

MUNICIPAL CORPORATION BATHINDA

NATIONAL COMPETITIVE BID (NCB) **BID REFERENCE NO 30/2018-19**

BIDDING DOCUMENT FOR THE WORK OF IMPLEMENTING SMART LED STREET LIGHTS AND CENTRALIZED CONTROL & MONITORING SYSTEM ON EPC MODE WITH OPERATION AND MAINTENANCE FOR 8 (EIGHT) YEARS IN MUNICIPAL CORPORATION BATHINDA.

Project Cost Rs.14.12 Cr.

COMMISSIONER

MUNICIPAL CORPORATION BATHINDA,

RAILWAY ROAD, BATHINDA – 151001, PUNJAB

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WORK OF IMPLEMENTING SMART LED STREET LIGHTS AND CENTRALIZED CONTROL & MONITORING SYSTEM ON EPC MODE WITH OPERATION AND MAINTENANCE FOR 8 (Eight) YEARS IN MUNICIPAL CORPORATION BATHINDA.

Specific Procurement Notice – Request for Bids (RFB)

Contents

No :- DETAILED NIB NIB No.: 30/2018-19 **Date:18.02.2019**

Notice inviting online bids for Work of Implementing Smart LED Street Lights And Centralized Control & Monitoring System on EPC Mode With Operation And Maintenance for 8 (Eight) Years In Municipal Corporation BATHINDA.

Commissioner, MUNICIPAL CORPORATION BATHINDA (MCB), invites online unconditional Bids through e-procurement portal **https://www.tenderwizard.com/DLGP** from eligible Bidders.

Bidding will be conducted under National Competitive E-Reverse Auction with Single Stage – 2 (two) envelopes bidding procedure with prequalification filter and are open to all national Bidders

Name & Address of the Procuring Entity	Commissioner, Municipal Corporation, Railway Road, BATHINDA - 151001, Punjab, India
Subject matter of Procurement	Notice inviting online Bids for work of Implementing Smart LED Street Lights and Centralized Control & Monitoring System on EPC Mode with Operation and Maintenance period for 8 (Eight) years in Municipal Corporation BATHINDA.
Period of completion of physical works	6 (Six) Months (including survey by the bidder)
Bid Procedure	Single-stage: 2 (two) Part (envelope) open competitive E-Reverse Auction procedure at **https://www.tenderwizard.com/DLGP**
Bid Evaluation Criteria (Selection Method)	Least Cost Based Selection (Lowest bid on E-Reverse Auction)
Websites for downloading Bidding Document	**https://www.tenderwizard.com/DLGP**
Fees	Earnest Money & Cost of tender documents shall be deposited through RTGS/NEFT/ Online mode. The Unique Transaction Reference (UTR) of RTGS/NEFT shall be uploaded by the Bidder along with scanned copies of the eligibility documents with "Eligibility Bid". The Bidding Document Fee (Non-Refundable): Rs. 5,000/- (Rupees Five Thousand only). Tender Processing Fee (Non-Refundable): As per the Portal
Estimated Project Cost	Rs 14.12 Cr. (Rupees Fourteen Crores and twelve Lakh Only) including Estimated Infrastructure development work of Rs 1.5 Cr.
Bid Security (also known as Earnest Money Deposit) and Mode of Payment	Rs 28,24,000/- **(**Rupees Twenty Eight Lakh and Twenty Four Thousand only.) Mode of Payment*:* BID SECURITY shall be deposited through RTGS/NEFT/online mode only. The Unique Transaction Reference (UTR) of RTGS/NEFT/online payment fee shall be uploaded by the Bidder along with scanned copies of eligibility documents with "Eligibility Bid".
Period of on-line availability of Bidding Documents (Start / End Date)	Start Date:- From:- 19.02.2019, 09:00 AM End Date: - Till: 11.03.2019, 09:00 AM
Pre-bid Meeting	Date/Time 04.03.2019 at 11:00 AM. Place: Conference Hall, Municipal Corporation, Bathinda, Punjab 151001
Manner, Start Date for submission of Bids	Manner: Online at **https://www.tenderwizard.com/DLGP** Start Date: 19.02.2019 at 09:00 A.M.
Manner, End Date for submission of Bids	Manner*:* Online at **https://www.tenderwizard.com/DLGP** End Date. 11.03.2019 at 11.00 AM
Submission of original Document and other Documents listed herein in RFP	Date: 11.03.2019, 11:00 A.M.

Date & Time of Technical Bid Opening	Date:11.03.2019, 11:30 A.M.
Date/ Time/ Place of Financial Bid opening and E-Reverse Auction	Will be intimated later to the Technically Qualified bidders
Bid Validity	180 (One hundred and Eighty) days from the Bid Submission Date.

Note:

1) Bidders (authorized signatory) shall submit their offer on-line in Electronic formats both for Technical and Financial Bid/ Proposal. However, RTGS/NEFT/BG (if applicable) for Bid Document Fees, Processing Fees and Bid Security should be submitted physically in original at the office of Commissioner, Municipal corporation Bathinda by time and date mentioned above and as prescribed in the Bid Document and scanned copy of same should also be uploaded along with the Technical Bid/ cover.

2) In addition to above, the following original documents should also be submitted physically in the Office of Commissioner, Municipal corporation Bathinda by time and date mentioned above and scanned copies of same should also be uploaded along with the technical Bid/ cover:

- Letter of Technical Bid
- Power of Attorney for appointing authorized representative.

3) Any subsequent addendum/corrigendum shall be published only at the website **https://www.tenderwizard.com/DLGP** and will not be published in newspapers. In case there is a holiday on the day of opening of the Bids, activities assigned on that date shall be carried out on the next working day.

4) Before electronically submitting the Bids, it should be ensured that all the Bid documents including conditions of contract are digitally signed by the Bidder.

5) The Procuring Entity will not be responsible for delay in online submission due to any reason. For this, the Bidders are requested to upload the complete Bid well in advance so as to avoid 11th hour issues like slow speed, choking of web site due to heavy load or any other unforeseen problems.

6) All the prospective Bidders are encouraged to participate in the Pre-Bid Meeting and it is advised that the work sites are visited and Bid documents are studied thoroughly.

7) The Procuring Entity reserves the sole right to cancel the Bid process and reject any or all of the Bids without assigning any reason.

8) The Procurement Entity disclaims any factual/ or other errors in the Bidding document (the onus is solely on the individual bidders to verify such information) and the information provided therein are intended only to help the Bidders to prepare a logical Bid-proposal.

9) No conditional Bids shall be accepted and such Bids shall be summarily rejected forthwith

Section I - Instructions to Bidders

1. Scope of Bid

- In connection with the Specific Procurement Notice – Request for Bids (**"RFB"**), specified in the Bid Data Sheet (**"BDS"**), the Employer, as specified in the BDS, issues this bidding document for the provision of Works as specified in Section VII, Works' Requirements. The name and identification of this RFB are specified in the BDS.

- The term "in writing" means communicated in written form (e.g. by mail, e-mail, fax, including if specified in the BDS, distributed or received through electronic-procurement system used by the Employer) with proof of receipt

2. Source of Funds

Source of Fund is from MC funds.

3. Fraud and Corruption

The Employer requires compliance with the Employer's Anti -Corruption Guidelines and its prevailing sanctions policies and procedures as set forth in the GoI's Sanctions Framework, as set forth in Section VI.

The Bidders and their respective officials/representatives shall observe the highest standard of ethics during the Bidding Process and subsequent to the grant of contract. Notwithstanding anything to the contrary contained herein, the Employer may reject a Bid, withdraw the contract, as the case may be, without being liable in any manner whatsoever to the Bidder or to the Successful Bidder, as the case may be. If the Employer determine that the Bidder or the Successful Bidder, as the case may be, has directly or indirectly or through an agent engaged in any corrupt fraudulent practice, coercive .practice, undesirable practice or restrictive practice in the Bidding Process or subsequent to allotment, in such an event, the Employer shall be entitled to forfeit and appropriate the Earnest Money or Performance Security, as the case may be, as damages, without prejudice to any other right or remedy that may be available to the Employer under the Tender Document and/ or otherwise. However, before taking such an action opportunity to show cause shall be issued to the affected parties in order to comply with the Principles of Natural Justice.

4. Eligible Bidders

4.1 A Bidder may be a firm that is a private entity / state-owned enterprise or institution subject to Instruction to Bidder ("**ITB**") 4.4

4.2 A Bidder shall not have a conflict of interest. Any Bidders found to have a conflict of interest shall be declared disqualified. A Bidder may be considered to have a conflict of interest for the purpose of this Bidding process, If the Bidder:

- Directly or indirectly controls, is controlled by or is under common control with another Bidder; or
- Receives or has received any direct or indirect subsidy from another Bidder; or
- has the same legal representative as another Bidder; or
- has a relationship with another Bidder, directly or through common third parties, that puts it in a position to influence the Bid of another Bidder, or influence the decisions of the Employer regarding this Bidding process; or
- any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the Bid; or
- any of its affiliates has been hired (or is proposed to be hired) by the Employer as Engineer In Charge for the Contract implementation; or

- would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the project as specified in the Clause 2.1 of the BDS or were provided by any affiliate that directly or indirectly controls, is controlled by , or is under the common control with that firm:
- or has a control business or family relationship with a professional staff of the employer(or of Project Implementing Agency, or of a recipient of a part of the loan) who: (i) are directly or indirectly involved in the preparation of the Bidding document or specifications of the contract, and/or the Bid Evaluation process of such contract; or (ii) would be involved in the implementation or supervision of such contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Employer throughout the procurement process and execution of the contract .

4.3 The Bidder may have the nationality of any country, subject to the restrictions pursuant to ITB 4.8. A Bidder shall be deemed to have the nationality of a country if the bidder is constituted , incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its Articles and Memorandum of Association, Certificate of Incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to determination of the nationality of proposed subcontractors or sub-consultants for any part of the contract including related services.

4.4 The Bidders which are a state-owned enterprises or institutions in INDIA may be eligible to compete and be awarded a contract(s) only if they can establish, in a manner acceptable to the Employer, that they (i) are legally and financially autonomous (ii) operate under commercial law, and (iii) are not under supervision of the Employer.

4.5 A Bidder shall provide such documentary evidence of eligibility satisfactory to the Employer, as the employer shall reasonably request.

4.6 Firms of a country shall be excluded if, by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's country prohibits any import of goods from that country or any payments to persons or entities in that country.

4.7 In case a prequalification process has been conducted prior to the bidding process, this bidding is open only to prequalified Bidders.

5. Eligible Materials, Equipment and Services

The materials, equipment and services to be supplied under the Contract may have their origin in any country subject to the restrictions specified in Section V, Eligible Countries, and all expenditures under the Contract will not contravene such restrictions. At the Employer's request, the Bidders shall be required to provide evidence of the origin of materials, equipment and services.

6. Sections of Bidding Document

6.1 contains 3 parts

PART 1 Bidding Procedures
PART 2 Works' Requirements
PART 3 Conditions of Contract and Contract Forms

6.2 Unless obtained directly from the Employer, the Employer is not responsible for the completeness of the bidding document, responses to requests for clarification, the minutes of the Pre-Bid meeting (if any), or Addenda to the bidding document in accordance with ITB 8. In case of any contradiction, documents obtained directly from the Employer shall prevail.

6.3 The Bidder is expected to examine all instructions, forms, terms, and specifications in the bidding document and to furnish with its Bid all information and documentation as is required by the Bidding Document.

7. Clarification of Bidding document, Site Visit, Pre Bid Meetings

7.1 Bidder requiring any clarification of the Bidding Document shall contact the Employer in writing at the Employer's address specified in the BDS or raise its inquiries during the Pre-Bid Meeting if provided for in accordance with ITB Clause 7.4. The Employer will respond in writing to any request for clarification, provided that such request is received prior to the deadline for submission of Bids within a period specified in the BDS. The Employer may forward copies of its response to all Bidders who have acquired the bidding document in accordance with ITB Clause 6.2, including a description of the inquiry but without identifying its source. If so specified in the BDS, the Employer shall also promptly publish its response at the web page identified in the BDS. Should the clarification result in changes to the essential elements of the bidding document, the Employer shall amend the bidding document by following the procedure under ITB Clause 8 and ITB Clause 21.2.

7.2 The Bidder is advised to visit and examine the Site of works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.

7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.

7.4 If so specified in the BDS, the Bidder's designated representative is invited to attend a Pre-Bid Meeting and/or a Site of works visit. The purpose of the Pre-Bid Meeting is to clarify issues and to answer questions on any matter that may be raised at that stage.

7.5 The Bidder is requested, to submit any questions in writing, to reach the Employer not later than 1 (one) week before the meeting.

7.6 Minutes of the Pre-Bid Meeting, if applicable, including the text of the questions asked by Bidders, without identifying the source, and the responses given, together with any responses prepared after the Pre-Bid Meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Document in accordance with ITB 6.2. The Employer shall also promptly publish the Minutes of the Pre-Bid Meeting at the web page ***https://www.tenderwizard.com/DLGP***. Any modification to the Bidding Document that may become necessary as a result of the Pre-Bid Meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to Article 8 of the ITB and not through the Minutes of the Pre-Bid Meeting. Non attendance at the Pre- Bid Meeting will not be a cause for disqualification of the Bidder.

8. Amendment of Bidding Document

8.1 At any time prior to the deadline for submission Of Bids, the Employer may amend the Bidding Document by issuing Addenda.

8.2 Any Addendum issued by the Employer shall be part of the Bidding Document and shall be communicated in Writing to all who have obtained the Bidding Document from the Employer in accordance with Clause 6.2 of the ITB. The Employer shall also promptly publish the addendum on the Employer's web page in accordance with Clause 7.1 of the ITB.

8.3 To give prospective Bidders reasonable time in which to take an Addendum into account in preparing their Bids, the Employer may, at its discretion, extend the deadline for the submission of Bids, pursuant to ITB 21.2

9. Cost of Bidding

The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the Bidding process.

10. Language of Bid

The Bid, as well as all the correspondence and documents relating to the Bid exchanged by the Bidder and the Employer, shall be written in the English language. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the English language, in which case, for purposes of interpretation of the Bid, such translation shall govern.

11. Documents Comprising the Bid

11.1 The Bid shall comprise 2 (two) Parts, namely the Technical Part and the Financial Part. These two Parts shall be submitted in 2 (two) separate sealed envelopes by online mode only (two-envelope Bidding process). 1(one) envelope shall contain only information relating to the Technical Part and the other, only information relating to the Financial Part. These 2 (two) envelopes shall be enclosed in a separate sealed outer envelope marked "ORIGINAL BID."

11.2 The **Technical Part** shall contain the following:

a. **Letter of Bid – Technical Part,** prepared in accordance with ITB 12;

b. **Bid Security** in accordance with ITB 19.1;

c. **Authorization**: written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.3;

d. **Bidder's Eligibility:** documentary evidence in accordance with ITB 17.1 establishing the Bidder's eligibility to Bid;

e. **Qualifications:** documentary evidence in accordance with ITB 17.2 establishing the Bidder's qualifications to perform the Contract if its Bid is accepted;

f. **Conformity**: a technical proposal in accordance with ITB 16;

g. Any other document **required in the BDS**.

11.3 The **Financial Part** shall contain the following:

A) **Letter of Bid – Financial Part:** prepared in accordance with ITB 12 and ITB 14;

b) Any other document required in the BDS.

11.4 The Technical Part shall not include any information related to the Bid price. Where material financial information related to the Bid price is contained in the Technical Part the Bid shall be declared non-responsive.

12. Letters of Bid and Schedules

12.1The Letter of Bid – Technical Part, Letter of Bid – Financial Part shall be prepared using the relevant forms furnished in Section IV - Bidding Forms. The forms must be completed without any alterations to the text and no substitutes shall be accepted except as provided under ITB 20.3. All blank spaces shall be filled in with the information requested.

13. Alternative Bids

13.1 When specified in the BDS, the Bidders are permitted to submit alternative technical solutions for specified parts of the Works. Such parts will be identified in the

BDS and described in Section VII, Works' Requirements. The method for their evaluation will be stipulated in Section III, Evaluation and Qualification Criteria.

14. Bid Prices and Discounts

14.1 The prices and discounts quoted by the Bidder in the Letter of Bid – Financial Part and in the Priced Activity Schedule or Bill of Quantities shall conform to the requirements specified below.

14.2 The Bidder shall submit a Bid for the whole of the Works described in ITB 1.1 by filling in prices for all items of the Works, as identified in Section IV, Bidding Forms. In case of admeasurement contracts, the Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Bidder will not be paid for by the Employer when executed and shall be deemed covered by the rates for other items and prices in the Bill of Quantities.

14.3 The price to be quoted in the Letter of Bid – Financial Part, in accordance with ITB 12.1, shall be the total price of the Bid, excluding any discounts offered.

The sum total of all the prices to be quoted during E-Reverse auction shall be the total price of the Bid in accordance with ITB 12.1

14.4 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, prior to the deadline for submission of the Bids, shall be included in the rates and prices and the total Bid price submitted by the Bidder.

15. Currencies of BID & Payment

15.1 The currency (ies) of the Bid and the currency(ies) of payments shall be the same and shall be in Indian Rupees and the same will be considered for evaluation of financial parts.
15.2 Bidders may be Required by the Employer To justify, to the Employer's satisfaction, their Local and foreign currency requirements, and To substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Adjustment Data are reasonable, in which case a detailed breakdown of the foreign currency requirements shall be provided by the bidder.

The source of Currency exchange rate if required, shall be: ***Reserve Bank of India***

16. Documents Comprising the Technical Proposal

The Bidder shall furnish a technical proposal in the Technical Part of the Bid including a statement of work methods ,equipment, personnel, schedule and any other information as stipulated in section IV, Bidding forms, in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the Work's requirements and the completion time.

17. Documents Establishing the Eligibility and Qualifications of the Bidder

17.1 To establish Bidder's eligibility in accordance with ITB 4, the Bidders shall complete the Letter of Bid, – Technical Part, included in Section IV, Bidding Forms.

17.2 In accordance with Section III, Evaluation and Qualification Criteria, to establish its qualifications to perform the Contract, the Bidder shall provide the information requested in the corresponding information sheets included in Section IV, the Bidding Forms.

18. Period of Validity of Bids

18.1 Bids shall remain valid for 180 (One Hundred & Eighty) days. The Bid Validity period starts from the date fixed for the Bid submission deadline (as prescribed by the Employer

in accordance with ITB 21.1). A Bid valid for a shorter period shall be rejected by the Employer as non-responsive.

18.2 T he validity of Bids may be extended by mutual consent of the respective Bidders and the Employer i.e Municipal Corporation Bathinda.

19. Bid Security (or Earnest Money Deposit)

19.1 The Bidder shall furnish as part of its Technical Part of its Bid, a Bid Security as the amount and currency specified in the BDS. Employer (MCB) shall reject the Bid, which does not include the Bid Security.

19.2 If a Bid Security is specified pursuant to ITB 19.1, the Bid Security shall be a demand guarantee, and in any of the following forms at the Bidder's option:

(a) an irrevocable unconditional bank guarantee, issued by a Bank in favour of the Commissioner MCB. Bank Guarantee issued by any Scheduled/ Nationalized Bank will be accepted, provided that the bank has branch in Bathinda City.

19.3 If a Bid Security is specified pursuant to ITB 19.1, the Bid Security of Bidders other than Successful Bidders shall be returned as promptly as possible upon the Successful Bidder's signing the Contract and furnishing the Performance Security.

19.4 The Bid Security of the Successful Bidder shall be returned as promptly as possible once the Successful Bidder has signed the Contract and furnished the required Performance Security. Successful bidder should extend the EMD till submission of PBG.

19.5 The Bid Security may be forfeited;

a) If a Bidder withdraws its Bid during the period of Bid validity specified by the Bidder on the Letter of Bid – Technical Part and repeated in the Letter of Bid – Financial Part or any extension thereto provided by the Bidder; or
b) if the Successful Bidder fails to:
   14. sign the Contract in accordance with ITB 30; or
   15. furnish a Performance Security.
   16. As per the provision of the Agreement.

20. Format and Signing of Bid

20.1 The Bidder shall prepare the Bid, in accordance with this Instruction, ITB 11.

20.2 The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation The written confirmation of authorization to sign on behalf of the Bidder shall consist of; *Duly executed Power of Attorney in favor of person who is submitting the Bid* as specified in the BDS and shall be attached to the Bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Bid where entries or amendments have been made shall be signed or initialed by the person signing the Bid.

21. Deadline for Submission of Bids

21.1 Bids must be received by the Employer at the address and no later than the date and time specified in the BDS. When so specified in the BDS, Bidders shall only submit their Bids electronically. Bidders submitting Bids electronically shall follow the electronic Bid submission procedures of the e-portal https://www.tenderwizard.com/DLGP specified in the BDS.

21.2 The Employer may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

21.3 The Employer shall not consider any Bid that arrives after the deadline for submission of Bids, in accordance with ITB 21. Any Bid received by the Employer after the deadline for submission of Bids shall be declared late, rejected, and returned unopened to the Bidder.

22. Withdrawal, Substitution, and Modification of Bids

22.1 A Bidder may withdraw, substitute, or modify its Bid after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization (except that withdrawal notices do not require copies). The corresponding substitution or modification of the Bid must accompany the respective written notice. All notices must be:

(a) prepared and submitted in accordance with ITB 20 (except that withdrawal notices do not require copies), and in addition, the respective envelopes shall be clearly marked “WITHDRAWAL,” “SUBSTITUTION,” “MODIFICATION;” and
(b) received by the Employer prior to the deadline prescribed for submission of Bids, in accordance with ITB 21.

22.2 Bids requested to be withdrawn in accordance with ITB 22.1 shall be returned unopened to the Bidders .

22.3 No Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bids and the expiration of the period of Bid validity specified by the Bidder on the Letter of Bid or any extension thereof.

23. Public Opening of Technical Parts of Bids

23.1 Except in the cases specified in ITB 21.3 and ITB 22.2, the Employer shall publicly open and read out all Bids received by the deadline, at the date, time and place specified in the BDS, in the presence of Bidders` designated representatives and anyone who chooses to attend. All Bidders, or their representatives and any interested party may attend a Public Opening. Any specific electronic Bid opening procedures required if electronic bidding is permitted in accordance with ITB 21.1, shall be as specified in the BDS.

23.2 First, the written notice of withdrawal in the envelope marked “WITHDRAWAL” shall be opened and read out and the envelope with the corresponding Bid shall not be opened, but returned to the Bidder. No Bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at Bid opening.

23.3 Next, envelopes marked “Substitution” shall be opened and read out and exchanged with the corresponding Bid being substituted, and the substituted Bid shall not be opened, but returned to the Bidder. No Bid substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at Bid opening.

23.4 Next, envelopes marked “MODIFICATION” shall be opened and read out with the corresponding Bid. No Bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at Bid opening.

23.5 Next, all other envelopes marked "TECHNICAL PART" shall be opened one at a time. On opening the envelopes marked "TECHNICAL PART" the Employer shall read out: the name of the Bidder, the presence or the absence of a Bid Security, or Bid- Securing Declaration, if required, and whether there is a modification; and Alternative Bid - Technical Part; and any other details as the Employer may consider appropriate.

23.6 Only Technical Parts of the Bids and Alternative Bid - Technical Parts that are read out at Bid opening shall be considered further for evaluation. The Letter of Bid- Technical Part: "FINANCIAL PROPOSAL" are to be initialed by representatives of the Employer attending Bid opening in the manner specified in the BDS.

23.7 At the Bid opening the Employer shall neither discuss the merits of any Bid nor reject any Bid (except for late Bids, in accordance with ITB 21.3).

23.8 The Employer shall prepare a record of the Technical Parts of Bid opening that shall include, as a minimum:

- the name of the Bidder and whether there is a withdrawal, substitution, or modification;
- the receipt of envelopes that there are no "FINANCIAL PART" submitted in the Hard Copy;
- the presence or absence of a Bid Security or Bid- Securing Declaration, if one was required; and
- if applicable, any Alternative Bid – Technical Part

23.9 The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders.

24. Clarification of Bids

24.1 To assist in the examination, evaluation, and comparison of the Bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its Bid given a reasonable time for a response. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids, in accordance with ITB 27(Note).

24.2 If a Bidder does not provide clarifications of its Bid by the date and time set in the Employer's request for clarification, his Bid may be rejected.

24.3 Provided that the Bid is substantially responsive, the Employer may waive any non-conformity in the Bid. A **substantially responsive Bid** is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission.

24.4 Provided that the Bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify non-material non-conformities in the Bid related to documentation requirements. Requesting information or documentation on such non-conformities shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

24.5 Provided that a Bid is substantially responsive, the Employer shall rectify quantifiable non-material non-conformities related to the Bid price. To this effect, the Bid price may

be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component in the manner specified in the BDS.

25. Evaluation of Technical Parts of Bids

25.1 In evaluating the Technical Parts of each Bid, the Employer shall determine to its satisfaction whether the eligible Bidders that have submitted substantially responsive Bid & use the criteria and methodologies listed in this ITB and Section III, Evaluation and Qualification Criteria. No other evaluation criteria or methodologies shall be permitted.

25.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17.

25.3 If a Bidder does not meet the qualifying criteria specified in Section III, Evaluation and Qualification Criteria, its Bid shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

25.4 Only Bids that are both substantially responsive to the Bidding Document, and meet all Qualification Criteria shall have their "Financial Part" submitted in e-bidding portal opened at the second public opening.

25.5 The Employer shall examine the technical aspects of the Bid submitted in accordance with ITB 16, in particular, to confirm that all requirements of Section VII, Works' Requirements have been met without any material deviation, reservation or omission.

26. Public Opening of Financial Parts of the Bids (E-Reverse Auction)

26.1 Following the completion of the evaluation of the Technical Parts of the Bids, the Employer may notify in writing or upload the same in e-portal those Bidders whose Bids were considered non-responsive to the Bidding Document or failed to meet the Qualification Criteria, advising them of the following information:

a) the grounds on which their Technical Part of the Bid failed to meet the requirements of the bidding document;
b) Their "Financial Part" uploaded in web portal will be not be opened.

26.2 The Employer shall, simultaneously, notify in writing or upload in e-portal those Bidders whose Technical Part have been evaluated as substantially responsive to the Bidding Document and met all Qualifying Criteria, advising them of the following information:

(a) their Bid has been evaluated as substantially responsive to the Bidding Document and met the Qualification Criteria;
(b) their "Financial Part" uploaded in e-portal will be opened at the public opening of the Financial Parts;
(c) all responsive Bidders shall be required to participate in the E-Reverse auction through e-portal and
(d) Notify them of the date, time and location of the second public opening of the "Financial Part" as well as E- Reverse Auction as specified in the BDS.

26.3 The E-Reverse Auction date should allow the Bidders with sufficient time to make arrangements for attending the auction. The ceiling price of auction shall be the lowest cost (L-1) received after the opening of Financial Bid which shall be inclusive of financial implication, if any, due to deferred payment.

At this public opening, the Financial Parts will be opened by the Employer in the presence of Bidders, or their designated representatives and anyone else who chooses to attend. The Bidders who met the Qualification Criteria and whose Bids were evaluated as substantially responsive will have their "Financial Part" opened at the second public opening. The Employer shall read out the names of each Bidder, and the total Bid prices, per contract if applicable, and any other details as the Employer may consider appropriate.

26.4 The Employer shall prepare a record of the Financial Part opening and of the E-Reverse Auction that shall include, as a minimum:

a) the name of the Bidder whose Financial Part was opened, & participated in the auction;
b) the Bid price, per contract if applicable, including any discounts;

26.5 The Bidders whose "Financial Part" have been opened or their representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all the Bidders.

27. Evaluation of Financial Parts of the Bids

27.1 The bidder shall submit the financial bid on percentage rate basis in the Price Bid (as per BOQ).

27.2 The Employer shall compare the evaluated costs of all responsive and qualified Bids to determine the Bid that has the lowest evaluated cost**. Or** having compared the evaluated costs of Bids, the Employer shall determine the Most Advantageous Bid. The Most Advantageous Bid is the Bid of the Bidder that meets the Qualification Criteria and whose Bid has been determined to be:

a) substantially responsive to the Bidding Document; and
b) The lowest evaluated cost pursuant to E-Reverse Auction.

NOTE:

(1) Abnormally Low Bids

An Abnormally Low Bid is one where the Bid price, in combination with other constituent elements of the Bid, appears unreasonably low to the extent that the Bid price raises material concerns as to the capability of the Bidder to perform the Contract for the offered Bid Price.

In the event of identification of a potentially abnormally Low Bid, the Employer shall seek written clarifications from the Bidder, including detailed price analysis of its Bid price in correlation to the subject matter of the contract, scope, proposed methodology, schedule, allocation of risks and responsibilities and any other requirements of the Bidding Document.

After evaluation of the price analysis, in the event that the Employer determines that the Bidder has failed to demonstrate its capability to deliver the Contract for the offered Tender price, the Employer may reject the Bid.

(2) Unbalanced or Front Loaded Bids

If the Bid for admeasurement Contract, which results in the lowest evaluated cost, is in the Employer's opinion, seriously unbalanced or front loaded, the Employer may require the Bidder to provide written clarifications. Clarifications may include detailed price analyses to demonstrate the consistency of the Bid prices with the scope of

Works, proposed methodology, schedule and any other requirements of the Bidding Document.

After the evaluation of the information and detailed price analysis presented by the Bidder, the Employer may, as appropriate:

a) accept the Bid; or
b) require that the amount of the Performance Security be increased at the expense of the Bidder to a level not exceeding 20% of the Contract price; or
c) Reject the Bid.

(3) Correction of Arithmetical Errors

In evaluating the Financial Part of each Bid, the Employer shall correct arithmetical errors on the following basis:

- only for admeasurement contracts, if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected;

- if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and

- if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

The Bidders shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITB 36.1 shall result in the rejection of the Bid.

28. Employer's Right to Accept Any Bid, and to Reject Any or All Bids

The Employer reserves the right to accept/ reject any Bid or to annul the Bidding process or reject all Bids at any time prior to Contract Award, without incurring any liability to the Bidders. In case of annulment, the Bid Securities for all the Bids submitted shall be promptly returned to the Bidders. No interest will be payable by the Employer in such a situation.

29. Award Criteria

Subject to ITB 27 & 28, the Employer shall award the Contract to the Bidder who quotes a price lower than the Lowest Bid, in the E-Reverse Auction.

Prior to the expiration of the Bid Validity Period or any extension thereof, the Employer shall transmit the Letter of Acceptance to the Successful Bidder. The Letter of Acceptance shall specify the sum that the Employer will pay to the Contractor in consideration of the execution of the Contract (hereinafter and in the Conditions of Contract and Contract Forms, called "the Contract Price").

At the same time, the Employer shall publish the Contract Award Notice which shall contain, at a minimum, the following information:

- name and address of the Employer;
- name and reference number of the Contract being awarded and the selection method used;

- names of all Bidders that submitted Bids and their Bid prices as read out at Bid opening and as evaluated; and
- the name of the Successful Bidder, the final total Contract price, the Contract duration and a summary of its scope.

Prior to the expiration of the Bid Validity Period or any extension thereof, the Employer shall transmit the Letter of Acceptance to the successful Bidder.

Until a formal Contract is prepared and executed, the Letter of Acceptance shall not constitute a binding Contract.

30. Signing of Contract

Promptly upon Notification of Award, the Employer shall send the Successful Bidder the Contract Agreement.

Within 28 (twenty-eight) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.

31. Performance Security

Within 28 (twenty-eight) days of the receipt of the Letter of Acceptance from the Employer, the successful Bidder shall furnish the Performance Security, in accordance with the Conditions of Contract, subject to ITB 27 (NOTE 2), using for that purpose the Performance Security, Contract Forms or another form acceptable to the Employer.

If the Performance Security furnished by the successful Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Employer. A foreign institution providing a bond shall have a correspondent financial institution located in the Employer's Country, unless the Employer has agreed in writing that a correspondent financial institution is not required.

Failure of the successful Bidder to submit the above- mentioned Performance Security, or to sign the Contract Agreement shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security. In that event the Employer may award the Contract to the Bidder offering the next Most Advantageous Bid/second lowest bidder.

32. Adjudicator

The Employer proposes the person named in the BDS to be appointed as Adjudicator under the Contract, at the hourly fee specified in the BDS, plus reimbursable expenses. If the Bidder disagrees with this proposal, the Bidder should so state in his Bid.

If, in the Letter of Acceptance, the Employer does not agree on the appointment of the Adjudicator, the Employer will request the Appointing Authority designated in the Particular Conditions of Contract (PCC) pursuant to Clause 20.1 of the General Conditions of Contract (GCC), to appoint the Adjudicator.

NOTE: The Adjudicator shall be named later with mutual consent.

33. E- Reverse auction

i. The E-Reverse-auction (no ties) of the Work will be through regressive bidding process.

ii. Each Bid shall be submitted online through e-procurement website https://www.tenderwizard.com/DLGP. The Prospective Bidder shall register himself on the e-procurement website to participate in the E-Reverse-Auction while taking in to consideration the following instructions –To participate in the Bidding Process, the Prospective Bidders shall have to get themselves registered with the e- Procurement portal (https://www.tenderwizard.com/DLGP) and obtain user ID and password. In the event of delay in submission of any documents or submission of incorrect documents the Bidder shall be solely responsible for delay in user ID activation. All the Bidders are advised to register well in advance to avoid last-minute delays. For more details regarding registration process kindly refer to registration guidelines on the e- procurement website.

iii. The bidder shall submit the financial bid on percentage rate basis which will be considered for fixing the ceiling/ start price.

iv. For the proposed reverse auction, technically acceptable Bidders whose Financial Bids have been opened shall only be eligible to participate.

v. Ceiling price or starting price to initiate the reverse auction shall be the price quoted by L-1 Bidder in the Financial Bid. Wherever more than one lowest online sealed bids are identical and lower than the estimate, Procuring Entity shall declare the start price by reducing the lowest online sealed bid by maximum of one decrement.

vi. Bidder shall Bid on dates shown in the notification as per the time. The proposed time of reverse auction shall be from 12:00 noon to 04:00 PM.

vii. After the L-1 price is declared as start price for reverse auction, it must be countered by Bids submitted by any Bidder including L-1 Bidder.

viii. Every Bidder will be given opportunity to reduce the price by minimum Rs 1,00,000 (Rupees One Lakh only) in every subsequent bid subject to maximum of Rs. 1 Crore (Rupees One Crore Only) per Bid reduction.

ix. If the Bid is received in the last 5 (five) minutes of the above shown date and time (i.e. between 3.55 pm to 4.00 pm) then time for Bidding will be automatically extended for 15 (fifteen) minutes, so that the other Bidders participating in the Bid can get equal chance. Maximum 3 (three) such extension of 15-15 minutes shall be given.

x. At the end of Reverse Auction event, the lowest Bid value will be known on the network which shall be final L-1 Bid.

xi. The L-1 Bid received in the auction for the work shall be its contract amount.

xii. The lowest Bidder has to e-mail / fax the duly signed filled-in Financial Letter as provided within 72 (Seventy Two) hours of Auction without fail.

xiii. Any variation between the on-line Bid value and the signed document will be considered as sabotaging the tender process and will invite disqualification of vendor to conduct business with MCB as per prevailing procedure. His BID SECURITY in such case shall be forfeited.

xiv. The provisional acceptance shall be issued by the MCB in the name of the Successful Bidder within 7 (Seven) days. If the Successful Bidder does not deposit the Performance Guarantee within the 28 (Twenty Eight) days then the earnest money deposited by him will be forfeited.

xv. In case violation of conditions of Bidding Process by the Contractor, the contract shall be cancelled by the Procuring Entity.

xvi. During E-Reverse-Auction if any Bidder violates any rules then he will not be allowed to participate in the E-Reverse-Auction and his Earnest Money Deposit shall be forfeited. If Employer decides that the violation is serious then he may prohibit the bidder to participate in Bidding / e- auction for up to 1 (one) year.

xvii. Notwithstanding anything contained in this Bid Document, the Employer

reserves the right to reject any Bid and/or to annul the Bidding process and reject all Bids at any time without any liability or any obligation for such acceptance, rejection or annulment, and without assigning any reasons thereof.

xviii. E-Reverse Auction shall be conducted on pre-specified date, while the bidders shall be quoting from their own offices/ place of their choice. Internet connectivity shall have to be ensured by bidders themselves and Procuring Entity will not be responsible for non-participation of the bidder in the Reverse Auction for reasons solely attributable to the bidder.

xix. Bidders are advised to get fully trained and clear all their doubts regarding the Reverse Auction from the service provider of www.tenderwizard.com i.e. ITI Limited who is also responsible for demonstration/ training the bidders. Contact no. of the service provider is 8146699875, 0172-3934667, 3953753, 8146699880. Bidders shall be able to view the following on their screen along with the necessary fields during Online Reverse Auction:

- Leading (Lowest) Bid.
- Bid placed by the bidder.
- Start Price.
- Decrement value.
- Rank of their own bid during bidding as well as at the close of the auction.

xx. Auto bid is disabled from the starting of the Auction.

xxi. The Bidders and their respective officials/representatives shall observe the highest standard of ethics during the Bidding Process and subsequent to the grant of contract. Notwithstanding anything to the contrary contained herein, the Employer may reject a Bid, withdraw the contract, as the case may be, without being liable in any manner whatsoever to the Bidder or to the Successful Bidder, as the case may be. If the Employer determine that the Bidder or the Successful Bidder, as the case may be, has directly or indirectly or through an agent engaged in any corrupt fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bidding Process or subsequent to allotment, in such an event, the Employer shall be entitled to forfeit and appropriate the Earnest Money or Performance Security, as the case may be, as damages, without prejudice to any other right or remedy that may be available to the Employer under the Tender Document and/ or otherwise. However, before taking such an action opportunity to show cause shall be issued to the affected parties in order to comply with the Principles of Natural Justice.

Section II – Bid Data Sheet (BDS)

The reference number of the Request for Bids (RFB) is: 30/2018-19

The Employer is***: MUNICIPAL CORPORATION BATHINDA.***

The name of the RFP/Project is: Works Of Implementing Smart LED Street Lights and Centralized Control & Monitoring System on EPC Mode with Operation and Maintenance of 8 (Eight) years in Municipal Corporation Bathinda.

Estimated Cost of Work is as under:

Sr No	Electrical work(Rs in Crores)	O&M (Rs in Crores)	Grand Total (Rs in Crores)
1	7.46 Cr. (Capital cost + IDC Cost)	6.66 Cr.(For 8 Years)	14.12 Cr

Note: Capital cost includes Supply, Installation, Testing, Commissioning of Implementing Smart LED Street Lights and CCMS System (as per BOQ).

Electronic –Procurement System

The Employer shall use the following electronic-procurement system to manage this Bidding process: ***https://www.tenderwizard.com/DLGP***
The electronic-procurement system shall be used to manage the following aspects of the Bidding process: *Technical Proposal containing all the required documents in the required formats*.
Financial Part: The Priced Bid shall be uploaded through web-portal only.

Requests for Clarifications

For clarification purposes only, the Employer's address is:
Commissioner,
MUNICIPAL CORPORATION BATHINDA.
Railway Road,
BATHINDA - 151001, Punjab, INDIA
Telephone: : +91-0164-2252811 and 97800 14145
Electronic mail address: **cmcbathinda@gmail.com**
Requests for clarification should be received by the Employer no later than: 15 (fifteen) days from issuing of tender notice.

Pre Bid Meeting

A Pre-Bid meeting ***"shall"*** take place at the following date, time and place:

Date: 04.03.2019 Time: 11.00 AM

Place: MUNICIPAL CORPORATION BATHINDA

Bathinda-151001, Punjab, INDIA

Bid Security (Earnest Money Deposit)

A Bid Security *shall be* valid for a period of 45 (Forty Five) days beyond the Bid Validity Period..

The amount and currency of the Bid Security shall be: INR Rs 28,24,000**/-** (Rupees Twenty Eight Lakh and Twenty Four Thousand Only) in the NEFT/ RTGS/Online Mode only as mentioned above in favor of the Commissioner Municipal corporation, Bathinda.

Bid Processing fee or Transaction Fee shall be as mentioned on web portal to be paid vide, NEFT/RTGS/Online only.

Bid Document Charges shall be INR Rs. 5,000/- (Rupees Five Thousands only) Paid via Online Mode in favor of the Commissioner Municipal corporation, Bathinda.

Submission of Bids

For **Bid submission purposes** only, the Employer's address is:

Commissioner, MUNICIPAL CORPORATION BATHINDA.

Railway Road, BATHINDA - 151001, Punjab, INDIA

Telephone: : ***+91-0164-2252811, cmcbathinda@gmail.com***

Bidders *"shall" mandatorily submit all the copies of the Bid vide web portal.*

The electronic bidding submission procedures shall be:

The bidder would be required to register on the e-procurement market place

https://www.tenderwizard.com/DLGP *a*nd submit their bids online. Bidders are requested

to submit the bid in two stages:

Stage – I: Eligibility and Technical Bid Stage.

Stage – II: Financial Bid stage and E-Reverse Auction Stage.
The first stage will cover the qualifications and eligibility criteria and the Technical Bid.

The Bidder shall upload documents in support of the above. The Bidder shall submit Price

Bid online under second stage which may include proposals for financing to cover part of

the Scope of Work as per bid documents before the Bid submission closing date.

The Bidders shall submit a declaration without any reservation whatsoever that the submitted eligibility and qualification details, Technical Bid, Financial Bid and E-Reverse Auction Bid are without any deviations and are strictly in conformity with the Bid documents issued by the Employer. Declaration should be given by the Bidder for the correctness of the credentials submitted by him.
The Bidder should submit the hard copy of Technical Bid on or before:

11.03.2019, 11.00 AM

Public Opening of Technical Parts

Commissioner, MUNICIPAL CORPORATION BATHINDA.

Railway Road, BATHINDA - 151001, Punjab, INDIA

Telephone: : ***+91-0164-2252811, cmcbathinda@gmail.com***

Date: 11.03.2019 Time: 11.30 A.M

Public Opening of Financial Parts

Following the completion of the evaluation of the Technical Bid/ Part of the Bids, the Employer will notify vide the e-portal mentioning of the location, date and time of the public opening of Financial Part and E-Reverse Auction of Financial Parts.
The Employer shall publish a notice of the date & time of the public opening of the Financial Parts and E-Reverse Auction (Financial Parts) on its website.
The Bidders shall be at liberty to participate in E-Reverse Auction from their respective offices / establishment through the e-portal.
The Bidder whose bid is lowest / last bid during the E-Reverse Auction shall have to submit the financial offer on their letter head duly signed by the authorized representative mentioning the last price of bid.

Performance Security

Performance Security amounting to total 5% (Five percent) of contract value (including O&M cost) shall be submitted / deducted as follows:

(a) Contractor shall submit Performance Security @ 5% (Five percent) in advance at the time of signing of agreement in form of BG. The BG should be issued by any nationalized / schedule bank and shall remain valid up to 60 (sixty) days beyond defect liability period. Bank Guarantee submitted against the performance guarantee, shall be unconditional and encashable/ inviolable at Bathinda.

(b) If there is no reason to retain the BG, it shall be returned back to the Contractor within 60 (sixty) days after the satisfactory completion of the defect liability period.

If the Bid, which results in the lowest evaluated Bid price, is seriously unbalanced or front loaded in the opinion of the Procuring Entity, the Procuring Entity may require the Bidder to produce detailed price analysis for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analysis, taking into consideration, the schedule of estimated Contract payments, the Procuring Entity may require that the amount of the performance security shall be increased to 10% (ten percent) of the Bid value of such items at the expense of the Bidder to a level sufficient to protect the Procuring Entity against financial loss in the event of default of the Successful Bidder under the Contract.

Section III - Evaluation and Qualification Criteria

3. *Minimum Eligibility Criteria*

The Bidders must read carefully the minimum conditions of eligibility provided herein. Bids of only those Bidders will be considered for Price Bid opening who satisfy the conditions of eligibility.

To be eligible for evaluation of its bid, the Bidder shall fulfill the following minimum eligibility criteria:

3.1.1 The Bidder must submit the Bank Guarantee/ Demand Draft BID SECURITY in the name of **"Commissioner, MUNICIPAL CORPORATION BATHINDA"** payable at BATHINDA, failing of which the tender will be rejected.

3.1.2 Bidder must be an experienced Manufacture/Authorized Dealer fulfilling the following criteria:

3.1.2.1 **For experienced Contractor/ESCO/Authorized Dealer/Service Provider:**

- Bidder must have previously executed and commissioned projects on street lighting either LED or non LED (at least 5,000 Luminaries) in single work order during last 8 (Eight) years in any city, nationally or internationally with any government, semi-government or private organization. Agency shall attach proof of the same, issued by the concerned department.

&

- Bidder must have been engaged in Operation & Maintenance of street lights of any kind whether LED or Conventional type (at least 5,000 Luminaries) for minimum one year during last 8 (Eight) years, through a single work order, in any city, nationally or internationally or with any government, semi-government or private organization. Agency shall attach proof of the same, issued by the concerned department.

&

- Bidder shall submit the Letter of Authorization from the manufacturer of the LED Street Lights as per the Performa given in Tender document (Annexure A in Bidding Forms) and also shall submit the Memorandum of Understanding (MoU) between manufacturer and Bidder as per attached format (Annexure-B in Bidding Forms). Also, this manufacturer must have sold minimum 5,000 LED Street light Luminaires in single work order during last 8 (Eight) years in any city, nationally or internationally with any government, semi- government or private organizations. Agency shall attach proof of the same, issued by the concerned department.

OR

3.1.2.2 **For OEM:** If the bidder is an OEM, then a sale of minimum 10,000 LED Luminaires in multiple work orders, having one work order of at least 5,000 LED street lights Luminaires, during last 8 (Eight) years in any city, nationally or internationally with any government, semi-government or private organizations & It must have been engaged in operation & maintenance of street lights which are either LED or non- LED for minimum one year (at least 5,000 Luminaires) during last 8 (Eight) years, through a single work order, in any city, nationally or internationally or with any government, semi-government or private organizations. In case OEM does not have any experience in operation & maintenance of street lighting, then Consortium is allowed to meet the eligibility criteria.

In case of Consortium arrangement, the Bidder has to submit the duly signed notarized MOU on Stamp Paper of Rs 1000 (Rupees One thousand only) along with the Technical Bid and each partner should have sufficient relevant experience independently to participate in the bidding.

Note:

3.1.1 The Bidder shall provide a minimum guaranteed savings of 59 % (Fifty Nine percent).

3.1.2 The experience of the Bidder must be supported by completion certificate issued by the competent authority i.e. Executive Engineer/ Engineer-in-Charge. The Employer may ask for the confirmation of the commitment from the Bidder or may check the authenticity of the submitted documents.

3.1.3 The Bidder must have positive net worth and average minimum turnover of Rs.5.00 crores during last 3 (three) financial years. The Bidder must submit the Turnover Certificate(s) and Net Worth certificate certified by statutory auditor(s) including unconsolidated balance sheet in support of certificate.

3.1.4 The Bidder must submit the fresh (not older than one year as on last date of online submission of the tender) Solvency Certificate of Rs. 5 crores (Rupees Five Crores).

3.1.5 The Bidder must submit a copy of valid Provident Fund Registration.

3.1.6 The Bidder must submit the copy PAN registration.

31.7 The Bidder must submit a declaration that they are not Black-listed by any Government or Semi Government departments.

3.1.8 The Bidder must submit the copy of the valid GST registration.

3.1.9 The Bidder must submit the copies of IT Returns of last3 (three) financial years.

3.1.10 Acceptance of the tenders will rest with MCB, who does not bind itself to accept the lowest tender and reserves the right to reject any or all Bids without assigning any reason thereof.

3.1.11 All the documentary proofs or their copies must be self-certified except the net worth and turnover certificates which must be certified by an experienced Chartered Accountant.

3.1.12 E-tender duly completed in all respect shall be submitted online and Two set (Print out) (Original and one copy) of tender documents including addendum, if any and other documents as required in this tender, duly stamped & signed in all pages **except Financial proposal** shall be submitted at the address mentioned in this RFP on the date and time mentioned in the tender notice (Submission of physical documents only).

3.1.13 If any tender documents are received after the specified last date and time of the submission, all such tender documents will be rejected on the basis of late submission without any other reasons assigned thereof.

Eligibility and Qualification Criteria				Documentation
NO	SUBJECT	REQUIREMENT	Compliance Requirements by the BIDDER	**Submission Requirements**
1. Eligibility				
1.1	Nationality	Nationality in accordance with E. Public Opening of Technical Parts of Bids	Must meet requirement	
1.2	Conflict of Interest	Not having been declared ineligible by the Employer, as described in ITB 4.2.	Must meet requirement	Letter of Bid
1.3	Employer Eligibility	Not having been declared ineligible by the Employer, as described in ITB 4	Must meet requirement	Letter of Bid
1.4	State-owned enterprise or institution of the Employer country	Meets conditions of ITB 4.4	Must meet requirement	

Eligibility and Qualification Criteria				Documentation
NO	SUBJECT	REQUIREMENT	Compliance Requirements by the BIDDER	**Submission Requirements**
2. Historical Contract Non-Performance				
2.1	History of Non-Performing Contracts	Non-performance of a contract1did not occurs as a result of contractor default since 1st January 2013.	Must meet requirement	Forms CON-2
2.2	Suspension Based on Execution of Bid/Proposal Securing Declaration by the Employer or withdrawal of the Bid within Bid validity period	Not under suspension based on execution of a Bid/Proposal Securing Declaration pursuant to ITB 4.7 or withdrawal of the Bid pursuant ITB 19.9.	Must meet requirement	Letter of Bid
2.3	Pending Litigation	Bidder's financial position and prospective long term profitability sound according to criteria established in 3.1 below and assuming that all pending litigation will be resolved against the Bidder	Must meet requirement	Forms CON-2
2.4	Litigation History	No consistent history of court/arbitral award decisions against the Bidder2 since 1st January 2011.	Must meet requirement	Forms CON-2

Non-performance, as decided by the Employer, shall include all contracts where (a) nonperformance was not challenged by the contractor, including through referral to the dispute resolution mechanism under the respective contract, and (b) contracts that were so challenged but fully settled against the contractor. Nonperformance shall not include contracts where Employers decision was overruled by the dispute resolution mechanism. Nonperformance must be based on all information on fully settled disputes or litigation, i.e. dispute or litigation that has been resolved in accordance with the dispute

resolution mechanism under the respective contract and where all appeal instances available to the Bidder have been exhausted.

3.FINANCIAL SITUATION & PERFORMANCE				
Eligibility and Qualification Criteria				**Documentation**
NO	SUBJECT	REQUIREMENT	Compliance Requirements by the BIDDER	**Submission Requirements**
3.1	Financial Capabilities	i) The Bidder shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements estimated as INR 500 Lakh for the subject contract(s) net of the Bidder's other commitments.	Must meet requirement	Form FIN – 3.1, & FIN - 3.3 with attachments
		(ii) The audited balance sheets for the last 3 years ending 31st March shall be submitted and must demonstrate the current soundness of the Bidder's financial position and ***shall be a profit making organization*.**	Must meet requirement	
3.2	Average Annual Turnover	Minimum average annual turnover of INR 500 lakh, calculated as total certified payments received for contracts in progress and/or completed within the last 3 years ending 31st March 2018 , divided by 3 years	Must meet requirement	Form FIN – 3.2

The Bidder shall provide accurate information on the letter of Bid about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the last 5 (five) years. A consistent history of court/arbitral awards against the Bidder may result in disqualifying the Bidder.

4. EXPERIENCE				
Eligibility and Qualification Criteria				**Documentation**
NO	**SUBJECT**	**REQUIREMENT**	**Compliance Requirements by the BIDDER**	**Submission Requirements**
4.1(a)	General Experience	Experience under SITC of street lighting contracts in the role of contractor/Bidder for at least the last 8 years, starting 1st January 2011.	Must meet requirement	Form EXP – 4.1 (a)
4.2(a)	Street lightning & Contract Management Experience	A minimum work of similar contracts specified below that have been ***completed by*** contractor/Bidder between 1st August 2011 and 31st July 2019: **(The Similar Contracts/ Works is defined as Supply/ SITC/ Replacement/ installation of street lighting with O & M for at least one year during the last 8 years)**	Must meet requirement	Form EXP 4.2(a)

NOTE : For contracts under which the Bidder participated as a Joint Venture member or Sub-contractor, only the Bidder's share, by value, shall be considered to meet this requirement.

Eligibility and Qualification Criteria				**Documentation**
NO	**SUBJECT**	**REQUIREMENT**	**Compliance Requirements by the BIDDER**	**Submission Requirements**
5. BID CAPACITY				
5.1	Available Bid Capacity	The available bid capacity will be calculated as under: Available bid capacity = (AxNx2) – B Where A = Maximum value of Electrical Engineering works executed in any one financial year during the last five financial years updated to the price level of year 2017-18 @ 7% taking into account the completed as well as works in progress. N = Number of years prescribed for completion of the works for which bids are invited. B = Value of works updated to the price level of year 2017-18 @ 7% of existing commitments and on-going works to be completed during the period of works for which bids are invited.	Must meet requirement	Form Bidcap 5(a) & 5(b)

Note: The statement showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the work listed should be attached along with certificates duly signed by the Engineer-in Charge not below the rank of Executive

Engineer or equivalent. For private company the certificate should be obtained from the officer not below the rank of Director / MD.

6.Key Personnel

The Bidder must demonstrate that it will have a suitably qualified (and in adequate numbers) minimum Key Personnel, as described in the table below, that are required to perform the Contract.

The Bidder shall provide details of the Key Personnel and such other Key Personnel that the Bidder considers appropriate, together with their academic qualifications and work experience. The Bidder shall complete the relevant Forms in Section IV, Bidding Forms.

The Contractor shall require the Employer's consent to substitute or replace the Key Personnel (reference the Particular Conditions of Contract 9.1).

Sr No.	Position	Total Work Similar Experience (years)	NUMBERS
1	Site Engineer /MANAGER	B.E. (Electrical) + 3years experience	1 No.
2	Supervisors	Diploma (Electrical) + 5years experience Or ITI + 5years experience	2 No.

7. Equipment

The Successful Bidder shall ensure the availability of sufficient ladder vehicle, Hydraulic Vehicle (suitable to reach upto 10m height or more as per the requirement) and other relevant vehicle & equipment for the installation and O&M of this project. The vehicle used for O&M should have valid registration documents.

MCB may lease out certain maintenance equipment and vehicles to the Concessionaire/Successful Bidder based on mutually agreed terms & conditions and defined fixed monthly/yearly payment.

8. Financial Bid Parameter

Financial Bid shall consist of following parameters

(a) Capital expenditure quoted by the Bidder based on item rates against provided specifications (No. of lights for installation and replacement shall be 22,424)

(b) **Annual operation & maintenance of LEDs and CCMS panels – The** Bidder will quote year-wise O&M costs for 8 (Eight) years.

"Bid price" shall calculated with below mentioned formula:

Bid Price = Current value of (A)
+
NPV value of (B) for 8 years
-
Buy Back Value

Note:

1. Buy Back value is Credit for Buyback unit rate of conventional fixtures of light.
2. NPV: The Net Present Value (NPV) will be calculated assuming a discount factor of 10%

2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Installation with penalty period	O&M Year 1	O&M Year 2	O&M Year 3	O&M Year 4	O&M Year 5	O&M Year 6	O&M Year 7	O&M Year 8

Note:

- **Minimum energy saving should be 59 %** only
- **Infrastructure Development Cost (IDC) –** The successful bidder will be paid for the IDC @15% discount on approved Common Schedule of Rates(CSR) of 2010 of State of Punjab. If rate is not available in CSR, then MCB will discover the market price through minimum three bids. In such a situation, the bidder will be paid on the discovered market price. The bidder shall note that the IDC i.e. identifying asset deficiency cost in the present system after allotment of work shall not be paid more than Rs.1.50 crore.

Section IV - Bidding Forms

1. Table of Forms

Letter of Bid - Technical Part Method Statement Mobilization Schedule Construction Schedule

Appendix B to Technical Part: Equipment

Appendix C to Technical Part: Key Personnel

Form PER -1: Key Personnel

Form PER-2: Resume and Declaration

Appendix D to Technical Part: Bidder's Qualification

Form CON – 2

Form FIN – 3.1

Form FIN - 3.2

Form FIN – 3.3

Form FIN – 3.4

Form EXP - 4. 1

Form EXP - 4. 2(a)

Form EXP - 4.2(a) (cont.)

Form EXP - 4. 2(b)

Form BIDCAP – 5.1 & 5.2

Annexure A

Annexure B

Letter of Bid - Financial Part

Letter of Bid - Technical Part

Date of this Bid submission: *[insert date (as day, month and year) of Bid submission]*

Request for Bid No*.: [insert identification]*

To:

Commissioner

Municipal Corporation, BATHINDA,

BATHINDA - 151001, INDIA, PIN Code: 151001,

Telephone: +91-0164-2252811

We, the undersigned, hereby submit our Bid, in two parts, namely:

(a) the Technical Bid/ Part, and

(b) the Financial Bid/ Part

In submitting our Bid, we make the following declarations:

a) **No reservations:** We have examined and have no reservations to the Bidding document, including Addenda issued in accordance with Instructions to Bidders (ITB 8);

b) **Eligibility**: We meet the eligibility requirements and have no conflict of interest in accordance with ITB 4;

c) **Bid-Securing Declaration:** We have not been suspended nor declared ineligible by the Employer based on execution of a Bid-Securing Declaration or Proposal-Securing Declaration in the Employer's country in accordance with ITB 4.7;

d) **Conformity**: We offer to execute in conformity with the bidding document the following

Works: *[insert a brief description of the Works]* _____

_____ i. ;_____

e) **Bid Validity Period**: Our Bid shall be valid for a period specified in BDS 18.1 (or as amended if applicable) from the date fixed for the Bid submission deadline specified in BDS 21.1 (or as amended if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

f) **Performance Security:** If our Bid is accepted, we commit to obtain a Performance Security in accordance with the Bidding Document;

g) **One Bid Per Bidder:** We are not submitting any other Bid(s) as an individual Bidder or as a subcontractor, and we are not participating in any other Bid(s) as a Joint Venture member, and meet the requirements of ITB 4.3, other than alternative Bids submitted in accordance with ITB 13;

h) **State-owned enterprise or institution:** [*select the appropriate option and delete the other*] [*We are not a state-owned enterprise or institution*] / [*We are a state-owned enterprise or institution but meet the requirements of ITB 4.6*];

i) **Binding Contract**: We understand that this Bid, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;

j) **Not Bound to Accept:** We understand that you are not bound to accept the lowest evaluated cost Bid, the Most Advantageous Bid or any other Bid that you may receive; and

k) **Fraud and Corruption:** We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf engages in any type of Fraud and Corruption;

Name of the Bidder: *[*insert complete name of person signing the Bid*]

Name of the person duly authorized to sign the Bid on behalf of the Bidder: ** [*insert complete name of person duly authorized to sign the Bid*]

Title of the person signing the Bid: [*insert complete title of the person signing the Bid*]

Signature of the person named above: [*insert signature of person whose name and capacity are shown above*]

Date signed [*insert date of signing*]

Date signed _____ day of _____,

** Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid.

2. Appendix A to Technical Part: Technical Proposal

Site Organization

[Insert Site Organization information]

Method Statement

[Insert Method Statement]

Mobilization Schedule

[Insert Mobilization Schedule

Schedule of work

[Insert Schedule]

Appendix B to Technical Part: Equipment

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section III, Evaluation and Qualification Criteria. A separate form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder.

Item of equipment		
Equipment information	Name of manufacturer	Model and power rating
	Capacity	Year of manufacture
Current status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment ☐ Owned ☐ Rented ☐ Leased ☐ Specially manufactured	

Omit the following information for equipment owned by the Bidder.

Owner	Name of owner	
	Address of owner	
	Telephone	Contact name and title
	Fax	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the project	

Appendix C to Technical Part: Key Personnel

Form PER -1: Key Personnel

Schedule

The Bidders should provide the names and details of the suitably qualified Key Personnel to perform the Contract. The data on their experience should be supplied using the Form PER-2 below for each candidate.

1	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
2	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
3	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
4	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]

Form PER-2: Resume and declaration of Key Personnel

Name of Bidder

Position [*#1*]: [*title of position from Form PER-1*]		
Personnel information	**Name:**	**Date of birth:**
	Address:	**E-mail:**
	Professional qualifications:	
	Academic qualifications:	
	Language proficiency:*[language and levels of speaking, reading and writing skills]*	
	Address of employer:	
	Telephone:	**Contact (manager / personnel officer):**
	Fax:	
	Job title:	**Years with present employer:**

Summarize professional experience in E-tendering chronological order. Indicate particular technical and managerial experience relevant to the project.

Project	**Role**	**Duration of Involvement**	**Relevant experience**
[main project details]	*[role and responsibilities on the project]*	*[time in role]*	*[describe the experience relevant to this position]*

1. Declaration

I, the undersigned Key Personnel, certify that to the best of my knowledge and belief, the information contained in this Form PER-2 correctly describes myself, my qualifications and my experience.

I confirm that I am available as certified in the following table and throughout the expected time schedule for this position as provided in the Bid:

Commitment	**Details**
Commitment to duration of contract:	*[insert period (start and end dates) for which this Key Personnel is available to work on this contract]*
Time commitment:	*[insert the number of days/week/months/ that this Key Personnel will be engaged]*

I understand that any misrepresentation or omission in this Form may:

- be taken into consideration during Bid evaluation;
- my disqualification from participating in the Bid;
- My dismissal from the contract.

Name of Key Personnel: [*insert name*]

Signature: _____

Date: (day month year): _____

Countersignature of authorized representative of the Bidder:

Signature: _____

Date: (day month year):

2. Appendix D to Technical Part: Bidder's Qualification

To establish its qualifications to perform the contract in accordance with Section III (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding Information Sheets included hereunder.

RFB No. and title: _____ Page _____ of _____ _pages Bidder's name……
Bidder's actual or intended country of registration: *[indicate country of Constitution]*
Bidder's actual or intended year of incorporation:
Bidder's legal address [in country of registration]:
Bidder's authorized representative information Name:…… Address: …….. Telephone/Fax numbers: …… E-mail address: ……..
1. Attached are copies of original documents of • Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above, in accordance with ITB 4.4. • In case of state-owned enterprise or institution, in accordance with ITB 4.6 documents establishing: ➢ Legal and financial autonomy ➢ Operation under commercial law ➢ Establishing that the Bidder is not under the supervision of the Employer 2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

4. Form CON – 2

Historical Contract Non-Performance, Pending Litigation and Litigation History

Bidder's Name:

Date:

RFB No. and title:

Page of pages

<table>
<tr><td colspan="4">Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria</td></tr>
<tr><td colspan="4">• Contract non-performance did not occur since 1st January [insert year] specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 2.1.
• Contract(s) not performed since 1st January [insert year] specified in Section III, Evaluation and Qualification Criteria, requirement 2.1</td></tr>
<tr><td>Year</td><td>Non- performed portion of contract</td><td>Contract Identification</td><td>Total Contract Amount (current value, currency, exchange rate and INR equivalent)</td></tr>
<tr><td>[insert year]</td><td>[insert amount and percentage]</td><td>Contract Identification: [indicate complete contract name/ number, and any other identification]
Name of Employer: [insert full name]
Address of Employer: [insert street/city/country]
Reason(s) for non-performance: [indicate main reason(s)]</td><td>[insert amount]</td></tr>
<tr><td colspan="4">Pending Litigation, in accordance with Section III, Evaluation and Qualification Criteria</td></tr>
<tr><td colspan="4">• No pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3.
• Pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3 as indicated below.</td></tr>
</table>

Year of dispute	**Amount in dispute (currency)**	**Contract Identification**	**Total Contract Amount (currency), INR Equivalent (exchange rate)**
		Contract Identification: ……. Name of Employer……: Address of Employer:……. Matter in dispute:…… Party who initiated the dispute:… Status of dispute: …….	
		Contract Identification: ……. Name of Employer……: Address of Employer:……. Matter in dispute:…… Party who initiated the dispute:… Status of dispute: …….	
Litigation History in accordance with Section III, Evaluation and Qualification Criteria			
• No Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4. • Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4 as indicated below:			
Year of award	**Outcome as percentage of Net Worth**	**Contract Identification**	**Total Contract Amount (currency), INR Equivalent (exchange rate)**
[insert year]	*[insert percentage]*	Contract Identification: [indicate complete contract name, number, and any other identification] Name of Employer: *[insert full name]* Address of Employer: *[insert street/city/country]* Matter in dispute: *[indicate main issues in dispute]* Party who initiated the dispute: *[indicate "Employer" or "Contractor"]* Reason(s) for Litigation and award decision *[indicate main reason(s)]*	*[insert amount]*

5. Form FIN – 3.1

Financial Situation and Performance

Bidder's Name:
Date:
RFB No. and title:
Page…… Of…….. pages

Type of Financial information in (currency)	**Historic information for previous……** *years,* **(amount in currency, currency, exchange rate*, in INR equivalent)**				
	Year 1	Year 2	Year 3	Year 4	Year 5
Statement of Financial Position (Information from Balance Sheet)					
Total Assets (TA)					
Total Liabilities (TL)					
Total Equity/ Net Worth (NW)					
Current Assets (CA)					
Current Liabilities (CL)					
Working Capital (WC)					
Information from Income Statement					
Total Revenue (TR)					
Profits Before Taxes (PBT)					

1. Sources of Finance

Specify sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.

Sr NO	**Source of finance**	**Amount (INR equivalent)**
1		
2		
3		
4		

2. Financial documents

The Bidder and its agents shall provide copies of Financial Statements for----------years pursuant Section III, Evaluation and Qualifications Criteria, Sub-factor 3.1. The Financial Statements shall:

(a) Reflect the financial situation of the Bidder and not an affiliated entity (such as parent company or group member).

(b) Be independently audited or certified in accordance with local legislation.

(c) Be complete, including all notes to the financial statements.

(d) Correspond to accounting periods already completed and audited.

Attached are the copies of Financial Statements for the years required above; and complying with the requirements.

If the most recent set of Financial Statements is for a period earlier than 12 (twelve) months from the date of the Bid, the reason for this should be justified.

6. Form FIN - 3.2:

Average Annual Turnover

(See Section III, Evaluation and Qualification Criteria, Sub-Factor 3.2)

Bidder's Name:……

Date:……

S.NO	**Financial Year**	**Annual Turnover (INR Crore)**	**Annual Turnover updated to the price level of year 2017-18 @ 7%**
1	Financial Year 2015-16		
2	Financial Year 2016-17		
3	Financial Year 2017-18		

Note: The audited Financial Statements for the corresponding year has to be attached.

Name of the auditor issuing the certificate

Name of the auditor's firm:

Seal of the auditor's firm:

Date:

Signature, name and designation of the authorized signatory for the Auditor's Firm)

* See Section III, Evaluation and Qualification Criteria, Sub-Factor 3.2.

Form Fin - 3.3

Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as specified in Section III (Evaluation and Qualification Criteria).

Financial Resources		
No.	**Source of financing**	**Amount (INR equivalent)**
1		
2		
3		

Form No. – 3.4

Current Contract Commitments / Works in Progress

Bidders should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

No.	Name of Contract	Employer's Contact Address, Tel, Fax	Value of Outstanding Work [Current INR Equivalent]	Estimated Completion Date	Average Monthly Invoicing Over Last Six Months [INR month)]
1					
2					
3					
4					
5					

Form EXP - 4.1
General Work Experience

Bidder's Name:……

Date:……..

RFB No. and title:……..

Page of pages……

Starting Year	Ending Year	Contract Identification	Role of Bidder
		Contract name:…… Brief Description of the Works performed by the Bidder: …… Amount of contract:…….. Name of Employer:……. Address:……	
		Contract name:…… Brief Description of the Works performed by the Bidder: …… Amount of contract:…….. Name of Employer:……. Address:……	
		Contract name:…… Brief Description of the Works performed by the Bidder: …… Amount of contract:…….. Name of Employer:……. Address:……	
		Contract name:…… Brief Description of the Works performed by the Bidder: …… Amount of contract:…….. Name of Employer:……. Address:……	

7. Form EXP - 4.2(a)
Specific Work and Contract Management Experience

Bidder's
Name……Date:……. RFB
No. and title: ……..
Page of pages……..

Similar Contract No.	**Information**			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor	Member in JV	Management Contractor	Sub- contractor
Total Contract Amount				
If member in a JV or sub- contractor, specify participation in total Contract amount				
Employer's Name:				
Address: Telephone/fax number E-mail:				

Form EXP - 4.2(a) (cont.)

Specific Work and Contract Management Experience (cont.)

Similar Contract No.	Information
Description of the similarity in accordance with Sub-Factor 4.2(a) of Section III:	
1. Amount	
2. Physical size of required works Items	
3. Complexity	
4. Methods/Technology	
5. Construction rate for key activities	
6. Other Characteristics	

9. Form EXP - 4. 2 (b)

Work Experience in Key Activities

Bidder's Name:……..Date:……
RFB No. and title:……
Page of _pages ……..
1. Key Activity No One: ……..

	Information			
Contract				
Award date				
Completion date				
Role in Contract	**Prime Contractor**	**Member in JV**	**Management Contractor**	**Sub- contractor**
Total Contract Amount	**INR……**			
Quantity (Volume, number or rate of production, as applicable) performed under the contract per year or part of the year				
Year 1				
Year 2				
Year 3				
Year 4				
Year 5				
Employer's Name:				
Address: Telephone/fax number				

Activity NO 2

	INFORMATION
Description of the key activities in accordance with Sub-Factor 4.2(b) of Section III:	

Activity NO 3

	INFORMATION
Description of the key activities in accordance with Sub-Factor 4.2(b) of Section III:	

Form BIDCAP – 5(a)

Existing commitments and on-going works

Description of work	Place & state	Contract No. & Date	Name and address of client	Value of contract (INR Lakh)	Stipulated period of completion	Value of works* remaining to be completed (INR Lakh)	Anticipated date of completion
1	2	3	4	5	6	7	8

Form BIDCAP – 5(b)

Works for which bids already submitted

Description of work	Place & state	Name and address of client	Estimated value of works (INR Lakh)	Stipulated period of completion	Date when decision is expected	Remarks if any
1	2	3	4	5	6	7

*Attach certificate(s) from the Engineer-in-Charge

Annexure A

MANUFACTURER AUTHORISATION FORM

To

Commissioner
MUNICIPAL CORPORATION
BATHINDA, Punjab

Dear Sir/ Madam,

Ref: Your Tender document No._____ dated_____.

1. We _____, who are proven and reputable Manufacturer of LED Street Lights having factories a_____ hereby authorize M/s _____ (Name and address of Contractor/ Bidder) to submit a tender, process the same further and enter into the contract with you against your requirement as contained in the above tender RFP No. _____ for the above goods manufactured by us.

2. We further confirm that no supplier or firm or individual other than _____ (Name and address of the above contractor/ bidder) is authorized to submit the tender, process the same further and enter into a contract with you against your requirement as contained in the above referred tender enquiry documents for the above goods manufactured by us.

3. We do hereby extend our full warranty, as applicable as clause of the condition of the contracts read with modification, if any, offered for supply by the above firm against this tender document RFP No. _____

Yours faithfully,

_____

_____

(Signature with date, Name and designation for and on behalf of M/s _____)

[Name and address of Manufacturer]

Note: This letter of authorization should be on the letter head of the manufacturer firm and should be signed by a person competent and having the power of attorney to legally bind the manufacturer.

Annexure B

Memorandum of Understanding between Manufacturer and Authorized Dealers
(On stamp paper of Rs.100/- duly notarized)

THIS MEMORANDUM BETWEEN:

Party No. ONE (Bidder)_____
AND
Party No. TWO M/s. (Manufacturer/ brand Owner of LED luminaires) who is meeting all the requisites as Specified in this RFP No. _____ for the work of "Implementing Smart LED Street Lights and Centralized Control and Monitoring System on EPC Mode with Operation and Maintenance for 8(Eight) years in Municipal Corporation BATHINDA."

With this Memorandum reached between Party ONE and Party TWO mentioned above, the Party No. ONE hereby undertakes that he will procure all the LED Street Lights required for the work detailed in the RFP No. _____ from the Party No. TWO only.

The Party No. TWO hereby undertakes to supply the LED Fixtures manufactured by them as per RFP No._____ specifications during the whole period of the Contract to the party No. ONE.

The Party No. TWO hereby also undertakes that it will stand guarantor for LED Street Lights supplied by them to Party No. ONE, if any component/ party needs any replacement or repair, they shall supply the same of good quality for replacement rectification, during the said Guarantee Period.

The Party No. TWO stand unconditional guarantor for performance of the fitting/ Fixture supplied to party no. ONE as per the requirement of Tender called for the work of "Implementing Smart LED Street Lights and Centralized Control and Monitoring System on EPC Mode with Operation and Maintenance of 8(Eight) Years in Municipal Corporation BATHINDA".

The Party No. TWO also undertakes to Supply the LED Street Light as per Specification and as per time schedule as mentioned in the RFP No. _____ of MCB to Party No. ONE.

The Party No. ONE undertakes to procure LED Street Lights from Party No. TWO as per specifications and in such a manner so as to install the same as per time Schedule given for installation in the above mentioned RFP for which payment whatever payment to be made to party No. TWO in whatever time period as agreed between Party ONE and TWO will be responsibility of Party No. ONE.

The Party No. ONE also undertakes to install said LED Street Lights which will be procured from Party No. TWO in manner as prescribed by Party No. TWO for proper and safe performance of such LED Street Lights.

Party No. TWO also undertake to test the Street Lights on random basis whenever directed by MCB and certify that they are having mandatory testing equipments for testing of the LED to be supplied as per above RFP specifications.

In case of non-performance of their authorized dealer i.e. Party No. ONE during Contract period at any stage, the Manufacturer i.e. Party No. TWO shall execute remaining part of the Contract till its completion directly on its own or through their authorized dealer with prior approval from MCB.

In case Manufacturer/ Authorized dealer fails to execute their role and responsibility as mentioned above or anywhere in the Tender/ RFP, MCB have right to blacklist the

manufacturer/ authorized dealer for non - performance and impose the penalty as per above RFP Tender Conditions.

Authorized Signatory & Seal	Authorized Signatory & Seal
(On Behalf of the Manufacturer)	(On Behalf of the Authorized Dealer)

Note: The content of MoU should indicate scope of work of both manufacturer and Dealer, during the Contract execution, O&M period. There should be only ONE MoU for both of them, if any manufacturer enters MoU with Two Dealers, their bid will be rejected. Both the parties should sign and seal on Rs.100/- stamp paper and the same should be uploaded in the Technical Bid.

Letter of Bid - Financial Part

Date of this Bid submission*: [insert date (as day, month and year) of Bid submission]*

Request for Bid No.: *[insert identification]*

To:

Commissioner
Municipal Corporation, BATHINDA,
PIN Code: 151001 Telephone: +91-0164-2252811

We, the undersigned, hereby submit the second part of our Bid, the Bid Price and Bill of Quantities. This accompanies the Letter of Technical Part.

In submitting our Bid, we make the following additional declarations:

(a) **Bid Validity Period**: Our Bid shall be valid for a period specified in BDS 18.1 (or as amended if applicable) from the date fixed for the Bid submission deadline specified in BDS 22.1 (or as amended if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(b) **Total Price**: The total price of our Bid, excluding any discounts offered in item (f) below is: [Insert one of the options below as appropriate]

Total price is: *[insert the price of the Bid in words and figures, indicating the various amounts and the respective currencies];*

(c) **Discounts:** The discounts offered and the methodology for their application are:

(i) The discounts offered are: [*Specify in detail each discount offered*]

(ii) The exact method of calculations to determine the net price after application of discounts is shown below: [*Specify in detail the method that shall be used to apply the discounts*];

(d) **Commissions,** gratuities **and fees:** We have paid, or will pay the following commissions,gratuities, or fees with respect to the Bidding process or execution of the Contract: [*insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity*].

Name of Recipient	Address	Reason	Amount

(If none has been paid or is to be paid, indicate “none.”)

Name of the Bidder:*[*insert complete name of person signing the Bid*]

Name of the person duly authorized to sign the Bid on behalf of the Bidder: ** [*insert complete name of person duly authorized to sign the Bid*]

Title of the person signing the Bid: [*insert complete title of the person signing the Bid*]

Signature of the person named above: [*insert signature of person whose name and capacity are shown above*]

Date signed [*insert date of signing*] **day of** [*insert month*], [*insert year*]

**Person signing the Bid shall have the power of attorney given by the Bidder. The power of attorney shall be attached with the Bid Schedules

Section V - Eligible Countries

1. Eligibility of Procurement for the provision of Goods, Works and non-consulting services in the Projects financed by Government of India and/or State Government of Punjab

In reference to ITB 4.8 and ITB 5.1, the Bidders are requested to check the eligibilities of the countries for procurement of goods, works and non-consulting Services whether declared prohibited/ ineligible for trade and/or procurement by the Government of India (GoI). During the Contract Agreement, if at any time GoI declares the prohibition of trade/procurement of goods, works, Non- consulting services from country/countries, the same shall be applicable w.e.f. the date of enforcement declared by the Government of India.

Section VI - Fraud and Corruption

6.1 The Bidders and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Bidding Process and subsequent to the issue of the Letter of Acceptance and/or Letter of Award and during the subsistence of the Contract Agreement. Notwithstanding anything to the contrary contained herein, or in the Letter of Acceptance and/or Letter of Award or the Contract Agreement, the Employer shall reject a Bid, withdraw the Letter of Acceptance and/or Letter of Award, or terminate the Contract Agreement, as the case may be, without being liable in any manner whatsoever to the Bidder or Contractor or Concessionaire, as the case may be, if it determines that the Bidder or Contractor or Concessionaire, as the case may be, has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bidding Process. In such an event, the Employer shall forfeit and appropriate the Bid Security or Performance Security, as the case may be, as mutually agreed genuine pre-estimated compensation and damages payable to the Employer towards, inter alia, time, cost and effort of the Employer, without prejudice to any other right or remedy that may be available to the Employer hereunder or otherwise.

6.2 Without prejudice to the rights of the Employer under Clause 6.1 hereinabove and the rights and remedies which the Employer may have under the Letter of Acceptance and/or Letter of Award or the Contract Agreement, if a Bidder or contractor or Concessionaire, as the case may be, is found by the Employer to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Bidding Process, or after the issue of the Letter of Acceptance and/or Letter of Award or the Contract Agreement or the execution of the Contract Agreement, such Bidder or Contractor or Concessionaire shall not be eligible to participate in any tender or RFP issued by the Employer during a period of 3 (three) years from the date such Bidder or Contractor or Concessionaire, as the case may be, is found by the Employer to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practices, as the case may be.

6.3 For the purposes of this Clause 6, the following terms shall have the meaning hereinafter respectively assigned to them:

a) "corrupt practice" means (i) the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the actions of any person connected with the Bidding Process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of the Employer who is or has been associated in any manner, directly or indirectly with the Bidding Process or the Letter of Acceptance and/or Letter of Award or has dealt with matters concerning the Contract Agreement or arising there from, before or after the execution thereof, at any time prior to the expiry of 1 (one) year from the date such official resigns or retires from or otherwise ceases to be in the service of the Employer, shall be deemed to constitute influencing the actions of a person connected with the Bidding Process); or (ii) engaging in any manner whatsoever, whether during the Bidding Process or after the issue of the Letter of Acceptance and/or Letter of Award or after the execution of the Contract Agreement, as the case may be, any person in respect of any matter relating to the Project or the Letter of Acceptance and/or Letter of Award or the Contract Agreement, who at any time has been or is a legal, financial or technical adviser of the Employer in relation to any matter concerning the Project;

(b) “fraudulent practice” means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bidding Process ;

(c) “coercive practice” means impairing or harming, or threatening to impair or harm, directly or indirectly, any person or property to influence any person’s participation or action in the Bidding Process;

(d) “undesirable practice” means (i) establishing contact with any person connected with or employed or engaged by the Employer with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Bidding Process; or (ii) having a Conflict of Interest; and

(e) “restrictive practice” means forming a cartel or arriving at any understanding or arrangement among Bidders with the objective of restricting or manipulating a full and fair competition in the Bidding Process.

Section VII - Works' Requirements

7.1 Introduction

Works of Implementing Smart LED Street Lights and Centralized Control & Monitoring System on EPC Mode with Operation and Maintenance of 8 (Eight) years in the Municipal Corporation BATHINDA.

7.2 Background- BATHINDA Street Lighting Project

POLES

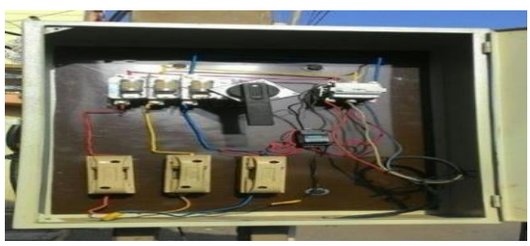
Within the jurisdiction of BATHINDA Municipal Corporation, most of the poles are conventional type for street lighting. Conventional lighting is characterized by fixtures mounted on the PSPCL concrete poles, carrying low tension electricity distribution lines. The Fixtures are mounted usually lower in order to enhance the illuminance levels near the pole. Usually these poles are made of mild steel tubular (MST), Concrete poles and rail beam (RB). There are around 30% dedicated poles under MCB juridiction for street lighting which are mainly found on main roads.

High Mast Poles are usually found on road intersections and have multiple fixtures mounted on a single pole and bidder has to make arrangements to install & operate LED Lights on the same.

Switch-points

There are a total of 358 switch controllers under MCB almost without any type of timer (analogue or digital). Most of the switch points are operated in manual mode and on-off timing decided manually. The number of fixtures connected to any switch points is having considerable variation. The existing type of switch point in BATHINDA is shown in Figure 6.

Figure 6: Timer switch points installed in BATHINDA



OTHER INFORMATION

Based on the data/observations , the major issue in MCB street Lighting is appeared to be the lack of proper street lighting infrastructure. Some comments/observations on the existing street lighting infrastructure are tabulated below:

Conventional street lighting Observations	Description
Pole span	Since the majority of the street lighting is conventional type, therefore pole span varies a lot throughout the city. There are certain major roads where pole span is around 30 - 35 meters (very high, resulting in dark patches) whereas pole span in interior road varies from 20 to 25 meters.
Wiring and Earthing	All the switching points are getting power from PSPCL. Switching points which are part of modern lighting are powered through 3 (three) phase wiring system whereas, the switching points which are part of conventional lighting are powered through single phase wiring system. Adequate earthing is not provided to most of the poles in city.

Type of cable	The cabling is of underground type for modern lighting and the cabling for conventional lighting is a mixture of underground type and overhead type (Most of the place it is overhead only).
Fixtures fitted on the walls	Some of the fixtures fitted on the walls in some of the area of MCB.
Modern lighting/Central lighting	There are around 30% (thirty percent) dedicated street lighting poles in the city. Rest of the Poles belongs to PSPCL which are mainly Concrete poles on which street light fixtures are installed/mounted.
Centralized Controlling & Monitoring Systems (CCMS)	There is no CCMS for street lighting in MCB.
Conventional lighting arrangement	There is a heterogeneous arrangement of sodium vapor lamps, Flouroscent tube lights, CFLs and metal halide lamps in the case of conventional lighting.
Junction Box	Junction boxes are present in modern lighting system and there are jnction boxes in the case of conventional lighting system in MCB.
Switch points	It was observed that there is no analog or digital timer provided with the existing switch points.
Load balancing	Both in conventional and modern lighting system, the load is highly unbalanced. It was noticed that in some cases the entire load was on a single phase with very less load on the remaining two phases.

7.3 Details of lighting luminaries inventory of MCB

Based on the luminaries inventory of MCB, a Total of approximately 23,254 luminaries are installed in 8 zones in the city. Of the total Streetlights, 830 luminaries are LED , Balance 22424 luminaries are of conventional type, which are very inefficient from energy consumption perspective. A snapshot of existing lighting luminaries inventory in BATHINDA is as below:

Type	FTL			CFL		HPSV			LED				Total
Watts	36 W	40 W	T-5 56 W	45 W	20 W	70 W	150 W	250 W	40 W	60 W	90 W	120 W	
No.	527	13068	524	493	232	2957	3681	1142	218	300	286	26	
	13919			725		7780			830				23254

The percentage composition of street lighting luminaries inventory in BATHINDA, around **59.85% FTL** (36W and 40W & 56W)), **33.45% HPSVs** (70W, 150W and 250W), **3.56% LEDs** (40W, 60W, 90W and 120W), **3.11% CFLs** (45W and 20W).

7.4 Aims and Objectives:

MCB has planned to replace its conventional street lights by suitable capacity of smart LED street lights on EPC mode. These lights will be centrally controlled through a monitoring center.

The primary objective of the project is to improve the overall energy efficiency of streetlights, which will lead to substantial savings in the electricity consumption in street lighting system, thereby resulting in cost reduction / savings. The Bidder shall invest in the project initially and recover his investment's part in equated installments as mentioned in payment clause after he proves Guaranteed Energy Savings.

Following are the Goals of the project:

a. Energy saving more than or equal to Guaranteed Energy Saving Automated control of all street light in the city through CCMS
b. Improved service to residents (by improving lux level on streets, as per requirement).
c. Creating database of electrical parameters to decide further action Improve operation and maintenance of existing street light systems & reduce operating and maintenance cost.
d. Improved environmental conditions.
e. To reduce power load on generation and use this energy for other purpose.

NOTE: The Successful Bidder and MCB (Employer) shall conduct joint assessment survey for no. of lights to be converted to LED and infrastructure condition before taking up the work. After submission of survey report, bidder shall take prior approval from Employer for actual work to be done.

7.5 Estimates of Energy Savings Potential

➢ Annual Baseline energy consumption

The annual baseline energy consumption has been estimated from the total power consumption of the existing street lighting luminaries including the ballast losses. There are two options for estimating the baseline energy consumption i.e.

- Based on the actual energy bills, switch controllers-wise for the last year.
- Based on the rated power consumption and ballast losses of the total street lighting luminaries (23,254) in the BATHINDA City.

The merits and demerits of both the options were explored to explore the baseline energy consumption. While considering the first option, it was acknowledged that preparing baseline energy consumption from energy bills may not be accurate on account of some of the non -running electric meters, lighting fixtures and addition of new light points in later months of the last year. Therefore, to arrive at the baseline energy consumption, the second option is explored to provide a more credible data.

a. Estimation of annual baseline energy consumption based on the actual energy bills on street lighting.

One way to estimate the annual baseline energy consumption is going by the aggregation of the actual annual energy consumption of all the switch controllers. The annual energy consumption or the annual energy bills for all the switch controllers for the 12 months of year 2016-2017 comes out to be 76,87,629 kWh or about Rs.6.16 Cr and 2015-16 comes out to be 57,81,295 KWh

It is found that energy bills of MCB are quiet fluctuating in nature from last 3 years due to addition of poles and fixtures and therefore, this method of establishing the annual baseline energy consumption based on the energy bills will be misleading. Also, there

may be a possibility of non-running meters/ lighting fixtures, leading to unaccounted energy consumption.

b. Estimation of annual baseline energy consumption based on the rated power consumption and ballast losses of the total population of street lighting luminaries.

In order to make a realistic assessment of the actual energy consumption for street lighting, the 2nd option of going by the total population of the street lighting luminaries for establishing baseline can be employed. The annual average operating hours of street lights have been considered to be 11 hours, 365 days a year. The estimated annual baseline energy consumption is provided below:

Annual energy consumption of conventional street lighting fixtures under MCB

Type of fixture	Quantity	Wattage (W)	Ballast losses (W)	LED equivalent (w)	Total Wattage of existing lights including ballast losses (W)	Annual energy consumption with existing lights (kWh/year)
40 W FTL	13068	40	9	18	49	2570933
36 W FTL	527	36	9	18	45	95215.73
20 W CFL	232	20	0	18	20	18629.6
45 W CFL	493	45	0	18	45	89072.78
70 W HPSV	2957	70	15	35	85	1009150
150 W HPSV	3681	150	22	70	172	2542025
250 W HPSV	1142	250	32	100	282	1293007
T-5 (4*14 W)	324	56	7	35	63	81954.18
LED 40 W	218	40	0	40	40	35010.8
LED 60 W	300	60	0	60	60	72270
LED 90 W	286	90	0	90	90	103346.1
LED 120 W	26	120	0	120	120	12526.8
						7923141

Using this method, **the annual baseline energy consumption comes out to be 79,23,141 kWh/ year.** It can be seen that the option 2 provides a realistic assessment of annual baseline energy consumption for street lighting under MCB. Therefore, the final baseline energy consumption data is provided in the table below:

S. No.	Parameters	Number	Annual energy consumption (kWh)
1	Total street lights	23,254	**79,23,141**

Final baseline energy consumption data

However during the implementation stage, the Successful Bidder must first install control panels with each of the feeders/ switch points before the installation of LED lights so that these panels can measure the existing lighting load and actual energy consumption on each of the energy meters for a specified period of time.

7.6 Estimated annual savings after replacement of conventional lights with LED lights

Type of fixture	Quantity	Wattage (W)	Ballast losses (W)	LED equivalent (w)	Total Wattage of existing light including ballast losses (W)	Annual energy consumption with existing lights (kWh/year)	Annual energy consumption of LEDs (kWh/year)	Annual energy savings (kWh)
40 W FTL	13068	40	9	18	49	2570933	944424.4	1626509
36 W FTL	527	36	9	18	45	95215.73	38086.29	57129.44
20 W CFL	232	20	0	18	20	18629.6	16766.64	1862.96
45 W CFL	493	45	0	18	45	89072.78	35629.11	53443.67
70 W HPSV	2957	70	15	35	85	1009150	415532.4	593617.8
150 W HPSV	3681	150	22	70	172	2542025	1034545	1507480
250 W HPSV	1142	250	32	100	282	1293007	458513	834493.7
T-5 (4*14 W)	324	56	7	35	63	81954.18	45530.1	36424.08
LED 40 W	218	40	0	40	40	35010.8	35010.8	0
LED 60 W	300	60	0	60	60	72270	72270	0
LED 90 W	286	90	0	90	90	103346.1	103346.1	0
LED 120 W	26	120	0	120	120	12526.8	12526.8	0
						7923141	3212181	4710960
					Total Saving	**59.45 %**		

11 (eleven) hours of operation time per day is considered for existing conventional lights and 11 (Eleven) hours of operation has been considered for new LED lights to be installed. 365 (three hundred and sixty five) days in a year have been taken for calculation purpose. {Hence annual energy consumption will be quantity x (wattage of light plus ballast) x11x365/1000}.To Illustrate: In case of 40 W FTL it will be 13068 x (40+9) x 11x 365/1000 = 2570933 kWh/year. The table above indicates that installation of LED lights offers energy savings of about 60 %. Considering this huge energy savings potential and because of the reason of the technology being proven, MCB has planned to implement this Project. This project will be implemented on EPC mode. The Project will be implemented in a Guaranteed minimum savings model under which MCB will make capital investment for implementation of LED Street Lighting and setting up of CCMS (50% of payment in 6 (six) months after successful installation and remaining in rest 5 (Five) years on performance based monthly bill) and Successful Bidder will operate & maintain the project for the contract duration of Eight and half years including installation period of 6 (six) months(installation period of 6 months also includes completion of IDC Works).

The project may be extended by 2 (two) months on account of delay but subject to payment of liquidated damages in GCC and PCC. The Bidder assumes both the performance risks and financial risks. Under this model, MCB assumes no financial obligation other than to pay to the Successful Bidder over a specified period of time in terms of the Contract and/ or ITB.

It is proposed to replace the existing street lighting fixtures with LED luminaries of equivalent wattage. It is important to maintain the same or better level of illumination after replacement with LED lights. However, lumen cannot be the only deciding factor to estimate the required wattage of LED luminaries as numerous other factors also impact the lumen level which would vary at every point. The equivalent LED luminaries wattage proposed for this project was kept based on other street lighting projects implemented across India. **It is suggested & measured that Proposed LED wattages Luminaries result in better illumination levels than that with conventional lights and bidder has to maintain the LUX level as per the entire satisfaction of EIC.**

7.7 Estimated monetary benefits to MCB from LED street lighting project

A cost-benefit analysis for the LED street lighting project has also been performed. It should be noted that average components from the infrastructure development have been considered in the costs computation of the LED street lighting project. For actual cost, the successful bidder will invest and produce bill as per conditions of RFP. The implementation of project will not only improve the service levels of street lighting in the city but will also provide financial benefits to MCB. The expected monetary benefits arising out of this project to MCB are shown below:

S. No.	Particulars	Values
1	**Baseline energy consumption (kWh/year)**	7923141
2	**Expected energy savings (%)**	**59.45%**
3	**Expected energy savings (kWh/year) (1x2)**	4710960
4	**Expected reduced energy consumption (kWh/year) (1-3)**	3212181
	Current scenario	
5	**Current electricity tariff (INR/kWh)**	**Rs.90/kW +** 7.35/kWH
6	Current Load (kW) from MCB records	1736.49
7	Current annual electricity bills (INR) approx.	55000000
8	Current annual operations & maintenance expenses including replacement of existing fixtures (INR) approximately	15000000
9	Total current annual expenses of MCB on street lighting (INR) (8+7)	70000000
	Proposed scenario	
10	New Load (kW)	712
11	Expected annual electricity bill after the LED project (INR)	22550000
12	Annual payment to bidder for O&M expenses (INR) (Assumed) for 22424 nos. + 830 existing LED's = 23254 no. LED lights* Rs 300 per point per year and an increment of 5% in O&M price is considered every year	6976200
13	Total annual expenses of MCB after LED project implementation (INR) (11+12)	2,95,26,200
Net Annual Monetary Benefits/Loss To MCB (9-13) (CAPEX & IDC will be paid by MCB)		**4.04 Cr.**

It can be seen from the table that the total annual expenses of MCB in the current scenario is INR 07.00 crores approximately which includes the annual electricity bills, annual operations and maintenance expenses and annual expenditure on replacement of fixtures.

With the implementation of energy efficient LEDs in BATHINDA, there will be a proposed approximately reduction of 60 % in the energy consumption along with the reduced operations and maintenance expenses. In the proposed scenario, the total annual expenses of MCB are expected to be INR 2.95 crores. Hence, there will be a net annual monetary benefit of INR 4.04 crores to MCB with the implementation of this project. It needs to be kindly borne in mind that the total cost of LED fixtures, CCMS and IDC will be borne by MCB.

The project will not only give energy savings but will also have many other social benefits like reduced accidents and traffic hazards, enhanced safety for the citizens during early morning and late night hours, more hours for business and hence enhanced financial health of the city. Some of these benefits have been listed down in the table below:

Social benefits for the citizens of BATHINDA from LED street lighting project

Segments of people	Social benefits
Traffic police	Reduced accident rates and traffic hazards Enhanced the ease of patrolling for cops because of increased visibility over long range.
Women	Safe movement of pedestrians and vehicles Deterrent to crime, particularly against women. Creates feeling of safety while waiting on the roads for buses Extends time available for local transport, work and business
Shop owners & hawkers	Enables more working hours for business in night Extends time available for recreation and entertainment Visual comfort and orientation and better quality of urban life

There will also be associated environmental benefits and other benefits from this project. Some of these benefits are as follows:

- By installing this project, MCB will be able to save around 44596825 Units (as mentioned in table 3 above) of electricity per year which can provide electricity to additional homes where there is no access of electricity in the country and help facilitate the rural electrification.

- The implementation of energy efficient street lighting (LEDs) would also reduce GHG emissions i.e. 5000 tones of CO2 annually resulting in significant environmental benefits.

- The project will make the whole street lighting system in the city automatic and will enable it to control sitting anywhere in the world. Moreover this will also provide

complete monitoring capabilities. This infrastructure will be transferred to MCB without any cost.

- The latest system will make the fault identification very easy and hence will enable maintenance without any delay leading to more satisfied citizens with the services of MCB.
- The monetary savings to MCB on energy bills and maintenance will help improve its financial health.
- As per the information provided around 50 persons handling the street lighting work now will be available for providing services in other areas.

7.8 Key Aspects Of BIS Standards On Outdoor Lighting Standards on Pole Siting Arrangements

Arrangement of luminaries along with the road mainly depends on the road width. All luminaries on one side of the road are recommended only when the width of the carriage way is equal to or less than the mounting height.

Staggered arrangement is recommended when the width of the road is greater than the value recommended for the single side lighting but not exceeding 1.5 times the mounting height. Luminaries on either side of the road are advisable when the width of the road is more than 1.5 times the mounting height. Axial mounting in which the luminaries are placed along the axis of the road, is recommended for the narrow roads where the width of the road doesn't exceed the mountain height. This is more acceptable for tree lined roads. Figure 4: Typical layout for the luminaries on road

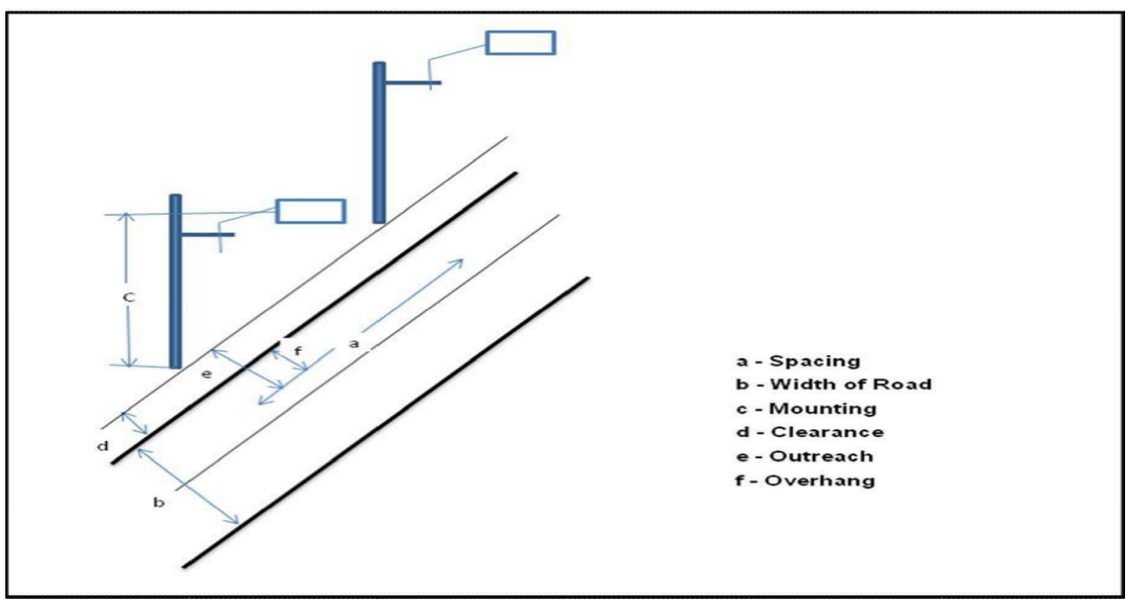


Table 7.8.1 Standard data for luminaries spacing to height ratio

Type of Luminaire	Maximum spacing/ height ratio
Cut-off/Full Cut-off	3
Semi Cut-off	3.5
Non Cut-off	4

Type of luminaries

Luminaries are classified into three categories according to the degree of glare (BIS, 1981):

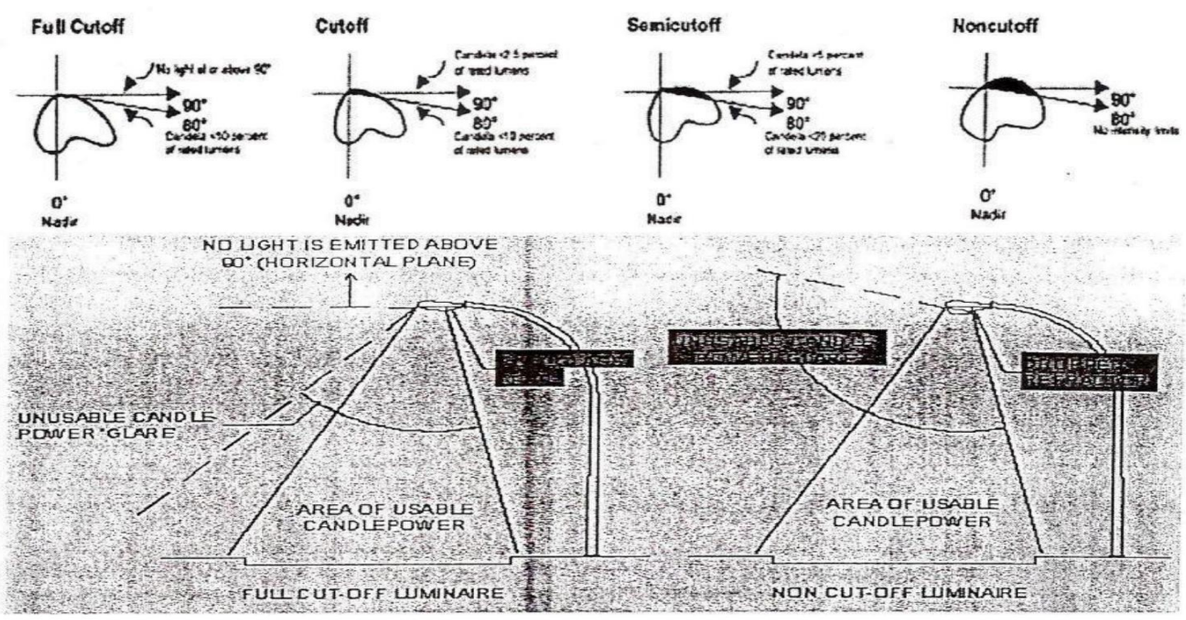
Cut off Luminaries: A light distribution where a negligible amount of light is permitted in the plane located at the bottom of luminaries.

Semi Cut Off Luminaries: A light distribution where slightly more light is permitted at a horizontal plane located at the bottom of luminaries than the cut off distribution.

Non Cut off Luminaries: A light distribution that can produce considerable light above the horizontal plane located at the bottom of luminaries.

The figures shown below illustrate the effect of Cut Off, Semi Cut Off and Non Cut off Luminaries.

Figure 5: Illustration of the effect of luminaries



Mounting Height: The mounting height should be greater as the road way is wider to obtain adequate transverse uniformly. As general rule heights of 9-10 meters are suitable for heavy traffic roads and 7.5-9 meters for medium traffic roads.

National Lighting Code design standards

In designing the street lighting specifications, it is important to understand the light requirements of the road. Street lighting in India is classified in the Indian Standard (BIS, 1981), based on the traffic density of the roads. The classification of roads is provided in the table below:

Table 7.8.2: Classification of roads as per Bureau of Indian Standards, 1981

Group	Description
A1	For very important routes with rapid and dense traffic where the only considerations are the safety and speed of the traffic and the comfort of drivers
A2	For main roads with considerable mixed traffic like main city streets, arterial roads, and thoroughfares
B1	For secondary roads with considerable traffic such as local traffic routes, and shopping streets
B2	For secondary roads with light traffic
C	For residential and unclassified roads not included in the previous groups
D	For bridges and flyovers
E	For towns and city centers
F	For roads with special requirements such as roads near airports, and railways

Based on this classification, Employer / Engineer In charge shall match the category of road, and designs and provides installation specifications for the street lighting system. One of the important components of the street lighting systems is the consideration of street lighting poles. The specifications of the street lighting poles according to Bureau of Indian Standards, 1981 is provided below:

Table 7.8.3: Specifications for street lighting poles as per Bureau of Indian Standards, 1981

Section	Overall length 11 m + 25 mm (base plate)			Overall length 9.5 m + 25 mm (base plate)		
	Outside diameter (mm)	Thickness (mm)	Length (mm)	Outside diameter (mm)	Thickness (mm)	Length (mm)
Bottom section	139.70	4.85	5,600	165.10	4.85	5,000
Middle section	114.30	4.50	2,700	139.70	4.50	2,250
Top section	88.90	3.25	2,700	114.30	3.65	2,250
Planting depth	1,800 mm			1,800 mm		
Nominal wt of pole	160 kg			147 kg		
Tolerance on mean weight for bulk supply is : 7.5% Tolerance for single pole weight is : 10%						

Another important aspect in designing street lighting systems is the determination of optimum position of the luminaries and the capacity of the light sources. The optimum mounting height.

should be chosen by taking into account the light output of the sources, the light distribution of the luminaries and the geometry of installation. The mounting height should be greater for more powerful lamps, to avoid excessive glare. The recommended mounting height of the luminaries as per Bureau of Indian Standards, 1981 is provided below:

Table 7.8.4 : Mounting height of luminaries as per Bureau of Indian Standards, 1981

Group	Recommended Mounting Height
A	9 to 10 meters
B	7.5 to 9 meters
Others (roads	Less than 7.5 meters

The Bureau of Indian Standards, 1981 has also recommended levels of illumination for street lighting related to groups A1, A2, B1, and B2 as shown in the table below:

Table 7.8.5 : Recommended levels of illumination as per Bureau of Indian Standards, 1981

Type of road	Road characteristics	Average level of illumination On road surface in lux	Ratio of minimum/ average illumination	Transverse Uniformity (Emin/Emax)	Type of luminaire preferred
A-1	Important traffic routes carrying fast Traffic	30	0.4	0.33	Cutoff
A-2	Main roads carrying Mixed traffic like city Main roads/streets, Arterial roads, Throughways	15	0.4	0.33	Cutoff
B-1	Secondary roads with considerable traffic like local traffic routes, shopping Streets	8	0.3	0.20	Cutoff or semi-Cutoff
B-2	Secondary roads with light traffic	4	0.3	0.20	Cutoff or semi-Cutoff

7.9 SCOPE OF WORK

The Successful Bidder shall be solely and exclusively responsible to design, implement and maintain on EPC model, the solution as mentioned in this RFP and to provide the services as specified. MCB seeks to appoint a Contractor/ Successful Bidder for a contract period of 8.5 years (Eight years and six months), for undertaking following tasks for upgrading the street lighting system under MCB jurisdiction:

Task 1: Replacement of existing luminaries (within municipal boundary of BATHINDA Municipal Corporation) with LED luminaries (including LED lamp, Driver and Luminary) and installation of Centralized Control & Monitoring System (CCMS)

Task 2: Undertake comprehensive operation and maintenance of street lighting network for contract period

Special Conditions of Tender for Task 1: *Replacement of existing luminaries with LED luminaries (including LED, Driver and Luminary) installation of CCMS and development of necessary infrastructure.*

A. **Implementation timeline:** The Successful Bidder has to supply, install, test and commission LED luminaries and three-phase CCMS panels within 6 (six) months from the date of award of work failing which liquidated damages shall be imposed as per the GCC 47.

Contract Period would be 8 (Eight) years 6 (six) months including installation period of 6 (six) months (extendable by 2 (two) months subject to levy of liquidated damages in accordance with the provisions of the Contract) and Eight years of Defects Liability Period and O&M. It is clarified that the Contract Period under no circumstances would be extended beyond 08 (Eight) years 8 (eight) months (inclusive of 2 months of extension as mentioned above) irrespective of installation period whether it is less than or more than 6 (six) months. For Example: Contract signed date is 01/July/2018, then end date of contract date would be 30/April/2027. The Bidder will not be eligible for any payment, for the period, after the contract end date.

The work shall be executed as per schedule given below. All the given milestones shall be achieved in time, in case of failure in any of the milestone, Liquidated Damages & other as penalties indicated in the RFB document shall be payable.

- **T0 - date of signing the agreement**
- **T0 + 15 days- Submission of detailed work plan with timelines and get it approved from EIC. Bidder has to start joint survey with MCB officials regarding required infrastructure development and existing load Certification.**
- **T0 + 30 days- finalization of the Detailed Infrastructure development cost estimate and existing load Certification jointly. Start of required ID works.**
- **T0 + 60 days- Supply of minimum 5000 LED luminaries at site.**
- **T0 + 90 days –Completion of the IDC works and installation work of minimum 5000 LED lights with monitoring panels.**
- **T0 + 120 days- Completion the work of installation of minimum 12500 luminaries with CCMS system and has to make arrangement to setup helpdesk with key personnel, Computer, printers and other necessary materials.**
- **T0 + 150 days- Completion the work of installation of 20000 luminaries with CCMS system.**

- **T0 + 180 days- Completion of the work of the SITC (Supply, Installation, testing and commissioning) all the LED luminaries and three-phase CCMS panels including help desk Setup Complete in all respect and clear the site.**

B. **Wattages of LEDs to be installed:** The intent of MCB is to replace existing luminaries with LED luminaries to get lighting levels equal or better than the lighting levels being given by existing luminaries. To ensure this the successful bidder will have to give demonstration of the performance of the LED luminaries (bidder is planning to install in the project) on roads which have street lighting infrastructure (pole height and gap between poles) as per NLC code and prove that their luminaries are meeting NLC standards. Bidder will have to install following minimum wattages of LED luminaries after replacement of existing luminaries:

Type of fixture	Quantity	Wattage (W)	Ballast losses (W)	LED equivalent (w)
40 W FTL	13068	40	9	18
36 W FTL	527	36	9	18
20 W CFL	232	20	0	18
45 W CFL	493	45	0	18
70 W HPSV	2957	70	15	35
150 W HPSV	3681	150	22	70
250 W HPSV	1142	250	32	100
T-5 (4*14 W)	324	56	7	35
LED 40 W	218	40	0	40
LED 60 W	300	60	0	60
LED 90 W	286	90	0	90
LED 120 W	26	120	0	120
Total	**23254**			

Table: Wattages of LEDs to be installed

The total number of luminaries to be replaced under the project may vary by ±20% before the completion of implementation.

Apart from the 22424 non LED lights specified above, there already exists 830 LED lights in the city .It is the responsibility of the Successful Bidder to install new CCMS panel or replace/ connect their switching points/ feeder panels with the new Centralized Control and Monitoring System to control and monitor these 830 existing LED lights. The Successful Bidder shall also operate and maintain such panels. The responsibility of operation and maintenance of these additional 830 LED lights will be in such Bidder's scope

The Wattages and Ballast losses mentioned in the table above would be binding to establish baseline for entire duration of the contract period.

Out of the total luminaries mentioned in the table above, the Successful Bidder shall have to install 500 (+10%) luminaries having individual luminaire level monitoring & control capability. The location of these luminaries would be suggested by MCB during project implementation. For remaining luminaries, the Bidder has the option to install either individual control feeder level control.

The LEDs should not flicker during the its normal operating duration at the specified parameters/ ranges.

Note: Before issuing the LoA to the successful Bidder, The Employer may ask the Bidder to make a Technical demonstration on the specified roads A1, A2, B1, B2 as per NLC to prove the levels of illumination. The categorization of roads will be at the sole discretion of Engineer-in-charge and the Bidder has to demonstrate the same.

As a part of its endeavor, BATHINDA has designated/selected Main AJIT Road, Mall Road, GT Road, Bibi wala Road & 100 Feet Road for Area Based Development (ABD) under this project (this may change and will depend upon client's priority). A separate contractor for electrical work would be hired, who would be responsible for infrastructure development in such area, including installation of new poles, laying of underground electrical cables and other electrical infrastructure if required. Since the development of any area designated under ABD is the top priority, the Successful Bidder must start the installation of LED lights and CCMS panels in such area, within two weeks from the date of notification from MCB for start of installation work.

Upon completion of street lighting work in ABD area, 12 (twelve) days testing period will start to check the adequacy of the installed LED street lighting system. The issue of completion certificate to the Contractor of underground cabling of ABD area is subject to successful testing and approval of MCB.

C. **Guaranteed savings:** The minimum guaranteed energy savings, with the installation of LED street lights, should be 59% (Fifty Nine percent).

MCB will conduct monthly or annual reconciliation of readings provided by CCMS and DISCOM energy meters. If deviation between CCMS energy meter readings and DISCOM energy meter is more than 2% (two percent), then MCB or a third party appointed by MCB, will carry out on site measurement for verification. This deviation of 2% (two percent) is allowed only if the overall committed energy savings for the system is achieved.

D. **Operating hours:** The Successful Bidder has to maintain average operating hours per day for street lights after the completion of the project, across the year, equivalent to existing levels of 11 (Eleven) hours per day. If MCB wants to increase/decrease the operating hours for

newly installed LED lights, then baseline will also be changed correspondingly to estimate energy savings. The Successful Bidder has to ensure that all the available street lighting feeder panels (existing or new) in the city are connected to the CCMS system.

E. **Baseline:** The baseline defined is for existing condition of street lighting system in BATHINDA. However, actual baseline during the installation period (i.e. from the start of project to complete installation) may vary by ±20% in terms of number of light points as well as electricity consumption. The Successful Bidder may be asked by MCB to install/ uninstall additional light points during the time of implementation and subsequently, the Baseline will be modified on the completion of installation of LED lights. This modified baseline will be considered for assessment of energy savings throughout the contract period for verifying the actual saving.

F. **Infrastructure Development Cost (IDC):** The Successful Bidder shall be responsible for identifying existing asset deficiencies through Joint Survey with MCB officials for essential requirements like power cables (overhead/ underground cables from feeder panels to various poles) for street lighting, required JBs/MCBs on poles and existing damaged poles in street light infrastructure maintained by MCB. Engineer-in-Charge will certify that the cost is essentially required for the proper functioning of existing LED Street Lights.

G.

The replacement of such infrastructure will be done by the Successful Bidder after getting approval from MCB. The Successful Bidder will be paid for this infrastructure improvement @ 15%(Fifteen percent) discount, on approved Common Schedule of Rates (CSR) of 2010 of State of Punjab for replacing/ installing the poles, power cables, JBs/ MCBs – on poles for street lighting. In addition to this, MCB may ask for painting of some poles across the city. After approval of the number of poles and locations for painting from MCB, the Bidder can start the painting work and payment will be made at the same premium @15% discount of CSR rate. If rate is not available in CSR, then MCB will discover the market price through minimum 3 (three) bids. In such situation the Bidder will be paid on discovered market price. The bidder shall note that the IDC i.e. identifying asset deficiency cost in the present system after allotment of work shall not be paid more than Rs.1.50 crore.

In view of the continuous development of the city expected during the contract tenure and after the commissioning date, MCB might need to install more street lights in the new or existing areas. In those cases, the Successful Bidder may be asked to install additional street lights and CCMS panels and connect the same to the overall CCMS system. In case of such additions after commissioning of the Project but during the concurrency of the Contract Period, MCB will reimburse the Successful Bidder, the cost of the luminaire and the CCMS (if required) at the same rate as quoted under this bid but the required infrastructure will be provided by the MCB for these additional light points . Guaranteed Energy saving will not be considered for the addition of these points. But the Successful Bidder will be paid O&M for those Luminaries at the rate, which is being paid, for luminaries herein, till the end of the Contract Period.

Note: This Condition of addition of street light Points remains valid up to 3 years starting from the date of issuance of Completion certificate.

Also, in such cases as specified above, the Successful Bidder has to carry out the O&M of these additional luminaries and CCMS panels. The Successful Bidder will be paid as per its quoted rates, of that respective year, in the price Bid document of this Tender. The Operation and Maintenance Fee associated with these addition/ deletion will be done starting following month of addition/ deletion.

The Successful Bidder might be required to:

Change existing CCMS panels to higher capacity in view of inclusion of additional street lights resulting in insufficient rating of CCMS panels at its own cost.

Shift the CCMS panels from one place to other place due to obstacle in traffic, line shifting or for the purpose of load distribution at its own cost.

The Successful Bidder has to intimate MCB about any cases of power theft or unauthorized connection of load during any time particularly in festivals from the street lighting network on priority basis. Bidder will be responsible for taking all the corrective measures required and MCB should assist the bidder in this exercise and not penalize the Successful Bidder for such theft.

The Successful Bidder shall ensure proper recording of the dismantled conventional luminaries and report that to MCB on weekly basis.

The Successful Bidder will buy-back the dismantled lamps from MCB as per the rate quoted in the Price Bid. The buy-back price will be same irrespective of condition of dismantled lamps.

H. Other Conditions Of Task 1:

- The Successful Bidder has to adhere to the technical specifications as specified in Technical Specifications section for different type of street lighting equipment.
- The Successful Bidder has to arrange all the equipment, machineries and instruments required for the implementation of the project at its own expense. Also the Successful Bidder shall procure at his sole expenses all permits and licenses and pay all charges and fees for lawful execution of the work.
- Before starting the installations, it is the responsibility of the Successful Bidder to ensure that only relevant poles or lamps are taken up for installations which belong to MCB. The details of the areas within the BATHINDA city which fall within the jurisdiction of MCB and forms the part of the service area/ site where the Project is to be implemented shall be provided by MCB. PSPCL Poles on which Conventional Street Lights were mounted, are also supposed to be taken up for LED Lights Installation.
- The Successful Bidder shall undertake marking of poles (pole numbering) for each LED luminaire installed in service area of MCB and switching point details. However, this should be done without damaging the infrastructure of MCB.
- **Service Wire:** The Successful Bidder has to install cable/wires (each for phase and neutral) of required length for connection of luminaire to overhead conductor/ power supply cable(usually 2.5 Sqmm or more as per requirement). The Cables/

Wires should be of suitable size. No extra charge will be payable to the Bidder for this work.

- **Project area**: comprises of poles that are under jurisdiction of MCB's 8 (Eight) administrative zones (1 to 8). There are a total of 23254 luminaries (approx) in place being operated by 358 switching points/ feeder panels.

- **Bracket/Arm/Clamps:** In case these items are not available at existing locations or existing Bracket/Arm/Clamps are defective, then the same are to be supplied and installed by the Bidder and for this no extra charges will be payable.

- The Successful Bidder has to prepare switching point based inventory post replacement and the Bidder shall conduct GIS/ GPS mapping of street lighting switching points/feeder panels and rationalize the coverage area under the switching points.

- The Successful Bidder must take adequate care, by using black cotton tape or better quality tape for connection of wires, joints etc to avoid short circuiting of connections especially during monsoon season between luminaire wire and overhead network of DISCOM. No extra charge will be payable to the Bidder for this work.

- **Surge protection:** The Successful Bidder will provide surge protection arrangement to protect the luminaire from switching surges which are expected/prevalent in Street Light supply networks. No extra charge will be payable to the Bidder for this work. No claim for failure of Luminaries, on account of voltage surges other than Lightning surges, will be considered.

  In case of voltage surges due to lightning, it is expected that lights, in the affected circuit, will fail in a group and not in an isolated manner. Hence, any such failure of lights in a group on account of Lightning surges, may be reported to the MCB, along with circumstantial evidence preferably within 48 hours of such occurrence, for the purpose of damage claim. The responsibility for submission of supporting documentation rests with the Successful Bidder.

- **Earthling:** The provisions of IS-3043, may be referred to in general and to Clause no. 21.3, 21.4 and 32.5 of the said IS Specifications in particular. The Successful Bidder may carry out, at his own cost, earth resistance measurement of neutral conductor of supply network during the initial commissioning phase and subsequently on yearly basis or as may be felt necessary for reliable operation of the Light Luminaries. Wherever, in CCMS provision of additional earth electrode is felt necessary to meet the provision of IS: 3043, the same shall be taken up with MCB for mutual agreement. No claim for failure of Luminaries will be entertained on account of earthing issues.
- **With regard to asset ownership, following need to be adhered to:**

  - MCB shall at all times during the Contract Period remain the owner of the land and the existing lighting infrastructure under its jurisdiction.

- The Successful Bidder will not be held liable for lighting infrastructure existing prior to the date of commissioning of the LED luminaries and CCMS panels or arising from any event or circumstance that occurred prior to the date of commissioning.
- The Successful Bidder shall remain the owner of the LED luminaries and CCMS panels installed by it during the Contract Period. The Successful Bidder shall undertake all the procurement of equipment and services necessary for the Project. This LED luminaries and CCMS panels shall be free of any lien.
- At the expiry of the Contract Period, all rights and titles to, and interests in, all improvements and equipment constructed or systems installed are vested in MCB, free and clear of all and any liens and encumbrances created or caused by the Successful Bidder. The Successful Bidder shall surrender possession of the LED luminaries and CCMS panels, along with CCMS bill of material, to MCB with 98% (ninety eight percent) of them in working condition.

Special Conditions of Tender for Task 2: **Undertake comprehensive operation and maintenance of street lighting network and be liable for removal of defects during the Defects Liability Period (8 Years).**

During the Contract Period, following Operation & Maintenance activities will be required to be carried out by the Successful Bidder :

MCB shall remain the principal employer of the municipal employees working for the street lighting department. Such employees may or may not, at the Successful Bidder's sole discretion, be seconded to the Successful Bidder for a specific duration and under terms and conditions to be agreed upon between the Parties. The Successful Bidder has no obligation to employ directly or indirectly any municipal employees.

The Successful Bidder has to **store inventory** minimum 1% (one percent) of total light points in the city of LED luminaries for maintenance requirements.

The Successful Bidder will open an office in the space provided by MCB with basic infrastructure where the Bidder will make available a person with amenities like computer, printer, phone, complaint register, etc. during working shift timings. These complaint handling centers will be connected to MCB’s existing Complaint Management System and such centers should become fully operational within 30 (thirty) days of allocation of such space by MCB.

The Successful Bidder has to be proactive in monitoring street lighting system regularly and performing preventive maintenance and not relying solely on Complaint Management System.

In case of theft of the material or electricity, the Successful Bidder will inform the MCB and MCB will file the FIR. Further, after FIR, the Successful Bidder will address the theft by replacement of material or removing illegal electricity connection as the case may be, in presence of MCB officials. The Successful Bidder will have to bear the cost for the losses in material. In case of theft of electricity, the feeder panel specific consumption would be adjusted for the theft.

The Successful Bidder will manage the operation of all the control panels installed by him and also provide maintenance, web-based portal & communication services etc. of these control panels during the Contract Period.

All complaints lodged in the system have to be resolved within 48 (forty eight) hours of lodging of complaint. For example, if the complaint is lodged on 16th May at 10 PM then the complaint has to be resolved by 18th May 10 PM. In certain cases, Successful Bidder has to resolve the complaints immediately as per the instruction of EIC.

The Successful Bidder shall ensure the availability of sufficient ladder vehicle, Hydraulic Vehicle (suitable to reach up to 10m height or more as per the requirement in case of High Mast Lights) and other relevant vehicle & equipment for O&M. The vehicle used for O&M should have valid registration documents.

The Successful Bidder to ensure that no work is held up due to non-availability of ladders, Lorry etc., otherwise the Successful Bidder will be held responsible for such delays.

In case normal vehicle is unable to access the light point, the Successful Bidder will be required to make necessary arrangements for facilitating street lighting installation and maintenance at such locations.

The Successful Bidder has to ensure that drivers of ladder vehicles must possess valid driving license, vehicle registration documents, insurance, etc. at all times during the Contract Period.

The Successful Bidder has to carryout O&M of street lighting network including following specific conditions:

Conditions	Responsibility of BIDDER
Maintenance of central lighting	Apart from regular O&M activities; the Successful Bidder will be responsible for maintenance/replacement of junction box, related switchgears and related connecting wires/ cables.
Some poles, street light span or street light control may be shifted due to obstacle to traffic, line shifting or for the purpose of load distribution.	In such a situation, the Successful Bidder has to bring in labor for dismantling luminaire and again putting luminaire after shifting has been completed by MCB.
Due to overhead mix network, snapping of conductors, phase-to-phase phenomenon is very frequent and leading to damages of street light luminary and its components	The Successful Bidder, under such a condition, will register a complaint with the DISCOM and also undertake required O&M.The Authority will coordinate with DISCOM, ifrequired.
All street lights are installed on bracket suitable to its entry diameter; however, it may be possible to change some of the brackets at site for LED installation	All the associated cost would be borne by the Successful Bidder.

The Successful Bidder will be penalized for non-achievement of following O&M performance parameters:

Performance parameter	Particulars	Penalty for non-achievement
Complaint resolution	The complaints need to be solved within 48 hours of lodging of complaint	Rs. 100/lamp/day
Addressing phase failure issue	The phase failure should be resolved within same day	Rs. 500/ phase/ day
		Rs. 500/visit If MCB staff is engaged for resolving phase issue
Hours of operation of street lights	As per normal operating hours	Increased bill amount + 100% as a penalty on this increased bill if average hours of operation per annum are more than 11 hours/ day without the approval of MCB.
Guaranteed savings of 59.00%	BIDDER has to maintain the minimum guaranteed savings of 59.00%	For every 1% (one percent) reduction In guaranteed energy saving on monthly basis on any CCMS/Feeder panel or group of panels, a penalty equal to 1.5 times of the less units saved multiplied by Unit rate. In case the savings fall below 50%, the Bidder will not be made any payments towards capital investment and O&M for that period. E.g there are 300 feeder panels in whole of the city, if energy saved on any of the panel/feeder is 58% then it is less by 1% of the guaranteed minimum energy saving of 59%. Such cases may be one or more with different energy reductions, the penalty shall be levied for each panel @1.5 times of the less units saved multiplied by Unit rate.

The Bidder will organize half-day training program at MCB office wherein the Bidder will train the employees of MCB on any day within 1 (one) month of the date of commissioning and on any day within last quarter of end of contract period on the operation, maintenance and repair of the equipment and systems installed by the Bidder.

The Successful Bidder should address the queries or issues raised by employees of MCB O&M practices from time to time.

The Successful Bidder shall assign an overall in charge for coordination and monitoring of day to day activities of entire city network. Additionally, the Successful Bidder should deploy the team as proposed, in their Technical Bid, from their organization who are regular employees and provide the contact details of the same, who shall be accountable for delivering on the said commitments during the Contract Period, coordinate for daily O&M exercise and update MCB as per agreed format. In case, the assigned personnel leaves the organization or is reassigned, the Successful Bidder has to intimate the same in writing to MCB and advice names of the new officers assigned for the role.

Insurance: The Goods supplied under the Contract shall be fully insured in Indian Rupees against loss or damage incidental to manufacture or acquisition, transportation, storage, delivery, completion of installation and commissioning. For delivery of goods at site, the insurance shall be

obtained by the Successful Bidder, for an amount not less than the Price of the goods from "warehouse to warehouse" (final destinations) on "All Risks" basis including War risks and strikes.

Safety: During the period of installation and O&M, the Successful Bidder should ensure implementation of measures to ensure Safety of working personnel, as per all applicable laws in general and with special focus on the following :

Working at heights and Working on/in the vicinity of power supply lines

Suitable work instructions/procedures shall be prepared for each type of work location (Height or type of pole / supply network configuration) and the working personnel shall be trained at regular intervals by a competent person possessing valid certificate w.r.t Safety issues.

All the working personnel shall be provided with appropriate Personnel Protection Equipment such as Safety harness for working at heights, safety helmets, Earthing rods, etc. The Successful Bidder shall arrange to carryout safety audit at regular intervals by a competent person possessing valid certificate w.r.t safety issues and suitable remedial measures shall be taken based on the findings/recommendation of the safety audit.

Assessment of lighting load

It is acknowledged that PSPCL charges MCB for electricity consumption in street lighting based on the connected load with any feeder / energy meter. For every feeder/ energy meter, a separate bill is raised on monthly basis. Therefore, in order to realize the benefit of reduced energy consumption after the installation of LED lights, MCB will have to get reduce the sanctioned load of each of the street lighting feeder proportionately. MCB will take-up this with PSPCL so that sanctioned load of each of the feeder is reduced based on the new load on the feeder after the installation of LED lights.

During implementation stage, the Successful Bidder must first install control panels with each of the feeders/ switch points before the installation of LED lights so that these panels can measure the existing lighting load also on each of the energy meters for a specified period of time (upto 7 days or more). After recording these measurements the Successful Bidder will replace the old lights with LED lights and will again record the changed load. Other parameters such as no. of lights and their corresponding wattage shall also be recorded for any switching point before and after replacement with LED lights. MCB will also provide Successful Bidder, the previous year bills for each switching point. At the end of every month, from the start of installation phase, the Successful Bidder shall for the completed switch points, must prepare and submit a consolidated report to MCB in the format as provided below:

ZONE(1 to 8)	**Switch Point Description**	**Existing load as per utility bill (kW)**	**Existing load as per new meter installed in CCMS panel (kW)**	**New load after replacement of all lights connected to switching point (kW)**

Note: The 3-phase meter installed at the feeder panel shall be as per the specifications of PSPCL which are provided at Annexure (PSPCL 3-phase meter specifications).

The Successful Bidder shall also submit a consolidated report in the above format to MCB separately for each zone, immediately after the work is completed for that zone.

Actual power consumption at each feeder panel should be fixed by initial joint survey after issuance of LoA and then a joint survey should be carried out after replacement of lights and actual saving % age on each feeder should be fixed. This saving percentage shall be checked for every feeder every month. Then, if there is any variation from this fixed saving percentage, both MCB & agency shall asses' reasons for such variation. If there is any theft or any technical fault, agency should be penalized after giving a suitable time for rectification.

Assessment of energy savings through M&V

The energy savings by virtue of its nature is to be calculated through difference of baseline energy consumption and actual energy consumption. The replacement of existing street light with energy efficiency LED street light is expected to give minimum 59% of energy saving. So the Successful Bidder will have to ensure minimum guaranteed energy saving of 59.00% (Fifty Nine percent) from all the measures taken in this project.

The M&V of energy savings will be started after replacement work of 2 (two) zones, has been completed. The Successful Bidder will be eligible to raise the invoice for the energy savings realized after complete installation in 2 (two) zones. For illustration, if total installation is completed in 2 (two) zones on 1st January 2018, than Bidder is eligible to raise invoice on 1st February 2018 for energy savings realized in the period from 2nd January 2018 to 31st January 2018. No payment will be made to the Successful Bidder for the energy savings generated prior to 2nd January 2018.

For subsequent zones (i.e. 3rd and 4th Zone), payment of energy saving would start only after total completion of both zones. No payment will be made to the Bidder for the energy savings generated during the installation period and for any period before the commissioning date.

MCB will conduct monthly or quarterly or annual reconciliation of readings provided by CCMS and DISCOM energy meters. If there is difference between CCMS energy meter readings and DISCOM energy meter by more than 2%, then MCB or a third party appointed by MCB, will carry out on site measurement for verification, the same shall be final. The deviation of 2% is allowed only if the overall committed energy savings for the system is achieved.

O&M period shall commence from the date of issue of satisfactory Installation, Testing and Commissioning certificate of all LED Street lights from Engineer-in-charge. The payment for O&M will begin after date of issue of satisfactory Installation, Testing and Commissioning certificate of all LED Street lights.

The Successful Bidder will be required to submit, at start of every month, detailed CCMS report capturing energy consumption at each CCMS panel, hours of operation, details of events like phase.

Completed switch points: Means the switch points for which all the connected lights have been replaced and CCMS panels installed. MCB or the third party consultant hired by MCB will conduct reconciliation of CCMS report and DISCOM bills semi-annually and any discrepancies observed in the savings of CCMS report would be adjusted in the subsequent invoice of the Bidder.

System Documents, User Documents

The Successful Bidder will provide all project related documents. This documentation should be submitted as the Project undergoes at various stages of implementation. Indicative list of documents include: Project Commencement Documentation: Project Plan in giving out micro level activities with milestones & deadlines.

Equipment Manuals: Original Manuals from OEMs.

Installation Manual: For all the application systems.

Training Material: Training Material will include the presentations used for trainings and also the required relevant documents for the topics being covered. Training registers should be submitted for same.

User Manuals: For all the application software modules, required for operationalization of the system.

System Manual: For all the application software modules, covering detail information required for its administration.

Standard Operational Procedure (SOP) Manual: The Successful Bidder shall be responsible for preparing SOP Manual relating to Operation and Maintenance of each and every service as mentioned in the RFP. The draft process (SOP) document shall be formally signed off by MCB before completion of Final Acceptance Test. This SOP manual will be finalized by the Bidder within 2 (two) months of operationalization, in consultation with the MCB and formally signed off by the MCB.

Note: The Successful Bidder will ensure upkeep & update all documentation and manuals during the contract period. The ownership of all documents, supplied by the Bidder, will be with MCB. Documents shall be submitted in two copies each in printed (duly hard bound) & in softcopy formats.

Helpdesk Setup

The Successful Bidder will set up a 24X7 centralized Helpdesk for the Project for the entire Contract Period. The Helpdesk will handle user queries and issues relating to implemented solution.

The Helpdesk is required to ensure that users can log calls and complaints for any technical issues they face while accessing the system. The following is included in the scope of work of the Bidder: The Helpdesk to have Interactive Voice Response (IVR) system for first level of call segregation; Accordingly Standard Operating Procedures (SOPs) shall be created by the Successful Bidder.

In addition to the telephone call, the Successful Bidder shall also provide other channels for call logging like email and web interface like Whattsapp or any other electronic media and also have to respond to every Written complaint.

Following is also part of scope of work of the Successful Bidder: (a) Development of training material for MCB employees (b) training to be imparted to MCB (c) provision of Call center

application (d) Development of standard operating procedures with call prioritization guidelines, problem security codes and escalation procedures etc. in consultation with MCB (e) Helpdesk related infrastructure. Language Capabilities: Hindi, English and Punjabi. The service window for Help Desk is 365X24X7 (Monday to Sunday);

The call statistics will be analyzed every quarter after Go-Live and the number of Customer Care Executives may be ramped up or down accordingly on a week's notice.

The Bidder shall deploy Helpdesk application accessible to all users through the portal for logging issues and the Bidder to provision for inbound calls.

Capacity Building

The Successful Bidder need to provide training and capacity building to MCB employees and other stakeholders as directed by MCB. The following is a broad level scope.

The Bidder will prepare all the requisite audio/visual training aids that are required for successful completion of the training for all stakeholders. These include the following for all the stakeholders: Training manuals for MCB employees / stakeholder departments; Computer based training modules; Presentations; User manuals; Operational and maintenance manuals for Smart Components implemented; and Regular updates to the training aids prepared under this project.

The Successful Bidder will maintain a copy of all the training material on the portal and access will be provided to relevant stakeholders depending on their need and role. The access to training on the portal would be finalized with MCB. The Successful Bidder has to ensure the following points:

For each training session, the Successful Bidder has to provide the relevant training material copies to all the attendees.
The contents developed shall be the property of MCB with all rights.

The Successful Bidder has to ensure that the training sessions held are effective and that the attendees would be able to carry on with their work efficiently. For this purpose, it is necessary that the effectiveness of training sessions is measured. The Bidder will prepare a comprehensive feedback form that will capture necessary parameters on measuring effectiveness of the training sessions. This form will be discussed and finalized with MCB.
After each training session, feedback will be sought from each of the attendees on either printed feedback forms or through a link available on the web portal. One member of the stakeholder group would be involved in the feedback process and he/she has to vet the feedback process. The feedback received would be reported to MCB for each training session.

Hand-over of the system at the end of contractual period

The Bidder will supply to the MCB the following before the expiry of the contract:

Information relating to the current services rendered and data relating to the performance of the services; Entire documentation relating to various components of the Project, any other data and confidential information related to the Project.

All other information (including but not limited to documents, records and agreements) relating to the products & services related to the Project to enable MCB and its nominated agencies, or its

replacing the Bidder to carry out due diligence in order to transition the provision of the Project Services to MCB or its nominated agencies, or its replacing the Bidder (as the case may be).

7.10 Technical Specification

7.10.1 Standard LED & Central Control & Monitoring System (CCMS) specifications

The LED Streetlight system consists of three parts:

- LED
- Luminaire
- Driver

The typical specifications for LED street lights are as follows:

Table : Typical specifications for LED street lighting

S. No.	Typical specifications of LED street lights	Supporting document
(a)	High bright white power LEDs shall be used in the luminaries and the wattage of these LEDs shall be < 3W with mandatory Modular Lenses.	LED Technical Data sheet
(b)	Life span of LEDs used in the Luminaire shall be more than 50,000 hours at 70% light output	LM-80/IS16105,L70 & TM 21 Test Report test report including technical data sheet of LED Chip
(c)	Colour rendering index (CRI) of the LEDs used in the luminaire shall be greater than 70	
(d)	LED chip make – NICHIA/PHILIPS LUMILED / CREE/ OSRAM	
(e)	LED chip efficacy shall be more than 135 Lumens/watt at Tj 25° C	LED Technical Data Sheet
(f)	Junction Temperature (Tj) should be <105^{o} C	Manufacturer self-certify
(g)	Photo Biological Safety Report for the LEDs as per IEC 62471 and assessment of blue light as per IEC/TR 62778 – Ed. 1.0	Photo Biological Safety Report
(h)	Colour temperature of the luminaire shall be in the range of nominal 3,000 K to 3,500 K for replacement of 250 W HPSV at main roads and 5000 K to 6000 K for balance+B12:D24 LED's (CCT as per BIS only)	LM-79 report for both type of LED's to be submitted by the bidder
(i)	Power factor > 0.95	LM-79 report
(j)	System Efficacy Shall be min.110 lumens/watt (lumen/watt) or more	LM-79 report
(k)	CRI of Luminaries > 70	LM-79 report
(l)	Lumen depreciation for rated life <10%	LM 80 Report to be submitted and Manufacturer has to self-certify

(m)	The luminaire light output (lumen) shall be constant. The voltage variations / fluctuations in the specified voltage range shall not impinge upon the lumen it produces. Maximum +/-2% is allowed throughout in the input operating voltage range		LM-79 report
(n)	Operating voltage: 120 V to 270V universal electronic driver with internal surge protection of 4 KV (Applicability IS 15885, Driver Safety 16104-1/2)		NABL accredited lab report
(o)	Over-voltage cut off limit > 295 V		NABL accredited lab report
(p)	Total Harmonic Distortion: < 10% THD - Test Method IEC:610003-2		NABL accredited lab report
(q)	LED Drive current <750 mA		LM-79 report
(r)	Driver Type	Potted Only	
(s)	LED driver Efficiency > 85%		LM-79 report
(t)	Heat dissipation / heat sink: Well-designed thermal management system with defined heat sink		NABL accredited lab report
(u)	The luminaire housing shall be made up of corrosion free High Pressure Aluminum die cast thus conforming the luminaire to minimum IP-66 for all wattages and safety as per IEC 60598/IS 10322. (Only single housing fixtures allowed).		NABL accredited lab report
(v)	The luminaire shall be equipped with distortion free, clear, heat resistant, toughened, UV stabilized glass / Poly-carbonate cover in the front fixed to the die cast Aluminum frame which shall be fixed to the housing by means of Corrosion resistant or Brass screws for areas not inside IP66 rated chamber. Zinc plated steel or equivalent screws can be applied inside sealed chambers.		NABL accredited lab report
(w)	The luminaire shall be built in such a way that it can withstand wind speed of 150 kmph. (Impact resistance>=IK07)		NABL accredited lab report
(i)	Frequency	50Hz +/- 3%	
(ii)	Operating Temperature Range	10C to +50C	NABL accredited lab report
(x)	Protections	IP66 for all type of lamps to be installed Surge protection 4 kV, IEC61000-4-5	NABL accredited lab report
(y)	Working humidity	10% to 90% RH	

(z)	Conformation standards of luminaire (Test reports of luminaire)	The luminaire should conform to IEC 60598/ IS:10322 The luminaire should be tested as per IEC 60598-2-3:2002/ IS:10322 Part 5 Sec-3 standards and following test reports should be submitted: Thermal Test, Ingress Protection Test, Electrical / Insulation Resistance Test, Endurance Test, Humidity Test , Photometry Test (LM79 report), Vibration Test	From NABL Certified TPL Test report TEST REPORT as per IS:10322 part 5 Sec-3 /IEC:60598-2-3
(aa)	Finishing/Painting	Aesthetically designed housing of LED luminarie both from inside and outside should be spray painted / corrosion resistant polyester powder coating.	Self-Declaration
(ab)	Luminaire configuration / Technical Requirement	Shall consist of separate optical and control gear compartments. It should be easy replaceable in the field condition.	Self-Declaration
(ac)	Compliance	RoHS/CE/ERTL/ERDI	Confirmation
(ad)	Surge Protection	Internal Min. 4KV (driver based) and External Surge protection of minimum 10 kV/ 10 kA to be separately installed with the each fixture.	As per ANSI C 136.2-2014
(ae)	Body of fitting	Pressure die cast aluminum housing with control gear (minimum IP66 or more with company name or logo engraved / embossed in the housing LM6 grade.	
(af)	LED Binning	Class I binning	Certification
(ag)	Glare control	Luminarie light distribution should have zero candela intensity at an angle of 90 degree or more.	Photometric Report
(ah)	Marking 1. Year of manufacture 2. Voltage (V)	To be engraved / laser printed on fixture/riveted plate / very good quality laminated sticker.	

	3.Wattage(W) 4. Batch No./ Serial No.		

Quality Control:-

Pre dispatch Inspection: *Pre dispatch inspection may be carried out by the group of engineers at manufacture's premises / NABL lab at the cost of manufacturer company or tender quoting agency on the behalf of manufacturer.*

(a) ***Testing of Samples (Post Arrival at site):*** *Random Samples may be sent to reputed nationalized accredited NABL laboratories as per the entire satisfaction of EIC and their testing charges will be deducted from the payment as per the quantity control GCC clause of the agreement.*

Central Control & Monitoring System (CCMS) specifications

Streetlight networks are strategic assets for cities. Streetlights illuminate the roads we drive on, the pedestrian paths we walk along and the public areas where we gather. It provides us with safe roads, safer public areas and enhanced security in our homes, businesses and city centres.

Advantages of using CCMS to monitor and control the street lights

The key advantages of using a CCMS include:

- **Reduced power consumption:** Power consumption gets reduced due to improved control of street lights.
- **Enhanced maintenance operation:** CCMS results in automatic identification of failures, real-time control of any individual lamp, increase lamp lifetime, reduce onsite maintenance costs; remove night patrols, automatic generation of alarms and notification to operations managers and crews to optimize their maintenance schedules.
- **Enhancing the quality of lighting on the streets:** The streets are lit to the right level but only at the right time e.g. when traffic/pedestrian loads are less dense on the streets, the street lights should dim to a lower level but owing to security constraints in BATHINDA non dimmable type LEDs are being used.
- **Open platform for monitoring:** CCMS are deployed using an open platform technology allowing the end user to decide on how they would prefer to monitor the street lights.
- Increase security and safety in the streets and on the roads.
- Exchange valuable data with various Network Maintenance Tools, Demand/ Response systems and Geographical Information Systems.

A CCMS system must be able to carry out three basic tasks of monitoring, controlling and scheduling.

Figure 7: Basic functions of a CCMS

The components of an intermediate CCMS system include:

Controller and Metering unit

- Schedule the timing of lights (pre-programmed based on astronomical clock and on field and through central control).
- ON / OFF Switch (on field or centrally).
- Capture the energy usage and other parameters at pre-determined interval and store data for 30 days.
- Ability to connect with a communication device.
- Ability to download data in field.
- System protection against surges.

Enclosure

- Even both controller and communication are utilized it should be a single compact unit.
- Should be tested for tropical conditions & be made of fire resistant FRS material.

Communication Module

- Ability to communicate securely with via cellular networks (GSM / GPRS).
- Two-way communicator.
- Ability to send data regarding energy usage, ON/OFF status etc. from controller.
- Ability to give commands from a central level for switching ON/OFF, scheduling etc.

Software

- A web-based / mobile based software package with a detailed information dashboard.
- This software shall be hosted/Installed in the office of BATHINDA Municipal Corporation.
- The Virtual machine requirements for hosting the software shall be provided by the vendor and he shall be allocated Virtual Machine with required configuration to host the CCMS.
- CCMS shall have ability to show the status of each controller on the dashboard.
- CCMS shall have ability to schedule and switch ON/OFF controllers remotely through the dashboard.

- CCMS shall have ability to incorporate logics to determine fault detection and power thefts. The responsibility to remove any kind of unauthorized connections or thefts rests with the agency/bidder.

Table 17: CCMS technical specifications

S. No	Features	Description
1	**Operational Features**	The CCMS unit should be capable of switching ON and OFF the lights of a particular switching point and/or networked switching points from Central Control Station instantaneously or automatically throughout the year on basis of sunrise and sunset time depending on the geographical location of the switching point. The CCMS unit should be a GPRS and/or GSM (with IMEI number) proven technology based remote streetlight monitoring system with capacity for self- protection from short-circuit, over voltage and anti- theft alert. The CCMS unit should have a battery backup of at least 12 hours. The CCMS shall have optically isolated communication port to fetch data (this is required for safe data transfer and to protect unauthorized access). The rating of the CCMS units should be at least twice that of the lighting load.
2.	**Energy measurement and communication features**	• The CCMS unit Should be able to capture (record) and provide following parameters at variable time-intervals (Individual switching point wise and/or networked switching points) : ➢ Voltages ➢ Current ➢ Power Factor ➢ Active Power (kW) ➢ Apparent Power (kVA) ➢ Metering kWh cumulative ➢ Metering kVAh cumulative • Number of hours of a group of LED luminaries connected with each switch controller was glowing • Number of hours the power supply was unavailable Special emergency on/off facility with wireless control. • Benchmarking capacity so as to generate alert SMS for: ➢ Phase-wise currents on crossing threshold values* ➢ Phase-wise voltages on crossing threshold values* ➢ MCB trips ➢ Theft alerts ➢ Group failure of lights ➢ No output supply • Alert SMS shall be forwarded to 5 (five) phone numbers. • CCMS should have provision for incorporating monitoring and control of smart solutions like environmental meters, wifi hotspots, etc. • Class 1.0 accuracy Energy Meter with ISI marking/IS-13779 is to be used for power measurement. Type testing report from NABL Accredited Lab to be

		provided. It is to be calibrated annually. * Please refer the technical specifications for designing the threshold Values for voltage and current.
3.	**Web based - Application**	Central Control and Monitoring System functionalities • CCMS shall have a web-server to receive and record all data with time stamping from the streetlight controllers. • It should be able to communicate with any individual switching points or collectively amongst networked switching points for control and monitoring. • It should able to record LED luminaries glowing and non-glowing hours of a particular switching point. • It should be able to display the power failure details of a particular switching point and the relevant luminaries. • It should register all fault conditions like excess voltage/current drawn, no-power supply, etc. through the instantaneous alert messages sent by the CCMS unit. • Reports such as energy saving report, lamp failure report, actual hours of operation, uptime (%), etc. should be generated on a daily basis from the data/readings received from the CCMS units. • Different user authorization levels should be settable and the central server should be capable of handling heavy traffic, i.e. the number of LED street lights installed in wards under this program. • GIS Mapping should be done covering all switching points and the details of each switch point shall be viewable in the web application software through a Google-map interface or web based digital map. • All the CCMS units should be remotely configured from the Central Control Unit: ➢ Setting new ON/OFF timings ➢ The Real Time Clock(RTC) of the Automation Unit shall be synced over network using NTP protocol from a NTP server. ➢ Knowing current status of particular switching point. ➢ Reset the unit. • The minimum interval for the update of data should be 15 minute but programmable up to 1 minute. • Auto synchronization of controller with NTP server timing to be further synchronized with standard GPS clock timing. • The system monitors all the following from the CCMS unit ➢ Voltages each phase ➢ Current each phase ➢ PF each phase ➢ Metering kWh cumulative ➢ Metering kVAh ➢ Further system is able to indicate various faults ➢ Failure of contactor ➢ Status of the incoming supply (power failure)

		➢ High /low voltage ➢ Overload on the phases • The central CCMS unit is capable of handling minimum 5000 number switching point units. • CCMS shall have server preferably dedicated server set- up or cloud based arrangement to ensure 100% guarantee of the data transmission and real time data storage for last 2 (two) years (24 (twenty four) Months) and archived data for the contract period. • Data authenticity and validation has to be ensured. • Reports to be submitted in a common CVS format. • Cyber security, safe database management, data retrieval and trouble free operation of software and allied systems (24*7) to be ensured. • CCMS system should have a self-healing mechanism and in case of failure, Bidder to ensure resumption of service within 24 hours. Till resumption of full services, the default settings of the CCMS should ensure timely ON/ OFF operation of the street lights. • System to report Jamming/ hacking attempts and maintain status-quo in case of Jamming/ hacking attempts i.e. if lights are ON, they should remain ON till the default OFF time recorded in the system. In case lights are OFF at the time of Jamming attempt/ hacking, lights should remain OFF till default ON time recorded in the system.

The Successful Bidder will manage (warranty, operation, maintenance, web-based portal, communication charges) the installed CCMS units for the contract period. The feature proposed for CCMS is indicative.

However, the Successful Bidder is free to offer their lighting control technology which should encompass all key features as above.

Section – VIII General Conditions of Contract ("GCC")

These General Conditions of Contract ("**GCC**"), read in conjunction with the Particular Conditions of Contract ("**PCC**") and other documents listed therein, should be a complete document expressing fairly the rights and obligations of both parties.

1. Definitions

1.1 Bold face types are used in GCC and PCC to identify the terms defined below :

a. Accepted Contract Amount: the Accepted Contract Amount means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects.

b. **Adjudicator**: the Adjudicator is the person appointed jointly by the Employer and the Contractor to resolve disputes in the first instance, as provided for in GCC 20.

c. **Employer** means ***COMMISSIONER, MUNICIPAL CORPORATION BATHINDA*** **.**The Employer is the party who employs the Contractor to carry out the Works, as per RFP Conditions.

d. **Bill of Quantities**(BOQ): Bill of Quantities means the priced and completed Bill of Quantities forming part of the Bid.

e. Compensation Events: Compensation Events are those defined in the GCC Clause 36 hereunder.

f. Completion Date: the Completion Date is the date of completion of the Works as certified by the Engineer In Charge, in accordance with the GCC Sub-Clause 44.1.

g. Contract: the Contract is the Contract between the Employer and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in GCC Sub-Clause 2.2 below.

h. Contractor: the Contractor is the party/ successful bidder whose Bid to carry out the Works has been accepted by the Employer.

i. Contractor's Bid: the Contractor's Bid is the completed bidding document submitted by the Contractor to the Employer.

j. Contract Price: the Contract Price is the Accepted Contract Amount stated in the Letter of Acceptance and thereafter as adjusted in accordance with the Contract.

k. Days: Days are calendar days; months are calendar months.

l. Day-works: Day-works are varied work inputs subject to payment on a time basis for the Contractor's employees and Equipment, in addition to payments for associated Materials and Plant.

m. Defect: A Defect is any part of the Works not completed in accordance with the Contract and also includes any shortcoming/ fault which may appear due to any deficiency in Works.

n. Defects Liability Certificate: the Defects Liability Certificate is the certificate issued by the Engineer In Charge upon correction of defects by the Contractor.

o. **Defects Liability Period:** the Defects Liability Period is 08 (Eight) years from the Date of completion of work in all respect and issuance of completion Certificate pursuant to Sub-Clause 30.1

p. Drawings: Drawings means the drawings of the Works, as included in the Contract, and any additional and modified drawings issued by (or on behalf of) the Employer in accordance with the Contract, include calculations and other information provided or approved by the Engineer In Charge for the execution of the Contract.

q. Equipment: Equipment means the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

r. "In writing" or "written" means hand-written, type- written, printed or electronically made, and resulting in a permanent record;

s. Initial Contract Price: the Initial Contract Price is the Contract Price listed in the Employer's Letter of Acceptance.

t. **Intended Completion Date**: the Intended Completion Date is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date for whole of the works shall be 06 (six) months from the date of signing the contract. The Intended Completion Date may be revised only by the Engineer In Charge by issuing an extension of time or an acceleration order.

u. Materials: Materials are all supplies, including consumables, used by the Contractor for incorporation in the Works.

v. Plant is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function.

w. The **Engineer In Charge** is a Competent person appointed by the Employer and notified to the Contractor Engineer In Charge) who is responsible for supervising the execution of the Works and administering the Contract.

The Engineer In Charge is *[shall be nominated by MCB after Award of Contract]*

x. PCC means Particular Conditions of Contract.

y. The Site is located within jurisdictional area of Municipal Corporation Bathinda
Site Investigation Reports are those that were included in the Bidding Document and are factual and interpretative reports about the surface and subsurface conditions at the Site

z. **Specification**s means the Specification of the Works included in the Contract and any modification or addition made or approved by the Engineer In Charge.

aa. The Start Date is the latest date when the Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.

bb. Subcontractor: A Subcontractor is a person or corporate body who has a contract with the Contractor to carry out a part of the work in the Contract, which includes work on the Site.

cc. Temporary Works: Temporary Works are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works.

dd. Variation: A Variation is an instruction given by the Project Manager which varies the Works.

ee. The Works are what the Contract requires the Contractor to construct, install, and turn over to the Employer & are defind as Works of Implementing Smart LED Street Lights and Centralized Control& Monitoring System on EPC Mode with Operation and Maintenance of 8 (Eight) years in Municipal Corporation, BATHINDA.

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2. Interpretation

2.1 In interpreting these GCC, words indicating 1 (one) gender include all genders. Words indicating the singular also include the plural and words indicating the plural also include the singular. Headings have no significance. Words have their normal meaning under the

language of the Contract unless specifically defined. The Engineer In Charge shall provide instructions clarifying queries about these GCC.

2.2 The documents forming the Contract shall be interpreted in the following order of priority:

(a) Agreement,
(b) Letter of Acceptance,
(c) Contractor's Bid,
(d) Particular Conditions of Contract,
(e) General Conditions of Contract, including Appendices
(f) Specifications
(g) Drawings
(h) Bill of Quantities, and
(i) any other document listed in the PCC as forming part of the Contract.

3. Language and Laws

3.1 The language of the Contract is ENGLISH and the law governing the Contract is the Law of INDIA.

3.2 Throughout the execution of the Contract, the Contractor shall comply with the import of goods and services prohibitions in the Employer's country as a matter of law or official regulations; the Employer's country prohibits
commercial relations with that country.

4. Projects Manager's Decisions

4.1 Except where otherwise specifically stated, the Engineer In Charge shall decide contractual matters between the Employer and the Contractor in the role representing the Employer.

5. Delegation

5.1 The Engineer In Charge may delegate any of his duties and responsibilities to other people/Employee except to the Adjudicator, after notifying the Contractor, and may revoke any delegation after notifying the Contractor.

6. Communications

6.1 Communications between parties that are referred to in the Conditions shall be effective only when in writing. A notice shall be effective only when it is delivered and receipt is obtained against the delivery of the notice.

7. Sub-contracting

7.**1** **Sub-Contracting shall not be allowed** under this Contract.

8. Personnel and Equipment

8.1 The Contractor shall employ the key personnel and use the equipment identified in its Bid, to carry out the Works or other personnel and equipment approved by the Engineer In Charge. The Engineer In Charge shall approve any proposed replacement of key personnel and equipment only if their relevant qualifications or characteristics are substantially equal to or better than those proposed in the Bid.

[insert the name/s of each Key Personnel agreed by the Employer prior to Contract signature.]

8.2 If the Engineer In Charge asks the Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within 7 (seven) days and has no further connection with the work in the Contract. The reasons to remove a person include behavior which breaches the Code of Conduct (EHS) (e.g. spreading communicable diseases, sexual harassment, gender based violence, illicit activity or crime etc)."

8.3 If the Employer, Engineer In Charge or Contractor determines, that any employee of the Contractor is engaged in Fraud and Corruption during the execution of the Works, then that employee shall be removed in accordance with Clause 8.2 above.

9. Employer's Risks

9.1 From the Start Date until the Defects Liability Certificate has been issued, the following are Employer's risks:

- The Employer is responsible for the excepted risks which are in so far as they directly affect the execution of the Works in India, the risks of war, hostilities, invasion, act of foreign enemies, rebellion, revolution, insurrection or military or usurped power, civil war, riot commotion or disorder (unless restricted to the Contractor's employees) and contamination from any nuclear fuel or nuclear waste or radioactive toxic explosive,(b) a cause due solely to the design of the Works, other than the Contractor's design.
- From the Completion Date until the Defects Liability Certificate has been issued, the risk are Employer's risk except loss or damage due to :
    a) a Defect which existed on the Completion Date,
    b) an event occurring before the Completion Date, which was not itself an Employer's risk, or the activities of the Contractor on the Site after the Completion date

10. Contractor's Risks

10.1 From the Starting Date until the Defects Liability Certificate has been issued, all risks of loss of or damage to the Works, Plant, Materials and loss of or damage of physical property & of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks referred in Clause 9.1, are the responsibility of the Contractor.

11. Insurance

11.1 The Contractor shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the PCC for the following events which are due to the Contractor's risks:

a. loss of or damage to the Works, Plant, and Materials;
b. loss of or damage to Equipment .
c. loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract; and
d. personal injury or death.

11.2 Policies and certificates for insurance shall be delivered by the Contractor to the Engineer In Charge for the Engineer In Charge's approval before the Start Date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

11.3 If the Contractor does not provide any of the policies and certificates required, the Employer may affect the insurance which the Contractor should have provided and recover the premiums that the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.

11.4 Alterations to the terms of an insurance shall not be made without the approval of the Engineer In Charge.

11.5 Both parties shall comply with any conditions of the insurance policies.

12. Site Data

12.1 The Contractor shall be deemed to have examined all the Site Data within MCB jurisdiction.

13. Contractor Works

13.1 The Contractor shall construct and install the work in accordance with the Specifications as per RFP & Drawings.

13.2 The Contractor shall be responsible for maintaining the safety of all activities on the site, including smooth flow of traffic at his own cost as per guidelines including any amendment(s) of the IRC/MORT&H/PWD/CPWD or any other guidelines, orders of the Courts/ Tribunals and notifications issued by the Government of India and/ or State Government in this regard.

13.3 In respect of all labour directly or indirectly employed in the work for the performance of the Contractor's part of this Contract, the Contractor shall at his own expense arrange for the safety provisions as per Safety Code framed from time to time and shall at his own expense provide for all facilities in connection therewith. In case the Contractor fails to make arrangement and provide necessary facilities as aforesaid, the Employer shall be at liberty to make arrangement and provide facilities as aforesaid and recover the costs incurred in that behalf from the Contractor. The decision of the Engineer in this regard shall be final and no claim on account of this shall be entertained.

14. The Works to Be Completed by the Intended Completion Date

14.1The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Program submitted by the Contractor, as updated with the approval of the Engineer In Charge, and complete them by the Intended Completion Date.

14.2 **ESHS Management Strategies and Implementation Plans**

The Contractor shall not commence any Works, including mobilization and/or pre-construction activities (e.g. limited clearance for haul roads, site accesses and work site establishment, geotechnical investigations or investigations to select ancillary features such as quarries and borrow pits), unless the Engineer In Charge is satisfied that appropriate measures are in place to address environmental, social, health and safety risks and impacts. At a minimum, the Contractor shall apply the Management Strategies and Implementation Plans and Code of

Conduct, submitted as part of the Bid and agreed as part of the Contract. These Management Strategies and Implementation Plans collectively comprise the Contractor's Environmental and Management Plan (C-EMP). The C-EMP shall be approved prior to the commencement of construction activities (e.g. excavation, earth works and structure works, stream and road diversions, quarrying or extraction of materials, concrete batching etc). The approved C-EMP shall be reviewed, periodically (but not less than every three (3) months), and updated in a timely manner, as required, by the Contractor to ensure that it contains measures appropriate to the Works activities to be undertaken. The updated C-EMP shall be subject to prior approval by the Engineer In Charge.

15. Approval by the Engineer In Charge

15.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to EIC for his approval.

15.2 The Contractor shall be responsible for design of Temporary Works.

15.3 The Engineer In Charge's approval shall not alter the Contractor's responsibility for design of the Temporary Works.

15.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, where required.

15.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Engineer In Charge before its use. In case of dispute, if any, decision of the COMMISSIONER, MCB will be final and binding.

The Contractor shall arrange the third party inspection of the work from officials to be designated later. It is deemed that the cost of the third party inspection is included in the rates of the work. No extra cost shall be paid by the Employer on this account .

16. Safety

16.1 The Contractor shall be responsible for the safety of all activities on the Site including personnel and equipment. The Contractors shall follow all the applicable rules and regulations of the Employer's country pertaining to the safety of the personnel and material.

17. Discoveries

17.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site shall be the property of the Employer. The Contractor shall notify the Engineer In Charge of such discoveries and do or omit to do all such acts/ deeds to carry out the Engineer In Charge's instructions for dealing with them.

18. Possession of the Site

18.1 The Employer shall give possession of all parts of the Site to the Contractor. The Site possession date shall be date of signing the Contract agreement. If possession of a part is not given by the above mentioned date (except when the delay is caused due to circumstances arising out of events which cannot be foreseen/ avoided by the Employer like natural calamities, flood, earthquake, war, internal disturbance, etc.), the Employer shall be deemed to have delayed the start of the relevant activities, and this shall be a Compensation Event.

19. Instructions, Inspections and Audits

19.1 The Contractor shall carry out all instructions of the Engineer In Charge which comply with the applicable laws where the Site is located.

19.2 The Contractor shall keep, and shall make all reasonable efforts to cause its personnel to keep, accurate and systematic accounts and records in respect of the Works in such form and details as will clearly identify relevant time changes and costs.

19.3 The Contractor shall permit and shall cause its personnel to permit, the Employer and/or persons appointed by the Employer to inspect the Site and/or the accounts and records relating to the performance of the Contract and the submission of the Bid, and to have such accounts and records audited by auditors appointed by the Employer if requested by the Employer. The Contractor's and its 'Personnel' attention is drawn towards Sub-Clause 22.1 which provides, inter alia, that acts intended to materially impede the exercise of the Employer's inspection and audit rights provided for under Sub-Clause 19.2 constitute a prohibited practice subject to the Contract termination (as well as to a determination of ineligibility pursuant to the Employer's prevailing sanctions procedures).

20. Appointment of the Adjudicator

20.1 The Adjudicator shall be appointed jointly by the Employer and the Contractor, at the time of the Employer's issuance of the Letter of Acceptance. If, in the Letter of Acceptance, the Employer does not agree on the appointment of the Adjudicator, the Employer may ask the Appointing Authority designated in the PCC to appoint the Adjudicator within 14 (fourteen) days of receipt of such request.

20.2 In the event, the Adjudicator resign or die, or should the Employer and the Contractor agree that the Adjudicator is not functioning in accordance with the provisions of the Contract, a new Adjudicator shall be jointly appointed by the Employer and the Contractor. In case of disagreement between the Employer and the Contractor, within 30 (thirty) days, the Adjudicator shall be designated by the Appointing Authority designated in the PCC at the request of either party, within 14 (fourteen) days of receipt of such request.

21. Procedure for Disputes

21.1 If the Contractor believes that a decision taken by the Engineer In Charge was either outside the authority given to the Engineer In Charge by the Contract or that the decision was wrongly taken, the decision shall be referred to the Adjudicator within 14 (fourteen) days of the notification of the Engineer In Charge's decision.

21.2 The Adjudicator shall give a decision in writing within 28 (twenty eight) days of receipt of a notification of a dispute.

21.3 The Adjudicator shall be paid by the hour at the rate specified in the PCC**,** together with reimbursable expenses of the types specified in the PCC, and the amount paid as a fee to the Adjudicator shall be divided equally between the Employer and the Contractor, whatever decision is reached by the Adjudicator. Either party may refer the decision of the Adjudicator to an Arbitrator within 28 (twenty eight) days of the Adjudicator's written decision. If neither party refers the dispute to arbitration within the above 28 (twenty eight) days, the Adjudicator's decision shall be final and binding.

21.4 The Arbitration shall be conducted in accordance with the arbitration procedures published by the institution named and in the place specified in the PCC. The Arbitration proceedings shall

comply with the provisions of the Arbitration and Conciliation Act, 1996 (as amended from time to time).

22. Fraud and Corruption

22.1 The Employer requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Appendix to the GCC.

22.2 The Employer requires the Contractor to disclose any commissions or fees that may have been paid or are to be paid to agents or any other party with respect to the Bidding process or execution of the Contract. The information disclosed must include at least the name and address of the agent or other party, the amount and currency, and the purpose of the commission, gratuity or fee.

The Employer shall carry out its obligations as mentioned in the Contract in accordance with the Good Industry Practice.

23. Labour & compliance with labour Regulation

23.1. The Contractor shall unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or otherwise, and for their payment, housing, feeding and transportion.

23.2. The Contractor shall, if required by the Engineer, deliver to the Engineer a return in detail, in such form and at such intervals as the Engineer may prescribe, showing the staff and the number of several classes of labour from time to time employed by the Contractor on the Site and such other information as the Engineer may require.

23.3. The Contractor and his Sub-contractors shall abide at all times by the all existing labour enactments and rules made there under, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed either by the State or the Central Government or the local authority. The Contractor shall keep the Employer indemnified in case any action is taken by the competent authority on account of violation of any of the provisions of the labour laws. If the employer is caused to pay or reimburse such amounts as may be necessary to cause or observe or for non observance of the provisions stipulated in the notifications / bye laws / Acts / Rules / regulations including amendments, on the part of the Contractor, the Employer shall have the right to deduct this amount from any money due to Contractor including his amount of Performance Security. The Employer shall also have the right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.

23.4 The employees of the Contractor and the Sub-contractors in no case shall be treated as the employees of the Employer at any point of time.

24. Ecological Balance

24.1. The Contractor shall maintain the ecological balance by preventing deforestation, water pollution and defacing of natural landscape. The Contractor shall so conduct his Work/ operations as to prevent destruction, scarring or defacing of natural surroundings in the vicinity of work or damage to any tree, shrub or water course unless any of same is specifically required to be cleared or removed for Works. Such removal shall only be done with prior approval of Engineer who may require the Contractor to do compensatory plantation at his cost.

242. No separate payment shall be made for compliance with provisions of this clause and all cost shall be deemed to have been included in the bid.

24.3. The Contractor shall make his own arrangement for the disposal of the spoils from the Works to such place where the same shall not cause nuisance and should be acceptable to the authorities concerned.

25. Program (Time)

25.1 Within 15(fifteen) days after the date of the Letter of Acceptance, the Contractor shall submit to the Engineer In Charge for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works.

25.2 An update of the Program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including any changes to the sequence of the activities.

"In addition to the progress report, the Contractor shall also provide a report on the Environmental, Health and Safety (EHS) metrics. In addition to Appendix A reports, the Contractor shall also provide immediate notification to the Engineer In Charge of incidents in the below-mentioned categories. Full details of such incidents shall be provided to the Engineer In Charge within the timeframe agreed with the Engineer In Charge.

(a) confirmed or likely violation of any law or international agreement;
(b) any fatality or serious (lost time) injury;
(c) significant adverse effects or damage to private property (e.g. vehicle accident, damage from fly rock, working beyond the boundary) major pollution of drinking water aquifer or damage or destruction of rare or endangered habitat (including protected areas) or species; Or
(d) any allegation of sexual harassment or sexual misbehavior, child abuse, defilement, or other violations involving children.

25.3 The Contractor shall submit to the Engineer In Charge for approval an updated Program at intervals no longer than the period of 30 days. If the Contractor does not submit an updated Program within this period, the Engineer In Charge may withhold the amount upto Indian rupees Two Lakh Fifty Thousand only(INR 2,50,000) from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program has been submitted. In the case of a lump-sum contract, the Contractor shall provide an updated Activity Schedule within 14 (fourteen) days of being instructed to by the Engineer In Charge.

25.4 The Engineer In Charge's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Engineer In Charge again at any time. A revised Program shall show the effect of Variations and Compensation Events .

26. Extension of the Intended Completion Date

26.1 The Engineer In Charge shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work, which would cause the Contractor to incur additional cost.

26.2 The Engineer In Charge shall decide whether and by how much to extend the Intended Completion Date within 21 (twenty-one) days of the Contractor asking him for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

27. Management Meetings

27.1 The Engineer In Charge may ask the Contractor to attend the management meetings. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure.

28. Identifying Defects

28.1 The Engineer In Charge shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Engineer In Charge may instruct the Contractor to search for a Defect and to uncover and test any work that the Engineer In Charge considers may have a Defect

29. Tests

29.1 If the Engineer In Charge instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect, the test shall be a Compensation Event.

29.2 The Contractor shall constitute quality assurance system to demonstrate compliance with the requirements of the Contract. The system shall be in accordance with the details stated in the Contract. The Engineer In Charge shall be entitled to audit any aspect of the system.

29.3 Details of all procedures and compliance documents shall be submitted to the Engineer in Charge for information before each design and execution stage is commenced. When any document of a technical nature is issued to the Engineer In Charge, evidence of the prior approval by the Contractor himself shall be apparent on the document itself.

29.4 The Engineer In Charge will be free to conduct surprise, random or in situ checks any time during the execution and after the completion of the work but not later than the Defect Liability Period, so as to have cross check in quality of works/projects and compliance to specifications and standards at all stages of the Work.

29.5 Nothing in this clause shall reduce the overall responsibility of the Contractor regarding quality and the Contractor.

30. Correction of Defects & Operation and maintenance

30.1 The Engineer In Charge shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion**.** The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

30.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Engineer In Charge's notice. If the Contractor has not corrected a Defect within the time specified in the Engineer In Charge's notice, the Engineer In Charge shall assess the cost of having the Defect corrected, and the Contractor shall pay this amount.

30.3 Operation and Maintenance period is 8 (Eight) years from the date of completion of contract as per schedule mentioned in Section VII- Works Requirement.

31. Contract Price

31.1 The Bill of Quantities shall contain priced items for the Works to be performed by the Contractor. The Bill of Quantities is used to calculate the Contract Price. The Contractor will be paid for the quantity of the Work accomplished at the rate in the Bill of Quantities for each item.

32. Changes in the Contract Price

32.1 The Engineer shall have power to make any variations, alterations omission, additions to or substitutions for the original specifications, drawings, designs and instructions that may appear to be necessary or advisable during the progress of the Work, and the Contractor shall be bound to carry

out the Work in accordance with any instructions which may be given to him in writing, signed by the Engineer. Such alterations/ additions/substitutions shall not invalidate the contract and shall be carried out by the Contractor on the same conditions in all respect on which he agreed to do the main work. The time of completion of the work shall be extended in the proportion that the altered, additional or substituted works bears to the original contract work and the certificate of the Engineer shall be conclusive as to such proportion.

32.2. If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25% (twenty five percent), provided the change exceeds 10 % (Ten percent) of the Initial Contract Price, the Engineer In Charge shall adjust the rate to allow for the change, duly considering:

- Justification for rate adjustment as furnished by the Contractor.
- Economies resulting from increase in quantities by way of reduced plant, equipment and overhead costs.
- Entitlement of the Contractor to compensation events where such events are caused by any additional work.
- The revised rates will be applicable to the quantity that exceeds 25% (twenty five percent) limit and not on the entire quantity.

32.3 The Engineer In Charge shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 15% (fifteen percent), except with the prior approval of the Employer.
32.4 If requested by the Engineer In Charge, the Contractor shall provide the Engineer In Charge with a detailed cost breakdown of any rate in the Bill of Quantities.

33. Variation

33.1 All Variations shall be included in updated Programs produced by the Contractor.

33.2 The Contractor shall provide the Engineer In Charge with a quotation for carrying out the Variation when requested to do so by the Engineer In Charge. The Contractor shall also provide information of any EHS risks and impacts of the Variation. The Engineer In Charge shall assess the quotation, which shall be given within 7 (seven) days of the request or within any longer period stated by the Engineer In Charge and before the Variation is ordered.
33.3 If the Work in the Variation corresponds to an item description in the Bill of Quantities and if, in the opinion of the Engineer In Charge, the quantity of Work above the limit stated in Sub-Clause 32.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work.

33.4 If the Contractor's quotation is unreasonable, the Engineer In Charge may order the Variation and make a change to the Contract Price, which shall be based on the Engineer In Charge's own forecast of the effects of the Variation on the Contractor's costs.

33.5 If the Engineer In Charge decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.

33.6 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.

33.7 Value Engineering: The Contractor may prepare, at its own cost, a value engineering proposal at any time during the performance of the contract. The value engineering proposal shall, at a minimum, include the following;

a. the proposed change(s), and a description of the difference to the existing Contract requirements;
b. a full cost/benefit analysis of the proposed change(s) including a description and estimate of costs (including life cycle cost) the Employer may incur in implementing the value engineering proposal; and
c. a description of any effect(s) of the change on performance/functionality.
d. The description of the proposed work to be performed, a programmed for its execution and sufficient EHS information to enable an evaluation of EHS risks and impacts;"

The Employer may accept the value engineering proposal if the proposal demonstrates benefits that:

a. accelerates the Contract Completion Period; or
b. reduces the Contract Price or the life cycle costs to the Employer; or
c. improves the quality, efficiency, safety or sustainability of the Facilities; or
d. yields any other benefits to the Employer without compromising the functionality of the Works

If the value engineering proposal is approved by the Employer and results in:

a. a reduction of the Contract Price; the amount to be paid to the Contractor shall be the percentage specified in the PCC of the reduction in the Contract Price; or
b. an increase in the Contract Price; but results in a reduction in life cycle costs due to any benefit described in (a) to (d) above, the amount to be paid to the Contractor shall be the full increase in the Contract Price .

34. Payment Certificates

34.1 The Contractor shall submit to the Engineer In Charge monthly statements with all requisite supporting documents of the estimated value of the work executed less the cumulative amount certified previously.

34.2 The requisite supporting documents shall contain, Request For Inspection (RFIs), measurements and Quantities (jointly measured by the representative of the Contractor and the Employer) of items of Work done since last bill, Copies of the quality control tests in specified format covering the work done since last bill, copies of the instructions recorded in the instruction book containing the instructions and compliance made thereof, covering the work done since last bill, applicable work done/as built drawings, details of approvals (as required) obtained. The Contractor shall submit all the bills on the printed/ computerized forms.

34.3 The Engineer In Charge shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor.

34.4 The value of work executed shall be determined by the Engineer In Charge.

34.5 The value of work executed shall comprise the value of the quantities of work in the Bill of Quantities that have been completed.

34.6 The value of work executed shall include the valuation of Variations and Compensation Events.

34.7 The Engineer In Charge may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

35. Payments

35.1 Payments shall be adjusted for deductions for retention. The Employer shall pay the Contractor the amounts certified by the Engineer In Charge within 28 (twenty eight) days of the date of each certificate.

35.2 If an amount certified is increased in a later certificate or as a result of an award by the Adjudicator or an Arbitrator, the Contractor shall be paid for the same.

35.3 Unless otherwise stated, all payments and deductions shall be paid or charged in the proportions of currencies comprising the Contract Price.

35.4 Items of the Works for which no rate or price has been entered in shall not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

35.5 The payment for the Operation and Maintenance shall be made quarterly on pro-rata basis. The Contractor shall submit the quarterly bill supported with requisite documents to the Engineer In Charge mentioning the details of the Operation and Maintenance done during the quarter. The payment will be made by the Engineer In Charge as per PCC.

36. Compensation Events

36.1 The following shall be Compensation Events:

(a) The Employer does not give access to a part of the Site by the Site Possession Date pursuant to GCC Sub-Clause 18.1.

(b) The Employer modifies the Schedule of Other Contractors in a way that affects the Work of the Contractor under the Contract.

(c) The Engineer In Charge orders a delay or does not issue Specifications, or instructions required for execution of the Works on time.

(d) The Engineer In Charge Unreasonably instructs the Contractor to uncover or to carry out additional tests upon work, which is then found to have no Defects.

(e) The Engineer In Charge gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons .

(h) Other contractors, public authorities, utilities, or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.

(i) The effects on the Contractor of any of the Employer's Risks.

(j) The Engineer In Charge unreasonably delays issuing a Certificate of Completion.

36.2 If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price may be increased and/or the Intended Completion Date may be extended. The EIC shall decide whether and by how much the Contract Price may be increased and whether and by how much the Intended Completion Date shall be extended.

36.3 As soon as information demonstrating the effect of each Compensation Event upon the Contractor's forecast cost has been provided by the Contractor, it shall be assessed by the Engineer In Charge, and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Engineer In Charge shall adjust the Contract Price based on the Engineer In Charge's own forecast. The Engineer In Charge shall assume that the Contractor shall react competently and promptly to the event.

36.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor's not having given early warning or not having cooperated with the Engineer In Charge.

37. Tax

37.1 The rates quoted by the Contractor shall be deemed to be inclusive of all the taxes, levies, duties etc. including their variations as notified by the concerned authority from time to time, and also of all the new taxes and levies that may be imposed that the Contractor will have to pay for the performance of this Contract. The Engineer In Charge on behalf of the Employer will perform such duties in regard to the deduction of such taxes at source as per applicable law.

37.2 The Contractor shall comply with the proper bye-laws and legal orders of the local body or public authority, authority under the jurisdiction of which the work is executed and pay all fees and charges for which he may be liable. Nothing extra shall be payable on this account.

38. Currencies

38.1 Where payments are made in currencies other than the currency of the Employer's country Currenncy i.e. Indian Rupees, the exchange rates used for calculating the amounts to be paid shall be the exchange rates stated in the Contractor's Bid.

39. Retention

39.1 The Employer shall retain from each payment due to the Contractor the proportion stated in the PCC until Completion of the whole of the Works.

39.2 Upon the issue of a Certificate of Completion of the Works by the Engineer In Charge, The amount retained shall be repaid to the Contractor in the first two installments and the retention money of O&M will be paid when the Defects Liability Period has passed and the Engineer In Charge has certified that all Defects notified by the Engineer In Charge to the Contractor before the end of this period have been corrected. The Contractor may substitute retention money with an "on demand" Bank guarantee.

40. Liquidated Damages

40.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the PCC for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount defined in the PCC. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's liabilities

If the Intended Completion Date is extended after liquidated damages have been paid, the Engineer In Charge shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate.

41. Advance Payment

No advance payment is made to the bidder.

42. Securities /Performance Security

42.1 The Performance Security (including additional security for unbalanced Bids) shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount specified in the PCC, by a bank acceptable to the Employer, and denominated in the types and proportions of the currencies in which the Contract Price is payable. The Performance Security shall be valid until a date 60 (sixty) days from the date of expiry of Defects Liability Period and

additional security for unbalanced bids shall be valid until a date 28 (twenty eight) days from the date of issue of the certificate of completion by the Engineer In Charge/Employer.

43. Cost of Repairs

43.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

44. Completion

44.1 The Contractor shall request the Engineer In Charge to issue a Certificate of Completion of the Works, and the Engineer In Charge shall do so upon deciding that the whole of the Works is completed.

45. Taking Over

45.1 The Employer shall take over the Site and the Works within 15 (fifteen) days of the Engineer In Charge's issuing a Certificate of Completion.

46. Final Account

46.1 The Contractor shall supply the EIC with a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Engineer In Charge shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 56 (fifty six) days of receiving the Contractor's account if it is correct and complete. If it is not, the Engineer In Charge shall issue within 56 (fifty six) days a schedule that states the scope of the corrections or additions t h a t a r e necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Engineer In Charge shall decide on the amount payable to the Contractor and issue a payment certificate.

47. Operating and Maintenance Manuals

47.1 If "as built" Drawings are required , the Contractor shall supply them within *15 (fifteen) days after the completion of the Contract period or with the Final Bill whichever is earlier.*
and/ or if as built Operation and Maintenance manuals are required, the Contractor shall supply them within *30 (thirty) days before the completion of the Contract period.*
47.2 If the Contractor does not supply the Drawings and/or manuals by the dates or they do not receive the Engineer In Charge's approval, the Engineer In Charge shall withhold the amount of Rs 5,00,000/- (*Indian Rupees Five Lakh Only)* from payments due to the Contractor.

48. Termination

48.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.
48.2 Fundamental breaches of Contract shall include any or all, but shall not be limited to, the following:

i. the Contractor stops work for 28 (twenty eight) days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Engineer In Charge;
ii. the Engineer In Charge instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 28 (twenty eight) days;
iii. the Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
iv. a payment certified by the EIC is not paid by the Employer to the Contractor within 84 (eighty four) days of the date of the Engineer In Charge's certificate;

v. the Engineer In Charge gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Engineer In Charge;

vi. the Contractor does not maintain a Security, which is required;

vii. the Contractor has delayed the completion of the Works by the maximum number of 60 (sixty) days for which the maximum amount of liquidated damages can be paid,

viii. if the Contractor, in the judgment of the Employer has engaged in Fraud and Corruption, as defined in paragraph 2.2 a of the Appendix A to the GCC, in competing for or in executing the Contract, then the Employer may, after giving 14 (fourteen) days written notice to the Contractor, terminate the Contract and expel him from the Site.

48.3 Notwithstanding the above, the Employer may terminate the Contract for convenience.

48.4 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.

NOTE: When either party to the Contract gives notice of a breach of Contract to the Engineer In Charge for a cause other than those listed under GCC Sub-Clause 48.2 above, the appointing authority mentioned in PCC shall decide whether the breach is fundamental or not.

49. Payment upon Termination

49.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer In Charge shall issue a certificate for the value of the work done and Materials ordered less retention money received up to the date of the issue of the certificate and less the percentage to apply to the value of the work not Completed. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable to the Employer.

NOTE: *The percentage to apply to the value of the Work not completed, representing the Employer's additional cost for completing the Works, is 20% (twenty percent).*

49.2 If the Contract is terminated for the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Engineer In Charge shall issue a certificate for the value of the work done, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works.

49.3 If the bidder stops to do the O&M Work during the Defect liability period of Eight years, than the entire performance security, Retention Money and other payment due to him shall be forfeited and encashed and bidder will not claim for the same.

50. Property

51.1 All Materials on the Site, Plant, Equipment, Temporary Works, and Works shall be deemed to be the property of the Employer if the Contract is terminated because of the Contractor's default.

Section IX - Particular Conditions of Contract

Insurance: The minimum insurance amounts and deductibles shall be:

(a) for loss or damage to the Works, Plant and Materials: *Equal to the Contract Amount and 0.4% of the Contract Amount respectively*

(b) For loss or damage to Equipment: *Equal to the 10% of Contract Amount and 0.4% of the Contract Amount respectively*.

(c) for loss or damage to property (except the Works, Plant, Materials, and Equipment) in connection with Contract *Equal to the 5% of Contract Amount and 0.4% of the Contract Amount respectively*

(d) for personal injury or death:

(i) of the Contractor's employees: *INR 25 Lakh.*

(ii) of other people: *In accordance with the statutory requirements applicable to India.*

Adjudicator:

The appointing authority for the adjudicator is CEO, PMIDC.

Hourly rate and types of reimbursable expenses to be paid to the Adjudicator shall be intimated later.

Arbitration & Procedure for Disputes:

The place of arbitration shall be: Bathinda***, Punjab (India)***

Arbitration will be conducted by Sole Arbitrator to be nominated by PSLG, Punjab or its authorized representative.

The language of the arbitration proceedings and that of all documents and communications between the parties shall be English.

DISPUTES RESOLUTION MECHANISM

I. A party may refer a decision of the Adjudicator to an Arbitrator within 28 days of the Adjudicator's written decision or if the Adjudicator fails to give a decision within the 28 days of submission of dispute to him.
II. The provisions of the Arbitration and Reconciliation Act, 1996 or any other statuary there under or modification thereof and for the time being in force shall apply to the arbitration proceedings under this clause

NOTE: The work under the contract shall continue during the arbitration proceedings.

Payments Schedule:

The payment shall be made on the basis of the works executed and certified by the engineer

Performance Based Payment Conditions

Work of Implementing Smart LED Street Lights and Centralized Control & Monitoring System on EPC Mode with Operation and Maintenance for 8 (Eight) Years in Municipal Corporation Bathinda, shall be taken up only after hindrance free site.

The modality of payment shall be as follows: LED & CCMS (CAPEX Amount)

1. 50% (fifty percent) of quoted CAPEX amount shall be paid during the project execution period of 6 (six) months. Minimum billing shall be for 5,000 LED lights.

2. After successful commissioning of the Smart LED Street Lights and Centralized Control & Monitoring System (CCMS) and after issuance of certificate by Engineer in Charge, balance 50% (fifty percent) shall be paid in equated 60 (sixty) monthly installments spread over a period of 5 (five) years under Defect Liability and O&M period.

**(Defect Liability and O&M Period is 8 years after Completion certificate is issued)*

IDC (Infrastructure Development Cost)

3. On monthly billing.

O&M (OPEX)

4. Quarterly billing on Pro rata basis.

Note:

The minimum supporting documents required with the payment certificate (Intermediate/Final) are as follows as applicable as per activity schedule:

1. Test certificates of the material (provided by the manufacturer and/or Third Party Inspection at manufacturer's work and/or test made at site/lab)

2. Request for Inspections Forms (RFIs).

3. Energy Saving Performance

Retention of Payment:

The proportion of payments retained is: *5% (Five percent).*
And it will be repaid to the successful bidder after Completion certificate is issued by EIC (which is issued after completion of successful installation of all LED's and CCMS complete in all respect including Infrastructure development) in the first two bill payments of the balance payable 50% to the bidder.

The retention money of O&M will be paid when the Defects Liability Period has passed and the Engineer In Charge has certified that all Defects notified by the Engineer In Charge to the Contractor before the end of this period have been corrected

Liquidated damages:

The liquidated damages for delaying of Project

- For delay beyond the scheduled completion period of six months, liquidated damages equivalent to 0.5% of the total Contract Value for each week or part thereof shall be imposed. Maximum delay period shall be 8 weeks after which Termination of Contract can be initiated.
- The maximum amount of liquidated damages for the whole of the Works is *7.5% (Seven point Five percent)* of the final Contract Price.
- In case of continued default or shortfall in progress, the Engineer In Charge may go on further enhancing the levy of liquidated damages, each time limited to 1% (one percent) of the amount of contract per week of further default subject to maximum limit of 5 (five) percent of the Contract value. When maximum damages payable have arisen, the Employer may terminate the Contract.

Performance security:

Performance Security amounting to total 5% (Five percent) of contract value (including O&M cost & Provisional sums) shall be submitted / deducted as follows:

i. Contractor shall submit Performance Security @ 5% (Five percent) in advance at the time of signing of agreement in form of Bank Guarantee. The Bank Guarantee should be issued by any nationalized / schedule bank and shall remain valid up to 60 (sixty) days beyond defect liability period. Bank Guarantee submitted against the performance guarantee, shall be unconditional and encashable/inviolable at Bathinda.

ii. If there is no reason to retain the Bank Guarantee, it shall be returned back to the contractor within 60 (sixty) days after the satisfactory completion of defect liability period and the O&M period.

NOTE: If the Bid, which results in the lowest evaluated Bid price, is seriously unbalanced or front loaded in the opinion of the Procuring Entity, the Procuring Entity may require the Bidder to produce detailed price analysis for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analysis, taking into consideration, the schedule of estimated Contract payments, the Procuring Entity may require that the amount of the Performance Security shall be increased to 10% (ten percent) of the Bid value of such items at the expense of the Contractor.

Tabular Format of Quantities of Work (BOQ)

Sr. No.	Description	Qty	Estimated Rate	Total Amount	Final Quoted rate per Item after discount	Total Quoted Amount
1	Supply of following LED street light IP66 fixtures with all accessories and related works including driver, LED efficacy more than 135 lumens per watt and system efficacy more than 110 lumens per watt complete in all respects (LED luminaire should be easily fitted on the existing brackets/arms)as per specifications and as desired by Engineer In charge along with comprehensive on site warrantee and maintenance for 8 years with Inland transportation including loading, unloading transfer to site, insurance and other costs incidental to delivery.					
i)	18 w LED Street Light	14320	1276	18272320		
ii)	35 w LED Street Light	3281	2610	8563410		
iii)	70 w LED Street Light	3681	3770	13877370		
iv)	100 w LED Street Light	908	5684	5161072		
v)	100 w LED Flood Light for High Mast poles	234	5794	1355796		
2	Installation & commissioning of above Led Fixtures. The cost also includes installing clamps at specified height complete in all respects as desired by EIC.	22424	100	2242400		
3	Dismantling and Credit for Buyback the conventional fixtures of light.					
i)	36/40/4*14 w Tube Light	13919	-70	-974330		
ii)	70 w HPSV/MH Fixture	2957	-150	-443550		
iii)	150w HPSV/MH Fixture	3681	-175	-644175		
iv)	250 w HPSV/MH Fixture	1142	-250	-285500		
v)	20W/45W CFL	725	-50	-36250		
4	Supply installation testing and Commissioning of outdoor type IP54 cluster control 63A Centralized control and Monitoring consisting of control panel with suitable memory/CPU, inbuilt battery to support operation upto 8 hours, power supply 5W SMPS, Energy meter and suitable for GSM/GPRS network complete in all respects as per specifications and as desired by Engineer incharge. (Quantity based on Existing Switching Points and may be optimized according to Load and electrical line parameters as per the entire satisfaction of EIC)	358.00	35000	12530000		
5	Operation and Maintenance work of LED street lights & CCMS complete as per specifications of RFP and as desired by Engineer In (Recurring SIM cost for CCMS is included).					
i)	For First year of O&M per year	23254	300	6976200		
ii)	For second year of O&M per year	23254	315	7325010		
iii)	For Third year of O&M per year	23254	331	7697074		
iv)	For Fourth year of O&M per year	23254	347	8069138		
v)	For Fifth year of O&M per year	23254	365	8487710		
vi)	For Sixth year of O&M per year	23254	383	8906282		
vii)	For Seventh year of O&M per year	23254	402	9348108		
viii)	For Eighth year of O&M per year	23254	422	9813188		
Total Cost				126241273		

****The rates are including GST & all other taxes.**

Section X - Contract Forms

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security etc when required, shall only be completed by the Successful Bidder after Award of the Contract.

Table of Forms

1. Letter of Acceptance
2. Contract Agreement
3. Performance Security - Bank Guarantee

NOTIFICATION OF AWARD

1. Letter of Acceptance

[on letter head of the Employer***]***

[date]…….

To: . . . . . ***[name and address of the Contractor]*** . …… . . . . . .

Subject: . . . . . ***[Notification of Award Contract No]***. . . . . .

This is to notify you that your Bid dated . . . . ***[insert date] . .*** . . for execution of the . . . . . ***.[insert name of the contract and identification number, as given in the PCC]*** . . . . . for the Accepted Contract Amount of . . . . . ***.[insert amount in numbers and words and name of currency]***, as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by Municipal Corporation Bathinda.

You are requested to furnish the Performance Security within 28 (twenty eight) days of the receipt of this Letter of Acceptance, in accordance with the Conditions of Contract, using for that purpose the Performance Security Form included in Section X - Contract Forms, of the Bidding Document.

[Choose one of the following statements:]

We accept that ……[**insert the name of the Adjudicator** ***proposed by the Bidder]*** be appointed as the Adjudicator.

[or]

We do not accept that ……..[**insert the name of the Adjudicator** ***proposed by the Bidder]*** be appointed as the Adjudicator, and by sending a copy of this Letter of Acceptance to ……[**insert the name of *the Appointing Authority]***, the Appointing Authority, we are hereby requesting such Authority to appoint the Adjudicator in accordance with ITB 32 and GCC 20.1.

Authorized Signature:

Name and Title of Signatory:

Name of Agency:

Attachment: Contract Agreement

2. Contract Agreement

THIS AGREEMENT made on . . . . . .day of . . . . . ., ..., among . . . .

Municipal Corporation Bathinda (MCB) acting through its Commissioner and having its office at ……. (hereinafter "the Employer" which expression unless repugnant to the context includes its successors, representatives and permitted assigns);

AND

[name of the Contractor]. . … . . acting through its …….. and having its head office at ……. (hereinafter "the Contractor" which expression unless repugnant to the context includes its successors, legal heirs, representatives).

The Employer(MCB) and Contractor are hereinafter referred to individually as a Party and collectively as the Parties.

WHEREAS the Employer(MCB) desires that the Works known as . . . . . [name of the Contract] (the "Project") .. . . . should be executed by the Contractor, and has accepted the Bid dated …….. submitted by the Contractor for the execution and completion of the Works forming part of the Project as per the terms of the RFP and the Conditions of Contract (GCC & PCC),

AND WHEREAS Notification of Award bearing no. …… dated ……. has been issued by …….. and in pursuance of the same, the Contractor has furnished Performance Security for an amount of Rs……. in favour of ……,

AND WHEREAS one of the conditions of the RFP is that the Selected Bidder shall execute a Contract Agreement with the Employer (MCB) interalia providing for the rights and obligations of the Parties in the implementation of the Project.

Now the Parties agree as follows:
In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.

The following documents shall be deemed to form and be read and construed as part of this Agreement. The obligations of the parties towards each other mentioned in the following documents shall be construed to be arising under this Agreement. This Agreement shall prevail over all other Contract documents.
(a) Letter of Acceptance

(b) Notice to proceed with the works, if any

(c) Bidding Document (Request for Proposal)

(d) Contractor's Bid (Technical Part & Financial Part)

(e) Addendum, Corrigendum & Clarifications, if any

(f) Contract Data

(g) Special/Particular Conditions of Contract

(h) General Conditions of contract

(i) Specifications

(j) Drawings

(k) Bill of Quantities (Optional)

(l) Payment Schedule and

(m) Any other document listed in the Contract Data / PCC as forming part of the contract

In consideration of the payments to be made by the Employer to the Contractor as specified in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.

Neither party shall be liable to the other under this Agreement for any loss of profit, loss of revenue or any other indirect or consequential damages that may be suffered by the other Party, unless otherwise specified in this Agreement.

The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of India . . . .on the day, month and year specified above.

Signed by:…….. *Signed by: ……..*

for and on behalf of the Employer *for and on behalf of the Contractor*

in the presence of: *in the presence of:*

Witness Name…… *Witness Name…….*

Signature…… *Signature…….*

Address…… *Address……..*

Date…… *Date……*

3. Performance Security - Bank Guarantee

[Guarantor letterhead or SWIFT identifier code] **Beneficiary:** *[insert name and Address of* Employer*]* **Date:** _ *[Insert date of issue]*

PERFORMANCE GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that_____ *[insert name of Contractor]* (hereinafter called the **"Applicant**") has entered into Contract No. *[insert reference number of the Contract]* dated *[insert date]* with the Beneficiary, for the execution of _ *[insert name of Contract and brief description of* Works*]* (hereinafter called the "**Contract**").

Furthermore, we understand that, according to the conditions of the Contract, a Performance Guarantee is required.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]* (_____) *[insert amount in words]*,1 such sum being payable in the types and proportions of currencies in which the Contract price is payable, upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.

This Performance Guarantee shall expire, no later than the …. Day of ……, 2… 2, and any demand for payment under it must be received by us at this office indicated above on or before that date.

This Performance Guarantee is subject to the Uniform Rules for Demand Guarantees ("**URDG**") 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

1 The Guarantor shall insert the amount mentioned in the Conditions of the Contract Agreement for Performance Security denominated either in the currency(cies) of the Contract or a freely convertible currency acceptable to the Beneficiary.

2. Insert the date sixty days after the expected completion date as described in GCC Clause 42.1. The Employer should note that in the event of an extension of this date for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the Performance Guarantee. In preparing this Performance Guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this Performance Guarantee for a period not to exceed [six months][one year], in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

[Signature]

Note: All italicized text (including foot notes) is for use in preparing this form and shall be deleted from the final product.

9 Exit Management

9.1 Purpose

i. This Clause sets out the provisions which shall apply on expiry or termination of the

"**Contract Agreement**" on account of material breach by the Successful Bidder. In the case of termination of the Contract Agreement due to any illegal activity performed by the selected Bidder during/ as part of the activities related to the Project, or due to material breach by the Bidder of Contract, Client shall have the right to, at its sole discretion, apply this Clause.

ii. The Parties shall ensure that their respective associated entities, in case of the Client or its nominated agencies and any nominated agencies in case of the Selected Bidder, carry out their respective obligations set out in this Exit Management Clause.

9.2 Transfer of Assets

This Clause is valid till the date of expiry or notice of termination of the Agreement after which the assets have to be transferred to Client.

During this period, the Successful Bidder will transfer all the assets in normal working condition and as per the specifications of the Bidding Document including the ones being upgraded to the Client.

The Successful Bidder, if not already done, shall transfer all the right to use software licenses under the name of Client during the Exit Management Period. The Successful Bidder shall also transfer all the relevant Software Passwords, User Names and Keys. If such a transfer of Assets happens before the expiry of Work Contract Period, the Parties shall mutually discuss and agree on the transfer value of the Assets together with the termination and transfer assistance fee.

The Successful Bidder shall be entitled to use the Assets for the duration of the exit management period which shall be 3 (three) months from the date of expiry or notice of termination of the Agreement.

For any material breach on the part of Bidder during the Project Implementation Phase and Operation & Management Phase, Client is entitled to provide notice in writing on the Selected Bidder at any time during the exit management period as detailed here in above requiring the Selected Bidder to provide the department or its nominated agencies with a complete and up to date list of the Assets within 30 (thirty) days of such notice.

Upon service of a notice as mentioned in point above, the following provisions shall apply:

All risk in and title to the Assets to be transferred to the Client on the last day of the exit management period. All expenses incurred during transfer of assets shall be borne by the Successful Bidder.

That on the expiry of this clause, the Successful Bidder and any individual assigned for the performance of the services under this clause must hand over all the Confidential Information and all other related materials in its possession, including all the software and hardware supplied by the Selected Bidder under this Clause to the Department.

As the Successful Bidder is supposed to provide comprehensive maintenance of all the hardware / software as detailed in RFP during the Contract period, the Successful Bidder must ensure that all the items are in working condition with support of OEM related to repair/replacement/availability of spare parts for at least 03 (three) years at the time of exit.

From the first day of last month of the Contract period, testing phase of overall system installed by the Successful Bidder will be started in phases and in an Agreement with the MCB so that all the equipment are proved to be in working conditions and handed over to the MCB on the last date of the Contract period and before issuing completion certificate and PBG.

9.3 Cooperation and Provision of Information

During the exit management period:

a) The Successful Bidder shall permit the Client or its nominated agencies access to the information reasonably required to classify the current mode of operation related with the provision of the services to enable the Client to assess the existing services being delivered.

b) In the event of there being a termination owing to material breach by the

Successful Bidder, on quick request by the Client or its nominated agencies, the Selected Bidder shall provide access to copies of all information held or controlled by it which it has prepared or maintained in accordance with the Contract Agreement. The Project Implementation, the Operation and Management service level agreement and SoW (Scope of Work) relating to any material aspect of the services (whether provided by the Successful Bidder). The Client or its nominated agencies shall be entitled to copy all such information. Such information shall include details pertaining to the services rendered and other performance data. The Successful Bidder shall permit the Client or its nominated agencies and/or any entity nominated by the Client to have reasonable access to it employees and facilities as reasonably required to understand the methods of delivery of the services employed by the Successful Bidder and to support appropriate knowledge transfer.

9.4 Confidential Information, Security and Data

The Successful Bidder shall be quick on the commencement of the exit management period and supply to Client the following:

a. Information relating to the present services provided and customer satisfaction surveys.

b. Documentation pertaining to the Project related data and confidential information.

C. All current and updated data as is needed for purposes of the Client or its nominated agencies for transitioning the services either to the Client or the entity nominated by Client.

d. All other information (including but not limited to documents, records and agreements) relating to the services reasonably compulsory to enable the Client or its nominated agencies, or to the entity nominated by Client to carry out due diligence in order to transition the provision of the Services to the Client or its nominated agencies, or to any entity nominated by Client (as the case may be).

Before the exit management period expire, the Successful Bidder shall deliver to the Client or its nominated agencies all new or up-dated materials from the categories set out in point (i) above and shall not keep any copies thereof, except that the Successful Bidder shall be permitted to keep one copy of such materials for archival purposes only.

Before the exit management period expire, unless otherwise provided under the Bidder Agreement, the Client or its nominated agencies shall deliver to the Selected Bidder all forms of the Successful Bidder Confidential Data which is in the possession or control of the Client or its nominated agencies or during the exit management period In any time, the Successful Bidder shall, subject to applicable laws, restraints and regulations(including in particular those relating to privacy) provide to the Client or its nominated agencies a list of all employees (with job titles) of the Successful Bidder dedicated to providing the services at the beginning of the exit management period; its users.

9.5 Employees

Where any national, regional law or regulation relating to the mandatory or automatic transfer of the contracts of employment from the Successful Bidder to the Department or its nominees, or an entity nominated by the Client applies to any or all of the employees of the Successful Bidder, then the Parties shall comply with their respective obligations under such Transfer Regulations.

To the extent that any Transfer Regulation does not apply to any employee of the Successful Bidder or its nominated agencies or its entity nominated by the Client may

make an offer of employment or contract for services to such employee of the Successful Bidder and the Successful Bidder shall not enforce or impose any contractual provision that would prevent any such employee from being hired by the Client or its nominated agencies or any Replacement Bidder.

9.6 Transfer of Certain Agreements

On request by the Client or its nominated agencies, the Successful Bidder shall effect such assignments, transfers, novation, licenses and sub-licenses in favor of Client or its nominated agencies, or its entity nominated by the Client in relation to any equipment lease, maintenance or service provision agreement between the Successful Bidder and third party lessors, Bidders or Bidder, and which are related to the services and reasonably necessary for the carrying out of replacement Bidder.

9.7 Right of Access to Premises

At any time during the exit management period, where Assets are located at the Successful Bidder's premises, the Successful Bidder shall be obliged to give full rights of access to (or, in the case of Assets located on a third party's premises, procure reasonable rights of access to the Client or its nominated agencies, and/or any entity nominated by the Client in order to inventory the assets or Assets.

The Successful Bidder shall also give the Client or its nominated agencies, or any entity nominated by Client right of reasonable access to the Successful Bidder's premises and shall procure the department or its nominated agencies and any entity nominated by the Client rights of access to relevant third party premises during the exit management period and for such period of time following termination or expiry of the Contract Agreement as is reasonably necessary to migrate the services to Client or its nominated agencies, or a Replacement Bidder.

9.8 General Obligations of the Successful Bidder

The Successful Bidder shall provide all such information as may reasonably be necessary to effect as seamless a handover as practicable in the circumstances the Client or its nominated agencies or any entity nominated by the Client and which the Successful Bidder has in its possession or control at any time during the exit management period.

For the purposes of this Clause, anything in the possession or control of any Successful Bidder or associated entity is deemed to be in the possession or control of the Successful Bidder.

The Successful Bidder shall commit adequate resources to comply with its obligations under this Exit Management Clause.

9.9 Exit Management Plan

The Successful Bidder shall provide the Client or its nominated agencies with recommended exit management plan ("**Exit Management Plan**") which shall deal with Contract Agreement as a whole and in relation to the Project Implementation, the Operation and Management service level agreement and SOWs.

9.10 End of Support

While handling over the completely working and functional network and systems, the Bidder must ensure that OEM of all hardware/software/ equipment are contractually bound to provide support for repair/replacement/availability of its spare parts for further five years. It shall be part of exit plan to submit letter from OEMs in this regard.

Format of Authorization Letter from Manufacturers

(On the letter head of Manufacturer)

To,

[Write Company Name & Address of the Experienced Contractor/ESCO]

Sub: Letter of confirmation to ***[Write Company Name]*** for supply of LED street lights in accordance with the requirements of RFP No.

Reference: Dear Sir,

We would like to introduce ourselves as one of the leading manufacturer of LED lights. With respect to the subject mentioned issue, we would like to confirm that:

1. We agree to supply LED lights, to ***[Write Company Name],*** in accordance with the requirements of the RFP No._____ .
2. We agree to provide the backup guarantee for the contract period, with full replacement and repairing support for the supplied LED lights.

We look forward to being your trusted partner for supply of LED lights for this business.
If you need any clarification, you may please write to us.

Thanking you

Yours truly,

[Name of the LED manufacturer]

[Signature and details of the Authorized Signatory]

PSPCL 3-phase meter specifications

Technical Specification for ISI Marked DLMS Compliant as per Indian Companion Specification ETD 13(6211)/IS: 15959 & other relevant Standards (with latest amendments), for LT CT operated 3 Phase, 4 Wire Static Energy Meter (Category-C1) of ratio 100/5A & 200/5A of Accuracy Class-0.5S for both active energy and reactive energy with 'Optical port' & 'RS-232 port' along with Software.

This specification covers requirements for the design, manufacture inspection, testing, supply and delivery of 'ISI' marked LT 3 Phase 4 Wire 50 c/s 415 V (3X240V) CT operated DLMS Compliant Static Energy Meters (Category-C1) of accuracy class 0.5S for both active energy and reactive energy with 'Optical Port' & 'RS-232 port' along with software for data transfer to base computer, through CMRI/direct downloading of data to laptop computer/direct transmission through data transmission media & converting the same into data base in the base computer.

The CT operated LT meter (Tariff & load survey type) with initial and sustained Accuracy of class 0.5S (for both active and reactive energy) shall be suitable for 3 (three) phase, 4 (four) wire solidly earthed system connection which will also be suitable for Three phase four wire application with balanced and un-balanced load for a power factor range of zero to unity (lagging & leading).

1 .STANDARD

The meters to be supplied shall conform to the latest edition of Indian standards/CBIP report. While drafting this specification, reference has been made to the following Indian Standard Specifications. In case, certain details are not covered in this specification, the relevant Indian Standard shall be applicable.

a)	IS : 14697-99 (with latest amendments up to 31.01.2017)	Specification for AC Static Transformer operated Watt Hour & VAR-Hour meters (class 0.5S).
b)	IS:15959-2011(withlatest amendments up to 31.01.2017)	Data Exchange for Electricity Meter Reading, Tariff and Load Control- Companion Specification
c)	CBIP-Publication No. 325 (with latest amendments up to 31.01.2017)	Static Energy Meter - Specifications & Testing
d)	IS/IEC 60529:2001 (with latest amendments up to 31.01.2017)	Degree of protection IP-51 (for enclosure protection against ingress of dust, moisture &
e)	CBIP Tech. Report No. 111 (with latest Amendments up to 31.01.2017)	Common Meter Reading Instruments and Optical Ports & RS-232 in use.
f)	IS : 9000 (with latest amendments up to 31.01.2017)	Environment Testing.
g)	IS-11731 (FH-1 Category) (with latest amendments up to 31.01.2017)	For Engineering Plastic Polycarbonate cover
h)	IS-11731(Part-2) 1986 (with latest amendments up to 31.01.2017)	-do-

For conflict related with parts of the specification and relevant standards, the order of priority shall be - i) This technical specification ii) relevant standards.

2 . CLIMATIC CONDITIONS

The meters shall be suitable to work satisfactorily under the following climatic conditions: -

i) Minimum ambient temperature = (-) 5° C
ii) Maximum ambient temperature = 55° C
iii) Minimum relative humidity = 26 %
iv) Maximum relative humidity = 95 %
v) Altitude = upto 1000 meter above mean sea level

The other values shall be as specified in Clause-8 i.e. "Climatic Conditions" of IS: 14697 with latest amendments up to 31.01.2017.

The meter shall withstand and operate satisfactory without loss of accuracy under the most hazardous climatic condition specified above. Parts and surfaces, which are subject to corrosion, shall be provided with protective coating.

3 . SUPPLY SYSTEM

The meter shall be suitable for working satisfactory with following supply system with variations:-

Line voltage	415V +20% to -40%
Frequency	50 ±5% HZ
Power factor	Zero to unity (both lagging and leading)

4 . RATING

4.1 Voltage rating: The rated voltage will be 415 V between phases and 240V between phase & neutral.

4.2 Voltage variation: (+) 20% to (-) 40%.

4.3 Current rating: -/5Amp (Through current transformer).

4.4 Three phase four wire

4.5 Frequency: 50Hz (±) 5%.

4.6 Accuracy Class 0.5S (for both active and reactive energy)

4.7 Power Factor 0.0 lag-unity-0.0 lead

4.8 Rated Max. Current 10A

4.9 Starting Current 0.1% of I_b (for both active and reactive).

5 . DISPLAY

The meter shall have 7 (seven) digits (6 (six) Whole digits and one decimal digit) high contrast display with parameter identifier, backlit Liquid Crystal Display (LCD) of minimum 10 mm (ten millimeter) height (except decimal digit) and Min. 5mm (five millimeter) width, wide viewing angle. LCD shall be suitable for temperature withstand of 70ºC. Display should be uniformly illuminated. Backlit display shall be preferred. In day light it should be clearly visible. Display shall be of high contrast for ease of manual reading even from a distance under outside ambient conditions. This shall specifically be checked during sample testing/pre-dispatch inspection. In case a single display is being used to display

multiple values, it shall be possible to display the contents of relevant memories. While displaying the various parameters from its memories the identification of each value shall be possible. Display must be electronic and it should not be affected by electrical & magnetic disturbances. Auto display cycle shall be with persistence time of 15 (fifteen) seconds for each parameter. The meter should have facility to come in auto scroll mode if push button is not pressed for one minute

The data stored in the meters shall not be lost in the event of power failure. The meter shall have Non Volatile Memory (NVM), which does not need any battery backup. The NVM shall have a minimum retention period of 10 (ten) years. Meter should have the facility for data downloading during power OFF position.

In case of failure of power supply, the meter shall be capable to display the measured quantities through push-button with the help of an internal rechargeable Non-rechargeable battery inbuilt in meter. Internal Battery provided shall have life of not less than 10 (ten) years and shall not damage the meter even during prolonged idle storage of the meter for 2 (two) years. In power 'Off' position, when push button is released, the display with the battery shall stop immediately.

The internal rechargeable/ non- rechargeable battery shall be of any make out of PANASONIC / VARTA / TADIRAN / TEKCELL / EVE Energy / SANYO / NATIONAL / ELEGANCE / VITZROCELL / MAXELL, HITACHI

Note: - If Non-rechargeable battery used then the battery shall be locked after 3 - operations during one 'Off' power cycle.

6 . QUANTITIES TO BE MEASURED/ MONITORED

The meters shall be capable of measuring and displaying the following electrical quantities within accuracy requirement as stipulated in relevant standards:-

6.1 DISPLAY PARAMETERS

The Meter shall have 3 (three) modes of display as mentioned below:

A. Mode 1 or Auto Scroll Mode: Following parameters shall Auto Scroll in this mode with persistence time of 15 (fifteen) seconds:

a) Meter Sr. No.
b) R.T.C. (Date & Time)
c) Cumulative Active Energy (Import) KWH
d) Cumulative Apparent Energy (Import) KVAH
e) Instantaneous load KW & KVA
f) Instantaneous Power factor PF (Lag/Lead)
g) Present M.D. (KW & KVA) with date and time (i.e. current billing cycle)
h) Previous month M.D. (KW & KVA) with date and time (i.e. previous billing cycle)

i) Instantaneous Red phase potential Volts j) Instantaneous Yellow phase potential Volts k) Instantaneous Blue phase potential Volts
l) Phase sequence - Voltage.
m) Phase sequence- Current.
n) Cumulative Active Energy (KWH) & Cumulative Apparent Energy (KVAH) for the following time zones:-
   i. 00.00 -06:00
   ii. 06:00 - 18:00
   iii. 18:00 - 22:00
   iv. 22:00 - 24.00

Display shall automatically come back to the auto-scroll mode, if the pushbutton is not pressed for one minute. No other parameter shall be displayed in the auto-scroll mode. Maximum Demand integration period shall be 30 (thirty) Minutes. Auto resetting of MDI should be done at 24:00 hours of last day of each calendar month, for which manufacturer will program the calendar for minimum 30 (thirty)

years. However meter shall also have provision of maximum demand resetting through sealable push button.

B. Mode 2: Mode 2 shall include all the display parameters as mentioned above under Mode 1 as well as all other parameters as per standard IS 15959:2011 with latest amendments.

C. Mode 3: Display mode-3 shall be for displaying Energy consumption and maximum demand recorded during TOD slots indicated in this specification.

i. High resolution display in KWH, KVAH & KVARH (lag/lead) with 2+5 (or higher no. of decimal digits) energy format (for dial test)
ii. Cumulative Energy in KWH (T.O.D. wise) (for current month)
iii. Cumulative Energy in KVAH (T.O.D. wise) (for current month)
iv. Maximum Demand in KW (T.O.D. wise) (for current month)
v. Maximum Demand in KVA (T.O.D. wise) (for current month)

Mode-2 & 3 may be selectable through same push button.

Display parameters shall be as per Standard on data exchange for electricity meter reading, tariff and load control (IS: 15959 with latest amendments.

7 . MAXIMUM DEMAND INTEGRATION

Meter shall monitor demand in KVA and KW during the integration period set and record & display the maximum registered values. Max. Demand History data shall be available for last 12 (twelve) billing periods. The rising demand under the current integration period shall also be displayed along with the elapsed time. The integration period shall be 30 (thirty) minutes. This maximum demand shall correspond to any consecutive 30 (thirty) minutes for block interval.

Integration logic should be such that integration time remains consistent with the real time clock and are set every 30 (thirty) minutes and should not be linked with the Power ON/OFF. Meters shall be provided with real time clock (Accuracy ± 3 Minutes/Year).

It should be possible to reset MD by the following options:

a) Loc al push button.
b) Auto reset at 24:00 hrs at the last day of every month. Auto reset date should be remotely programmable from central data station for change in billing date (on any day of month).

In all the above listed MD resets, No. of counts shall increase on every reset.

Push button for MDI reset, mode and function shall be with/without spring and screw arrangement.

8 . LOAD SURVEY CAPABILITIES

Meter shall be capable of storing the following 8 (Eight) parameters for minimum last 70 (seventy) "**Power ON**" days with 30 (thirty) minutes integration period:

i) RTC (Real Time Clock – Date and Time).
ii) K V A r h l a g
iii) K V A r h l e a d
iv) K V A h
v) KWH

The meter shall also store power 'ON' time.

9 . COMMUNICATION CAPABILITY

a) Communication Port:

Meter shall be provided with 2 (two) ports for communication of the measured/ collected data as per IS: 15959 -2011 with latest amendments, if any i.e. a hardware port compatible with RS-232 for Category-C1 specifications which

shall be used for remote access through suitable Modem (GPRS/GSM/EDGE/CDMA/PSTN/LPR) and shall have galvanically isolated optical communication Port as per CBIP technical report -111

of universal type complying with hardware specifications detailed in IEC- 62056-21. This shall be used for local data downloading through CMRI.

RS-232 port shall be used to transfer and export data to the remote end server through suitable communication mediums (GPRS/GSM/EDGE/CDMA/ PSTN/LPR). Both ports shall support the default and minimum baud rate of 9600bps. Both the ports will support communication on DLMS and should be accessible through CMRI. All necessary software (BCS & for CMRI) required for down loading the data shall be provided by the supplier without any additional cost to the purchaser. There should be passwords for data retrieval. DATA shall not be re -programmable through ports.

b) Meter should be AMR compliant with external modem through RS-232 Port, so that it can be connected to Automated Remote Meter Reading System. The bidders shall have to demonstrate the readings of meter data at the Base Computer Station Patiala in the existing AMR network of PSPCL for ascertaining the compatibility as per IS: 15959:2011 (with latest amendments).

1 0 . SELF DIAGNOSTIC FEATURES

Indications to show the satisfactory performance of the meter shall be provided in the meter. The meter shall have capability to check its circuits for any malfunctioning. If some malfunctioning occurs, the meters should record such malfunctioning. The details of the self-diagnostic feature shall be furnished by the manufacturer/supplier. It should be possible to check correctness of CT connection to meter and polarity for proper functioning.

1 1 . TIME OF DAY ("TOD") TARIFF

The meter shall have eight different zones for storing TOD consumption and maximum demand. The registration of energy consumption shall be in 'KWH' & 'KVAH' and demand in 'KW' & 'KVA'. The timing of TOD zones, in hours, shall be as under:-

Zone no.	***Timing***
1	00.00 - 06:00
2	06:00 - 18:00
3	18:00 - 22:00
4	22:00 – 24:00

The time period of TOD recordings may be programmable as per DLMS standard with proper security.

1 2 . CONSTRUCTION OF THE METER

12.1. GENERAL:

Complete meter housing material i.e. base/cover/terminal cover shall be made out of high quality reinforced polycarbonate material to ensure high reliability and long life. Meter base shall be non-transparent material. Meter cover & terminal cover shall be of transparent material. The thickness of meters case, base & terminal cover shall be minimum 2mm.

The meter shall be compact in design. Meter shall be immune to vibration and shocks during transportation and handling as per clause 12.3 of IS: 14697 (with latest amendments). It should also be immune to external magnetic / electric fields as per clause 12.8 of IS: 14697 (with latest amendments).

Polycarbonate plastic conforming to requirement of FH-1 of IS: 11731 shall be used. However, test requirements shall be met as per IS-14772:2000 and following standards (with latest amendments):

UV ageing as per ASTM: G53, Ball pressure as per IEC -60695 -10-2, Flammability Test as per UL-94/IS-11731, Glow wire test as per IS-11000/IEC PUB, 60695-2-12, Heat deflection temperature as per ISO-75/Ae and Boiling water test (10 Minutes).

The electronic components used in the meter shall be of high quality from world - renowned manufacturers and there shall be no drift in accuracy of the meter over a long period of time. Make of ASICs to be used should be ANALOG DEVICES/ SEMS/ ATMEL/ SIEMENS/ TOSHIBA/ PHILIPS/ FJITSU/ NATIONAL/ TDK/ AMS/ ZILOG/ ST Micro Electronics/ CIRRUS LOGIC/ MOTOROLLA (now free scale) / TEXAS INSTRUMENTS/ MICROCHIP / RENESAS. It shall be convenient to transport and immune to vibration and shocks during transportation and handling. It should also be immune to external magnetic /electric fields.

Meter shall have a device such as blinking LED, which blinks giving indication analogous to the rotation of the disc in an electromechanical meter. The meter shall be state of the art using surface mounted components and shall be housed in a safe enclosure of Projection mounting type. The meter shall be fixed up with the help of screws and should have a handle to facilitate carrying around. The meter shall conform to degree of protection as per IP51 of IS/IEC 60529:2001 (with latest amendments), for protection against penetration of dust and water.

All the terminals for CTs connections shall be arranged in a row along the meter in the lower side. The terminals shall be moulded / tight fit constructions with barriers and covers to provide secure & safe connections of CTs through the stranded copper conductors of 2.5mm size. The terminal cover design shall be pilfer proof and extended type and shall be of transparent polycarbonate.

Meter shall generally comply with the mechanical requirements of IS 14697 (with latest amendments).

12.2. METER CASE (COVER & BASE)

Meter cover shall be in single piece and fully transparent. Otherwise for easy reading of all displayed values/parameters, name plate details and observations of operation indicators the window portion of molded cover shall be fully transparent
whereas rest of the cover shall be semi-transparent. The entire design and construction shall be capable of withstanding the severest stress likely to occur in actual service. Meter case shall ensure adequate insulation properties maximum strength against distortion and injury to the working parts during normal use and rough handling during transportation. The casing should be dust & moisture proof to the degree of IP-51 as per IS/IEC 60529:2001 (with latest amendments). Bidder must submit the test certificate to this effect. The meter cover and base when closed should be designed in such a way that entry of any film of thin foreign object shall not be possible. The meter cover shall be continuously ultrasonic welded with meter base from all side.

Construction of the meter shall be such so as to permit the sealing of the meter cover, terminal cover etc. independently to ensure that the internal parts are not accessible for tampering etc, without breaking the seals and ultrasonic welding.

Overall dimensions of offered meter shall be suitable for mounting in the meter cup boards being used by PSPCL failing which the meter of the firm is liable to be rejected. Bidders are requested to check the fixing arrangement provided in the meter Boxes in the office of CE/Metering.

12.3. TERMINAL BLOCK:

Terminal block shall be made of flame retardant type VO grade polycarbonate / Bakelite material having sufficient thickness, insulating properties and mechanical strength. Minimum centre to centre distance between adjacent terminals in terminal block shall be as per latest IS-14697 with latest amendments.

Terminals shall be grouped in a terminal block having adequate insulating properties and mechanical strength. Holes in the insulating material shall be of sufficient size so as to accommodate a small length of insulation of the conductors also.

Method of fixing conductors to the terminal shall ensure adequate and durable contact so that there is no risk of loosening or undue heating. The terminal block shall ensure reasonable safety against the spread of fire and should not get ignited by the heat generated on account of overload of live parts in contact with them. All parts of every terminal shall be such that the risk of corrosion

resulting from the contact with any other metal part is minimized. Internal diameter of terminal inserts shall be minimum 5.5mm with minimum 2 (two) screws (without pointed ends i.e. flat ends so as not pierce in the external conductor.) in order to tighten the terminals effectively. Terminal inserts, screws and washer shall be of tin/Nickel plated brass.

12.4. TERMINAL COVER

Meter terminal blocks shall be provided with an extended terminal transparent cover of material mentioned at Sr. no. 13.1, which will enclose the terminals, their fixing screws, a suitable length of external insulated conductor and its insulation. There shall be provision of sealing the terminal cover with two independent seals. When the meter is mounted on a meter board, no access to the terminals shall be possible
without breaking the seals of the terminal cover. Terminal cover shall be fixed with terminal block meter housing with hinge.

The terminal cover shall be fixed with terminal block hinged either at the top so that it opens from bottom to top or hinged at right side so that it opens from left to right of meter or vice-versa. The pin used in the hinge shall be riveted at one end and crimped at the other end or the snap fit type hinged arrangement with top cover be provided. The terminal cover shall have a C-cut of suitable size at the bottom for entry of cable leads.

13. SEALING OF THE METER

Proper sealing arrangements shall be provided on the meter to make it tamper-proof as under:

i. At-least 2 (two) seals on the meter body.
ii. 2 (two) seals on the terminals block.
iii. 1 (one) seal on maximum demand resetting device.
iv. 1 (one) seal on optical port.
v. Rs-232 port shall be sealable either through one no. separate seal or sealable through terminal block sealing arrangement.

14. METER POWER SUPPLY:

Meter shall be self-powered and thus shall draw its power from all 3 (three) phases and neutral. Potential and neutral links, if any, should be inside the meter case and meter should be able to be tested on 'Fully Automatic Meter Test Bench' under sealed cover condition. No external link shall be accepted. Further, the meter shall not get damaged if line voltage is applied to neutral for 30 (thirty) minutes.

15. ACCURACY

The accuracy of measurement by meter shall be tested in accordance IS 14697 (with latest amendments). Provision may be made that once the accuracy is brought within limits, the adjustments should be ceased and it shall not be possible to change the calibration of meters at site.

16. TAMPER AND FRAUD DETECTION

The meter shall have the following special features to prevent/detect common ways of tamper and fraud: -

i) Phase sequence Reversal: The offered meter will keep working accurately irrespective of the phase sequence of supply.

ii) CTs Polarity Reversal: Meter shall detect and record the tamper of Phase wise CT reversal with date & time of occurrence and restoration or duration of tamper.

Further, under this tamper, the energy recorded by the affected phase/phases should be added to the import energy register.

iii) CT Open/Missing: Meter shall detect and record the tamper of CT open / missing of CT secondary terminals with date & time of occurrence and restoration or duration of tamper along with proper indication on display for tamper identification.

iv) **Missing Potential:** The offered meter will be capable of recording occurrence of missing One/two Potentials, which can happen due to intentional/ accidental disconnection of potential leads, with suitable indication on display. All such Occurrences and restorations or duration will be recorded with date and time.

v) **Over Voltage& Low Voltage**: Meter shall detect & record the incidence of over voltage in any phase (120% of Vref & above.) & Low voltage in any Phase (80% of Vref & below) with date & time of occurrence and restoration/Duration**.**

vi) **Over Current**: : Meter shall record the incidence of Over Current in any Phase (more than 1.3 times of I_b) with date & time of occurrence and restoration/Duration.

vii) **Meter Cover Open***:* In case meter top cover is opened, the same should be recorded as tamper event with date & time stamping and the meter reading should get blocked and only the words "C-Open" with date & time should appear permanently, on auto display (Mode-1). The other two modes of display i.e. mode-2 & mode-3 shall not get blocked. Under this condition meter shall, however, keep recording the consumption, which can be checked from its memory. Cover open tamper should not be re - settable, i.e. once the cover open tamper occurs, the above display should always be there.

Cover open tamper should not be activated during the manufacturing process. "Meter Cover Open" tamper must also get logged even when the power supply is 'OFF'.

viii) Power OFF will be recorded as an event if it persists for more than 30 (thirty) minutes. Print out with total number of events occurred can also be taken out by base computer system.

ix) **Current unbalance:** Meter should record tamper when there is load difference of 25% I_b or above between any two phases (the tamper should be recorded on the phases which has lower value of load) provided minimum 10% of I_b load is flowing.

x) Meter shall log actual date and time of occurrence/restoration of tamper. Meter will also log the snap shots i.e. instantaneous values of individual voltages, currents, power factors, Active & Apparent Energy etc., at the instant of confirmation of tamper. The time of at least one of the occurrence and restoration/duration will be indicated in the printout.

xi) All tampers except “Cover Open", "Abnormal magnetic Induction" & "Power Off" will be recorded if the tamper persists for three minutes and the restoration time after 3 minutes.

xii) In case more than one tamper exists simultaneously then meter will record all the tamper with date and time of occurrence.

xiv) The offered meter will record accurately under tamper conditions of neutral disturbance when DC voltage is fed to neutral by installing a diode.At least 350 Nos. tampering events (175 no. occurrence and 175 no. restorations) shall be recorded with date & time.

xv) Meter should work properly in the event of removal of neutral according to electrical conditions and connection in case of 3-phase 4-wire connection. Meter shall measure & record energy/parameters according to electrical conditions and connections.

xvi) Invalid Voltage : The meter should record tamper if same phase voltage is given to any two phase terminals of the meter and actual current is fed through CT secondary terminals (i.e. CT connections are OK but one phase voltage for LT meter only is disconnected and not for load and is looped/shorted with any one of the other / remaining two phases) e.g. V_R, V_R, V_B & V_N and I_{r1}-I_{r2}, I_{y1}- I_{y2} & 1_{b1}-1_{b2} instead of V_R, V_Y, V_B & V_N and I_{r1}-I_{r2}, I_{y1}- I_{y2} & 1_{b1}-1_{b2}. Meter should also record energy accurately under these conditions assuming voltage of all the three phases as $V_{ref,}$ UPF, and actual current flowing through individual phases.

Further, CT reversal phenomenon shall be appearing due to phase shift of 120^0 under these conditions / Tamper. However, in order to avoid any confusion, CT reversal tamper shall not be indicated / logged (i.e. should be blocked) in DDL print outs by the

firms for this tamper only (i.e. Invalid Voltage). However, snap shot shall indicate actual values of current.

Snap shot shall be logged as per clause 17(x) & (xi) of Tender Enquiry (i.e. if tamper persists for 3 minutes). The accuracy tests/ dial test shall be performed after logging of this event is confirmed (i.e. after 3 minutes) at the time of testing of sample meters/ meters.

NOTE:

1. Tamper information and readings logged by energy meter should not be changeable by either Common Meter Reading Instrument or P.C.
2. All tamper events shall be recorded with date and time.
3. Event wise allocation of 350 tampers in the meters shall be as under: -

Event Category description	**Tamper**
Voltage related events including over voltage & low voltage	132
Current related events including over current and current unbalance.	134
Power failure related events	50
Transaction related events	10
Other events	20
Non- rollover events	04
Total	

17. ABNORMAL VOLTAGE/ FREQUENCY DEVICE TEST:

The accuracy of the meter should not be affected with the application of abnormal voltage/frequency generating device available in ME Labs of PSPCL having spark discharge of approximately 35KV. Meter shall be tested by feeding the output of abnormal voltage/frequency generating device to the meter in any of the following manners for a total period of 10 minutes:

i) On any of phase or neutral terminals.
ii) On any connecting wires of meter.
iii) Spark on meter body (including optical port)
iv) At any place in load circuit.

} Voltage ddischarge with 0-10 mm spark

However, spark on meter body test shall not be conducted on the RS-232 port.

Accuracy of the meter shall be checked before and after the application of the above device.

During this test i.e. during the application of abnormal voltage/ frequency generating device, display as well as pulse of meters should not be affected.

The Abnormal Voltage/ Frequency devices are available at ME Lab, Patiala. Meter will be tested with any of the five devices to be selected randomly out of total devices available with ME Lab, Patiala. Firms are at liberty to get their meters tested from ME Lab, Patiala with high voltage, high frequency device before submission of sample meters to this office. In case of successful bidders, the meters shall be tested at the works during inspection with any of devices available with PSPCL.

18. EFFECT OF ABNORMAL MAGNETIC INDUCTION:

In the event of logging of abnormal magnetic induction with date & time, the meter should record energy in import register only equivalent to the product of rated voltage, rated maximum current and unity power factor if tamper persists for three minutes or more. Restoration time for magnetic tamper shall be 30 Seconds minutes after removal of tamper. Date and time of occurrence of tamper and total duration of the tamper will be recorded by the meter. Sensor used for detecting this tamper should be of electronic type.

This test shall be performed using 0.5 Tesla permanent magnet and meter should record energy in import register only equivalent to the product of rated voltage, rated maximum current and unity power factor at least at one location / place on the meter.

However, at all other points where meter does not record at Imax, it should record energy correctly as per IS-14697:1999 (with latest amendments). Also before logging the tamper, meter should record energy correctly as per IS- 14697:1999 (with latest amendments up to 31.01.2017).

19. Meter shall record the energy accurately, within the permissible limits of error, under the effect of radiation emitted by mobile phone.

The test shall be carried out by bringing any mobile phone in close proximity of the meter for 10 minutes when there is an incoming call and shall be checked under the following conditions-

1	10 % Ib at UPF
2	50 % Ib at UPF
3	100 % Ib at UPF
4	120 % Ib at UPF

20. The registration of reactive and apparent energy at leading power factor shall be as follows:-

Reactive energy shall be stored in a separate register.

21. POWER CONSUMPTION:

i) The active and apparent power consumption in each voltage circuit at reference voltage, reference temperature and reference frequency shall not exceed 1.0W and 10 VA.

ii) The apparent power taken by each current circuit, at basic current, reference frequency and reference temperature shall not exceed 1.0VA.

Note: The testing shall be carried out strictly under test conditions as per clause-12.9 of IS-14697 (with latest amendments).

22. WORKING ENVIRONMENT

As per IS 14697-1999 (with latest amendments) meter to perform satisfactorily under Non Air conditioned environment (with in stipulations of IS). Meter body will conform to IP51 degree of protection.

The meter shall be suitable designed for satisfactory operation under the hot and hazardous tropical climate conditions and shall be dust and vermin proof. All the parts and surface, which are subject to corrosion, shall either be made of such material or shall be provided with such protective finish, which provided suitable protection to them from any injurious effect of excessive humidity.

23. PERFORMANCE UNDER INFLUENCE QUANTITIES

The meters performance under influence quantities shall be governed by IS: 14697-1999 (with latest amendments). The accuracy of meter shall not exceed the permissible limits of accuracy as per standard IS 14697 (with latest amendments).

24. OUTPUT DEVICE

Energy meter shall have test output, accessible from the front, and be capable of being monitored with suitable testing equipment while in operation at site. The operation indicator must be visible from the front and test output device shall be provided in the form of LED output device for kWh and kVArh measurement. Resolution of the test output device shall be sufficient to conduct satisfactorily accuracy test at the lowest load in less than 5 minutes and the starting current test in less than 10 minutes as per Clause 6.11 of IS: 14697 with latest amendments.

25. CALIBRATION AT SITE

It shall not be possible to change calibration of meters at site.

26. OPERATION MANUALS

The supplier shall supply free of cost detailed operating and maintenance manuals of meters and software to the purchaser for use. The number of such manual sets shall be equal to the numbers of meters under purchase.

27. NAME PLATE AND MARKINGS

The letters Punjab State Power Corporation Limited (PSPCL) & 'ISI' mark shall be indelibly and clearly marked at the appropriate place of the meters. The meter shall have a name plate clearly visible, effectively secured against removal and indelible & distinctly marked with the particulars mentioned generally as per IS: 14697 with latest amendments. In addition the words 'Property of PSPCL', Purchase Order No & date, Year/Month of manufacture and guaranteed for the duration of contact period or guarantee period provided by the manufacturer, whichever is higher from the date of supply shall be either punched or marked indelibly on the name plate. Purpose of LED indicators shall be clearly printed on the name plate. Month & year of replacement of the meter supplied against guarantee shall be indicated on meter name plate.

28. CONNECTION DIAGRAM:

Every meter shall have a diagram showing the external connections appropriate to its type which shall be embossed / engraved on transparent meter terminal cover and shall be clearly readable. The sequence of connections shall conform to IS: 14697 with latest amendments. Schematic diagram of meter shall also be supplied with tender.

29. PERFO RM ANCE GUARA NTEE:

Meter shall be guaranteed for the duration of contact period or guarantee period provided by the manufacturer, whichever is higher from the date of supply. If any meter fails during this period free replacement shall be carried out by the firm within 2 months of notification of defects. Detailed guarantee clause is given in general terms & conditions.

30. QUALITY AND WORKMANSHIP

Workmanship and material used should be of the best quality. Due weight-age will be given to the quality of each assembly/ component. Meter shall be manufactured using latest 'state

of the art' technology and methods prevalent electronic industry. The meter shall be made from high accuracy and reliable Surface Mount Technology (SMT) components. All inward flow of major components and sub assembly parts (CT, PT/RTC/Crystal, LCD, LED, power circuit assembly etc.) shall have batch and source identification. Fully tested Multilayer glass epoxy 'PCB' assembly with 'PTH' (Plated Through Hole) using surface mounted component shall have adequate track clearance for power circuits. Mounting of components on PCB shall be SMT (Surface Mounted Technology) Type and components shall be assembled using automatic 'pick-and place' machines, reflow soldering oven, for stabilized setting of the components on PCB. For soldered PCBs, cleaning and washing of cards, after wave soldering process is to be carried out as a standards practice. Assembly line of the manufacturing system shall have provision for testing of sub- assembled cards. Manual placing of components and soldering to be minimized to items, which cannot be handled by automatic machines. Handling of 'PCB' with ICs/CMOS components, to be restricted to bare minimum and precautions to prevent 'ESD' failure to be provided.

Latest technology such as hybrid microcircuit or Application Specific Integrating Circuit (ASIC)/ Micro controller shall be used to ensure reliable performance. The electronic components used in meter shall be of high quality from world-renowned manufacturers and there shall be no drift in accuracy of the meter over a long period of time. Make of ASICs/Microcontroller to be used should be ANALOG DEVICES/ SEMS/ ATMEL/ SIEMENS/ TOSHIBA/ PHILIPS/ FJITSU/ NATIONAL/ TDK/ AMS/ ZILOG/ ST Micro Electronics/ CIRRUS LOGIC/ MOTOROLLA (now Freescale)/ TEXAS INSTRUMENTS/MICROCHIP/RENESAS. Meter manufacturing firms should have BIS certificates for meters similar to offered meter on date of submission of tenders.

Complete assembled and soldered PCB should undergo functional testing using computerized Automatic Test equipment. Fully assembled and finished meter shall undergo 'burn-in' test process for 12 hours at 55 degree Celsius (Max. temperature not to exceed 60 degree Celsius) under base current (I_b) load condition.

Test points should be provided to check the performance of each block/stage of meter circuitry. RTC shall be synchronised with NPL time at the time of manufacture. Meters testing at intermediate and final stage shall be carried out with testing instruments, duly calibrated with reference standard with tractability of source and date.

31. W I R I N G

Arrangement of internal wiring of meter shall be neat and held suitably away from live parts. Colours of leads and wires used for different phases shall be of relevant colour i.e. red colour for red phase and so on.

32. INSPECTION A ND TESTING

a) The inspection and testing shall be done as per IS: 14697 / CBIP-325 (with latest amendments). All the meters shall be tested, calibrated and sealed by the supplier at their works before dispatch. While offering the meters for inspection, the record of routine test results for each meter shall be put up to Inspecting Officer for verification. A register shall be maintained in Manufacturer's office for this purpose. The testing of meters shall only be done after verification of the test results by the Inspecting Officer and copy of the routine test certificates of individual meter shall be supplied to consignees alongwith meters.

The tests as per IS:14697 (latest) and as per CBIP325 report (Latest) for magnetic strength of AC and DC permanent magnet, respectively, shall be carried out during inspection by PSPCL before dispatch.

The PSPCL shall inspect, examine and test the equipment /material through i ts officer(s) or through an out - side agency no m i n a t e d b y P S P C L at manufacturer's/suppliers works during or after the manufacture of goods or at NABL accredited laboratory (CPRI, ERTL, ETDC & ERDA only **),** prior to dispatch, on receipt of

clear notice of minimum two weeks in advance to be reckoned from the date of receipt by the purchaser. The supplier shall give the list of tests for which testing facilities with the manufacturer are not available and submit the proposal for carrying out the same at reputed test laboratories. Sealing shall be done with hydraulic press and Aluminium seals with steel lash wire, which shall be provided by the supplier. The supplier shall provide to the Inspector/representative of the purchaser with reasonable facilities, free of charge, to satisfy him that the equipment offered is in accordance with the specification/ISS.

The benefit of permissible displacement of zero line under clause-12.15 of IS: 14697-1999 "Limit of error and Interpretation of Test Results" shall not be allowed during Testing of meters.

The Inspecting agency can carry out any type test which felt necessary as acceptance tests at firm's works. PSPCL Inspecting Officer will open one meter, to check physical parameters.

b) **Two samples meters shall be sealed during inspection from any 2 (two) lots of offered material** and shall be got type tested by PSPCL from any external NABL approved laboratory out of CPRI, ERTL, ETDC & ERDA only at the cost of supplier and in case of any failure, the entire lot shall be rejected at the risk and cost of the supplier. Further, PSPCL may get the sample meters type tested from the subsequent lots from any of the above mentioned laboratories, at its own cost.

Note- In case the sealed sample fails in testing then the sample of subsequent lot shall be tested at the cost of the firm.

c) During inspection of material, it shall be certified in the inspection report that the meter base, meter cover & terminal cover have been made out of high quality reinforced polycarbonate. **The samples of above parts shall be sealed from any two lots during inspection** and got tested from any Govt. approved Laboratory at the cost of supplier, for carrying out following tests:-

   i) UV ageing as per ASTM: G53.
   ii) Ball pressure as per IEC-60695-10-2.
   iii) Flammability Test as per UL-94/IS-11731.
   iv) Glow wire test as per IS-11000/IEC PUB, 60695-2-12.
   v) Heat deflection temperature as per ISO-75/Ae and Boiling water test (10 Minutes)

Note: - Please also refer Clause no. 21 "INSPECTION AND TESTING" of Schedule-E of this specification.

33. TYPE TEST AND TEST CERTIFICATES

The Concessionaire shall submit type test certificates of meters along with tender, issued by NABL accredited laboratory for all type tests covered in IS: 14697 with latest amendments including immunity to magnetic field as per CBIP -325 with latest amendments and these test certificates shall pertain to LT AC 3-Phase, 4-Wire CT operated Static Energy Meters of Accuracy Class-0.5S (for both active and reactive energy) only. Concessionaires shall also submit, along with tender, Type Test Certificates of high quality Reinforced Polycarbonate material used for meter housing material i.e. base/cover/terminal cover from any Government. approved Laboratory. The Concessionaire shall also submit valid DLMS compliant certification (category-C1), as per Indian Standard IS 15959 with latest amendments), of the offered meters along with tender. Further, these tests must not have been conducted earlier than two years from the scheduled date of bid opening. The purchaser reserves the right to demand repetition of some or all the type tests in the presence of purchaser's representative free of cost.

For any change in the design/type, already type tested and the design/type offered against this specification, the purchaser reserves the right to demand repetition of tests free of

cost. In case type test certificate are not submitted as per tender specifications then the tender shall be rejected.

The type test certificates submitted by the Concessionaires should clearly contain the following information that the:

- Type of Display is LCD /LED.
- Meter case is of polycarbonate.
- Class of Accuracy of the meter is 0.5S**.**

In addition to these, the Concessionaires shall obtain a valid ISO 9001:2008 certification from meter manufacturing company, ISO 27001:2005 for information security management system & ISO 14001:2004 for environmental management system and shall submit the same to the LMC along with the technical bid.

NOTE-

1. ***All type tests as per IS-14697 with latest amendments should be got carried out on the same sample meter with same Lab identification code of Test House. Similarly all the type tests for magnetic field as per CBIP- 325 may be on single sample meter.***
2. Reports for type tests conducted in manufacturer's own laboratory and certified by testing institute shall not be acceptable.
3. The sample meters submitted (as per clause-38 of the tender specification) shall be examined/tested for various tests / accuracy (as per relevant ISS or other standards mentioned elsewhere) for both active and reactive energy as per accuracy class 0.5S.

34. SUPPORT SERVICES

In addition to the supply of meters and equipment the supplier would be required to extend supports services as under:-

a) The supplier shall provide meters along with software for data transfer to base computer through CMRI's/Direct down loading of data to laptop computer/direct transmission media i.e. telephone line, cellular phone, wireless etc. with auto-dialer feature and shall assist in converting the same into data base in the base computer. The software should have feature to give command to reset the MDI through base computer.

b) Based on the data retrieved from the meters, generate analysis report for the Board so as to reflect on the following parameters for enabling the purchaser to take necessary corrective actions for future:-

- **i)** Load profiles.
- **ii)** Tamper analysis data and any other such useful information.
- **iii)** The computer software should have suitable interface to transfer the billing Data to billing software on line through LAN or through some data storage device for processing/printing out the energy bills. The computer software should be able to convert the data received from the meter into database so that further processing of the output is possible.

35. MISCELLANEOUS

a) The software provided by the meter manufacturer for base computer should have the provision for entering Meter CT ratio, line CT ratio. Also its software shall be capable of multiplying the meter data with whole number or fractional number arising due to non-matching of meter CT ratio and line CT ratio.

b) The Concessionaire should also submit complete technical write up along with literature of meters.

c) Blinking LED/high resolution display through CMRI for testing active and reactive energy should be available and meter constant should be invariably printed on the dial plate. The testing pulse should be homogenous and manufacturer should state necessary number of pulse count(s) to ensure measurement and accuracy of atleast 1/10th, of class of meters at different test point.

d) Power interruptions should be stamped with 50 (fifty) events but the events occurred for (1/2) half hours and above should be logged in the print out with total number of events occurred.

e) Meter should have the facility for data downloading during power OFF position. When battery push button is kept pressed ON.

f) Provision should be made for recording cumulative daily energy (in KWH & KVAH) at 00:00 Hours, for the purpose of energy auditing for last 70 (seventy) "Power ON" days.

g) Maximum Demand History data (KW & KVA) should be available for last 12 (twelve) calendar months; all the MDI registers should be with date and time stamping. Cumulative energy (kWh & KVAH) at 00.00 Hrs shall also be available in the memory for last 12 calendar months.

h) The meter must provide summary report for all total nos. of tamper events and total duration (for each type) for the events occurred from the date of manufacturing and it shall not be possible to reset the values to zero through programming or rollover.

3 6 . SAMPLES

Firms are requested to submit four number samples (-/5A) of offered meters (as tabulated below), on or before the opening date & time of tenders and supply software logics to examine acceptability of their products.

Ratio	**Accuracy class (forboth active and reactive energy)**	**Welding**	**No. of samples**
-/5 Amp	0.5S	Ultrasonically	4

In case order is placed on a firm, the meters shall be supplied as per the sample & the specification. No subsequent changes in design shall be allowed in supplies unless the same is got approved from purchaser with due justification.

37. CERTIFICATES:

Following Certificates will be furnished by the bidders in their offer:

a) That their meters are capable of recording of 350 tamper events.

b) That their meters are capable of recording of minimum 70 "Power ON" days load survey.

c) That RTC Drift shall be within (+/-) 3 minutes for the year.

d) The time period of TOD recordings are programmable as per DLMS standard with proper security.

e) Software takes care of 29th Feb of the leap year.

f) No fake ICs will be used by them in the manufacturing meters to be supplied.

g) Meter will not be affected by Abnormal Voltage/ Frequency Device as per clause-18 of specification.

h) Internal software related with accuracy, tamper recording and accuracy of meters and other parameters of meter shall not be re-programmable through Communication Port. Or 'RS-232 Port'.

This specification is a guideline, for supply the Trivector metering features. However, the Concessionaire should offer the meter as per IS: 14697/companion specification bringing out clearly the all-technical features provided in their Trivector meters.

38. REAL TIME CLOCK AND BATTERY

Maximum Demand integration cycle of 30 minutes shall be on the basis of 'Real Time Clock' (RTC) of the meter. The maximum drift in real time clock of the meter shall not exceed (±) 3 minutes per year.

A lithium battery (Non-rechargeable) of adequate capacity shall be used for supplying energy to the real time clock during no voltage or power off condition. The minimum life of the battery should be ten years with a shelf life of 2 years**.** The lithium battery (non-rechargeable) shall be of any make out of MAXELL, HITACHI/ PANASONIC/VARTA/ EVE/ MITSUBHISHI.

The RTC battery & the battery for display in case of power failure shall be separate. In any case, RTC battery Power shall not be used for display under power off condition.

The RTC provided in the meter shall be pre -programmed for 30 (thirty) years without any necessity for correction with maximum drift not more than (+/-) 180 (one hundred and eighty) seconds per year. The day/date setting and synchronization shall only be possible once in a year subject to maximum of 3 (three) minutes through password/key code command from one of the following:

Remote server through suitable Communication network/ PC/Substation data logger.