

Project:	Construction of 220KV DC line on DC towers from existing 220kV Indi sub-station to proposed 220kV Chadchan (Devaranimbaragi) sub-station for a distance of 29.628Kms using AAAC Moose ACSR conductor in Indi Taluk Vijayapur District.
Line:	DESIGN OF 220KV DC MONOPOLE OF TYPE - 2P3+3M
Title:	SAG-TENSION CALCULATION

Normal Span = 150 M

Details of Power Conductor & Earth wire/OPGW

Description	Conductor	48F OPGW
Type	AAAC MOOSE	OPGW
Aluminium Stranding	54/3.53mm	-
Steel Stranding	7/3.53mm	-
Optical Fibre Stranding	-	48F
Diameter in mm	31.95	12.2
C/S Area in Sq.mm	603.3	75.65
Ultimate Tensile Strength in Kgs	16295	9032
Unit weight in Kg/Mt	1.666	0.451
Modulus of Elasticity in Kg/Sq.Cm	550000	1290000
Coeff of Linear Expansion in /deg C	2.30E-05	1.38E-05

Climatic conditions & Corresponding Sag - Tension values for conductor

Sl.No.	Temparature	Wind Pressure	Tension in Kgs	Sag in Mtrs	FOS (actual)
1	32	0.0	4074	1.15	4.000
2	32	106.5	5213	0.90	3.126
3	32	79.9	4812	0.97	3.386
4	32	81.5	4836	0.97	3.370
5	32	55.1	4473	1.05	3.643
6	32	99.4	5104	0.92	3.193
7	10	0.0	5535	0.85	2.944
8	10	38.3	4282	1.09	3.805
9	32	90.9	4975	0.94	3.275
10	32	67.0	4630	1.01	3.519
11	32	53.3	4450	1.05	3.662
12	90	0.0	1790	2.62	9.103

Climatic conditions & Corresponding Sag - Tension values for 48F OPGW

Sl.No.	Temparature	Wind Pressure	Tension in Kgs	Sag in Mtrs	FOS (actual)
1	32	0	456	2.782	19.807
2	32	133	1263	1.004	7.151
3	32	99.75	1040	1.220	8.685
4	10	0	538	3.860	16.788
5	10	47.88	766	1.656	11.791
6	32	101.74	1054	1.203	8.569
7	32	68.82	823	1.541	10.974
8	32	124.09	1205	1.053	7.495
9	32	113.52	1134	1.119	7.965
10	32	83.71	928	1.367	9.733
11	32	66.50	806	1.574	11.206
12	53	0	400	3.171	22.580