

TENDER

FOR

**SUPPLY AND INSTALLATION OF HIGH
MAST LIGHT AND STREET LIGHT POLES**

AT

**NSIC EXHIBITION COMPLEX
OKHLA INDUSTRIAL ESTATE
NEW DELHI -110020**



ISO 9001:2008

THE NATIONAL SMALL INDUSTRIES CORPORATION LTD.

(A Government of India Enterprise)

Okhla Industrial Estate

New Delhi-110020

Website: <http://www.nsic.co>.

**THE NATIONAL SMALL INDUSTRIES CORPORATION LTD.
(A GOVERNMENT OF INDIA ENTERPRISES)
Okhla Industrial Estate New Delhi-110020**

Ref: - SIC/HO/WD/1(50)/05-06

Date: 29-11-2011

M/s. _____

Sub: Supply and Installation of High Mast Light and Street Light Poles at NSIC Exhibition Complex Okhla Industrial Estate, New Delhi -110020.

Sir,

Tender documents in respect of the above mentioned works containing 27 pages as detailed on page 4 (Index) are forwarded herewith. ***Please note that tender is to be issued in the office of the General Manager (Works) NSIC Ltd., NSIC Bhawan Okhla Industrial Estate New Delhi-110020 upto 28-12-2011, 3.00 P.M.***

The Tender should be signed on each page, dated and witnessed in all places provided for in the documents; all other papers should be initialed.

The tender should be accompanied by Earnest Money Deposit in the form of demand draft as mentioned in Appendix. Tenders without earnest money deposit shall be summarily rejected. The tenders will be opened at 3.30 P.M. on 29-12-2011.

The person, signing the tender on behalf of company/firm or on behalf of another person shall attach with tender a certified copy of proper authority/power of attorney on a non-judicial stamp paper of requisite value duly executed in his favour by such person, company/firm and must state specifically that he has authority to sign such tenders for and on behalf of such person or company/firm as the case may be, and in all matters pertaining to the contract including arbitration clause.

This letter shall form part of the **“CONTRACT”** and must be signed and returned along with the tender documents.

Yours faithfully

Encl. 36 Pages

General Manager (Works)

Signature of the Contractor with stamp

Tender notice for Supply and Installation of High Mast Light and Street Light Poles at NSIC Exhibition Complex New Delhi -110020

TENDER NOTICE NO Ref:-SIC/HO/WD/1(50)/05-06

Date: 29-11-2011

Sealed item rate tenders are hereby invited on behalf of NSIC Ltd. from experienced Contractors

S. No.	Name of the work	Estimated cost Rs. (Lacs)	EMD (Rs)	Completion Time	Issue of Blank Tender Document	Last Date of Submission Tender
1.	Supply and Installation of High Mast Light and Street Light Poles at NSIC Exhibition Complex New Delhi -110020.	30.70 Lacs	62000 /-	60 days	From 22-12-2011 to 28-12-2011	29-12-11 Up to 3.00 PM

1. Blank tender documents (non-transferable) for above work shall be issued from 22-12-2011 to 28-12-2011 on working days from the address given below on payment of required tender fee of Rs.1000/- (Rupees One thousand only) (non-refundable) in cash/DD in favour of "NSIC Ltd.", payable at New Delhi . The bidders may also download the tender documents from the website however a separate demand draft of Rs 1000/- in favour of NSIC Ltd. payable at New Delhi is to be enclosed along-with the technical bid towards the cost of tender documents.
2. The tenders should have completed minimum three works of similar nature of minimum value of Rs 12.00 Lacs each or two works of value of Rs. 18.00 lacs each or one work of Rs 25.00 lacs in their name, during last 5 years. Photocopies of the completion certificates/award letters should be submitted along with the tender. Completion certificate issued by the reputed organization / MNC shall also be accepted. In case of certificates issued by the private party, copies of TDS should also be enclosed. Similar natures means that bidder should have executed the work of design, supply, erection, testing and commissioning of High Mast Lighting system for above said value.
3. Work of similar nature means "Supply and Installation of High Mast Light and Street Light Poles" as mentioned in the schedule of work..
4. While applying for the tender document, the intending tenderers shall furnish proof of, experience certificates, works completed/awarded, valid work contract tax /sales tax/ VAT/TIN as applicable.
5. The tender issuing authority reserves the right to issue or refuse to issue the tender document to any party without assigning any reason.
6. Tenders not accompanied by Earnest Money Deposit and tender cost in the prescribed form shall be summarily rejected.
7. NSIC reserves the right to reject all or any tender wholly or partly without assigning any reason whatsoever.

General Manager (Works)

**THE NATIONAL SMALL INDUSTRIES CORPORATION LTD.
(A GOVERNMENT OF INDIA ENTERPRISES)
Okhla Industrial Estate New Delhi -110020**

Ref: - SIC/HO/WD/1(50)/05-06

Date: 29-11-2011

INDEX OF TENDER DOCUMENTS

S. NO.	DESCRIPTION	PAGES
1	INSTRUCTION TO TENDERERS	5-7
2	GENERAL CONDITIONS OF CONTRACT	8-17
3	FORM OF TENDER	18-19
4	APPENDIX	20
5	SPECIAL CONDITIONS	21
6	SCHEDULE OF QUANTITIES	22-26
7.	TECHNICAL SPECIFICATION	27-36

INSTRUCTIONS TO TENDERERS

1.0 GENERAL

Tenderers are advised to acquaint themselves fully with the description of work, scope of services, time schedule and terms and conditions including all the provisions of the Tender Document before framing up their tender.

2.0 SITE PARTICULARS

Tenderers are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to site conditions, means of access to the site.

3.0 SUBMISSION OF TENDER

The expression "Tender Notice" referred to in the Tender Documents shall be deemed to include any Notice / Letter Inviting Tender with respect to the work forming the subject matter of the documents and vice-versa.

The tender complete in all respects shall be submitted along with Earnest Money as stipulated in the Notice / Letter Inviting Tender ONLY. Tenders without Earnest Money Deposit will be out rightly rejected.

Tenders shall be submitted in Two sealed envelopes Super scribing as following: -

1) Technical Bid

Name of work :
Tender no. :
Due date & time of opening :
Addressed to : General Manager (Works)
NSIC Ltd. NSIC Bhawan
Okhla Industrial Estate New Delhi-110020

From: Name & address of the tenderer

This envelope shall contain the following: -

EMD in the form of Demand Draft drawn on a scheduled/nationalized bank in favour of 'NSIC LTD' payable at New Delhi be accepted.

Details of the minimum three works of similar nature of minimum value of Rs 12.00 Lacs each or two works of value of Rs.18.00 Lacs each or one work of Rs 25.00 Lacs in their name, during last five years. Photocopies of the completion certificates/award letters should be submitted along with the tender. Completion certificate issued by the reputed organization / MNC shall also be accepted. In case of certificates issued by the private party, copies of TDS should also be enclosed.

Valid registration with Sales Tax department for Work Contract Tax/VAT/TIN.

Registration with Central/State Government Department and PSU's in appropriate class upto the limit of estimated cost.

Tender cost in requisite form if tender down loaded from the Website.

II) Price Bid

This envelope shall contain the tender document with **PRICES and amount duly filled by the party against the each item prescribed in the Schedule of quantity of tender document** and no conditions (i.e. deviations / assumptions / stipulations / clarifications / comments / any other request) whatsoever and the conditional offers will be rejected.

3.1 Essentially qualifying criteria

Tenderer should submit the following documents with Technical bid.

- 1.) EMD in requisite form
- 2.) Tender cost in requisite form if tender is downloaded from NSIC website.
- 3.) Experience certificates /completion certificates.
- 4.) Registration certificate with Central/State govt. Department and PSUs in minimum class II .

4.0 ABNORMAL RATES

If it is noticed that the unit rates quoted by the Tenderer for any items are unusually high or unusually low, it will be sufficient cause for rejection of the tender unless the Corporation is convinced about the reasonableness of the unit rates on scrutiny of the analysis for such unit rate to be furnished by the tenderer on demand.

5.0 DEVIATIONS TO TENDER CLAUSES:

Tenderers are advised to submit the tenderers strictly based on the terms and conditions and specification contained in the Tender Documents and not to stipulate any deviations. Conditional tenders are liable to be rejected.

6.0 VALIDITY OF OFFER

Tender submitted by tenderers shall remain valid for acceptance for a minimum period of 120 days from the date of opening of the tenders.

7.0 AWARD OF WORK

Corporation reserves the right to split the job into two or more parts and to award the work to separate agencies/contractors. Work shall be awarded to the lowest bidder, subject to the work experience and fulfillment of other terms & conditions and specifications.

8.0 ACCEPTANCE / REJECTION OF TENDER

- i) Corporation does not bind itself to accept the lowest tender.
- ii) Corporation also reserves the right to accept or reject any tender in part or full without assigning any reason whatsoever.
- iii) Corporation also reserves the absolute right to reject any or all the tenders at any time solely based on the past unsatisfactory performance by the bidder(s) the opinion/decision of NSIC regarding the same shall be final and conclusive.

9.0 CORRECTIONS

No corrections or overwriting will be entertained in schedule of rates by using correcting fluid. All correction in the schedule of rate should be initialed.

10.0 FIRM RATES

The rates quoted by bidder shall remain firm till completion of all works even during the extended period, if any, on any account what so ever. It is provided that the contractor shall not change any of the rates, quoted in the tender till the completion of work.

General Manager (Works)

GENERAL CONDITIONS OF CONTRACT

1. Where the context so requires, words importing the singular only also include the plural and vice versa.
2. Corporation shall mean 'The National Small Industries Corporation Ltd. (A Government of India Enterprise) "NSIC Ltd.,NSIC Bhawan ,Okhla Industrial Estate, New Delhi-110020 and shall include their legal representatives, successors and permitted assigns.
3. The Contractor is required to approach the Corporation for execution of agreement for the said work as per the prescribed proforma to be provided by the Corporation on a non-judicial stamp paper of Rs.100/- within 10 days from the issue of the letter of award.

4. Contract Documents:

The Contractor shall be provided, free of charge, one certified true copy of the Contract Documents and of all further drawings, which may be issued during the progress of the Works. He shall keep these Documents on the Site in good order.

5. Works to be carried out:

The work to be carried out under the Contract shall, except as otherwise provided in these conditions, include all labour, materials, taxes tools, plant, equipment and transport which may be required in preparation of and for and in the full and entire execution and completion of the works.

6. Inspection of Site:

The Contractor shall inspect and examine the Site and its surrounding and shall satisfy himself before submitting his tender as to the nature of the Site, the quantities and nature of works and material necessary for the completion of the Works and the means of access to the Site, the accommodation he may require and in general shall himself obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect this tender.

7. Sufficiency of Tender:

The Contractor shall be deemed to have satisfied himself before tendering as to the Correctness and sufficiency of his tender for the works and of the rates and prices quoted in the Schedule of Quantities, which rates and prices shall except as otherwise provided, cover all his obligations under the contract and all matters and things necessary for the proper completion and maintenance of the Works.

8. Any error in description, quantity or rate in Schedule of Quantities or any omission there from shall not vitiate the Contract or release the Contractor from the execution of the whole or any part of the Works comprised therein according to drawings and specifications or from any of his obligations under the Contract.

In the event of an error occurring in the amount column of Schedule of Quantities as a result of wrong extension of the unit rate and quantity the unit rate shall be regarded as firm and extension shall be amended on the basis of the rate.

All errors in totaling in the amount column and in carrying forward totals shall be corrected.

9. Security Deposit:

Total security deposit shall be 10 % of the accepted tender cost and shall be deposited/deducted by/from the contractor as following: -

a). Initial Security Deposit:

Contractor will deposit initially a two and half percent (2.5%) of the accepted tender cost as an initial security deposit within ten (10) days of receipt of the letter of intent/notification of acceptance of the tender by him. The earnest money deposited shall be converted into initial security deposit.

b). Balance Security Deposit

Balance seven and half per cent (7.5%) will be recovered in installments through deductions at the rate of ten per cent (10%) of the value of each running account bill till total security Deposit amount is collected, after which no further deduction from Bills will be made on this account. EMD shall be converted into security deposit and adjusted in RA bills.

- 9.1 All compensation or other sums of money payable by the contractor under the terms of this Contract or any other Contract or any other account whatsoever may be deducted from the security deposit.
- 9.2 Refund **of Security deposit**: Security deposit refundable to the Contractor worked out on the basis of the value of work completed shall be refunded to the Contractor on the Engineer-In-Charge certifying in writing that the work has been completed satisfactorily after defect liability period of 12 months.
- 9.3 No interest shall be payable to the contractor on the Security Deposit furnished/recovered from the contractor, by the Corporation.

10 Deviations/Variations Extent and Pricing

The Engineer-in-charge shall have power (i) to make alteration, in omissions from, additions to, or substitutions for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work, and (ii) to omit a part of the works in case of

non-availability of a portion of the site or for any other reasons and the contractor shall be bound to carry out the works in accordance with any instructions given to him in writing signed by the Engineer-in Charge and such alterations, omissions, additions or substitutions shall form part of the contract as if originally provided therein and any altered, additional or substituted work which the contractor may be directed to do in the manner specified above as part of the works, shall be carried out by the contractor on the same conditions in all respects including price on which he agreed to do the main work except as hereafter provided.

10.1 The time for completion of the works shall, in the event of any deviations resulting in additional cost over the tendered value sum being ordered, be extended if requested by the contractor, as follows:

- i) In the proportion which the additional cost of the altered, additional or substituted work, bears to the original tendered value plus
- ii) 25% of the time calculated in (i) above or such further additional time as may be considered reasonable by the Engineer-in-Charge.

10.2

Deviation, Extra Items and Pricing Rates for Extra/ Additional Items

- i) If the rate for additional, altered or substituted item of work is specified in the Schedule of Quantities, the Contractor shall carry out the additional, altered or substituted item at the same rate.
- ii) If the rate for any altered, additional or substituted item of work is not specified in the schedule of Quantities, the rate for that item shall be derived from the rate for the nearest similar item specified therein.
- iii) If the rate for any altered, additional or substituted item of work cannot be determined in the manner specified in sub-paras (i), and (ii) above, the contractor shall, within 7 days of the date of receipt of the order to carry out the said work, inform the Engineer-in-Charge under advice to the Accepting Authority of the rate which he proposes to claim for such item of work, supported by analysis of the rate claimed, and the Engineer-in-Charge shall, within fifteen days thereafter, after give due consideration to the rate claimed by the Contractor determine the rate on the basis of market rate(s). In the event of the contractor failing to inform the Engineer-in-Charge within the stipulated period of time, the rate which he proposes to claim, the rate for such item shall be determined by the Engineer-in-Charge on the basis of market rate(s) shall be final. Payment of such items shall be made accordingly.

11.0 Time and Extension for Delay:

11.1 The time allowed for execution of the works as specified in the Appendix or the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the works shall commence from the 10th day after

the date on which the Corporation issues written orders to commence the work or from the date of handing over of the site, which ever is earlier.

11.2 As soon as possible after the Contract is concluded the Engineer-in-Charge and the Contractor shall agree upon a Time and Progress Chart. The Chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of the works.

11.3 If the work be delayed by

(a) Force majeure or

(b) Abnormally bad weather or

(c) Serious loss or damage by fire, or

(d) Civil commotion, local combination of workmen strike or lockout, affecting any of the trades employed on the work, or

(e) Delay on the part of other contractors or tradesmen engaged by Corporation in executing work not forming part of the contract, or

(f) Any other cause, which, in the absolute discretion of the authority mentioned in Appendix, is beyond the Contractor's control;

11.4 Then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Engineer-in-Charge but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the Works.

12 The Contractor shall arrange, at his own expense, all tools, plant and equipment hereafter referred to as (T & P) labour, P.O.L. & electricity/water required for execution of the work.

13 FORCE MAJEURE

Any delays in or failure of the performance of either party herein shall not constitute default hereunder or give rise to any claim for damages, if any, to the extent such delays or failure of performance is caused by occurrences such as Act of god or the public enemy; expropriation or confiscation of facilities by Government authorities, or in compliance with any order or request of any Governmental authorities or due acts of war, rebellion or sabotage or fires, floods, explosions, riots or illegal joint strikes of all the workers of all the contractors.

14 MATERIALS

All materials to be provided by the Contractor shall be in conformity with the specifications laid down in the contract and the Contractor shall, if requested by

the Engineer-in-Charge, furnish proof to the satisfaction of Engineer-in-Charge in this regard.

15 Labour:

a.) The Contractor shall employ its labour in sufficient numbers to maintain the required rate of progress and of quality to ensure workmanship of the degree specified in the Contract and to the satisfaction of the Engineer-in-Charge. The Contractor shall not employ in connection with the Works any person who has not completed eighteen years of age.

b.) All the workers or employees deployed by the contractors shall consider the employees of contractor and corporation shall not have any liability what so ever in nature in regard to such workers/employees.

c.) The Contractor shall pay to labour employed by him directly wages not less than fair wages as per Minimum Wages Act. Fair Wage' means wages, which shall include wages for weekly day of rest and other allowances whether for time or piece work, after taking into consideration prevailing market rates for similar employment in the neighborhood but shall not be less than the minimum rates of wages fixed under the payment of Minimum Wages Act.

d.) The Contractor shall in respect of labour employed by him or his sub-contractor comply with or cause to be complied with the Contractor Labour Regulation in regard to all matters provided therein.

e.) The Contractor shall comply with the provisions of the payment of Wages Act, 1936, Minimum Wages Act, 1948, Employers' Liability Act, 1938. Workmen's Compensation Act, 1923, Industrial Disputes Act, 1947, Maternity Benefit Act, 1970 or any modification thereof or any other law relating thereto and rules made there under from time to time.

f) The Contractor shall indemnify and keep indemnified the Corporation against:

- i) Any claim arising out of third party loss/ damage to life or property caused by/ during execution of the work.
- ii) Any claim arising out of loss/ damage to the workmen engaged by the Contractor during execution of the work.
- iii) Any claim due to non-compliance of applicable PF/ Labour laws, ESI Regulations etc.

16 Inspections and Approval:

All work embracing more than process shall be subject to examination and approval at each stage thereof and the Contractor shall give due notice to the Engineer-in-Charge or his authorized representative when each stage is ready. The Engineer-in-Charge or his representative shall have powers at any time to inspect and examine any part of the Works and the contractor shall give such

facilities as may be required for such inspection and examination, at manufacturers works if necessary.

17 Liquidated Damages for Delay

Time is essence of the contract. In case the CONTRACTOR fails to complete the whole work within the stipulated period, and clear the site he shall be liable to pay liquidated damages @ 0.5% (One Half of one percent only) of the value of contract per week and or part thereof of the delay subject to a maximum of 10% (ten percent only) of the value of the contract. The amount of Compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with the Corporation.

18 Instruction and Notices:

18.1 Subject as otherwise provided in this contract, all notices to be given on behalf of the Corporation and all other actions to be taken on its behalf may be given or taken by the Engineer-in-Charge or any officer for the time being entrusted with the functions, duties and powers of the Engineer-in-Charge.

18.2 All instructions, notices and communications, etc., under the contract shall be given in writing and if sent by registered post to the last known place of abode or business of the Contractor shall be deemed to have been served on the date when in the ordinary course of post these would have been delivered to him.

18.3 Foreclosure of Contract in Full or in Part due to Abandonment or Reduction in Scope of Work.

If at any time after acceptance of the tender the Corporation shall decide to abandon or reduce the scope of the works for any reason whatsoever and hence not require the whole or any part of the Works to be carried out the Engineer-in-Charge shall give notice in writing to that effect to the Contractor and Contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the works in full but which he did not derive in consequence of the foreclosure of the whole or part of the works.

18.4 The Contractor shall be paid at Contract rates full amount for works executed at Site as certified by the Engineer-in-Charge.

19 Cancellation of Contract in Full or in Part:

If the Contractor:

a. At any time makes defaults in proceeding with the Works with due negligence and continues to do so even after a notice in writing of 7 days from the Engineer-in-Charge; or

b. Commits default in complying with any of the terms and conditions of Contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him in that behalf by the Engineer-in-Charge; or

- c. Fails to complete the works or items of work on or before the date(s) of completion, and does not complete them within the period specified in a notice given in writing in that behalf by the Engineer-in-Charge; or
- d. Violates any of the terms and conditions stipulated in this agreement
- e. Being a company, passes a resolution or the Court makes an order for liquidation of its affairs, or a receiver or manager on behalf of the debenture holders is appointed or circumstances shall arise which entitle the Court or debenture holders to appoint a receiver or manager; or

20 Liability for Damage, Defects or Imperfections and Rectification thereof:

If the Contractor or his workmen or employees shall injure or destroy any part of the building in which they may be working or any building, road, fence, etc. contiguous to the premises on which the work or any part of it is being executed, or if any damage shall happen to the work while in progress the Contractor shall upon receipt of a notice in writing in that behalf make the same good at his own expense. In case of repairs and maintenance works, splashes and dropping from white washing, painting, etc. shall be removed and surfaces cleaned simultaneously with completion of these items of work in individual rooms, cabins or premises, etc. where the work is done, without waiting for completion of all other items of work in the contract. In case the Contractor fails to comply with the requirements of this condition, the Engineer-in-Charge shall have the right to get the work done by other means at the cost of the Contractor. Before taking such action, however, the Engineer-in-Charge shall give three days notice in writing to the Contractor.

21 Urgent Works:

If any Urgent work (in respect whereof the decision of the Engineer-in-Charge shall be final and binding) becomes necessary and Contractor is unable or unwilling at once to carry it out, the Engineer-in-Charge may by his own or other workpeople carry it out, as he may consider necessary. If the urgent work shall be such as the Contractor is liable under the contract to carry out at his expenses, the expenses incurred on it by the Corporation shall be recoverable from the Contractor and be adjusted or set off against any sum payable to him.

22 VALUATIONS AND PAYMENT:

- 22.1 The Engineer-in-Charge shall accept as otherwise stated ascertain and determine by measurement the value in accordance with the contract work done in accordance therewith.
- 22.2 All items having a financial value shall be entered in Measurement Book, etc. prescribed by the Corporation so that a complete record is obtained of all work performed under the contract.

- 22.3 Payments against running bills may be released subject to value of work executed and measured being not less than Rs. 9.00 lac.
- 22.4 Payment will be made on actual measurement basis as carried out at the site. The quantities given in the schedule of quantities are only approximate and contractor will have to carry out the work as per the increased/decreased quantity of work as per the directions of Engineer-in-Charge, for which no extra claim over and above the tender rate will be considered. For releasing the payment up-to accepted tender amount the General Manager (Works) is the approving authority.
- 22.5 The Contractor shall, without extra charge, provide assistance with every appliance, labour and other things necessary for measurements. In regard to measurement, variation; the decision taken by the Engineer-in-charge shall be final.
No escalation will be paid even in extended period, if any.
- 22.6 All measurements shall be taken jointly by the Engineer-in-charge or his authorized representative and by the contractor or his authorized representative from time to time during the progress of the work and such measurements shall be signed and dated by the Engineer-in-charge and the parties. If the Contractor objects to any of the measurements recorded on behalf of the Corporation a note to that effect shall be made in the Measurement Book against the item object to and such note shall be signed and dated by all the parties engaged in taking the measurement. The decision of the Competent Authority on any such dispute or difference or interpretation shall be final and binding on both the parties and shall be beyond the scope of the settlement of disputes of Arbitration in respect of all contract items, substituted items, extra items and deviations.
- 22.7. All statutory deductions as applicable like TDS, sales tax/VAT shall be made from the due payment of the contractor.

23 Methods of Measurement:

Except where any general or detailed description of the work in Quantities expressly shows to the contrary, Schedule of Quantities shall be deemed to have been prepared and measurements shall be taken in accordance with the procedure set forth in the Schedule of Rates / Specification notwithstanding any provision in the relevant Standard Method of Measurement or any general or local custom.

24 Income Tax/WCT/VAT

- 24.1 Income tax including surcharge if any, at the prevailing rate shall be deducted from the Contractor's bills as per the provision of Income Tax Act.
- 24.2 The Contractor shall ascertain from the concerned commercial tax department regarding the applicability of Works Contract Tax / VAT/TIN. Necessary deductions will be made from the contractor's bill as applicable.

25 Carrying out part work at risk & cost of contractor

The Engineer-in-charge without prejudice to any other right or remedy against the contractor which have either accrued or accrue thereafter to the Corporation, by a notice in writing to take the part work/ part incomplete work of any item(s) out of his hands and shall have powers to:

- a) Take possession of the site and any materials, constructional plant, implements, Stores etc., thereon; and/or
- b) Carry out the part work/ part incomplete work of any item(s) at the risk and cost of the contractor.

Any excess expenditure incurred or to be incurred by the Corporation in completing the part work/ part incomplete work of any item(s) or the excess loss of damages suffered or may be suffered by the Corporation as aforesaid without prejudice to any other right or remedy available to Corporation in law or as per agreement be recovered from any money due to the contractor on any account, and if such money is insufficient, the contractor shall be called upon in writing and shall be liable to pay the same within 30 days.

If the contractor fails to pay the required sum within the aforesaid period of 30 days, the Engineer-in-charge shall have the right to sell any or all of the contractors' unused materials, constructional plant, implements, temporary building at site etc. and adjust the proceeds of sale thereof towards the dues recoverable from the contractor under the contract and if thereafter there remains any balance outstanding, it shall be recovered in accordance with the provision of the contract.

In the event of above course being adopted by the Engineer-in-charge, the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured materials or entered into any engagements or made any advance on any account or with a view to the execution of the work or the performance of the contract.

26 ARBITRATION AND LAWS

Arbitration:

Except where otherwise provided for in the contract all questions and disputes relating to the meaning of the specifications, designs, drawings and instructions herein before mentioned and as to the quality of workmanship or materials used onto work or as to any other question, claim right matter or thing whatsoever in any way arising out of or relating to the contract, designs drawings, specifications, estimates, instructions, orders and these conditions or otherwise concerning the works, or the execution or failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the sole arbitration of the Chairman-cum-Managing Director of the National Small Industries Corporation Ltd. and if the Chairman-cum-Managing Director is unable or unwilling to act, to the sole arbitration of some other person appointed by the Chairman cum Managing Director, National Small Industries Corporation Ltd. willing to act as such arbitrator. There will be no objection if the arbitrator so appointed is an employee of the

National Small Industries Corporation Ltd. and that he had to deal with the matters to which the contract relates and that in the course of his duties as such he had expressed views on all or any of the matters in dispute or difference. The arbitrator to whom the matter is originally referred being transferred or vacating his office or being unable to act for any reason as aforesaid at the time of such transfer, vacation of office or inability to act., Chairman and Managing Director, National Small Industries Corporation Ltd. shall appoint another person to act, as arbitrator in accordance with the terms of the Contract. It is also a term of this contract that no person other than a person appointed by C.M.D., National Small Industries Corporation LTD., as aforesaid should act as arbitrator and if for any reason, that is not possible, the matter is not to be referred to arbitration at all.

Subject as aforesaid the provision of the Indian Arbitration and Reconciliation Act, 1996, or any statutory modification or re-enactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceeding under this clause.

It is a term of the contract that the party invoking arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such dispute.

The arbitrators may from time to time with consent of this party enlarge the time, for making and publishing the award.

The work under the contract shall, if reasonably possible continue during the arbitration proceedings and so payment due to payable to the Contractor shall be withheld on account of such proceedings.

The Arbitrator shall be deemed to have entered on the reference on the date he issued notice to both parties fixing the date of the first hearing. The Arbitrator shall give a separate award in respect of each dispute of difference referred to him.

The venue of arbitration shall be such place as may be fixed by the Arbitrator in sole discretion.

The award of the arbitrator shall be final, conclusive and binding on all parties to this contract.

The cost of arbitration shall be borne by the parties to the dispute, as may be decided by the arbitrator(s).

The Indian Laws shall govern this contract for the time being in force. The courts at New Delhi / Delhi only shall have the jurisdiction

General Manager (Works)

SIGNATURE OF THE CONTRACTOR

FORM OF TENDER

To

General Manager (Works)
NSIC Ltd., NSIC Bhawan
Okhla Industrial Estate,
New Delhi-110020

I/We have read and examined the following documents relating to.....

.....

(Name of the Work)

- a). Notice inviting tender.
- b). Instructions to Tenderers
- c). Technical Specifications
- d). General Conditions of Contract including Contractors, Labour Regulations, Model Rules for Labour Welfare and Safety Code appended to these conditions together with the amendments thereto if any.
- e). Special Conditions of contracts if any.
- f). Bill of Quantities

I/We hereby tender for execution of the works referred to in the aforesaid documents upon the terms and conditions contained or referred to therein and in accordance in all respects with the specifications, designs, drawings and other relevant details at the rates contained in Schedule and within the period(s) of completion as stipulated in Appendix.

In consideration of I/We being invited to tender, I/We agree to keep the tender open for acceptance for 120 days from the due date of submission thereof and not to make any modifications in its terms and conditions which are not acceptable to the Corporation.

A sum of Rs 62,000/- is hereby forwarded as Earnest Money Deposit in the form of Demand Draft in favour of NSIC Ltd. payable at New Delhi . If I/We fail to keep the tender open as aforesaid or make any modifications in the terms and conditions of the tender which are not acceptable to the Corporation, I/We agree that the Corporation shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely. Should this tender be accepted, I /We agree to abide by & fulfill all the terms conditions of aforesaid document.

If after the tender is accepted, I/we fail to commence the execution of the work as provided in the conditions. I/We agree that Corporation shall without prejudice to any other right or remedy is at liberty to forfeit the said earnest money absolutely.

Signature of contractor.....

Duly authorized to sign the tender on behalf of the (in block capitals)
.....

.....

Dated.....

Witness.....

Date.....

Address.....

.....

APPENDIX

- | | |
|--|---|
| 1. Competent Authority | C.M.D. NSIC or his
Authorized executives |
| 2. Earnest money/Security deposit | |
| a) Estimated cost of the Works | Rs. 30.70 Lacs |
| b) Earnest money | Rs 62,000/- in the form of
DD /Pay order in favour
of NSIC Ltd.,New Delhi |
| c) Security Deposit | 10% of the contract value. |
| 3. Deviation limit for items of work | |
| Deviation limit beyond which clauses 10.2
shall apply for the building / Development work | 30% |
| 4. Time allowed for execution of work | 60 Days |
| 5. Authority competent to grant extension of time for
or his any cause of delay which is beyond Authorized
representative Contractor's control | GM (Works) New Delhi |
| 6. Liquidated Damaged | 0.5% (one half of one
Percent) per week subject
to a Maximum 10% value
of the contract |
| 7. Approving Authority for releasing the payment
up to the accepted tender cost. | GM (Works) NSIC Ltd
New Delhi |
| 8. Defect Liability Period | 12 months from the date
of Completion of work. |
| 9. Authority competent to reduce
Compensation | GM (Works) NSIC Ltd.
New Delhi |

(Signature of the Contractor)

SPECIAL CONDITIONS

1. Any facility not mentioned in this scope, but which is vital to erection and commissioning of High Mast Lighting System is assumed to be included in the scope of work.
2. The minimum grade of M-20 of concrete shall be used for foundation work of High Mast and Pole. If design requires higher grade of concrete then the same has to be used.
3. All designs, drawings and quality plan duly certified by chartered structural engineer have to be submitted to NSIC before commencement of work.
4. Electricity for erection at site will be provided free of cost at NSIC substation. However, cable, T &P etc will have to be managed by the contractor
5. Contractor has to ensure safety and provide adequate supervision.
6. Quality plan for fabrication of high mast to be submitted as per the standard quality plan of NSIC stating all stages of inspection like preliminary, in process and final, before dispatch of material to NSIC.
7. During working at site, some restrictions may be imposed by Engineer-in-Charge/Security staff of Corporation or Local Authorities regarding safety and security etc., the contractor shall be bound to follow all such restrictions/instruction & nothing extra shall be payable on this account.
8. No compensation shall be payable to the contractor for any damage caused by rains lightening, wind, storm, floods Tornado, earth quakes or other natural calamities during the execution of work. He shall make good all such damages at his own cost; and no claim on this account will be entertained.
9. The tender shall be based on Conditions of Contract and tenderers are required to quote their own rates against each item in schedule of quantities, which is enclosed. All rates shall remain firm for the contract period/extended contract period.
10. If the contractor fails to proceed with the work within the stipulated time as specified from the date of issue of letter of intent/letter to proceed with the work, the Corporation shall forfeit the earnest money deposited by him along with the tender.
11. All the works to be carried out in accordance with latest CPWD/BIS Specifications and as per the directions of Engineer-in-charge.
12. **COST OF TESTS**
The contractor is bound to carry out the tests as per the CPWD/BIS/Applicable codes guidelines for ascertaining the quality of the works executed/ materials used as and when directed by the Engineer-in-charge. The cost of preparing samples and carrying out tests for quality of material or workmanship will be borne by the contractor except for such exclusions as are specifically mentioned in the specifications laid down in the contract. The cost of all test carried out in Laboratories as directed by the Engineer-in-charge will be borne by the contractor.

General Manager (Works)

SIGNATURE OF THE CONTRACTOR

Schedule of Work

S. No	Description of item	Unit	Qty	Rate Rs.	Amount Rs.
1.	<p>S.I.T & C of continuously tapered multifaceted and polygonal cross section High mast as per detailed specification & details given</p> <p>a) 1 or 2 sections having suitable sectional length with slip joints between sections without any circumpherencial welding.</p> <p>b) Double drum winch with separate handle for manual operation of winch with a torque limiting device for safe docking of carriage.</p> <p>c) Raising/lowering type lantern carriage designed to carry 08 nos luminaries; control gear box, junction box and top pulley assemble with weather proof cover.</p> <p>d) Necessary suitable length for lowering & rising of lantern carriage of stainless steel wire ropes of 7/19 construction(with minimum 6mm dia) and multicore flexible copper power cable</p> <p>e) Hinged service door in base section base plate earthing terminal.</p> <p>f) Suitable arrangement for supply distribution with termination of suitable size underground cable in high mast.</p> <p>g) Complete with other provision for execution in the confirmation with detailed technical specifications.</p> <p>h) Lightning conductor finial made of 25mm dia 300 mm long G.I.tube having single prong.</p> <p>i) Integral single power tool (electrical) for lowering & raising of high mast with separate manually operated system.</p> <p>j) Anchor plate, templates, foundation bolts manufactured from special steel along with nuts washers etc,</p>				
1.1	16 meter High mast (two sections)	Each	1		
1.2	12 meter high mast (one sections)	Each	3		
2.	Design & casting of RCC Foundation suitable for erection of high mast as per design/manufacturers recommendation considering safe soil bearing capacity				

	including supplying & casting foundation anchor plate and templates, foundation bolts manufactured from special steel along with nuts, washers etc as reqd. a) 16 meter High mast	Each	1		
	b) 12 meter high mast	Each	3		
3.	S.I.T & C of 2x400 watt asymmetrical beam non-integral floodlight luminaries with glaskote, 2x400 watt control gear boxes including 2x400 SVT lamps complete suitable for operation on 230 v, 50HZ, AC Supply, on the existing high mast as reqd. Make: BGNF 22R of Bajaj make or equivalent of Philips/Crompton as approved by Engineer in Charge.	Each	26		
4.	S.I.T & C of dust vermin and weather proof out door compartmentalized feeder pillar of suitable size made of 14 SWG M.S. sheet complete with the following:- a) Canopy at top b) Hinged door open able on both side with heavy duty locking system.- 02 nos c) Base frame with detachable cover on all sides made out of 14 SWG steel sheet. d) Legs of suitable length make out of 40mm x 40mm x 6mm angle iron including grouting the legs in 1:2:4 CC (1 Cement 2 coarse sand 4 stone aggregate of 40 mm nominal size). e) Knock out holes at bottom for cable entry f) Earthing stud- 02 nos g) Powder coated of approved shade. h) 63 amps TPN MCB, 16K breaking capacity- 01 No, i) 40 Amps TP air brake contactor j) 24 hour Electronic timer – 01 No k) Heavy duty godown lock- 02 Nos. l) power tool control with with 02 nos 09 Amps contactors m) raise/lower push button n) Termination incoming/outgoing cables with suitable sizes of ferrules & compression gland.	Each	4		
5.	S.I.T & C of flange mounted hot dip Galvanized Octagonal Pole of 6 Mtr height made from 3 mm thick HT Steel plate, having top dia-70mm & bottom dia of 130 mm complete with window with flash cover	Each	50		

	<p>at a height of 500mm from the base for cable termination block etc and galvanized base plate of size 220 mm x 220mm x 12 mm thick on existing cement concrete pedestal as required including supplying and fixing the following in the window box provided for cable termination as per direction of engineer incharge:-</p> <p>a) Supplying and fixing 6mm thick laminated mounted sheet inside the window mounted on and including providing and welding 02 nos G.I. strips 4mm thick of suitable length and having suitable size tapped holes as reqd.</p> <p>b) Supplying and fixing 63 Amps terminal block, suitable for 10 sq.mm conductor- 04 nos & shorting links- 05 nos. on DIN Channel including providing. And fixing DIN Channel of suitable length- 01 nos on the existing laminated sheet.</p> <p>c) Supplying and fixing 6 Amps, SPMCB, "C" characteristics curve- 02 nos, Earth stud 02 nos, welded at suitable height, washers, springs washers & nuts.</p>				
6.	<p>Providing and laying in position M - 20 reinforced cement concrete foundation of size 550mm x 550mm wide and 1200 mm deep i/c excavation of earth, providing cutting, bending and placing in position, reinforcement of cold twisted bars of 12 mm dia- 1200 mm long (approx)- 08 nos and reinforcement ring of cold twisted bar of 8 mm dia-190 spacing centre to centre (approx)- as required with positioning of foundation bolts as shown in the item given below and providing 63 mm (O.D.) PVC Pipe of suitable length for cable entry & exit as required.</p>	Each	50		
7.	<p>Supplying and fixing set of 04 nos, M20X470mm j-type (EN8grade) foundation bolt (total length 600mm) with nuts, washer including 01 nos template of 3 mm thick size 220x220mm with 4 nos 24mm dia holes, to match with PCD of pole base plate as reqd.</p>	set	50		
8.	<p>Supplying & Fixing of 1 meter long Galvanized single arm bracket for mounting on pole and fixing of fixture including with tightening bolts etc as approved by</p>	Each	50		

	Engineer-In-Charge.				
9.	S.I.T & C of HPSV Fitting of 150 Watt (integral type) with 150 watt SV Lamp, control gears such as choke condenser and igniter etc. on the street pole. Make: Bajaj/ Philips/Crompton or equivalent to BGE ST150SV as approved by Engineer-in-charge.	Each	50		
10.	Supplying and drawing following sizes of PVC insulated copper conductor 3-core cable of size 1.5 sqmm in the existing poles and bracket from cable termination connector to the fitting i/c providing suitable copper lugs connections etc as reqd.	Each	500 mtr		
*11.	Supply and laying of XLPE insulated PVC Sheathed Aluminum conductor armored cable of 1.1 KV Grade of following sizes direct in ground including excavation, sand cushioning, protective covering and refilling the trench as required :- a) 3.5 x 50 sqmm b) 3.5 x 35 sqmm c) 4 x 10 sqmm	mtr mtr mtr	50 50 300		
*12.	Supply and laying of XLPE insulated PVC Sheathed Aluminum conductor armored cable of 1.1 KV Grade of following sizes on surface as required :- a) 3.5 x 50 sqmm b) 3.5 x 35 sqmm c) 4 x 10 sqmm	mtr mtr mtr	200 50 500		
*13.	Supply and laying of XLPE insulated PVC Sheathed Aluminum conductor armored cable of 1.1 KV Grade of following sizes direct in ground in same trench in one tier horizontal formation i/c excavation, sand cushioning, protective covering and refilling the trench as required :- a) 4 x 10 sqmm	Mtr	200		
*14.	Supply and laying of XLPE insulated PVC Sheathed Aluminum conductor armored cable of 1.1 KV Grade of following sizes in the existing RCC/stone ware/metal pipe as reqd :- a) 3.5 x 50 sqmm b) 3.5 x 35 sqmm c) 4 x 10 sqmm	Mtr Mtr Mtr	20 20 50		
* make of cable: Havells/Glaxtor or equivalent as approved by Engineer in Charge					
15.	Supplying and making end termination with brass compression gland and aluminium				

	lugs for following sizes of XLPE insulated PVC Sheathed Aluminium conductor cable of 1.1 KV Grade as reqd. a) 4 x10 sqmm b) 3.5 x 35 sqmm c) 3.5 x 50 sqmm	Each Each each	200 10 4		
16.	Earthing with G.I. earth pipe 4.5 mtr long, 40 mm dia i/c accessories and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc with charcoal and salt as reqd.	set	20		
17.	Supplying and laying 25mmx6mm G.I.Strip at 0.50 metre below ground as strip earth electrode i/c soldering etc as reqd. -	mtr	25		
18	Supplying and laying 6 SWG G.I. wire on surface or in recess for loop earthing along with cable as required.	Mtr	2500		
19.	S.I.T & C of dust vermin and weather proof out door compartmentalized feeder pillar of suitable size made of 14 SWG M.S. sheet complete with the following:- a) Canopy at top b) Hinged door open able on both side with heavy duty locking system.- 02 nos c) Base frame with detachable cover on all sides made out of 14 SWG steel sheet. d) legs of suitable length make out of 40mm x 40mm x 6mm angle iron i/c grouting the legs in 1:2:4 CC (1 Cement 2 coarse sand 4 stone aggregate of 40 mm nominal size). e) Knock out holes at bottom for cable entry f) Earthing stud- 02 nos g) One coat of primer and two coats of approved make & colour of synthetic enamel paint. h) 100 amps, 4-pole MCCB, 16K breaking capacity- 01 No, i) 63 Amps, 4-pole MCCB 10k, - 04 Nos j) R-Y-B indication Lamps with control HRC Fuses & fuse fittings k) power contactor 3-pole, (ML-6) 95 Amps l) 24 hour Electronic timer – 01 No m) Heavy duty godown lock- 02 Nos.	Each	2		

Total in words -----

Signature of bidder with stamp

TECHNICAL SPECIFICATIONS

Height of mast	:	16 Meter,
No. of sections	:	Two
Material construction	:	As per BS-EN10 025
Base dia. and top diameter (A/F)	:	Top : 150 mm (minimum), Bottom : 360 mm (minimum)
Plate thickness & top & bottom sections	:	Top : 3 mm, Bottom : 4 mm,
Cross section of Mast	:	20 side regular continuously tapered polygonal
Metal protection treatment of fabricated mast section	:	Hot dip galvanization through single dipping process
<i>Thickness of galvanizations (minimum)</i>	:	85 Microns as per applicable code
Size of opening and door at base	:	1050 x 225 mm/1200 X 250 mm (as per requirement of design)
Diameter of base plate	:	520 mm (minimum)
Thickness of base plate	:	25 mm
Lightning protection finial	:	G.I single spike. (As per BIS/CPWD specification)
Max.wind speed	:	As per IS : 875 (Part - III)
Number of foundation bolts	:	8 nos.
PCD of foundation bolts	:	445 mm or as per requirement of designs
Type / diameter / length of foundation bolts	:	TS 600 / 25 mm dia / 850 mm long
LUMINAIRES CARRIAGE		
Material of construction	:	50 NB ERW Class B - M. S. Pipe
Diameter of carriage ring (mm)	:	535 mm (ID)
Construction	:	8 Arm, Welded, 2 sections
Load carrying capacity	:	8 Luminaire + 10%
TRAILING CABLE		
Conductor	:	Copper, 5 core, 2.5 sq mm
Insulation	:	EPR insulated PCP sheathed
No. of circuits per mast	:	One
WINCH / POWER TOOL		
Type / SWL of winch	:	Double Drum/SWL 750 Kg minimum
Method of operation	:	Integral Motor and manual
Motor capacity	:	As per manufacturers designs
No of speeds	:	As per manufacturers designs
STAINLESS STEEL WIRE ROPE		
Grade / construction	:	AISI 316, 7/19 construction
Number of ropes	:	Two continuous
Diameter (mm)	:	6 mm minimum
Braking load capacity	:	2350 kg x 2 minimum each rope

Note : The above dimensions may vary if supported with design duly certified by approved agency as per satisfaction of Engineer-in-charge and subject to approval of Engineer-in-Charge. Contractor shall be responsible for the structural stability and safety of the Erected High Mast Lighting system.

(Signature of the Contractor)

HIGH MAST SYSTEM - 12 M

Height of mast	:	12 Meter,
No. of sections	:	One
Material construction	:	As per BS-EN10 025
Base dia. and top diameter (A/F)	:	Top : 100 mm, (minimum) Bottom : 360 mm (minimum)
Plate thickness	:	4 mm,
Cross section of Mast	:	12 side regular continuously tapered polygonal
Metal protection treatment of fabricated mast section	:	Hot dip galvanization through single dipping process
<i>Thickness of galvanizations</i>	:	85 Microns as per applicable BIS code
Size of opening and door at base	:	1050 x 225 mm
Diameter of base plate	:	520 mm (minimum)
Thickness of base plate	:	25 mm
Lightning protection finial	:	Not Required
Max.wind speed	:	As per IS : 875 (Part - III)
Number of foundation bolts	:	4 nos or 6 nos (as per manufacturers design)
PCD of foundation bolts	:	445 mm
Type / diameter / length of foundation bolts	:	TS 600 / 25 mm dia /750 mm long

LUMINAIRES CARRIAGE

Material of construction	:	50 OD ERW Class B - M. S. Pipe
Diameter of carriage ring (mm)	:	450 mm (ID)
Construction	:	6 Arm, Welded, 2 sections
Load carrying capacity	:	6 Luminaire + 10%

TRAILING CABLE

Conductor	:	Copper, 5 core, 2.5 sq mm
Insulation	:	EPR insulated PCP sheathed
No. of circuits per mast	:	One

WINCH / POWER TOOL

Type / SWL of winch	:	Double Drum/SWL 750 Kg (minimum)
Method of operation	:	Integral Motor / Manual
Motor capacity	:	As per manufacturers design
No of speeds	:	As per manufacturers design

STAINLESS STEEL WIRE ROPE

Grade / construction	:	AISI 316, 7/19 construction
Number of ropes	:	Two continuous
Diameter (mm)	:	6 mm (minimum)
Braking load capacity	:	2350 kg x 2 (minimum)

Note : The above dimensions may vary if supported with design duly certified by approved agency as per satisfaction of Engineer-in-charge and subject to approval of Engineer-in-Charge. Contractor shall be responsible for the structural stability and safety of the Erected High Mast Lighting system

(Signature of the Contractor)

DETAILED TECHNICAL SPECIFICATION FOR 16 MTR AND 12 MTR HIGH MAST LIGHTING

1. SCOPE:

The scope of this specification covers manufacture, transport, installation, testing and commissioning of the complete lighting system, using Raising and Lowering type of High mast Towers, including the Civil Foundation Works.

2. APPLICABLE STANDARDS:

- a. TR No. 7 – High Masts for Lighting
- b. SABS 0225:1991 – High Mast natural frequency calculation
- c. IS 875 Part – 3, Wind Loading
- d. BS EN 10025:1993 – High Tensile Steel Sheets
- e. IS 2062 – Mild Steel
- f. BS EN ISO 1461 – Galvanization
- g. IS 3459 / 2266 – Stainless steel Wire rope
- h. IS 9968 Par – 1 – Trailing Cable
- i. IS 325 – Motor
- j. IS 5135 – Welding

3. Facilities Required for High Mast Lighting System:

- a. Manual operation of lantern carriage
- b. Automatic operation of lantern carriage
- c. Lightning Arrester
- d. Weather Proof Luminaries
- e. Electrical Earthing of mast as per relevant standard.

4. STRUCTURE:

The high mast shall be of continuously tapered polygonal cross section, at least 20 sided for 16 meters and 12 sided for 12 meters, presenting a good and pleasing appearance and shall be based on proven intension design conforming to the standards mentioned to give an assured performance and reliable service. The structure shall be structurally safe against wind loading as per IS:875 Part – III.

5. CONSTRUCTION:

The high mast shall be fabricated from steel plates conforming to BS : EN 10025 or equivalent IS, cut and folded to form a polygonal section as stated in technical specification above and shall be telescopically joined and welded in conformance with BS:5135/AWS. The procedural weld geometry and the workmanship shall be exhaustively tested on the completed welds. Mast shall be supplied in sections of length as stated in technical specification above. Each section of the mast shall have only one longitudinal welding and there shall not be any circumferential weld inside or outside. The electrodes used for welding shall be compatible with the grade of steel used for shaft and shall have mechanical properties at least equal to that of base

metal. At site, the sections shall be joined together by slip stress-fit method. No site welding or bolted joint shall be done on the mast. The minimum overlap distance shall be 1.5 times the diameter at penetration. The dimensions of the mast shall be decided on proper design and design calculations shall be submitted duly certified by chartered structural engineer for verification prior to fabrication.

The mast shall be provided with fully penetrated flange, which shall be free from any lamination or incursion. The welded connection of the based flange shall be fully developed to the strength of the entire section. The base flange shall be provided with supplementary gussets between the bolt holes to ensure elimination of helical mast shall be hot dip galvanized internally and externally, with each section galvanized through single dip process as per BS EN ISO 1461.

6. DOOR OPENING:

An adequate door opening shall be provided at the base of the mast and the opening shall be such that it permits clear access to equipment like winches, cables, plug and socket etc. and also facilitate easy removal of the winch. The door opening shall be complete with a close fitting, vandal resistant, weather proof door, provided with a heavy-duty double internal lock with special paddle key, and a provision for pad lock. The door opening shall be carefully designed and reinforced with welded steel section so that the mast section at the base shall be unaffected and undue buckling of the cut portion is prevented.

7. DYNAMIC LOADING FOR THE HIGH MAST:

The mast structure shall be suitable to sustain an assumed maximum reaction arising from a wind speed conforming to IS:875 (3 second gust) and shall be measured at a height of 10 meter above ground level. The design life of the mast shall be minimum of 25 years.

8. LANTERN CARRIAGE

8.1 Fabrication:

A fabricated lantern carriage shall be provided for fixing and holding the flood light fittings and control gear boxes. The lantern carriage shall be of special design and shall be of steel tube construction, the tubes acting as conduits for wires with holes fully protected by grommets. The Lantern carriage shall be so designed and fabricated to hold the required number of flood light fittings nad control gear boxes, and also have perfect self balance.

The lantern carriage shall be fabricated in two halves and joined by bolted flanges with stainless steel bolts and nyloc type stainless steel nuts to enable easy installation or removal from the erected mast. The inner lining of the carriage shall be provided with protective PVC arrangement, so that no damage is caused to the surface of the mast during the raising and lowering operation of the carriage. The entire Lantern Carriage shall be hot dip galvanized after fabrication.

8.2 Junction Box:

Weather proof junction box made of cast Aluminium shall be provided on the carriage assembly as required, from which the inter-connections to the designed number of floor light luminaries and associated control gears fixed on the carriage shall be done.

8.3 Raising and Lowering Mechanism:

For installation and maintenance of luminaries and lamps, it will be necessary to lower and raise the Lamp carriage Assembly. To enable this, a suitable Winch arrangement shall be provided with the winch fixed at the base of the mast and the specially designed head frame assembly at the top.

8.4 Winch

The winch shall be of completely self sustained type, without the need for brake shoe, springs or clutches. Each driving spindle of the winch shall be positively locked when not in used, gravity activated PAWLS. Individual drum also should be operated for fine adjustment of lantern carriage. The capacity, operating speed, safe working load, recommended lubrication and serial number of the winch shall be clearly marked on each winch.

A suitable gear ratio of the winch shall be used to facilitate smooth operation. However, the minimum working load shall not be less than 750 KG. The winch shall be of self lubricating type by means of an oil bath and the oil shall be readily available grades of reputed producers.

The winch drum shall be grooved to ensure perfect seat for stable and tidy rope lay, with no chances of rope slippage. The rope termination in the winch shall be such that distortion or twisting is eliminated and at least 5 to 6 turns of rope remains on the drum even when the lantern carriage is fully lowered and rested on the rest pads. It should be possible to operate the winch manually by a suitable handle by an integral power tool. It shall be possible to remove the double drum after dismantling, through the door opening provided at the based of the mast. Also, a winch gear box for simultaneous and reversible operation of the double drum shall be provided.

The winch shall be type tested in presence of a reputed institution and the test certificates should be furnished before supply of materials. A test certificate shall be furnished by the contractor from the original equipment manufacturer, for each winch in support of the maximum load operated by the winch.

8.5 HEAD FRAME

The head frame, which is to be designed as a capping unit of the mast, shall be of welded steel construction, galvanized both internally and externally after assembly. The tope pulley shall be of appropriate diameter, large enough to accommodate the stainless steel wire ropes and the multi core electric cable. The pulley block shall be made of non-corrodible material, and shall be of die cast A1. alloy (LM-6). Pulleys made of synthetic materials such as plastic or PVC are not acceptable. Self lubricating bearings and stainless steel shaft shall be provided to facilitate smooth and maintenance free operation for a long period. The pulley assembly shall be fully

protected by a canopy galvanized internally and externally. Close fitting guides and sleeves shall be provided to ensure that the ropes and cables do not dislodge from their respective positions in the grooves. The head shall be provided with guides and stops with PVC buffer for docking the lantern carriage.

8.6 WIRE ROPES

The suspension system shall essentially be without any intermediate joint and shall consist of only non-corrodible stainless steel of AISI 316 or better grade.

The stainless steel wire ropes shall be of 7/19 construction, the central core being of the same material. The overall diameter of the rope shall not be less than 6 mm. The breaking load of each rope shall not be less than 2350 kg giving a factor of safety of over 5 for the system at full load as per the TR-7 of the list of specifications attached. The end construction of ropes to the winch drum shall be fitted with talnut.

The lugs shall be secured on ropes by compression splices. Two continuous lengths of stainless steel wire ropes shall be used in the system and no intermediate joints are acceptable in view of the required safety. No intermediate joints/terminations, either bolted or else, shall be provided on the wire ropes between winch and lantern carriage.

9. ELECTRICAL SYSTEM, CABLE AND CABLE TERMINATIONS

The multi core trailing cable from based compartment to junction box at luminaries carriage shall be 1.1 KV grade EPR insulated PCP sheathed copper conductor with male female connectors of minimum 5 cores x 2.5 sq. mm, and there shall be one no. cables per mast. Wiring from junction box to luminaries is to be done using 3 cores 1.5 sq. mm PVC insulated, PVC sheathed copper conductor flexible cable or as directed by engineer in charge.

Suitable arrangement is to be provided in the base compartment to receive and terminate incoming power cable and MCB in a box for isolation of incoming power supply.

10. POWER TOOL FOR THE WINCH

A suitable, high powered, electrically driven, internally mounted power tool, with manual override shall be supplied for the raising and lowering of the lantern carriage for maintenance purposes. The speed of the power tool shall be to suit the system. The power tool shall be single speed, provided with a motor of required rating. The power tool shall be supplied complete with suitable control. The capacity and speed of the electric motor used in the power tool shall be suitable for lifting the designed load installed on the lantern carriage.

The power tool mounting shall be so designed that it will not only self supporting but also aligns the power tool perfectly with respect to the winch in case of problem with the electrically operated tool shall be provided and shall incorporate a torque limiting device.

There shall be a separate torque-limiting device to protect the wire ropes from over stretching. IT shall be mechanical with suitable load adjusting device. The load limiter shall trip the load when it exceeds the adjusted limits. There shall be suitable provision for warning the operator once the load is tripped off. The load limiter is a requirement as per the relevant standards in view of the overall safety of the system. Each mast shall have its own power tool motor.

11. EARTHING OF HIGH MAST

The mast and feeder pillar have to be properly earthed by 2 no. earthing pits to keep the potential of the body of mast zero under normal condition. Earthing to conform to IS: 3043.

12. SCOPE OF WORK FOR 16 & 12 Mtr. High Mast:-

A. SUPPLY

1. High Mast Shaft
2. Foundation Bolt Set
3. Non integral flood light twin HPSV 400 Watt
4. Control panel
5. Lightning arrester (in case of 16 m pole only)
6. Material for earthing of mast

B. DESIGN

1. Foundation design to be done as per the soil nature at NSIC Complex.
2. Complete high mast design as per the state of art technology.
3. Design calculation and technical details duly certified by the chartered structural engineer.

C. ERECTION

1. Excavation of soil
2. Erection of foundation
3. Erection of mast
4. Erection of control panel
5. Erection of winch and rope drum
6. Erection of lantern carriage
7. Erection of luminaries, lamps and cable
8. Erection of lightning arrestor
9. Assembly of complete system
10. Making of earthing pits and connection to mast.

D. TESTING & COMMISSIONING

1. Connection of 415 V power supply

2. Switching on and adjusting focus of lamps
3. Checking operation of lantern carriage manually and automatically

13. LT CABLES

GENERAL

L.T. Cables shall be supplied, inspected, laid, tested and commissioned in accordance with drawings, specifications, relevant Indian Standards, CPWD specifications and cable manufacturer's recommendations. The cable shall be delivered at site in original drums with manufacturer's name clearly written on the drums. The recommendations of the cable manufacture with regard jointing and sealing shall be strictly followed.

MATERIALS

The LT Power Cables shall be XLPE insulated PVC sheathed aluminum conductor armored cable conforming to IS:7098 : Part -1:1988 with up-to-date amendments.

Make: Havells, Gloster or Equivalent as approved by the Engineer Incharge.

INSTALLATION OF CABLES

Cables shall be laid directly in ground, pipes, masonry ducts, on cable tray, surface of wall etc. as indicated in BOQ and/or as per the direction of Engineer-in-charge, and as per CPWD specifications.

INSPECTION

All cables shall be inspected at site and checked for any damage during transit.

JOINTS IN CABLES

The contractor shall take care to see that the cables received at site are apportioned to various locations in such a manner as to ensure maximum utilization and avoiding of cable joints. This apportioning shall be got approved from Engineer-in-charge before the cables are cut to lengths.

LAYING CABLES IN GROUND

Cables shall be laid by skilled experienced workmen using adequate rollers to minimize stretching of the cables. The cable drums shall be placed on jacks before unwinding the cable. With great care it shall be unrolled on over wooden rollers placed in trenches at intervals not exceeding 2 meters. Cables and other accessories shall be laid as per CPWD specification and other relevant IS Codes.

At all changes in direction in horizontal and vertical planes, the cables shall be bent smooth with a radius of bent not less than 12 times the diameter of cables. Minimum 3 metre long loop shall be provided at both end of cable.

Distinguishing marks may be made on the cable ends for identifications of phases. Insulation tapes of appropriate voltage and in red, yellow and blue colours shall be wrapped just below the sockets for phase identifications.

PROTECTION OF CABLES

The cables shall be protected by bricks laid on the top layer of the sand for the full length of underground cable. Where more than one cables is laid in the same trench, the bricks shall cover all the cables and shall project a minimum of approximately 80mm on either side of the cables. Cable under road crossings and any other places subject to heavy traffic shall be protected by running them through Hume Pipes size.

EXCAVATION & BACK FILL

All excavation and back fill required for the installation of the cables shall be carried out by the Contractor in accordance with the drawings and requirements laid down elsewhere. Trenches shall be dug true to line and grades. Back fill for trenches shall be filled in layer not exceeding 150 mm. Each layer shall be properly rammed and considered before laying the next layer.

The contractor shall restore all surface, roadways, side walks, kerbs wall or the works cut by excavation to their original condition to the satisfaction of the Engineer-in-Charge.

TESTING OF CABLES

Prior to installation, buying of cables, following tests shall be carried out. Insulation test between phases, phase & neutral, phase & earth for each length of cable.

- a. Before laying
- b. After laying
- c. After jointing

On completion of cable laying work, the following tests shall be conducted in the presence of the Engineer-in-Charge.

- a. Insulation Resistance Test (Sectional and overall)
- b. Continuity Resistance Test
- c. Earth Test

All tests shall be carried out in accordance with relevant Indian Standard code of practice and Indian Electricity Rules. The Contractor shall provide necessary instruments, equipments and labour for conducting the above tests & shall bear all expenses of conducting such tests.

14. PROTECTIVE EARTHING & LIGHTING PROTECTION

The scope of work shall cover earthing stations, laying copper/GI earth strips and connecting the power panels, DBs and switch boards.

The work shall be done as per the CPWD specification

To cater for lightning protection of the complete high mast made of steel including the flood lighting system it has been proposed to provide for 1 no of 1200 mm long GI finial at top of each of the high mast provided. The complete steel structure should be connected to the ground by means of GI earth strip which will be connected to the earth stud of mast's body at the bottom.

Body earthing of the feeder pillars shall be provided.

Materials of which the protective system is composed shall be resistant to corrosion or be adequately protection against corrosion. The material shall be as specified in the schedule of quantities BOQ and shall comply to the following requirements:

The resistance of each earth stations should not exceed 1 ohm. The earth lead shall be connected to the earth plate through brass bolts.

All apparatus and equipment transmitting or utilizing power shall be earthed.

Testing

The following earth resistance values shall be measured with an approved earth megger and recorded.

Each earthing stations

Earthing system as a whole Earth continuity.

CPWD specification shall be applicable for all earthing works.