

## **TECHNICAL SPECIFICATIONS FOR THE WORK** **TO BE CARRIED OUT**

For erection work 11 KV and L.T. Distribution lines and Transformer Centers.

**(A) Erection of HT and LT Lines :**

Site clearing and tree cutting which come in the way of line will be done by the contractor at his cost. The Company will assist the contractor in getting necessary permission for tree cutting etc. Any claim for compensation in above respect will have to be borne by contractor.

**(B) Fixing: Pole Position:**

The position of pole structures, guys and earthling will be fixed by the department and will be shown to the contractor. He should adhere to these locations in all circumstances unless directed by the department to make any change.

**(C) Pole setting:**

Where poles are set in good solid ground the depth of pit shall be  $1/6^{\text{th}}$  of the height of the pole and for grounds of any other nature. The poles and guys must not be set at the edge of cuts/at shore/embankment where the soil is liable to be washed or eroded out of such setting should be avoided. While back filling, earth must be packed tight and in no case earth be dumped to greater depth more than four inches without being rammed, hard before the next layer is thrown in. Extra earth should be packed around the poles and rammed.

Extra payment is payable for hard soil or rock under the pole erection item which may be quoted in the tender. The cost of damage done to the pole during erection will be recoverable from the contractor. No pole, which is out of plumb or out of alignment, shall be accepted. The pole will be in his safe custody till erected and he is liable to compensate to the Company the full cost of pole along with supervision charges, if the pole is broken during erection, or stolen from his custody. He should be able to render full account of the poles entrusted to him whenever the Supervising Officer demands to scrutinizes the same.

**(D) Erection of Complete single Pole Structure**

Erection of single pole structure comprises of shifting of pole from the stacking place in the village, excavation of pit, erection in position (with base plate where required), of 8/10 meter PSC poles / 9 to 13 meter Steel Pole or any other suitable pole, fitting of clamps and cross arms and fabricated materials, fixing of caution board, anti-climbing device etc. complete as per drawing and specification inclusive of painting, numbering. Generally vertical formation will be used on each pole. However horizontal formation will have to be used in special circumstances as per instruction at Engineer in charge.

**(E) Special Two Poles Structure**

Special two poles structure such as for HT line tapping, Railway crossing, any other HT/LT or telephone line crossing, terminal structure for distribution transformer center comprises of Excavation suitable pits and refilling of earth, erection in position of two Nos. of 8/10 meter PSC poles / 9 to 13 meter Steel

Pole or any other suitable pole, fitting of clamps, cross arms, bracing cross arm bracing etc. as per drawing exclusive of mounting of transformer but inclusive of mounting D.O. fuses/A.B. switches/HT metering equipment etc., painting, numbering, fixing of caution Board and anti-climbing devices. The D.P. must be properly aligned and must be in plumb. Special structure if included will be erected as per drawing supplied.

**(F) Stringing of conductors**

This includes stringing of stranded and solid bare conductor with fitting of necessary HT/LT pin and strain insulators, binding on insulators, jumpering, the jointing in HT line will be done by twistingsleeve joints as per standard practice. Care must be taken in handling the conductor to protect against cuts, scratches or kinks. The conductor must not be drawn over rough or rocky ground, when it is liable to be damaged. AAA/ACSR conductors must be drawn on wooden or aluminum pulley only. Wastage and cutting should be avoided as far as possible. Not more than 2% sag will be accepted in the materials account. The sag and spans will be maintained as per drawing and design. The cross arms insulators must be so fixed that neither tilts nor bands from position. The rate quoted should be per conductor route kilometer. The sagging should be uniform for all conductors and uneven sagging will not be allowed. The ground clearance, line to line clearances etc. to be maintained as per IE Rules 1956 (copy enclosed). Generally following span should be kept of HT line.

**(G) Erection of Stay Set:**

The erection of stay set comprises of anchor rod, turn buckle, eye bolt and excavation of suitable pit of 4' depth, fixing of stay clamp on pole, binding of GI stay wire. The stay insulators must be inserted in the stay wire on all stays as per drawing. The wrapping of the Guy wire strands at both ends the stay insulator must be even and must presents neat appearance and good workmanship. No stay should be left loose but should be tight and straight to withstand in say cyclone or sand storm, the item includes refilling of earth and painting of fabrication material. If stays are not required to be concreted, a pre casted cement concrete block will be supplied by the department from his division store which the contractor will have to transport at his own cost to the site of work and will have to use for fixing of anchor rod at site.

**(H) *Separate Pole Ear thing:***

A pits of 2x2x6 fit is to be dig about 3 fit away from the pole on which earthing is required to be carried out. The earthing pipe/earthing plate/earthing coil supplied by the company shall be used as per specification and drawing. GI wire no.8 SWG for earthing should be bolted with earthing pipe/earthing plate/earthing coil. The earthings are to be done at place as indicted in the pole schedule or as selected by the field Engineer. The coke and salt will have to be supplied by the contractor at his cost. Erection of earthing should be carried out under the supervision of the Engineer in charge. At least 10 KG of salt and 10 KG of coke per earth will be used by contractor. No amount will be paid if the work is not done in accordance with this specification.

(I) **Guarding:**

The guarding will have to provide at crossing of lines, below all the overhead railway crossing, telephone crossing, road crossing and such other places as indicated by the department. The work comprises of fixing of guard cross arms, eye bolts, guard cradle as per design, GI cross lacing wires complete. Any special type of guarding if required will be designed by the department. Binding cross arms must be used where the HT line crosses the road. The ground clearance, line to line clearances etc. to be maintained as per IE Rules 1956 (copy enclosed).

The poles for road crossing may be concreted as instructions of the Engineer In-charge. The work has to be carried out as instructions of the Engineer In-charge.

(J) **Painting and Numbering:**

Rail poles and girder poles shall be given one coat of approved red-lead paint and two coats of approved aluminum paint, all fabricated material will also be painted in a manner shown above, and there should be sufficient interval between every coat of painting in order to allow for drying. The bolts and must shall be dipped in anticorrosive oil before insertion. The lower portion of steel poles up 3 fit above ground level shall be cleaned of all dust and rust. This surface should be given a base coat of red lead and an additional coat of black bituminous paint before inserting in the ground. The good quality paint will be supplied by the contractor and should be of I.S.I mark and will be got approved from Executive Engineer, prior to starting work. Name of the feeder and pole number has to be written on all the poles in English or Gujarati as per instruction of Engineer In-charge. The colour of back ground and name / number must be of contrast color. P.S.C poles need not be painted but should be with pole numbering, fabrication material is to paint and all accumulations of earth, dirt etc, should be removed but fabrication material has to be painted.

It is suggested to get one coat of red oxide and one coat of silver paint at the fabricator only.

(K) **Concreting:**

Cement concrete for any pole / stay should be carried out as per drawing and specification given by Engineer In-Charge as and where required. Concreting should be with one part of cement, two part of specified quality sand and four parts of well burnt Brice bats (1:2:4). The mixture should be prepared on GI sheet and should be free from the dust. Cement river sand and metal should be used by contractor at his own cost.

**Muffling:**

Concern for muffing of poles and stay rods should be cement one part, sand two parts and four parts of Metal (1:2:4) Sand shall be clean grip ply and composed of hard strong, durable and siliceous grains. It shall be free from clay or organic matter, metal should be sound, hard and durable stone to pass through a mesh of 11/2" as far as possible and free from any surplus. Brick bats should be made of well Burt brick and should of 11/2" size as far possible.

Cement, sand and metal must be got approved from the Engineer in charge. The concrete shall be used in above proportion and should be thoroughly mixed at least three times in dry state before water is added and as far possible a fairly wet mixture must be used all concrete must be mixed on watertight platform. In any case, the work finishing coat of cement plaster should be applied on outer surface of the smooth. One finishing coat of cement plaster should be applied on outer surface of the muffing. The concrete block, when slightly dried, should be kept wet continuously for period of 10 days. The location for concerting will be decided by the Engineer-in-charge and the contractor will follow his instructions scrupulously. If the concerting work is not found as per the specifications and quality, the same is liable to be rejected. The brick bat concreting or cement concerting work and muffing has to be done in the presence of companies representative only and work done in his absence will be rejected and no payment made thereof. The sand, metal, brickbats shall be procured the contractor.

The normal size of concreting/muffing of pole will be 5x2'x2.1/2' & that for stay 2'x2'x2' muffing for pole shall be 12" diax2'x9" (1" above and 1' below ground) Muffing for stay shall be 12" diax2'.9" (-do-) for muffing only metal is to be used and not brick bat or gravel.

**(L) Distribution Transformer Centre :**

The distribution transformer centre (10 KVA to 200 KVA) will be of outdoor type on two poles structures as per standard drawing. This work include erection of special two pole structure as per Item No. 2 and fixing of all fabricated material for support of line, L.A., HG Fuse/AB Switch, Transformer, LT Dist. Box, cable wiring, anti climbing devices etc. The works includes of transportation and hoisting of transformer, numbering and painting of all fabricated materials. For transformer having capacity of 100 KVA and above MS channel shall be utilize which will be supplied by the company. Two independent separate earthing should be provided on either side of the dist. Transformer centre each consisting of one or more earth connection from lightning arrestor's, transformer natural, transformer tank, Dist. Box etc.

The cost of damage done to the transformer is recoverable from contractor.

Signature of Contractor

## **PROCEDURE TO BE FOLLOW FOR GETTING MATERIAL FROM STORES**

(A) **Issue of materials:**

The following materials shall be supplied by the company free of cost for use on the works contracted for and will be issued as and when required from Divisional Stores/. The transport will have to be arranged by the contractor at his cost (except poles of all types.)

**List of Materials:**

- (1) AAA/ACSR and all type of conductors.
  - (2) The pole will be supplied by company within a radius of about 5 KM from the place of work.
  - (3) HT-LT insulators with hardware and stay insulators with CC block.
  - (4) All fabricated steel material with bolts and nuts.
  - (5) Stay wire, G.I wire.
  - (6) Transformer, LT Dist. Box, HT lightning arrestors, HG fuse / AB Switch, Cable.
  - (7) Anti climbing device.
  - (8) Earthing plate/earthing coil/earthing pipe.
  - (9) All types of Bolts and nuts to be supplied by company.
- The rates quoted should be inclusive of transporting to site from the stores, erection and setting to work the following material is will be supplied by the contractor at his cost for which no payment will be made.
- (1) Aluminum and red lead paints of approved quality.
  - (2) Salt and coke for earthing.
  - (3) Paint for name and numbering.

(B) The quantities in the Schedule are approximate. Actual quantities may increase or decrease according to the local conditions. The department reserves the right to revising or omitting any of the quantities to be erected during the execution.

(C) The contractor will draw or will be given only those materials and in anticipated quantities that are just sufficient for the works to be carried out by him. The contractor should first intimate his requirement to the concerned field Engineer who will approve the list and as per this list, the materials can be drawn from the stores.

(D) The materials will be issued to the contractor himself or his duly authorized representative only. In case

If any authority or power of attorney is to be terminated written instructions in this respect must be intimated by Registered Post to the Executive Engineer and concerned sub-divisional office.

- (E) The contractor must get the requisition, three days before requirement of the materials at site, from the Engineer-in-charge.
- (F) (a) In case of shortage or loss or damage to materials the cost of the same will be recovered from the Contractor at stock issue rate or prevailing market rate at the time of finalization of bill whichever is higher plus 15% overhead charges.
- (b) The contractor will be fully responsible for any damage, breakage, loss or theft of materials during transit or erection issued to him from stores till the time the work is handed over to and taken over by the Company. The cost of or damage shall be recovered from him as stated above in F (a).
- (c) The contractor at the time of taking materials from the stores shall have to give letter of authorization in triplicate to the concerned sub-divisional officers, specifically stating the names of the persons who will draw materials from the store on his behalf and would sign the requisitions for and on behalf of the contractor and shall be binding upon the contractor.
- (d) All materials supplied to the contractor shall remain the absolute property of the company and shall on no account be removed from the site of the work and shall at all times be opened to inspection by the Engineer in-charge.

Any such materials remaining unused and in perfectly good condition at the time of completion of the contract shall be returned to the company store for which no carting and other charges will be paid to the contractor.

- (e) The contractor will have to make his own arrangements to keep the materials under his custody, address of which has to be given to the sub division engineer In-charge. His store will be inspected by any authority of the company at any time. He will be responsible for theft or loss on account of any reason what so ever.

All the above instructions have been read by me thoroughly or have obtained the thorough understanding of the same and are acceptable to me unconditionally.

Signature of Contractor