

## TECHNICAL SPECIFICATION FOR 9 METER STEEL TUBULAR POLES

### 1.0 SCOPE:

This specification covers manufacturing, testing before supply and delivery at site CIP destination (for Indian Bidders) and CIF Indian port (Foreign Bidders) of Steel Tubular poles.

- 1.1** It is not the intent to specify completely all the details of the design and construction of equipment. However the equipment shall conform in all respects to high standards of engineering, design and workmanship and shall be capable of performing in continuous commercial operation up to the bidder's guarantee in manner acceptable to the purchaser, who will interpret the meanings of drawings and specifications and shall have the power to reject any work or material which, in his judgment is not in accordance therewith. The offered equipment shall be complete with all components necessary for their effective trouble free operation. Such components shall be deemed to be within the scope of Bidder's supply irrespective of whether those are specially brought out in this specification and/or the commercial order or not.

### 2.0 STANDARDS:

- 2.1** The material shall conform in all respect to the relevant 'Indian Standards' specification with latest amendments indicated below:-

<u>INDIAN INTERNATIONAL &amp; STANDARDS INTERNATIONALLY</u>	<u>TITLE</u>	<u>RECOGNIZED STANDARDS</u>
---	--------------	---------------------------------

(i) IS 2713(Part-I to III) 1980	Specification for Tubular Steel Poles for overhead Power lines.	
---------------------------------	---	--

(ii) IS 4736/1986 with latest amendments thereof	Specification for hot dip Zinc coating on Mild Steel tubes	
--	--	--

The Steel Tubular Poles conforming to other internationally accepted, which ensure equal to higher quality than the standards, mentioned above also be acceptable. In case the bidder who wish to offer material conforming to the other standards, salient points of difference between adopted and specific standards with authentic English Translation shall be furnished.

### 3.0 SERVICE CONDITIONS:

The steel Tubular Poles to be supplied against this specification shall be suitable for satisfactory and continuous under the following climatic conditions:

(i)	Location	At various power line locations in the State of UTTAR PARDESH
(ii)	Max. Ambient air temperature (deg C)	50
(iii)	Min ambient air temperature (deg C)	(-) 5
(iv)	Average daily ambient air temp (deg C)	40
(v)	Max. relative humidity (%)	100
(vi)	Max altitude above means sea level (m)	1000

(vii)	Average annual rainfall (mm)	1200
(viii)	Max. wind pressure (Kg. sq/mm)	195
(ix)	Isocerautic level (days per year)	50
(x)	Seismic level (Horizontal accn)	0.33

The Steel Tubular shall be used in moderately hot and humid tropical climate conducive to rust and fungus growth.

#### 4.0 **PRINCIPAL PARAMETERS:**

The S.T.P. shall conform to the following specific parameters.

S. No.	Technical Particulars	
1.	Type of Pole	Swaged Type 410SP-33
2.	Total length	9 Meter
3.	Out side diameter and Thickness of section	
	i) Bottom	165.1 X 5.40mm
	ii) Middle	139.7 X 4.50mm
	iii) Top	114.3 X 3.65mm
4	Bottom Portion of the pole (5.4 mtr long) shall be galvanized as per IS 4736/1986 and latest amendments thereof. Minimum zinc coating shall be 360 gms per sq. mtr. Zinc thickness shall be minimum 51 microns	
5.	Minimum weight of Pole	164 Kg.
6.	Breaking load	612 Kgf
7.	Crippling load	435Kgf
8.	Maximum permissible working load	As per ISS
9.	Minimum tensile strength of steel used in manufacturing of poles	42 Kg .f/mm <sup>2</sup>
10.	The Pole should be complete with convex shape top cover made of 3 mm. thick M.S. plate of pole top size and duly tack welded.	
11.	<b>A Mild Steel base plate(hot dip galvanized) of size 300×300×6 mm shall be welded at the bottom of the pole having weight of 4.5 kg.</b>	
12.	<b>Base plate shall be welded after inspection but before dispatch.</b>	

Note: Poles shall conform to IS: 2713/1980(Part I to III) and latest amendments thereof or as mentioned herein. No deviation from technical particulars of any type shall be acceptable. However tolerances only on positive side as per above I.S.S. and amendments thereof. shall be allowed.

Other particulars in addition to above, if any, as per latest amendment of IS/IEC to be given.

#### 5.0 **TECHNICAL REQUIREMENTS :**

Poles shall be steel tubes having minimum tensile strength 42 kgf/mm<sup>2</sup> and minimum percentage elongation as specified in IS: 1161:1979 with latest amendment thereof if any. The Poles shall be made in 3 sections of dimensions as detailed in specified technical particulars annexed hereto. The tubes used should be made by ERW (Electrical Resistance Welding) process. The tubes should be swage jointed to form the desired poles to give a strong joint which should withstand all the tests as per ISS without any welding. The welding is only to be done after carrying out all the tests. No joints shall be permitted in the individual tube length of poles. The poles shall be coated with bituminous paints internally and externally upto the level which goes in side the earth and the remaining portion of exterior shall be painted with one coat of red oxide primer as specified in IS: 2713/1980.

A Through hole of 14-mm. diameter shall be provided in each Pole at a height of 300 mm above the planting depth. The pole should be complete with convex shape top cover made of 3 mm. thick M.S. Plate of pole top size and duly tack welded.

**6.0 TEST:****6.1 ROUTINE & ACCEPTANCE TESTS:**

The Steel Tubular Poles shall conform to IS: 2713 Part (I to III) 1980 or any amendments thereof in every respect. The following routine and acceptance tests prescribed in the above ISS will be carried out.

- a) Verification of dimensions and weigh.
- b) Deflection test
- c) Permanent set test
- d) Drop test

**7.0 MARKING:**

The pole shall be clearly and indelibly engraved with the following particulars during manufacture so as to easily read after erection in position.

1. Marking on ST poles shall be clearly and indelibly engraved at the height of 3 meter from the base of the pole, with the following particulars during manufacture so as to be easily readable (alphabet size-minimum 12 mm height and 8 mm width with proper spacing between letters) after erection in position.
2. Packing No./Lot No./Pole No.
3. Name of DISCOM (in capital bold letters)/Date of manufacture.
4. Maker's distinguishing mark.
5. Size of pole.

**8.0 INSPECTION:**

All acceptance tests and inspection shall be carried out at the place of manufacturer unless otherwise specially agreed upon by the Bidder and purchaser at the time of purchase. The Bidder shall offer for inspection and testing of material to inspecting official representing the purchaser. All reasonable facilities without charges, to satisfy him that the material is being furnished in accordance with this specification shall be provided by the supplier at his works. The purchaser has the right to have the tests carried out at his own cost by an independent agency, wherever, there is a dispute regarding the quality supply.

The bidder shall give 7 days (for local supplies) 30 days (in case of Foreign Bidder) advance intimation to enable the purchaser to depute his representative for witnessing acceptance/routine test.

**9.0 QUALITY ASSURANCE PLAN:**

**9.1** The bidder shall invariably furnish following information along with his bid, failing which his bid shall be treated as Non-responsive. This information shall be separately given for individual type of material offered.

- (i) Statement giving list of important raw material, names of sub-supplier for raw materials. List of standard according to which the raw materials are tested List of test normally carried out on raw material in presence of Bidder's representative, copies of test certificate.
- (ii) Information and copies of test certification as in (1) above in respect of bought out accessories.
- (iii) List of manufacturing facilities available.
- (iv) Level of automation achieved and list of areas where manual processing exists.
- (v) List of area in manufacturing process stage inspection are normally carried out for quality control and details of such tests and inspections.
- (vi) List of testing equipment available with the bidder for final testing of equipment and specify test limitation, if any vis-à-vis the type, special acceptance and

routine tests specified in the relevant standards. These limitations shall be clearly brought out in schedule of deviations from specified test requirements.

- 9.2** The successful Bidder shall, within 7 days of placement of order, submit following information to the purchaser:-
- (i) List of raw materials as well as bought out accessories and the names of sub-supplier selected from, furnished along with offer.
  - (ii) Type test certificate of raw materials and bought out accessories.
  - (iii) Quality Assurance Plan (QAP) with hold points for purchaser's inspection.

The quality assurance plan and purchaser's hold points shall be discussed between the purchaser and bidder before the QAP is finalized.

- 9.3** The contractor shall operate the system which implement the following:-
- (i) **Hold Point:** A stage in the material procurement or workmanship process beyond which work shall not proceed without the documented approval of designated individuals or organizations. The purchaser's written approval is required to authorize work to progress beyond the hold points indicated in quality assurance plan.
  - (ii) **Notification Point:** A stage in material procurement or workmanship process for which advance notice of activity is required to facilitate witness. If the purchaser does not attend after receiving documented notification in accordance with agreed procedures and with the correct period of notice then work may proceed.

- 9.4** The successful bidder shall submit the routine test certificate of bought out accessories and central excise passes for raw material of bought out accessories and central excise passes for raw material at the time of the routine testing if required by the purchaser and ensure that quality assurance requirements of this specification are followed by the sub-contractors.

The Quality Assurance Program of the contractor shall consist of the quality system and quality plans with the following details:-

- (i) **Quality System:**
  - The Structure of organization
  - The duties and responsibilities assigned to staff ensuring quality of work.
  - The system for ensuring quality workmanship
  - The system for retention or records
  - The arrangement of contractor's internal auditing
  - A list of administration and work procedures required for achieving and verifying contract's quality requirements. These procedures shall be made readily available to the purchaser for inspection on request.
- ii) **Quality Plans:**
  - An out line of the proposed work and program sequence
  - The structure of the contractors' organization for the contract
  - The duties and responsibilities assigned to staff ensuring quality of work.
  - Hold and notification points.
  - Submission of engineering documents required by the specification
  - The inspection of material and component of receipt
  - Reference of the contractor's work procedures appropriated to each activity
  - Inspection during fabrication /construction
  - Final inspection and test.

**10.0 DOCUMENTATION:**

All drawings shall conform to International Standard Organization (ISO)'A' series of drawing sheet/Indian Standard Specification IS: 656. All drawings shall be in ink and suitable for microfilming. All dimensions and data shall be in S.I Units.

Two sets of complete dimensions showing the general arrangements shall be furnished along with the tender as under:

- a) Outline dimension of the poles with all the sections.
- b) Cross sectional details top bottom middle sections with swaging details.

**10.1** The manufacturing shall be done strictly in accordance with the approved drawing and no deviation shall be permitted without the written approval of the purchaser. All the manufacturing works in connection with the pole prior to the approval of the drawing shall be at the supplier's risk.

**10.2** Approval of drawing/work by the purchaser shall not relieve the supplier of his responsibility and liability for ensuring correctness and correct interpretation of the drawing for meeting requirements of the latest revision of applicable standards, rules and codes of practices. The pole shall conform in all respect to high standards of engineering, design, workmanship and latest revision of relevant standards at the time of ordering and purchaser shall have the power to reject any work or material which in his judgment is not in full accordance therewith.

**10.3** The successful bidder shall, within two week of placement order, submit 3 sets of final versions of all drawings as stipulated in the purchase order for purchaser's approval. The purchaser shall communicate his comments/approval on the drawing to the supplier within two weeks. The supplier shall if necessary modify the drawings and resubmit 3 copies of the modified drawing for their approval. The supplier shall within two weeks, submit 30 prints and two good quality report copies of the approved drawing for purchaser's uses.

**10.4** One set of routine test certificate shall accompany each dispatch consignment.

**11.0 PACKING & FORWARDING:**

The packing may be in accordance with the manufacturer's standard practice. Supplier should however ensure that the packing is such that the equipments reach the departmental stores/site without damages after transport by rail and road. Whenever material are supplied to a consignee, the supplier shall prepare the following information in the form of packing slip in quadruplicate and send the same to the consignee and obtain his acknowledgement on the same. The consignee will return to the supplier one copy of the packing slip with his remarks.

Packing slip will have following information printed on it:-

1. Purchaser order No. & Date.
2. Quantity allotted to the stores and rate applicable.
3. Quantity so far supplied and rates applied.
4. Total quantity supplied under the P.O. with rates applied.
5. Programme for supply of balance quantity to the stores/site.

**12.0 SUPERVISION SERVICE:**

Purchaser will arrange for unloading stacking and handling of consignment at delivery stores.

**13.0 GENERAL:**

- a) **TECHNICAL DEVIATIONS:**  
The technical deviations to technical specification of S.T. Poles shall be specifically and clearly indicated in the Annexure-II.
- b) The bidder who shall not provide G.T.P.(Guaranteed Technical Particulars) shall be treated as non-responsive.

**ANNEXURE-II**

**i. Schedule of deviation:**

Sl. No.	Requirements Equipment	Specification Clause No.	Deviations	Remarks

ii. It is hereby conformed that except that for deviations mentioned above, the offer conforms to all the other features specified in Technical Specification of the Bid Document.

iii. Technical details/information enclosed with the bid as required in Technical Specification of the bid document is listed at Appendix\_\_\_\_\_.

Place: \_\_\_\_\_ Signature of the Bidder

Date: \_\_\_\_\_ Name

Business address: