 mm Width	6 MTR.
	4.7	Steel Type	Mild Steel - E 250	
	4.8	Platforms		
		Working	2 Nos	22.5 & 27.5 Mtr
		Rest	1 Nos.	10 mtr
5	5.1	Foundation bolt & Template	As Per Tower Design	Included
	5.2	Bolts & Nut with spring &	Hot Dipped Galvanized Property Class 5.6	Extra 2%
		Plane washer	As per Standard ASTM A 153	
	5.3	Size	As per Design Specs.	
6	6.0	Hot Dipped Galvanization	As per Standard ISO 1461	85 Microns
7		<u>Others to be specified</u>		
	7.1	Weight Per Tower	5250 Kg	(+/-) 5%
	7.2	Drawing No.	IPS-30M-3L-BT-6G2M	



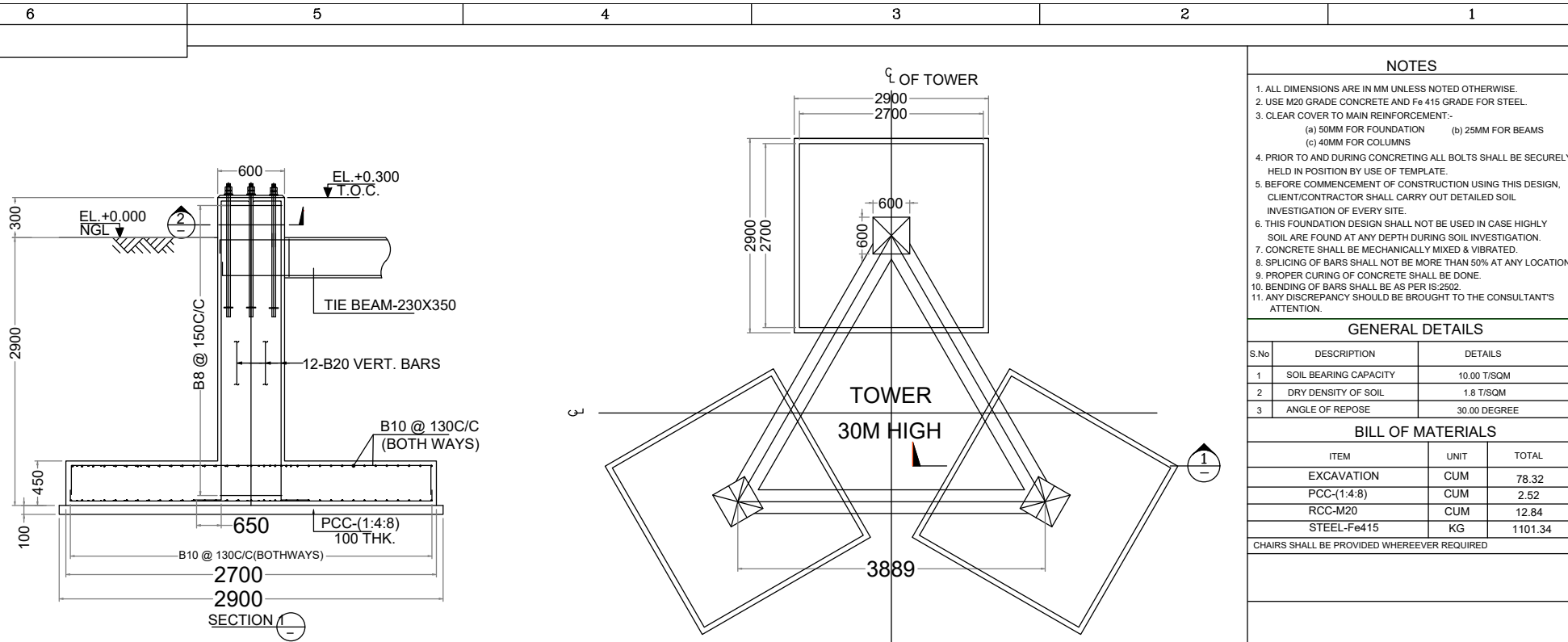
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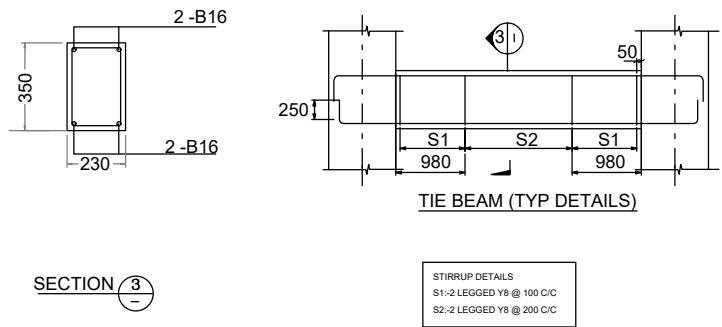
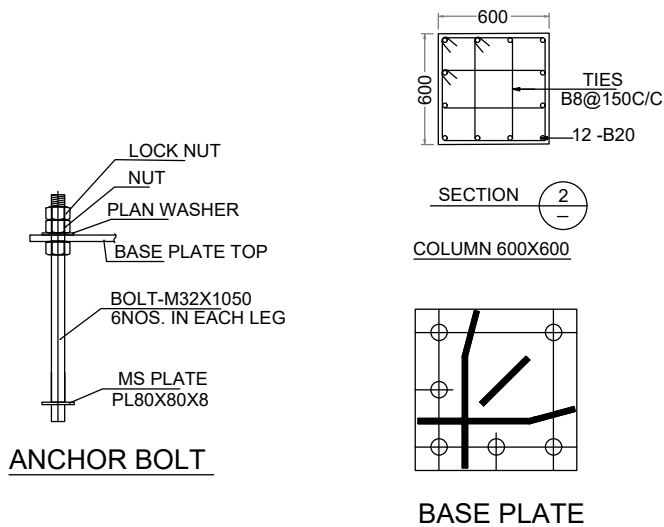
	NAME	SIGNATURE	DATE	CHANGES	NAME	SIGNATURE	DATE	NO:	TOLERANCE:	SCALE: 1:50	DRW. NO:	DRW. NAME:
DRAWN BY:	PANKAJ	PANKAJ	03-12-2025						X ±		LA-ASSY-3LEG TOWER	LIGHTING ARRESTOR MOUNTING ARRANGEMENT-3LEG
DESIGNED BY:	SUJITH	SUJITH	03-12-2025						X.X ±		REV 0	PROJECT NAME:
CHECKED BY:	SUJITH	SUJITH	03-12-2025						X.XX ±			BHUTAN TELECOM LTD 2026
									X.XXX ±			
									ANGLES ±			



ICON POWER SOLUTIONS(P) LTD.
112-113, Sector-5, IMT Manesar,
Gurugram, Haryana, INDIA-122050
TEL : +91 124 4120600/01/02



FOUNDATION KEY PLAN



NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. USE M20 GRADE CONCRETE AND Fe 415 GRADE FOR STEEL.
3. CLEAR COVER TO MAIN REINFORCEMENT:-
(a) 50MM FOR FOUNDATION (b) 25MM FOR BEAMS
(c) 40MM FOR COLUMNS
4. PRIOR TO AND DURING CONCRETING ALL BOLTS SHALL BE SECURELY HELD IN POSITION BY USE OF TEMPLATE.
5. BEFORE COMMENCEMENT OF CONSTRUCTION USING THIS DESIGN, CLIENT/CONTRACTOR SHALL CARRY OUT DETAILED SOIL INVESTIGATION OF EVERY SITE.
6. THIS FOUNDATION DESIGN SHALL NOT BE USED IN CASE HIGHLY SOIL ARE FOUND AT ANY DEPTH DURING SOIL INVESTIGATION.
7. CONCRETE SHALL BE MECHANICALLY MIXED & VIBRATED.
8. SPlicing OF BARS SHALL NOT BE MORE THAN 50% AT ANY LOCATION.
9. PROPER CURING OF CONCRETE SHALL BE DONE.
10. BENDING OF BARS SHALL BE AS PER IS:2502.
11. ANY DISCREPANCY SHOULD BE BROUGHT TO THE CONSULTANT'S ATTENTION.

GENERAL DETAILS

S.No	DESCRIPTION	DETAILS
1	SOIL BEARING CAPACITY	10.00 T/SQM
2	DRY DENSITY OF SOIL	1.8 T/SQM
3	ANGLE OF REPOSE	30.00 DEGREE

BILL OF MATERIALS

ITEM	UNIT	TOTAL
EXCAVATION	CUM	78.32
PCC-(1:4:8)	CUM	2.52
RCC-M20	CUM	12.84
STEEL-Fe415	KG	1101.34

CHAIRS SHALL BE PROVIDED WHEREEVER REQUIRED

REVISION NOTES

REV. NO.	DESCRIPTION	DATE	SIGN.
DRAWN	CHECKED	APPROVED	DATE
HEMANT	SUJITH	SUJITH	01-12-2025

CLIENT: BHUTAN TELECOM
DESIGN BY: ICON POWER SOLUTIONS PVT. LTD. GURGAON

PROJECT: NETWORK EXPANSION 2025

TITLE : FOUNDATION DETAILS FOR 30M HIGH TRIANGULAR TOWER
SBC : 10 T/SQM

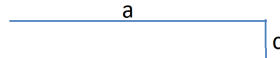
DRAWING No.	SH. NO.	REV.
IPS-30M-3L-BT-6G2M	1 OF 2	01

IPS-30M-3L-BT-6G2M Tower Bar Bending Schedule



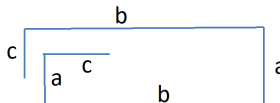
Type A

Type C



Type B

Type D



Cover Slab 50 mm

Column 40 mm

Beam 25 mm

Item	Position	Type	Dia. Of Rebar	Size	Size	Size	Length	Qty in Nos both ways or total	Unit wt	Total Weight of
				a	b	c				
			(mm)	(mm)	(mm)	(mm)	(mm)		(kg/m)	(kg)
Raft Slab	Top	B	B10	2600	250	250	3100	120	0.62	230.64
	Bottom	B	B10	2600	250	250	3100	120	0.62	230.64
Tie Beams	Top	B	B16	3889	250	250	4389	6	1.58	41.61
	Bottom	B	B16	3889	250	250	4389	6	1.58	41.61
	Strips	D	B8	180	300	80	1120	87	0.40	38.98
Column	Main	C	B20	3100	0	650	3750	36	2.47	333.45
	Ties	D	B8	512	512	80	2208	63	0.40	55.64
		D	B8	512	200	80	1584	126	0.40	79.83
		Total								1101.34

* Chairs Shall be Provided whenever required

Notes :

1. Dimensions of Bars are along the Center Lines.
3. Splicing of Bars should not be more than 50%. Length of splice as per Standards.



REVISION NOTES

REV. NO.	DESCRIPTION		DATE	SIGN.
DRAWN	CHECKED	APPROVED	DATE	SCALE
HEMANT	SUJITH	SUJITH	01-12-2025	NTS

CLIENT:

BHUTAN TELECOM

DESIGN BY: ICON POWER SOLUTIONS PVT. LTD.
GURGAON

PROJECT:

NETWORK EXPANSION 2025

TITLE : FOUNDATION DETAILS FOR 30M HIGH TRIANGULAR TOWER
SBC : 10 T/SQM

DRAWING No.	SH. NO.	REV.
IPS-30M-3L-BT-6G2M	2 OF 2	01