

TECHNICAL SPECIFICATIONS FOR THE WORK TO BE CARRIED OUT

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

(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 of Pole Location:

The Points of pole structures, guys and farthing 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. The Poles from One site to other site or at proposed locations must be carted by loading on Tractor or Hand-Cart. The Poles shall not be carted by toeing/Dragging with Tractor or Cart or with any other means.

(c) Pole setting:

Where poles are set in good solid ground, the depth of pit shall be $\frac{1}{6}$ the height of the pole and for grounds of any other nature, depth of pit shall be decided by the department. The poles and guys must not be set at the edge of cuts or embankment where the soil is liable to be washed or eroded out such setting should be avoided. While back filling, proper care should be taken for filling of pit.

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. Pole, which is out of plumb/ out of alignment, shall not be accepted.

He should be able to render full account of the poles entrusted to him whenever the Supervising Officer demands to scrutinize 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 meter, 10 meter PSC poles, 9 meter to 13 meter long rail or suitable size girder or any other suitable pole, fitting of clamps and cross arms and fabricated materials, fixing of caution boards as per drawing, and specification inclusive of painting numbering and anti-climbing device. Generally vertical formations will be used on each pole. However horizontal formations will have to be used in special circumstances as per instruction of 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 transformer substation comprises of Excavation suitable pits and refilling of earth erection in position of two nos. of 8 Meter to 10 Meter PSC poles. 9 meter to 13 Meter long rails or any other suitable poles fitting of clamps and cross arms, bracing, cross bracing etc. as per drawing exclusive of mounting transformer but inclusive of mounting D.O. fuses/ A.B. switches, numbering fixing of caution Board and anti-climbing device etc. The D.P. must be properly aligned and must be in plumb. Special structure if included will be erected as per drawing supplied. Each Shackle Points must have "D" type Jumpers only.

(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, hampering. The jointing in HT line will be done properly 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.

Wastage and cutting should be avoided as far as possible. Sag will be accepted as per RE Standard in the materials account drawn for proper tension. 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 kilometre. The span and sag, however, may vary according to sizes of pole available that these dimensions will be specified by the field office before commencement of work. The sagging should be uniform for all conductors and uneven sagging will not be allowed.

All the clearances should be maintained as per latest CEA (Measure relating to safety & Electric Supply) regulation-2023 clause No-60 to 63.

(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) Earthing:

The earthing arrangement shall be of pipe type/ plate type/ coil type as indicated in the drawing. 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. G. I. Wire must be passed through PVC rigid Pipe which must be buried at least 0.5 Meter in ground and to be kept 2.0 Meters above ground along the Pole. The earthings are to be done at place as indicted in the pole schedule or selected by the field offices. Coal and salt will have to be supplied by the contractor at his cost. Erection of earthing should be carried out by digging separate pit of 1.8 meter for each earthing under the supervision of the in charge. No amount will be paid if the work is not done in accordance with these instructions. At least 10 KG of charcoal and 10 KG of salt should be invariably used by the contractor at his cost and refilled the earthing pit with the alternate layers of **coal / coke and earth**. Earthing carried out in pit of pole will not be considered and no amount will be paid for such type of earthings.

(i) Guarding:

The guarding will have to be provided between crossing of HT and LT lines, at the road crossing, crossing of telephone and telegraphs line 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 and erected by the contractor as per requirement of department. The ground clearance, line to line clearances etc. to be maintained as per latest safety regulation-2023 of CEA.

(j) Painting and Numbering:

Rail poles and girder poles shall be given one coat of approved red-lead paint and two coats of approved aluminium paint, all fabricated material will also be painted in a manner shown above, there should be sufficient interval between every coat of painting in order to allow for drying. The bolts and nuts 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 contras colour. P.S.C poles need not be painted but should be properly cleaned 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 two coat of silver paint at the MS fabrication material.

(k) Muffling:

Unless Specified concreting is to be done for Girder Poles/Guys only. no any PSC Pole/Guys to be concreted without any special reason. The Concreting of PSC Poles must be approved by concerned Executive Engineer prior to execution. Concrete for Muffling of poles and stay rods should be cement one part sand two parts and four parts metal (1:2:4). Muffling is not to be done for PSC poles. Sand shall be clean and composed of hard siliceous grains. It shall be free from clay or organic matter. Metal should be having sound hard and durable stone size $\frac{1}{2}$ " to $\frac{3}{4}$ " sieve. Drawing of Muffling are attached.

(l) TRANSFORMER CENTER:

The distribution transformer centre (10 KVA to 200 KVA) will be of outdoor type mounted on two poles structures as per standard drawing and comprises of,

- Erection of poles with necessary earthings.
- One set of HT D.O fuses/ AB Switch.
- 11KV 10 to 200 KVA transformers complete with its accessories.
- One set of HT lightning arrestors.
- Fixing of Distribution box, cross arms and branching with earthing as per drawing, necessary wiring of appropriate size of cables.
- Stays with insulators, numbering, fixing of danger board and ant climbing device.
- Three independent separate pipe type earthing/plate earthing / coil earthing should be provided on either side of the transformer center and one at middle of the transformer center. One separate earthing for LA, one separate earthing for transformer neutral and one separate earthing for transformer body and other metal parts including distribution box. Each consisting of one or more earth connection to earth pit.
- The rate should be quoted inclusive of transportation of distributions transformer from the Company's stores to the site of erection. The cost of damage done to the transformer is recoverable from contractor.

(m) Stringing of HT/LT Arial Bunched Cable

This includes stringing of Arial Bunched Cable with providing and fitting of necessary accessories like dead end clamps, suspension clamps, insulation piercing connectors, Eye Hooks, HT termination kits, jumpering etc. Care must be taken in handling the cable to protect against cuts, scratches or kinks. The cable must not be drawn over rough or rocky ground, when it is liable to be damaged.

(n) INSTRUCTIONS TO BE FOLLOW BEFORE STARTING WORK

Before starting the work (New, alteration or addition) and during the progress of works the contractor must obtain line clear whenever necessary from the concerned officers of this department or other. During transportation or erection, if any accident occurs or any liability

arises due to non-observance of rules / instructions, contractor will be solely responsible for that.

All conductor, earth wire and stay set must be tight. Stay rod pit must be as per the specifications. The entire pole must be in plumb. Fabrication fitting on pole must be tight.

Span of HT/LT line shall have to be kept as per site survey done by Engineer In-Charge and as per site situation.

So long as the line is not handed over to the company, the responsibility of its safe custody and of all fixture and materials etc. lying with that of the contractor will be that of the contractor.

PROCEDURE TO BE FOLLOW FOR GETTING MATERIAL FROM STORES

A. Issue of materials:

The following materials shall be supplied by the DGVCL free of cost for use on the works to the contractor as required from RSO / Divisional Stores as well as from the sub-division store if any. The transportation will have to be arranged by the contractor at his cost (except poles of all types.)

List of Materials:

1. All types of Conductors & AB Cable.
2. The pole will be supplied by DGVCL at convenient place near place of work within 4 KM. Contractor has to cart poles to the destination from the location where poles stacked by DGVCL within the radius of 4 KM at his cost.
3. HT-LT insulators with hardware.
4. All fabricated steel material with bolts and nuts.
5. Stay wire, G.I wire, earthing plate, earthing coil, earthing bolt, earthing pipes.
6. Distribution Transformer, LT Dist. Box, lightning arrestors, HT D.O. Fuse, AB switch with accessories, PVC cable.
7. Danger board, anti climbing device of barbed wire.
8. Earthing plate/earthing coil/earthing pipe.
9. Stay set material.
10. All types of Bolts and nuts to be supplied by company as per availability in store, if not, Contractor has to provide the same and at the rate prescribed by company time to time in statement of rates(SOR) will be reimbursed to the contractor.

The rates quoted should be inclusive of required all type of bolts and nuts (except LT Shackle bolt) and transportation cost of all type of materials to site from the stores.

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

C. The contractor will draw and will be given only those materials and in anticipated quantities that are just sufficient for the works to be carried out by him.

D. The materials will be issued to the contractor himself or his duly authorized representative only. The contractor at the time of drawing 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. 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 should get the requisition, three days before requires the materials on site, from the Engineer-in-charge, for the material as per technical sanction. All the materials mentioned in the requisition should be issued from Divisional store to the name of contractor with scheme. No any material should be drawn departmentally for the work allotted to the contractor.

F. In case of loss or damage to materials, contractor will be responsible for the same, he has to lodge FIR regarding loss of material. Action will be taken as per discretion of DGVCL, the cost of the same will be recovered from the Contractor at stock issue rate plus 15% overhead charges with applicable TAXES and shall be considered as final and unchallengeable.

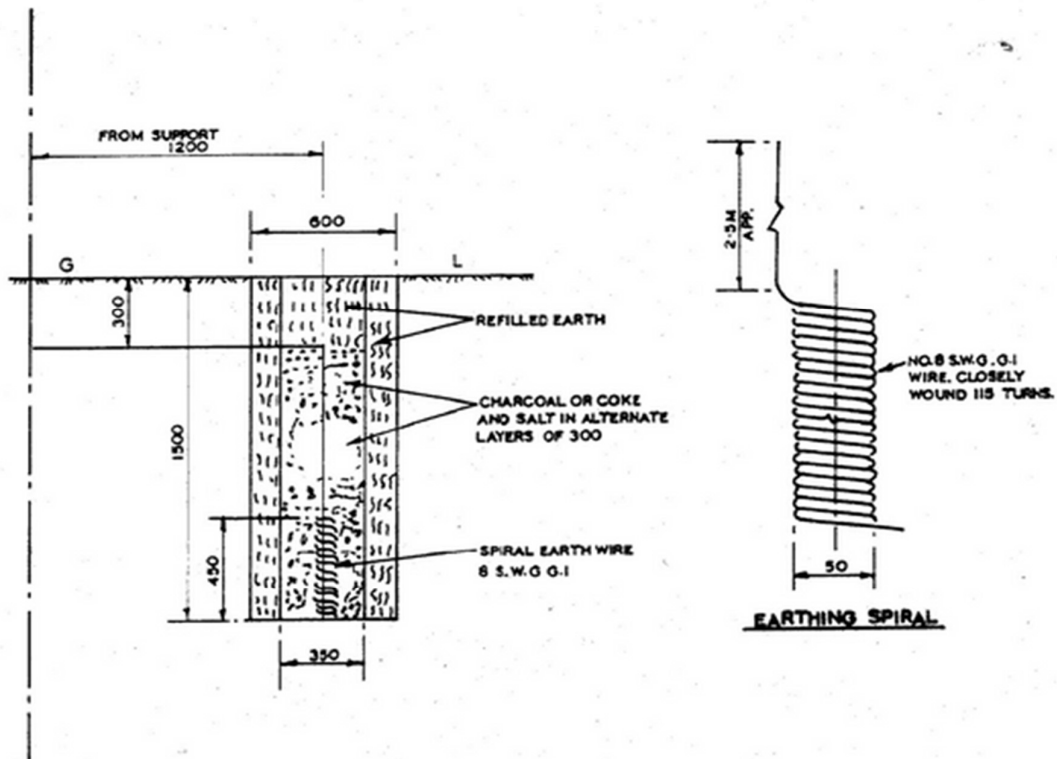
All the materials issued by DGVCL shall be transported to the work site on same day and to be preserved in safe custody at pre notified stores, failing to which DGVCL shall initiate Police action. Similarly as per instruction of Engineer In Charge, you have to credit the material at DGVCL store without any loss of time failing to which DGVCL shall initiate Police action.

- G. 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 damage shall be recovered from him as stated above in F.
- H. 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.
- I. 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 charges are payable to the contractor.
- J. The contractor will have to make his own arrangements to keep the materials under lock and key (i.e. Store) and address of all the stores to be submitted before commencement of work. 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.

REC DRAWINGS FOR ERECTION WORKS

REC CONSTRUCTION STANDARD J-1



NOTE:-

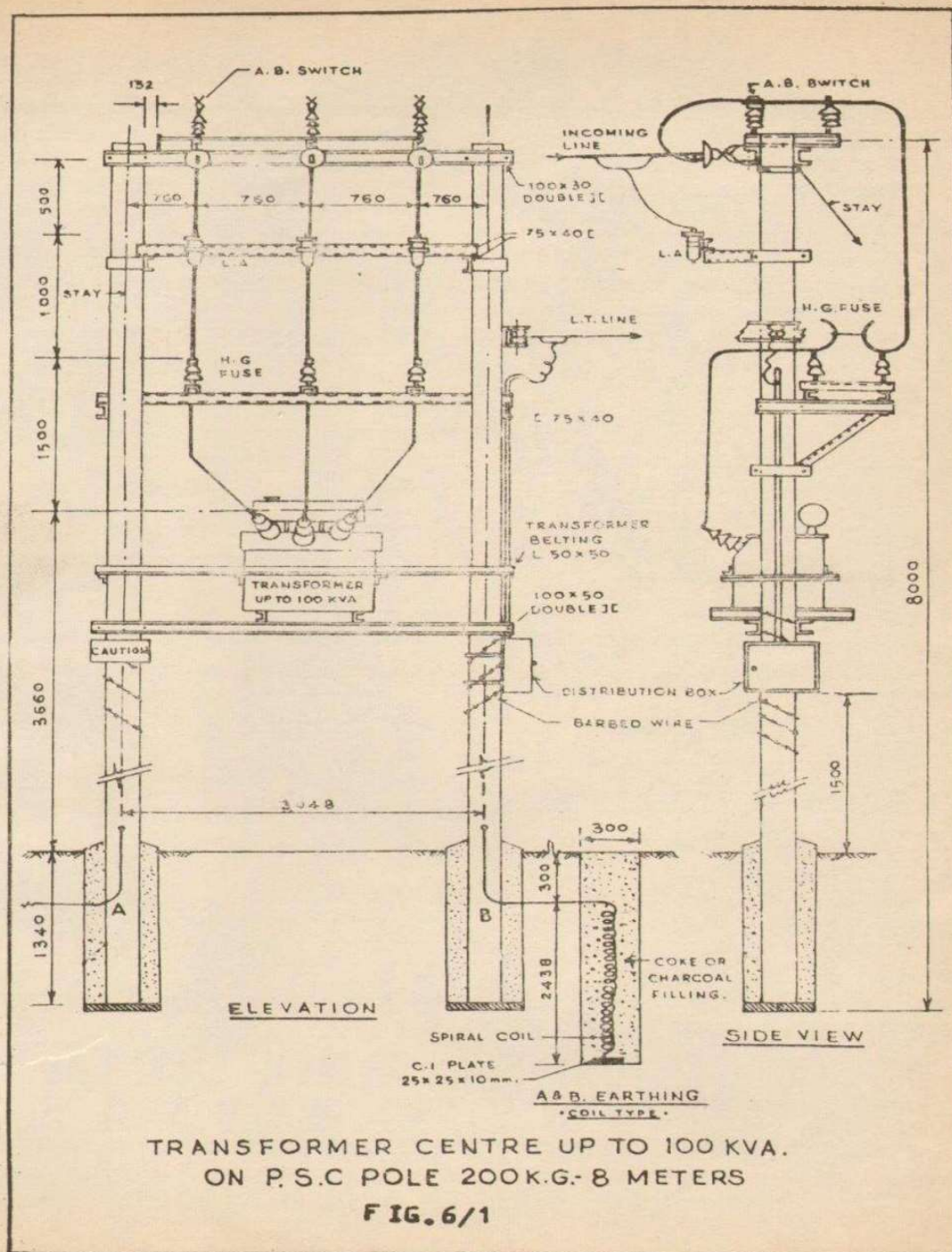
FOR PIPE EARTHING REFER CONSTRUCTION
STANDARDS J-2.

ALL DIMENSIONS ARE IN mm.

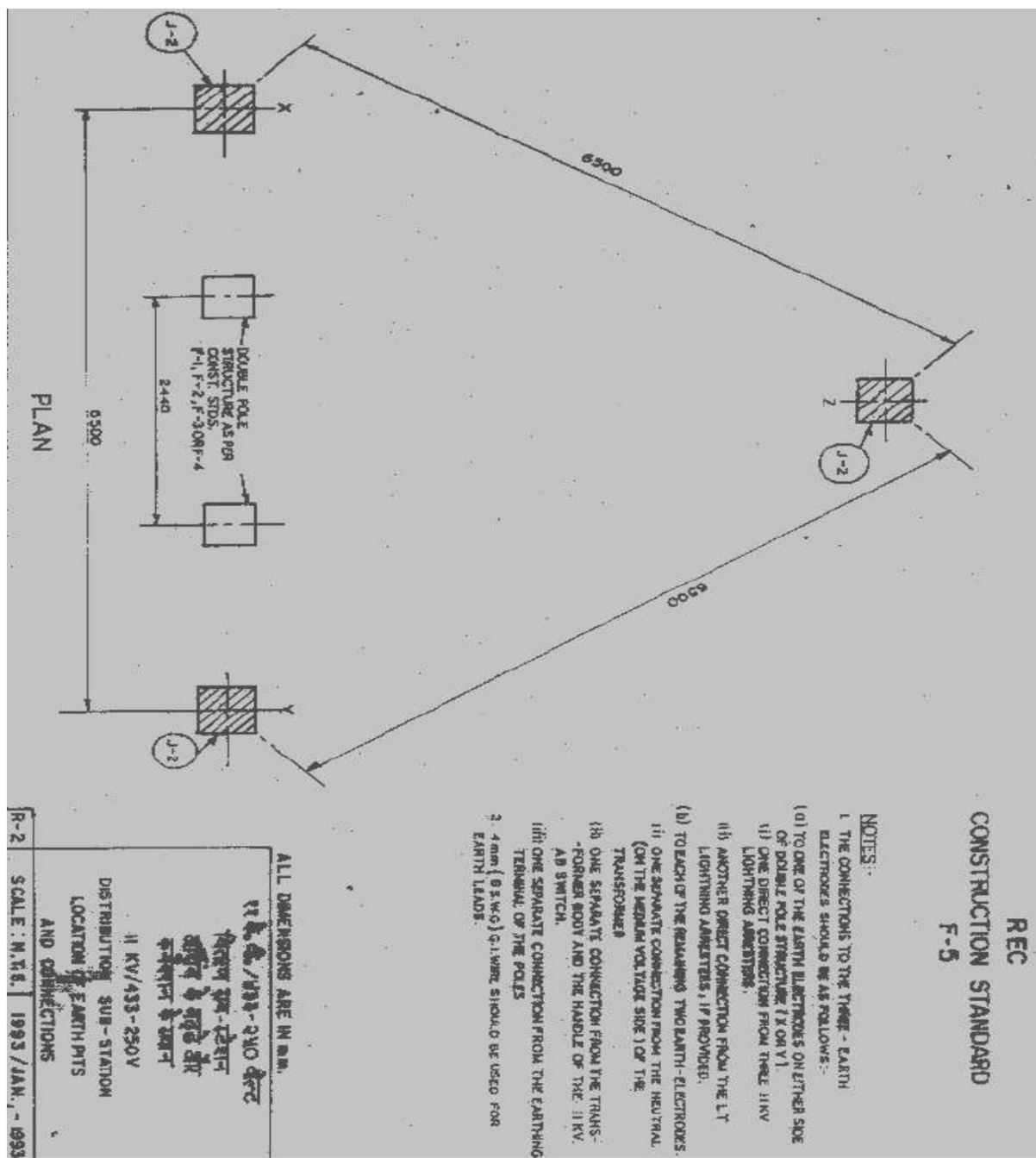
कुंडली भू-सम्पर्कन

COIL EARTHING

01. Earthing

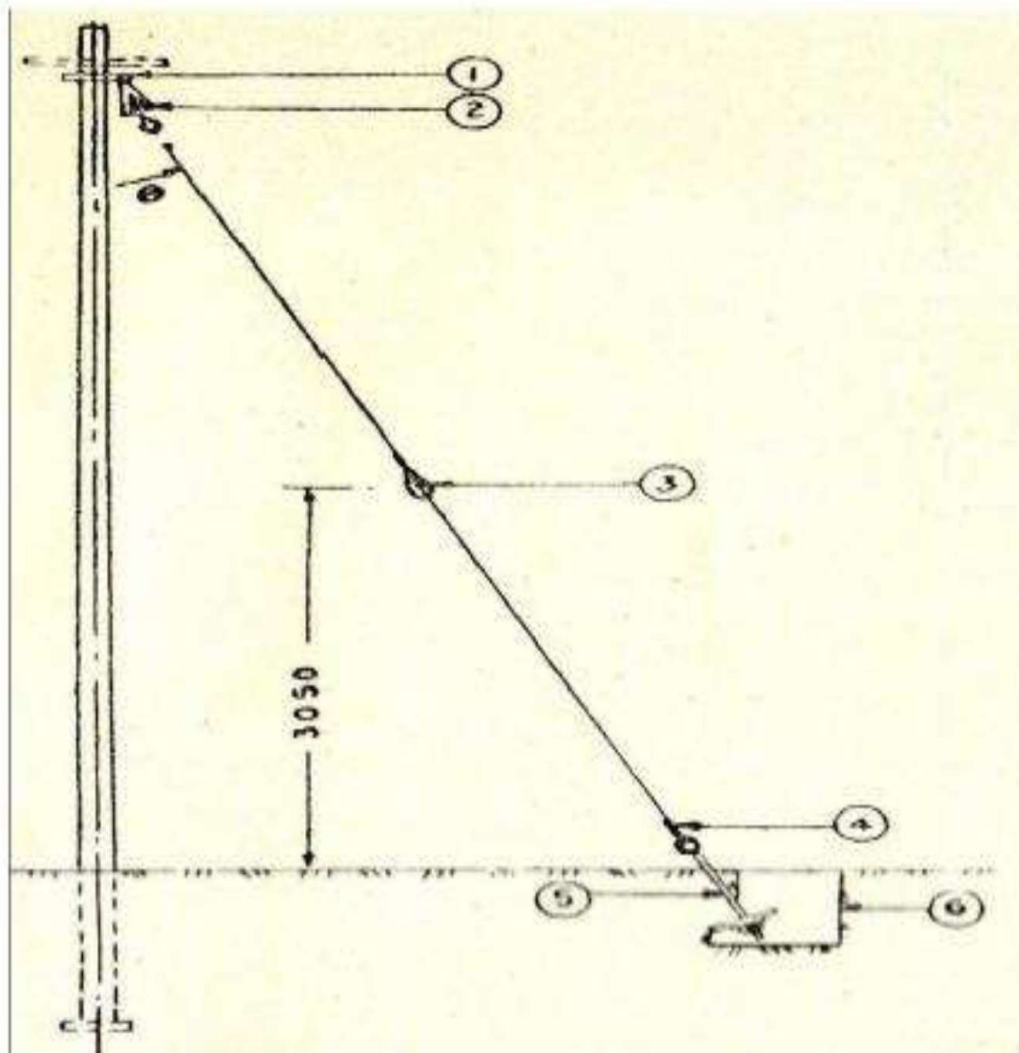


02. Arrangement of Transformer Centre



03. Earthing Arrangements of Transformer Centre

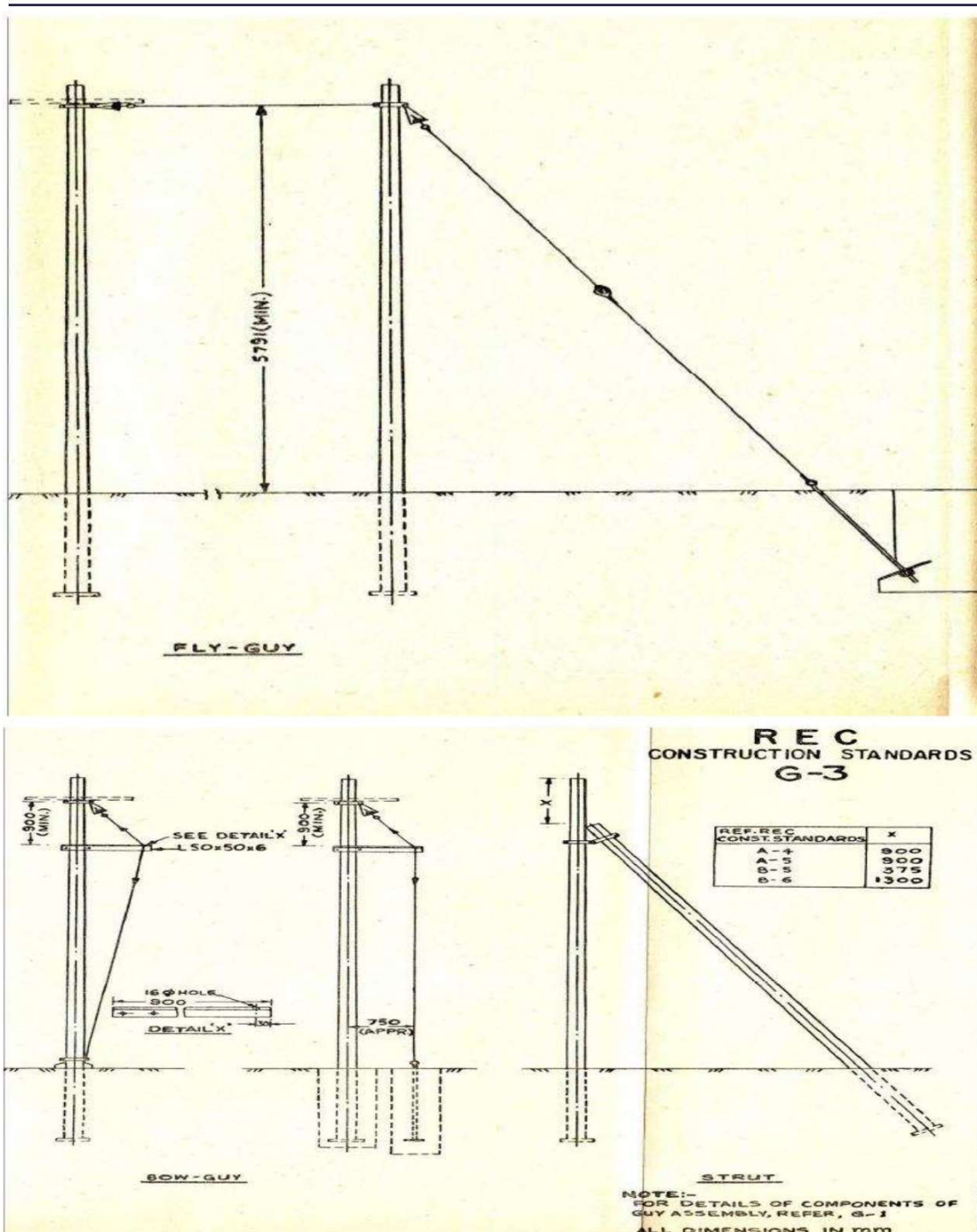
Arrangements of Guy



- | | | |
|---------------------------|-----------------------------|----------------------------|
| 1. Guy Clamp | 2. Turn Buckle and Eye Bolt | 3. Guy Insulator |
| 4. Guy Wire | 5. Guy Rod | 6. Guy Pit (2 X 2 X 5 ft.) |
| 7. θ 30 to 40 Deg. | | |

- | | | |
|---------------------------|-----------------------------|----------------------------|
| 1. Guy Clamp | 2. Turn Buckle and Eye Bolt | 3. Guy Insulator |
| 4. Guy Wire | 5. Guy Rod | 6. Guy Pit (2 X 2 X 5 ft.) |
| 7. θ 30 to 40 Deg. | | |

04. Arrangement of Guy



Double Pole (D.P.) Structure

05. Double Poles (D.P.) Structure

[illegible]

P.C. SUPPORTS	SA LONG	2 Hrs.
CHANNELS (FOR STRAIN INSULATORS)	100 R50 - 2800 (APPROX.)	2 Hrs.
CHANNELS (FOR A.B. SWITCH)	75 R40 - 2800 (APPROX.)	2 Hrs.
SPOTS (SUPPORT FOR A.B. SWITCH)	35 R35 R5 - 2800 (APPROX.)	2 Hrs.
ANDERS (FOR CROSS BRACKING)	50 R250 R4 - 2800 (APPROX.)	4 Hrs.
A.B. SWITCH	POLYCENTRAL TYPE	1 Hrs.
WIN STRAIN INSULATORS WITH HANGINGS		6 Hrs.
DAY BELTS	REIN. REC. CONST. STD. G-2	2 Hrs.
EXHAUST MATERIAL CLIPPS, NETS BOXES ETC.		AS REQUIRED
PIPE AND PARTINGS	REIN. REC. CONST. STD. J. & E.	1 Hr.
WALLS PLATE	REIN. REC. CONST. STD. W-1	2 Hrs.

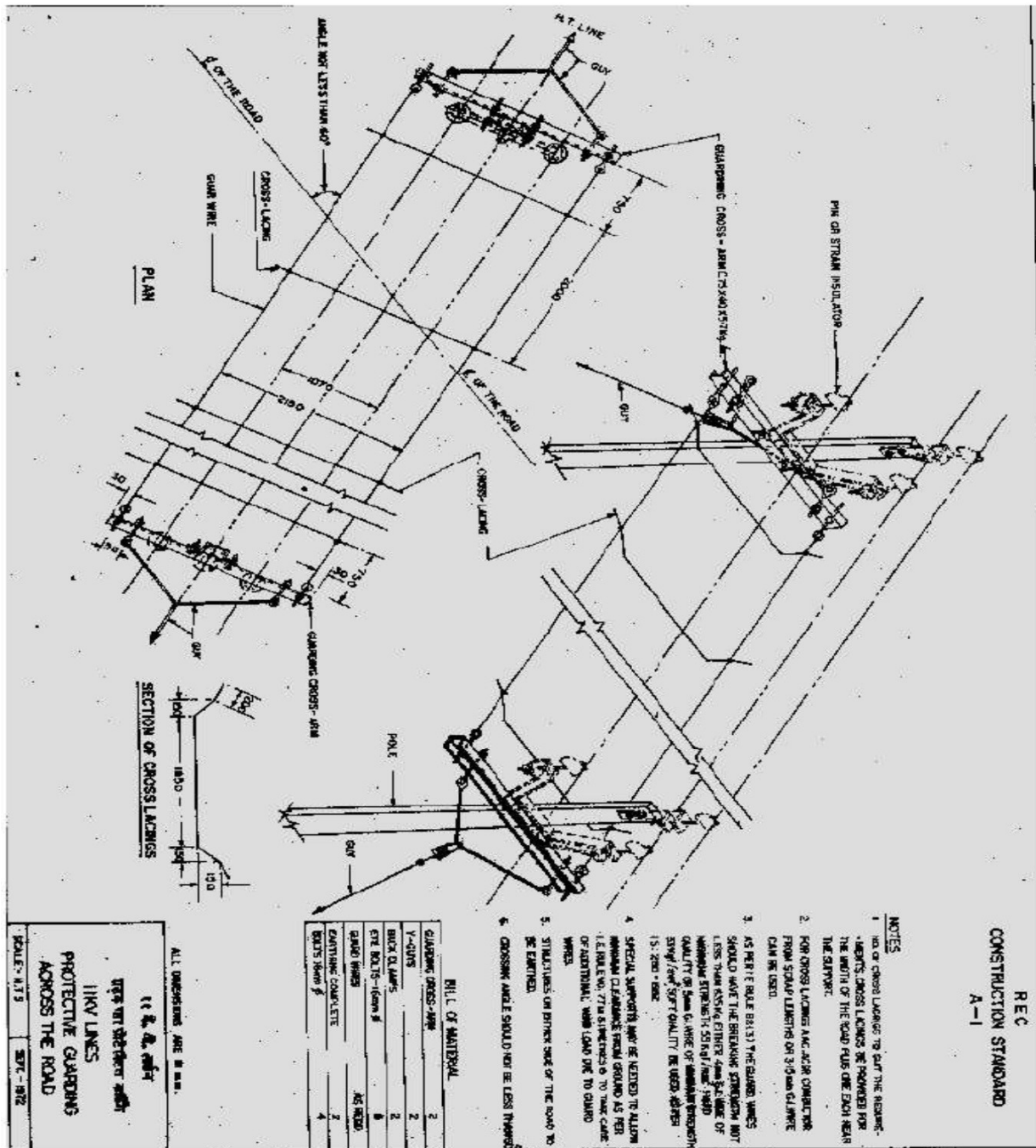
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ALL INFORMATION ARE IN

SPUR LINES
TAPPING ARRANGEMENT
FIRST STRUCTURE OF LEMSTRY

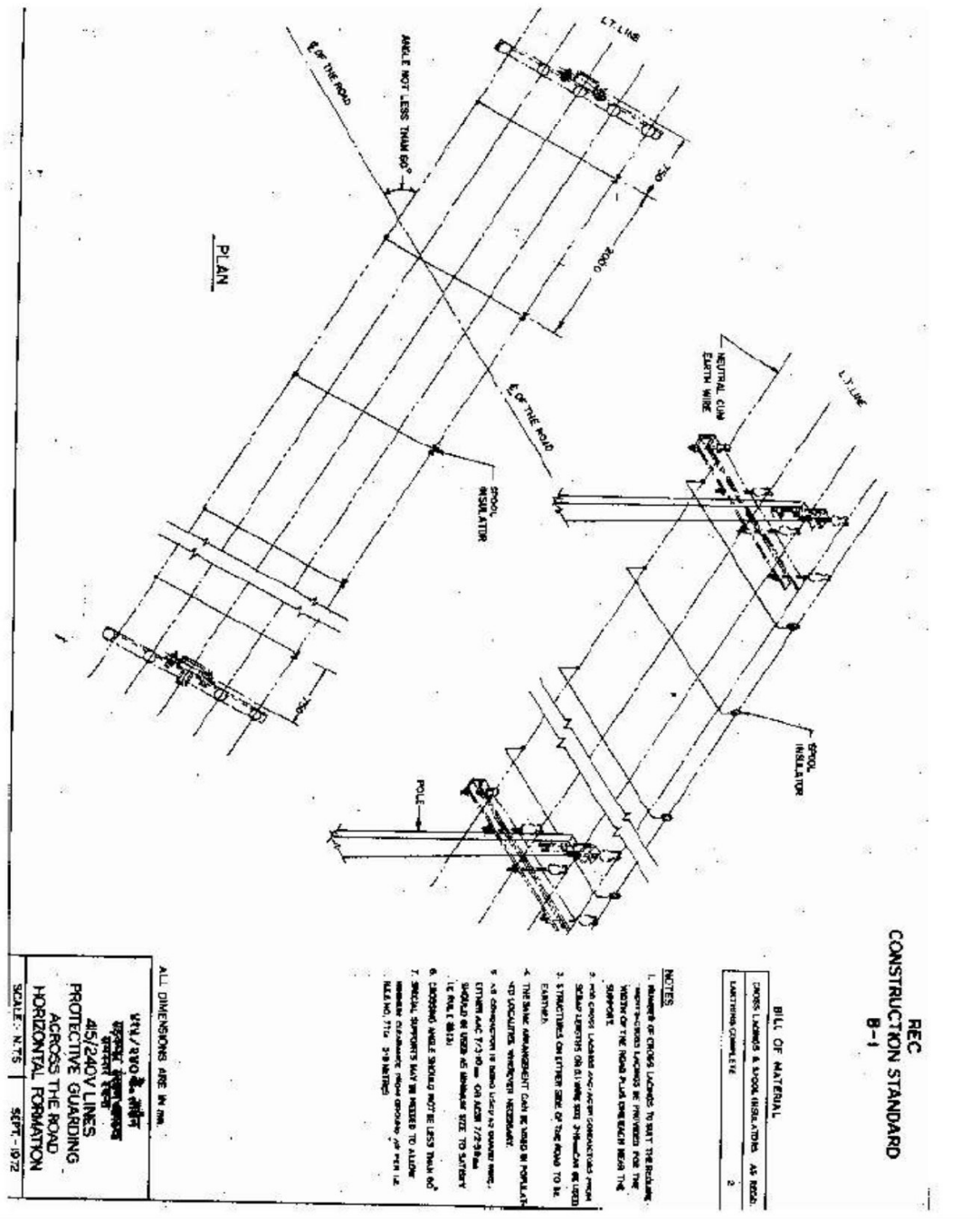
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Guarding under 11 KV Line



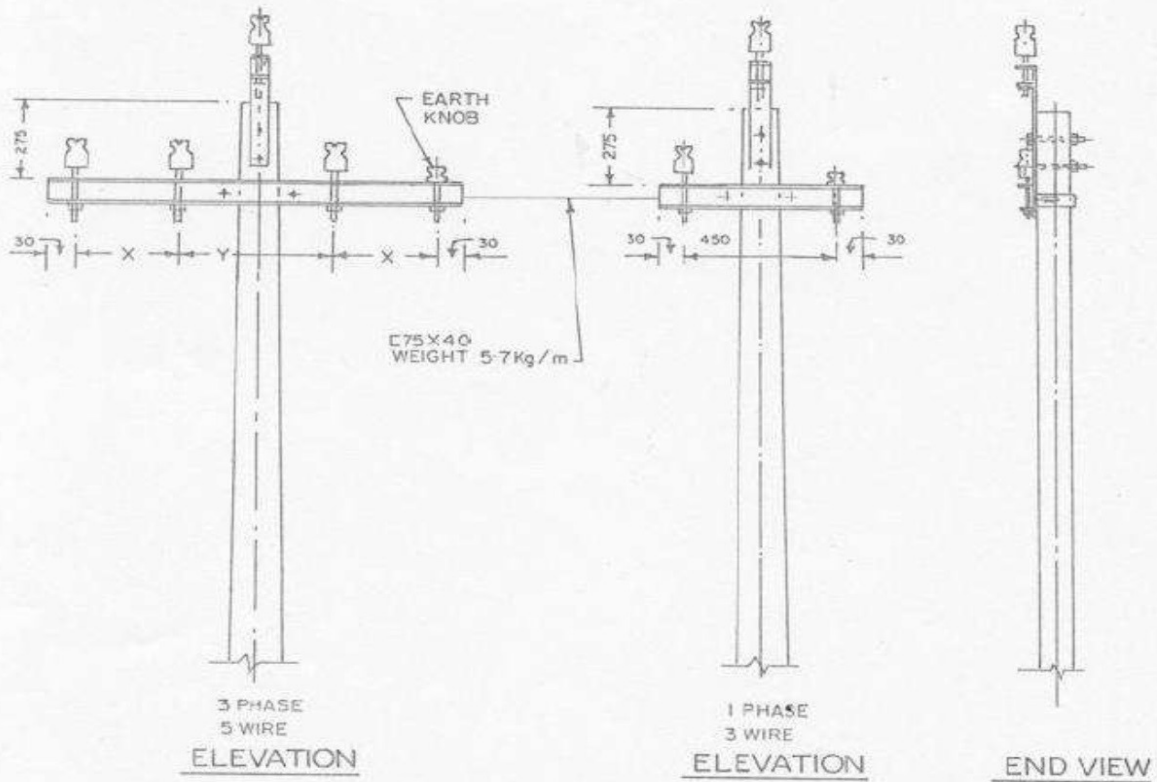
07. Guarding Under The 11KV Lines

Guarding under LT Line



08. Gaurding Under The LT Lines

REC
CONSTRUCTION STANDARD
B-3



TANGENT LOCATION
MAXIMUM SPAN - 67 METRES

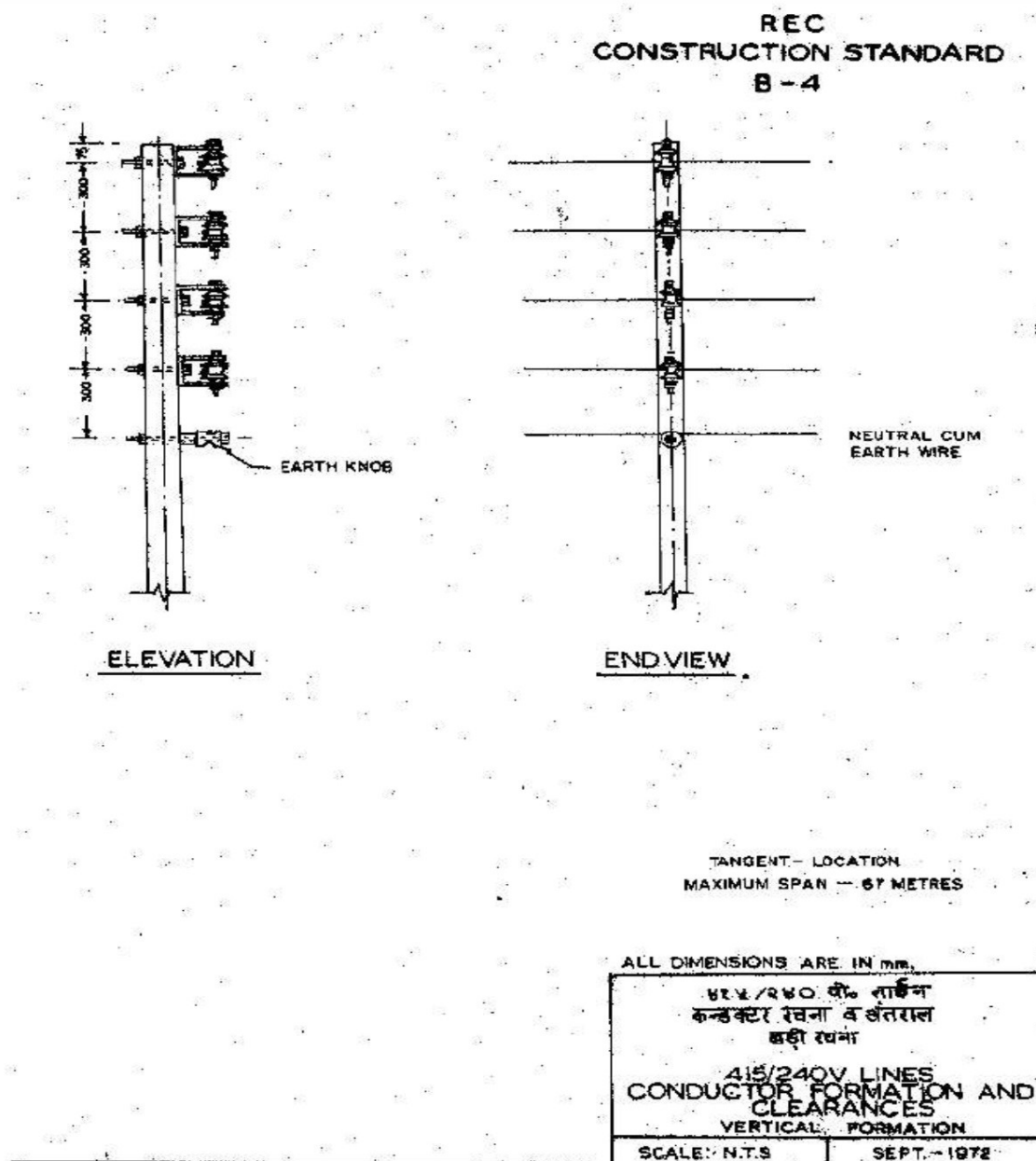
SAGS	HORIZONTAL SPACING	
	X	Y
UP TO 750	300	450
750 TO 1200	450	450

ALL DIMENSIONS ARE IN mm

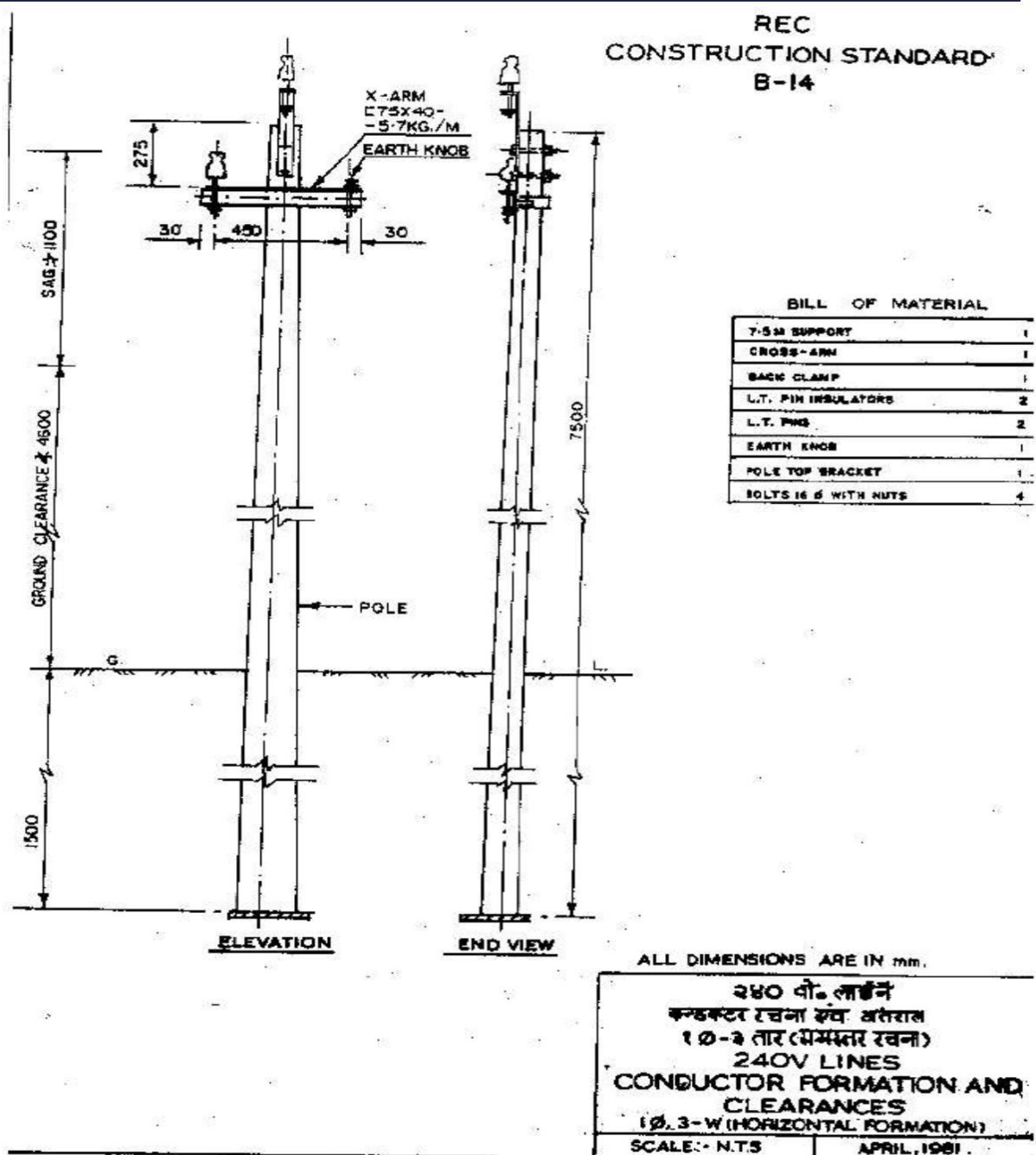
४१५/२४० वी० लाईन
कन्डक्टर रचना व अंतराल
समस्तर रचना
415/240V LINES
CONDUCTOR FORMATION AND
CLEARANCES
HORIZONTAL FORMATION
SCALE: N.T.S. | SEPT. - 1972

09. LT Line Horizontal Formation and Clearances (415 V)

LT Line Vertical Formation and Clearances (415 V)

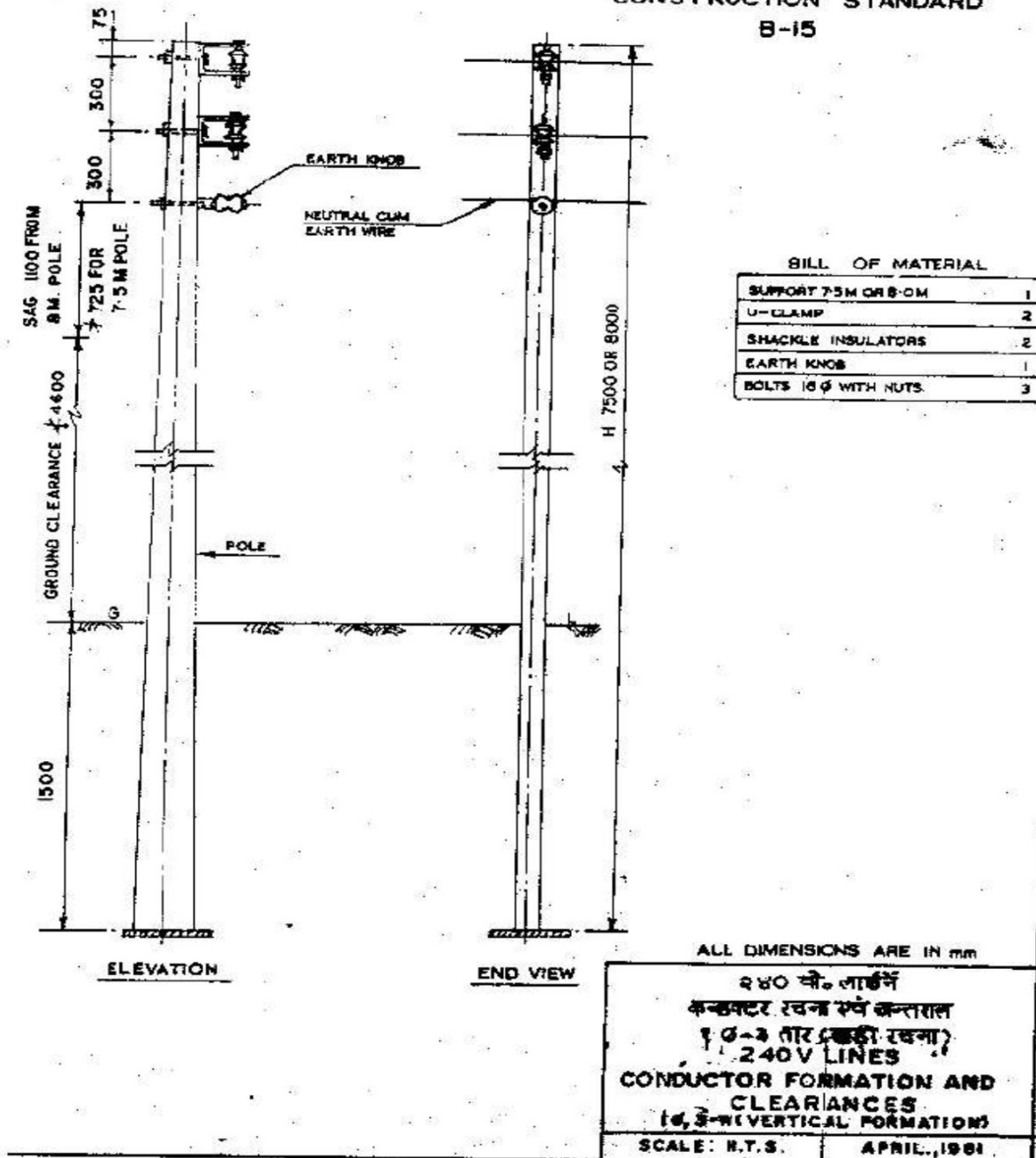


10. LT Line Vertical Formation and Clearances (415 V)

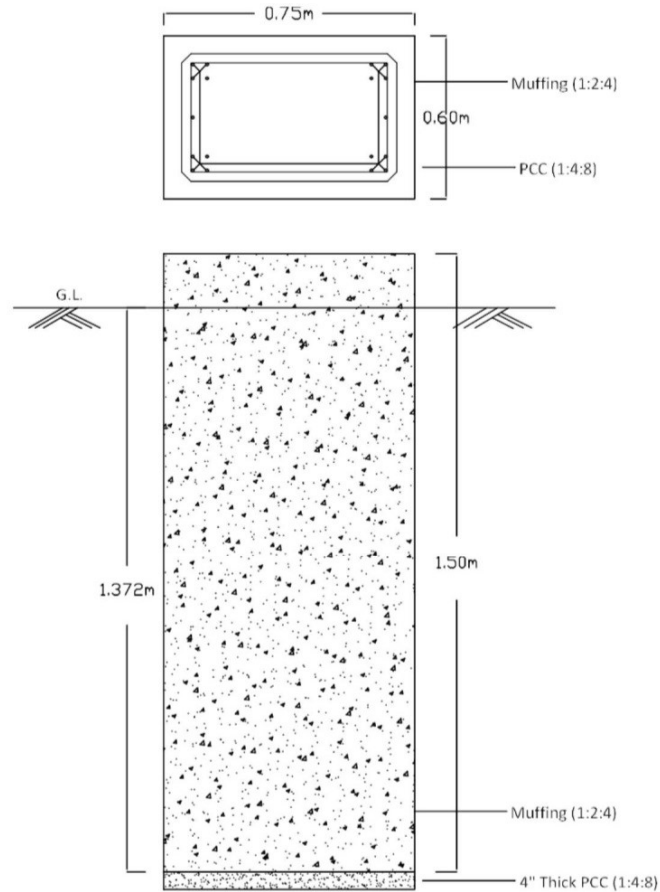


11. LT Line Vertical Formation and Clearances (210 V)

REC
CONSTRUCTION STANDARD
B-15



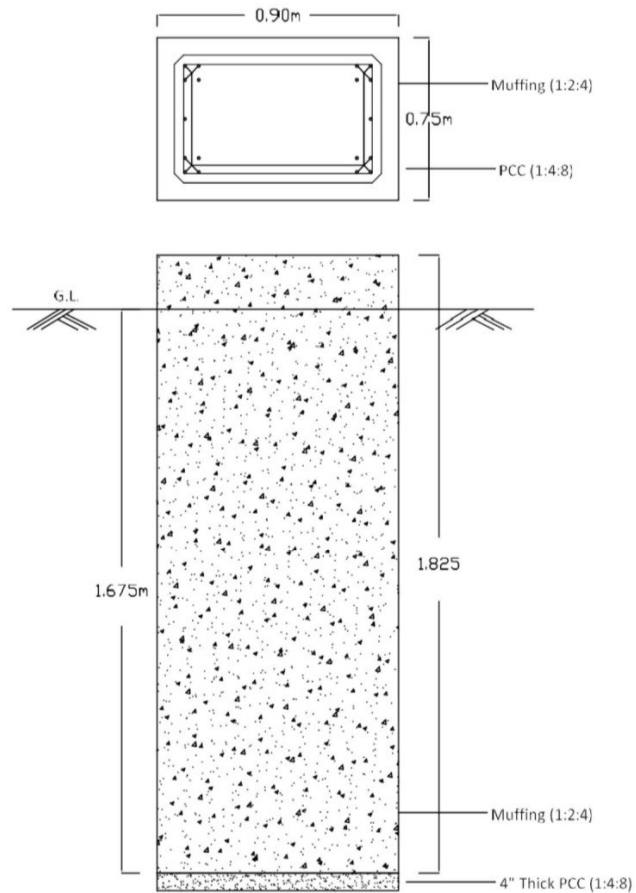
12. LT Line Vertical Formation and Clearances (210 V)



PSC POLE Muffing

For 8M PSC pole

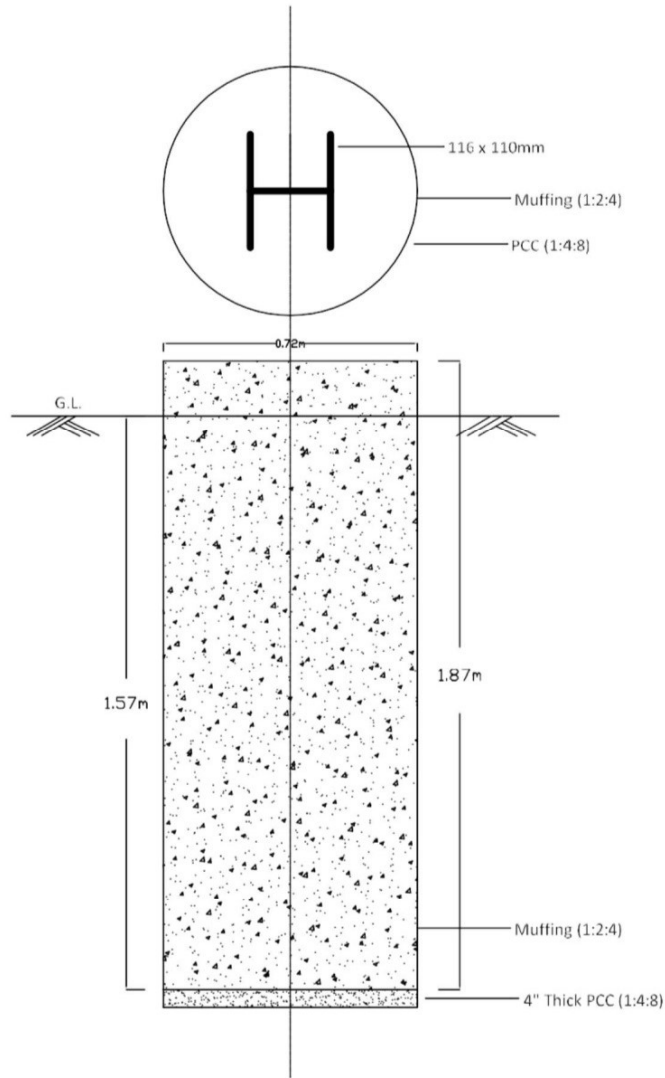
13. PSC 8 Meter Pole Muffing



PSC POLE Muffing

For 10M PSC pole

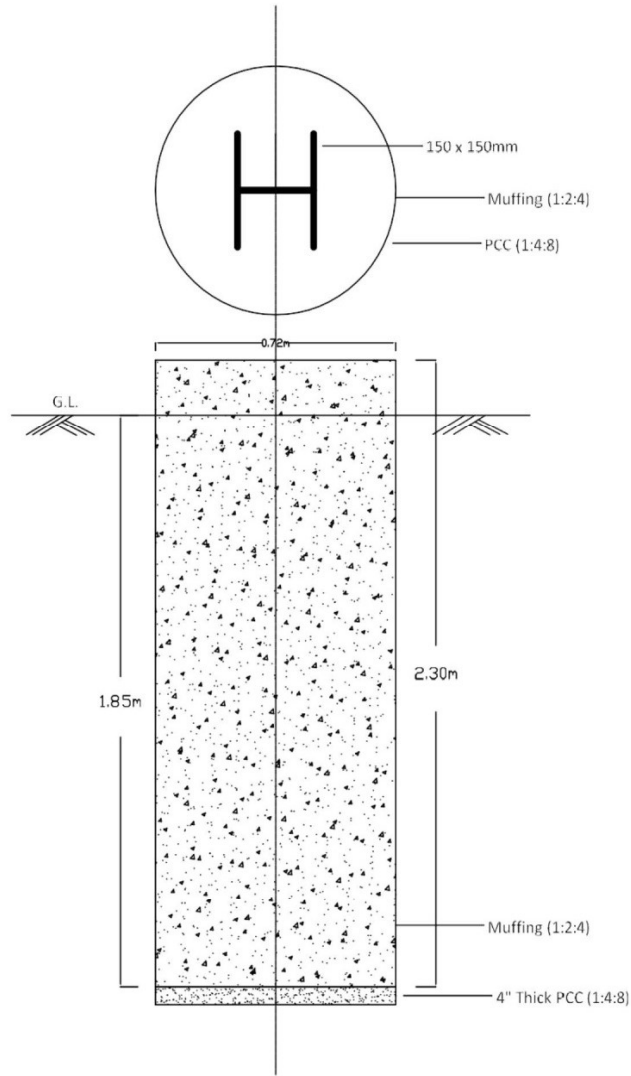
14. PSC 10 Meter Pole Muffing



11m Girder POLE Muffing

(3.14 x 0.36 x 0.36 x 1.87)

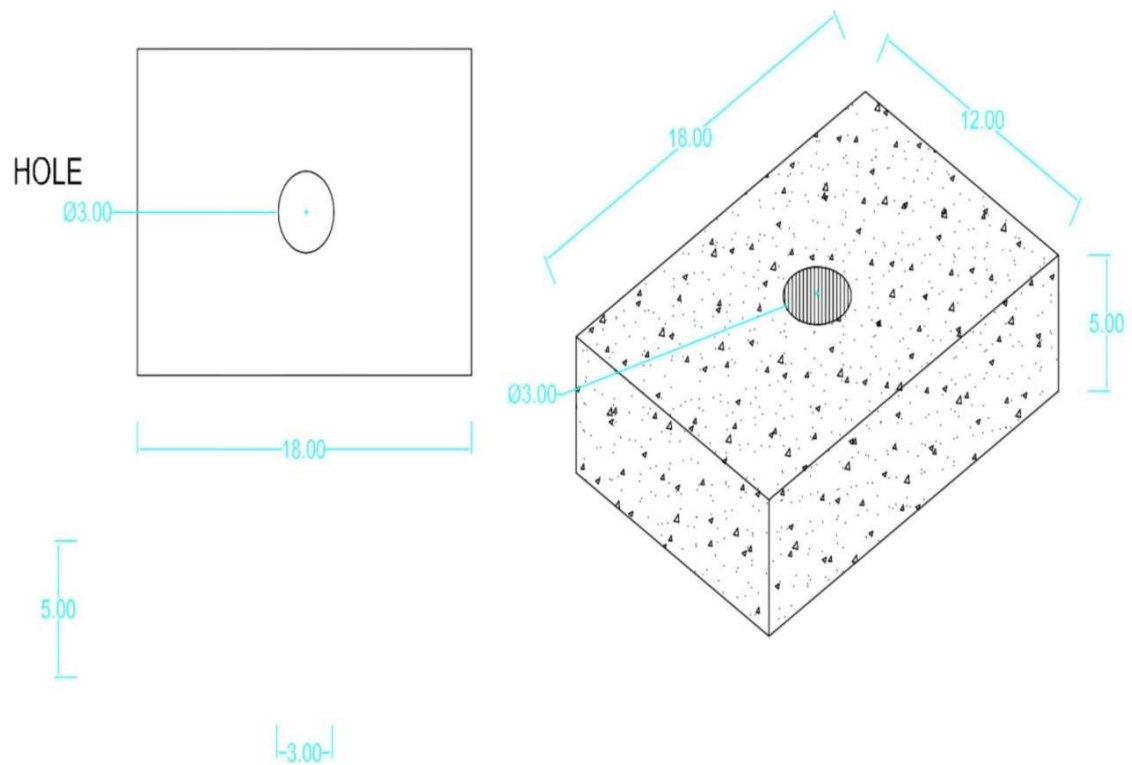
15. RSJ 11 Meter Pole Muffing



13m Girder POLE Muffing

(3.14 x 0.36 x 0.36 x 2.30)

16. RSJ 13 Meter Pole Muffing



C. C. BLOCK

DAKSHIN GUJARAT VIJ CO. LTD.

NAME : C. C. BLOCK

Not to scale. All dimensions are in inch.

Date:

17. CC Block Design