

PRASAR BHARATI
(Broadcasting Corporation of India)
OFFICE OF THE ADG(E)(SOUTH ZONE)
ALL INDIA RADIO & DOORDARSHAN
Swamy Sivananda Salai, **Chennai - 600 005**

NO. ADG(E)(SZ)/PUR/NIT-10/SRMST/2011-12/

Date:- 21.09.2011

SUB: TENDER FOR SITC of 150 Mtr S.S. Tower at HPT, Cannanore- Reg.

Sir,

Kindly find enclosed NIT for the Supply, Installation, Testing and Commissioning (SITC) of 150 Mtr S.S. Tower at HPT, Cannanore(Kerala) All *India Radio Studio / Transmitter Sites*.

Tender documents can be collected from this office from 22.09.2011 to 20.10.2011 on all working days on payment of Rs. 530/- as tender cost in the form of Cash / Demand Draft in favour of THE ADG(E) (South Zone), AIR & TV, Chennai-5, against each tender. Prebid meeting is arranged at HPT, Cannanore. on 12.10.2011. Attending pre bid meeting is mandatory. Only the firm attending the pre-bid meeting can participate in the tender.

Tender documents can also be downloaded from the web sites
www.cesairdd.org.in/tenders.html
www.allindiaradio.org/tender.html.
www.tenders.gov.in

If the tender documents are downloaded, Demand Draft for Rs. 530/- in favour of THE ADG(E)(South Zone), AIR & DD, Chennai-5, against each tender shall be enclosed in separate cover along with the tender otherwise the tender shall be rejected.

The tenders will be received at the Office of The Addl. Director General (E)(SZ), AIR & DD, Swamy Sivananda Salai, Chennai-5, up to 1230 Hrs on 21.10.11. The technical bid and E.M.D. will be opened on the same day at 1500 Hrs. The commercial bid will be notified after recommendation of technical committee.

Yours faithfully,

(T.Shanmugaraju)
Dy. Director (Engg)
for Addl. Director General(E)(SZ)



PRASAR BHARATI
(BROADCASTING CORPORATION OF INDIA)
OFFICE OF THE ADDITIONAL DIRECTOR GENERAL (E) (SZ)
AIR and DOORDARSHAN, CHENNAI
SWAMY SIVANANDA SALAI CHENNAI 600005



COST OF TENDER Rs.530

No:ADG(E)(SZ)/PUR/NIT-10/SRMST/2011-12

Dated:21.09.2011

NOTICE INVITING TENDER

1. **DESCRIPTION:**

Sealed tenders are hereby invited for and on behalf of the President of India, from reputed Engineering Contractors in the field of erection of 150 mtr SS tower at HPTV CANNANORE, KERALA.

2 **Scope of work:**

150 Metre SS tower of 187.7 metric ton to be erected on the tower foundation already cast at site. The tower is of M/S Triveni Structural Limited Allahabad design and materials weighing about 87 metric tons are available at site.

The tenderers are to identify the available materials at site, manufacture / fabricate the rest of materials required for erecting the tower, erect the tower, haul up VHF Band III antenna system and feeder cables, supply and install electrical accessories such as Aviation Lights, power supply cables lightning arrestors, earthing of the tower etc. and paint the tower with one coat of etch primer, one coat of zinc chromate primer and two coats of alternating band international orange and white as per civil aviation norms (including supply of paint). Detailed scope of work is given in Annexure – I.

3 **PRE BID MEETING (MANDATORY):** This work involves a combination of fabrication of new materials, using the existing material at site, fabrication and erection etc to be done as per M/S Triveni Structural Limited Allahabad design and drawing, and Erecting the tower on the existing foundation at site. Hence a Pre bid meeting is mandatory component of tender. **Pre Bid meeting will be held at HPT Cannanore KERALA on 12/10/2011 1100hrs. Attending pre bid meeting is mandatory. Only the firm attending the pre-bid meeting can participate in the tender.**

4. The tender shall consist of three parts (bids) namely:

i) **EMD:** As per clause 29 of this tender document E.M.D. should be enclosed in a separate sealed envelope. Technical bids of those only tenderers will be opened who have submitted the required E.M.D.

ii) **TECHNICAL BID:** Technical bid should contain the proof of past experience in the supply and execution of similar works and confirmation to the technical specifications / schedule as given in Annexure - I. This should be

submitted in a separate sealed envelope with 'TECHNICAL BID FOR ERECTING 150 METER SS TOWER AT HPT CANNANAORE (KERALA) DUE TO OPEN ON 21/10/11' written on it. The technical bid should also contain the bill of materials without price.

iii) COMMERCIAL BID: The commercial bid should contain the price bid and acceptance of the commercial terms & conditions of the tender documents. **The price should be quoted item wise** as given in Annexure- I. This should be submitted in a separate sealed envelope. The envelope should be superscripted with 'COMMERCIAL BID FOR ERECTING 150 METER SS TOWER AT HPT CANNANAORE (KERALA)' written on it.

5. The tenders shall be submitted in sealed envelopes with the name of the work, date of opening and the bid enclosed written on the envelopes.
6. The above mentioned envelopes (3 Nos.) should be enclosed and submitted in another large size envelope duly sealed and marked with the name of the work and date of opening. The envelope will be received at the office of the Additional Director General (E) (SZ), AIR and **Technical bid** will be opened on the **21/10/11 at 1500 hrs**. The date of opening of the **commercial bid of the technically qualified tenders** will be intimated.

In case the tender opening date becomes holiday, the bids will be received and opened at the same specified time on the next working day. Bids received late or submitted after the scheduled submission time on scheduled date will not be entertained and will be returned back unopened.

7. DELIVERY PERIOD:-

All the works as per the schedule should be completed in all respects and handed over within **6 months** from the **date of awarding work order**. The tenderer shall furnish within three week of the award of work, the detailed time schedule and estimated completion time for various parts of work. The firm has to ensure schedule is firm and final and work should be executed strictly as per schedule.

8. SECURITY DEPOSIT:-

The tenderer shall furnish the security deposit within 2 weeks of placement of order at the rate of 10% of the contract value subject to a maximum of Rs.5 lakhs at the time of signing the contract. The security deposit shall be furnished in favour of the ADDITIONAL DIRECTOR GENERAL (SZ), AIR & TV, CHENNAI in any one of the forms mentioned below :-

a) Cash in full. b) DD payable at Chennai c) Post office / National Savings Certificates d) Term deposits in any Nationalized bank e) Bank Guarantee from any Nationalized bank valid up to the end of warranty period as per contract. The EMD received along with the bid will be returned after receipt of Security Deposit.

9. PAYMENT TERMS AND BILLS:-

9.1 The total charges quoted for supply (of short materials) and erection of tower will be released in stages as follows (**Sub total A of the commercial bid**):-

- ❖ 25% on Supply and erection of tower up to 40 metres height
- ❖ 20% on Supply and erection of tower up to 80 metres height
- ❖ 20% on Supply and erection of tower up to 120 metres height
- ❖ 25% on Supply and erection of tower up to 150 metres height including other works like Platform, ladder, cable tray (Vertical and Horizontal) etc
- ❖ Balance 10% will be released after handing over the tower.

9.2. 80% of the cost of the Materials supplied like paint, AOL, Electrical items, lightening arrestor (except tower materials) shall be released after the items are received (**Sub total B of the commercial bid**) and inspected at the site and balance 20% will be released after handing over the tower.

9.3. 90% of the contracted price for painting (Labour charges) shall be released on completion of painting (**Item -1 of labour charges of Sub total C of the commercial bid**)

9.4. 90% of the contracted price shall be released on completion of all electrical work (Labour charges) including fixing of AOL, laying of power supply cables, earthing, lightening arrestor etc. (**Item -2 of labour charges of Sub total C of the commercial bid**)

9.5. On completion of hauling up of the antenna systems (labour charges) and hauling of RF cable 90% of the contracted price (labour charges) will be released (**Item -3 of labour charges of Sub total C of the commercial bid**)

9.6. Balance 10% of the contract price for labour charges will be released after the handing over of the Tower (**Sub total C of the commercial bid**).

The bills shall be submitted by the Contractor in triplicate to the consignee for verification and onward dispatch to the paying authority.

10. TERMS OF DELIVERY:-

Free delivery at the site. The Firm will arrange to receive the materials at site. The purchaser however will provide storage space to the firm for storing the material with the clear understanding that storage is being arranged at the risk of the firm.

11. DUTIES & TAXES:

a) **Excise Duty:** The prices should contain an element of Excise Duty which should be indicted separately. Any statutory variation in the Excise Duty taking place after acceptance of tender within the delivery date will be adjusted by the purchaser on production of documentary proof.

b) **Sales Tax:** The prices should be exclusive of ST/CST. The prevailing rate of ST/CST should be clearly mentioned the tender. The following certificates are to be submitted by the supplier along with the bills :

“Certified that the goods on which the sales tax has been charged have not been exempted under central sales tax act of the rules made thereunder. The amount charged on account of sales tax on these goods is not more than what is payable under provision of the relevant act or the rules made thereunder”.

“Certified that we are registered as dealers in the State under registration number for the purpose of Sales Tax”. Any statutory variation in the ST/CST

taking place after acceptance of tender within the delivery date will be adjusted by the purchaser.

- c) **Works Contract:** If work contract tax is leviable by the concerned State Govt. on works contracts, the same shall be clearly mentioned in the tender.

12. GUARANTEE TERMS:-

As mentioned in the Annexure-I of the tender document

13. PENALTY FOR DELAY:-

If the contractor is unable to complete the entire job within the time limit, the purchaser at his option allow such additional time as he may consider justified with / without altering the terms and conditions of the order. In the event of failure of the contractor to complete the work within the stipulated time or the extended time the purchaser has the right to impose a penalty of Rs.350/- per week or part thereof for every Rs.1,00,000/- of the contract price. The contractors liability for delay however shall not exceed 5% of the total contract price.

14. INSPECTION:-

The stores to be supplied shall be offered for inspection as soon as it is ready to be dispatched to the site. The stores supplied shall be offered for inspection as soon as it is delivered at the site. Materials used for erection and workmanship will further be subjected to inspection at all the stage until the entire job is completed.

- a) Inspecting authority:

THE ADDITIONAL DIRECTOR GENERAL (E) (SZ),
AIR & TV,
Swamy Sivananda Salai,
Chennai – 600 005.

- b) Inspecting Officer: Authorised Representative of ADDITIONAL DIRECTOR GENERAL (E) (SZ) AIR and TV Swamy sivananda salai Chennai for Initial and final inspection .

15. DESPATCH INSTRUCTIONS:

The packing and marking of goods shall be as laid down in clause-12 of general conditions of contract DGS & D69 (revised).

- a) The contractor shall arrange to dispatch the goods duly insured direct to the consignee after prior intimation for delivery at site by whichever mode of transport he may choose, to ensure safe delivery of goods at site. Unloading shall be done at site at the contractor's expense. Only storage space will be provided by the consignee. The contractor will provide his own security like locking etc. and store the materials at his own risk.
- b) The contractor must submit his challans in triplicate to the consignee sufficiently in advance of the actual arrival of the stores at the destination failing which he will be held responsible for any subsequent discrepancies between the actual receipt and the material detailed in the challan received later. The challans must also contain the following information.
1. Brief description of stores
 2. Railway/Lorry receipt No. & Date
 3. Order No. & Date

4. Inspection note No. & date

- c) The consignment received at site shall be opened and checked for shortages/damages by the contractor himself. He shall show all the materials received at site to the consignee to enable him to certify receipt of stores in good condition. However, in exceptional circumstances, the contractor may request the consignee to check the consignment on his behalf. In such cases the consignee shall notify the contractor of the shortage/damages immediately on receipt of consignment at site. Expenses incurred, if any, in checking the consignments shall be debitable to the contractor's account.
- 16. INSURANCE:** The contractor shall arrange for the insurance covering the risk during transit_storage. All the charges for such insurance shall be borne by the contractor.
- 17. ADDITIONAL QUANTITIES** The purchaser reserves the right to place order for additional_quantity up to 100% of the ordered quantity at the same rates and terms and condition during the currency of the contract.
- 18. GUARANTEE/WARRANTY:** The contractor shall accept clause 18 of the Form No. DGS & D-71 with exception that his obligation shall be limited for a period as in Annexure-I clause 15. During the guarantee period, the contractor shall repair or replace free of charge any parts that will become defective due to faulty material design or workmanship.
- 19. CONDITIONS OF CONTRACT** DGS & D-68 (Revised) and DGS & D-71 as amended up to date. However, such of these conditions stipulated on this tender shall supersede corresponding conditions in DGS & D-71. The contractor shall sign a contract agreement form in triplicate in the prescribed proforma and submit the same along with Security Deposit within two weeks. The complete form with the purchaser's signature shall be sent back to the contractor. No supplies will be made and no work shall start unless the agreement is signed by the contractor and the purchaser.
- 20. SPECIAL CONDITIONS:** In addition to the terms and conditions contained in the general conditions of contract DGS & D-68 (Revised) and DGS & D-71, the contract would also be governed by the following special conditions.
- i) In case where only a portion of the stores ordered is tendered for inspection at the fag end of the delivery period the purchaser reserves the right to cancel the balance quantity not found acceptable after carrying out the inspection at the risk and expense of the contractor. If however, the stores tendered for inspection are found acceptable the purchaser may grant an extension of the delivery period subject to the following conditions:-
- a) That no increase in price on account of any statutory increase in or fresh imposition of customs duty, excise duty, sales tax or on account of any other tax or duty levy able in respect of the stores specified in the acceptance of tender shall be admissible on such of the stores as are delivered after the expiry of the delivery period stipulated in the A/T.
 - b) That notwithstanding any stipulation in the contract for increase in price or any other grounds no such increase which takes place after the date of delivery stipulated in the A/T shall be admissible on such of the stores as are ordered after the expiry of the delivery period stipulated in the A/T.
 - c) But, nevertheless the purchaser shall be entitled to the benefit of any decrease in price on account of reduction in or remission of customs duty, excise duty, sales tax on account of any other ground stipulated in the price variation clause which takes place after the expiry of the date of delivery stipulated in the A/T.
 - d) The contractor shall not dispatch the stores till such time extension in delivery period

is granted by the purchaser and accepted by the supplier before and extension letter as aforesaid is issued by the purchaser, the same are deemed to be subject to the conditions set out in preceding paragraph.

- ii) In case where the entire quantity has not been tendered for inspection within the delivery period stipulated in the A/T and the purchaser chooses to grant an extension of delivery period, the same would be subject to conditions mentioned in (i) above.
- iii) The contractor shall refund any advance / part payment issued to him in respect of the rejected stores within 14 days of the receipt of intimation from the consignee about the rejection of such prices this is strictly without prejudice and in addition to the rights provided in the clause-17 (8) of form DGS & D-67.
- iv) The contractor is required to replace the rejected stores forthwith but in any event not later than a period of 14 days from the date of rejection and the contractor shall bear all the costs of such replacement including freight, if any, but without being entitled to any extra payment or any other account.
- v) Where under the contract, price payable is fixed F.O.R. dispatching station, the contractor shall, if the stores are rejected at destination by the consignee, be able to, in addition to his other liabilities (including refund of price recoverable in respect of the stores rejected) to re-imburse to the purchaser the freight and all other expenses incurred by the purchaser in this regard.

21. ENFORCEMENT OF LABOUR LAWS: While engaging labour for carrying out obligations under the contract the contractor shall satisfy the conditions laid down under contract labour (Regulation and Audition) Act 1970 and (Central) Rules 1971 as amended from time to time and observe all formalities required as per the said Act/Rules. The supplier shall also observe the provision under minimum wages act 1948(Central) Rules 1950 amended from time to time while engaging labour.

22. FORCE MAJURE : If any time during the continuance of the contract the performance in whole or in part by the contractor shall be prevented or delayed by reason of any war, hostility acts of the public enemy, Civil commotion, sabotage, fires, floods, explosions, epidemics, guarantee restrictions, strikes, lock-outs or acts of God (herein after restrictions refer to as events) and provided notice of happenings of any such eventuality is given by the contractor within 21 days from the date of occurrence thereof, the purchaser shall by reason of such event neither be entitled to cancel this order nor shall have any claim for damages against the contractor in respect of such non-performance or delay in performance and delivery shall be resumed as soon as practicable after such events have come to an end or ceased to exist.

Provided further that if the performance in whole or part or any obligation under this order is prevented or delayed by reasons of any such event for a period exceeding 180 days, the purchaser and the contractor shall meet to find a natural agreement to any effect resulting the reform or the purchaser may at his option cancel order provided also that if the order is cancelled under this clause, the purchaser shall be at liberty to take over from the contractor at order prices all unused, un-damaged and acceptable material bought out components and stores in course of manufacture in the possession of the supplier at the time of such cancellation or such portion thereof as the purchaser may deem fit accepting such material, bought out components and stores as the supplier may with the concurrence of the purchaser elect to retain.

23. ARBITRATION OF CONTRACTUAL DISPUTES: If a dispute arises out of or in connection with the contract, or in respect of any defined legal relationship associated therewith or derived there from, the parties agree to submit that dispute to arbitration under ICADR Arbitration Rules, 1996.

The Authority to appoint the arbitrator(s) shall be the International Centre for Alternative dispute resolution.

The International centre for Alternative Dispute Resolution will provide administrative services in accordance with the ICADR Arbitration Rules, 1996.

- a) The number of arbitrator(s) shall be one. who has legal as well as technical background.
- b) The language of the arbitration proceedings shall be English.
- c) The place of arbitration proceedings shall be Chennai.

The arbitrator shall preferably be a Structural Engineer.

24. PRICE & STATUTORY DUTIES: - Prices should be firm and for free delivery at site inclusive of transit insurance and excise duty.

25. INCOME TAX: - PAN number obtained from Income Tax may be submitted along with the tender.

26. VALIDITY OF TENDER: - The tendered prices and the total cost of tender shall be valid for **90 DAYS** from the date of opening.

27. TRANSIT INSURANCE: - The Contractor shall arrange for the insurance covering the risk during transit, storage and installation till commissioning. All the charges for such insurance shall be borne by the contractor.

28. Printed terms and conditions of firms will not be considered as forming parts of their tender.

29 E.M.D. :- The Earnest Money Deposit of Rs.2,50,000/-(Rupees Two Lakh and Fifty thousand only) should accompany along with the tender in the form of crossed demand draft in favour of the Additional Director General (E) (SZ), AIR & TV, Chennai 600 005 from any nationalized bank, without which the tender will not be considered. **The EMD should be submitted in a separate sealed cover. The quotations of those tenderers who have not submitted the requisite EMD will not be opened.**

30. Tenders which do not fulfil any of the above conditions or which are incomplete in any respect are liable for summary rejection.

31. Canvassing in connection with the tender is strictly prohibited and tenders submitted by the tenderers who resort to canvassing will be rejected.

32. **EXPERIENCE:** - As mentioned in clause 5 of Annexure.-I of the tender document

33. The successful tenderer will be required to remit security **deposit as specified in clause 8 of tender document.** The EMD amount already paid will be adjusted against the Security Deposit.

34. The acceptance of tender is subjected to tenderer's total compliance of schedule of work as per the enclosed specifications. The acceptance of a tender will rest with the Additional Director General (E) (SZ), AIR & TV, Chennai 5, who does not bind himself to accept the lowest tender and reserves to himself the authority to reject any or all of the tenders received without assigning any reason. **Work can be awarded in part or in full by the competent authority depending upon the nature and urgency of work to a single or multiple bidders.**

35. CANCELLATION: The purchaser reserves the right to cancel the order in full or part in the event of non-performance or unsatisfactory performance by the contractor and recover payment already made if any, along with losses / damages incurred.

36. GENERAL TERMS AND CONDITIONS:-

The tools and equipments required for carrying out the entire job will not be supplied by purchaser. The contractor shall provide all the necessary erection tools and erection gang within the tendered price and shall use such method and appliances for the performance of all operations connected with the work envisaged under the contract as well as ensure satisfactory quality of work and rate of progress.

The contractor shall fully discharge all obligations under Indian Workmen Compensation Act in so far as it affects the workmen in his employ.

Any loss to the contractor on account of stoppage of work for reasons given above have to be borne by him / her and any damage to the work shall be made good to the Additional Director General(E) (SZ) / Dy. Director General(E)

Materials to be supplied by the contractor are to be approved by the Additional Director General (E) (SZ) / Dy. Director General (E) before utilization.

In the event of loss or damage to Government property or materials directly handed over to the contractor or other existing in the premises where work is being executed by the contractor at any stage of the progress of the work, the Additional Director General (E) (SZ) / Dy. Director General (E) shall have the option to decide on primary available evidence, the likely liability of the contractor towards the damages as contemplated in this clause, if in his / her opinion it is necessary to do so to protect Government interest. The Additional Director General (E) (SZ) / Dy. Director General (E) shall in cases where it is decided that the contractor has incurred liability, communicates to the contractor the extent of his / her liability and call upon him / her to pay the same within a specified date on the inspection and the supervision of the Additional Director General (E) (SZ) / Dy. Director General (E) and his / her subordinates. The Contractor(s) shall at all times during the usual working hours, and at all other times of which reasonable notice of the intention of the Additional Director General (E) (SZ) / Dy. Director General (E), or his / her subordinate to visit the works shall have been given to the contractor(s) either himself / themselves be present to receive orders or instructions or have a responsible agent duly credited in writing present for that purpose. Orders given to the contractor(s) agent shall be considered to have the same force as if they had been given to the contractor(s) himself / themselves. The Additional Director General (E) (SZ) / Dy. Director General(E) may require the contractor(s) to dismiss any person in the contractor(s) employ upon the works who may be incompetent or misconducts himself and the contractor(s) is / are forthwith to comply with such requirement.

The Contractor(s) is / are not to vary or deviate from the drawings, specifications or instructions or execute any extra work of any kind what-so-ever unless upon the authority of the Additional Director General (E) (SZ) / Dy. Director General (E) to be sufficiently shown by an order in writing or by any plan or drawing expressly given and signed by him as an extra or variation or by any subsequent written approval signed by him. If compliance with the Additional General (E) (SZ) / Dy. Director General (E) aforesaid order, plan or expense beyond involved the execution of the contract works, then unless the same were issued in consequence of some breach of this contract on the part of the Contractor(s), the latter shall be entitled to be paid price of the said work (to be valued as here-in-after provided) and / or the expense aforesaid.

The works comprised in this tender are to be commenced immediately on receipt of written orders from the Additional Director General (E) (SZ) / Dy. Director General (E) to commence work. The time allowed for carrying out the work entered in the tender shall be strictly observed by the Contractor(s) and shall be reckoned from the date on which the order to commence the work is given to the contractor(s).

The work shall throughout the stipulated period of the contract be proceeded with all due diligence (time being deemed to be the essence of the contract on the part of the Contractor(s) and the contractor(s) shall pay as compensation an amount equal to one percent or such similar amount as The Additional Director General (E) (SZ) / Dy. Director General(E) whose decision in writing shall be final may decide, on the amount of the contract for everyday that the work remains uncommenced or unfinished, after the proper dates. And further to ensure good progress during the execution of the work the contractor(s) shall be bound, to complete one fourth of such time has elapsed, and three fourths of the work before three fourths of such time has elapsed. In the event of the contractor(s) to pay as compensation an amount of equal to one percent of such smaller amount as these (whose decision in writing shall be final) may decide on the said amount of the contract for every day that the due quantity of work remains incomplete provided always that the entire amount of compensation to be paid under the provision the clause shall not exceed 10% on the amount of the contract.

The Additional Director General (SZ) (E) / Dy. Director General(E) shall have power to make any alterations in, omission from, additional to or substitutions for the original specifications, drawings and instructions, that could not be envisaged earlier that become a necessary for technical or other reasons and the contractor(s) shall be bound to carry out the work in accordance with any instructions which may be given to him / them in writing signed by the Additional Director General (SZ) (E) / Dy. Director General (E) . Such additions, omissions, alterations or substitutions shall not vitiate the contract but shall be measured and certified by the Additional Director General (SZ) (E) / Dy. Director General (E) and the rate of such additional items of work will be the same as for similar items of work in the contract. In the case of lump sum contracts such rates will be determined on a proportionate basis, via, value by total work. If, however, it is not possible to fix the rates in this fashion a rate mutually agreed to by the Contractor(s) and the Additional Director General (E) (SZ) / Dy. Director General (E) will apply.

The Additional Director General (E) (SZ) / Dy. Director General(E) shall have full power to ask the contractor to stop the work for a total period of (1) seven days per mast (applicable to mast erection) or (2) fourteen days (applicable to other lump sum contractors), either at a time or intermittently without any compensation what-so-ever being paid to the contractor

and the contractor shall stop the work as and when asked by the Additional Director General(E) (SZ) / Dy. Director General(E) The period shall not include the days in which the contractor may stop work of his own accord and at his own responsibility or as a result of damage to any part of the equipment owing to accidents during the execution of work.

The Additional Director General (E) (SZ) / Dy. Director General (E) has full power to require the removal, from the premises of all materials which in his opinion are not in accordance with specifications and in case of default, the Additional Director General (E) (SZ) / Dy. Director General(E) to be at liberty to employ other persons or remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Additional Director General (E) (SZ) / Dy. Director General (E) is also to have the full power to require other proper materials to be substituted there of and in case of default the Additional Director General (E) (SZ) /Dy. Director General (E) (Engg) may cause the same to be supplied and all costs which may attend such removal and substitution are to be borne by the contractor(s).

If in the opinion of the Additional Director General (E) (SZ) / Dy. Director General(E) any of the works have been executed with improper materials or defective workmanship, the contractor(s) is / are when required by the Additional Director General (E) (SZ) / Dy. Director General(E) forthwith to re-execute the same and to substitute proper materials and workmanship and in case of default of the contractor(s) in so doing within a week, the Additional General (E) (SZ) / Dy. Director General(E) is to have full power to employ other persons to re-execute the work and the cost thereof shall be borne by the contractor(s).

Any defects, shrinkage or other faults which may appear within two years of the completion of the work, out of defective workmanship are to be amended and made good by the contractor(s) at his / their own cost.

After completion of the work, the contractor(s) should obtain the necessary certificates from the Additional Director General (E)(SZ) / Dy. Director General(E) , or his representative and shall handover the same to the Additional Director General (E) (SZ) / Dy. Director General(E) . Final adjustment of bills will not be made if the certificate is not handed over.

The complete job should be carried out during the normal working hours from 0900 hours to 1700 hours as laid down by factory rules.

TECHNICAL SPECIFICATIONS AND REQUIREMENTS FOR LATTICE STEEL T.V. TOWER – 150 M AT CANNANORE

1. Scope:

1.1 SUPPLY OF MATERIALS: - Weight of Tower 187.7 M.T.

- **For installation of 150 m self supporting tower:** Design, Supply, Fabrication of Hot Dip Galvanized materials with one coat of primer & one coat of zinc chromate primer. About 87 M.T. of the tower material is available at site. It will be responsibility of the firm to identify the available materials at site and list out the materials required for the completion of the tower. The tower is to be provided with accessories like ladder, platforms, vertical cable rack, horizontal cable tray, SDP for the AOL and other electrical system and antenna support ladder. The tower should be able to withstand a wind speed of 39 m / second.
- Supply of Electrical accessories such as Aviation obstruction lights, AOL cables, Power and Telephone cables with clamps, earthing materials like copper strip etc.
- 2 ½ core 10 Sq.mm Armoured copper cable is to be routed from the building to the top of the tower with weather proof utility box housing 20 amps metal clad socket at each platform, separate cable to be routed for each platform
- LED type AOL to be fixed and wired at each platform as per civil aviation regulations.
- The LED AOL fixed at the top of the tower will be a flashing unit as per civil aviation regulations. One 2 ½ core 10 sq.mm copper cable has to be laid separately for this lamp from the building.
- All the above cable is to be routed properly along the vertical cable rack for the vertical section and through horizontal tray up to the building.
- One lightning arrester is to be mounted on top of the tower and this is to be bought to the ground by using copper strip 25mm X 3mm separated from the tower by using suitable spacer / insulator and 30mm X 6mm thickness below the ground.
- Supply, fabrication and laying of horizontal feeder cable rack from tower to building. The firm should quote for supply, fabrication and installation of feeder cable rack from tower to building at per meter length rate. The approximate length of the horizontal RF feeder cable rack is 20 mtrs
- Supply, fabrication and fixing of antenna ladder on all the four sides of the mast for mounting the band III antenna panel.
- Supply of reputed make (**Asian / Burger / Shalimar / Dulux**) of primer, international orange paint and white paint for painting the tower.

1.2 SERVICES:-

- It will be the responsibility of the firm to verify the availability of the materials at the site (about 87 M.T.), fabricate and supply the short supply materials for installation of 150m tower.
- Installation of tower as per M/s Triveni Structural Limited Allahabad drawings on the existing tower foundation at site, fixing of AOL as per civil aviation regulations,

fixing of lightening arrestors, power cables along the vertical cable rack and routing them up to the building.

- The make of paint and primer used should be **Asian / Burger / Shalimar / Dulux**. The paint and primer to be used for painting should be offered for inspection by the representative of this office.
- The painting of 150m steel tower as per specification in para 7.8 of the this document.
- Mounting of Band III VHF Antenna, routing of RF cable from top of the tower to the building along the vertical rack and the horizontal tray. (Antenna, RF feeder cable and other accessories will be made available at site by Doordarshan for hoisting and fixing).
- The approximate weight of the antenna system is **2 tons and the cost is 25 lakhs**. The firm should take at most care while hoisting and fixing the Antenna and feeder cable. They should ensure that these are hoisted and fixed to the mast without any damage and it will be responsibility of the firm to replace / repair the Antenna system and the RF feeder cables if they are damaged while handling them.

The site is **High Power Transmitter, Doordarshan Kendra, Parassinikadavu, Cannanore Kerala-670563**.

1.3 The tower shall be designed to accommodate 4 Nos of 2 metre diameter parabolic dishes each at 40 m and 80 m level platforms.

1.4 The tenderer shall quote for mounting of TV Antenna systems, feeder cables and related work / services as per details given in the subsequent paragraphs. Mounting of Band III antenna systems is the present requirement and mounting of band II, band IV antenna and the 2 metre diameter M/W parabolic dishes do not form part of this tender .

2.0 General

2.1 The specifications indicated herein are to guide those tenderers, about the requirements of the purchaser. Tenderer shall be fully responsible for soundness of fabrication, supply, erection, mounting of antennas & RF cables, electrical works, earthing etc. and safety of complete turnkey tower construction project.

2.2 The tenderer shall complete and include all minor / major items of appurtenances and accessories which may not have been enumerated in this specification and schedule but which are useful and necessary for completion of this turnkey project in all respect as per good engineering practices and no extra charges will be paid for providing and installing such minor / major items.

2.3 The tenderer shall make his own arrangements for power supply, water and the storage of materials and their safe custody at site for erection of tower.

2.4 Prior approval of the purchaser, in writing, shall be obtained, if the tenderer desires to sublet or assign any section of the work associated with the fabrication, supply, erection of tower, mounting of antennas etc. Such permission of consent shall not, however discharge the tenderer from his liabilities in this contract or any part thereof.

2.5 (a) Contractor shall make good all damage to the purchaser's building, property, equipment etc. how-so-ever arising from the erection of the tower, in the course of such work and throughout the period during which the safety of tower is guaranteed.

(b) The contractor shall indemnify and hold harmless the purchaser against any claims in respect of damages to building, property situated nearby, not belonging to the purchaser, how-so-ever arising from the erection of the tower in course of such work and throughout the period during which the safety of tower is guaranteed.

(c) The contractor shall indemnify and hold harmless the purchaser against claims in respect to injury any mishap to any person how so ever arising out of the tower construction / erection work and throughout the period during ,the safety of the tower is guaranteed.

2.6 The contractor shall discharge all obligations under the Indian workmen's compensation act any local, state laws and regulations in so far as it affects the workmen in his employment.

2.7 The contractor shall make his own arrangement for employing labour-skilled & unskilled and shall make his own arrangement for providing accommodation for his workman at site.

2.8 Patent & copyright:

The tenderer shall hold the purchaser and his employees safe, harmless and immune from any liability that may arise out of infringements of patents and copyright associated with fabrication, erection tower construction work and its accessories.

2.9 The performance specification and basis of design are as per the original design and diagram of M/S Triveni Structural Limited, Allahabad. The tenderer shall be deemed to comply with the design and diagram of M/S Triveni Structural Limited, Allahabad.

3.0 Design and Drawings.

3.1. Only few diagrams (about 18 Nos.) are available with the department, and these will be shown during pre-bid meeting. The successful bidder would be given a copy of the diagrams available and it will be responsibility of the firm to get the remaining diagram of the tower and complete this turnkey project.

3.2 Along with bid the tenderer shall furnish complete information with his tender so that its full merit maybe judged with respect to the requirements of the specifications. For this purpose the tenderer shall submit along with his tender, the following documents, without which tender is liable for rejection. The following information must be attached with the offer.

i) Detailed information concerning the quality of steel fasterns and other materials to be used in the structures with reference to relevant BIS standard specifications must be provided with the offer.

ii) Details of type make and model of Aviation obstruction lights, antenna fixtures, power cables and earthing system etc. The pamphlet and literature of AOL must be attached.

iii) Detail of paint, primer, painting schedule and sources of procurement of paints. The manufacturer name for paints and primer with its relevant pamphlet must be attached.

3.3 After completion of contract : The successful tenderer should submit one complete set of "as made" drawing along with original tracing / microfilm / CD of all the documents and detail drawings along with a detailed completion report in bound form for the reference and record of the purchaser. He should also hand over the entire tower diagram to the purchaser.

4. VERTICALITY AND MAXIMUM DEFLECTION OF TOWER:

4.1. The tower shall be vertical after erection and no straining shall be permitted to achieve this. The erection tolerance of verticality shall be within 25 mm every 9100 mm, subject to overall verticality of tower within 50mm after erection of full height of tower and stage wise corrective action shall be taken to achieve the above.

4.2 The maximum deflection of the axis of the antenna support tower shall not be more than 1/100 from the vertical at various levels including top, under maximum wind and other loading conditions. The successful tenderer will have to satisfy the purchaser the verticality is maintained within 50mm after erection of the tower at site. The verticality of the tower shall be measured and report shall be provided by tenderer after completion of work.

5.0 EXPERIENCE AND RESOURCE:

The tenderer is required to submit details of his previous experience in similar type of work i.e. design, fabrication, supply of self-supporting TV or any other towers not less than 150m height, capacity of their plant and their organizational set up for undertaking such works. **Tenderer must have erected at least one tower of similar capacity in past. The name and address of the purchaser for whom towers have been erected, necessary completion certificate for the work and other supporting documents must be provided. This is a mandatory requirement for acceptance tender.**

6.0 DATE OF COMPLETION:

The complete turn key tower project shall be completed as early as possible as but not **later than 6 months from date of award of the work order**. However, activity wise time schedule including the period of delivery of materials at site and the time required for completion of erection of the tower shall be specified clearly in the tender. Early completion of work is an important consideration in the award of work.

7.0 TECHNICAL SPECIFICATION:

7.1 MATERIALS:

The materials to be provided by the supplier are to confirm to the following specification:

7.2. Tower steel Section:

All tower members shall be out of structural steel confirming to IS-2062 Class A or B. However steel confirming to IS:8500 for medium and high strength steel can also be used, but same will be identified separately using colour code to avoid mix up with mild steel and use of steel confirming to IS:8500 shall be got approved from purchaser prior to its use.

7.3. Steel shall be procured exclusively from the main producers like SAIL / TISCO / RINL (VSP) etc.

7.4 FABRICATION AND WORKMAN SHIP:

The work shall be carried out in thoroughly reliable and workman like fashion in order to ensure satisfactory assembly and erection, inter changeability of similar members, accuracy of dimension, position and alignment of holes etc.

7.4.1 The fabrication of various components of the tower shall be in accordance with the Triveni Structural Limited, Allahabad drawings of HPT Cannanore 150 metre Tower.

7.4.2 The fabrication of tower components shall conform to IS: 800-1984

7.4.3 All steel section shall be reasonably straight and if required carefully straightened and trued by pressure and not by hammering.

7.5. **DRILLING AND PUNCHING:**

7.5.1 Holes for bolts shall be drilled and punched with jig, but drilled holes shall be preferred. Punching may be adopted for thickness up to 5 mm. Tolerances regarding punched holes are as follows:

(a) Holes must be perfectly circular and no tolerance in this respect will be permissible.

(b) The maximum allowable difference in diameter of the holes on the two sides of the plates or angles shall be 0.8 mm i.e. the allowable tolerance in punched holes should not exceed 0.8 on diameter.

7.5.2 Drilled and punched holes must be square with the plates or angles and have their wall parallel.

7.5.3 Holes on both side of the bend line in a bent member shall be drilled after bending.

7.5.4 The formation of bends by the “cut and Weld” method unless specified in drawings is not permitted without prior approval of the engineer.

However for all these works (drilling punching etc) the tower diagram of M/S Triveni Structural Limited, Allahabad of HPT Cannanore has to be followed.

7.6 **GALVANIZING:**

7.6.1 All steel tower members shall be hot dip galvanized after fabrication is completed. The galvanizing to the tower members shall conform to IS:2629 and IS: 4759-1996 and in case of spray galvanized confirming to IS:5905 & IS:6585.

7.6.1 The thickness of galvanizing shall be generally 85 micron (610g/m) in accordance with IS 4759 hot dip and in case spray galvanizing 150 microns as per IS:5905:1989 7.3 All galvanized members shall with stand test as per IS:2633-1986 & IS:3203 – 1982.

7.6.2 All material prior to galvanizing shall be free from oil, grease or any substance which may adversely effect the quality of galvanizing.

7.6.3 Excessively thick or brittle coating due to high levels of silicon or phosphorus in steel, which may result in an increased risk of coating damage and / or other features that make the final product non-fit-for-purpose, shall be rejected.

7.6.4 The preparation for galvanizing it self shall not adversely affect the mechanical properties of the coated materials.

7.6.5. All fasteners shall be galvanized in accordance with IS:1367 part XIII and IS: 5358 – 1969

7.6.6 Spring washers shall be electro galvanized as per Grad 4 of IS: 1573 1978

7.7 Inspection and tests.

7.7.1 All standard tests, including quality control tests, in accordance with appropriate Indian (BIS) / International Standard shall be carried out unless otherwise specified herein.

7.7.2 In addition to the provisions of clause regarding inspection following shall also apply.

(a) Contractor shall keep the purchaser informed in advance about time of starting and progress of manufacture and fabrication of various tower parts, so that it can be inspected.

(b) The acceptance of any part or items shall in no way relieve contractor / tenderers of any part of his responsibility for meeting all the requirement of the specification.

7.7.3 The purchaser or his representative shall have free access at all reasonable times to those parts of contractor's works, where fabrication work is carried out for satisfying himself that fabrication is being done accordance with specification.

7.7.4 The correct grade and quality of steel shall be used by contractor. The Contractor shall make available to manufacturer's test certificate. However inspector may at his discretion get materials tested at approved laboratory to ascertain the quality of steel and other material used, for which cost shall be borne by contractor.

7.7.5 Any member of the structure found not to comply with the approved drawings, shall be liable for rejection. No member once rejected shall be resubmitted for inspection except in case, where inspector considers that the defect can be rectified.

7.7.6 All gouges, templates, jigs, fixtures, instruments necessary for inspection and testing shall be supplied by contractor to purchaser.

7.7.7 To ensure effective in-process quality control, it is essential that the manufacturer should have all testing facilitates for tests like weight of zinc coating, tensile & shear strength, non destructive testing of welds etc. in house or tie up. The manufacturer should have proper quality assurance system in line with requirement of this specification and IS: 4000.

7.8 PAINT & PAINTING:

7.8.1 The lattice steel portion of tower shall be painted after erection usually until unless as per given paint schedule.

a) One coat of etch primer conforming to IS 5666-1970

b) One coat of zinc chromate primer conforming to IS:104

c) Final two coats of synthetic enamel conforming to IS: 2932 (color, international orange and white)

7.8.2 The final coats of paint on tower shall be painted with synthetic enamel to have alternate band of international orange and white colours with top and bottom bands painted in international orange as per Civil Aviation regulation.

7.8.3. The paints and primer used in painting shall be of best quality from reputed paint manufacturer such as **Asian / Burger / Shalimar / Dulux** paints in accordance with relevant BIS: codes.

8.0 **Facilities on tower:** Platform at various levels, ladders for climbing, Cable rack and Antenna supporting ladders, Horizontal Cable tray etc, all have to be provided as per M/S Triveni Structural Limited, Allahabad design and drawing for HPT Cannanore.

9. Protection against Lightning and Earthing

9.1 Principles of Protection:

The fundamental principle for the protection of tower against lightning is to provide a conducting path between the general mass of earth and the atmosphere above the building by which a lightning discharge may enter the earth without producing dangerous potential differences in or near the building and also without passing through a non-conducting parts of the building, for example parts which are made of wood, brick, tile, stone or concrete. Damage to the building may be caused by the thermal and mechanical forces generated in such non conducting parts by the discharge, whereas in the metal parts the heat and mechanical forces due to the lightning discharge have negligible effect provided the metal part has sufficient cross sectional area.

Comprehensiveness of lightning protective system depends on the prevalence of lightning in the locality, the frequency and extent of occupancy of building and nature of the soil, other things being equal, the more elaborate the protective system the more complete the protection will be provided.

9.2 Material and dimension:

The materials for the lightning conductors, down conductors, earth termination network etc. of the protective system shall be reliable resistant to corrosion or be adequately protected against corrosion. The flat copper strip are used, shall be of high grade, ordinarily required for commercial electrical work, generally designated as being of 98% conductivity when annealed. They shall conform to the relevant Indian Standard Specification. The minimum sizes of conductors shall be 25mm x 3mm for use above ground and 30 mm x 6mm for use below ground.

9.3 Design consideration:

The vertical air termination of lightning arrester need not have more than one point and should be projected at least 30cm above the top of the object, the down conductor should run along the tower. The down conductor should follow the most direct path avoiding sharp bends, upturns and kincks.

9.4. The tower shall be provided with suitable complete system of lightning protection in accordance with provision of IS: 2309 – 1989 and approved drawings, considering necessary earthing based on the specific resistibility of the soil and sub-soil water level and other relevant provision state their off.

9.5 Tower structure shall be provided lightning arrester for protection against lightning as per IS: 2309 – 1989

9.6 The comprehensiveness of lightning protection system depends on the prevalence of lightning in the locality, its frequency and extent of occupancy nature of soil etc. the tower shall be provided protection considering these facts.

9.7 The material for lightning conductors, down conductors earth terminals network etc. of the protective system shall be reliable resistant to corrosion or be adequately protected against corrosion.

9.8 All tower legs shall be connected to ground properly as per standard practice of earthing of such structures in the ground in plain areas and mountainous regions. Each down conductor should have independent earth termination. All earth termination shall be interconnected. Earth electrodes shall be constructed and installed in accordance with IS: 3043-1987. 4 Nos of lightning arresters at four corners inter connected by copper strip shall be provided.

10 **Testing:**

10.1 The earth resistance value obtained for whole of lightning protective system should not exceed one ohm. In case it exceeds one ohm the same should be reduced by providing additional earth electrodes.

10.2 Electrical Requirement for TV Tower:

- a. Provision of aviation obstruction lights and hazard beacon lights is to be made on tower as per ICAO norms.
- b. Provision of two nos. of twin core weather proof magneto wire with socket arrangement is to be made at every platform.
- c. 2 ½ core 10 Sq.mm Armoured copper cable is to be routed from the building to the top of the tower with weather proof utility box housing 20 amps metal clad socket at each platform, separate cable is to be routed for each platform. LED type AOL to be fixed and wired at each platform as per civil aviation regulations. The LED AOL fixed at the top of the tower will be a flashing unit as per civil aviation regulations. One 2 ½ core 10 sq.mm copper cable has to be laid separately for this lamp from the building.
- d. Provision of Automatic sun-switch is to be made for operating the Aviation lights.
- e. Tower should be provided with lightning arresters to give protection against lightning. For this purpose IS: 2309 - 1989 should be strictly followed. Earth electrodes should be installed in accordance with IS: 3045 – 1966 (with latest amendments).
- f. A detailed completion report of tower with all drawing facilities provided is to be submitted by the tenderer to the Zonal office /Station for reference and record after completion.

11 **Aviation Obstruction Lights (A.O.L):**

11.1 **LED based Aviation Obstruction Lights provided.** The globes and their housings shall be strong, weather proof and of approved manufacturer. The LED based Aviation Obstruction Lights shall be provided and installed. There shall be 2 lights located diagonally at each level, except the top level AOLs are to be as per detailed instructions provided for electrical works on tower. The aviation obstruction light arrangement shall be as per latest International Civil Aviation Organization rules.

11.2 Power supply load of the aviation lights shall be evenly distribute don all the three phases, in order to ensure that with failure of the single phase all the lamps at each level do not go off.

11.3 The contractor shall provide temporary aviation obstruction lights during erection of tower as soon as the tower reaches 45 metres.

11.4 The 'ON' and 'OFF' switches and power supply control panel of Aviation Lights shall be provided in the power supply metering room of the transmitter building.

11.5 A "SUN switch" is required to be provided for aviation lights so that these are "on" automatically if sufficient sunlight is not available around tower. In no case sun-switch is to be installed inside a room or covered space.

11.6 The details of power supply arrangements for aviation lights shall be provided with the tender bid.

12.0 PURCHASERS SUPPLY:

The purchaser shall supply to successful tenderer the following:

- (a) List of tower materials supplied by M/s Triveni Structural Limited Allahabad for erection of 150m tower at HPT Cannanore
- (b) Available tower drawings (about 18 nos.)
- (c) Band III antenna system along with accessories and two numbers of RF feeder cable.

13. Schedule of requirements:

Design, fabrication and Supply of balance materials as per M/s Triveni Structural Limited Allahabad for 150m tower at HPT Cannanore and Erection of 150M television tower as specified above and as per M/s Triveni Structural Limited Allahabad design and drawings complete with following works:

- i) Earthing of tower (earth resistance one ohm)
- ii) Platforms with railings.
- iii) Internal ladders for climbing from ground to top of the tower.
- iv) Vertical cables rack on tower.
- v) Horizontal cable rack as per the actual site conditions between transmitter building and tower.
- vi) Aviation Obstruction lights including Beacon light and sun-switch.
- vii) Supply and installation of power supply cables and service connection cables
- viii) Providing fixture for M/S Dish antenna.
- ix) Providing and fixing antenna ladder for Band III antennas as per M/s Triveni Structural Limited Allahabad drawing.
- x) Mounting of VHF Band III antenna system and accessories.

14. Inspection:

As per clause 14 of the tender document

15. GUARENTEE:

The tenderer shall guarantee to replace free of charge any material or part thereof that may develop defects within **two years** of handing over the tower.

The tenderer shall guarantee the stability, safety, durability and satisfactory mechanical behavior of the tower structure under the all conditions of specified loading and complete system and their off including allied system such as lightening arrestors, aviation obstruction lights etc. The guarantee shall hold good for a period of two years from the date of completion of erection of the tower.

16. SAFETY WORKSMANSHIP AND INSURANCE FOR THE WORKERS

The successful tenderer had to ensure that all safety norms are followed during the erection of the tower and the work is executed in a professional manner. All the formalities for the insurance of the workers deployed for erection are completed and a copy of all documents in this regard is to be submitted to the Installation officer before starting the erection work.

17 COMPLETION OF TOWER:

- a. The tower is to be inspected at site by the representatives of Zonal office when it is completed in all respect including the works of painting, aviation light etc.
- b. The verticality of the tower is to be verified by the inspector at site during his inspection as per the specification. The arrangements of equipment for checking the verticality is to be arranged by the tower erector.
- c. The Earth resistance of the tower is also to be verified by the inspector at site.
- d. All debris, extra material and items etc which are brought / created during construction work at site are to be removed / cleared by the tower tenderer.
- e. The Aviation-Lights on the tower should function as per Civil Aviation Specifications.
- f. The 150m tower is to be erected on the tower foundation already completed at site.

FORMAT FOR TECHNICAL BID

Sl. No	Description of item	Quantity	Make
PART - A			
1	Design, fabrication and Supply of hot dip galvanized tower members including vertical rack, horizontal rack tower ladder platform antenna ladder etc (for short materials as per TSL design and drawings)	About 100 MT (as per TSL design & drawings)	
2	Design, fabrication and Supply of hot dip galvanized fasteners (for short materials as per TSL design and drawings)	1 lot (as per TSL design & drawings)	
3	Labour charges for erection of 150 metre tower including all works like erection of horizontal cable tray, vertical cable tray, platform at various level as per M/s TSL Allahabad drawing. (except painting work, electrical work and hoisting of antenna system RF feeder cable work)		
PART-B			
1	# Etch primer for painting (one coat) 150 metres height and 187.7 MT weight.	400 liters	
2	# Zinc chromate primer for painting (one coat) 150 metres height and 187.7 MT weight.	400 liters	
3	# Synthetic enamel white paint for painting (two coat) 150 metre height and 187.7 MT weight.	350 liters	
4	# Synthetic enamel international orange paint for painting (two coat) 150 metres height and 187.7 MT weight	550 liters	
5	# Thinner for painting	400 liters	
6	* AOL medium intensity	1 no	
7	* AOL low intensity	8 Nos	
8	Cable for AOL (Havells / Finolex)	1 lot	
9	Control panel box for AOL and power Supply (Havells / Finolex)	3 boxes	
10	Power cable (Havells / Finolex)	1 lot	
11	Telephone cable Reputed make	1 lot	
12	Cable clamps, Junction box, weather proof Power distribution box, Metal clad sockets etc (All electrical switches and junction should be Havells / Anchor / Schneider make)	1 lot	

13	Lightning arrester with copper strip from top to ground	1 lot	
14	All materials required for tower earthing (four legs separately) including copper plate and strip etc	1 lot	
PART-C			
1	Labour charges for painting 150 metre height 187.7 MT with one coat of etch primer, one coat of zinc chromate primer and two coats of synthetic enamel paint (alternate band of international orange and white as per civil aviation norms.)	1job	
2	Labour charges for all electrical works including fixing of AOL, laying of power supply cable, telephone cable earthing, lightning arrester etc	1job	
3	Labour charges for Hauling up of antenna system (including power divider, branch feeder cable etc) and RF feeder cable in clamping and routing up to building (Antenna system and RF feeder cable will be provided by the department)	1 job	

* The no of lights is indicative, however the exact number should be as per civil aviation norms but not less than the quantity mentioned above.

This is the minimum quantity to be supplied for painting of tower additional quantity if required is to be supplied by the tenderer

FORMAT FOR COMMERCIAL BID

Sl. No	Description of item	Quantity	Rate	Amount
PART-A				
1	Design, fabrication and Supply of hot dip galvanized tower members including vertical rack, horizontal rack tower ladder platform antenna ladder etc (for short materials as per TSL design and drawings)	About 100 MT (as per TSL design & drawings)		
2	Design, fabrication and Supply of hot dip galvanized fasteners (for short materials as per TSL design and drawings)	1 lot (as per TSL design & drawings)		
3	Labour charges for erection of 150 metre tower including all works like erection of horizontal cable tray, vertical cable tray, platform at various level as per M/s TSL Allahabad drawing (except painting work, electrical work and hoisting of antenna system RF feeder cable work)			
Sub Total. A				
PART-B				
1	# Etch primer for painting (one coat) 150 metres height and 187.7 MT weight.	400 liters		
2	# Zinc chromate primer for painting (one coat) 150 metres height and 187.7 MT weight.	400 liters		
3	# Synthetic enamel white paint for painting (two coat) 150 metre height and 187.7 MT weight.	350 liters		
4	# Synthetic enamel international orange paint for painting (two coat) 150 metres height and 187.7 MT weight	550 liters		
5	# Thinner for painting	400 liters		
6	* AOL medium intensity	1 no		
7	* AOL low intensity	8 Nos		
8	Cable for AOL	1 lot		
9	Control panel box for AOL and power supply	3 boxes		
10	Power cable (Havells / Finolex)	1 lot		

11	Telephone cable	1 lot		
12	Cable clamps, Junction box, weather proof Power distribution box, Metal clad sockets etc	1 lot		
13	Lightning arrester with copper strip from top to ground	1 lot		
14	All materials required for tower earthing (four legs separately) including copper plate and strip etc	1 lot		
Sub Total. B				
PART-C				
1	Labour charges for painting 150 metre height 187.7 MT with one coat of etch primer, one coat of zinc chromate primer and two coats of synthetic enamel paint (alternate band of international orange and white as per civil aviation norms.)	1job		
2	Labour charges for all electrical works including fixing of AOL, laying of power supply cable, telephone cable earthing, lightning arrester etc	1job		
3	Labour charges for Hauling up of antenna system (including power divider, branch feeder cable etc) and RF feeder cable in clamping and routing up to building (Antenna system and RF feeder cable will be provided by the department)	1 job		
Sub Total. C				
GRAND TOTAL (A+B+C)				

* The no of lights is indicative, however the exact number should be as per civil aviation norms but not less than the quantity mentioned above.

This is the minimum quantity to be supplied for painting of tower additional quantity if required is to be supplied by the tenderer