Annexure-A

TECHNICAL SPECIFICATION FOR 11mtr. LONG STEEL TUBULAR POLE

1.0 SCOPE

1.1 This specification covers the design, manufacture, testing at works, supply / delivery & transportation of 11 mtr long Steel tubular Pole conforming to IS:2713 (P-I & II)/1980 and as amended latest with Mild Steel Base Plate.

2.0 STANDARDS

2.1 The 11 mtr long Steel tubular Pole shall conform in all respect to the relevant Indian/ International Standard Specification, with latest amendments.

3.0 SPECIFICATION FOR 11 MTR LONG STEEL TUBULAR POLES AS PER IS:2713 (P-I & II)/1980 AND AS AMENDED LATEST.

1 Type of Poles: 11 meter long Steel tubular Pole of swaged type.

2 Designation of Pole: 11meter = 410:SP-54

3. Effective length of each section:-

Items	410:SP-54 (11 mtr)
Top	2.7 meter
Middle	2.7 meter
Bottom	5.6 meter

4. Outside Diameter of Sections:-

Items	410:SP-54 (11 mtr)
Top	114.3 mm
Middle	139.7 mm
Bottom	165.1 mm

5. Thickness of Sections:-

Items	410:SP-54 (11 mtr)
Top	3.65 mm
Middle	4.50 mm
Bottom	5.40 mm

6. Tolerances:-

i) Outside Diameter:- The outside diameters of the poles shall not vary from the appropriate value, except at the joint, by more than ±1.0 percent.

ii) Thickness :- Thickness shall not fall below the thickness specified by more than 10 percent.

iii) Length :- The tolerance on the length shall be as follows:
On the length of any section ±40mm.
On the overall length of pole ±25mm.

iv) Weight :- Mean weight for bulk supplies shall be not more than 5 percent below the calculated value. The weight of any single pole shall not fall below the calculated weight by more than 7.5 percent.

7. Swaged Poles - Swaged poles shall be made of seamless or welded tubes of suitable lengths swaged and joined 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. .

7.1 Swaging may be done by any mechanical process. The upper edge of each joint shall be chamfered off at an angle of about 45C'. The upper edge need not be chamfered if a circum. ferential weld is to be deposited in accordance with 5.3.2.

7.2 Unless swaging is done by special process such as rotary or longitudinal die swaging process a circumferential weld shall be deposited at the upper end of the joint (Fig. I) at a slope of approximately 45°. Thi~ circumferential weld shall be deposited only after the poles are subjected to and conforms to all the test requirements specified in this standard.

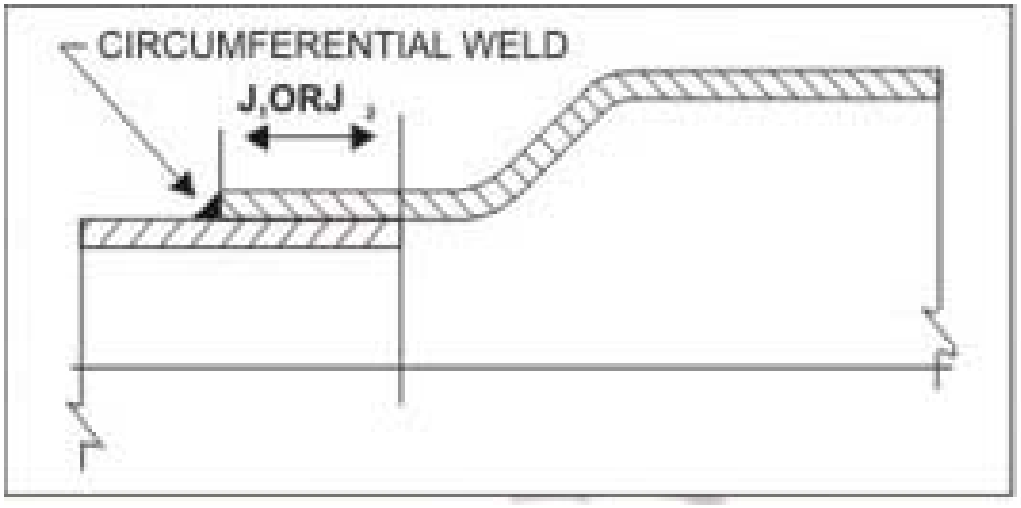


Fig.1

8. Protection against corrosion:-

The poles shall be coated with black bituminous paint (conforming to IS:158/1968) of two coats throughout, internally and externally, up to the level which goes inside the earth including 1 m above the earth level. The working portion of the exterior shall be painted with two coats of red oxide primer (conforming to IS:2074/1979).

9. Earthing arrangements:-

Poles shall be provided with earthing arrangement with a through hole of 14 mm dia. which shall be provided at a height of 300 mm above the planting depth.

10. M.S. Base Plate:-

M.S. base plate as per drawing shall have to be welded to bottom portion of the pole. Both planes of the plate to be welded along the circumference of the bottom portion of the pole. Two coats of bituminous paint (conforming to ISS: 158/1968) shall be provided on all surface of the M.S. Plate.

11. Top cap :-

Canopy shaped plate of thickness same as that of top section of the pole shall be provided at the top of the pole with proper welding

12. The poles shall be made of welded tube of suitable length (indicated in the relevant ISS and enclosed drawing) swaged together and conforming to chemical composition and physical requirement of the specification. The material to be used for the poles shall be of minimum tensile strength of 42 kgt per Sqmm.

13. Chemical Composition:- As per IS:228(P-III)/1972 and IS:228(P-IX)/1975 or as amended latest.

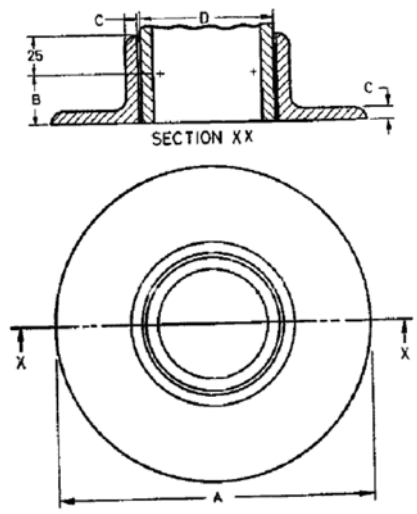
14. Minimum Tensile Strength :- 42Kgt/mm^2

15. Approx. Weight of each pole : 11 mtr =194 Kg

16. Breaking load of each pole (in N/kgf) : 11 mtr =5030(513)

17. Crippling load of each pole (in N/kgf) : 11 mtr =3570(364)

IS : 2713 (Part I) - 1980

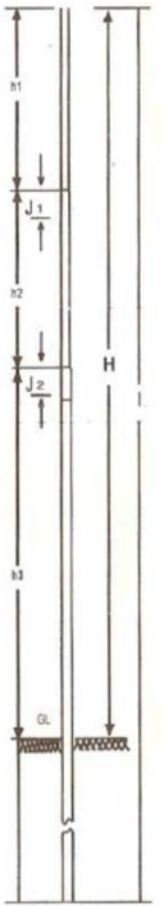


Details of Base Plate

D (Out side Dia of Bottom Plate)	C	B	A
165.1	20	45	400

All Dimensions are in mm

Fig- 1 Mild Steel Base Plate



Items	410: SP-54
1.	3.
h_1	2.70 m
h_2	2.70 m
h_3	5.60 m
J_1	0.30 m
J_2	0.35 m
H	9.20m
L	11.00

Fig- 2 Steel Pole

4. TESTS AND TEST CERTIFICATES:

4.1 The following tests shall be conducted on poles after placed of purchase order and test certificates should be submitted to the purchaser for approval:

A. Tensile test,
B. Deflection test,
C. Permanent set test, and
D. Drop test.
E. Physical verification of dimensions

4.2 Number of poles selected for conducting different tests shall be in accordance to clause No. 10.1.1 and No. 10.1.12: of IS: 2713 (Part-I) 1980.

4.3 Tests shall be carried out before supply of consignment at the manufacturer's woks and test certificates should be submitted to the purchaser for approval.

4.4 Re-tests, if any, shall be made in accordance with IS: 2713 (Part-I) 1980.

4.5 Purchaser reserves the right to inspect during manufacturing and depute his representative to inspect/test at the works.

4.6 If any extra cost is required for carrying out the above specified tests, the same shall be borne by the tenderer.

5. Marking :

5.1 The poles shall be marked with designation, manufacturer's identification, year of manufacture and name of the purchaser: BHEL.

5.2 The poles may also be marked with the ISI certification mark if applicable

6.0 GUARANTEED TECHNICAL PARTICULARS

The guaranteed technical particulars of 11 mtr.. long Steel Tubular Pole offered shall be given by the bidder along with the tender.

Guaranteed & other technical particulars for 11m Steel Tubular Poles

(To be furnished by the Manufacturer)

Sl.no.	Item	Description
1.0	Type of Poles	
2.	Designation of Pole	
3.	Effective length of Each section:-	
	1) Top	(meter)
	ii) Middle	(meter)
	ii) Bottom	(meter)
4.	Outside Diameter of sections:-	
	1) Top	(mm)
	ii) Middle	(mm)
	ii) Bottom	(mm)
5.	Thickness of sections	
	i) Top	(mm)
	ii) Middle	(mm)
	iii) Bottom	(mm)
6.	Tolerance	
	i) Outside Diameter	
	ii) Thickness	
	ii) Length	
	iv) Weight	
7.	Protection against corrosion:-	
8.	Earthing arrangements :-	
9.	M.S.Base Plate :-	
10.	Top cap :-	
11.	Minimum Tensile Strength	
12.	Chemical Composition	
13.	Approx .Weight of each pole	
14.	Breaking load of each pole	
15.	Crippling load of each pole	
16.	Marking	

Signature of Authorized
Signatory of the firm
Seal of the firm