


AMRITSAR SMART CITY LIMITED

NATIONAL COMPETITIVE BID (NCB) **BID REFERENCE NO. 02/ASCL/2018-19**

BIDDING DOCUMENT FOR WORKS OF IMPLEMENTING SMART LED STREET LIGHTS AND CENTRALIZED CONTROL & MONITORING SYSTEM ON EPC MODE WITH OPERATION AND MAINTENANCE OF 5 (FIVE) YEARS IN MUNICIPAL CORPORATION AMRITSAR, AMRITSAR UNDER SMART CITY MISSION

September 2018

CHIEF EXECUTIVE OFFICER
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AMRITSAR SMART CITY LIMITED

National Competitive Bid (NCB)

Bid Reference No. 02/ASCL/2018-19

Bidding Document for

Works of Implementing Smart LED Street Lights And Centralized Control & Monitoring System on EPC Mode With Operation And Maintenance Of 5 (Five) Years In Municipal Corporation Amritsar, Amritsar Under Smart City Mission

September – 2018

Project Cost Rs.34.57 Cr.

Chief Executive Officer

Amritsar Smart City Limited,
2nd Floor, SCO-21,
District Shopping Complex,
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AMRITSAR SMART CITY LIMITED

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DETAILED NIB

NIB No.:

02/ASCL/2018-19

Notice inviting online bids for Works of Implementing Smart LED Street Lights And Centralized Control & Monitoring System on EPC Mode With Operation And Maintenance of 5 (Five) Years In Municipal Corporation Amritsar, Amritsar Under Smart City Mission

Chief Executive Officer, Amritsar Smart City Limited (ASCL), Amritsar invites online unconditional Bids through e-procurement portal **https://www.tenderwizard.com/PUNJAB** 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	Chief Executive Officer, Amritsar Smart City Limited, SCO – 21, 2nd Floor, District Shopping Centre, Block – B, Ranjit Avenue, Amritsar - 143001, Punjab, India
Subject matter of procurement	Notice inviting online Bids for works of Implementing Smart LED Street Lights and Centralized Control & Monitoring System on EPC Mode with Operation and Maintenance period of 5 (five) years in Municipal Corporation Amritsar, Amritsar under the Smart City Mission.
Period of completion of physical works	6 (Six) Months
Bid Procedure	Single-stage: 2 (two) Part (envelope) open competitive E-Reverse Auction procedure at

	https://www.tenderwizard.com/PUNJAB

Bid Evaluation Criteria (Selection Method)	Least Cost Based Selection (Lowest bid on E-Reverse Auction)
Eligibility Criteria	As detailed in Bid documents
Websites for downloading Bidding Document	**https://www.tenderwizard.com/PUNJAB**
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. 20,000/- (Rupees Twenty Thousand only). Tender Processing Fee (Non-Refundable): As per the Portal
Estimated Procurement Cost	Rs 34,57,27,910 (Rupees Thirty Four Crore Fifty Seven Lakh Twenty Seven Thousand Nine Hundred Ten Only).
Bid Security (also known as Earnest Money Deposit) and Mode of Payment	Rs.69,14,000/- (Rupees Sixty Nine Lakh Fourteen Thousand only) Mode of Payment*:* BID SECURITY shall be deposited through RTGS/NEFT/ Online**.** The Unique Transaction Reference (UTR) of RTGS/NEFT 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:- 17.09.2018, 05:00 PM
	End Date: - Till: 16.10.2018 06:00 PM
Pre-bid Meeting	Date/ Time 28.09.2018 at 11:00 AM. Place: SCO – 21, II Floor, District Shopping Complex, Block – B, Ranjit Avenue, Amritsar, Punjab, 143001
Manner, Start Date for submission of Bids	Manner: Online at **https://www.tenderwizard.com/PUNJAB** Start Date: 17.09.2018 05:00 P.M.

Manner, End Date for submission of Bids	Manner*:* Online at **https://www.tenderwizard.com/PUNJAB** End Date*:*16.10.2018 06:00 P.M.
Submission of original document and other documents listed herein after	Date: 16.10.2018 06:00 P.M.
Date & Time of Technical Bid Opening	Date: 17.10.2018 03:00 P.M.
Date/ Time/ Place of Financial Bid opening and E-Reverse Auction	Will be intimated later to the Technically Qualified bidders
Bid Validity	120 (One hundred and twenty) 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 Amritsar Smart City Limited, Amritsar 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 Amritsar Smart City Limited, Amritsar by time and date mentioned above and scanned copies of same should also be uploaded along with the technical Bid/ cover:
   i. Letter of Technical Bid
   ii. Power of Attorney for appointing authorized representative
   iii. Joint Venture Agreement.
3) Any subsequent addendum/corrigendum shall be published only at the website **https://www.tenderwizard.com/PUNJAB** 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.

WORKS OF IMPLEMENTING SMART LED STREET LIGHTS AND CENTRALIZED CONTROL & MONITORING SYSTEM ON EPC MODE WITH OPERATION AND MAINTENANCE OF 5 (FIVE) YEARS IN MUNICIPAL CORPORATION AMRITSAR, AMRITSAR UNDER SMART CITY MISSION

Specific Procurement Notice – Request for Bids (RFB)

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PART 1 – Bidding Procedure

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Section I - Instructions to Bidders

	A.GENERAL
1. Scope of Bid	1.1 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.
	1.2 Throughout this Bidding document: (a) 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; (b) if the context so requires, "singular" means "plural' and vice versa; and (c) "Day" means calendar day, unless otherwise specified as a "Business Day." A Business Day is any day that is a working day of the Employer. It excludes the Employer official public holidays.
2. Source of Funds	2.1 Source of Fund is from Smart City Mission Funds [Government of India ("GoI") and Government of Punjab ("GoP")]
3. Fraud and Corruption	3.1 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. 3.2 In further pursuance of this Policy, the Bidders shall permit and shall cause their agents (where declared or not), subcontractors, sub- consultants, service providers, suppliers, and their personnel, to permit the Employer to inspect all accounts, records and other documents relating to any initial selection process, prequalification process, Bid Submission, Proposal Submission, and Contract Performance (in the case of award), and to have them audited by auditors appointed by the Employer.

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**") 4.6—or any combination of them in the form of a Joint Venture ("**JV**"), under an existing agreement, or with the intent to enter into such an agreement supported by a letter of intent. In the case of a JV, all members shall be jointly and severally liable for the execution of the entire contract in accordance with the contract terms. The JV shall nominate a representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the Bidding process and, in the event the JV is awarded the contract, during contract execution. Unless specified in the BDS, there is no limit on the number of members in a JV.

	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: (a) directly or indirectly controls, is controlled by or is under common control with another Bidder; or (b) receives or has received any direct or indirect subsidy from another Bidder; or (c) has the same legal representative as another Bidder; or (d) 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 (e) 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 (f) 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 (g) 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 common control with that firm; (h) or has a close business or family relationship with a professional staff of the Employer (or of the 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 A firm that is a Bidder (either individually or as a JV member) shall not participate in more than 1 (one) Bid, except for permitted alternative Bids. This includes participation as a subcontractor in other Bids. Such participation shall result in the disqualification of all Bids in which the firm is involved. A firm that is not a Bidder or a JV member may participate as a subcontractor in more than 1 (one) Bid.
	4.4 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 the determination of the nationality of proposed subcontractors or sub-consultants for any part of the contract including related services.
	4.5 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.
	4.6 A Bidder shall provide such documentary evidence of eligibility satisfactory to the Employer, as the Employer shall reasonably request.
	4.7 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.
	4.8 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	5.1 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 may be required to provide evidence of the origin of materials, equipment and services.

B. Contents of Bidding Document	
6. Sections of Bidding Document	6.1 The bidding document consist of Parts 1, 2, and 3, which include all the sections specified below, and which should be read in conjunction with any Addenda issued in accordance with ITB, Clause 8. **PART 1 Bidding Procedures** Section I - Instructions to Bidders (ITB) Section II - Bid Data Sheet (BDS) Section III - Evaluation and Qualification Criteria Section IV - Bidding Forms Section V - Eligible Countries Section VI - Fraud and Corruption **PART 2 Works' Requirements** Section VII – Works' Requirements **PART 3 Conditions of Contract and Contract Forms** Section VIII - General Conditions of Contract Section IX - Particular Conditions of Contract Section X - 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 Meeting	7.1 A 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 following the procedure under ITB Clause 8 and ITB Clause 22.2.
	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 will be 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. If so specified in the BDS, the Employer shall also promptly publish the Minutes of the Pre-Bid Meeting at the web page identified in the BDS. 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 an 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 22.2.

C. Preparation of Bids	
9. Cost of Bidding	9.1 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	10.1 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 language specified in the BDS. 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 language specified in the BDS, 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 (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. 11.5 In addition to the requirements under ITB 11.2, Bids submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful Bid shall be signed by all members and submitted with the Bid, together with a copy of the proposed Agreement. 11.6 The Bidder shall furnish in the Letter of Bid – Financial Part information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid.
12. Letters of Bid and Schedules	12.1 The 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 Unless otherwise specified in the BDS, alternative Bids shall not be considered.
	13.2 When alternative times for completion are explicitly invited, a statement to that effect will be included in the BDS, and the method of evaluating different alternative times for completion will be described in Section III, Evaluation and Qualification Criteria.
	13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the requirements of the Bidding Document must first price the Employer's design as described in the Bidding Document and shall further provide all information necessary for a complete evaluation of the alternative by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the Bidder with the Most Advantageous Bid conforming to the basic technical requirements shall be considered by the Employer.
	13.4 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 The Bidder shall quote any discounts and indicate the methodology for their application in the Letter of Bid - Financial Part, in accordance with ITB 12.1.
	14.5 Unless otherwise provided in the BDS, and the Conditions of Contract, the prices quoted by the Bidder shall be fixed. If the prices quoted by the Bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract, the Bidder shall furnish the indices and weightings for the price adjustment formulae in the Schedule of Adjustment Data as provided in the Section IV- Bidding Forms and the Employer may require the Bidder to justify its proposed indices and weightings. 14.6 If so specified in ITB 1.1, Bids are invited for individual contracts. Bidders wishing to offer discounts for the award of more than 1 (one) Contract shall specify in their Bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITB 14.4, provided the Bids for all the contracts are opened at the same time.
	14.7 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 and Payment	15.1 The currency(ies) of the Bid and the currency(ies) of payments shall be the same and shall be as specified in the BDS.
	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.
16. Documents Comprising the Technical Proposal	16.1 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.
	17.3 If a margin of preference applies as specified in accordance with ITB 38.1,domestic Bidders, individually or in joint ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility specified in accordance with ITB 38.1.
18. Period of Validity of Bids	18.1 Bids shall remain valid for the Bid Validity period specified in the BDS. The Bid Validity period starts from the date fixed for the Bid submission deadline (as prescribed by the Employer in accordance with ITB 22.1). A Bid valid for a shorter period shall be rejected by the Employer as non-responsive.
	18.2 In exceptional circumstances, prior to the expiration of the Bid validity period, the Employer may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a BID SECURITY is requested in accordance with ITB 19, it shall also be extended for 28 (twenty-eight) days beyond the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its BID SECURITY. A Bidder granting the request shall not be required or permitted to modify its Bid, except as provided in ITB 18.3.

	18.3 If the Award of Contract is delayed by a period exceeding 56 (fifty-six) days beyond the expiry of the initial Bid validity period, the Contract price shall be determined as follows: (a) in the case of fixed price contracts, the Contract Price shall be the Bid Price adjusted by the factor specified in the BDS; (b) in the case of adjustable price contracts, no adjustment shall be made; or (c) in any case, Bid evaluation shall be based on the Bid Price without taking into consideration the applicable correction from those indicated above.
19. Bid Security	19.1 The Bidder shall furnish as part of its Technical Part of its Bid, either a Bid-Securing Declaration or a Bid Security as specified in the BDS, in original form and, in the case of a Bid security, in the amount and currency specified in the BDS.
	19.2 A Bid-Securing Declaration shall use the form included in Section IV, Bidding Forms.
	19.3 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, (b) an irrevocable letter of credit, or (c) transfer through NEFT/ RTGS/ Over The Counter payment or any other format as prescribed in the website of the Employer (d) another security specified in the BDS
	19.4 If a Bid Security or Bid-Securing Declaration is specified pursuant to ITB 19.1, any Bid not accompanied by a substantially responsive Bid Security or Bid-Securing Declaration shall be rejected by the Employer as non-responsive.
	19.5 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.
	19.6 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.

	19.7 The Bid Security may be forfeited or the Bid-Securing Declaration executed: (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: (i) sign the Contract in accordance with ITB 49; or (ii) furnish a Performance Security.
	19.8 The Bid Security or the Bid-Securing Declaration of a JV shall be in the name of the JV that submits the Bid. If the JV has not been constituted into a legally enforceable JV, at the time of Bidding, the Bid Security or the Bid- Securing Declaration shall be in the names of all future members as named in the Letter of Intent mentioned in ITB 4.1 and ITB 11.5.
	19.9 If a Bid Security is not required in the BDS, pursuant to ITB 19.1, and: (a) if a Bidder withdraws its Bid during the period of Bid Validity specified by the Bidder in the Letters of Bid; or (b) if the Successful Bidder fails to: sign the Contract in accordance with ITB 49; or furnish a Performance Security; the Employer may, if provided for in the BDS, declare the Bidder ineligible to be awarded a contract by the Employer for a period of time as stated in the BDS.
20. Format and Signing of Bid	20.1 The Bidder shall prepare the Bid, in accordance with this Instruction, ITB 11 and ITB 21. 20.2 Bidders shall mark as "CONFIDENTIAL" information in their Bids which is confidential to their business. This may include proprietary information, trade secrets or commercial or financially sensitive information.
	20.3 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 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.

	20.4 In case the Bidder is a JV, the Bid shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a Power of Attorney signed by their legally authorized representatives.
D. Submission of Bids	
21. Sealing and Marking of Bids	21.1 The Bidder shall submit the Bids through e-portal. All the e-documents required for Technical qualification shall be submitted as per ITB and formats as per Section IV of the RFP documents. Bidder shall submit all the required documents and submit as per the standard procurement procedures of the e-portal **https://www.tenderwizard.com/PUNJAB** 21.2 Financial Part shall be uploaded in the given format in web portal. 21.3 All the submission will be as mentioned in BDS. 21.4 In addition, the Bidder shall submit hard copy of the Bid in the number if specified in the BDS. All the required documents shall be uploaded in the e-portal and Employer shall not have any liability towards the failure in uploading of the documents by the Bidder.
22. Deadline for Submission of Bids	22.1 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 specified in the BDS.
	22.2 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.
23. Late Bids	23.1 The Employer shall not consider any Bid that arrives after the deadline for submission of Bids, in accordance with ITB 22. Any Bid received by the Employer after the deadline for submission of Bids shall be declared late, rejected, and returned unopened to the Bidder.
24. Withdrawal, Substitution, and Modification of Bids	24.1 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 in accordance with ITB 20.3, (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 and ITB 21 (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 22.
	24.2 Bids requested to be withdrawn in accordance with ITB 24.1 shall be returned unopened to the Bidders.
	24.3 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.
E. Public Opening of Technical Parts of Bids	
25. Public Opening of Technical Parts of Bids	25.1 Except in the cases specified in ITB 23 and ITB 24.2, 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 22.1, shall be as specified in the BDS.
	25.2 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. 25.3 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.
	25.4 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.

	25.5 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. 25.6 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.
	25.7 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 23.1).
	25.8 The Employer shall prepare a record of the Technical Parts of Bid opening that shall include, as a minimum: (a) the name of the Bidder and whether there is a withdrawal, substitution, or modification; (b) the receipt of envelopes that there are no "FINANCIAL PART" submitted in the Hard Copy; (c) the presence or absence of a Bid Security or Bid-Securing Declaration, if one was required; and (d) if applicable, any Alternative Bid – Technical Part.
	25.9 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.
F. Evaluation of Bids – General Provisions	
26. Confidentiality	26.1 Information relating to the evaluation of Bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with the Bidding process until information on Intention to Award the Contract is transmitted to all Bidders in accordance with ITB 44.
	26.2 Any effort by a Bidder to influence the Employer in the evaluation of the Bids or Contract award decisions may result in the rejection of its Bid.
	26.3 Notwithstanding ITB 26.2, from the time of Bid opening to the time of Contract award, if a Bidder wishes to contact the Employer on any matter related to the Bidding process, it shall do so in writing.

27. Clarification of Bids	27.1 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 36.
	27.2 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.
28. Deviations, Reservations, and Omissions	28.1 During the evaluation of the Bids, the following definitions apply: (a) "Deviation" is a departure from the requirements as specified in the Bidding Document; (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and (c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Document.
29. Non-material Non-conformities	29.1 Provided that the Bid is substantially responsive, the Employer may waive any non-conformity in the Bid.
	29.2 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.
	29.3 Provided that a Bid is substantially responsive pursuant to ITB 31, 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.

G. Evaluation of Technical Parts of Bids	
30. Evaluation of Technical Parts	30.1 In evaluating the Technical Parts of each Bid, the Employer shall 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.
31. Determination of Responsiveness	31.1 The Employer's determination of a Bid's responsiveness is to be based on the contents of the Bid itself, as defined in ITB 11. 31.2 A substantially responsive Bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that: (a) if accepted, would: (i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or (ii) limit in any substantial way, inconsistent with the Bidding Document, the Employer's rights or the Bidder's obligations under the proposed Contract; or (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.
	31.3 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.
	31.4 If a Bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.
32. Qualification of the Bidder	32.1 The Employer shall determine to its satisfaction whether the eligible Bidders that have submitted substantially responsive Bid - Technical Part meet the qualifying criteria as specified in Section III, Evaluation and Qualification Criteria.

	32.2 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. The determination shall not take into consideration the qualifications of other firms such as the Bidder's subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Subcontractors if permitted in the Bidding Document), or any other firm different from the Bidder.
	32.3 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.
	32.4 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.
33. Subcontractors	33.1 Unless otherwise stated in the BDS, the Employer does not intend to execute any specific elements of the Works by subcontractors selected in advance by the Employer. 33.2 The subcontractor's qualifications shall not be used by the Bidder to qualify for the Works unless their specialized parts of the Works were previously designated by the Employer in the BDS as can be met by subcontractors referred to hereafter as "**Specialized Subcontractors**", in which case, the qualifications of the Specialized Subcontractors proposed by the Bidder may be added to the qualifications. 33.3 Bidders may propose Subcontracting up to the percentage of total value of contracts or the volume of works as specified in the BDS. Subcontractors proposed by the Bidder shall be fully qualified for their parts of the Works.
H. Public Opening of Financial Parts of the Bids	
34. Public Opening of Financial Parts (E-Reverse Auction)	34.1 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.

	34.2 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.
	34.3 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.
	34.4 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.
	34.5 The Employer shall neither discuss the merits of any Bid including the "Financial Part".
	34.6 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; and (c) the last Bid price of every Bidder, as per contract if applicable, including any discounts.

	34.7 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.
I. Evaluation of Financial Parts of the Bids	
35. Evaluation of Financial Parts	35.1 To evaluate the Financial Part, the Employer shall adopt the methodology as set out in ITB 53 of this document.
36. Correction of Arithmetical Errors	36.1 In evaluating the Financial Part of each Bid, the Employer shall correct arithmetical errors on the following basis:
	(a) 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; (b) 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
	(c) 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.
	36.2 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.
37. Conversion to Single Currency	37.1 For evaluation and comparison purposes, the currency(ies) of the Bids shall be converted in a single currency as specified in the BDS.
38. Deleted	Deleted
39. Comparison of Financial Parts	39.1 The Employer shall compare the evaluated costs of all responsive and qualified Bids to determine the Bid that has the lowest evaluated cost.
	40.1 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.

40.Abnormally Low Bids	40.2 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. 40.3 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 shall reject the Bid.
41. Unbalanced or Front Loaded Bids	41.1 If the Bid for admeasurements 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. 41.2 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.

1 In lump-sum Contracts, delete "Bill of Quantities" and replace with "Activity Schedule."

2 Day work is work carried out following the instructions of the Engineer In Charge and paid for on the basis of time spent by the workers, use of materials and the Contractor's equipments, at the rates quoted in the Bid. For day work to be priced competitively for Bid evaluation purposes, the Employer must list tentative quantities for individual items to be taken against day work (e.g., a specific number of tractor driver staff-days or a specific tonnage of Portland cement), to be multiplied by the Bidders' quoted rates and included in the total Bid price.

42. Most Advantageous Bid	42.1 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.
43. Employer's Right to Accept Any Bid, and to Reject Any or All Bids	43.1 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.
44. Standstill Period	44.1 The Contract shall be awarded not earlier than the expiry of the Standstill Period. The duration of the Standstill Period is specified in the BDS**.** Where only one Bid is submitted, the Standstill Period shall not apply.
45. Notice of Intention to Award	45.1 When a Standstill Period applies, it shall commence when the Employer has transmitted to each Bidder (that has not already been notified that it has been unsuccessful) the Notification of Intention to Award the Contract to the successful Bidder. The Notification of Intention to Award shall contain, at a minimum, the following information: a) the name and address of the Bidder submitting the successful Bid; b) the Contract price of the successful Bid; c) the names of all Bidders who submitted Bids; and their Bid prices as readout and evaluated; d) a statement of the reason(s) the Bid (of the unsuccessful Bidder to whom the letter is addressed) was unsuccessful, unless the price information in (c) above already reveals the reason; e) the expiry date of the Standstill Period; and f) instructions on how to request a debriefing and/or submit a complaint during the standstill period.
J. Award of Contract	
46. Award Criteria	46.1 Subject to ITB 43, the Employer shall award the Contract to the Bidder who quotes a price lower than the Lowest Bid, in the E-Reverse Auction.

47. Notification of Award	47.1 Prior to the expiration of the Bid Validity Period and upon expiry of the Standstill Period specified in BDS, ITB 44.1 or any extension thereof, or upon satisfactorily addressing a complaint that has been filed within the Standstill Period, 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"). 47.2 At the same time, the Employer shall publish the Contract Award Notice which shall contain, at a minimum, the following information: a) name and address of the Employer; b) name and reference number of the Contract being awarded and the selection method used; c) names of all Bidders that submitted Bids and their Bid prices as read out at Bid opening and as evaluated; d) names of all Bidders whose Bids were rejected either as nonresponsive or as not meeting qualification criteria or were not evaluated, with the reasons thereof; and e) the name of the Successful Bidder, the final total Contract price, the Contract duration and a summary of its scope. 47.3 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. 47.4 The Contract Award Notice shall be published on the Employer's website with free access. 47.5 Until a formal Contract is prepared and executed, the Letter of Acceptance shall not constitute a binding Contract.
48. Debriefing by the Employer	48.1 On receipt of the Employer's Notification of Intention to Award referred to in ITB 45.1, an unsuccessful Bidder has 3 (three) Business Days to make a written request to the Employer for a debriefing. The Employer shall provide a debriefing to all unsuccessful Bidders whose request is received within this deadline.

	48.2 Where a request for debriefing is received within the deadline, the Employer shall provide a debriefing within 5 (five) business days, unless the Employer decides, for justifiable reasons, to provide the debriefing outside this timeframe. In that case, the Standstill Period shall automatically be extended upto 5 (five)) Business Days after such debriefing is provided. If more than one debriefing is so delayed, the standstill period shall not end earlier than 5 (five) business days after the last debriefing takes place. The Employer shall promptly inform by the quickest means available to all Bidders of the extended Standstill Period
	48.3 Where a request for debriefing is received by the Employer later than the 3 (three) business days deadline, the Employer should provide the debriefing as soon as practicable and normally no later than fifteen (15) business days from the date of publication of Public Notice of Award of Contract. Requests for debriefing received outside the 3 (three) Business Days deadline shall not lead to extension of the Standstill Period.
	48.4 Debriefings of unsuccessful Bidders may be done in writing or verbally. The respective Bidder shall bear the costs of attending such a debriefing meeting.
49. Signing of Contract	49.1 Promptly upon Notification of Award, the Employer shall send the Successful Bidder the Contract Agreement.
	49.2 Within 28 (twenty-eight) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.
50. Performance Security	50.1 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 41.2(b), 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.

	50.2 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.
51. Adjudicator	51.1 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 23.1 of the General Conditions of Contract (GCC), to appoint the Adjudicator.
52. Procurement Related Complaint	52.1 The procedures for making a procurement-related Complaint are as specified in the BDS.
53. E-Reverse Auction	a) The E-Reverse-auction (no ties) of the Work will be through regressive bidding process. b) Each Bid shall be submitted online through e-procurement website **https://www.tenderwizard.com/PUNJAB**. 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/PUNJAB)** 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 (**https://www.tenderwizard.com/PUNJAB).** c) The bidder shall submit the financial bid on percentage rate basis which will be considered for fixing the ceiling/ start price. d) For the proposed reverse auction, technically acceptable Bidders whose Financial Bids have been opened shall only be eligible to participate.

	e) 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. f) 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.
	g) 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. h) Every Bidder will be given opportunity to reduce the price by minimum Rs 5,00,000 (Rupees Five lakh only) in every subsequent bid subject to maximum of Rs. 1 Crore (Rupees One Crore Only) per Bid reduction i) 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. j) At the end of Reverse Auction event, the lowest Bid value will be known on the network which shall be final L-1 Bid. k) The L-1 Bid received in the auction for the work shall be its contract amount. l) 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. m) 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 ASCL as per prevailing procedure. His BID SECURITY in such case shall be forfeited n) The provisional acceptance shall be issued by the ASCL 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.

	o) In case violation of conditions of Bidding Process by the Contractor, the contract shall be cancelled by the Procuring Entity. p) 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 upto 1 (one) year. q) 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. r) 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. s) 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 8146699867, 0172-3934667, 3953753,8054628821, 925720340 t) Bidders shall be able to view the following on their screen along with the necessary fields during Online Reverse Auction: 1. Leading (Lowest) Bid 2. Bid placed by the bidder 3. Start Price 4. Decrement value 5. Rank of their own bid during bidding as well as at the close of the auction u) Auto bid is disabled from the starting of the Auction. v) 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)

<table>
<tr><th colspan="2">A. General</th></tr>
<tr><td>ITB 1.1</td><td>The reference number of the Request for Bids (RFB) is: 02/ASCL/2018-19

The Employer is: Amritsar Smart City Limited.

The name of the RFP is: Works Of Implementing Smart LED Street Lights and Centralized Control & Monitoring System on EPC Mode with Operation and Maintenance of 5 (five) years in Municipal Corporation Amritsar, Amritsar under Smart City Mission

Estimated Cost of Work is as under:
<table>
<tr><th>Sr. No.</th><th>Electrical Work (Rs. In Crores)</th><th>O & M (Rs. In Crores)</th><th>Grand Total (Rs. In Crores)</th></tr>
<tr><td>1</td><td>21.33</td><td>13.24</td><td>34.57</td></tr>
</table></td></tr>
<tr><td>ITB 1.2 (a)</td><td>The number and identification of comprising this RFB is: 02/ASCL/2018-19</td></tr>
<tr><td>ITB 1.2(a)</td><td>Electronic –Procurement System

The Employer shall use the following electronic-procurement system to manage this Bidding process: http://www.tenderwizard.com/PUNJAB

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. E-Reverse Auction shall start after opening of Financial Part.</td></tr>
<tr><td>ITB 2.1</td><td>The name of the Project is:

Works of Implementing Smart LED Street Lights and Centralized Control & Monitoring System on EPC Mode with Operation and Maintenance of 5 (five) years In Municipal Corporation Amritsar, Amritsar under Smart City Mission</td></tr>
<tr><td>ITB 4.1</td><td>Maximum number of members in the JV shall be: 3 (Three)</td></tr>
<tr><th colspan="2">B. Contents of Bidding Document</th></tr>
</table>

ITB 7.1	For **clarification purposes** only, the Employer's address is: Attention: ***Chief Executive Officer,*** ***Amritsar Smart City Limited.*** SCO – 21, 2nd Floor, District Shopping Centre, Block – B, Ranjit Avenue, Amritsar - 143001, Punjab, INDIA PIN Code: ***143001,*** Telephone: : ***+91-183-5015048*** Facsimile number: Electronic mail address: ***ceoasclasr@gmail.com***

ITB 7.1	Requests for clarification should be received by the Employer no later than: ***15 (fifteen) days.*** Web page: **http://www.tenderwizard.com/PUNJAB**
ITB 7.4	A Pre-Bid meeting ***"shall"*** take place at the following date, time and place: Date: 28.09.2018 Time: 11.00 AM Place: ***Amritsar Smart City Limited,*** SCO – 21, II Floor, District Shopping Centre, Block – B, Ranjit Avenue, Amritsar - 143001, Punjab, INDIA
ITB 7.5	The Bidder is requested, to submit any questions in writing, to reach the *Employer* not later than one week before the meeting.
ITB 7.6	Web page: http://www.tenderwizard.com/PUNJAB
ITB 10.1	The language of the Bid is: *English* All correspondence exchange shall be in English language.
ITB 13.1	Alternative Bids shall not be permitted.
ITB 13.2	Alternative times for completion shall not be permitted.
ITB 13.4	Alternative technical solutions are permitted
ITB 14.4	Bidders shall only give discount during the auction.
ITB 15.1	The price shall be quoted by the Bidder in: ***Indian Rupees***
ITB 18.1	The Bid validity period shall be ***120 (one hundred and twenty)*** days.
ITB 19.1	A Bid Security *shall be* required which shall be valid for a period of 45 (Forty Five) days beyond the Bid Validity Period. A Bid-Securing Declaration *shall not be* required. If a Bid Security shall be required, the amount and currency of the Bid Security shall be: INR Rs **69,14,000/-** (Rupees Sixty Nine Lakh and Fourteen Thousand Only) in the form of DD/BG/NEFT/RTGS/OTC as mentioned above. DD shall be issued by a Scheduled Bank in India, drawn in favour of the Chief Executive Officer, ASCL and payable at Amritsar. Bid Processing fee or Transaction Fee shall be as mentioned on web portal to be paid vide, NEFT/RTGS only. Bid Document Charges shall be INR Rs. 20,000/- (Rupees Twenty Thousand only) Paid via DD issued by a Scheduled Bank in India, drawn in favour of the Chief Executive Officer, Amritsar Smart City Limited and payable at Amritsar.

ITB 19.3 (d)	Other types of acceptable securities: ***NEFT/RTGS*** ***Net Banking*** ***Over the Counter and any other forms which are provided as per the e-portal.*** ***Demand Draft*** ***Bank Guarantee***
ITB 19.9	If the Bidder performs any of the actions prescribed in ITB 19.9 (a) or (b), the Employer will declare the Bidder ineligible to be awarded contracts by the Employer for a period of *1 (one)* year.
ITB 20.3	The written confirmation of authorization to sign on behalf of the Bidder shall consist of; *Duly executed Power of Attorney in favour of person who is submitting the Bid*

D. Submission of Bids	
ITB 21.4	In addition to the original of the Bid, the number of copies is: **One.**
ITB 22.1	For **Bid submission purposes** only, the Employer's address is: Street Address: ***Chief Executive Officer,*** ***Amritsar Smart City Limited.*** SCO – 21, II Floor, District Shopping Centre, Block – B, Ranjit Avenue, Amritsar - 143001, INDIA PIN Code: ***143001,*** Telephone: : ***+91-183-5015048*** Date: 16.10.2018 Time: 6.00 PM 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 www.tenderwizard.com/PUNJAB *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 : 16.10.2018 6:00 PM

E. Public Opening of Technical Parts of Bids	
ITB 25.1	The Bid opening shall take place at: Street Address: : ***Chief Executive Officer,*** ***Amritsar Smart City Limited.*** SCO – 21, II Floor, District Shopping Centre, Block – B, Ranjit Avenue, Amritsar - 143001, INDIA PIN Code: ***143001,*** Telephone: : ***+91-183-5015048*** Date: 17.10.2018 Time: 3.00 PM
F. Evaluation of Bids – General Provisions	
ITB 29.3	***Not Applicable***
G. Evaluation of Bids - Technical Parts	
ITB 33.1	At this time the Employer to execute certain specific parts of the Works by subcontractors selected in advance- ***None***
ITB 33.3	Contractor's proposed subcontracting: ***None***
H. Public Opening of Financial Parts	
ITB 34.2 (b)	Deleted
ITB 34.2 (c)	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.
ITB 34.3	The Bidders shall be at liberty to participate in E-Reverse Auction from their respective offices / establishment through the e-portal.
ITB 34.7	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.
I. Evaluation of Bids - Financial Parts	

ITB 37.1	The currency that shall be used for Bid evaluation and comparison purposes to convert at the selling exchange rate all Bid prices expressed in various currencies into a single currency is: ***Indian Rupees*** The source of exchange rate shall be: ***Reserve Bank of India*** The date for the exchange rate shall be*:* ***28 (twenty eight)days before the Submission of Bid***
ITB 38.1	• Deleted
ITB 44 Standstill Period	***Not Applicable***
J. Award of Contract	
ITB 50. Performance Security	Performance Security amounting to total 5% (five percent) of contract value (but excluding O&M cost and provisional sum) 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 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 Amritsar (ii) 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, subject to submission of fresh BG valid for the entire O&M period, of an amount 5% (five percent) of total contract value (but excluding O&M cost and provisional sum) or 5% (five percent) of the total O&M cost whichever is higher. 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 expanse 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.

ITB 51 Adjudicator	The Adjudicator proposed by the Employer is***: The Adjudicator shall be named later with mutual consent.***

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 **"Chief Executive Officer, Amritsar Smart City Limited, Amritsar"** payable at Amritsar, failing which the tender will be rejected.

3.1.2 Bidder must be an experienced Contractor/ ESCO/Authorized Dealer or an Original Equipment Manufacturer (OEM) fulfilling the following criteria:

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

(a) Bidder must have previously executed and commissioned similar projects on energy efficient street lighting (at least 10,000 LED Luminaire) in single work order and agreement during last 5 (five) years in any city, nationally or internationally with any government, semi-government or private organization

(b) Bidder must have been engaged in Operation & Maintenance of street lights (at least 10,000 Luminaires) during last 5 (five) years, through a single work order, in any city, nationally or internationally or with any government, semi-government or private organization

(c) 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 the sale of minimum 10,000 LED Street light Luminaires in single work order during last 5 (five) years in any city, nationally or internationally with any government, semi- government or private organizations.

OR

3.1.2.2 **For OEM:** If the bidder is an OEM, then a sale of minimum 30,000 LED Luminaires in multiple work order, having one work order of at least 10,000 LED street lights Luminaires, during last 5 (five) 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 (at least 10,000 Luminaires) during last 5 (five) 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 JV/ Consortium is allowed to meet the eligibility criteria.

3.1.2.3 To meet the eligibility criteria mentioned in 3.1.2.1 and 3.1.2.2, Joint Venture (maximum of 3 (three) parties) is allowed. In case of JV/ Consortium arrangement, the Bidder has to submit the signed duly notarized MOU on Stamp Paper of Rs 1000 (Rupees One thousand Only) along with the Technical Bid.

Note:

Bidders are allowed to submit experience in terms of Technical Qualification of their holding company or subsidiary company only as stipulated in this RFP. For the purpose of this clause:

a) a 'holding company', in relation to one or more other companies, means a company of which such companies are subsidiary companies; and

b) a 'subsidiary company' in relation to any other company (that is to say the holding company), means a company in which the holding company— (a) controls the composition of the Board of Directors; or (b) exercises or controls more than one-half of the total share capital at its own

c) Bidder should provide the details of the company whose experience they are quoting. In case of JV/ Consortium arrangement, the Bidder has to submit the signed duly notarized MoU on Stamp Paper along with the Technical Bid. The format of MoU of JV is provided. Post award of the project, the Successful Bidder should submit the consortium agreement based on the MoU submitted in the bid and that will be the part of Contract Agreement.

3.1.3 The Bidder shall provide a minimum guaranteed savings of 64% (sixty four percent).

3.1.4 The experience of the Bidder/ any one of the members of JV 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.

3.1.5 The Bidder/ any one JV member must have positive net worth and average minimum turnover of Rs.25.93 crores during last 3 (three) financial years. The enhancement factor of 7% (seven percent) will be considered for calculation of turnover. 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.

3.1.6 The Bidder/ all the JV members must submit the fresh (not older than one year as on last date of online submission of the tender) Solvency Certificate of Rs. 10 crores (Rupees Ten Crores).

3.1.7 The Bidder/ all the members of JV must submit a copy of valid Provident Fund Registration.

3.1.8 The Bidder/ all the members of JV must submit the copy PAN registration.

3.1.9 The Bidder/ all the members of JV must submit a declaration that they are not Black-listed by any Government or Semi Government departments.

3.1.10 The Bidder/ all the members of JV must submit the copy of the valid GST registration.

3.1.11 The Bidder/ all the members of JV must submit the copies of IT Returns of last 3 (three) financial years.

3.1.12 The Bidders must submit the copy of Memorandum of Association or Partnership Deed, as the case may be.

3.1.13 Acceptance of the tenders will rest with ASCL, 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.

3.1.14 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.

3.1.15 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 clause 1.2.8 of this RFP on the date and time mentioned in the tender notice (Submission of physical documents only).

3.1.16 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			Compliance Requirements				Documentation
				Joint Venture (existing or intended)			
No.	Subject	Requirement	Single Entity	All members Combined	Each member	At least one member	Submission Requirements
1. Eligibility							
1.1	Nationality	Nationality in accordance with E. Public Opening of Technical Parts of Bids	Must meet requirement	N/A	N/A	Indian	Forms ELI – 1.1 and 1.2, with attachments
1.2	Conflict of Interest	No conflicts of interest in accordance with ITB 4.2	Must meet requirement	N/A	Must meet requirement	N/A	Letter of Bid
1.3	Employer Eligibility	Not having been declared ineligible by the Employer, as described in ITB 4.5.	Must meet requirement	N/A	Must meet requirement	N/A	Letter of Bid
1.4	State-owned enterprise or institution of the Employer country	Meets conditions of ITB 4.6	Must meet requirement	N/A	Must meet requirement	N/A	Forms ELI – 1.1 and 1.2, with attachments

Eligibility and Qualification Criteria			Compliance Requirements				Documentation
				Joint Venture (existing or intended)			
No.	**Subject**	**Requirement**	**Single Entity**	**All members Combined**	**Each member**	**At least one member**	**Submission Requirements**
2.	**Historical Contract Non-Performance**						
2.1	History of Non- Performing Contracts	Non-performance of a contract[1] did not occurs as a result of contractor default since 1st January 2013.	Must meet requirement	N/A	Must meet requirement	N/A	Form 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	N/A	Must meet requirement	N/A	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	N/A	Must meet requirement	N/A	Form CON – 2
2.4	Litigation History	No consistent history of court/arbitral award decisions against the Bidder[2] since 1st January 2011.	Must meet requirement	N/A	Must meet requirement	N/A	Form 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 and Performance							
Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All members Combined	**Each member**	**At least one member**	
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 1037 Lakh for the subject contract(s) net of the Bidder's other commitments	Must meet requirement	N/A	N/A	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 organisation*****.**	Must meet requirement	N/A	N/A	Must meet requirement	
3.2	Average Annual Turnover	Minimum average annual turnover of INR 2593 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	N/A	N/A	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 or any member of a Joint Venture may result in disqualifying the Bidder.

4. Experience							
Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or**			**Submission Requirements**
				All members Combined	**Each member**	**At least one member**	
4.1 (a)	General Experience	Experience under SITC of street lighting contracts in the role of prime contractor, JV member, nominated sub-contractor, or management contractor for at least the last 7 years, starting 1st January 2011.	Must meet requirement	N/A	N/A	Must meet requirement	Form EXP – 4.1
4.2 (a)	Specific Street lightning & Contract Management Experience	(i) A minimum number of similar contracts specified below that have been ***completed*** as a prime contractor, joint venture member, management contractor or nominated sub- contractor between 1st August 2011 and 31st July 2018: **(The Similar Contracts/ Works is defined as Supply/ SITC/ Replacement/ installation of energy efficient street lighting with O & M for 5 years)** One similar completed work of minimum Contract value of INR 2766 Lakhs in a single contract OR Two similar completed work of minimum each Contract value of INR 1729 Lakhs in two different contract OR Three similar completed work of minimum each Contract value of INR 1383 Lakhs in three different contract	Must meet requirements	N/A	N/A	Must meet requirement	Form EXP 4.2(a)

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			Compliance Requirements				Documentation
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All members Combined	Each member	At least one member	
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	N/A	N/A	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).

Key Personnel

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

7. Equipment

The Bidder must demonstrate that it has the key equipment listed hereafter:

S. No	Type of Equipment	Maximum age as on 31.03.2018 (years)	Minimum No.
1	Excavator	5	1No.
2	Mobile Crane	5	1No.
3	Water Tanker	5	1No.
4	Lorry	5	1No.
5	Man Lift/Lifting Platform	5	2No.

The Bidder shall provide further details of proposed items of equipment using Form EQUIP in Section IV, Bidding Forms

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 62,444)

(B) Annual operation & maintenance of LEDs and CCMS panels – The Bidder will quote year- wise O&M costs for 5 (five) years in NPV terms. Maximum amount which the Bidder can quote shall be Rs 400 per light per year (No. of lights for O&M shall be 66,226 + 2500 non LED lights installed on BRTS corridor)

"Bid price" shall calculated with below mentioned formula:

Bid Price = Current value of (A)
+
NPV of value (B) for 5 years

The Bidder offering lowest Bid Price shall be the ceiling price for starting the regressive bidding.

Note:
.
NPV: The Net Present Value (NPV) will be calculated assuming a discount factor of 10%
Period: Project period to be used for NPV calculation shall be (1+5 ~ 6 years) as below

2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Installation with penalty period	O&M Year 1	O&M Year 2	O&M Year 3	O&M Year 4	O&M Year 5

Note:
(a) Minimum energy saving should be 64% only
(b) **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 MCA 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.4.17 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 ELI -1.1

Form ELI -1.2

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:
Chief Executive Officer
Amritsar Smart City Ltd.,
SCO – 21, II Floor,
District Shopping Centre, Block–B, Ranjit Avenue,
Amritsar - 143001, INDIA, PIN Code: 143001,
Telephone: +91-183-5015048

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]*_____

_____;

(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 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;

(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*] **day of** [*insert month*], [*insert year*]

Date signed_____day of_____,
***: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder
**: 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 reverse 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:

(a) be taken into consideration during Bid evaluation;

(b) my disqualification from participating in the Bid;

(c) 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
In case of Joint Venture (JV), name of each member:
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 JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1. ☐ 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.

3. Form ELI -1.2

Bidder's JV Information Form

1. (to be completed for each member of Bidder's JV)

Date:
RFB No. and title:
Page of pages

Bidder's JV name:
JV member's name:
JV member's country of registration:
JV member's year of constitution:
JV member's legal address in country of constitution:
JV member'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 registration documents of the legal entity named above, in accordance with ITB 4.4. ☐ In case of a state-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and that they are not under the supervision of the Employer, in accordance with ITB 4.6. 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: _____

JV Member's Name _____

RFB No. and title: _____

Page _____ of _____ pages

Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria			
☐ 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			
Year	**Non-performed portion of contract**	**Contract Identification**	**Total Contract Amount (current value, currency, exchange rate and INR equivalent)**
[insert year]	*[insert amount and 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]* Reason(s) for non-performance: *[indicate main reason(s)]*	*[insert amount]*
Pending Litigation, in accordance with Section III, Evaluation and Qualification Criteria			
• 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.			

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: _____

JV Member's Name _____

RFB No. and title: _ Page _____ of _____ pages

Financial data[#]

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.

No.	Source of finance	Amount (INR equivalent)
1		
2		
3		

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 or in case of JV member, 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 and each member to a JV 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.

Current Contract Commitments					
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:_____
JV Member's Name_____
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: _____	

7. Form EXP - 4.2(a)

Specific Work and Contract Management Experience

Bidder's Name:_____ Date:_____

JV Member's Name_____

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			INR	
If member in a JV or sub-contractor, specify participation in total Contract amount				
Employer's Name:				
Address: Telephone/fax number E-mail:				

8. 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:_____

Bidder's JV Member Name: _____

Sub-contractor's Name[8] (as per ITB 34.2 and 34.3): _____

RFB No. and title:_____ Page_____ of_____ pages

All Sub-contractors for key activities must complete the information in this form as per ITB 33.2 and 33.3 and Section III, Qualification Criteria and Requirements, Sub-Factor 4.2.

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	Total quantity in the contract (i)	Percentage participation (ii)		Actual Quantity Performed (i) x (ii)
Year 1				
Year 2				
Year 3				
Year 4				
Year 5				
Employer's Name:				

8 If applicable

	Information
Address: Telephone/fax number	

Activity No. Two

3.

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

	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

Chief Executive Officer
Amritsar Smart City Limited
2nd Floor, SCO-21, District Shopping Complex,
B-Block, Ranjit Avenue,
Amritsar, Punjab

Dear Sir/ Madam,

Ref: Your Tender document No._____ dated_____.

1. We _____, who are proven and reputable Manufacturer of LED Street Lights having factories at _____ 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 Authorised 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 luminaries) 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 of 5(Five) years in Municipal Corporation Amritsar, Amritsar under Smart City Mission"

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 5(Five) Years in Municipal Corporation Amritsar, Amritsar under Smart City Mission".

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 ASCL 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 ASCL/ MCA 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 ASCL/ MCA.

In case Manufacturer/ Authorized dealer fails to execute their role and responsibility as mentioned above or anywhere in the Tender/ RfP, ASCL/ MCA have right to blacklist the manufacturer/ authorized dealer for non-performance and impose the penalty as per above RfP Tender Conditions.

Authorized Signatory & Seal
(On behalf of the Manufacturer)

Authorized Signatory & Seal
(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: *Chief Executive Officer*
Amritsar Smart City Ltd.,
SCO – 21, II Floor, District Shopping Centre,
Block–B, Ranjit Avenue*,*
Amritsar, PIN Code: 143001 Telephone: +91-183-5015048

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*]

*****: In the case of the Bid submitted by a Joint Venture specify the name of the Joint Venture as Bidder.

**: 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

Table of Contents

7.1 Introduction

7.2 Scope of Work

7.3 Technical Specifications

7.1 Introduction

Works of Implementing Smart LED Street Lights and Centralized Control & Monitoring System on EPC Mode with Operation and Maintenance of 5 (five) years in the Municipal Corporation Amritsar, Amritsar under Smart City Mission.

7.1.1 City Profile

Total area and Religion Data 2011

Amritsar City, historically also known as Ramdaspur, falls under the municipal jurisdiction of Amritsar Municipal Corporation. The Amritsar city is located in the State of Punjab, India. The Municipal Corporation-Amritsar covers an area of 142.37 sq.kms (including Amritsar Cantonment). As per provisional reports of Census India, population of Amritsar in 2011 was 11,32,761 (about 11 Lakh); and it is the second most populous city of Punjab. It has 48% (forty eight percent) females. As per records, Hinduism and Sikhism are the main religions of Amritsar city with respectively 49.36% and 48% of the population following them. However, Sikhs form a majority of close to 70% in the Amritsar District including the rural areas and some of the other towns. In Amritsar city, Christianity was followed by 1.23% and Islam by 0.51%. Around 0.74% of the population of the city stated 'No Particular Religion' or another religion.

7.1.1 Regional Linkages

The city lies on the main Grand Trunk Road (G.T. Road) from Delhi to Amritsar connecting to Lahore in Pakistan. The G. T. Road, built by Sher Shah Suri, runs through the whole of the northern half of the Indian subcontinent, connecting Peshawar, Pakistan to Sonargaon, Bangladesh. The city is also connected to most other major cities such as New Delhi, Mumbai, and Calcutta by an extensive network of rail system. The city also provides air connectivity to major Indian cities, as well as foreign cities such as Birmingham, Toronto, Dubai, Singapore, Tashkent, Ashgabat, London etc. from Guru Ramdas International Airport (formerly the Raja Sansi International Airport). The city is the administrative centre for the Amritsar District. However, it did not become the industrial centre of Punjab because of its proximity to the volatile Indo-Pakistan border.

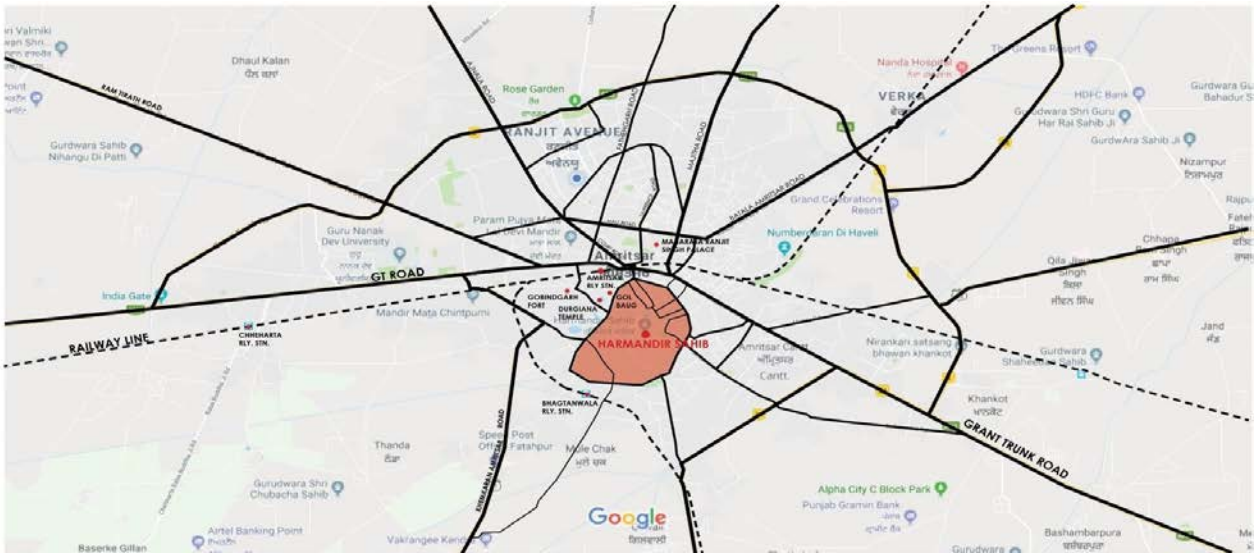

Figure 0-1: Google Map of Amritsar City (Source: Google & Author)

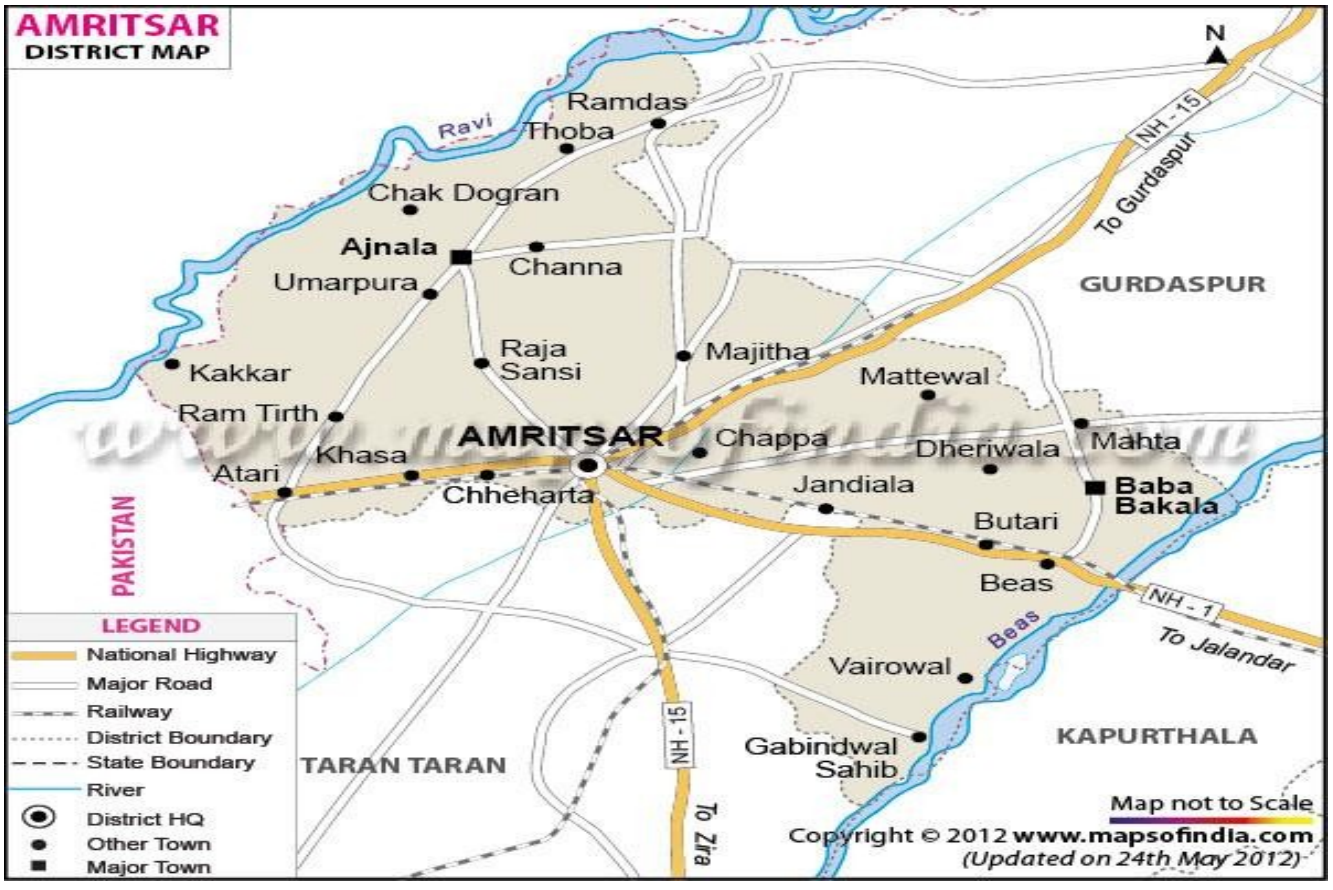

Figure 0-2: District Map of Amritsar (Source: Map my India)

1.1.3 Physical features

1.1.3.1 Topography

Amritsar district lies amidst River Beas (to the East) separating Amritsar from Kapurthala and River Ravi (to the West). It is located in the lower part of Upper Bari Doab Canal giving it a saucer like shape. It is interesting to note that river Beas joins Satluj River at the confluence of Ferozepur, Tarn Taran and Kapurthala districts. As Punjab Plain is a part of Indo-Gangetic system, Amritsar also has alluvial deposits brought by Beas and Ravi Rivers. The soil in Amritsar is a light reddish-yellow loam (colloquially called maira) that becomes somewhat stiffer at the Doab area in the State of Punjab, finally deteriorating into sandy and slightly uneven soil (colloquially called tibba). Amritsar has a levelled plain area situated at an elevation of about 200 meters in the North-East to about 175 meters in the South West. The terrain of Amritsar can be put under three categories: The Upland Plain, Bluff along the Beas and Floodplain of Satluj.

1.1.3.2 Climate :

The district has a continental climate typical of North-West Indian region. It comprises of the winter season (November to March) when temperatures ranges from 16 °C (61 °F) to about 4 °C (39 °F), the summer season (April to June) when temperatures can reach 45 °C (113 °F), monsoon season (July to September) and post-monsoon (September to November). The annual rainfall is about 790 millimetres (31.1 in). The lowest recorded temperature since 1970 is 6 °C (27 °F) recorded on 21 Jan 2005. The highest temperature recorded was 47.7 °C (117.9 °F) on 21 May 1978. The climate is generally characterized by dry weather except the brief Southwest Monsoon season, hot summer and bracing winter. Amritsar receives on an average 601.5 mm of rainfall with around 33 rainy days. The wind direction of Amritsar is from North-West to South-East.

1.2 Amritsar Smart City :

In July 2014, Government of India (GoI) formally announced the Smart City Scheme to build 100 (hundred) smart cities across India. In April 2015, announcement detailed the selection process of cities based on a Smart Cities Challenge Competition process. Amritsar was nominated as one of the three cities from Punjab to participate in this Challenge. The city was selected in second round along with 26 (twenty six) other cities. Thereafter, Amritsar Smart City Ltd. invited bids for Project Management Consultant for Amritsar Smart City Project. After the completion of bid process, the work was awarded to the joint

venture consortium of Haskoning DHV Consulting Pvt. Ltd. & Ernst & Young LLP and the contract was signed on December 29, 2017.

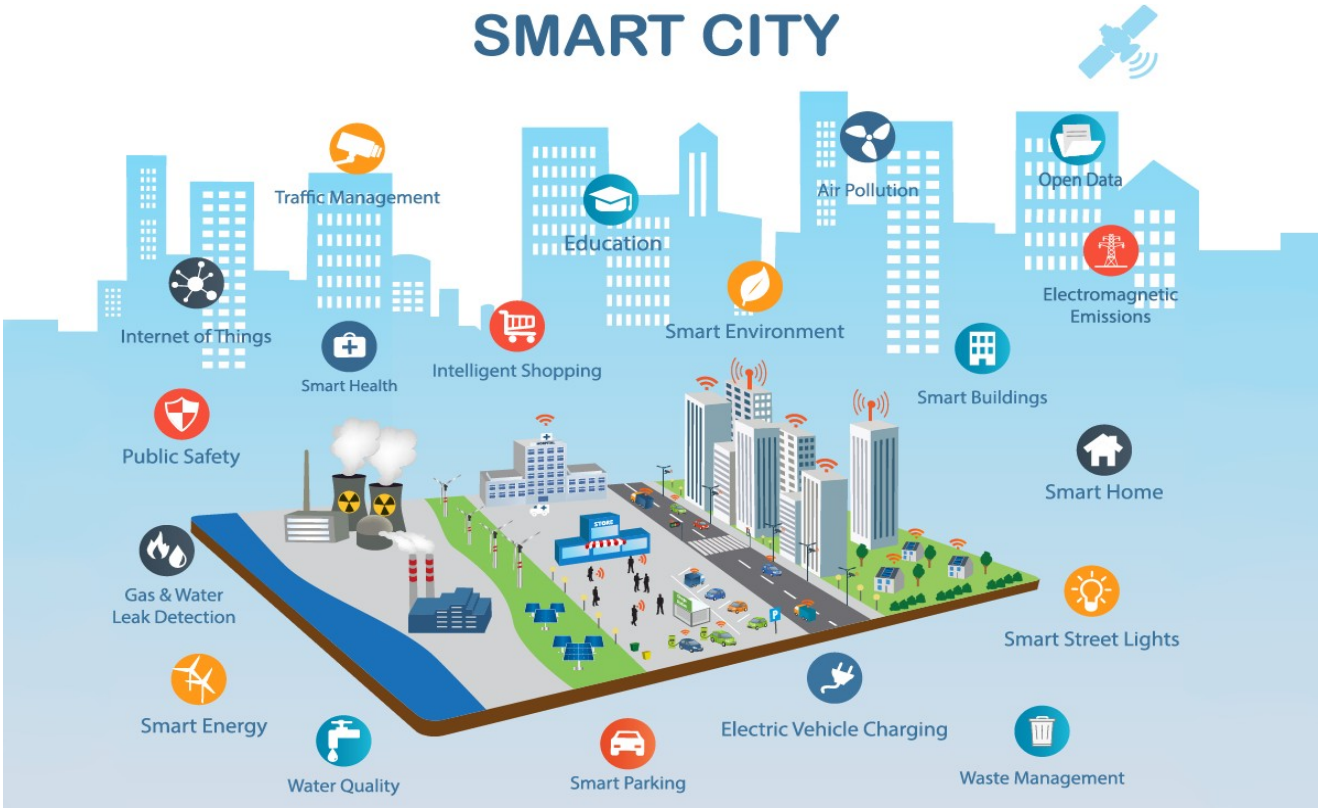

Figure 0-3: Illustration showing Smart Infrastructure (Source : Google)

Amritsar city with 1.13 million population as per 2011 census and 1.19 million in 2014 is the spiritual and cultural centre for the Sikh religion “home to the Harmandir Sahib” (commonly known as the Golden Temple). The Amritsar City is also famous for most popular destination for Non-Resident Indians (NRI) in the whole of India. The terrain of Amritsar can be put under three categories: the Upland Plain, Bluff along the Beas and floodplain of Satluj. The city is known for its rich cuisine, culture, and for the historical significance attached to the place for example Jallianwala Bagh massacre in 1919 under British Rule.

It has been observed that 93% of the workers in Amritsar city are engaged in mainly tertiary activities, 4% in household industry and 3% in primary activities i.e cultivators and agricultural labourers. The main commercial activities of Amritsar include tourism, carpets and fabrics, farm produce, handicrafts, service trades and light engineering.

Amritsar's central walled city has narrow streets mostly developed in the 17th and 18th century. The walled city is a unique example of medieval planning system with unique areas called Katras. The Katras are self-styled mixed land use residential and commercial development units. The

walled city is considered as a major commercial hub or CBD for the Amritsar city, which has many specialized bazaars.

The development characteristic of the walled city is predominantly by mixed land use with commercial use on the ground floor while with residential on the upper floors. However, with the passage of time and commercial activities getting concentrated in the walled city, there is large scale conversion of residential areas into commercial use even on upper floors. This pattern is more pronounced in the areas defined by Katra Ahluwalia, Karmon Deori, Shastri Market, Hall Bazaar etc. wherein the availability of space is a constraint and land prices are very high. The walled city area is the cultural and heritage identity of the city and is plagued with various development issues.

1.3 An Overview of Amritsar Smart City Project:

In the Smart City Proposal ("SCP") for Amritsar city, Municipal Corporation of Amritsar ("MCA") has proposed to take retrofitting typology under Area based Development ("ABD") proposal and four packages under Pan City Proposal. These proposals are set out to achieve the vision of Smart City Proposal. There were 8 (eight) packages identified in the Area Based Development and 4 (four) packages in Pan City proposals. These projects have been categorized in different modules of implementation (five for ABD and four for Pan City projects). The implementation of each package is to go through the five stages of project preparation, structuring, procurement, execution and commissioning.

1.4 Key Themes:

The key themes for the above mentioned vision as per Smart City Proposal are:

Theme 1: Intelligent Physical Infrastructures

Theme 2: World Class Tourism Destination

Theme 3: Self Sustainable Transportation & Environment

Theme 4: Making Governance Citizen Friendly

Theme 5: Inclusive Growth (Planned Communities)

These all themes will be achieved through effective policy framework and participatory planning at grass root level. All themes provide unique opportunity to make, Amritsar city a self-sustainable city with smartly leveraging its cultural, historical and religious heritage base.

Under the theme 'Intelligent Physical Infrastructures' in the proposal, one of the major objective is to provide effective and efficient LED street lighting in the city by replacing existing conventional sodium vapour/MH/CDMT/FTL or other more power consuming lights. One time infrastructure

development cost will improve basic infrastructure of the system by changing pole condition/ brackets/ cables/ conductors or distributional panels. Usage of LED lights will reduce extra power load on PSPCL distribution system and load on existing cables and other switchgears. Low requirement of power will lead to low carbon emission and thus will play important role for safer environment. LED imparts pleasant visual impact. LED lights are basically glare free and thus are least responsible for any accident.

1.5 Aims and Objectives:

1.5.1 Challenges: Amritsar has over a period of time faced the following two key challenges:

1. Conventional technology with low energy efficiency; and
2. lack of city infrastructure.

In order to mitigate aforementioned challenges, pan-city smart solutions are considered to benefit the entire city through application of ICT and resulting improvement in local governance and delivery of public services.

Street Lighting is one such area where new technology and management practices can be explored to smartly control the system. Therefore, this project i.e. Implementing Smart LED Street Lights and Centralized Control & Monitoring Centre in Amritsar on EPC model aims to complement the vision of Amritsar Smart City Limited by adopting best practices available in the market.

1.5.2 Background- Amritsar Street Lighting Project

In order to realize its vision of a smart city, Local Government through Amritsar Smart City Limited (ASCL) has rolled out several projects. As a part of this initiative, ASCL/ MCA 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 main control room and main system of CCMS will communicate with Integrated Command Control Center envisaged under Amritsar Smart City Project.

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 in equated installment 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
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

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1.5.3 Objective & scope

The primary objective is to assess the energy savings and investment potential for replacement/ retrofit the existing street lighting infrastructure (poles and fixtures) with smart LED based energy efficient street lighting luminaries in the Amritsar Municipal Corporation.

The project team has undertaken consultation with various key stakeholders, including Amritsar Municipal Corporation to understand the existing street lighting system. Key issues and challenges were acknowledged to formulate the strategic approach for any future action.

Existing inventory data has been collected to quantify the lighting load. Details for different light points and feeder panels have been obtained.

Energy bills for the past year have been collected to ascertain the electricity consumption.

Extensive analysis of the existing system has been done to determine the potential energy savings.

Financial feasibility study has been undertaken to determine any risks associated with the project.

The report is an appropriate and scientific tool for promoting systematic & planned installation of LED street Lighting within the city together with infrastructure development in the form of the following:

(a) Replacement of conventional street lights with LED Street Lights

(b) To change damaged brackets, poles, cables and conductors in the form of infrastructure development tool.

(c) To improve lux level on streets, as per requirement.

(d) To provide improved infrastructure to the People of Amritsar.

(e) To optimize Electrical Energy usage by implementing Centralized Control & Monitoring System. To reduce power load on generation and use this energy for other purpose.

The Successful Bidder, MCA and/ or the 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.

1.6 Executive Summary

The primary objective of this study is to assess the energy savings and investment required for replacement/ retrofit of existing street lighting luminaries and related infrastructure with Light Emitting Diodes (LEDs) based energy efficient street lighting luminaries for Amritsar Municipal Corporation (MCA).

Based on the luminaries inventory data provided by MCA, a total of 66,226 luminaries are installed in 5 zones in the city. Of the total Streetlights, 3782 luminaries have been replaced by Energy Efficiency Services Limited (EESL). Balance 62,444 luminaries are of conventional type, which are very inefficient from energy consumption perspective. A snapshot of balance conventional lighting luminaries inventory in Amritsar is as below:

Type	FTL	CFL	HPSV				MH		Total
Watts	40 W	18 W	70 W/ES-96W	150 W	250 W	400W	250 W	400 W	
No.	45064	2020	3244	11364	144	354	150	84	62444

Table 1: Details of lighting luminaries inventory

The percentage composition of street lighting luminarie inventory and their contribution in annual electricity consumption is shown below:

In Amritsar, around 24% HPSVs (70W, 150W, 250W and 400W), 72% FTL (40W) and 1% MH (250W and 400W) and 3% CFL (18W) are used for street lighting.

Today there are technologies available in the market which can give huge energy savings in street lighting over the conventional being used now. LED being one of them, which is a proven technology now and is able to give huge energy savings, when installed. In addition to energy savings, LED also has a very long life while retaining their lumen output throughout their life.

Table 2: Tentative existing distribution of lighting luminaries in different zone

Type	East Zone	West Zone	North Zone	South Zone	Center Zone	Total
FTL 40W	9,000	8064	4500	10,500	13,000	45,064
HPSV 70W	1,589	600	350	175	550	3,264
HPSV 150W	1,400	1,000	3,894	1,190	3,880	11,364
HPSV 250W	104	25	-	15	-	144
HPSV 400W	68	70	65	76	75	354
MH 250W	85	40	-	25	-	150
MH 400W	-	-	-	-	84	84
CFL 18W	700	650	120	350	200	2,020
Total	12,946	10,449	8,929	12,331	17,789	62,444

The envisaged energy savings with replacement of existing streetlights with LED is provided in the Table below:

Table 3: Estimated annual savings after replacement of conventional lights with LED lights

Type of fixture	Quantity	Wattage (W)	LED equivalent (W)	Annual energy consumption with existing lights (kWh/year)	Annual energy consumption of LEDs (kWh/year)	Annual energy savings (kWh)
40 W FTL	45064	40	18	10263777	3256775	7007002
18 W CFL	2020	18	18	159257	145985	13272
70 W HPSV/ES-96W	3244	70	35	1207741	455863	751878
150 W HPSV	11384	150	70	8227217	3199473	5027744
250 W HPSV	144	250	110	173448	63598	109850
250 W MH	150	250	110	180675	66248	114428
400 W MH	84	400	190	156366	64079	92287
400 W HPSV-High Mast	354	400	190	658971	270049	388922
Total	62444			21027452	7522070	13505382
Savings (kWh)						64.23%

12 (twelve) 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/1000 x 12x365)

To Illustrate: In case of 40W FTL it will be 45064 x (40+12)/1000 x 12x 365 =10263777 kWh/year. The table above indicates that installation of LED lights offers energy savings of about 64%. Considering this huge energy savings potential and because of the reason of the technology being proven, ASCL 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 ASCL 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 five and half years including installation period of 6 (six)

months. 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, MCA 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. The key tasks involved in the Project to be implemented are:

Task 1: Replacement of existing luminaries with LED luminaries (Including LED lamps, Drivers and Luminaries) and installation of Centralized Control & Monitoring System (CCMS)

Task 2: Operation and Maintenance of the installed LED luminaries (Including LED lamp, Driver and fixture) and CCMS

Generally, existing street lighting infrastructure like cabling, JBs/MCBs, brackets, earthing etc is not upto the mark to serve new LED luminaries. So in addition to installation of new LED luminaries and CCMS, infrastructure improvement is required to make it suitable for LED installation and ensure that LED luminaries can work for their life without fail. For this also, the Bidder shall be responsible for identifying existing asset deficiency like power cables (overhead/ underground cables from feeder panels to various poles) for street lighting or conductors, required JBs/MCBs on poles and existing damaged poles in street light infrastructure maintained by MCA/ASCL. The replacement and maintenance of such infrastructure will be done by the successful Bidder after getting approval of MCA/ ASCL.

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 MCA. The expected monetary benefits arising out of this project to MCA are shown below:

Table 4: Monetary benefits to MCA from LED street lighting project

S. No.	Particulars	Values
1	Baseline energy consumption (kWh/year)	21027452
2	Expected energy savings (%)	64.23% say 64%
3	Expected energy savings (kWh/year) (1x2)	13505381
4	Expected reduced energy consumption (kWh/year) (1-3)	7522070
Current scenario		
5	Current electricity tariff (INR/kWh)	Rs.80/kW +

S. No.	Particulars	Values
		7.21/kWH
6	Current Load (kW) from MCA records	4802
7	Current annual electricity bills (INR)	151,992,088
8	Current annual operations & maintenance expenses including replacement of existing fixtures (INR)	43300000
9	Total current annual expenses of MCA on street lighting (INR) (8+7)	195292085
Proposed scenario		
10	New Load (kW)	1873
11	Expected annual electricity bill after the LED project (INR)	54383967
12	Annual payment to bidder for O&M expenses (INR) (Assumed) for 62444nos. + 3782 installed by EESL + 2500 non LED lights installed on BRTS Corridor = 66226 no. LED lights.	26490400
13	Total annual expenses of MCA after LED project implementation (INR) (11+12)	80874367
Net Annual Monetary Benefits/Loss To MCA (9-13) (CAPEX & IDC will be paid by ASCL)		11.44 Cr.

It can be seen from the table that the total annual expenses of MCA in the current scenario is INR 19.53 crores 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 Amritsar, there will be a reduction of 64% in the energy consumption along with the reduced operations and maintenance expenses. In the proposed scenario, the total annual expenses of MCA are expected to be INR 8.09 crores. Hence, there will be a net annual monetary benefit of INR 11.44 crores to MCA 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 ASCL.

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:

Table 5: Social benefits for the citizens of Amritsar 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, MCA will be able to save around 1,34,57,569 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. 12,000 tonnes 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 MCA 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 MCA.

The monetary savings to MCA on energy bills and maintenance will help improve its financial health.

As per the information provided around 60-70 persons handling the street lighting work now will be available for providing services in other areas.

This project would be a step towards making Amritsar a smart city.

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

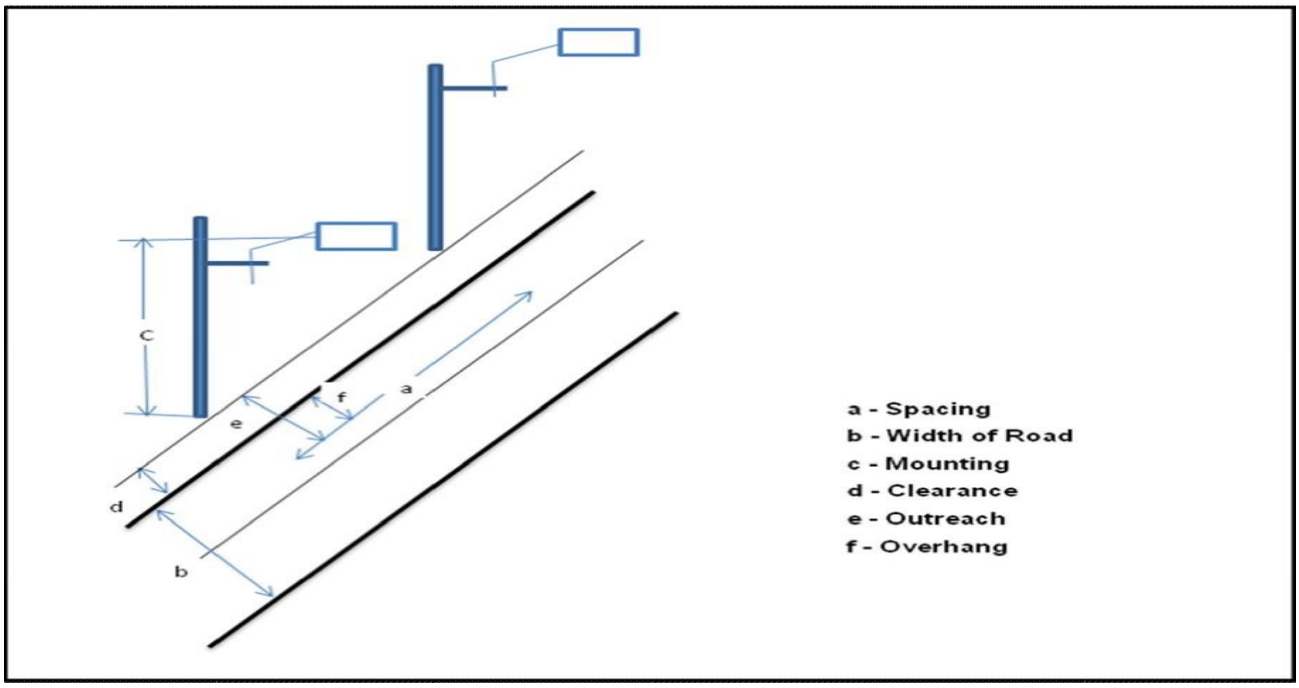


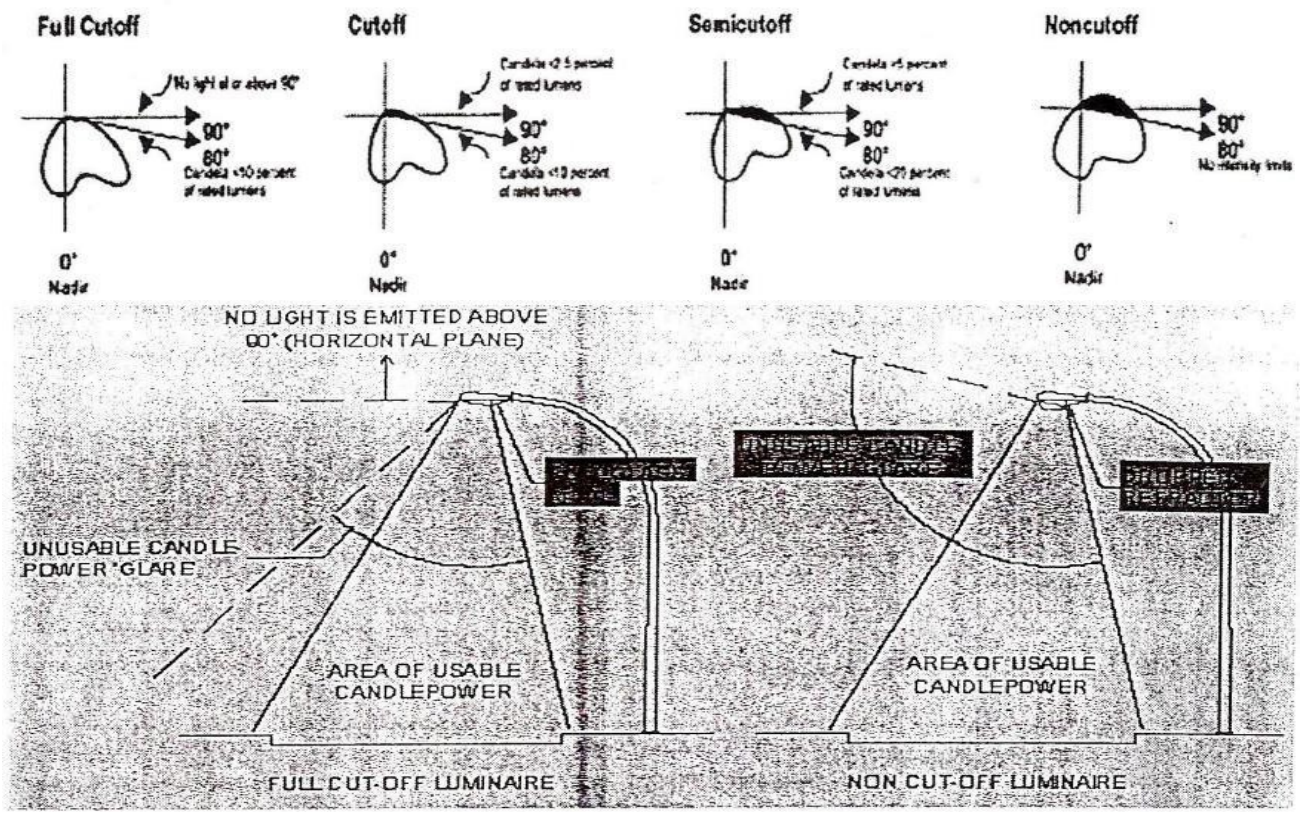
Table 6: Standard data for luminaries spacing to height ratio

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: 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 8: 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 9: 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 10: 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

Overview of street lighting poles

Modern Lighting

Modern street lighting is characterized by dedicated poles which are solely used to mount luminaries for street lighting purposes. Usually for modern lighting, mild steel octagonal poles are preferred as their design contains a junction box in recess of the pole. Within the Amritsar Municipal Corporation jurisdiction, there are around 30% dedicated poles for street lighting.

Conventional Lighting

Conventional lighting is characterised by fixtures mounted on the concrete poles, carrying low tension electricity distribution lines. The mounting height of these fixtures is 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). Within the jurisdiction of Amritsar Municipal Corporation, most of the poles are conventional type for street lighting.

High Mast Lighting

High Mast lighting is usually found on road intersections and have multiple fixtures mounted on a single pole.

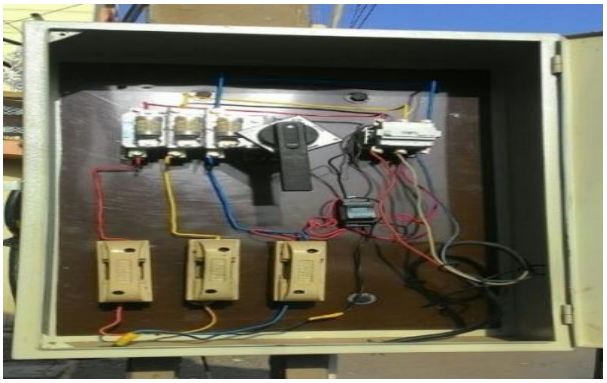
Status and condition of the poles

As per discussion with the MCA, it is acknowledged that the condition of poles is not good in the city. Most of them are rusted and therefore, in bad condition.

Types of Switch-points

There are a total of 354 switch controllers under MCA without any type of timer (analogue or digital). All 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 Amritsar is shown in Figure 6.

Figure 6: Analog timer switch points installed in Amritsar



Status of Pole Wiring

The condition of pole wiring is very important to ensure proper and efficient operation of the luminaire. Proper installation of wire i.e. use of all the 3 (three) cores is key to safeguard the life of the luminaries. It is acknowledged that MCA and PSPCL have deployed a 3 phase and 4-wire method of wiring for the modern lighting and single phase 2 (two) wire method for conventional lighting.

Comments and observations on the existing design of street lighting infrastructure
Based on the consultation with MCA officials, the major issue appeared to be the lack of proper street lighting infrastructure. We have tabulated below some comments/observations on the existing street lighting infrastructure.

Table 11: Comments/observations

Comments/ 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 MCA.
Modern lighting/Central lighting	There are around 30% (thirty percent) dedicated street lighting poles in the city.
Provision of dimming	There is no provision of dimming in existing street lighting system.
Centralized Controlling & Monitoring Systems (CCMS)	There is no CCMS for street lighting in MCA
Conventional lighting arrangement	There is a heterogeneous arrangement of sodium vapor lamps, 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 is no junction boxes and MCBs in the case of conventional lighting system in MCA.
Switch points	It was observed that there is no analog or digital timer provided with the existing switch points.

Comments/ observations	Description
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.

Suggestions for improvement of existing lighting infrastructure for LED lighting

In order to allow for full accrual of the benefits of an LED street lighting upgrade, it is important that all the components of the street lighting infrastructure meet some essential/ minimum requirements. Thus, the Bidder shall be responsible for identifying existing asset deficiency like power cables (overhead/ underground cables from feeder panels to various poles) for street lighting or conductors, required JBs/MCBs on poles and existing damaged poles in street light infrastructure maintained by ASCL/ MCA. The replacement and maintenance of such infrastructure will be done by the BIDDER after getting approval of MCA/ ASCL.

This section justifies the importance of each of these components as well as their role in smooth and efficient functioning of LED lamps over their lifetime.

Junction Boxes and MCBs

Junction Boxes and MCBs are required for safe day to day operation of street lighting system. These are not mandatory infrastructure upgrade but add to the safety and protection for employees who are presently operating direct-wire manual switch points. MCBs are also helpful in maintenance of individual lamp without switching-off other lamps connected with same switch point. Additionally, junction boxes can be provided with proper locking arrangement to protect the MCB's and timer devices as well as reducing thefts related to switch boxes.

Earthing

Without proper earthing, common mode surges can break the dielectric of the metal core PCB (MCPCB) and get connected to Earth through the body of the pole. The chances of this breakdown are more when the pole is metallic or concrete pole is wet. Also, earthing is necessary to eliminate electrostatic/dynamic discharge to take care of sensitive equipment as well as uninterrupted service.

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 conventional street lighting luminaries (62,444) in the Amritsar 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.

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 comes out to be 1,79,37,220 kWh or about Rs.12 Cr.

Based on the discussions with MCA officials, it is found that energy bills 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.

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. Based on the discussion with MCA officials, the annual average operating hours of street lights have been considered to be 12 hours, 365 days a year. The estimated annual baseline energy consumption is provided below:

Table 12: Annual energy consumption of conventional street lighting fixtures under MCA

Sr. No.	Type of existing lamp	No. of lights installed	Existing Watt per luminary (Watt)	Ballast Loss (Watt)	Total power consumption/ luminaries (Watt)	Total electricity consumption (kWh/year)
1	40 W FTL	45064	40	12	52	10263777
2	18 W CFL	2020	18	0	18	159257
3	70 W HPSV/ES-96W	3244	70	15	85	1207741
4	150 W HPSV	11384	150	15	165	8227217
5	250 W HPSV	144	250	25	275	173448
6	250 W MH	150	250	25	275	180675
7	400 W MH	84	400	25	425	156366
8	400 W HPSV- High Mast	354	400	25	425	658971
Total	62444				21027452	

Using this method, the annual baseline energy consumption comes out to be 2,10,27,452 kWh/ year. It can be seen that the option 2 provides a realistic assessment of annual baseline energy consumption for street lighting under MCA.
Therefore, the final baseline energy consumption data is provided in the table below:

Table 13: Final baseline energy consumption data

S. No.	Parameters	Number	Annual energy consumption (kWh)
1	Total street lights	62444	21027452

Energy tariff
Based on the last 12 months electricity bills provided by MCA officials, the average energy tariff applicable to MCA street lighting comes out to be INR 6.69/kWh. Now the tariff has been revised to two part tariff i.e. Rs.80 per kW of demand load plus Rs. 7.21 per Kwh

Computation of energy saving potential
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 luminaire 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 that Proposed LED wattages result in better illumination levels than that with conventional lights. In order to compute energy consumption and saving potential, the average operating hours of street lighting are mentioned in the tale below:

Table 14: Annual operating hours

Particulars	Value
Annual Operating hours after installation of LED lighting	4015

The envisaged energy savings with replacement of existing streetlights as well as optimization of operation hours of streetlights is provided below:

Table 15: Estimated annual savings after replacement of conventional lights with LED lights

Type of fixture	Quantity	Wattage (W)	LED equivalent (W)	Annual energy consumption with existing lights (kWh/year)	Annual energy consumption of LEDs (kWh/year)	Annual energy savings (kWh)
40 W FTL	45064	40	18	10263777	3256775	7007002
18 W CFL	2020	18	18	159257	145985	13272
70 W HPSV/ES-96W	3244	70	35	1207741	455863	751878
150 W HPSV	11384	150	70	8227217	3199473	5027744
250 W HPSV	144	250	110	173448	63598	109850
250 W MH	150	250	110	180675	66248	114428
400 W MH	84	400	190	156366	64079	92287
400 W HPSV-High Mast	354	400	190	658971	270049	388922
Total	62444			21027452	7522070	13505382
Savings (kWh)						64%

It can be computed from the above table that the replacement of existing street lighting fixtures with LED luminaries has an energy savings potential of 64%.

2. Employers Requirement / 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. ASCL on behalf of MCA seeks to appoint a Contractor/ Successful Bidder for a contract period of 5.6 years (five years and six months) years, for undertaking following tasks for upgrading the street lighting system under MCA jurisdiction:

Task 1: Replacement of existing luminaries (within municipal boundary of Amritsar 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

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.

Wattages of LEDs to be installed: The intent of ASCL 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 existing Luminaire	Wattage (W)	Ballast Losses of existing luminaries (W)	Wattage of LED luminaire to be replaced (W)	No. of luminair es
Fluorescent Tube Lights (FTL)	40	12	18	45510
Compact Fluorescent Lamp (CFL)	18	0	18	2020
High-Pressure Sodium Vapour (HPSV)	70	15	35	3244
	150	15	70	11384
	250	25	110	144
	400	25	190	354
Metal Halide (MH)	250	25	110	150
	400	25	190	84
Total				62444

Note:

1 **Contract Period would be 5 (five) 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 five years of Defects Liability Period and O&M. It is clarified that the Contract Period under no circumstances would be extended beyond 05 (five) 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/2024. The Bidder will not be eligible for any payment, for the period, after the contract end date.

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

Apart from the 62444 lights and 1041 switch points as specified above, there already exists 3782 LED lights in the city (installed by EESL). These existing 3782 LED lights are separately controlled through 63 different switch points/ feeder panels. It is the responsibility of the Successful Bidder to replace/ connect these switch points/ feeder panels with the new Centralized Control and Monitoring System to control and monitor these 3782 existing LED lights. The Successful Bidder shall also operate and maintain such panels. The responsibility of operation and maintenance of these additional 3782 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.

All existing 250 W HPSV will be replaced with warm LED's having CCT around 3,500 K with ± 500K.

Out of the total luminaries mentioned in the table above, the Successful Bidder shall have to install 1,000 (+10%) luminaries having individual luminaire level monitoring & control capability. The location of these luminaries would be suggested by MCA 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, such Bidder will 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.

As a part of its smart city endeavor, Amritsar has designated/selected ward no. 49 & 50 internal roads of way from Hall Gate to Entry of Heritage walk of Darbar Sahib and back to Sikandary Gate in Center zone for Area Based Development (ABD) under Smart City 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. 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 MCA 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 MCA.

Guaranteed savings: The minimum guaranteed energy savings, with the installation of LED street lights, should be around 64% (sixty four percent).

Operating hours and dimming: 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 MCA want to increase 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.

Baseline: The baseline defined is for existing condition of street lighting system in Amritsar. 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 MCA to install/ uninstall 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.

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 MCA. The details of the areas within the Amritsar city which fall within the jurisdiction of MCA and forms the part of the service area/ site where the Project is to be implemented shall be provided by MCA. Poles outside such jurisdiction are not supposed to be taken up.

The Successful Bidder shall undertake marking of poles (pole numbering) for each LED luminaire installed in service area of MCA and switching point details. However, this should be done without damaging the infrastructure of MCA.

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.

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. The Cables/ Wires should be of 10 sqmm, PVC insulated, 4-core Aluminum wire. No extra charge will be payable to the Bidder for this work.

The Project area comprises of poles that are under jurisdiction of MCA's 5 (five) administrative zones (East, West, North, South and Center). There are a total of 66226 luminaries in place being operated by 1104 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 must take adequate care, by using black cotton tape or better quality tape for connection of wires, 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 MCA, 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 MCA for mutual agreement. No claim for failure of Luminaries will be entertained on account of earthing issues.

Infrastructure Development Cost (IDC): The Successful Bidder shall be responsible for identifying existing asset deficiencies through Joint Survey 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 MCA. Engineer-in-Charge will certify that the cost is essentially required for the proper functioning of existing LED Street Lights.

The replacement of such infrastructure will be done by the Successful Bidder after getting approval from MCA. 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, MCA may ask for painting of some poles across the city. After approval of the number of poles and locations for painting from MCA, 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 MCA 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.4.17 crore.

In view of the continuous development of the city expected during the contract tenure and after the commissioning date, MCA 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 ICC Centre Amritsar. In case of such additions after commissioning of the Project but during the currency of the Contract Period, MCA will reimburse the Successful Bidder, the cost of the luminaire at the same rate as quoted under this. Guaranteed Energy saving condition will remain the same and no extra payment would be made by MCA to the Bidder for all such additional street lights 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.

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 MCA about any cases of power theft or unauthorized connection of load during festivals from the street lighting network on priority basis. MCA will be responsible for taking all the corrective measures required 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 MCA on weekly basis.

The Successful Bidder will buy-back the dismantled lamps from MCA as per the rate quoted in the

Price Bid. The buy-back price will be same irrespective of condition of dismantled lamps.

With regard to asset ownership, following need to be adhered to:

MCA 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 MCA, 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 MCA with 98% (ninety eight percent) of them in working condition.

MCA 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 MCA or a third party appointed by MCA, 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.

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.

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

MCA 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 each zone 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 MCA’s existing Complaint Management System and such centers should become fully operational within 30 (thirty) days of allocation of such space by MCA.

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 MCA and MCA 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 MCA 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 upto 10m height) 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, 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 MCA.
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, if required.

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 MCA 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 MCA.
Guaranteed savings of 64%	BIDDER has to maintain the minimum guaranteed savings of 64%	For every 1% (one percent) reduction in quoted guaranteed energy saving on monthly basis, a penalty (inclusive of monetary loss to MCA) of Rs 2,00,000 will be imposed on the Selected Bidder. For example: if 2%(two percent) reduction in quoted guaranteed energy saving, then penalty would be 4,00,000 per month to the Bidder. In case the savings fall below 50%, the Bidder will not be made any payments towards capital investment and only O&M cost will be paid.

The Bidder will organize half-day training program at MCA office wherein the Bidder will train the employees of MCA 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 MCA 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 MCA 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 MCA 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

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 MCA 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, MCA will have to get reduce the sanctioned load of each of the street lighting feeder proportionately. MCA 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 (1-2 days). 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. MCA 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 MCA in the format as provided below:

Zone (East/ West/ North / South Center)	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 MCA separately for each zone, immediately after the work is completed for that zone.

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 64% of energy saving. So the Successful

Bidder will have to ensure minimum energy saving of 64% (sixty four 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 each zone (i.e. on total completion of 3rd zone, the invoice of energy savings for 3rd (third) zone could be raised by the Bidder and similarly on total completion of 4th zone). 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.

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 (i.e. only after complete installation in particular zone). The payment for O&M will begin after date of issue of satisfactory Installation, Testing and Commissioning certificate of all LED Street lights.

The payment, on account of O&M, for the period between the completion date of any zone and the first day of the second year will be made @ of O&M quoted by the Successful Bidder for the first year.
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.

MCA or the third party consultant hired by MCA 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 MCA 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 MCA and formally signed off by the MCA.

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 MCA. 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.

Following is also part of scope of work of the Successful Bidder: (a) Development of training material for MCA employees (b) training to be imparted to MCA (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 MCA (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 Smart City 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 MCA employees and other stakeholders as directed by ASCL/ MCA. 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 MCA 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 MCA. 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 MCA 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 MCA.
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 ASCL/ MCA for each training session.

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

The Bidder will supply to the MCA 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 MCA 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 MCA or its nominated agencies, or its replacing the Bidder (as the case may be).

Technical Specification

6.1 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 16: 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		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, Osram, CREE.		
(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 <105ºC		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 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 (lumen/watt)	Shall be >100 lumens/watt	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: 140 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

S. No.	Typical specifications of LED street lights		Supporting document
(q)	LED Drive current	>=350 mA<1200 mA	LM-79 report
(r)	LED driver efficiency	> 85%	LM-79 report
(s)	Heat dissipation / heat sink: Well-designed thermal management system with defined heat sink		NABL accredited lab report
(t)	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
(u)	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 Aluminium 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
(v)	The luminaire shall be built in such a way that it can withstand wind speed of 150 kmph. (Impact resistance>=IK05)		NABL accredited lab report
(i)	Frequency	50Hz +/- 3%	
(ii)	Operating temperature	Range: -10C to +50C	NABL accredited lab report
(w)	Protections	IP66 for all type of lamps to be installed Surge protection 4 kV, IEC61000-4-5	NABL accredited lab report
(x)	Working humidity	10% to 90% RH	
(y)	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
(z)	Finish	Aesthetically designed housing with corrosion resistant polyester powder coating	Self-Declaration
(aa)	Luminaire configuration / technical requirement	Side entry type. Shall consist of separate optical and control gear compartments. It should be easy replaceable in the field condition.	Self-Declaration
(ab)	Compliance	RoHS/CE/ERTL/ERDI	Confirmation
(ac)	Surge Protection	External Surge protection of minimum 10 kV/ 10 kA to be separately installed with the each	As per ANSI C 136.2-2014

S. No.	Typical specifications of LED street lights		Supporting document
		fixture, if required.	

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.

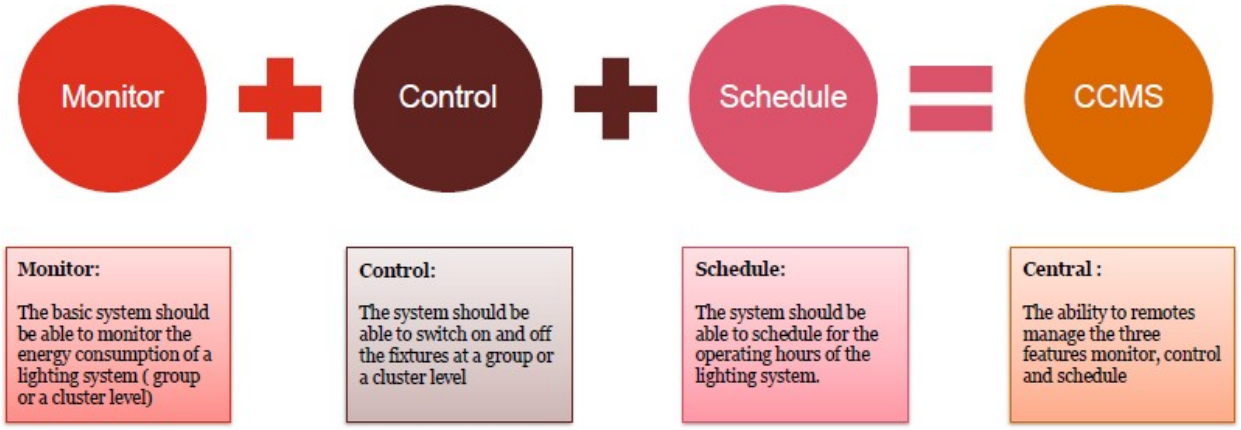
Advantages of using CCMS to monitor and control the street lights

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 Amritsar 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 or on field or 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 in the Amritsar Smart City Integrated Control Command Centre (ICCC).
- 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 at ICCC.
- The vendor shall be responsible for integration of the streetlight CCMS with the ICCC Software for integrated city dashboard , monitoring , control and alert management.
- 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 key technical specifications of a CCMS include:

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)

S. No	Features	Description
		➢ 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.

S. No	Features	Description
		• 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

S. No	Features	Description
		✓ 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.

Note:

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

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.

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General Conditions of Contract ("GCC")

A. General

1. Definitions	11.1 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 23. (c) Employer: Employer means the name as specified in the PCC. (d) Bill of Quantities: 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 42 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 53.1. (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 2.3 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 the period specified in the PCC pursuant to Sub-Clause 34.1 and calculated from the Completion Date. (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) Employer: The Employer is the party who employs the Contractor to carry out the Works, as specified in the PCC. (r) Equipment: Equipment means the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works. (s) "In writing" or "written" means hand-written, type- written, printed or electronically made, and resulting in a permanent record; (t) Initial Contract Price: the Initial Contract Price is the Contract Price listed in the Employer's Letter of Acceptance. (u) 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 is specified in the PCC. The Intended Completion Date may be revised only by the Engineer In Charge by issuing an extension of time or an acceleration order. (v) Materials: Materials are all supplies, including consumables, used by the Contractor for incorporation in the Works. (w) Plant is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function. (x) The Engineer In Charge is the person named in the PCC (or any other competent person appointed by the Employer and notified to the ContractorEngineer In Charge) who is responsible for supervising the execution of the Works and administering the Contract. (y) PCC means Particular Conditions of Contract. (z) The Site is the area defined as such in the PCC. 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. (aa) Specification means the Specification of the Works included in the Contract and any modification or addition made or approved by the Engineer In Charge.

	(bb) The Start Date is given in the PCC. It 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. (cc) 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. (dd) Temporary Works: Temporary Works are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works. (ee) Variation: A Variation is an instruction given by the Project Manager which varies the Works. (ff) The Works are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the PCC.
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 If sectional completion is specified in the PCC, references in the GCC to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works). 2.3 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 2.4 The damages whether liquidated or otherwise, payable by either

	Party to the other of them, as set forth in GCC or PCC, whether on per diem basis or otherwise, are mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the Party entitled to receive the same and are not by way of penalty
3. Language and Laws	3.1 The language of the Contract and the law governing the Contract are stated in the PCC.

	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 Otherwise specified in the PCC, the Engineer In Charge may delegate any of his duties and responsibilities to other people 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. Other Contractors	8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Employer between the dates given in the Schedule of other Contractors, as referred to in the PCC. The Contractor shall also provide facilities and services for them as described in the Schedule. The Employer may modify the Schedule of other Contractors, and shall notify the Contractor of any such modification
9. Personnel and Equipment	9.1 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. 9.2 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. 9.3 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 9.2 above.

10. Employer's and Contractor's Risks	10.1 The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks which this Contract states are Contractor's risks
11. Employer's Risks	11.2 From the Start Date until the Defects Liability Certificate has been issued, the following are Employer's risks: (i) 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 (ii)From the Completion Date until the Defects Liability Certificate has been issued, the risk of loss of or damage to the Works, Plant, and Materials is an 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
12. Contractor's Risks	12.1 From the Starting Date until the Defects Liability Certificate has been issued, all risks of loss of or damage of physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks referred to in Clause 11.2, are the responsibility of the Contractor.
13. Insurance	13.1 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. 13.2 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. 13.3 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. 13.4 Alterations to the terms of an insurance shall not be made without the approval of the Engineer In Charge. 13.5 Both parties shall comply with any conditions of the insurance policies.
14. Site Data	14.1 The Contractor shall be deemed to have examined any Site Data referred to in the PCC, supplemented by any information available to the Contractor.
15. Contractor Works	15.1 The Contractor shall construct and install the work in accordance with the Specifications and Drawings. 15.2 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. 15.3 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
16. The Works to Be Completed by the Intended Completion Date	16.1 The 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.

17. Approval by the Project	17.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Project

Manager	Manager, for his approval. 17.2 The Contractor shall be responsible for design of Temporary Works. 17.3 The Engineer In Charge's approval shall not alter the Contractor's responsibility for design of the Temporary Works. 17.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, where required. 17.5 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 CEO, ASCL 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
18. Safety	18.1 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.
19. Discoveries	19.1 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.
20. Possession of the Site	20.1 The Employer shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the PCC (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.
21. Access to the Site	21.1 The Contractor shall allow the Engineer In Charge and any person authorized by the Engineer In Charge access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out

22. Instructions, Inspections and Audits	22.1 The Contractor shall carry out all instructions of the Engineer In Charge which comply with the applicable laws where the Site is located. 22.2 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. 22.3 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 25.1 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 22.2 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).
23. Appointment of the Adjudicator	23.1 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 will request the Appointing Authority designated in the PCC, to appoint the Adjudicator within 14 (fourteen) days of receipt of such request. 23.2 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.

24. Procedure for Disputes	24.1 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. 24.2 The Adjudicator shall give a decision in writing within 28 (twenty eight) days of receipt of a notification of a dispute. 24.3 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 cost 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. 24.4 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).
25. Fraud and Corruption	25.1 The Employer requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Appendix to the GCC. 25.2 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.

25 A. Labour & compliance with labour Regulations	25A1. 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 transportation. 25A2. 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. 25A3. 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.

	25A4. 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.
25B. Ecological Balance	25B1. 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. 25B2. 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. 25B3. 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.

B. Time Control	
26. Program	26.1 Within the time stated in the PCC, 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. 26.2 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. 26.3 The Contractor shall submit to the Engineer In Charge for approval an updated Program at intervals no longer than the period stated in the PCC. If the Contractor does not submit an updated Program within this period, the Engineer In Charge may withhold the amount stated in the PCC 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. 26.4 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
27. Extension of the Intended Completion Date	27.1 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. 27.2 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 the Project Manager 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.

28. Acceleration	28.1 When the Employer wants the Contractor to finish before the Intended Completion Date, the Engineer In Charge shall obtain priced proposals for achieving the necessary acceleration from the Contractor. If the Employer accepts these proposals, the Intended Completion Date shall be adjusted accordingly and confirmed by both the Employer and the Contractor. 28.2 If the Contractor's priced proposals for acceleration are accepted by the Employer, they are incorporated in the Contract Price and treated as a Variation.
29. Delays Ordered by the Engineer In Charge	29.1 The Engineer In Charge may instruct the Contractor to delay the start or progress of any activity within the Works
30. Management Meetings	30.1 Either the Engineer In Charge or the Contractor may require the other to attend a management meeting. 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. 30.2 The Engineer In Charge shall record the business of management meetings and provide copies of the record to those attending the meeting and to the Employer. The responsibility of the Parties for actions to be taken shall be decided by the Engineer In Charge either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.
31. Early Warning	31.1 The Contractor shall warn the Engineer In Charge at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the Work, increase the Contract Price, or delay the execution of the Works. The Project Manager may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible. 31.2 The Contractor shall cooperate with the Engineer In Charge in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Engineer In Charge.
C. Quality Control	

32. Identifying Defects	32.1 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
33. Tests	33.1 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. 33.2 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. 33.3 Details of all procedures and compliance documents shall be submitted to the Project Manager 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. 33.4 For carrying out mandatory tests as prescribed in the specifications, the Contractor shall establish field laboratory at the location decided by the Engineer In Charge or Conduct the tests in a repute institute in consultation with the Engineer In Charge. If the field laboratory is established, the field laboratory will have minimum of equipment as required to conduct the tests. The Contractor shall be solely responsible for: i) Carrying out the mandatory tests prescribed in the Specifications, and ii) For the correctness of the test results, whether preformed in his laboratory or elsewhere. 33.5 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. 33.6 Nothing in this clause shall reduce the overall responsibility of the Contractor regarding quality and the Contractor

34. Correction of Defects & Operation and maintenance	34.1 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, and is defined in the PCC**.** The Defects Liability Period shall be extended for as long as Defects remain to be corrected. 34.2 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. 34.3Operation and Maintenance as specified in the PCC.
35. Uncorrected Defects	35.1 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.

	D. *Cost Control*
36. Contract Price	36.1 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.
37. Changes in the Contract Price	37.1 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. 37.2 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 1% (one percent) of the Initial Contract Price, the Engineer In Charge shall adjust the rate to allow for the change, duly considering: (a) Justification for rate adjustment as furnished by the Contractor. (b) Economies resulting from increase in quantities by way of reduced plant, equipment and overhead costs. (c) Entitlement of the Contractor to compensation events where such events are caused by any additional work. (d) The revised rates will be applicable to the quantity that exceeds 25% (twenty five percent) limit and not on the entire quantity 37.3 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. 37.4 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.
38. Variation	38.1 All Variations shall be included in updated Programs produced by the Contractor. 38.2 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 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. 38.2 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 37.1 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. 38.3 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. 38.4 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. 38.5 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning. 38.6 **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. 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.
39. Cash Flow Forecasts	39.1 When the Program, is updated, the Contractor shall provide the Engineer In Charge with an updated cash flow forecast. The cash flow forecast shall include different currencies, as defined in the Contract, converted as necessary using the Contract exchange rates.
40. Payment Certificates	40.1 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. 40.2 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.

	40.3 The Engineer In Charge shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor. 40.4 The value of work executed shall be determined by the Engineer In Charge. 40.5 The value of work executed shall comprise the value of the quantities of work in the Bill of Quantities that have been completed.[1] 40.6 The value of work executed shall include the valuation of Variations and Compensation Events. 40.7 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.

41. Payments	41.2 Payments shall be adjusted for deductions for advance Payments and 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. 41.2 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 interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of Dispute. 41.3 Unless otherwise stated, all payments and deductions shall be paid or charged in the proportions of currencies comprising the Contract Price. 41.4 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.
42. Compensation Events	42.1 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 20.1.

(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 Drawings, Specifications, or instructions required for execution of the Works on time.

(d) The Engineer In Charge 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 unreasonably does not approve a Subcontract to be let.

(f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to the Bidders (including the Site Investigation Reports), from information available publicly and from a visual inspection of the Site.

(g) 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.

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

42.2 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. 42.3 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.
43. Tax	43.1 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. 43.2 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.
44. Currencies	44.1 Where payments are made in currencies other than the currency of the Employer's country specified in the PCC, the exchange rates used for calculating the amounts to be paid shall be the exchange rates stated in the Contractor's Bid.
45. Price Adjustment	45.1 Prices shall be adjusted for fluctuations in the cost of inputs only if provided for in the PCC. If so provided, the amounts certified in each payment certificate, before deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amounts due in each currency. A separate formula of the type specified below applies to each Contract currency: **$P_C = A_C + B_C$ Imc/Ioc** Where P_C is the adjustment factor for the portion of the Contract Price payable in a specific currency "c." A_C and B_C are coefficients specified in the PCC, representing the nonadjustable and adjustable portions, respectively, of the Contract Price payable in that specific

	currency “c;” and Imc is the index prevailing at the end of the month being invoiced and Ioc is the index prevailing 28 (twenty eight) days before Bid opening for inputs payable; both in the specific currency “c 45.2 If the value of the index is changed after it has been used in a calculation, the calculation shall be corrected and an adjustment made in the next payment certificate. The index value shall be deemed to take account of all changes in cost due to fluctuations in costs.
46. Retention	46.1 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. 46.2 Upon the issue of a Certificate of Completion of the Works by the Engineer In Charge, in accordance with GCC 51.1, half the total amount retained shall be repaid to the Contractor and half when the Defects Liability Period has passed and the Project Manager 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
47. Liquidated Damages	47.1 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 47.2 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. The Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rates specified in GCC Sub-Clause 41.1.
48. Bonus	48.1 The Contractor shall be paid a Bonus calculated at the rate per calendar day stated in the PCC for each day (less any days for which the Contractor is paid for acceleration) that the Completion is earlier than the Intended Completion Date. The Project Manager shall certify that the Works are complete, although they may not

	be due to be complete.
49. Advance Payment	49.1 The Employer shall make advance payment in 2 (two) installments to the Contractor of the amounts stated in the PCC, against provision by the Contractor of an unconditional irrevocable Bank Guarantee in a form and by a Bank acceptable to the Employer in amounts and currencies equal to the 110% (hundred and ten percent) of advance payment. The contractor shall submit utilization certificate against first installment. The Employer shall verify the utilization of advance and after being satisfied release second installment. The Guarantee shall remain effective until the advance payment has been repaid, but the amount of the Guarantee shall be progressively reduced by the amounts repaid by the Contractor. Interest shall be charged at the rate 12% (twelve percent) per annum on the advance payment. 49.2 The Contractor is to use the advance payment only to pay for Equipment, Plant, Materials, and mobilization expenses required specifically for execution of the Contract. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the Engineer In Charge. 49.3 The advance payment shall be repaid by deducting proportionate amounts from payments otherwise due to the Contractor, following the Schedule of completed percentages of the Works on a payment basis, but not later than the initial project time period of 6 (six) months. No account shall be taken of the advance payment or its repayment in assessing valuations of work done, Variations, price adjustments, Compensation Events, Bonuses, or Liquidated Damages. 49.4 ***Secured Advance:*** The Contractor, on signing an indenture in the form to be specified by the Engineer In Charge, shall be entitled to be paid, during the execution of work, up to 75% (seventy five percent) of the estimated value of any materials, which, in the opinion of the Engineer In Charge, are non-perishable, non- fragile, non-combustible and which have been procured and adequately stored against damage, but which have not been incorporated in the works at the time of making advance. This secured advance is subject to the following: a. The materials are in accordance with the specification for works; b. Such materials have been delivered to Site, and are properly stored and protected against damage or

	deterioration to the satisfaction of the Engineer In Charge. The Contractor shall store the bulk material in measurable stacks; c. The Contractor's records of the requirements, orders, receipt and use of materials are kept in a form approved by the Engineer In Charge and such records shall be available for inspection by the Engineer; d. The Contractor has submitted with his monthly statement the estimated value of the materials on site together with such documents as may be required by the Engineer In Charge for the purpose of valuation of the materials and providing evidence of ownership and payment thereof; and e. Ownership of such materials shall be deemed to vest in the Employer for which the Contractor has submitted an Indemnity Bond in an acceptable format. 49.5 The quantities of materials are not excessive and shall be used within a reasonable time as determined by the Engineer In Charge.
50. Securities	50.1 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.
51. Day-works	51.1 If applicable, the Day-works rates in the Contractor's Bid shall be used only when the Engineer In Charge has given written instructions in advance for additional work to be paid for in that way. 51.2 All work to be paid for as Day-works shall be recorded by the Contractor on forms approved by the Engineer In Charge. Each completed form shall be verified and signed by the Engineer In Charge within 2 (two) days of the work being done. 51.3 The Contractor shall be paid for Day-works subject to obtaining signed Day-works forms.
52. Cost of	52.1 Loss or damage to the Works or Materials to be

Repairs	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
Finishing the Contract	
53. Completion	53.1 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.
54. Taking Over	54.1 The Employer shall take over the Site and the Works within 7 (seven) days of the Engineer In Charge's issuing a Certificate of Completion.
55. Final Account	55.1 The Contractor shall supply the Project Manager 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 that are 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.
56. Operating and Maintenance Manuals	56.1 If "as built" Drawings and/ or Operation and Maintenance manuals are required, the Contractor shall supply them by the dates stated in the PCC. If the Contractor does not supply the Drawings and/or manuals by the dates stated in the PCC pursuant to GCC Sub-Clause 56.1, or they do not receive the Engineer In Charge's approval, the Engineer In Charge shall withhold the amount stated in the PCC from payments due to the Contractor.
57. Termination	57.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract. 57.2 Fundamental breaches of Contract shall include any or all, but shall not be limited to, the following: a) 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; b) 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; c) the Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation; d) a payment certified by the Project Manager is not paid by the Employer to the Contractor within 84 (eighty four) days of the date of the Engineer In Charge's certificate; e) 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; f) the Contractor does not maintain a Security, which is required; g) the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in the PCC; h) 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. 57.3 Notwithstanding the above, the Employer may terminate the Contract for convenience. 57.4 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. 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 56.2 above, the Project Manager shall decide whether the breach

	is fundamental or not.
58. Payment upon Termination	58.1 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 advance payments 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, as specified in the PCC. Additional Liquidated Damages shall not apply. 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. 58.2 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, Materials ordered, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works, and less advance payments received up to the date of the certificate.
59. Property	59.1 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.
60. Release from Performance	60.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Contractor, the Engineer In Charge shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.
61. Suspension of Grant by GOI and/or State Government of Punjab	61.1 In the event that the Government of India (GoI) and/or State Government of Punjab suspends the grant to the Employer, from which part of the payments to the Contractor are being made: (a) The Employer is obligated to notify the Contractor of such suspension within 7 (seven) days of having received the GoI and/or State Government of Punjab's suspension notice. If the Contractor has not received sums due to it within the

	28 (twenty eight) days for payment provided for in Sub-Clause 40.1, the Contractor may immediately issue a 14 (fourteen) - day termination notice.

Section IX - Particular Conditions of Contract

A. General	
GCC 1.1 (c)	The Employer is Chief Executive Officer ("CEO"), Amritsar Smart City Limited (ASCL).
GCC 1.1 (o)	The defect liability period is 5 (five) year.
GCC 1.1 (q)	The Employer is *CEO, Amritsar Smart City Limited*.
GCC 1.1 (u)	The In-tended Completion Date for the whole of the Works shall be 06 (six) months from the date of signing the Contract.
GCC 1.1 (x)	The Engineer In Charge is *[shall be nominated by ASCL after Award of Contract]*
GCC 1.1 (z)	The site is located within Jurisdictional area of Municipal Corporation, Amritsar
GCC 1.1 (cc)	Sub Contract is not allowed
GCC 1.1 (ff)	Works of Implementing Smart LED Street Lights and Centralized Control & Monitoring System on EPC Mode with Operation and Maintenance of 5 (five) years in Municipal Corporation, Amritsar, Amritsar under the Smart City Mission.
GCC 2.2	Sectional Completions are *Applicable*
GCC 2.3(i)	The following documents also form part of the Contract: Work Schedule.
GCC 3.1	The language of the contract is English. The law that applies to the Contract is the law of *India*
GCC 5.1	The Engineer In Charge may delegate any of his duties and responsibilities.
GCC 8.1	Schedule of other contractors: None, if obtained during the implementation period, the same shall be provided to the Contractor.
GCC 9.1	**Key Personnel** GCC 9.1 is replaced with the following: Key Personnel are the Contractor's personnel named in this GCC 9.1 of the Particular Conditions of the Contract. 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.]

GCC 9.2	**Code of Conduct (ESHS)** The following is inserted at the end of GCC 9.2: "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)."
GCC 13.1	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.*
GCC 14.1	Site Data are: *Amritsar*

GCC 16.1 (add new 16.2)	**ESHS Management Strategies and Implementation Plans** The following is inserted as a new sub-clause 16.2: "16.2 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. The Project Manager's prior approval, such supplementary Management Strategies and Implementation Plans as are necessary to manage the EHS risks and impacts of ongoing works. 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, bridge and structure works, stream and road diversions, quarrying or extraction of materials, concrete batching and asphalt manufacture). 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."
GCC 20.1	The Site Possession Date(s) shall be: *the date of signing of the Contract.*
GCC 23.1 & GCC 23.2	Appointing Authority for the Adjudicator: ***CEO, Amritsar Smart City Limited, Amritsar, Punjab.***
GCC 24.3	Hourly rate and types of reimbursable expenses to be paid to the Adjudicator: shall be intimated later.

GCC 24.4	The place of arbitration shall be: ***Chandigarh, India*** Arbitration will be conducted by Sole Arbitrator to be nominated by CEO, PMIDC. 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. The work under the contract shall continue during the arbitration proceedings.

A. Time Control	
GCC 26.1	The Contractor shall submit for approval a Program for the Works within *15 (fifteen)* days from the date of the Letter of Acceptance.
	EHS Reporting Inserted at the end of GCC 26.2: "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.
GCC 26.3	The period between Program updates is *30 (thirty)* days. The amount to be withheld for late submission of an updated Program is Indian Rupees Two lakh Fifty Thousand only (INR*2,50,000/-)*
C. Quality Control	
GCC 34.1	The Defects Liability Period is: *5 (five) years from the date of completion of work in all respect and issuance of the Completion Certificate*. Add the following clause after Clause 34.3 :
	Operation and maintenance: 34.1 The Operation and Maintenance period is 5 (five) years from the date of completion of contract as per schedule mentioned in Section VII- Works Requirement.

D. Cost Control	
GCC 38.2	At the end of Clause 38.2 add after the first sentence: "The Contractor shall also provide information of any EHS risks and impacts of the Variation."
GCC 38.7	In the first paragraph insert new sub-paragraph (d): "(d) a 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;"

	Add new GCC 40.8: "40.8 if the Contractor was, or is, failing to perform any EHS obligations or work under the Contract, the value of this work or obligation, as determined by the Engineer In Charge, may be withheld until the work or obligation has been performed, and/or the cost of rectification or replacement, as determined by the Engineer In Charge, may be withheld until rectification or replacement has been completed. Failure to perform includes, but is not limited to the following: (i) failure to comply with any EHS obligations or work described in the Works' Requirements which may include: working outside site boundaries, excessive dust, failure to keep public roads in a safe usable condition, damage to offsite vegetation, pollution of water courses from oils or sedimentation, contamination of land e.g. from oils, human waste, damage to archeology or cultural heritage features, air pollution as a result of unauthorized and/or inefficient combustion; (ii) failure to regularly review C-EMP and/or update it in a timely manner to address emerging ESHS issues, or anticipated risks or impacts; (iii) failure to implement the C-EMP; (iv) failing to have appropriate consents/permits prior to undertaking Works or related activities; (v) failure to submit EHS report/s (as described in Appendix C), or failure to submit such reports in a timely manner; remediation addressing non-compliance/s)." "40.8 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 Clause 41 of the G.C.C."

GCC 41	The payment shall be made on the basis of the works executed and certified by the engineer **Performance Based Payment Conditions** Works of Implementing Smart LED Street Lights and Centralized Control & Monitoring System on EPC Mode with Operation and Maintenance of 5 (five) Years in Municipal Corporation Amritsar, Amritsar under Smart City Mission 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 10,000 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 of Defect Liability and O&M period. **IDC** 3. On monthly billing **O&M (OPEX)** 4. Yearly billing on completion of year of O&M **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
GCC 44.1	The currency of the Employer's country is: *Indian Rupees.*
GCC 45.1	The Contract is not subject to price adjustment in accordance with GCC Clause 45.
GCC 46.1	The proportion of payments retained is: *5% (five percent)]*

GCC 47.1	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.
GCC 47	Add New GCC 47.3 Clause 47.3- 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.
GCC 48.1	Not Applicable
GCC 49.1	The Advance Payments shall be: *5% (five percent).*
GCC 50.1	Performance Security amounting to total 5% (five percent) of contract value (but excluding O&M cost and provisional sum) 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 Amritsar (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, subject to submission of fresh BG valid for the entire O&M period plus 6 (six) months, of an amount 5% (five percent) of total contract value (but excluding O&M cost and provisional sum) or 5% (five percent) of the total O&M cost whichever is higher. 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.

E. Finishing the Contract	
GCC 56.1	The date by which Operation and Maintenance manuals are required is *30 (thirty) days before the completion of the Contract period.* The date by which "as built" drawings are required is *15 (fifteen) days after the completion of the Contract period or with the Final Bill whichever is earlier.*
GCC 56.2	The amount to be withheld for failing to produce "as built" drawings and/or Operation and Maintenance manuals by the date required in GCC 58.1 is Rs. 5,00,000/- (*Indian Rupees Five Lakh Only).*
GCC 57.2 (g)	The maximum number of days is 60 (s i x t y) days.
GCC 58.1	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).*

Tabular Format of Quantities of Work

S.No.	Description of Item	Unit	Qty.	Rate (INR)	Amount (INR)
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 100 lumens per watt complete in all respects as per specifications and as desired by Engineer Incharge alongwith comprehensive on site warrantee and maintenance for 5 years with Inland transportation including loading, unloading and transfer to site, insurance and other costs incidental to delivery.				
(i)	18W LED street light	Each	47084	1,487	7,00,13,908
(ii)	35W LED street light	Each	3244	2,684	87,06,896
(iii)	70W LED street light	Each	11384	4,980	5,66,92,320
(iv)	110W LED street light	Each	294	6,371	18,73,074
(v)	190W LED street light	Each	438	13,660	59,83,080
2	Dismantling, installation and commissioning of above LED light fixtures. The cost also includes installing ASCL signage on pole with clamps at specified height complete in all respects as desired by Engineer incharge. Clamps with signage will be supplied free of cost.	Each	62444	118	73,68,392
3	Credit for Buyback unit rate of conventional fixtures of light. This rate will be irrespective of size /type of fixture.	Each	62444	-40	-2497760
4	Supply installation testing and commissioning of outdoor type IP54 cluster control 63A Centralized control and Monitoring system consisting of control panel with suitabe 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.	Each	1104	59,000	6,51,36,000
5	Operation and Mantenance work of LED street lights and CCMS complete as per specifications of RFP and as desired by Engineer Incharge (Maximum rate fixed is Rs 400 per handed over fixture per year)				
	-Do- For First year of O&M	66226	Per year	400	26490400
	-Do- For Second year of O&M	66226	Per year	400	26490400

	-Do- For Third year of O&M	66226	Per year	400	26490400
	-Do- For Four year of O&M	66226	Per year	400	26490400
	-Do- For Five year of O&M	66226	Per year	400	26490400
	Total Cost				**34,57,27,910**

Section X - Contract Forms

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, 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
4. Advance Payment Security
5. Indenture for Secured Advances

NOTIFICATION OF AWARD

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).., as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by Amritsar Smart City Pvt. Ltd. .

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 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 name of the Appointing Authority]***, the Appointing Authority, we are hereby requesting such Authority to appoint the Adjudicator in accordance with ITB 50.1 and GCC 23.1.

Authorized Signature:
Name and Title of Signatory:
Name of Agency:

Attachment: Contract Agreement

3. Contract Agreement

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

Amritsar Smart City Limited acting through its Chief Executive Officer and having its office at …… (hereinafter "the Employer" which expression unless repugnant to the context includes its successors, representatives and permitted assigns);

AND

Municipal Corporation of Amritsar acting through its …….. and having its office at …… (hereinafter referred to as "MCA" 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, MCA and Contractor are hereinafter referred to individually as a Party and collectively as the Parties.

WHEREAS the Employer and MCA 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 and MCA 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 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 the Contractor*
in the presence of:	*in the presence of:*
Witness, Name, Signature, Address, Date	*Witness, Name, Signature, Address, Date*

Signed by:

for and on behalf of the MCA

in the presence of :

Witness, Name, Signature, Address, Date

4. 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, which in the case of a Joint Venture shall be the name of the Joint Venture]* (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 50.1. 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 footnotes) is for use in preparing this form and shall be deleted from the final product.

5. Advance Payment Security

Demand Guarantee *[Guarantor letter head or SWIFT identifier code]* **Beneficiary:** *[Insert name and Address of* Employer*]* **Date:** *[Insert date of issue]*

ADVANCE PAYMENT 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, which in the case of a Joint Venture shall be the name of the Joint Venture]* (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, an advance payment in the sum *[insert amount in figures]* () *[insert amount in words]* is to be made against an advance payment guarantee.

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] 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 either that the Applicant:

(a) has used the advance payment for purposes other than the costs of mobilization in respect of the Works; or

(b) has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.

A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the advance payment referred to above has been credited to the Applicant on its account number *[insert number]* at *[insert name and address of Applicant's bank]*.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Applicant as specified in copies of interim statements or Payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety (90) percent of the Accepted Contract Amount, less provisional sums, has been certified for payment, or on the *[insert day]* day of *[insert month]*, 2 *[insert year]*,[2] whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, that the supporting statement under Article 15(a) is hereby excluded.

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

[1] *The Guarantor shall insert an amount representing the 110% of amount of the advance payment and denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Employer.*

[2] *Insert the expected expiration date of the Time for Completion. The Employer should note that in the event of an extension of the time 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 guarantee. In preparing this 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 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."*

6. Indenture For Secured Advances

(For use in cases in which the contract is for finished work and the Contractor has entered into an agreement for the execution of certain specified quantity of work in a given time)

This indenture made the day of_____, 20____BETWEEN_____(hereinafter called the Contractor which expression shall where the context so admits or implies be deemed to include his executors, administrators and assigns) or the one part and Employer of the other part.

Whereas by an Agreement dated_____(hereinafter referred to as the said Agreement) the Contractor has agreed.

AND WHEREAS the Contractor has applied to the Employer that he may be allowed advanced on the security of materials absolutely belonging to him and brought by him to the site of the works the subject of the said Agreement for use in the construction of such of the works as he has undertaken to execute at rates fixed for the finished work (inclusive of the cost of materials and labour and other charges).

AND WHEREAS the Employer has agreed to advance to the Contractor the sum of Rupees on the security of materials the quantities and other particulars of which are detailed in Accounts of Secured Advances attached to the Running Account bill for the said works signed by the Contractor on and the Employer has reserved to himself the option of making any further advance or advances on the security of other materials brought by the Contractor to the site of the said work.

NOW THIS INDENTURE WITNESSETH that in pursuance of the said Agreement and in consideration of the sum of Rupees_____on or before the execution of these presents paid to the Contractor by the Employer (the receipt where of the Contractor doth hereby acknowledge) and of such further advances (if any) as may be made to him as aforesaid the Contractor doth hereby covenant and agree with the present and declare as follows:

1. That the said sum of Rupees so advanced by the Employer to the Contractor as aforesaid and all or any further sum of sums advanced as aforesaid shall be employed by the Contractor in or towards expending the execution of the said works and for no other purpose whatsoever.

2. That the materials details in the said Account of Secured Advances which have been offered to and accepted by the Employer as security are absolutely the Contractor's own propriety and free from encumbrances of any kind and the Contractor will not make any application for or receive a further advance on the security of materials which are not absolutely his own property and free from encumbrances of any kind and the Contractor indemnified the Employer against all claims to any materials in respect of which an advances has be made to him as aforesaid.

3. That the materials detailed in the said account of Secured Advances and all other materials on the security of which any further advance or advances may hereafter be made as aforesaid (hereafter called the said materials) shall be used by the Contractor solely in the execution of the said work in accordance with the directions of the Engineer In Charge.

4. That the Contractor shall make at his own cost all necessary and adequate arrangements for the proper watch, safe custody and protection against all risks of the

said materials and that until used in construction as aforesaid the said materials shall remain at the site of the said works in the Contractor's custody and on his own responsibility and shall at all times be open to inspection by the Engineer In Charge or any officer authorized by him.

In the event of the said materials or any part thereof being stolen, destroyed or damaged or becoming deteriorated in a greater degree than is due to reasonable use and wear thereof the Contractor will forthwith replace the same with other materials of like quality or repair and make good the same required by the Engineer In Charge.

5. That the said materials shall not be on any account be removed from the site of the said works except with the written permission of the Project Manager or an officer authorized by him on that behalf.

6. That the advances shall be repayable in full when or before the Contractor receives payment from the Employer of the price payable to him for the said works under the terms and provisions of the said agreement. Provided that if any intermediate payments are made to the Contractor on account of work done than on the occasion of each such payment the Employer will be at liberty to make a recovery from the Contractor's bill for such payment by deducting there from the value of the said materials than actually used in the construction and in respect of which recovery has not been made previously, the value for this purpose being determined in respect of each description of materials at the rates at which the amounts of the advances made under these presents were calculated.

7. That if the Contractor shall at any time make any default in the performance or observance in any respect of any of the terms and provisions of the said agreement or of these presents the total amount of the advance or advances that may still be owing of the Employer shall immediately on the happening of such default be repayable by the Contractor to the Employer together with interest thereon at 12% (twelve per cent) per annum from the date or respective dates of such advance or advances to the date of repayment and with all costs, charges, damages and expenses incurred by the Employer in or for the recovery thereof or the enforcement of this security or otherwise by reason of the default of the Contractor and the Contractor hereby covenants and agrees with the Employer to repay and pay the same respectively to him accordingly.

8. That the Contractor hereby charges all the said materials with the repayment to the Employer of the said sum of Rupees and any further sum of sums advanced as aforesaid and all costs, charges, damages and expenses payable under these presents PROVIDED ALWAYS and it is hereby agreed and declared that notwithstanding anything in the said agreement and without prejudice to the power contained therein if and whenever the covenant for payment and repayment here-in- before contained shall become enforceable and the money owing shall not be paid in accordance there with the Employer may at any time thereafter adopt all or any of the following courses as he may deem best:

    a. Seize and utilize the said materials or any part thereof in the completion of the said works on behalf of the Contractor in accordance with the provisions in that behalf contained in the said agreement debiting the Contractor with the actual cost of effecting such completion and the amount due to the Contractor with the value of work done as if he had carried it out in accordance with the said agreement and at the rates thereby provided. If the balance is against the Contractor, he is to pay same to the Employer on demand.

    b. Remove and sell by public auction the seized materials or any part thereof and out

of the moneys arising from the sale retain all the sums aforesaid repayable or payable to the Employer under these presents and pay over the surplus (if any) to the Contractor.

c. Deduct all or any part of the moneys owing out of the security deposit or any sum due to the Contractor under the said agreement.

9. That except in the event of such default on the part of the Contractor as aforesaid interest on the said advance shall not be payable.

10. That in the event of any conflict between the provisions of these presents and the said agreement the provisions of these presents shall prevail and in the event of any dispute or difference arising over the construction or effect of these presents the settlement of which has not been here-in-before expressly provided for the same shall be referred to the Employer whose decision shall be final and the provision of the Arbitration and Conciliation Act, 1996 (as amended from time to time) for the time being in force shall apply to any such reference.

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 SuccessfulBidder. 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 MCA so that all the equipment are proved to be in working conditions and handed over to the MCA 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 levela 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:

Information relating to the present services provided and customer satisfaction surveys.

Documentation pertaining to the Project related data and confidential information.

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.

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 Compatible 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 . S T A N D A R D

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 (with latest 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 5 (five) 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 Freescale) / 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.

xiii) The offered meter will record accurately under tamper conditions of neutral disturbance when DC voltage is fed to neutral by installing a diode.

xiv) 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 discharge with 0-10 mm spark gap.

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 WORKM ANSHIP

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 its officer(s) or through an out-side agency nominated by PSPCL 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:

i) Type of Display is LCD /LED.
ii) Meter case is of polycarbonate.

iii) 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 $1/10^{th}$, 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.

36. 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 (for both 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.