



NEW TOWN KOLKATA DEVELOPMENT AUTHORITY

(A Statutory Authority under Government of West Bengal)

3, Major Arterial Road • New Town • Kolkata – 700156
Ph. No. (033) 2324-2138 Email Id: eeme@nkda.in

Memo. No. 1378/ EE(E)/NKDA/Elect/2018-19

Date: 05-03-2019

NOTICE INVITING e-TENDER

Notice Inviting e-Tender No. 16/EE(E)/NKDA/2018–19(2nd Call)

Percentage Rate e-Tender are hereby invited by Executive Engineer (E), New Town Kolkata Development Authority invites quoted rate e-tender from resourceful, reliable, bonafide manufacturer or authorized dealer having experience in similar nature of work at WBHIDCO, PWD, PHED and other Govt. department are requested to submit their offer for the work detailed below.

(Submission of Bid through **online**)

S l. N o	Name of the work	Estimated Amount (Rs.)	Earnest Money (Rs.)	Price of Tender documen ts (Rs.)	Period of Completion
1	Supply, Installation, Testing & Commissioning with Five Years Comprehensive maintenance of 13 different Green Verge Pathway solar lighting at AA-IA, IB, IC of AA-I New Town, Kolkata Under NKDA.	84,84,528.00	Earnest money Rs. 1,69,690.00/ (Rupees One Lakh Sixty Nine thousand Six Hundred and Ninety) only to submit through Online payments/RTGS/NEFT from ICICI Bank. In favour of “ Newtown Kolkata Development Authority ” payable at Kolkata	N.A	45 (forty five) days

1) In the event of e-filing, intending bidder may download the tender documents from the website <http://wbtenders.gov.in> directly with the help of Digital Signature Certificate. All the bidder shall have to submit Earnest Money & necessary earnest money will be deposited by the bidder through the following payment mode as finance dept. order no. 3975-F (Y) dated 28th July 2016 (Annexure-A).

i) **Net banking (any of the banks listed to the ICICI bank payment gateway) in case of payment through ICICI payment gateway.**

ii) **RTGS/NEFT through bank account in any bank. The EMD shall be deposited in favor of “Newtown Kolkata Development Authority” payable at Kolkata.**

Notice Inviting
e-Tender

- 2) Both **Technical Bid** and **Financial Bid** are to be submitted concurrently duly digitally signed in the website <http://wbtenders.gov.in>
- 3) Tender documents may be downloaded from website and submission of Technical Bid and Financial Bid will be done as per Time Schedule stated in Sl. No. 13 of this NIT.
- 4) The **FINANCIAL OFFER** of the prospective qualified tenderer(s) will be considered only if the **TECHNICAL BID** of the tenderer(s) is found qualified by competent authority of New Town Kolkata Development Authority. The decision of the competent authority of New Town Kolkata Development Authority will be final and absolute in this respect. The list of Qualified Bidders will be displayed in the website.

5) **SCOPE OF WORKS:**

- I. The broad scope of the work includes supply, installation, testing, commissioning with 5 years comprehensive maintenance and warranty of 156 SPV 15 Watt LED based Street Lighting system at AA-IA, IB, IC of AA-I New Town, Kolkata. Tentative block wise number of system to be installed is reflected in Green Verge pathway list.
- II. Supply of the complete systems, including all necessary components, sub-components, spares, tools, tackles etc. as per technical specifications given in this document including packing, forwarding, safe storage, handling, commissioning, trial and performance testing and handing over, insurance coverage, operation & maintenance with 5 years warranty including CMC.
- III. Submission of all details of the installed systems in the formats to be provided at the time of issue of purchase order.
- IV. Execution of Comprehensive Maintenance Contract (CMC) of the complete system for five years warranty period. The date of commencement of CMC shall be reckoned from the date of commissioning of the system.
- V. Open a service Centre at West Bengal as to deliver uninterrupted and sustainable maintenance services. The centre will give the desired performance with least interruption.
- VI. Adequate training has to be provided to the persons to be designated by NKDA in day to day maintenance and upkeep of the installed system. The bidder must also provide a detailed operation and maintenance manual specific to the installed systems.

6) **ELIGIBILITY CRITERIA:**

- I. The bidder must be a company (registered under Indian Companies Act 1956) or a Partnership Firm (registered under Indian Partnership Act 1932) or a Sole Proprietorship Firm and should have registered under GST.
- II. The bidder must be manufacturers of composite systems and must have got its products tested and qualified recently not before 2016-17 (financial year) by any of the accredited test centers of MNRE, GOI and must submit such test certificates along with the technical bid.
- III. The bidder must have a minimum cumulative turnover of Rs5.00 Crore over last three years in solar business. Copy of audited balance sheet for 2015-16, 2016-17 and 2017-18 clearly indicating the turnover from solar PV business duly certified and signed by a Chartered Accountant must be submitted along with the technical bid.

- IV. The bidder must have installed at least 500 Solar street lighting system including SPV mini /high mast lighting system in different SNAs/ Government organizations in any part of the country during last 3 years. Copies completion certificates/installation report from the authorized officer of the concerned SNA/Govt. must be submitted along with the technical bid.
- Or
- Working Contractors of NKDA, WBHIDCO, PWD, PHED and other Govt. Departments having satisfactorily completed (as prime contractor) during the last 3 years, at least one work of similar nature having magnitude of at least 30% of the quoted amount. Authentic documents in original, from the Engineer-in-charge of the work will have to be submitted in support of the above credential as non-statutory documents.
- V. The firm must not have been debarred / blacklisted by any Govt. Dept., agency, PSUs / institution / agencies / autonomous organizations. The bidder shall submit a self-certification by an authorized person duly notarized to this effect.
- VI. The firm must have established quality assurance systems and organization in line with the requirements under ISO 9001:2008.
- VII. The bidder must have valid GST clearance certificate.
- VIII. Pan Card, Income Tax Acknowledgement Receipt for the latest Assessment year, P.T. Deposit Challan for the current year, GST Registration and PF registration Certificate are to be submitted as non-statutory documents.
- IX. Contractors should have valid Electrical license declaration of Electrical Supervisor engaging in me concurred agency through notary and his part holding at least 1, 2, 3, 4 & 11 with workman license certificate having sufficient part for mentioned work will have to be produced along with the originals. The original documents will be refunded after verification.
- X. Registered Partnership Deed for Partnership Firms only along with Power of Attorney since executed under any Judicial Magistrate/First Class Magistrate is to be submitted. The company shall furnish the Article of Association and Memorandum as non-statutory documents.
- XI. Also as per order of Finance Department, GO WB Vide no. 4600-F(Y) dated on 18.07.2018 an additional performance security amount 10% of tendered amount will have to submit in the form of bank Guarantee from any scheduled bank before issuance of the work order (no increase in scope of work of projects during execution phase).

7) **WARRANTY:**

- I. The complete system should be warranted against any manufacturing defect or bad workmanship at least for a period of 5 (five) years from the date of commissioning of the systems.
- II. SPV modules must be warranted against any manufacturing defect of bad workmanship for a period of 10 years.
- III. Warranty certificate to the above effect must be furnished along with the commissioning reports. Any defect noticed during warranty period should be rectified / replaced by the supplier free of cost upon due intimation by NKDA.

8) **INSPECTION:**

- I. All tests and inspections shall be made at the place of delivery. Officers authorized by NKDA shall be entitled at all reasonable time to inspect and supervise and test during erection and commissioning. Such inspection will not relieve the executing firm of their obligation in the contract.

9) **COMPREHENSIVE MAINTENANCE CONTRACT (CMC):**

- I. Each street light system must be guaranteed against any manufacturing / Design/ Installation defects for a minimum period of 5 years.
- II. The scope of CMC must cover supply of spare parts (including wherever necessary) / services during the contract in force. Order shall be placed on bidders who agree to offer such CMC. The CMC charges quoted by the bidder must be realistic in view of actual rendering of after sale services. Payment will be effected depending upon the functionality of the system duly certified by the concerned Authorized officials of NKDA.
- III. During the CMC period NKDA will have all the rights to cross check the performance of the Solar Street Light.

10) **INSTRUCTIONS TO BIDDERS:**

- I. Valid GST clearance certificate duly attested must be submitted along with the bid.
- II. Deviations in terms and conditions, Specification of material, Inspection clause etc. will not be accepted under any condition.
- III. The bidders should furnish the information on all past supplies and satisfactory performance.
- IV. The bidder shall submit copies of documents defining the constitution or legal status, place of registration and principle place of business of company or firm or partnership.
- V. The bidder shall furnish a brief write up backed with adequate data, explaining his available capacity and experience (both technical and commercial) for the manufacture and supply of the systems, equipment's within the specified time of completion after meeting all their commitments.
- VI. The bidders shall submit reports on financial standing of the bidder such as audited profit and loss statements, balance sheets and auditor's reports for the past. All accounting statements submitted should be duly audited and with proper auditor's note on accounts and accounting standards.
- VII. Bids without E.M.D will not be accepted.
- VIII. Hard copies of the bids received late due to postal delay or otherwise will not be considered.
- IX. Since timely execution of works is of paramount importance, requests for extension of time shall not be ordinarily entertained.
- X. Canvassing in any manner shall not be entertained and will be viewed seriously leading to rejection of the bid.
- XI. Certificate to the effect that the systems to be supplied are indigenous & not fully imported must be furnished.
- XII. Power of attorney to sign the agreement on behalf of bidders & partnership deed articles, if any, should be enclosed along with original bid documents.
- XIII. Notice inviting tender, bid documents, prescribed Technical bid, price bid, terms & conditions will form the part of the tender.
- XIV. Bids will be accepted & will be opened as per information mentioned in the notice-inviting tender. No receipt against submission of bid shall be issued by NKDA.
- XV. If due to any reason the due date is declared as a holiday the bid will be opened on next working day at the same time.

- XVI. In case of supply of any defective material or substandard material, the materials will be rejected & it will be the responsibility of the supplier for taking back & replacing the rejected materials at their own cost. In case of non-lifting of such rejected materials within a reasonable time offered by the office it will have the right to suitably dispose of the same and forfeit the amount.
- XVII. The supplied materials should strictly comply with the specifications as mentioned in the bid; otherwise the material would be liable for rejection.
- XVIII. Any clarification on the technical specification and commercial terms and conditions may be clarified in writing from NKDA.
- XIX. During the warranty period, MNRE/ State Agencies/ Users reserve the right to cross check the performance of the systems with the minimum performance levels specified in the MNRE specifications.
- XX. The Executive Engineer (Electrical), NKDA shall award the contract to the successful bidder whose bid shall be qualified after evaluation in terms of the responsiveness and lowest rate determined on the basis price bids.
- XXI. On award of contract the qualified bidder shall be termed as contractor / supplier / executor /turnkey operator.
- XXII. The bidder is to submit documents as asked in the tender. Submission of unnecessary documents leads to disqualification of the offer.
- XXIII. **Joint Ventures/MOU will not be allowed.**
- XXIV. All materials are to be procured and supplied at site of work by the tenderer / firm at his / their own cost from approved reputed dealer / manufacturer. Departmental materials will not be issued under any circumstances unless any such provision is made and accepted latter by both the parties. Department unless otherwise stated means New Town Kolkata Development Authority. The prospective applicant shall be capable to establish Field Testing Laboratory equipped with requisite Instruments and Technical Staff complete in itself to carry out all necessary Tests for such project.
- XXV. **Mobilization advance, time / cost overrun and consequent cost escalation for any material labour etc. and secured advance will not be allowed.**
- XXVI. The offer shall remain valid for **6 (Six) Month** from the date of opening of the tender.
- XXVII. On-going payments for work may be allowed to the executing agency as per existing rules and availability of fund. Subject to deduction of security deposit, progressive payment may be made against the completed or partly completed item of works. Such interim payments, shall be made as running account bill (s), however, shall not construed to mean that the respective items / components have finally been approved and accepted by NKDA and the contractor shall not be absolved of his responsibility to set right any deficiency of such paid items / components at his/ their own cost, for rectifying all defects which are subsequently being noted or found.
- XXVIII. No claim for interest or compensation will be entertained in respect to any money or balance of payment which may be due or alleged to be due to the contractor owing to any dispute between the contractor and NKDA or in respect to any delay in making payment of progressive or final bill of the work, to the contractor.
- Payment for the works done by the contractor will be based on recorded and accepted measurement put for payment to be invariably made by putting signature (with seal) of the contractor (or his/ their authorized representative). The contractor or his / their authorized representatives are advised to take measurements jointly with the officials of NKDA. In case of failure of his/their part either to take measurement jointly and /or acceptance of the recorded measurement, within a reasonable time, measurement taken by the department shall be considered as final for making payment. Similar acceptance is also essential for level records and survey data, field books etc.

- XXIX. **No payment shall be made before satisfactory of Work.** 10% of the whole amount shall be with held and kept as Security Deposit subject to refund after completion of defect liability period i.e. 05 (five) years from the date of completion.
- XXX. **Idle labour, idle rent and hire charges etc.:** No claim of any category and type, on this ground shall be entertained. The contractor and NKDA shall make every effort that such situation does not arise.

11) **Testing and Testing Equipment:**

Testing of materials, to be used in work and the quality of finished work on quality control aspect, is to be undertaken by the contractor at own cost, with facilities provided at site and / or through approved (by NKDA) Test Houses / Laboratories. All materials and workmanship shall be in accordance with the specifications laid down in the contract and also as per P.W.D.(Electrical Schedule) and IS Codes . The Engineer-in-Charge reserves the right to test, examine and measure the material / workmanship direct at the place of manufacture, fabrication or at the site of works or any suitable place. The contractor shall provide such assistance, instrument machine, labour and materials as the Engineer-in-Charge may require for examining, measuring and testing the works and quality, weight or quantity of materials used and shall supply samples for testing as may be selected and required by the Engineer-in-Charge without any extra cost. Beside this, he/they will carry out tests from outside Laboratory as per instruction of Engineer-in-Charge. The cost of all such tests would be borne by the agency Engineer-in-Charge without any extra cost. Beside this, he/they will carry out tests from outside Laboratory as per instruction of Engineer-in-Charge. The cost of all such tests would be borne by the agency Should the Executive Engineer (E) his representative consider it necessary to satisfy himself / themselves as to quality of work, the contractor shall offer sample of work done as necessary, pull down reasonable part of the work required for inspection and testing. The contractor shall bear the cost of pulling down and shall make good the same at own cost and to the full satisfaction of E-I-C without any claim for payment.

12) **Security Deposit:**

Retention money towards performance Security amounting to 8% (*eight percent*) of the value of the work shall be deducted from the running account bill of the tenderer as per prevailing order. No interest will be paid on the money retained for Security Deposit.

13) **Date and Time Schedule:**

Sl. No.	Particulars	Date & Time
1	Date of uploading of N.I.T. & other Documents (online) (Publishing Date)	06.03.2019
2	Documents download start date (Online)	06.03.2019 from 6:00P.M.
3	Documents download end date (Online)	23.03.2019 up to 6:55 P.M
4	Bid submission start date (Online)	06.03.2019 from 6:00P.M.
5	Bid submission closing date (Online)	23.03.2019 at 6:55 P.M
6	Bid opening date for Technical Proposals (Online)	27.03.2019 at 11:00 A.M.
7	Last Date of uploading list for Technically Qualified Bidder(online)	27.03.2019 at 3:00 P.M.
8	Date for opening of Financial Proposal (Online).	Will be intimated in due course

14) **Earnest Money:**


- I. Earnest money of Rs. 1,69,690.00/ (Rupees One Lakh Sixty Nine thousand Six Hundred and Ninety) only to submit in the form of ICICI Bank online/ RTGS/NEFT from scheduled Bank, In favor of “**Newtown Kolkata Development Authority**” payable at Kolkata balance amount covering 2% of the quoted amount to be submitted in bank draft / pay order at the time of making agreement by the successful tenderer.
 - II. Earnest Money for the successful tenderer will be retained and converted as Initial Security deposit. The Balance security deposit @ 8% will be deducted from on-going bills to cover 10% of the total value of work done.
 - III. The security deposit of the successful tenderer will be refunded after defect liability period i.e. 05 (five) year from the date of completion as stipulated in relevant clause of the tender document.
- 15) The tenderers are bound by the terms & conditions of WBF 2911(ii) along with specification, notice for calling Tenders, Special terms & condition, Information to Bidders, Schedule of works etc, which forms a part and parcel of this contract.
- 16) Income Tax, GST & PF will be deducted as per Govt. orders issued from time to time and would be applicable on the date of making payment of the bills. Building & other construction workers cess @ 1.0% will be deducted from progressive bills in pursuance with G.O. no. 599A/ 4M – 28 / 06 dated 27/09/2006.
- 17) The Bidder, at his own responsibility and risk is encouraged to visit and examine the site of works and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for the work as mentioned in the Notice Inviting Tender, before submitting offer with full satisfaction. The cost of visiting the site, shall be at his own expenses.
- 18) The intending Bidders shall clearly understand that whatever may be the outcome of the present invitation of Bids, no cost of Bidding shall be reimbursable by the Department. New Town Kolkata Development Authority reserves the right to accept or reject any offer without assigning any reason whatsoever and is not liable for any reimbursement of any cost that might have been incurred by any Tenderer at any stage of Bidding.
- 19) Prospective applicants are advised to note carefully the eligibility criteria before tendering the bids.
- 20) **Conditional / Incomplete tender will not be accepted under any circumstances.**
- 21) **The intending tenderers are required to quote the rate *online*.**
- 22) Contractor shall have to comply with the provisions of (a) the contract labour (Regulation Abolition) Act. 1970 (b) Apprentice Act. 1961 and (c) minimum wages Act. 1948 of the notification thereof or any other laws relating thereto and the rules made and order issued there under from time to time.
- 23) During scrutiny, if it comes to the notice of the tender inviting authority that the credential or any other paper found incorrect / manufactured / fabricated, that bidder would not be allowed to participate in the tender and that application will be rejected without any prejudice.
- 24) If there be any objection regarding prequalification of any Agency the same should be lodged online to Chief Engineer, New Town Kolkata Development Authority within 2 (*two*) days from the date of publication of list of qualified agencies and beyond the said time schedule no objection will be entertained.

- 25) Before issuance of WORK ORDER, the Tender Inviting Authority may verify the credential and other documents of the lowest tenderer in original, if found necessary. After verification if it is found that the documents submitted by the lowest tenderer is either manufactured or false in that case work order will not be issued in favour of the said Tenderer under any circumstances and his/their offer will be treated as cancelled.
- 26) If any discrepancy arises between two similar clauses on different notification, the clause superseding others will be solely as per the discretion of the Tender inviting authority.
- 27) The successful Tenderer whose tender is accepted shall make formal agreement in WBF 2911 (ii) along with bid documents in triplicate, within 7 (seven) days from the date of issue of work order by Executive Engineer (E), New Town Kolkata Development Authority on payment of usual charges which is non-refundable under any circumstances and submit the same duly signed by him/them to this office. If the contractor fails to perform the formalities within the specified period the Tender is liable to be cancelled and the Earnest Money will be forfeited as per relevant clauses under memorandum of WBF 2911(ii).
- 28) **Qualification criteria:**
The tender inviting and Accepting Authority will determine the eligibility of each bidder. The bidders shall have to meet all the minimum criteria as stipulated in relevant clauses of this NIT.
- The eligibility of a bidder will be ascertained on the basis of the document(s) submitted in support of the minimum criteria. If any document submitted by a bidder is either manufactured or false, in such cases the eligibility of the bidder / tenderer will be rejected at any stage without any prejudice to take any penal action against him/them as may be deemed fit by the Tender Accepting Authority.
- 29) **No. price preference and other concession will be allowed as per order no 8648 – F(T) dated 12.10.2012.**
- 30) Agencies are required to give a work programme preferably in the form of a bar-chart and to approve it by the EIC (Engineer-in-Charge) before commencement of work and if progress of work abruptly differs from the given work program, the undersigned may terminate the work order at any point of time.
- 31) Unless otherwise stipulated, all the works are to be done as per general conditions and general specifications of the latest edition of 'PWD (Electrical)/(W.B) Schedule
- 32) In case of any inadvertent typographical mistake in the specific price schedule of rates, the same will be treated to be so corrected as to confirm with the prevailing relevant schedule of rates and/or technically sanctioned estimate.
- 33) Intending tenderer should note that he will have to work simultaneously with other contractors already entrusted with other work or with contractors to be entrusted with other work in future in the same site. The contractor will have to work in close co-operation and harmony with all the contractors engaged in the project. Any claim for idle labour, for any reason whatsoever, will not be entertained under any circumstances.
- 34) NKDA will not be held responsible for making payment against any anticipated profit and/or compensation for any losses or price escalation whatsoever for the works as stated in the annexure of this NIT. Rates should be quoted accordingly.

35) The address as furnished by the contractor shall be deemed as the postal address of this office. Any notice or instruction to be given to the contractor under the terms of contract shall be deemed to have been served if it has been delivered to his authorized agent (on the strength of authorization) or representative or sent by registered letter to his official address as furnished.

36) Arbitration clause of WBF 2911(ii) stands deleted.

37) Any Corrigendum, notification in connection to this NIE T will be published in the official website of New Town Kolkata Development Authority (www.nkdamar.org) as well as <https://wbtenders.gov.in> . The applicants are requested to please follow the websites for such notifications, corrigendum etc.


Executive Engineer (E)
New Town Kolkata Development Authority

Memo. No. 1378/1(8)/EE(E)/NKDA/Elect./2018-19

Date:05-06-2019

Copy forwarded for information to:-

1. The Chief Executive Officer, New Town Kolkata Development Authority.
2. The Chief Engineer, New Town Kolkata Development Authority.
3. The Finance Officer, New Town Kolkata Development Authority.
4. The Assistant Engineer (M/E), New Town Kolkata Development Authority.
5. The Sr. Accountant / Cashier, New Town Kolkata Development Authority.
6. P.A to the Chairman, New Town Kolkata Development Authority.
7. Office Notice Board.
8. Official Website of New Town Kolkata Development Authority (www.nkdamar.org)

Executive Engineer (E)
New Town Kolkata Development Authority

Notice Inviting e-Tender

Green Verge Pathway List:

SI NO.	Address Of The Green Pathway
1	Making Greenery by Plantation& Bamboo Fencing at Green Verge of AA Block at Street No-57 & 59 in AA.
2	Making Greenery by Plantation & Bamboo Fencing at Green Verge of AB Block at Street No-91 & 85 in AA-IA.
3	Making Greenery by Plantation & Bamboo Fencing at CC Block Street No.-256 & 233, AA-IC.
4	Making Greenery by Plantation & Bamboo Fencing at Green Verge of AK Block at Street No.-12 & 04 in AA-IA.
5	Making Greenery by Plantation & Bamboo Fencing at Green Verge of BA Block in between street no-110 & Link Canal in AA-IB.
6	Making Greenery by Plantation & Bamboo Fencing at Green Verge of BA Block in between street no-131 & Link Canal in AA-IB.
7	Making Greenery by Plantation & Bamboo Fencing at Green Verge of BC Block in between street no-131 & 165 in AA-IB.
8	Making Greenery by Plantation & Bamboo Fencing at Green Verge of BD-1 Block in between street no-131 & Canal Bank Road in AA-IB.
9	Making Greenery by Plantation & Bamboo Fencing at Green Verge of BD-2 Block in between street no-131 & 165 in AA-IB.
10	Making Greenery by Plantation & Bamboo Fencing at Green Verge of BE Block in between street no-165 & Bagjola Canal Road in AA-IB.
11	Making Greenery by Plantation & Bamboo Fencing at Green Verge of CA Block in between street no-121 & 201 in AA-IC.
12	Making Greenery by Plantation & Bamboo Fencing at Green Verge of CD Block in between street no-268 & 256 Road in AA-IC.
13	Making Greenery by Plantation & Bamboo Fencing at Green Verge of CE Block in between street no-183 & 185 Road in AA-IC.

Total Length of the Green Verge Pathway (Approx.) = 1.87 Km.

No of Solar Pole Required =156 Nos.

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06/3/19

Executive Engineer (E)
New Town Kolkata Development Authority
03 MAR, Kolkata-700156

ANNEXURE

TECHNICAL WHITE-LED (W-LED) BASED SOLAR STREET LIGHTING SYSTEM, (1 5WATT)

A stand-alone solar photo voltaic street lighting system (SLS) is an outdoor lighting unit used for illuminating a street or an open area. The Solar Street Lighting System consists of solar photo voltaic (SPV) module, a luminaire, storage battery, control electronics, inter-connecting wires/cables, module mounting pole including hardware and battery box. The luminaire is based on White Light Emitting Diode (W-LED), a solid-state device which emits slightly when the electric current passes through it. The luminaire is mounted on the pole at a suitable angle to maximize illumination on the ground. The PV module is placed at the top of the pole at an angle facing south so that it receives solar radiation throughout the day, without any shadow falling on it. A battery is placed in a box attached to the pole.

Electricity generated by the PV module charges the battery during the day time which powers the luminaries from dusk to dawn. The system lights at dusk and switches off at dawn automatically.

Broad Performance Specifications:

PV Module	75watt under STC, Each Solar Panel or Photovoltaic (PV) module must carry an RFID tag.
Battery	Maintenance , 12.8V /25AH and above, LifePO4 Battery
Light Source	Pack White Light Emitting Diode(W-LED) 15Watt, W-LED luminaire, dispersed Beam, soothing to eyes with the use of proper optic sand diffuser.
Mounting of light	Pole Mounted Minimum 5 meter height above the ground
Electronics Efficiency	Minimum 90% total
Autonomy	2 days

PV Module:

- Indigenously manufactured PV module should be used.
- The PV module should have crystalline silicon solar cells and must have a certificate of testing conforming to IEC61215 Edition II/BIS14286 from an NABL or IECQ accredited Laboratory.
- Each Solar Panel or Photovoltaic (PV) module must carry an RFID tag
- The power output of the module(s) under STC should be a minimum of 75W per load Voltage *of $16.4 \pm 0.2V$.
- The module efficiency should not be less than 12%.**
- The terminal box on the module should have a provision for opening it for replacing the cable, if required.
- There should be a Name Plate fixed inside the module which will give:
 - o Name of the Manufacturer or Distinctive Logo.
 - o Model Number
 - o Serial Number
 - o Year of manufacture

*The load voltage and Voc conditions of the PV modules are not applicable for the system having MPPT based charge controller.

Battery:

- Lithium Ferro phosphate type battery.
- The battery will have a minimum rating of 12.8V/25Ah discharge rate.
- 85% of the rated capacity of the battery should be between fully charged and load cut off conditions.
- Battery should conform to the latest BIS/International standards.

S. No.	Description	Specification
1.	Battery Nominal Ah Rating	25Ah and above.
2	Nominal Voltage	12.8 V
3	Cell Capacity	3.2Volt 5Ah/6Ah/10Ah and above
4	Battery type	Lithium Ferro phosphate
5	Battery Voltage Range	10V to 14.6±0.2Volt
6	Working Temperature Range	0°C ~ 60°C; humidity < 95%
7.	Certifications	As per BIS standard

Light Source:

- The light source will be a white LED type.
- The colour temperature of white LED used in the system should be in the range of 5500oK– 6500oK.
- W-LEDs should not emit ultra violet light.
- Light source must be Operates dusk to dawn, First 6 Hours at full Brightness, rest of the time at 50% lower brightness level.
- The lamps should be housed in an assembly suitable for outdoor use.
- The temperature of heat sink should not increase more than 20°C above ambient temperature during the dusk to dawn operation.
- Lumen efficiency of LED minimum 120 lumen/watt

Sl No	Description	Specification
1.	System Wattage	15W
2.	Operating nominal Voltage	12.8 VDC
3.	Input Voltage range	10.8V-14.4 VDC
4.	LED type	High Power LED
5.	LED efficacy	120 Lm/Watt(minimum)
6.	LED MAKE	CREEE / Philips/Osram/Seoul/Nichia or equivalent
7.	Colour Index (CRI)	CRI >60
8.	Viewing Angle	120°
9.	Driver type	DC-DC - Compatible for Solar Panel power
10.	Driver efficiency	>85%
11.	Luminaries housing	Aluminum
12.	Ingress Protection	IP 65
13.	Certifications	LM-80 and LM-79 for LED Confirmation to NABL or BIS or equivalent standards

Electronics:

- The total electronic efficiency should be at least 90%.
- Electronics should operate at 12 V and should have temperature compensation for proper charging of the battery throughout the year.
- No Load current consumption should be less than 20mA.
- The PV module itself should be used to sense the ambient light level for switching ON and OFF the lamp.
- The PCB containing the electronics should be capable of solder free installation and replacement.
- Necessary lengths of wires/cables, switches suitable for DC use and fuses should be provided.

SI No.	Description	Specification
1	Nominal Battery Voltage	12.80V -Optimized for Lithium battery chemistry
2	Charge Controller Type	Maximum Power Point Tracking (MPPT)
3	Load Controller	Automatic Dusk to dawn with Dimmer and Motion sensor based lighting control
4	Self-Consumption	<20mA
5	Efficiency	>90%
6	Protections	<ul style="list-style-type: none">• Over Charging / Deep Discharge• Overload - Auto shutdown and restart• Solar and Battery Reverse• Reverse Current Protection from Battery at Night.

Electronic Protections:

- Adequate protection is to be incorporated under “No Load” conditions e.g. when The lamp is removed and the system is switched ON.
- The system should have protection against battery overcharge and deep discharge conditions.
- Fuse should be provided to protect against short circuit conditions.
- Protection for reverse flow of current through the PV module(s) should be provided.
- Adequate protection should be provided against battery reverse polarity.
- Load reconnects should be provided at 85% of the battery capacity status.

Mechanical Components:

- A corrosion resistant metallic frame structure should be fixed on the pole to hold the SPV module.
 - The frames structure should have provision to adjust its angle of inclination to the horizontal, so that it can be installed at the specified tilt angle.
 - The pole should be made of Galvanized Iron (GI) pipe.
 - The height of the pole should be 5 meters above the ground level, after grouting and final Installation .Pole should be minimum 3mm thickness, 70mm top diameter & 130mm bottom diameter. Make: Bajaj, Valmont, Transrail.
 - The pole should have the provision to hold the luminaire.
 - The lamp housing should be water proof with IP 65 protection and should be painted with a corrosion resistant paint and should be housing the battery.
- Alternatively:

A vented, acid proof and corrosion resistant metallic box or plastic box (Made of polypropylene-Copolymer(PP-CP) with a locking arrangement For outdoor use should be provided for housing the battery.

Indicators:

- The system should have two indicators, green and red.
- The green indicator should indicate the charging under progress and should glow only when the charging is taking place. It should stop glowing when the battery is fully charged.
- Red indicator should indicate the battery “Load Cut Off” condition.

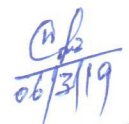
Quality And Warranty:

- The street lighting system (including the battery) will be warranted for a period of five years from the date of supply.
- The PV module(s) will be warranted for a minimum period of 25years from the date of Supply. PV modules must be warranted for their output peak watt capacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of Twenty five (25) years.
- The Warranty Card to be supplied with the system must contain the details of the system. The manufacturers can also provide additional information about the system and conditions of warranty as necessary.

Operation And Maintenance Manual:

An Operation, Instruction and Maintenance Manual, in English and the local language, should be provided with the Solar Street Lighting System. The following minimum details must be provided in the Manual:

- Basic principles of Photovoltaic.
- A small write-up (with a block diagram) on Solar Street Lighting System-its components, PV module, battery, electronics and luminaries and expected performance.
- Type, Model number, Voltage & capacity of the battery, used in the system.
- The make, model number, country of origin and technical characteristics (including IESNA LM-80 & LM-79 report) of W-LEDs used in the lighting system.
- About Charging and Significance of indicators.
- Clear instructions about erection of pole and mounting of PV module (s).
- Clear instructions on regular maintenance and trouble shooting of the Solar Street Lighting System.
- DO's and DONT's.


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