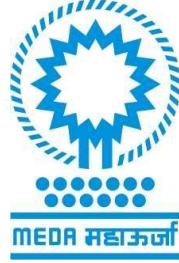


**MAHARASHTRA ENERGY DEVELOPMENT AGENCY, (MEDA)**  
**DIVISIONAL OFFICE, PUNE**



**(A GOVERNMENT OF MAHARASHTRA INSTITUTION)**

**QUOTATION CALL FOR  
SUPPLY, ERECTION, TESTING AND COMMISSIONING INCLUDING FIVE YEARS  
INSURANCE AND COMPREHENSIVE OPERATION AND MAINTENANCE OF  
TOTAL 11 NOS SOLAR STREET LIGHTS OF 50W AND 06 METER HEIGHT AT  
VARIOUS LOCATIONS OF GRAMPANCHYAT PIMPARI TAL. PURANDAR  
DISTRICT PUNE IN MAHARASHTRA STATE.**

**Quotation Ref. No: DOP/Technical-Desk -1/2024-25/SSL/GPP**

Address: - Aundh road, opposite to Spicer college, beside Commissionerate of Animal husbandry,  
Aundh, Pune- 411007.

Contact No.020-35000450,

Email: domedapune@mahaurja.com

Website – [www.mahaurja.com](http://www.mahaurja.com)

### Quotation Call

**Sub: - Supply, Erection, Testing and Commissioning Including Five Years Insurance and Comprehensive Operation and Maintenance of total 11 no's solar street lights of 50W and 06-meter height at various locations of Grampanchyat Pimpari Tal. Purandar District Pune in Maharashtra State.**

With reference to subject matter, we would like to invite your quotes in sealed condition for undertaking the work with given technical specifications and technical standards with following terms and conditions –

• **Details and Dates: -**

Sr. No.	Particulars	Type of System	Project Capacity (Wp/ Height)
1	Name of System	Solar Street light	125Wp Solar panel, 12.8V-48Ah (LiFe) battery, 50W LED & 6 M Octagonal hot dip galvanized Pole
2	Estimated Cost	4,98,631/- (Inclusive of all taxes and charges)	
3	Date and time for submission of quotations.	From 03/10/2024; 10:00 Hrs to 09/10/2024 17:00 Hrs	
4	Date and time for opening of quotations.	10/10/2024; 11:00 Hrs	
5	Security Deposit	14,959/- (to be deposited by online mode in favor of Maharashtra Energy Development Agency, Pune)	
6	Address for submission of quotation	Aundh road, opposite to Spicer college, beside Commissionerate of Animal husbandry, Aundh, Pune- 411007.	

**1. Scope of Work –**

The Scope of contract is as below:

1. **The work order to successful bidder will be issued after receipt of fund from beneficiary.**
2. Bidder has to carry the work at below mention locations

Sr.no	Name of location	Capacity	Number
1	Near Shayaji gaikwad house, G.P. Pimpari, Tal. Purandar, Dist. Pune	125Wp Solar panel, 12.8V-48Ah (LiFe) battery, 50W LED & 6 M Octagonal hot dip galvanized Pole	1
2	Near Balu shendkar, G.P. Pimpari, Tal. Purandar, Dist. Pune		1
3	Godse wasti, G.P. Pimpari, Tal. Purandar, Dist. Pune		1
4	Near Santosh hambir house, G.P. Pimpari, Tal. Purandar, Dist. Pune		1
5	Near Namdev narayan hambir house, G.P. Pimpari, Tal. Purandar, Dist. Pune		1
6	Shendkar mala, G.P. Pimpari, Tal. Purandar, Dist. Pune		1
7	Madhala mala, G.P. Pimpari, Tal. Purandar, Dist. Pune		1
8	In front of Kalubai mandir, G.P. Pimpari, Tal. Purandar, Dist. Pune		1
9	Rajesh shendkar, G.P. Pimpari, Tal. Purandar, Dist. Pune		1
10	Smashanbhumi, G.P. Pimpari, Tal. Purandar, Dist. Pune		1
11	Chinchechi Mala, G.P. Pimpari, Tal. Purandar, Dist. Pune		1
<b>Total</b>			<b>11</b>

3. Supply, Erection, Testing and Commissioning Including Five Years Insurance and Comprehensive Operation and Maintenance of total 11 no's solar street lights of 50 W and 06-meter height at various locations of Grampanchyat Pimpari Tal. Purandar District Pune in Maharashtra State.
4. Free replacement of defective/ damaged components of systems within Comprehensive Maintenance Contract period (CMC) of 5 years after commissioning for efficient running of the system.
5. Selected Bidder(s) shall be bound by operation and management arrangements and rules, regulations and modalities as per MNRE and as established by MEDA and mutually agreed between MEDA and the contractor for effective implementation of the project.
6. The works are to be carried out at various 11 locations of Grampanchyat Pimpari Tal. Purandar District Pune in the State of Maharashtra. Bidder can quote for all the Systems.

7. The responsibility of electrical works, safety precautions and safety parameters of the project will be of awarded bidder, which must be as per standards specified.
8. The successful bidder shall work according to diagram given in the quotation and insure safe installation and commissioning of solar street light adopting all safety standard. The installation work shall be certified by licensed Chartered Engineer/ Structural Engineer (Civil) and provide structure stability certificate against a wind speed of minimum 180 kmph.
9. Time is the essence in completing the works. The successful bidder will be required to complete the works within the stipulated time as specified in this document. The bidder shall ensure that Solar street lights should be commissioned within stipulated time frame of work order.
10. Bids shall complete and cover all works described in the quotation/ work order. Any item of works required for complete usable system shall be deemed to be included in bidder's scope irrespective of whether it is specifically mentioned or not in the quotation/ work order.
11. Bidder should note that obtaining permissions from statutory bodies wherever required for execution of works, shall be entirely in bidder's scope.

**2. ELIGIBILITY CRITERIA –**

The manufacturer/supplier shall be eligible to quote for this work provided fulfilment of following.

1. Shall have a registered firm/company with GST registration within Pune division.
2. Shall provide brief information in prescribed format (enclosed).
3. Shall not be black listed in any govt and/or other organizations.
4. Shall provide documentary proof about having experience of supply, installation and commissioning of minimum 20 no's of Solar Street lights.
5. Shall have an annual average turnover of Rs.10 lakh per year for FY 2021-22 2022-23 and 2023-24 duly certified by chartered accountant.
6. Shall provide self-attested copy of IT returns for last 3 FY.
7. Shall have arrangement of providing after sales service in area of installation of systems.

**3. TERMS AND CONDITIONS –**

- 1) Location for installation of Solar street lights shall be assigned immediately by the user agency to the selected manufacturer/ supplier to get the work done instipulated time.
- 2) In case of any dispute arising at any time about this work the same shall be settled amicably among the parties and the final decision of Div. GM, Pune be final and binding on the concerned parties.
- 3) DGM has all rights to accept or reject any or all quotations without assigning any reason thereof.
- 4) The installation of Solar street lights should be done in excellent manner and meet technical standards prescribed by the MEDA.
- 5) As per the technical criteria set by the Ministry of New and Renewable Energy, Govt. of India the solar modules should fulfill the IEC standards and shall be procured from manufacturer providing module with RFID tag.
- 6) The manufacturer/ supplier shall provide valid test certificate of LED light and battery from govt. approved test centres.

- 7) The manufacturer/ supplier shall provide Solar Modules from the approved Manufacturers which are enlist in MNRE's ALMM list.
- 8) If the Solar street lights does not function as per given standards then the loss incurred shall be borne by the supplier and paid to Grampanchayat Pimpri, Tal. Purandar, Dist. Pune.
- 9) If contractor fails to complete the work then Security Deposit will be forfeited and contractor shall be blacklisted.
- 10) Supplier shall give training of system operation to a person duly nominated by user agency and same shall be informed to Divisional office Pune.
- 11) The Contractor/ Agency should successfully complete the project within time frame set out by the MEDA.
- 12) The manufacturer/ supplier shall provide the user manual, warranty card to the user agency and copy of same shall be provide to MEDA Pune.**
- 13) The manufacturer/ supplier shall visit the site and ensure scope of work and ownership of land with respective Grampanchayat before submission of quote against the enquiry. In this context, the manufacturer/ supplier shall submit the site visit report in given prescribed format for installation of solar street light & get it certified from the concerned Gram Sevak/ Gram vikas adhikari of Gram Panchayat (User Agency).
- 14) The work being of limited nature and to seek prompt after sales service the manufacturer/ supplier within Pune District will be preferred while allotting the work against the invited quotes. Required documentary proof in this matter need to be submitted by concerned manufacturer/supplier along with quote.
- 15) The Contractor shall provide the detailed information about Company/ firm in attached Format (Contractor's Information sheet)
- 16) **The manufacturer/ supplier shall submit their quotations in two different sealed envelopes i.e. First envelop shall contains documents as per the technical eligibility criteria and Second envelop shall contain Financial details (quoted rate).**
- 17) **The manufacturer/ supplier should mention the subject on each sealed envelope i.e Technical Envelop and Financial Envelop.**
- 18) **The financial envelop of technically qualified manufacturer/ suppliers will only be opened.**

**4. INSURANCE:**

- a. The manufacturer/ supplier/ bidder shall provide complete insurance of Solar street lights project coverage ex-factory until commissioning of project and acceptance for replacement or repair of any part of the consignment due to Natural calamity, theft, damage, fire, vandalism, burglary.
- b. It is the responsibility of successful manufacturer/ supplier/ bidder to draw the complete insurance of Solar street lights project in the name of MEDA Pune on behalf of user agency (name of the user agency to be mentioned in insurance policy) from the date of commissioning up to 05 Years period covering the natural calamity, theft, burglary, fire and damage of project.
- c. The Successful manufacturer/ supplier should pay the necessary insurance premium for the said project.
- d. The Bidder shall be responsible and take an Insurance Policy for transit-cum-storage-cum-erection for all the materials to cover all risks and liabilities for supply of materials

on site basis, storage of materials at site, erection, testing and commissioning. The bidder shall also take appropriate insurance during O&M period, if required.

- e. The Bidder shall also take insurance for Third Party Liability covering loss of human life including students (User), engineers and workmen and also covering the risks of damage to the third party/ material/ equipment/ properties during execution of the Contract.
- f. Before commencement of the work, the Bidder will ensure that all its employees and representatives are covered by suitable insurance against any damage, loss, injury or death arising out of the execution of the work or in carrying out the Contract. Liquidation, Death, Bankruptcy etc., shall be the responsibility of bidder.
- g. Any complaint registered due to Natural calamity, theft, damage, fire, burglary by user agency shall be attended by the manufacturer/ supplier/ bidder and claims be settled with insurance company accordingly.
- h. In case of any loss encored by the project due to natural calamities, theft, fire, burglary and vandalism etc. the bidder shall be responsible for filing the insurance claim towards loss attained by the project with the respective insurance company and ensure to get compensation.***

#### **5. COMPREHENSIVE MAINTENANCE CONTRACT (CMC)**

1. The complete and commissioned Solar Street Lights must be guaranteed against any manufacturing/ design/ installation defects for a minimum period of 5 years.
2. PV modules used in Solar Street Lights must be guaranteed for their output peakwatt capacity, which should not be less than 90% at the end of 12 years and 80% at the end of 25 years.
3. During the CMC period, MEDA will have all the rights to cross check the performance of the Solar Street Lights. MEDA may carry out the frequent inspections of the Solar Street Lights installed. If during such inspection if any part is not found as per the specified technical parameters, MEDA will take the necessary action. The decision of MEDA in this regard will be final and binding on the manufacturer/ supplier.
4. Successful manufacturer/supplier shall have to provide office address and name of technical person with contact who is operating in Pune district/ division for timely maintenance of SPV system.
5. During the CMC period, timely cleaning of SPV panels (once in fortnight) of system shall be responsibility of user agency.
6. After site visit manufacturer/ supplier shall submit plant visit report to MEDA duly certified by authorized person of the user agency.
7. If any problem occurs in working of Solar Street Lights or its estimated energy saving is not getting achieved then successful manufacturer/ supplier shall attend the system and rectify the problem immediately.
8. After the completion of the CMC period (after 05 Years) User Agency will completely responsible for maintenance and repair etc. of the system.
9. In case if Contractor/ Supplier fail to provide service during the CMC period, the Performance Bank Guarantee (PBG) and Security Deposit shall be forfeited and Contractor/ Supplier shall be blacklisted.

**6. TERMS OF PAYMENT:****a. Release of 80% of total project cost:**

It shall be released after supply, installation & successful commissioning of the systems and duly certified by authorized representative of user agency, Officer of Division office MEDA, Pune & authorized person of developer along with submission of following documents:

- Joint Inspection Report duly signed by User Agency, MEDA official and your company authorised representative along with system photographs.
- System photograph with geo-coordinates accompanying MEDA official taken during joint inspection.
- Submission of undertaking of comprehensive contract (CMC) for 5 years from date of commissioning on your letter head.
- Tax invoice.
- Warranty/ Guaranty certificate of materials used in project.
- List and Serial wise test reports of panel comprising I-V curve and detail parameters of each panel.
- IEC/ IE/ BIS test certificate of equipment's used the project.
- Complete insurance policy documents (covering Natural calamity, damage, fire, burglary) effective from date of installation up to five-year period from date of commissioning.
- **MEDA official at its discretion may ask developer to submit document other than above mentioned; failing which General Manager, Divisional Office, Pune shall have right to hold the payment of the project.**

**b. Release of 20% of total project cost:**

- 20% of the total cost shall be released on receipt of three-month successful performance report which should be duly certified by Officer of MEDA, authorized person of user agency and submission of performance bank guarantee (PBG) of 10% amount of project cost from any Nationalized Bank valid for period of 5 years from date of commissioning of project.
- Performance Bank Guarantee shall be released after 5 years on submission of latest report of Solar street light functioning at G.P Pimpari, tal. Purandar dist. Pune Maharashtra duly certified by authorized person of user agency.
- In case if "you" does not provide service during the warrantee period, PBG will be forfeited and "you" will be blacklisted (in case of "Consortium": all the partners be blacklisted)

**7. DEDUCTION: -**

- i. The TDS at the source will be deducted as per the Govt. rule and regulations.
- ii. MEDA will issue necessary certificates of TDS deduction.
- iii. C' / 'D' form will not be issued by MEDA.

**8. BILLS TO BE ON PRINTED FORM (TAX INVOICE):**

- Contractor/Supplier/Installer shall submit the Tax Invoice in terms of the 80:20ratio for basic amount i.e. 70% for goods and 30% for services, respectively by adding applicable GST on renewable energy projects (i.e. 12% GST on Goods and 18% GST on Services).
- Contractor/Supplier/Installer shall submit the two separate Tax Invoices of 80% amount while releasing the 80% and 20% payment respectively (Do not submit the Tax Invoice of 100% amount while releasing the first stage 80% payment).

**9. SECURITY DEPOSIT –**

- i. A sum of 14,959/- shall be deposited by the selected manufacturer/supplier/bidder as security deposit by online mode in favor of 'Maharashtra Energy Development Agency, Pune on or before issuing of Work Order.
- ii. If the contractor fails to execute the work in given time or terminates the order prematurely then the security deposit will be forfeited and contractor shall be blacklisted and no excuses will be entertained.
- iii. The security deposit will be returned to the contractor without interest after successful commissioning (i.e. all work is completed as per terms and conditions of work order) of system and receipt of two-month successful performance report duly signed by user agency, MEDA official and representative of the contractor.

**10. PENALTY –**

- A penalty of 1/2% of the total project cost shall be imposed on the contractor against a delay of one week in project completion subject to a maximum of up to 10% of the total project cost. In case the penalty exceeds 10% of the total project cost, the given order will be canceled & the security deposit will be forfeited and the Contractor/ Supplier shall be blacklisted.

**11. TIME FRAME:**

- The successful Manufacturer/supplier will be required to commission the project within 60 Days from the date of issue of work order.

**12. EXTENSION:**

- If project is not commissioned within the given time frame due to any inevitable reasons then contractor shall seek the time extension for the project at least 07 Days in advance before expiry of project completion period (60 Days) by giving satisfactory reasons for same.

**13. SITE VISIT:**

The bidder should visit the site & carry out the survey along with officials of user agency (as mentioned in terms and conditions) along with photographs (with Lat. And Long.) indicating that the survey is carried by the bidder as per given format.

**14. CHECK LIST OF DOCUMENTS TO BE FURNISHED WITH QUOTATION –**

- PAN and GST Details.
- Copy of IT Returns.
- Declaration on company letter head.
- Contractors Information Sheet.
- Annual Turnover Certificate.
- Work Experience Details.
- Site Visit Report. (in format)

We look ahead to seek your sealed quotation on or before 09/10/2024 till 18 Hrs.

Thanking you,

Sd/-

Divisional General Manager  
MEDA, Divisional Office, Pune

Encl.: -

1. Contractor Information Sheet.
2. Declaration Format.
3. Annual Turn Over certificate format.
4. Site Survey Form.
5. Technical Specifications of Solar street light



**CONTRACTOR'S INFORMATION**

<b>Sr. No</b>	<b>Particulars</b>	
1	Name of Firm	
2	Details of Mailing Address	
3	Firm Status (PSU/ Incorporate/ Ltd/ Pvt.Ltd/ LLP/ Partnership/ Proprietary)	
4	Name & Designation Of Contact Person	
5	Contact No.	
6	E-mail Address for correspondence	
7	Firm website Address	
8	Firm registration No/ROC Establish Year of firm	
9	PAN No.	
10	GST No.	
11	Turnover (in Rs.) of last 3 FY	
12	Skilled manpower	
13	*Experience in Solar Street Lights	

Authorized Sign and Stamp

**DECLARATION**

(On company's letter head)

To,

**Divisional General Manager,**

Divisional Office Pune

Maharashtra Energy Development Agency

(A Government of Maharashtra Institution)

Address: Aundh road, opposite to Spicer college, beside Commissionerate of Animal husbandry, Aundh, Pune- 411007.

Respected Sir/ Madam,

1. We have carefully read and understood all the terms and conditions of the quotation and hereby convey our acceptance to the same.
2. The information/ documents furnished along with our offer are true and authentic to the best of my knowledge and belief. We are well aware of the fact that furnishing of any false information/ fabricated document would lead to rejection of our quotation at any stage besides liabilities towards prosecution under appropriate law.
3. We have apprised our self fully about the job to be done during the currency of the period of agreement and also acknowledge bearing consequences to of non-performance or deficiencies in the services on our part.
4. We have no objection, if enquiries are made about the work listed by us.
5. We have not been barred or blacklisted by any Government Agency / Department/ PSU or any such competent Government authority, organization where we have worked. Further, if any of the partners/ directors of the organization/ firm is blacklisted or having any criminal case against them, our quote shall not be considered. At any later point of time, if this information is found to be false, Divisional General Manager, Divisional Office Pune, Maharashtra Energy Development Agency, may terminate the assigned contract immediately.
6. We have not been found guilty by a court of law in India for fraud, dishonesty or moral turpitude.
7. We agree that the decision of Divisional General Manager, MEDA, Divisional Office Pune, in selection of quotation and shall final and binding to us.

For

(Company Name)

Name of signing authority / Designation / Place / Date

**Annual Turnover**

(Each Contractor must fill in this form including private/public limited company)

- **Annual Turnover Data for the FY 2021-22,2022-23 and 2023-24**
- **Name of Company:**

<b>Year</b>	<b>Rs in Lacs</b>
2021-22	
2022-23	
2023-24	

The information supplied should be the Annual Turnover of the Contractor in terms of the amounts billed to clients for each year for work in progress or completed.

Signature of Applicant

Certified by Applicant's Auditor

(Affix Stamp)

**SITE VISIT REPORT**

(To be submitted on letterhead of contractor)

Date: \_\_\_\_\_

To,  
The Divisional General Manager,  
Divisional Office Pune,  
Maharashtra Energy Development Agency  
(A Government of Maharashtra Institution)  
Address: Aundh road, opposite to Spicer college, beside Commissionerate of Animal husbandry,  
Aundh, Pune- 411007.

**Sub.:** Site Visit Report for Supply, Erection, Testing and Commissioning Including Five Years Insurance and Comprehensive Operation and Maintenance of total 11 no's solar street lights of 50 W and 06-meter height at various locations of Grampanchayat Pimpari Tal. Purandar District Pune in Maharashtra State.

Ref.: Quotation Call No..... Date:

Sir,  
This has reference to above referred quotation call for Supply, Erection, Testing and Commissioning Including Five Years Insurance and Comprehensive Operation and Maintenance of total 11 no's solar street lights of 50 W and 06-meter height at various locations of Grampanchayat Pimpari Tal. Purandar District Pune in Maharashtra State.

I / We hereby declare that we have visited the site.

I / We have made my ourselves acquainted with site conditions, approach to site, requirement of area, availability of water, requirement of quotation conditions etc.

I / We have verified the ownership of land for this project belong to respective Grampanchayat.

I / We have verified all details required to execute the project.

I / We have no problems in undertaking the project and complete them in the given time period.

Thanking you

Yours faithfully,

(Signature of Contractor)

Name of Contractor -----

Designation .....

Seal:

**Signature of User Agency authorities.**

**Seal:.....**

**TECHNICAL SPECIFICATION FOR 50W LED SOLAR STREET LIGHT**

<b>Sr. No</b>	<b>Components</b>	<b>Specification for Solar street light fitting</b>
1	PV module	125 Wp under STC
2	Battery	Minimum 12.8V, 48 AH capacity Lithium FerroPhosphate battery.
3	Light Source	White Light Emitting Diode (W-LED) 50-Watt, W-LED luminaire, dispersed beam, soothing toeyes with the use of proper optics and diffuser. Test report for same should be submitted. (LED + Driver) DC operated confirming to IP65 or above with proper dimmer arrangement Using LEDs which emits ultraviolet light will not be Permitted
4	Light Out put	The luminaire must use high efficacy W-LED with minimum 140 lumens per watt (and UVfree). [A certificate to be submitted by the System supplier tothe Test Lab during certification]
5	Mounting of light	Luminaire shall be at 6 m above the ground level & mounted properly. Foundation should be properly doneto ensure safety.
6	Electronics Efficiency	Overall total Efficiency of the Electronics should be Minimum 90%
7	Duty Cycle	Dusk to dawn: First 6 Hours full light (Min. 24 Lux), rest of the time atlower light (50%, Min. 12 Lux) level. (Higher light output will be preferred)
8	Autonomy	3 days or Minimum 36 operating hours per permissible discharge with fully charged Lithium- Ferro Phosphate Battery.
9	Ingress Protection – IP	Optical and Control gear compartment - IP 65 / IP66
10	Pole	6 mtr long Octagonal hot dip galvanized Pole of 3 mm Thickness having base plate arrangement to fix with nut& bolt on concrete platform.
11	Civil work	As shown in diagram

**1. PV MODULE:**

- i. Indigenously manufactured PV module should be used.
- ii. The PV module should have crystalline silicon solar cells and must have a certificate of testing conforming to IEC 61215 Edition II / BIS 14286 from an NABL or IECQ accredited Laboratory.
- iii. The power output of the module under STC should be a minimum of 125Wp.
- iv. The module efficiency should not be less than 14 %.
- v. The terminal box on the module should have a provision for opening it for replacing the cable, if required.
- vi. There should be a Name Plate fixed inside the module which will give:
  - a. Name of the Manufacturer or Distinctive Logo.
  - b. Model Number
  - c. Serial Number
  - d. Year of manufacture
- vii. distinctive serial number starting with NSM will be engraved on the frame of the module or screen printed on the tedlar sheet of the module.

**2. BATTERY**

- i. Minimum 12.8V, 48 AH capacity Lithium Ferro Phosphate Battery. (LiFePo<sub>4</sub>)
- ii. Battery pack should have proper 'Battery management System' (BMS) for cell balancing, overcharge and over temperature protection.
- iii. Battery should conform to the latest BIS/ International standards.

**3. LIGHT SOURCE**

- i. The light source will be a white LED type.
- ii. W-LEDs should not emit ultraviolet light.
- iii. The light output from the white LED light source should be constant throughout the duty cycle.
- iv. The lamps should be housed in an assembly suitable for outdoor use.
- v. The temperature of heat sink should not increase more than 20°C above ambient temperature during the dusk to dawn operation.

**4. ELECTRONICS**

- i. The total electronic efficiency should be at least 90 %.
- ii. Charge controller should be MPPT Type.
- iii. Electronics should operate at an appropriate voltage suitable for proper charging of the battery.
- iv. The PV module itself should be used to sense the ambient light level for switching ON and OFF the lamp.
- v. The PCB containing the electronics should be capable of solder free installation and replacement.
- vi. Necessary lengths of wires/cables, switches suitable for DC use and fuses should be provided.

**5. ELECTRONIC PROTECTIONS**

- i. Adequate protection is to be incorporated under "No Load" conditions e.g. when the lamp is removed and the system is switched 'ON'.
- ii. The system should have protection against battery overcharge and deep discharge conditions.
- iii. The System should have protection against short circuit conditions.
- iv. Protection for reverse flow of current through the PV module(s) should be provided.
- v. Adequate protection should be provided against battery reverse polarity.
- vi. Load reconnect should be provided at 80% of the battery capacity status.

**6. MECHANICAL COMPONENTS**

- I. Pole should be Hot dip galvanized pipe as per IS1161 & IS4736 i.e. Class B.
- II. Pole height 6 m above the ground level. Luminaire shall be at 6 m above the ground level & fixed properly in foundation to ensure safety.
- III. The pole should have the provision to hold the luminaire.
- IV. The battery shall be included in the luminaire enclosure, which should be water proof (IP65) and corrosion resistant.

**7. INDICATORS**

- I. The system should have two indicators, green and red.
- II. 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.
- III. Red indicator should indicate the battery "Load Cut Off" condition.

**8. QUALITY AND WARRANTY**

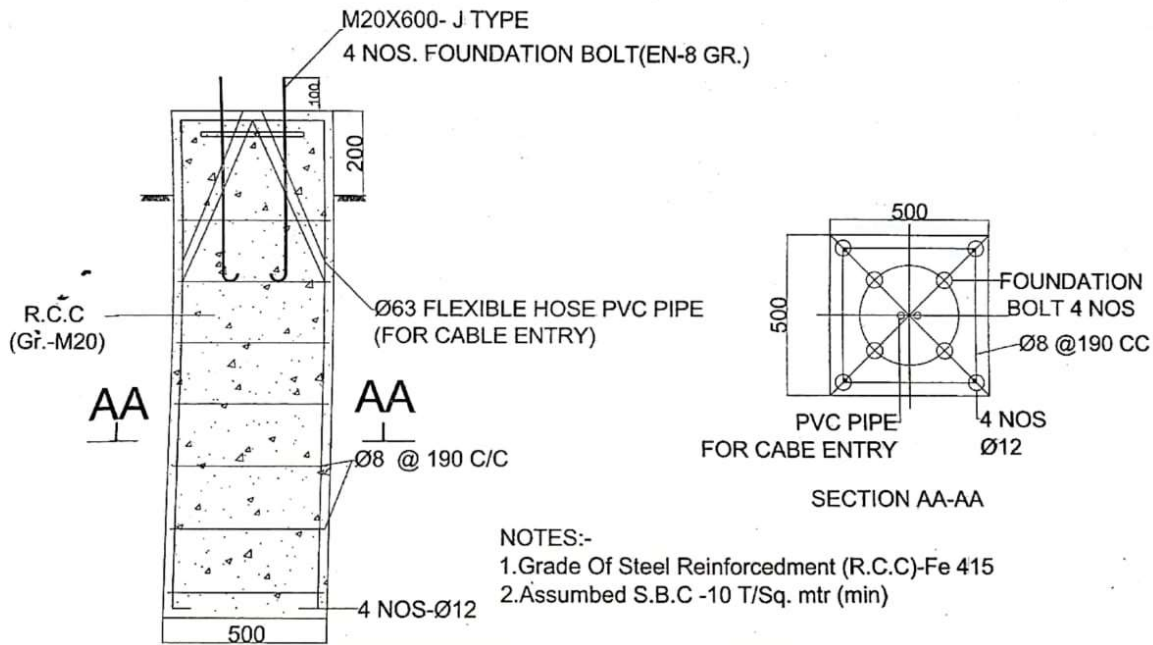
- I. The street lighting system (including the battery) will be warranted for a period of five years from the date of supply.
- II. The PV module(s) will be warranted for a minimum period of 25 years from the date of supply. The PV modules must be warranted for their output peak watt capacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of Twenty-five (25) years.
- III. The Warranty Card to be supplied with the system must contain the details of the system.

**9. OPERATION and MAINTENANCE MANUAL**

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

- A small write-up (with a block diagram) on Solar Street Lighting System - its components, PV module, battery, electronics and luminaire and expected performance.
- Type, Model number, Voltage & capacity of the battery, used in the system.
- About Charging and Significance of indicators.
- Clear instructions about erection of pole and mounting of PV module (s) and lamphousing assembly on the pole.
- Clear instructions on regular maintenance and troubleshooting of the Solar Street Lighting System.
- DO's and DONT's.
- Name and address of the contact person for repair and maintenance, in case of non-functionality of the solar street lighting system.

Detailed specifications of Foundation are as per details given below.



NOTES:-

1. Grade Of Steel Reinforcedment (R.C.C)-Fe 415
2. Assumbed S.B.C -10 T/Sq. mtr (min)

DETAIL OF CIVIL FOUNDATION