

TECHNICAL SPECIFICATION FOR TUBULAR STEEL POLES FOR OVERHEAD LINES

1. SCOPE :

1.1. This specification covers the general requirements towards design, manufacture, testing at manufacturers works, supply and delivery for tubular steel poles of circular cross section (swaged type) for overhead lines.

2. STANDARD :

2.1. The tubular steel poles shall conform to the latest edition of Indian Standard specification IS: 2713 (Part - I, III): 1980 or any other authoritative standards (as amended up-to-date) except where specified otherwise in this specification.

3. Topography and Climatic Condition :

3.1. The materials offered, shall be suitable for operation in tropical climate and will be subjected to the sun and inclement weather and shall be able to withstand wide range of temperature variation. For the purpose of design, average atmospheric temperature may be considered to be 50 deg C with humidity nearing saturation.

4. Materials :

4.1. The materials used in construction of tubular steel poles shall be of the tested quality of steels of minimum tensile strength 540 MPa (: 55 Kgf/mm²).

4.2. The materials, when analyzed in accordance with IS : 228 (Part-III : 1972) and IS : 228 (Part-IX) shall not show sulphur and phosphorous contents of more than 0.060 percent each.

5. Types, Size and construction :

5.1. Tubular Steel Poles shall be swaged type.

5.2. Swaged poles shall be made of seamless or welded tubes of suitable lengths swaged

and jointed together. No circumferential joints shall be permitted in the individual tube lengths of the poles. If welded tubes are used they shall have one longitudinal weld seam only and the longitudinal welds shall be staggered at each swaged joint.

5.3. Swaging may be done by any mechanical process. The upper edge of each joint shall be chamfered if at an angle of about 45 deg. The upper edge need not be chamfered if a

circumferential weld is to be deposited in accordance with clause No. 5.3 2 of IS: 2713 (Part-I):1980.

5.4. The length of joints on swaged poles shall be in accordance with clause No. 5.4 of IS:

2713 (Par-I): 1980.

5.5. Poles shall be well-finished, clean and free from harmful surface defects. Ends of the

poles shall be cut square. Poles shall be straight, smooth and cylindrical. The weld joints, if any, shall be of good quality, free from scale, surface defects, cracks, etc.

5.6. Tolerances for outside diameter, thickness, length, weight and straightness shall be in

accordance with IS: 2713 (Part-I) : 1980.

5.7. The poles shall be coated with black bituminous paint conforming to IS: 158-1968

throughout, internally and externally, up to the level which goes inside the earth. The R-APDRP PART B, KASHMIR Vol 2 Technical Specifications & GA Drawings

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remaining portion of the exterior shall be painted with one coat of red oxide primer as

specified in IS: 2074-1979.

5.8. Base Plate of the size 300 X 300 X 5 mm shall be welded at the bottom of steel tubular poles.

5.9. Steel tubular poles shall be provided with steel pole cap

6. Earthing Arrangements :

6.1. The earthing of steel tubular pole shall be facilitated by welding a 75 mm piece of 75 X 40

mm galvanized channel at a height of 300 mm from ground level (black painted strip).

The channel piece shall be provided with an 18mm hole and 16mm galvanized bolt with

GI flat and spring washer. The hot dip galvanizing of channel piece shall be carried out

after cutting and drilling of hole so that no rusting takes place at the connection point of

earth.

7. Marking :

7.1. All the poles shall be embossed with a unique number after every meter on full length of

the poles. The pole at a height of 1.5 mtr, 1.83 mtr & 2.16 mtr from the bottom of the pole for poles 9 mtr, 11 mtr and 13 mtr lengths shall be marked with a 30 mm wide black

painted strip with inscription as “GL”.

7.2. Further pole should be also engraved with the year of manufacture and name of the

Employer: JKPDD and name of the project: RAPDRP, Name of the manufacturer at an

interval of 2 mtrs.

8. Guaranteed technical particulars :

8.1. The vendor shall furnish all necessary guaranteed technical particulars in the prescribed

proforma enclosed hereinafter.

**ANNEXURE -‘A’
SPECIFIC TECHNICAL REQUIREMENTS FOR TUBULAR STEEL POLES:
SWAGED TYPE**

	9 meters long	11 meters long	13 meters long
1) Standard	IS: 2713 (Pat-I and III): 1980 as amended up to date		
2) Type of Pole	Swaged Type		
3) Designation	540 SP 28	540 SP 52	540 SP 72
4) Overall Length	9 meters	11 meters	13 meters
5) Planting depth	1.5 meters	1.8 meters	2.0 meters
6) Height above ground	7.5 meters	9.2 meters	11.0 meters
7) Effective length of Each section.			
a) Bottom	5.0 meters	5.6 meters	5.80 meters
b) Middle	2.0 meters	2.7 meters	3.60 meters
c) Top	2.0 meters	2.7 meters	3.60 meters
8) Outside diameter and Thickness of each Section.			
a) Bottom	139.7x 4.50 mm	165.1x4.50 mm	219.1x5.90 mm
b) Middle	114.3x3.65 mm	139.7x4.50 mm	193.7x4.85 mm
c) Top	88.9x3.25 mm	114.3x3.65 mm	165.1x4.50 mm
9) Joint Length (in cm.):			
a) Bottom (J2)	30 cm.	35 cm.	45 cm.
b) Top (J1)	23 cm.	30 cm.	40 cm.
10) Approximate weight of Pole	113 Kg.	175 Kg.	343 Kg.
11) Point of application of load below/top (mtr.)	0.3 mtr.	0.6 mtr.	0.6 mtr
12) Breaking load (in Kgf)	478	567	1084
13) Working load with factor of Safety : 2.5 (in Kgf)	191	227	435 Kg.

14) Crippling load (in Kgf)	339	403	770 Kg.
15) Load for permanent set Not exceeding 13mm (in Kgf)	2 32	2 76	5 27 Kg.
16) Load for Temporary Deflection of 157.5 mm (in Kgf)	76	74	121
17) Tolerance	As per IS : 2713 (Part-I & Part-III): 1980		
18) Finish	-do-		
19) Manufacturing clause	-do-		

ANNEXURE

TECHNICAL GUARANTEED AND OTHER PARTICULARS.

1. Type of Pole offered
2. a) Whether tubes are of seamless construction. Or welded type.
b) Is it manually welded tubes? If so, state name/address of manufacturer
c) It is ERW tubes? If so, state name/address of manufacturer
3. Overall length
4. Effective length of section
 - a) Bottom
 - b) Middle
 - c) Top
5. Effective dia thickness of section
 - a) Bottom
 - b) Middle
 - c) Top
6. Approximate weight (Kg.)
7. Breaking Load (Kg.)
8. Working Load (Kg.)
9. Weight/Mtr.
 - i) Top Section (kg)
 - ii) Middle Section (kg)
 - iii) Bottom Section (kg)
10. Crippling load (kg)
11. Load for permanent set
12. Load for temporary deflection
13. Joint length