



INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE
2A & 2B, Raja S.C. Mullick Road, Jadavpur, Kolkata-700032, West Bengal, India.
Phone: 2473 4971/3372/3073, Fax (91) (33) 2473 2805, e-mail: wssb@iacs.res.in

NIT No.: -IACS/EL (ADM)/07/2024-25/35

DATE: - 20/09/24

NOTICE INVITING TENDER / निविदा आमंत्रित करने का सूचना

Sealed Item Rate tenders (in two envelop system) are invited from bonafide, resourceful and eligible contractors for the following work in the campus of IACS, Jadavpur.

- **Name of the Work:** Supply, Installation, testing & Commissioning of Stadium mast along with luminaries at IACS, Jadavpur, Kolkata.
- **Estimated cost: Rs. 18,57,374/--** (Rupees Eighteen lakh fifty seven thousand three hundred seventy four only). The estimate however, is mentioned as rough guideline.

Eligibility Criteria: The minimum eligibility criteria for the contractors will be as follows:

- (1) Completion of **one similar work** of value not less than **80% of the estimated cost** put to tender under Government, Semi-Government, PSU, Govt. funded Autonomous Body in the **last 7 (seven) years** to be reckoned from the date of issue of NIT.
OR
- (2) Completion of **two similar works** each of value not less than **60% of the estimated cost** put to tender under Government, Semi-Government, PSU, Govt. funded Autonomous Body in the **last 7 (seven) years** to be reckoned from the date of issue of NIT.
OR
- (3) Completion of **three similar works** each of value not less than **40% of the estimated cost** put to tender under Government, Semi-Government, PSU, Govt. funded Autonomous Body in **last 7 (seven) years** to be reckoned from the date of issue of NIT.

Similar work shall mean: Erection & Commissioning of high mast poles. Electrical installation of heavy electrical equipment viz. transformer, DG, Panels, substation equipment etc. Electrical Installation Work consisting of electrical wiring, HT/LT Cable Laying plate/ pipe earthing, MCB/MCCB DB wiring, laying and fixing. Foundation and other accessory civil work. Preferably in laboratory/ research Centre/ educational institute/ etc.

The stipulated time of completion: 45 days, which will be reckoned from the date of handing over of site.

Earnest Money Deposit: Rs. 37,147/- (Rupees Thirty one thousand one hundred forty seven only) to be submitted with the tender in the form of Demand Draft/Banker's Cheque/Pay Order of a scheduled Bank to be drawn in favor of **"Indian Association for the Cultivation of Science"** payable at Kolkata.

Cost of Tender Form: The intending bidders may submit the tender documents, downloaded from our Website (www.iacs.res.in), against a payment of Rs. 500/- + 5% GST = **Rs.526/-** (CGST & SGST @ Rs.12.50 rounded to Rs.13.00 each), per Set (Non refundable), in favour of **"Indian Association for the Cultivation of Science"**, Payable at Kolkata. The payment should be made in the form Of Demand Draft/Pay order/Banker's cheque (non- refundable) of a Scheduled Bank. The cost of tender should be sent in a separate envelope, along with the "Tender documents". Tender paper, submitted without the Cost of tender shall be summarily rejected.

Tender Notice No.	NIT NO:IACS/EL(ADM)/07/2024-25/35 Date:20.09.2024
Tender issue date and time	23/09/24 to 07/10/24 (up to 2.00PM on each working day)
Last date and time of application for physical sale	07/10/24 (up to 1.00 PM). Application should be made on printed letter head of the firm mentioning the NIT no. and name of work.
Last date & time of submission of tender	07/10/24 (up to 3.00PM).
Pre-bid meeting cum site visit	27/09/2024, 3.00 PM at Workshop conference room.
Date and time of Opening tender	07/10/24 at 4.00 PM
Place of Opening Tender	Workshop conference room
Contact No.	Tel. +9133 2473 4971 (Extn. 1700/1730)

Details of Bid Documents:

i) Technical Bid:

The "Technical Bid" (i.e. Envelop-I) shall consist of the following documents:

Photocopy of (a) PAN Card, (b) Valid Trade License, (c) GST registration certificate. (d) Company Profile (e) Proofs of eligibility criteria i.e. copy of "Work Orders" "Completion Certificates" etc. and any other documents found to be suitable in support of their technical competency. (f) EMD and cost of tender. (g) Valid electrical contractor's license. (h) Valid SCC for electrical supervisor.

ii) Financial Bid:

The Financial-Bid (Envelop-II) shall consist of the following document(s).

Bill of Quantities (BOQ) as provided with the tender documents. The rate should be quoted in figure and word both. (b) Bank Account details of the firm mentioning the Beneficiary Name, Account Number, Bank Name, Branch Name, IFS Code and MICR Code as will be required for making payment through RTGS/NEFT.

- **Note:** Each & every page of the tender documents must contain company's seal & signature of the bidder or their authorized representative. Letter of authority in the form of power of attorney has to be submitted with the tender documents in case the tender is signed by the authorized representative.

Conditional tender including conditional rebates shall not be accepted and shall be liable for rejection.

In case of any discrepancy is noticed, the office copy the NIT/tender documents will be considered as reference and shall be binding to the contractor.

The IACS Authority reserves the right to accept the lowest tender, reject any or all the tenders and to place the order on one or more firms without assigning any reason thereof. All the tenders should be in conformity with this NIT. Non-compliance may be the cause of rejection of tender.

Tender Submission Date: On or before 07.10.24 (up to 3.00 PM). The offer shall be submitted in a sealed envelope. The outer envelope shall bear the Name of work, NIT No., due date, sender's name etc. on the top of the envelope which would be addressed to the Registrar, IACS, Jadavpur, Kolkata-32. The complete tender has to be submitted to the Despatch & Receiving Section of IACS within the prescribed time & date.

Date of Opening: The Technical bid will be opened on 07.10.24 at 4.00 P.M. in presences of the intending bidders. However price bid shall be opened for the technically qualified bidders only with prior intimation to the technically qualified bidders. If Holiday is declared on the Scheduled date of openings, the tenders will be opened on the next working day at the same time in presence of the intending bidders.

Acceptance of Tender: IACS authority is not bound to accept the lowest tender and reserves the right to reject any or all the tenders without assigning any reason thereof.

Other terms & conditions:

The EMD shall be treated as a part of the security deposit for the successful bidder. Tender submitted without EMD or EMD not in proper form & shape shall be summarily rejected. The Security Deposit will be released after six months from the date of successful completion of work. The EMD for unsuccessful bidders will be refunded on demand after finalization of tender.

Deviation limit for individual item, trade and contract as a whole is 25% (twenty five percent). However, the department reserves the right to execute in part or whole and can drop any item of the “schedule of work” of the tender. No claim whatsoever will be entertained in this regard.

If the contractor fails to maintain the required rate of progress or to complete the work and clear the site on or before the contract or extended date of completion, he shall without prejudice to any other right or remedy available under the law, pay compensation the amount calculated at the rates stipulated below or such smaller amount as the Director may decide (whose decision in writing shall be final and binding) on the amount of the tendered value of the work for every completed day / week (as applicable) that the progress remains below or that the work remains incomplete.

- i. Completion period not exceeding 3 months (stipulated) @0.5% per week or part thereof provided always that the total amount of compensation for delay to be paid under this condition shall not exceed 5% of the tendered value of work.
- ii. The Engineer in Charge may without prejudice to his any other rights or remedy against the contractor in respect of any delay, inferior workmanship, any claims for damages and / or any other provisions of this contract or otherwise, and whether the state of completion has or has not elapsed, by notice in writing absolutely determine the contract in any of the following cases.
 - if the contractor fails to rectify/replace the defects in spite of written notice by the Engineer –in-Charge.
 - If the contractor suspends the progress of work so that in the opinion of the Engineer-in-Charge will be unable to secure completion of the work by the date of completion and do not improve performance even after written notice.
 - If the contractor neglects to carry out his obligation under the contract and / or commits defaults in complying with any of the terms and conditions and does not remedy if even after written notice.

When the contractor has made him liable for action under any of the aforesaid cases, the Engineer-in-Charge on behalf of IACS shall have powers

- To determine or rescind the contract. Upon such rescission, the full security deposit recoverable under the contract shall be liable to be forfeited and shall be absolutely at the disposal of IACS.
- After giving notice to the contractor to measure up the work done by him, get the balance work done by another contractor. Any expenses which may be incurred in excess of the sum

which would work had been executed by him, shall be borne and paid by the original contractor and may be deducted from any of his dues.

Complete Tender Document will also be available at www.iacs.res.in and can be downloaded for submission. Conditional tender including conditional rebates shall be summarily rejected. The quoted rate shall be inclusive of all taxes & duties, levies, cess etc i/c GST also. Nothing extra will be paid to the Contractor except the accepted rate. In case of any discrepancies, the office copy of the tender document will be referred and shall be binding to the contractor.

Registrar

TECHNICAL SPECIFICATIONS & SPECIAL CONDITIONS OF CONTRACT FOR ELECTRICAL WORKS

CHAPTER 1

SPECIAL CONDITIONS OF CONTRACT

1.1 General

- 1.1.1 These Special Conditions of Contract supplement the General Instructions. General Conditions of Contract, Bill of Quantities and basic rates and Technical Specifications and tender drawings enclosed thereto, and shall be considered as part of the Tender Papers. Where the provisions of these Special Conditions of Contract are at variance with General Conditions of Contract, the Provisions of these Special Conditions of Contract shall prevail.
- 1.1.2 The several documents forming the tender are to be taken as mutually complementary to one another. Detailed drawings shall be followed in preference to small scale drawings and figured dimensions in preference to scaled dimensions.
- 1.1.3 If there are varying or conflicting provisions in the documents forming part of the contract, the Engineer-In-Charge shall be the deciding authority with regard to the intentions of the provisions and his decision shall be final and binding on the contractor.
- 1.1.4 The Employer reserves the right to exclude any of the Schedule items on reasons of the rates not being reasonable or subsequent change of design for evaluation of tender and deciding the contract during execution or work.
- 1.1.5 The Contractor may be required to carry out any addition or alteration work other than the specified in the schedule of work / bill of quantities as and when required, by the 'Employer' within the completion period of the project.

1.2 Scope of Work

- 1.2.1 The works to be governed by this contract shall cover delivery and transportation up to destination, safe custody at site, insurance, erection, testing and commissioning of the entire Electrical, civil and fabrication works.
- 1.2.2 The works to be under taken by the contractor will inter-alia include the following:

- i) Preparation of detailed drawings of high mast pole, Foundation, electrical wiring installation, cable laying, erection/fixing of switchgear etc.
- ii) Pre-commissioning tests as per relevant standard specifications, code of practice, Acts and Rules.
- iii) Warranty obligation for Circuit Breaker, CT, Cables, Capacitor etc to be supplied by the Contractor.
- iv) All other earthwork, masonry and foundation works required to be done in connection with the electrical works.

1.3 Execution of work

- 1.3.1 All the works to be carried out as per the approved drawing and direction of the Engineer- In-Charge.
- 1.3.2 Water & Power supply: - It will be provided by IACS free of cost for the beneficial use of IACS only. However, the contractor shall have to arrange for utilizing the same at their cost and risk.

1.4 Period of Completion

- 1.4.1 Time is the essence of contract. Therefore, timely completion of project is very important. Normally no extension of time will be given. However, on account of delay if any, for the reason beyond the control of the contractor, necessary time extension may be granted if applied for by the contractor prior to the expiry of schedule time of completion.
- 1.4.2 No price variations shall be admissible on the contract rate for any item during the entire period of contract including extension periods. The Contractor shall not have any claim whatsoever in this regard except statutory variation of duties and Taxes imposed by the Govt. of India/State Govt subsequent to submission of tender by the contractor.

1.5 Quality of materials and works

All the materials to be used in the execution of the contract shall be of the approved quality and of the class most suited for the purpose specified. The work shall also conform to the following Acts, Rules and Orders:

- i) Indian Factories Act
- ii) Indian Electricity
- iii) National Building Code
- iv) National Electrical Code
- v) Indian Standard Specifications

- 1.5.1 All erection work shall be of the best workmanship & quality to the entire satisfaction of the Employer. The Contractor shall ensure that the equipment and services under the scope of this contract whether manufactured or performed within the Contractor's premises or at his subordinate's premises or at the work site or at any other place are strictly in accordance with the provisions of this contract. For this purpose, if necessary the Contractor shall adopt necessary quality assurance programme to control such activities at all stages.

1.6 Electrical License

- 1.6.1 The work shall be carried out only by a Contractor holding a valid license issued by the State Government for carrying out the installation work of a voltage classes involved, under the direct supervision of the persons holding valid certificates issued or recognized by the State Government. The tenderer should furnish with his tender the particulars of the license with validity period held by him. The successful tenderer shall furnish the names and particulars of certificates of competency of supervisors and workmen to be engaged for carrying out this work.
- 1.6.2 The contractor shall not be allowed to engage sub-contractor directly or indirectly unless it is officially permitted by IACS.

1.7 Inspection

- 1.7.1 The Contractor shall provide without any extra cost to the Employer all materials, equipment, tools, labor and maintenance of every kind which the Employer's Inspecting Engineer may consider necessary for any test and examination to be made at the Contractor's or the Sub-Contractor's (if approved) premises and at site and shall pay all cost attended thereon.
- 1.7.2 All the equipment and materials shall be tested / inspected by the Employer or its authorized Inspecting Engineer and approved before they are installed / used in the execution of the works covered in the contract. If the Contractor uses any equipment / materials without the prior approval of Employer, those are liable to be rejected. The Contractor shall furnish, as and when demanded by the Engineer-in-Charge the T.C. (Test Certificate) and G.C (Guarantee Card) for verification of quality and make of the materials.
- 1.7.3 The Inspecting Engineer or his authorized Representative shall have at all times access to the Contractor's premises and shall have the power to
- i) Inspect and examine the materials and workmanship of the work at any time at the site of erection
 - ii) Reject any part of the work submitted by the Contractor as not being in accordance with the contract.
 - iii) Reject the whole of the work including equipment tendered for inspection if after the inspection of such portion as he may, in his discretion think fit he is justified that the same is unsatisfactory.
 - iv) Mark the rejected equipment with a rejection mark so that the same may be easily identified
 - v) Re-inspect at the time of erection at site any equipment both previously inspected and approved by the inspecting Engineer at the Contractor or Sub-contractor's (if approved) premises. Notwithstanding any approval given earlier, the Contractor shall make good such rejections made based on such re-inspection at site to the satisfaction of the Engineer.
 - vi) The decision of the Inspecting Engineer as regards to the acceptance or rejection of equipment / work shall be final and binding to the Contractor.

1.7.4 Consequence of Rejection

On the equipment / assemblies being rejected by the Inspecting Officer of the Employer at destination of the Contractor shall replace such rejected equipment/assemblies of the forthwith but in any event not later than a period of 2 (two) weeks in the case of minor equipment and 4(four) weeks in case of a major equipment from the date of rejection. The Contractor shall bear all the costs of replacement including freight, etc., but without being entitled to any extra time on this account. The decision as to whether the equipment is to be classified as Minor or Major for the purpose of this clause shall be that of an Engineer and is not questionable.

1.8 Installation

- 1.8.1 All works connected with and inclusive of installation and erection under this contract shall be done in accordance with the standard and established methods of installation and erection of electrical equipment and shall comply with relevant Indian Electricity Rules, National Electrical Code, BIS Codes of Specifications and Standards. The work shall also be strictly carried out in accordance with the instructions / recommendations of the manufacturers. The equipment shall be leveled carefully before being fixed finally in position. All fragile and sensitive equipment shall be protected adequately and handled carefully during installation and erection.

1.9 Commissioning Tests

- 1.9.1 As soon as the installations are ready for commissioning, the Contractor shall arrange for all the tests/ inspection as required by the relevant ISS and / or IE Rules and advise the Employer and others concerned. Employer shall depute their Inspecting Officer for witnessing the tests and to carry out inspection independently and also jointly with other concerned agencies where ever necessary and only after the installation passes the required tests and inspection, it should be commissioned / energized. The contractor shall arrange all testing equipments/apparatus/instruments as will be required for conducting the tests without any extra cost. Test reports are required to be submitted before commissioning of the new installation.

- 1.9.2 Visual Inspection shall include checks for satisfactory workmanship, all connections, painting, cleanliness of all fittings etc., and compliance with Indian Electricity Rules.

- 1.9.3 The ammeters, voltmeters and energy meters shall be checked for their calibration, scale, accuracy, etc. for compliance with the specified requirement.

Routine tests certificates are required to be submitted on demand.

- 1.9.4 All cables shall be tested at manufacturer's works in compliance with relevant ISS. All cables and connections after erection shall be tested as required by the employer for :

- i) Pressure Test
- ii) Insulation Resistance Test

- 1.9.5 Earth resistant shall be measured separately for each earth electrode and when they are connected together and to the equipment should be recorded.

- 2.0 Warranty:** - The contractor shall stand guarantee that all the equipments and the works executed under this contract shall be free from all defects and faults in materials, design, workmanship and manufacture and shall be acceptable standards for the contracted works and

in full conformity to the technical specifications, drawings and other contract stipulations for a period of 12 months from the date of completion of the project or 15 months from the date of supply of materials whichever is earlier.

3.0 Completeness of tender: -

All sundry fittings, assemblies, accessories, hardware items, foundation bolts, termination lugs for electrical connections as required, and all other sundry items which are useful and necessary for proper assembly and efficient working of the various component of the work shall be deemed to have been included in the tender whether such items are specifically mentioned in the tender documents or not.

4.0 Works to be done by the Contractor: - Unless and otherwise mentioned in the tender documents, the following work shall be done by the contractor, and therefore, their cost shall be deemed to be included in their tender cost

- i) Cutting and making good all damages caused during installation and restoring the same to their original finish.
- ii) Sealing of all floor openings provided by him for pipes and cables from fire safety point of view after laying of the same
- iii) Painting at site of all exposed metal surfaces of the installation other than pre-painted items like switch-gear, transformer etc. damages to finished surfaces of these items while handling and erection shall however be rectified to the satisfaction of the Engineer In-Charge.
 - a) Tools for handling and erection: - all tools and tackles required for handling of equipments and materials at site of works as well as for their assembly and erection and also necessary testing instruments shall be responsibility of the contractor.
 - b) Care of Building: Care shall be taken by the Contractor to avoid damage to the building during execution of his part of the work. He shall be responsible for repairing of all damages and restoring the same to their original finish at his cost. He shall also remove at his cost all unwanted and waste materials arising out of his work from the site.

5.0 Tools for handling and erection: - all tools and tackles required for handling of equipments and materials at site of works as well as for their assembly and erection and also necessary testing instruments shall be responsibility of the contractor.

6.0 Care of Building: Care shall be taken by the Contractor to avoid damage to the building during execution of his part of the work. He shall be responsible for repairing of all damages and restoring the same to their original finish at his cost. He shall also remove at his cost all unwanted and waste materials arising out of his work from the site.

7.0 Structural Alterations to Buildings

- i) No structural member in the building shall be damaged / altered, without prior approval of the competent authority through the Engineer-in-charge.
- ii) Structural provisions like openings, cutouts, if any, provided by the department for the work, shall be used. Where these require modifications, or where fresh provisions are

- required to be made, such contingent works shall be carried out by the Contractor at his cost.
- iii) All such openings in floors provided by the Department shall be closed by the Contractor after installing the cables / conduits / rising mains etc. as the case may be, by any suitable means as approved by the Engineer-in-charge without any extra payment.
 - iv) All chases required in connection with the electrical works shall be provided and filled by the Contractor at his own cost to the original architectural finish of the buildings.

GENERAL TERMS AND CONDITIONS

1. Submission of a tender/quotation by a tenderer/ quotationer implies that they have inspected and examined the site and its surroundings and satisfied themselves as to the nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves, obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender.
2. The tenderer shall be responsible for arranging and maintaining at his own cost all materials, tools and plants, water electricity, access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract document.
3. The tender/quotation for the work shall remain open for acceptance for a period of sixty days from the date of opening of tender/quotation. If any tenderer withdraws his tender before the said period or makes any modifications in the terms and conditions of the tender which are not acceptable to IACS, then IACS shall without prejudice to any other right or remedy be at liberty to forfeit 50% of the said earnest money as aforesaid.
4. All conditions/terms listed under “Terms and conditions” are applicable for all tenders/ quotations.
5. The successful tenderer /contractor, on acceptance of his tender by the accepting Authority, shall, within 7 days from the stipulated date of start sign this contract/agreement.
6. The Director, Indian Association for the Cultivation of Science (IACS) does not bind himself to accept the lowest or any tender and reserves to himself the authority to reject any or all tenders received without the assignment of any reason.

General Rules and Directions

1. The tenderer shall fill in the rates both in words and figures. The amount against each item is also to be filled in. In case of any discrepancy, the rates quoted by contractor in words shall be taken as correct.
2. Canvassing whether directly or indirectly in connection with tenders is strictly prohibited and the tender submitted by the contractor who resorts to canvassing will be liable to rejection.
3. The contractor whose tender is accepted will be required to furnish by way of Security Deposit for the fulfillment of his contract, an amount equal to 10% of the tendered value of the work. The Security Deposit will be collected by deductions from the running bills and Final bill of the contractor at the rates mentioned above and the earnest money if deposited in cash at the time of tenders will be treated as part of the Security Deposit.
4. On acceptance of tender, the name of the accredited representative of the contractor who would be responsible for taking instructions from the Engineer in Charge shall be communicated in writing to the Engineer in Charge.

5. All the works shall be carried out as per **CPWD/ WB PWD specification** corrected up to date and Indian Electricity rule. Where CPWD/ WB PWD specification is silent Indian standard specifications of B.I.S./ Specification laid down by IACS is to be followed.
6. The time allowed for execution of the work or the extended time in accordance with these conditions shall be the essence of the contract.
In case of any event causing delay for which the contractor is not responsible, the contractor shall immediately give notice thereof in writing to the Engineer in charge but shall nevertheless make best endeavors to prevent or make good the delay.
The Director, IACS may consider the notice and allow suitable extension of time for completion of work.
7. The contractor shall submit "running account bill" and final bill in triplicate supported by detailed measurements and shall provide necessary assistance, Labour and tools for checking the measurement and quality of work.
8. The contractor shall execute the whole and every part of the work in the most substantial and workman like manner both as regards materials and otherwise in every respect in accordance with specifications. Unless otherwise given in the Contract documents the specification will mean standard specification of Central Public Works Department corrected up to date, Bureau of Indian Standard Specifications, and/or any other published standard or code.
9. The Engineer in Charge shall have the power to make alteration in, omission from additions to, or substitutions for the original specifications drawings, design and instructions that may appear to him to be necessary or advisable.

The rates for such altered, additional or substituted work shall be determined by the Engineer in Charge as under.

- (i) Rate entered in the schedule of rates mentioned in the award letter Plus/minus the percentage by which the tendered amount of the works awarded is higher or lower than the corresponding estimated amount.
 - (ii) Market rates.
10. Deviation limit for individual item, trade and contract as a whole, is 25% (twenty five percent). No claim whatsoever will be entertained in this regard.
11. The contractor shall provide all necessary superintendence during execution of work and as along there after as may be necessary for proper fulfilling of the obligations under the contract.
12. Security deposit will be refunded to the contractor if no complaint is pending on Record till 6 (six) months after completion of the work and no labour complaint is pending against the contractor in respect of the work.
13. The contractor shall pay their workers as per the provisions of Minimum wages Act fixed and notified by the Government from time to time.
 - No person below the Age of 14 years shall be employed to act as a workman.
 - First AID Box shall be made available by the contractor at all work sites.
 - The contractor shall provide all safety measures to his workmen like working platform, suitable scaffolding, gangways, ladder, helmets, gumboots, gloves safety belts, insurance coverage etc. according to the situation and nature of work.
 - In every case where compensation is to be paid to a workman employed by the contractor, as per provisions of Workmen's Compensation Act. The contractor shall arrange to pay such compensation in full and IACS will recover the same

from the dues and/or security deposit of the contractor and make arrangement to pay the same to the concerned.

14. In case of any dispute arising out of this contract during the progress of the work or after the cancellation, termination, completion or abandonment, the decision of the Director, IACS, shall be final and binding on the contractor.
15. It is also a term of the contract that if the contractor does not raise any claim in writing within 90 days from the date of cancellation, termination, completion or abandonment, the claim of the contractor shall be deemed to have been waived and absolutely barred and IACS shall be discharged and released of all its liabilities under the contract in respect of these claims.

Chapter 2

Technical Specifications

General scope of work:

- i) This specification covers the Design, fabrication, galvanizing, testing, inspection before dispatch, delivery at site, erection, commissioning and providing technical support up to the defect liability period. The fabricated steel poles will include base plate with its required accessories, monopole body, Cross Arms. The accessories shall include nuts, bolts and washers, U-Bolts with nuts and washers, space washers, links for providing attachment (if any), maintenance platform with safety caged ladder and any other equipment/ material / article to complete the works as per the scope given in this specification.
- ii) The monopoles will be fully galvanized. The holes for fixing the earthing bonds at the peak and for grounding the monopoles at bottom, which the purchaser may require, shall be provided at the convenient locations on the monopoles.
- iii) The scope includes construction of RCC foundation at site and SITC of luminaries for the high mast pole.
- iv) All other ancillary works viz. earth cutting, soil testing, back-filling for construction of foundation and cable trenches etc.

Steel:

The steel to be used shall conforming to structural steel grade as per BS-EN 10025 355 JO/JR, having minimum yield strength of 355 N/mm² and silicon content in steel shall be less than 0.06%. Procurement of all steel material required for the fabrication shall be arranged by the supplier at his cost. Progress of manufacturing shall also be watched during the progress of the work. IACS reserves the right to inspect the quality of steel. IACS also reserves the right to conduct stage inspection to check fabrication, raw material, galvanizing and other allied activities for which the manufacturer should give 15 days' advance notice for main activities viz. procurement of raw material, fabrication and galvanizing.

Zinc:

Electrolytic Zinc of Proper quality (99.9% pure) should be used for galvanizing monopole. IACS shall be at liberty to have samples of zinc used, test checked in any laboratory at the cost of the bidder and reject the particular supply if it not found up to requisite standard.

Bolts and Nuts:

Material for anchor bolts shall conform to grade 6.8 as per IS 12427 (latest amendment). Exposed portion of the Anchor bolts shall be galvanized as per relevant IS. Material for headed bolts shall be of grade 6.8 and shall be galvanized in accordance with relevant IS. Threaded rod shall be of grade 6.8.

Charpy impact requirements:

Structural plates shall meet Charpy impact value of 27J at 0°C. Charpy impact properties shall be determined in accordance with relevant provisions of IS 2062 (2006), latest amendment.

Weld Material:

Telescoping splices joining sections (slip joints) shall be designed to assure a minimum lap of 1.5 times the largest inside diameter of the outer section. Anchor bolts shall be provided with top and bottom templates to form a cage at job site. Circumferential welds are allowed only in case of welding of pole to shaft base plate, and shall be full penetration welds. Circumferential joints in the pole sections are not allowed. Welding shall conform to the relevant national / international standards. Preheat and interphase temperature as per standards shall be followed. Welding shall be done by the shield metal-arc, gas shielded flux core, gas shield metal arc or submerged-arc processes. Welding electrodes shall be of low hydrogen classification as per national / international standards, for submerged arc welding, when inspection of a weld zone is called for, procedures shall be in accordance with non-destructive testing procedures of national / international welding standards viz. ultrasonically or dye penetrant.

Fabrication

The Pole manufacturer shall prepare a detailed drawing of the pole and submit it to IACS for approval. Fabrication shall be performed in strict compliance with the approved detail drawings. Material substitution or deviations from the final approved drawings shall not be made without written approval from IACS. The manufacturer shall accurately identify all material to assure proper usage.

Pole Shaft

The pole shaft shall present the most pleasing appearance possible, consistent with the strength requirements in the specification and drawings. Pole shall be continuously tapered from bottom to top with a uniform slope. The pole shall be a 20 sided polygon. The pole shall be capable of safely withstanding the wind speed of 180 KM/H (50 m/sec) with 3 second gust, measured at a height of 10 meter above ground level in Inland area. Pole must be welded with automatic submerged arc welding machine. The deflection of the pole is to be limited to 1/40 of the height at 2/3 of the design wind speed. The design life of the mast shall be minimum of 25 years.

Pole Slip Joint

Pole section shall be made with telescopic slip joints for easy assembly either in air or on the ground at the construction site. Overlapping shall not be less than 1.5 times the largest inside diameter of the female section.

Foundations

These specifications provide general guidelines for construction of foundations for monopoles covered in the tender. The foundation shall be constructed as per design/drawings attached. Reinforced Cement concrete foundations, shall be used for monopoles in conformity with the present day practice followed in the country and the specifications laid herein. Foundation includes supply of materials such as cement, reinforcement steel, sand, coarse aggregates etc. Rates quoted for foundations in appropriate schedule shall include all items of work related to supply and installation of foundations such as form work, excavation and backfilling, setting, providing reinforcement etc.

Foundation shall be designed for the reaction arising out of the dynamic loading of the high mast for the actual safe soil bearing at site.

- The cement concrete used for the foundations shall be of grade **M-30**.
- All the properties of concrete regarding its strength under compression, tension, shear, punching and bend etc. as well as workmanship will conform to IS: 456-1978 (with latest amendments).
- The Portland cement used in concrete shall conform to IS: 269-1967.
- The Pozzolena cement used in concrete shall conform to IS: 1489-1976.
- Concrete aggregates shall conform to IS:383-1970
- The water used for mixing concrete shall be fresh, clean and free from Oil, acids and alkalis, organic materials or other deleterious substances. Potable water is generally preferred.
- Reinforcement shall conform to IS: 432-1966 for M.S. bars and hard drawn steel wires and IS: 1139-1966 and IS: 1786-1966 for deformed and cold twisted bars respectively. All reinforcement shall be clean and free from loose mill scales, dust, loose rust, and coats of paint, oil or other coatings, which may destroy or reduce bond. Contractor shall supply, fabricate and place reinforcement too shapes and dimensions and indicated or as required to carry out the intent of drawings and specifications. Only one type of steel shall be used for the design.
- The concrete shall be mixed in a mechanical mixer.
- The water for mixing concrete shall be fresh, clean and free from oil, acids and alkalis. Satish or blackish water shall not be used.
- Mixing shall be continued until there is uniform distribution of material and the mix is uniform in colour and consistency, but in no case the mixing be done for less than two minutes.
- Mechanical vibrator shall be employed for compaction of the concrete.

Back-Filling

Backfilling shall normally be done with excavated soil, unless it consists of large boulders/stones. The backfilling materials should be clean and free from organic or other foreign materials. The earth shall be deposited in maximum 200 mm layers wetted and tampered properly before another layer is deposited. Care shall be taken that the backfilling is started from the foundation ends of the pits, towards the outer ends. After the pits have been backfilled to full depth, the stub template may be removed.

Curing

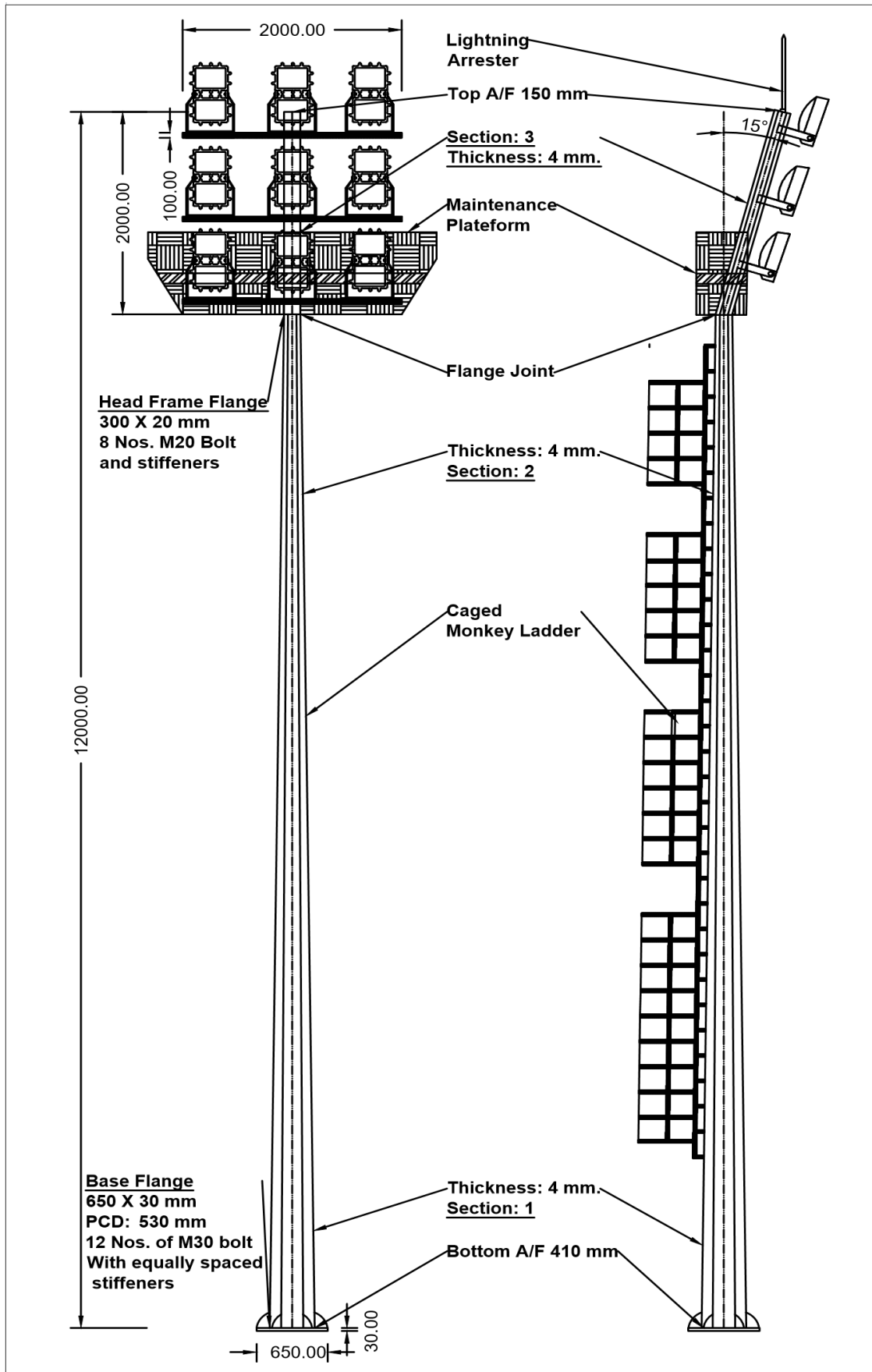
The concrete after setting for 24 hours shall be cured by keeping the concrete wet continuously for a period of 10 days after laying. The pit may be back filled with selected earth sprinkled with necessary amount of water and well consolidated in layers not exceeding 200 mm of consolidated thickness after a minimum period of 24 hours and thereafter both the backfilled earth and exposed top shall be kept wet for the remainder of the prescribed time of 10 days. The uncovered concrete above the backfilled earth shall be kept wet by providing empty jute bags dipped in water fully wrapped around the concrete for curing and ensuring that the bags are kept wet by the frequent pouring of water on them.

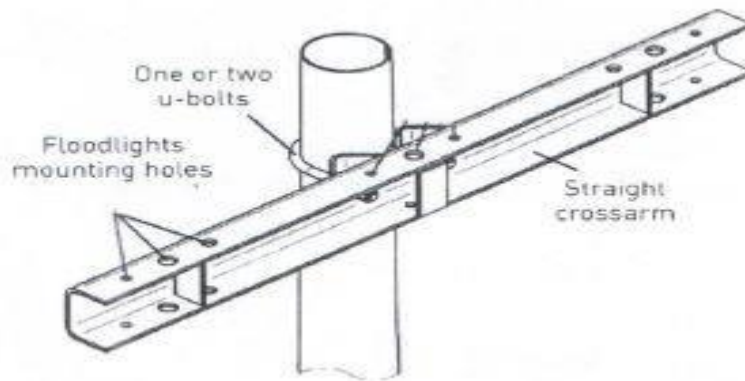
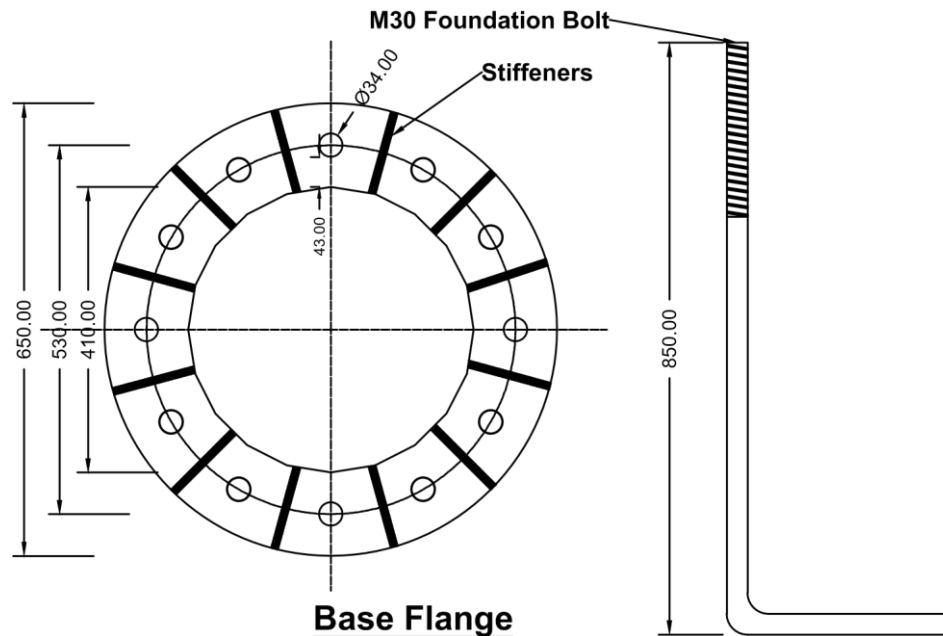
TECHNICAL DATA SHEET

	HIGH MAST STRUCTURE	
	Height of the polygonal pole.	12 Meters In Two Sections ; 20 sided polygon
	Material	High Tensile Steel. As per BS-EN 10025, Grade S-355 JO
	Material Construction of base plate and other stiffeners	IS 2062, Grade: E-250A
	Minimum plate thickness of main shaft	4 mm (Vertical portion) 4 mm (Inclined portion)
	Minimum base and top diameter	Top diameter : 150 mm Bottom diameter : 410 mm
	Type of Joints	Telescopic Slip Joint
	Metal protection treatment for mast section	Hot dipped galvanized in both internal and external surface (single dip) (As per IS 2629 : 1985)
	Thickness of galvanization	Minimum : 70 Micron (As per BS-EN ISO 1461)
	Base Flange	Diameter: 650 mm. Thickness: 30 mm. PCD: 530 mm With 12 Nos. of equally spaced Stiffeners
	Lightening protection finial	12 mm dia. Single spike, fixed at the head frame (As per IS 2309)
	Max. wind speed	50 m/sec with three second gust time (Inland area) (as per IS 875-Part III)
	Number of luminaries	9 Nos. of 500W LED. Weight around 12 KG each.

	HEAD FRAME	
	Head frame dimensions	2 Meter X 2 Meter
	Head Frame Flange	Diameter: 300 mm. Thickness: 20mm. PCD: 225 mm. With 8 Nos. of equally spaced stiffeners.
	Head frame connection Bolt	8 Nos. of M20 bolt of 6.8 Grade steel with Hot dipped galvanized.
	Cross-arm	2/3 Nos. per pole Length: 2 Meter, thickness: 6 mm, width: 100 mm, (50 x 100 x 50 X 6 mm C- Channel) Hot dipped galvanized. 2 Nos. of U-Bolt per cross arm
Anchor plate and template		
	Anchor Plate	Thickness: 6 mm; Hot dipped galvanized
Maintenance platform and caged ladder		
	Maintenance platform	Made up of MS angel iron with Hot dipped galvanized.
	Caged monkey ladder	The ladder is made of steel alloy profiles, anodized 10 micron, and corresponds to standards EN 131 and ISO 14122-4. with a safety cage, consisting of hoops and vertical bars
FOUNDATION DETAILS		
	Dimension of foundation	M-30 ; Refer to drawing
	Considered wind pressure	AS PER IS 875
	Considered wind speed	50 M/SEC
	No. of foundation bolts	12 Nos.
	PCD of foundation bolts	530 mm
	Type of foundation bolts	TS-600
	Bolt diameter and length	M30 X 850 mm, hot dip galvanized
	Nuts and Washers	Hot dip galvanized

Representational GA Drawing





1. Conformity to IE Act, IE Rules, and Standards:

- v) All electrical works shall be carried out in accordance with the provisions of Indian Electricity Act, 1910 and Indian Electricity Rules, 1956 amended up to date.
- vi) The works shall also conform to relevant Indian Standard Codes of Practice (COP) for the type of work involved.
- vii) In all electrical installation works, relevant safety codes of practice shall be followed.
- viii) Unless otherwise specified, the work shall be carried out as per CPWD General Specifications for Electrical Works (Internal & external) as applicable as per the instruction of the Engineer-in-Charge or his authorized representative.

2. Workmanship :

- i) Good workmanship is an essential requirement to be complied with. The entire work of manufacture / fabrication, assembly and installation shall conform to sound engineering practice involving highly skilled workers.
- ii) The work shall be carried out under the direct supervision of a highly experienced licensed SUPERVISOR, i.e. a person holding a certificate of competency issued by the State Govt. for the type of work involved, employed by the contractor, who shall rectify the defects pointed out by the Engineer-in-charge during the progress of work.

TENDER

I/We have read and examined the notice inviting tender, schedule of quantities, terms and conditions and all other contents of the tender document.

I/We hereby tender for execution of the work as per schedule of quantities, specification, drawing and instructions.

I/We agree to keep the tender open for Sixty days from the date of submission for acceptance and not to make any modifications in its terms and conditions.

A sum of Rs. _____ is hereby forwarded in the form of Demand Draft/ Bankers cheque/PAY Order of a Scheduled Bank as earnest money deposit which shall be retained by IACS as a part of security Deposit.

I/We agree that if I/We fail to commence the work as specified in the schedule of quantities, an amount equal to the amount of the earnest money mentioned above shall be absolutely forfeited to the IACS without prejudice to any other right or remedy available in law.

Date _____

Signature of Contractor

Postal address _____.

Witness _____

Address/Occupation _____

Acceptance

The above tender is accepted by me for and on behalf of Indian Association for the Cultivation of Science for a sum of Rs. _____ (Rupees _____). The letters referred to below shall form part of this contract agreement.

a) _____

Date: _____

For and on behalf of
Indian Association for the Cultivation of Science

Signature _____

Designation _____