



BIDDING DOCUMENT

for

**Construction of
500kWp Grid Connected Solar PV with Energy Storage
System at Chitlang, Thaha Municipality Ward 9,
Makwanpur District**

IFB No. MBUSTDB/W/ICB-01/2021/22

**International Competitive Bidding
Single-Stage: Two-Envelope Bidding Procedure**

***Madan Bhandari University of Science and Technology
Development Board***

Setopati, Sainbu, Lalitpur Metropolitan City Ward 18

Issued on: 2021-11-12
Issued to:

Abbreviations

BD	Bidding Document
BDF	Bidding Forms
BDS	Bid Data Sheet
BOQ	Bill of Quantities
COF	Contract Forms
DP	Development Partners
DoLIDAR	Department of Local Infrastructure Development and Agricultural Roads
ELI	Eligibility
EQC	Evaluation and Qualification Criteria
EXP	Experience
FIN	Financial
GCC	General Conditions of Contract
GoN	Government of Nepal
ICC	International Chamber of Commerce
IFB	Invitation for Bids
ITB	Instructions to Bidders
JV	Joint Venture
LIT	Litigation
MBUSTDB	Madan Bhandari University of Science and Technology Development Board
ICB	International Competitive Bidding
PAN	Permanent Account Number
PPA	Public Procurement Act
PPMO	Public Procurement Monitoring Office
PPR	Public Procurement Regulations
PL	Profit & Loss
SBD	Standard Bidding Document
SCC	Special Conditions of Contract
TS	Technical Specifications
VAT	Value Added Tax
WRQ	Works Requirements

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Invitation for Bids

Madan Bhandari University of Science and Technology Development Board Setopati, Sainbu, Lalitpur Metropolitan City Ward 18, Nepal

Invitation for Bids for the Construction of 500 kWp Grid Connected Solar PV with Energy Storage System at Chitlang

Contract Identification IFB No.: MBUSTDB/W/ICB-01/2021/22

First Date of Publication: November 12, 2021, Friday (Kartik 26, 2078)

1. Madan Bhandari University of Science and Technology Development Board (MBUSTDB) has received a grant from GoN towards the cost for the Grid Connected Solar PV with Energy Storage System at Chitlang, Thaha Municipality, Ward No. 9, Makwanpur District, Bagmati Province and intends to apply part of the funds to cover eligible payments under the Contract for the **Construction of 500 kWp Grid Connected Solar PV with Energy Storage System**. Bidding is open to all eligible Nepalese and Foreign bidders as per Section V of the bidding document.
2. MBUSTDB invites electronic bids from eligible bidders for the construction of the Grid Connected Solar PV with Energy Storage System under the International Competitive Bidding – Single Stage Two Envelope Bidding Procedures.
Only eligible bidders with the following specific construction experience should participate in this bidding:
 - a) Minimum Average Annual Construction Turnover of the best 3 years within the last 10 years: USD 1.5 million or equivalent.
 - b) Minimum work experience of similar size and nature: (1) Participation as the Prime contractor, management contractor, or subcontractor, in at least one (1) Contract for Grid Connected Solar PV with Energy Storage System Project within the last ten (10) years with a value of at least USD one million or equivalent that has been successfully completed and that are similar to the proposed works; (2) At least one Grid Connected Solar PV with Energy Storage System Project with capacity of at least 400 kWp successfully completed within the period of 7.5 months as the Prime contractor, management contractor, or subcontractor within last ten (10) years.
3. Eligible Bidders may obtain further information and inspect the Bidding Documents at the office of MBUSTDB, Telephone no. 9840088016 and 9849848053, email: info@mbustb.edu.np and info@mbustb.org or may visit PPMO e-GP system www.bolpatra.gov.np/egp and www.mbustb.org
4. A complete set of Bidding Documents may be downloaded from PPMO's e-GP system www.bolpatra.gov.np/egp. Bidders, submitting their bids electronically, should deposit a non-refundable cost of bidding document USD 86 or NPR 10,000.00 in the account as specified below
Name of the Bank: Nepal Bank Limited, Gabahal, Lalitpur.
Name of Office: Madan Bhandari University of Science and Technology Development Board
Office Account no.: 01800106701870000001
5. Online Pre-bid meeting shall be held at 15:00 hours, November 25, 2021, Thursday.
6. Electronic bids must be submitted to the office of MBUSTDB at Setopati, Sainbu, Lalitpur – 18, Nepal through PPMO website www.bolpatra.gov.np/egp on or before 13:00 hours on December 28, 2021. Bids received after this deadline will be rejected.
7. The bids will be opened in the presence of Bidders' representatives who choose to attend at 14:00 hours on December 28, 2021, Wednesday at the office of MBUSTDB.
8. Bids must be valid for a period of 120 (One hundred twenty) **days** after bid opening and must be accompanied by a scanned copy of the bid security in pdf format amounting to a minimum of USD 25,000 or **NPR 2,900,000.00** which shall be valid for 30 days beyond the validity period of the bid **(i.e. April 14, 2022)**
9. If the last date of purchasing and /or submission falls on a government holiday, then the next working day shall be considered as the last date. In such a case the validity period of the bid security shall remain the same as specified for the original last date of bid submission.
10. Bidders are advised to visit site and assess the actual site conditions before submitting their bid. The employer shall not be responsible for any costs or expenses incurred by bidders in connection with preparation or submission of Bids.
11. The employer reserves the right to accept or reject, wholly or partly any or all the bids without assigning any reason, whatsoever.

Part I: BIDDING PROCEDURES

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Section 1 - Instructions to Bidders

General

<p>1. Scope of Bid</p>	<p>1.1 In connection with the Invitation for Bids indicated in the Bid Data Sheet (BDS), the Employer, as indicated in the BDS, issues this Bidding Document for the procurement of Works as specified in Section 5 (Works Requirements). The name, identification, and number of Contracts of the International Competitive Bidding (ICB) are provided in the BDS.</p> <p>1.2 Throughout this Bidding Document:</p> <p>(a) the term “in writing” means communicated in written form and delivered against receipt;</p> <p>(b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and</p> <p>(c) “day” means calendar day.</p>
<p>2. Source of Funds</p>	<p>2.1 GoN Funded: In accordance with its annual program and budget, approved by the GoN, the implementing agency indicated in the BDS plans to apply a portion of the allocated budget toward the cost of the project named in the BDS. The GoN intends to apply a portion of the allocated budget to eligible payments under the contract(s) for which this Bidding Document is issued.</p> <p>Or</p> <p>Public Entities' own Resource Funded: In accordance with its annual program and budget, approved by the public entity, the implementing agency indicated in the BDS plans to apply a portion of the allocated budget to eligible payments under the contract(s) for which this Bidding Document is issued.</p> <p>Or</p> <p>DP Funded: The GoN has applied for or received financing (hereinafter called “funds”) from the Development Partner (hereinafter called “the DP”) indicated in the BDS toward the cost of the project named in the BDS. The GoN intends to apply a portion of the funds to eligible payments under the contract(s) for which this Bidding Document is issued.</p> <p>2.2 DP Funded: Payment by the DP will be made only at the request of the GoN and upon approval by the DP in accordance with the terms and conditions of the financing agreement between the GoN and the DP (hereinafter called the “Loan Agreement”), and will be subject in all respects to the terms and conditions of that Loan Agreement. No party other than the GoN shall derive any rights from the Loan Agreement or have any claim to the funds.</p>
<p>3. Fraud and Corruption</p>	<p>3.1 The Government of Nepal (GoN) requires that the procuring entities as well as bidders, suppliers, and contractors and their sub-contractors under GoN/DP-financed contracts, shall adhere to the highest standard of ethics during the procurement and execution of such contracts. In this context, the Employer;</p> <p>(a) defines, for the purposes of this provision, the terms set forth below as follows:</p> <p>(i) “corrupt practice” means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party;</p>

- (ii) “fraudulent practice” means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
- (iii) “coercive practice” means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
- (iv) “collusive practice” means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party.
- (v) “obstructive practice” means:
 - (aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a GoN/DP investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
 - (bb) acts intended to materially impede the exercise of the GoN’s/DP’s inspection and audit rights provided for under sub-clause 3.5 below.
- (b) will reject bid(s) if it determines that the bidder has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
- (c) will sanction a firm or individual, including declaring ineligible, for a stated period of time, to be awarded a GoN/DP-financed contract if it at any time determines that the firm has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for, or in executing, a GoN/DP-financed contract.

3.2 The Bidder shall not carry out or cause to carryout the following acts with an intention to influence the implementation of the procurement process or the procurement agreement:

- (a) give or propose improper inducement directly or indirectly,
- (b) distortion or misrepresentation of facts,
- (c) engaging in corrupt or fraudulent practice or involving in such act,
- (d) interference in participation of other competing bidders,
- (e) coercion or threatening directly or indirectly to cause harm to the person or the property of any person to be involved in the procurement proceedings,
- (f) collusive practice among bidders before or after submission of bids for distribution of works among bidders or fixing artificial/uncompetitive bid price with an intention to deprive the Employer the benefit of open competitive bid price,
- (g) contacting the Employer with an intention to influence the Employer with regards to the bids or interference of any kind in examination and evaluation of the bids during the period from the time of opening of the bids until the notification of award of contract.

	<p>3.3 PPMO on the recommendation of the Employer may blacklist a Bidder for a period of one (1) to three (3) years for its conduct including the following grounds and seriousness of the act committed by the bidder:</p> <ul style="list-style-type: none"> (a) if convicted by a court of law in a criminal offence which disqualifies the Bidder from participating in the contract, (b) if it is established that the contract agreement signed by the Bidder was based on false or misrepresentation of Bidder’s qualification information, (c) if it at any time determines that the firm has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for, or in executing, a GoN/DP-financed contract. (d) if the Successful Bidder fails to sign the Contract. <p>3.4 A bidder declared blacklisted and ineligible by the GoN, Public procurement Monitoring Office (PPMO) and/or the DP in case of DP funded project, shall be ineligible to bid for a contract during the period of time determined by the GoN, PPMO and/or the DP.</p> <p>3.5 The Contractor shall permit the GoN/DP to inspect the Contractor’s accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by the GoN/DP, if so required by the GoN/DP.</p> <p>3.6 DP Funded: In pursuance of the fraud and corruption policy, the DP.</p> <ul style="list-style-type: none"> (a) will reject a Bid if it determines that the bidder recommended for award has directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question; (b) will cancel the portion of the loan/ credit/ grant allocated to a contract if it determines at any time that representative(s) of the GoN or of a beneficiary of the fund engaged in corrupt, fraudulent, collusive, or coercive practices during the procurement or the execution of that contract, without the GoN having taken timely and appropriate action satisfactory to the DP to address such practices when they occur. <p>3.7 3.7 A bidder declared blacklisted and ineligible by the GoN, Public Procurement Monitoring Office (PPMO) and/or the DP in case of DP funded project, may be ineligible to bid for a contract during the period of time determined by the GoN, PPMO and/or the DP.</p> <p>3.8 3.8 In case of a natural person or firm/institution/company which is already declared blacklisted and ineligible by the GoN, any other new or existing firm/institution/company owned partially or fully by such Natural person or Owner or Board of director of blacklisted firm/institution/company; shall not be eligible bidder.</p>
<p>4. Eligible Bidders</p>	<p>4.1 A Bidder may be a natural person, private entity, or government-owned entity—subject to ITB 4.5—or any combination of them in the form of a Joint Venture (JV) under an existing agreement, or with the intent to constitute a legally-enforceable joint venture. In the case of a JV:</p> <ul style="list-style-type: none"> (a) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms. Maximum number of JV and other provision for JV shall be as per specified in the BDS. The qualification requirement of the parties to the JV shall be as specified in Section 3; Evaluation and qualification Criteria, and (b) the JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the parties of the

JV during the bidding process and, in the event the JV is awarded the Contract, during Contract execution.

- 4.2 A Bidder, and all parties constituting the Bidder, shall have the nationality of Nepal or any country or eligible countries mentioned in the BDS. A Bidder shall be deemed to have the nationality of a country if the Bidder is a citizen or is constituted, or incorporated, and operates in conformity with the provisions of the laws of that country. This criterion shall also apply to the determination of the nationality of proposed sub Contractors or suppliers for any part of the Contract including related services.
- 4.3 A Bidder shall not have a conflict of interest. A Bidder found to have a conflict of interest shall be disqualified. A Bidder may be considered to be in a conflict of interest with one or more parties in this bidding process, if:
- (a) they have controlling partners in common; or
 - (b) they receive or have received any direct or indirect subsidy from any of them; or
 - (c) they have the same legal representative for purposes of this bid; or
 - (d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the Bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or
 - (e) a Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which the party is involved. However, this does not limit the inclusion of the same sub Contractor in more than one bid; or
 - (f) a Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the Contract that is the subject of the Bid; or
 - (g) a Bidder or any of its affiliates has been hired (or is proposed to be hired) by the Employer as Engineer for the Contract.
- 4.4 A firm that is under a declaration of ineligibility by the GoN/DP in accordance with ITB 3, at the date of the deadline for bid submission or thereafter, shall be disqualified. The list of debarred firm is available at the electronic address specified in the BDS.
- 4.5 Enterprises owned by GoN shall be eligible only if they can establish that they are legally and financially autonomous and operate under commercial law, and that they are not a dependent agency of the GoN.
- 4.6 Bidders shall provide such evidence of their continued eligibility satisfactory to the Employer, as the Employer shall reasonably request.
- 4.7 In case a prequalification process has been conducted prior to the bidding process, this bidding is open only to prequalified Bidders.
- 4.8 Firms shall be excluded in any of the cases, if
- (a) 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 Employer's country prohibits any import of goods or Contracting of works or services from that country or any payments to persons or entities in that country.
 - (b) DP Funded: as a matter of law or official regulation, Nepal prohibits commercial relations with that country, provided that the DP is satisfied that such exclusion does not preclude effective competition for the supply of goods or related services required;

	<p>(c) DP Funded: a firm has been determined to be ineligible by the DP in relation to their guidelines or appropriate provisions on preventing and combating fraud and corruption in projects financed by them.</p> <p>4.9 Domestic Bidder shall be eligible only if the bidder has obtained Permanent Account Number (PAN) and Value Added Tax (VAT) Registration Certificate(s) and Tax Clearance Certificate or proof of submission of income return as stated in BDS from the Inland Revenue Office. Foreign bidder shall be eligible only if the bidder submits the documents indicated in the BDS at the time of bid submission and a declaration to submit the document(s) indicated in the BDS at the time of contract agreement.</p>
<p>5. Eligible Materials, Equipment and Services</p>	<p>5.1 The materials, equipment and services to be supplied under the Contract shall have their origin in any source countries as defined in ITB 4.2 above and all expenditures under the Contract will be limited to such materials, equipment, and services. At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment and services.</p> <p>5.2 For purposes of ITB 5.1 above, "origin" means the place where the materials and equipment are mined, grown, produced or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that differs substantially in its basic characteristics or in purpose or utility from its components.</p>

Contents of Bidding Document

<p>6. Sections of Bidding Document</p>	<p>6.1 The Bidding Document consist of Parts I, II, and III, which include all the Sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITB 8.</p> <p style="text-align: center;">PART I Bidding Procedures</p> <p style="text-align: center;">Section 1 - Instructions to Bidders (ITB)</p> <p style="text-align: center;">Section 2 - Bid Data Sheet (BDS)</p> <p style="text-align: center;">Section 3 - Evaluation and Qualification Criteria (EQC)</p> <p style="text-align: center;">Section 4 - Bidding Forms (BDF)</p> <p style="text-align: center;">PART II Requirements</p> <p style="text-align: center;">Section 5 – Works Requirements (WRQ)</p> <p style="text-align: center;">Section 6 – Bill of Quantities (BOQ)</p> <p style="text-align: center;">PART III Conditions of Contract and Contract Forms</p> <p style="text-align: center;">Section 7 - General Conditions of Contract (GCC)</p> <p style="text-align: center;">Section 8 - Special Conditions of Contract (SCC)</p> <p style="text-align: center;">Section 9 - Contract Forms (COF)</p> <p>6.2 The Invitation for Bids issued by the Employer is not part of the Bidding Document.</p> <p>6.3 The Employer is not responsible for the completeness of the Bidding Document and their Addenda, if they were not obtained directly from the source stated by the Employer in the Invitation for Bids.</p>
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	<p>6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Document. Failure to furnish all information or documentation required by the Bidding Document may result in the rejection of the bid.</p>
<p>7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting</p>	<p>7.1 A prospective Bidder requiring any clarification of the Bidding Document shall contact the Employer in writing at the Employer’s address indicated in the BDS or raise any question or curiosity during the pre-bid meeting if provided for in accordance with ITB 7.4. The Employer shall be required to make available as soon as possible the answer to such question or curiosity in writing to any request for clarification, provided that such request is received as mentioned in BDS. The Employer shall forward copies of its response to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. Should the Employer deem it necessary to amend the Bidding Document as a result of a request for clarification, it shall do so following the procedure under ITB 8 and ITB 22.2.</p> <p>7.2 The Bidder is encouraged to visit and examine the Site of Works and its surroundings and obtain for itself, on its own risk and 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.</p> <p>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.</p> <p>7.4 The Bidder’s designated representative is invited to attend a pre-bid meeting, if provided for in the BDS. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.</p> <p>7.5 The Bidder is requested, as far as possible, to submit any questions in writing, to reach the Employer as mentioned in BDS.</p> <p>7.6 Minutes of the pre-bid meeting, including the text of the questions raised, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3. 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 ITB 8 and not through the minutes of the pre-bid meeting.</p> <p>7.7 Non attendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.</p>
<p>8. Amendment of Bidding Document</p>	<p>8.1 At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Document by issuing addenda.</p> <p>8.2 Any addendum issued 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 ITB 6.3.</p> <p>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.</p>

Preparation of Bids

<p>9. Cost of Bidding</p>	<p>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.</p>
<p>10. Language of Bid</p>	<p>10.1 The Bid, as well as all 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.</p>
<p>11. Documents Comprising the Bid</p>	<p>11.1 The Bid shall comprise two envelopes submitted simultaneously, one called the Technical Bid containing the documents listed in ITB 11.2 and the other the Price Bid containing the documents listed in ITB 11.3, both envelopes enclosed together in an outer single envelope.</p> <p>11.2 The Technical Bid shall comprise the following:</p> <ul style="list-style-type: none"> (a) Letter of Technical Bid; (b) Completed Schedules, in accordance with ITB 12; (c) Bid Security, in accordance with ITB 19; (d) Alternative Technical Bids, at Bidder's option and if permissible, in accordance with ITB 13; (e) Written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2; (f) Documentary evidence in accordance with ITB 17 establishing the Bidder's qualifications to perform the Contract; (g) Technical Proposal in accordance with ITB 16; (h) In the case of a bid submitted by a JV, the JV agreement, or letter of intent to enter into a JV including a draft agreement, indicating at least the parts of the Works to be executed by the respective partners; and (i) any other required documents, which is not against the provision of Procurement Act/Regulation/Directives and Standard Bidding Document issued by PPMO as specified in the BDS. <p>(j) The Price Bid shall comprise the following:</p> <ul style="list-style-type: none"> (a) Letter of Price Bid; (b) completed Bill of Quantities, Price Schedules, in accordance with ITB 12 and ITB 14, or as stipulated in the BDS; (c) alternative price Bids, at Bidder's option and if permissible, in accordance with ITB 13; (d) Any other document required in the BDS. <p>11.3 The Bidder is solely responsible for the authenticity of the documents submitted by the Bidder.</p>
<p>12. Letter of Bid and Schedules</p>	<p>12.1 The Letter of Technical Bid and Priced Bid, Schedules, and all documents listed under Clause 11, shall be prepared using the relevant forms in Section 4 (Bidding Forms), if so provided. The forms must be completed without any</p>

	alterations to the text, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.
13. Alternative Bids	<p>13.1 Unless otherwise indicated in the BDS, alternative bids shall not be considered.</p> <p>13.2 When alternative times for completion are explicitly invited, a statement to that effect will be included in the BDS, as will the method of evaluating different times for completion.</p> <p>13.3 When specified in the BDS pursuant to ITB 13.1, and subject to 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.</p> <p>13.4 When specified in the BDS, 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 5 (Employer's Requirements). The method for their evaluation will be stipulated in Section 3 (Evaluation and Qualification Criteria).</p>
14. Bid Prices and Discounts	<p>14.1 The prices and discounts quoted by the Bidder in the Letter of Price Bid and in the Schedules shall conform to the requirements specified below.</p> <p>14.2 The Bidder shall submit a Price 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 4 (Bidding Forms). In case of Unit Rate 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.</p> <p>14.3 The price to be quoted in the Letter of Price Bid shall be the total price of the Bid, excluding any discounts offered.</p> <p>14.4 Unconditional discounts, if any, and the methodology for their application shall be quoted in the Letter of Price Bid, in accordance with ITB 12.1.</p> <p>14.5 If so indicated in ITB 1.1, bids are invited for individual Contracts or for any combination of Contracts (packages). Bidders wishing to offer any price reduction for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Price reductions or discounts shall be submitted in accordance with ITB 14.3, provided the bids for all Contracts are submitted and opened at the same time.</p> <p>14.6 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 Table of Adjustment Data in Section 4 (Bidding Forms) and the Employer may require the Bidder to justify its proposed indices and weightings.</p> <p>14.7 The bidder is subject to local taxes such as VAT, social charges or income taxes on nonresident international personnel, and also duties, fees, levies on amounts payable by the employer under the Contract. All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 30 days prior to the deadline for submission of bids, shall be included in the rates and prices and the total bid price submitted by the Bidder.</p>

<p>15. Currencies of Bid and Payment</p>	<p>15.1 The unit rates and the prices shall be quoted by the bidder entirely in Nepalese currency if not otherwise specified in the BDS.</p> <p>15.2 Bidders shall indicate the portion of the bid price that corresponds to expenditures incurred in Nepalese currency in the Schedule of Payment Currencies included in Section 4 (Bidding Forms).</p> <p>15.3 Bidders expecting to incur expenditures in other currencies for inputs to the Works supplied from outside the Employer's country and wishing to be paid accordingly may indicate up to three convertible foreign currencies included in daily publication of Nepal Rastra Bank foreign currency exchange rate in the Schedule of Payment Currencies included in Section 4 (Bidding Forms).</p> <p>15.4 The rates of exchange to be used by the bidder for currency conversion during bid preparation shall be the selling rates for similar transactions prevailing on the date 30 days prior to the deadline for submission of bids published by Nepal Rastra Bank. Bidders should note that for the purpose of payments, the exchange rates confirmed by Nepal Rastra Bank as the selling rates prevailing 30 days prior to the deadline for submission of bids shall apply for the duration of the Contract so that no currency exchange risk is borne by the bidder.</p> <p>15.5 Foreign currency requirements indicated by the bidders in the Schedule of Payment Currencies shall include but not limited to the specific requirements for</p> <ul style="list-style-type: none"> (a) expatriate staff and labor employed directly on the Works; (b) social, insurance, medical and other charges relating to such expatriate staff and labor, and foreign travel expenses; (c) imported materials, both temporary and permanent, including fuels, oil and lubricants required for the Works; (d) depreciation and usage of imported Plant and Contractor's Equipment, including spare parts, required for the Works; (e) foreign insurance and freight charges for imported materials, Plant and Contractor's Equipment, including spare parts; and (f) overhead expenses, fees, profit, and financial charges arising outside the Employer's country in connection with the Works. <p>15.6 Bidders may be required by the Employer to clarify their foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Payment Currencies are reasonable and responsive to ITB 15.3 above, in which case a detailed breakdown of its foreign currency requirements shall be provided by the Bidder.</p> <p>15.7 Bidders should note that during the progress of the Works, the foreign currency requirements of the outstanding balance of the Contract Price may be adjusted by agreement between the Employer and the Contractor in order to reflect any changes in foreign currency requirements for the Contract, in accordance with Sub-Clause 14.15 of the Conditions of Contract. Any such adjustment shall be effected by comparing the percentages quoted in the bid with the amounts already used in the Works and the Contractor's future needs for imported items.</p>
<p>16. Documents Comprising the Technical Proposal</p>	<p>16.1 The Bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section 4 (Bidding Forms), in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.</p>
<p>17. Documents Establishing the Qualifications of</p>	<p>17.1 To establish its qualifications to perform the Contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding information sheets included in</p>

<p>the Bidder</p>	<p>Section 4 (Bidding Forms).</p> <p>17.2 Domestic Bidders, individually or in joint ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility as described in ITB 34 if margin of preference for domestic bidders is applicable in accordance with ITB 34.</p>
<p>18. Period of Validity of Bids</p>	<p>18.1 Bids shall remain valid for the period specified in the BDS after the bid submission deadline date prescribed by the Employer. A bid valid for a shorter period shall be rejected by the Employer as non responsive.</p> <p>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 30 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 and to include any additional conditions against the provisions specified in Bid Documents.</p>
<p>19. Bid Security</p>	<p>19.1 The Bidder shall furnish as part of its bid, in original form, a bid security as specified in the BDS. In case of e-submission of bid, the Bidder shall upload scanned copy of Bid security letter at the time of electronic submission of the bid. The Bidder accepts that the scanned copy of the Bid security shall, for all purposes, be equal to the original. The details of original Bid Security and the scanned copy submitted with e-bid should be the same otherwise the bid shall be non-responsive.</p> <p>19.2 The bid security shall be, at the Bidder's option, in any of the following forms:</p> <ul style="list-style-type: none"> (a) an unconditional bank guarantee from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law or; (b) a cash deposit voucher in the Employer's Account as specified in BDS. <p>In the case of a bank guarantee, the bid security shall be submitted either using the Bid Security Form included in Section IV (Bidding Forms) or in another Form acceptable to the employer. The form must include the complete name of the Bidder. The bid security shall be valid for minimum thirty (30) days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 18.2.</p> <p>19.3 The bid security issued by any foreign Bank outside Nepal must be counter guaranteed by a Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal.</p> <p>19.4 Any bid not accompanied by an enforceable and substantially compliant bid security, if required in accordance with ITB 19.1, shall be rejected by the Employer as nonresponsive. In case of e- Submission, if the scanned copy of an acceptable Bid Security letter is not uploaded with the electronic Bid then Bid shall be rejected.</p> <p>19.5 The bid security of unsuccessful Bidders shall be returned within three days, once the successful bidder has furnished the required performance security and signed the Contract Agreement pursuant to ITB 41.1 and ITB 42.1.</p> <p>19.6 The bid security shall be forfeited if:</p> <ul style="list-style-type: none"> (a) a Bidder requests for withdrawal or modification of its bid, except as provided in ITB 18.2: <ul style="list-style-type: none"> (i) during the period of bid validity specified by the Bidder on the Letter of Technical Bid and Price Bid, in case of electronic submission;

	<ul style="list-style-type: none"> (ii) from the period twenty-four hours prior to bid submission deadline up to the period of bid validity specified by the Bidder on the Letter of Technical Bid and Price Bid, in case of hard copy submission. (b) a Bidder changes the prices or substance of the bid while providing information pursuant to clause 27.1; (c) a Bidder involves in fraud and corruption pursuant to clause 3.1; (d) the successful Bidder fails to: <ul style="list-style-type: none"> (i) furnish a performance security in accordance with ITB 41.1; (ii) sign the Contract in accordance with ITB 42.1; or (iii) accept the correction of arithmetical errors pursuant to clause 32 ; <p>19.7 The Bid Security of a JV shall be in the name of the JV that submits the bid. If the JV has not been legally constituted at the time of bidding, the Bid Security shall be in the names of all future partners as named in the letter of intent mentioned in ITB 4.1.</p>
<p>20. Format and Signing of Bid</p>	<p>20.1 The Bidder shall prepare one original of the documents comprising the bid as described in ITB 11 and clearly mark it “ORIGINAL”. Alternative bids, if permitted in accordance with ITB 13, shall be clearly marked “ALTERNATIVE”. In addition, the Bidder shall submit copies of the bid in the number specified in the BDS, and clearly mark each of them “COPY.” In the event of any discrepancy between the original and the copies, the original shall prevail.</p> <p>In case of e-submission of bid, the Bidder shall submit his bid electronically in PDF or web forms files as specified in ITB Clause 21.1(b), If a Bidder submits both the electronic bid and a bid in hard copy within the bid submission deadline, then the submitted Bids shall be accepted for evaluation provided that the facts and figures in hard copy confirm to those in electronic bid. If there is any major discrepancy in fact and figures in the electronic bid and bid in hard copy, it shall be treated as two separate bids from one Bidder and both the Bids shall be disqualified, as per ITB Clause 4.3 (e).</p> <p>20.2 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation 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, except for un-amended printed literature, shall be signed or initialed by the person signing the bid.</p> <p>20.3 Any amendments such as interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the bid.</p>

Submission and Opening of Bids

<p>21. Sealing and Marking of Bids</p>	<p>21.1 Bidders may always submit their bids by mail or by hand or by courier. When so specified in the BDS, bidders shall have the option of submitting their bids electronically. Procedures for submission, sealing and marking are as follows:</p> <p>(a) Bidders submitting bids by mail, by hand or by courier</p> <ol style="list-style-type: none">i. Bidders shall enclose the original of the Technical Bid, and the original of the Price Bid and each copy of the Technical Bid and Price Bid, including alternative bids, if permitted in accordance with ITB 13, in separate sealed envelopes, duly marking the envelopes as : “ORIGINAL TECHNICAL BID”, “ORIGINAL PRICE BID”, “ALTERNATIVE BID” and “COPY OF TECHNICAL BID” and “COPY OF PRICE BID”. These envelopes containing the original and the copies shall then be enclosed in one single envelope.ii. The inner and outer envelopes shall:<ol style="list-style-type: none">(aa) bear the name and address of the Bidder;(bb) be addressed to the Employer as provided in BDS 22.1;(cc) bear the specific identification of this bidding process indicated in BDS 1.1;(dd) The outer envelope and the inner envelope containing Technical Bid shall bear a warning not to open before the time and date for the opening of Technical Bid in accordance with ITB 25.1.iii. The inner envelope containing the Price Bid shall bear a warning not to open until advised by the Employer in accordance with ITB 25.7iv. If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the bid. <p>(b) Electronic Bid Submission Procedures : Bidders submitting Bids electronically shall follow the electronic bid submission procedure specified in this clause as follows:</p> <ol style="list-style-type: none">i. For e-submission, the bidder is required to register in the e-GP portal https://www.bolpatra.gov.np. for downloading and submitting the bid electronically.ii. Interested bidders may either purchase the bidding documents from the employer's office as specified in the invitation for bid (IFB) or bidders registered in the e-GP portal of PPMO may download the bidding document from http://www.bolpatra.gov.np after login. If bidders choose to download the bidding document and submit the bid electronically, then the cost of the bidding document shall be deposited as specified in IFB. In addition, electronic scanned copy (.pdf format) of the bank deposit voucher/cash receipt should also be submitted along with the electronic bid files.iii. The bidder shall then prepare/fill the documents and forms included in the issued bid documents or the downloaded bid
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documents from the e-GP portal of PPMO - <http://www.bolpatra.gov.np>. as applicable. The required documents and forms shall be prepared in PDF form and/or shall be filled in the web forms in the e-GP system as specified below:

Technical Bid:

S · N ·	Document	Requireme nt	Remarks
1	Letter of Technical Bid	Mandatory	PDF/Web Forms
2	Bid Security (Bank Guarantee)	Mandatory	PDF
3	Company/Firm Registration Certificate	Mandatory	PDF
4	VAT registration Certificate	Mandatory for domestic bidders	PDF
5	Tax Clearance Certificate/Tax return submission evidence/evidence of time extension	Mandatory for domestic bidders	PDF
6	Power of Attorney of Bid signatory	Mandatory	PDF
7	Business Registration (Licence) Certificate	Mandatory ,	PDF
8	Bank Voucher for cost of bid document	Mandatory	PDF
9	Joint venture agreement	Mandatory	Mandatory in case of JV Bids Only
10	Qualification Information	Mandatory	Web Forms (Experience, Turnover, etc.)
11	Additional Document , if any	Mandatory	PDF

Price Bid;

S · N ·	Document	Requirem ent	Remarks
1	Letter of Price Bid	Mandator y	PDF/Web Forms

2	Applicable Price Adjustment Table	If applicable	No Price adjustment will be treated if the indices in the Price Adjustment Table are not provided.
3	Completed BOQ or Price Schedule	Mandatory	Web Forms

Note:

a) Bidders (all partners in case of JV) should verify/update their profile documents as appropriate for the specific bid before submitting their bid electronically.

iv) The Bidder shall then upload the PDF bid files and submit the complete bid online through e-GP portal of PPMO- <http://www.bolpatra.gov.np> within the specified date and time.

v) Bidders are advised to download the bid submission report to ensure that all the documents/ files are up to date and complete.

vi) The Bidder / Bid shall meet the following requirements and conditions for e-submission of bids;

aa) The e-submitted bids must be readable through open standards interfaces. Unreadable and or partially submitted bid files shall be considered incomplete and rejected for further bid evaluation.

bb) In addition to electronically submitted PDF files/web forms, the Bidder shall be required to submit original bid security letter/ documents and clarifications as specified in ITB Clause 27. If a bidder does not submit the original Bid security letter and requested documents and or clarifications within the specified time limit then the bid shall not be considered for further evaluation.

cc) If major discrepancy is found between the electronically submitted PDF bid files and the documents/ clarifications provided by the Bidder as per ITB Clause 27, then the bid shall not be considered for further evaluation.

dd) The facility for submission of bid electronically through e-submission is to promote transparency, non-discrimination, equality of access, and open competition in the bidding process. The Bidders are fully responsible to use the e-submission facility properly in e-GP portal of PPMO- <http://www.bolpatra.gov.np> as per specified procedures and in no case the Employer shall be held liable for Bidder's inability to use this facility.

ee) When a bidder submits electronic bid through the PPMO e-GP portal, it is assumed that the bidder has prepared the bid by studying and examining the complete set of the Bidding documents including specifications, drawings and conditions of contract.

ff) Bidders who submit electronic bid should deposit the bidding document fee as specified in IFB and upload the scan copy (in pdf format) of the deposit voucher at the time of bid submission. The deposited amount shall be verified by the Employer during the bid evaluation process. The

	submitted Bid shall be non-responsive and shall not be evaluated if the cost for bidding document is not deposited as specified in the IFB.
22. Deadline for Submission of Bids	<p>22.1 Bids must be received by the Employer at the address and no later than the date and time indicated in the BDS.</p> <p>In case of e-submission, the standard time for e-submission is Nepal Standard Time as set out in the server. The e-procurement system will accept the e-submission of bid from the date of publishing of notice and will automatically not allow the e-submission of bid after the deadline for submission of bid.</p> <p>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.</p>
23. Late Bids	<p>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.</p>
24. Withdrawal, and Modification of Bids	<p>24.1 A Bidder may withdraw, or modify its bid after it has been submitted either in hard copy or by e-submission. Procedures for withdrawal or modification of submitted bids are as follows:</p> <p>(i) Bids submitted in hard Copy</p> <p>a) Bidders may withdraw or modify its bids by sending a written notice in a sealed envelope, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITB 20.2 before 24 hours prior to the deadline of submission of bids. The corresponding modification of the bid must accompany the respective written notice. All notices must be:</p> <p>(aa) prepared and submitted in accordance with ITB 20 and ITB 21, and in addition, the respective envelopes shall be clearly marked “WITHDRAWAL”, “MODIFICATION;” and</p> <p>(bb) received by the Employer twenty four hour prior to the deadline prescribed for submission of bids, in accordance with ITB 22.</p> <p>(cc) The bidder shall clearly specify on envelope whether “MODIFICATION” is of Technical Bid or Price Bid.</p> <p>ii) E-submitted bids.</p> <p>a) Bidder may submit modification or withdrawal prior to the deadline prescribed for submission of bid through e-GP system by using the forms and instructions provided by the system. Once a Bid is withdrawn, bidder will not be able to submit another bid response for the same bid.</p> <p>24.2 Bids requested to be withdrawn in accordance with ITB 24.1 shall be returned unopened to the Bidders after completion of the bid opening.</p> <p>24.3 Bidder may submit request for withdrawal or modification only one time.</p>

	<p>24.4 No bid may be withdrawn if the bid has already been modified.</p> <p>24.5 Except in case of any modification or correction in bid document made by procuring entity, Bidder may submit request for withdrawal or modification only one time.</p> <p>24.6 In case of hard copy bid, no bid may be withdrawn if the bid has already been modified; except in case of any modification or correction in bid document by procuring entity.</p> <p>24.7 Request for withdrawal or modification must be made through the same medium of submission. Request for withdrawal or modifications through different medium shall not be considered.</p> <p>24.8 The following provisions apply for withdrawal or modification of the Bids:</p> <p>(i) In case of bids submitted in hard copy no bid shall be withdrawn or modified in the interval between 24 hours prior to 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.</p> <p>(ii) In case of e-submitted bids no bids shall be withdrawn or modified in the interval between 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.</p>
<p>25. Bid Opening</p>	<p>25.1 The Employer shall open the bids in public at the address, date and time specified in the BDS in the presence of Bidders' designated representatives and anyone who choose to attend. Then the Employer shall segregates the Technical Bid and Price Bid separately. The Price Bids will remain unopened and will be held in custody of the Employer until the specified time of their opening. If the Technical Bid and Price Bid are submitted together in one inner envelope, the Employer may reject the entire Bid.</p> <p>25.2 The Employer shall download the e-submitted Bid files. The e-procurement system allows the Employer to download the e-submitted bid files (report) only after bid opening date and time after login simultaneously by at least two members of the Bid opening committee.</p> <p>25.3 After downloading the each e-bid, electronically submitted Technical Bid shall be opened at first in the same time and date as specified above. Electronic Bids shall be opened one by one and read out. The e-submitted technical bids must be readable through open standards interfaces. Unreadable and or partially submitted bid files shall be considered incomplete.</p> <p>25.4 Thereafter, envelopes 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. Next, envelopes marked "MODIFICATION" shall be opened and read out with the corresponding bid. No Technical Bid and/or Price Bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out and recorded at bid opening. Only the Technical Bid, both Original as well as Modification, are to be opened, read out, and recorded at the opening. Price Bids, both Original and Modification, will remain unopened in accordance with ITB 25.1.</p> <p>25.5 All other envelopes holding the Technical Bid shall be opened one at a time, reading out: the name of the Bidder; whether there is a modification; the presence of a bid security and any other details as the Employer may consider appropriate. Only Technical Bids read out and recorded at bid opening shall be considered for evaluation. No bid shall be rejected at opening of</p>

	<p>Technical Bids except for late bids, in accordance with ITB 23.1.</p> <p>25.6 The Employer shall prepare a record of the opening of Technical Bids that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, or modification; and the presence or absence of a bid security. 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.</p> <p>25.7 At the end of the evaluation of the Technical Bids, the Employer will invite bidders who have submitted substantially responsive Technical Bids and who have been determined as being qualified for award to attend the opening of the Price Bids. The date, time, and location of the opening of Price Bids will be advised in writing by the Employer. Bidders shall be given reasonable notice for the opening of Price Bids.</p> <p>25.8 The Employer will notify Bidders in writing who have been rejected on the grounds of their Technical Bids being substantially nonresponsive to the requirements of the Bidding Document and return their Price Bids unopened.</p> <p>25.9 The Employer shall conduct the opening of Price Bids of all Bidders who submitted substantially responsive Technical Bids, in the presence of Bidders' representatives who choose to attend at the address, on the date, and time specified by the Employer. The Bidder's representatives who are present shall be requested to sign a register evidencing their attendance.</p> <p>25.10 All envelopes containing Price Bids shall be opened one at a time and the following read out and recorded:</p> <ul style="list-style-type: none"> a) the name of the Bidder; b) whether there is a modification; c) the Bid Prices, including any discounts and alternative offers; and d) any other details as the Employer may consider appropriate. <p>Only Price Bids, discounts, modifications, and alternative offers read out and recorded during the opening of Price Bids shall be considered for evaluation.. No Bid shall be rejected at the opening of Price Bids.</p> <p>25.11 The Employer shall prepare a record of the opening of Price Bids that shall include, as a minimum, the name of the Bidder, the Bid Price (per lot if applicable), any discounts, modifications and alternative offers. 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.</p>
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Evaluation and Comparison of Bids

<p>26. Confidentiality</p>	<p>26.1 Information relating to the examination, evaluation, comparison, and post qualification of bids and recommendation of Contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on Contract award is communicated to all Bidders.</p> <p>26.2 Any attempt 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.</p> <p>26.3 Notwithstanding ITB 26.2, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it may do so in writing.</p>
<p>27. Clarification of Bids</p>	<p>27.1 To assist in the examination, evaluation, and comparison of the Technical and Price Bids, and qualification of the Bidders, the Employer may, at its</p>

	<p>discretion, ask any Bidder for a clarification of its Bid. 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 in the substance of the Technical Bid or prices in the Price Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Price Bids. In case of e-submission of bid, upon notification from the employer, the bidder shall also submit the original of documents comprising the Technical and Price Bid as per ITB 11 for verification of submitted documents for acceptance of the e-submitted bid.</p> <p>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, its bid may be rejected.</p>
<p>28. Deviations, Reservations, and Omissions</p>	<p>28.1 During the evaluation of bids, the following definitions apply:</p> <ul style="list-style-type: none"> a) “Deviation” is a departure from the requirements 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.
<p>29. Determination of Responsiveness</p>	<p>29.1 The Employer’s determination of a bid’s responsiveness is to be based on the contents of the bid itself, as defined in ITB11.</p> <p>29.2 A substantially responsive Technical 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</p> <ul style="list-style-type: none"> (a) if accepted, would: <ul style="list-style-type: none"> (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. <p>29.3 The Employer shall examine the technical aspects of the Bid submitted in accordance with ITB 16, Technical Proposal, in particular, to confirm that all requirements of Section 5 (Works Requirements) have been met without any material deviation, reservation or omission.</p> <p>29.4 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.</p> <p>29.5 In case of e-submission bids, the Employer evaluates the bid on the basis of the information in the electronically submitted bid files. If the Bidder cannot substantiate or provide evidence to establish the information provided in e-submitted bid through documents/ clarifications as per ITB Clause 27, the bid shall not be considered for further evaluation.</p> <p>29.6 In Case, a corruption case is being filed to Court against the Natural Person or Board of Director of the firm/institution /company or any partner of JV, such Natural Person or Board of Director of the firm/institution /company or any partner of JV such bidder’s bid shall be excluded from the evaluation, if public</p>

	<p>entity receives instruction from Government of Nepal.</p> <p>29.7 Except in case of e-submission, the Financial Bid of the bidder, which is evaluated as substantially non-responsive in technical bid, shall be returned to the respective bidders.</p>
<p>30. Nonconformities, Errors, and Omissions</p>	<p>30.1 Provided that a bid is substantially responsive, the Employer may waive any nonconformities in the bid that do not constitute a material deviation, reservation or omission.</p> <p>30.2 Provided that a Technical 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 nonmaterial nonconformities in the Technical Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the Price Bid. Failure of the Bidder to comply with the request may result in the rejection of its bid.</p> <p>30.3 Provided that a Technical bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities 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. The adjustment shall be made using the methods indicated in Section 3 (Evaluation and Qualification Criteria).</p> <p>30.4 If minor discrepancies are found such as in technical specification, description, feature which do not make the bid to be rejected, then the cost, which is calculated to the extent possible due to such differences shall be included while evaluating the bid.</p> <p>30.5 If the value of such non-conformities is found to be more than fifteen percent of the quoted amount of the bidder on account of minor discrepancies pursuant to ITB 30.4, such bid shall be considered ineffective in substance and shall not be involved in evaluation.</p>
<p>31. Qualification of the Bidder</p>	<p>31.1 The Employer shall determine to its satisfaction during the evaluation of Technical Bids whether Bidders meet the qualifying criteria specified in Section 3 (Evaluation and Qualification Criteria).</p> <p>31.2 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.</p> <p>31.3 An affirmative determination of qualification shall be a prerequisite for the opening and evaluation of a Bidder's Price Bid. A negative determination shall result into the disqualification of the Bid, in which event the Employer shall return the unopened Price Bid to the Bidder.</p>
<p>32. Correction of Arithmetical Errors</p>	<p>32.1 During the evaluation of Price Bids, the Employer shall correct arithmetical errors on the following basis:</p> <p>32.2 only for unit price 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;</p> <p>32.3 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</p> <p>32.4 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</p>

	<p>(a) and (b) above.</p> <p>32.5 If the Bidder that submitted the lowest evaluated bid does not accept the correction of errors, its bid shall be disqualified and its bid security may be forfeited.</p>
33. Conversion to Single Currency	33.1 For evaluation and comparison purposes, the currency (ies) of the bid shall be converted into a single currency as specified in the BDS.
34. Domestic Preference	34.1 Unless otherwise specified in the BDS, a domestic preference shall be a factor in bid evaluation.
35. Subcontractors	<p>35.1 The Employer may permit subcontracting for certain specialized works as indicated in Section 3. When subcontracting is permitted by the Employer, the specialized sub-contractor's experience shall be considered for evaluation. Section 3 describes the qualification criteria for sub-contractors.</p> <p>Bidders may propose subcontracting up to the percentage of total value of contracts or the volume of works as specified in the BDS.</p>

<p>36. Evaluation of Price Bids</p>	<p>36.1 The Employer shall evaluate Price Bid of each bid for which the Technical Bid has been determined to be substantially responsive. The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.</p> <p>36.2 To evaluate a Price bid, the Employer shall consider the following:</p> <p>(a) the bid price, excluding Value Added Tax, Provisional Sums, and the provision, if any, for contingencies in the Summary Bill of Quantities, for Unit Rate Contracts, or Schedule of Prices for lump sum Contracts, but including Day work items, where priced competitively;</p> <p>36.3 price adjustment for correction of arithmetic errors in accordance with ITB 32;</p> <p>36.4 price adjustment due to discounts offered in accordance with ITB 14.4;</p> <p>36.5 converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 33;</p> <p>(a) adjustment for nonconformities in accordance with ITB 30.3;</p> <p>(b) application of all the evaluation factors indicated in Section 3 (Evaluation and Qualification Criteria);</p> <p>36.6 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.</p> <p>36.7 If this Bidding Document allows Bidders to quote separate prices for different Contracts, and to award multiple Contracts to a single Bidder, the methodology to determine the lowest evaluated price of the Contract combinations, including any discounts offered in the Letter of Bid, is specified in Section 3 (Evaluation and Qualification Criteria).</p> <p>36.8 if the bid for an Unit Rate Contract, which results in the lowest Evaluated Bid Price is seriously unbalanced or front loaded or extremely low in the opinion of the Employer, the Employer 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 Employer may require that the amount of the performance security be increased at the expense of the Bidder as mentioned in BDS to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract or may consider the bid as non-responsive.</p> <p>36.9 In case of e-submission bids, the Employer evaluates the bid on the basis of the information in the electronically submitted bid files. If the Bidder cannot substantiate or provide evidence to establish the information provided in e-submitted bid through documents/clarifications as per ITB Clause 27, the bid shall not be considered for further evaluation.</p> <p>36.10 In Case, a corruption case is being filed to Court against the Natural Person or Board of Director of the firm/institution /company or any partner of JV, such Natural Person or Board of Director of the firm/institution /company or any partner of JV such bidder's bid shall be excluded from the evaluation, if public entity receives instruction from Government of Nepal.</p>
<p>37. Comparison of Bids</p>	<p>37.1 The Employer shall compare all substantially responsive bids in accordance with ITB 36.2 to determine the lowest evaluated bid.</p>

<p>38. Employer’s Right to Accept Any Bid, and to Reject Any or All Bids</p>	<p>38.1 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to Contract award, without thereby incurring any liability to Bidders. In case of annulment, all bids submitted and specifically, bid securities, shall be promptly returned to the Bidders.</p>
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Award of Contract

<p>39. Award Criteria</p>	<p>39.1 The Employer shall award the Contract to the Bidder whose offer has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.</p>
<p>40. Letter of Intent to Award the Contract/ Notification of Award</p>	<p>40.1 The Employer shall notify the concerned Bidder whose bid has been selected in accordance with ITB 39.1 within seven days of the selection of the bid, in writing that the Employer has intention to accept its bid and the information regarding the name, address and amount of selected bidder shall be given to all other bidders who submitted the bid.</p> <p>40.2 If no bidder submits an application within a period of seven days of the notice provided under ITB 40.1, the Employer shall, accept the bid selected in accordance with ITB 39.1 and Letter of Acceptance shall be communicated to the selected bidder prior to the expiration of period of Bid validity, to furnish the performance security and sign the contract within fifteen days.</p> <p>40.3 At the same time, the Employer shall affix a public notice on the result of the award on its notice board and may make arrangements to post the notice into its website, if it has; and if it does not have, into the website of the Public Procurement Monitoring Office, identifying the bid and lot numbers and the following information: (i) name of each Bidder who submitted a Bid; (ii) bid prices as read out at Bid Opening; (iii) name and evaluated prices of each Bid; (iv) name of bidders whose bids were rejected and the reasons for their rejection; and (v) name of the winning Bidder, and the Price it offered, as well as the duration and summary scope of the Contract awarded.</p> <p>40.4 In Case, a corruption case is being filed to Court against the Natural Person or Board of Director of the firm/institution /company or any partner of JV, such Natural Person or Board of Director of the firm/institution /company or any partner of JV such bidder’s bid shall be excluded from the evaluation, if public entity receives instruction from Government of Nepal.</p>
<p>41. Performance Security and Line of Credit</p>	<p>41.1 Within Fifteen (15) days of the receipt of Letter of Acceptance from the Employer, the successful Bidder shall furnish the performance security in accordance with the Conditions of Contract, as specified below from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal using Sample Form for the Performance Security included in Section 9 (Contract Forms), or another form acceptable to the Employer. The performance security issued by any foreign Bank outside Nepal must be counter guaranteed by Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal.</p> <p>i) If bid price of the bidder selected for acceptance is up to 15 (fifteen) percent below the approved cost estimate, the performance security amount shall be 5 (five) percent of the bid price.</p> <p>ii) For the bid price of the bidder selected for acceptance is more than 15 (fifteen) percent below of the cost estimate, the performance security amount shall be determined as follows:</p> <p style="text-align: center;">Performance Security Amount = [(0.85 x Cost Estimate – Bid</p>

	<p>Price) x 0.5] + 5% of Bid Price.</p> <p>The Bid Price and Cost Estimate shall be inclusive of Value Added Tax.</p> <p>Within Fifteen (15) days of the receipt of Letter of Acceptance from the Employer, the successful Bidder shall furnish the Letter of Commitment for Bank's Undertaking for Line of Credit of the amount as specified in the BDS, using Sample Form for the Line of Credit included in Section 9 (Contract Forms) at the time of contract agreement.</p> <p>41.2 Failure of the successful Bidder to submit the above-mentioned Performance Security and Line of Credit 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 next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily. In such case, the award process shall be repeated according to ITB 40.</p>
<p>42. Signing of Contract</p>	<p>42.1 The Employer and the successful Bidder shall sign the Contract Agreement within the period as stated ITB 41.1.</p> <p>42.2 Within thirty (30) days from the date of issuance of notification pursuant to ITB 40.1 unsuccessful bidders may request in writing to the Employer for a debriefing seeking explanations on the grounds on which their bids were not selected. The Employer shall promptly respond in writing to any unsuccessful Bidder who, requests for debriefing.</p> <p>42.3 If the bidder whose bid has been accepted fails to sign the contract as stated ITB 42.1, the Public Procurement Monitoring Office shall blacklist the bidder on recommendation of the Public Entity.</p>
<p>43. Complain and Review</p>	<p>43.1 If a Bidder is dissatisfied with the Procurement proceedings or the decision made by the Employer in the intention to award the Contract, it may file an application to the Chief of the Public Entity (Employer) within Seven (7) days of providing the notice under ITB 40.1 by the Public Entity, for review of the proceedings stating the factual and legal grounds.</p> <p>43.2 Late application filed after the deadline pursuant to ITB 43.1 shall not be processed.</p> <p>43.3 The chief of Public Entity (Employer) shall, within five (5) days after receiving the application, give its decision with reasons, in writing pursuant to ITB 43.1:</p> <p>(a) whether to suspend the procurement proceeding and indicate the procedure to be adopted for further proceedings; or</p> <p>(b) to reject the application.</p> <p>The decision of the chief of Public Entity shall be final for the Bid amount ,less than Rupees Twenty Million (NPR 20,000,000).</p> <p>43.4 If the Bidder is not satisfied with the decision given in accordance with ITB 43.3, or the decision is not given within five (5) days of receipt of application pursuant to ITB 43.1, it can, within seven (7) days of receipt of such decision, file an application to the Review Committee of the GoN, stating the reason of its disagreement on the decision and furnishing the relevant supporting documents. The application may be sent by hand, by post, by courier, or by electronic media at the risk of the Bidder itself.</p> <p>43.5 Late application filed after the deadline pursuant to ITB 43.4 shall not be processed</p> <p>43.6 Within three (3) days of the receipt of application from the Bidder,</p>

	<p>pursuant to ITB 43.4, the Review Committee shall notify the concerning Public Entity to furnish its procurement proceedings, pursuant to ITB 43.3.</p> <p>43.7 Within three (3) days of receipt of the notification pursuant to ITB 43.6, the Public Entity shall furnish the copy of the related documents to the Review Committee.</p> <p>43.8 The Review Committee, after inquiring from the Bidder and the Public Entity, if needed, shall give its decision within one (1) month of the receipt of the application filed by the Bidder, pursuant to ITB 43.4.</p> <p>43.9 The Bidder, filing application pursuant to ITB 43.4, shall have to furnish a cash amount or Bank guarantee from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law equivalent to one percent (1%) of its quoted amount with the validity period of at least ninety (90) days from the date of the filing of application pursuant to ITB 43.4.</p> <p>43.10 If the claim made by the Bidder pursuant to ITB 43.4 is justified, the Review Committee shall return the security deposit pursuant to ITB 43 to the applicant, within seven (7) days of such decision made.</p>
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Section II: Bid Data Sheet

A. General	
ITB 1.1	The number of the Invitation for Bids is: <i>MBUSTDB/W/ICB-01/2021/22</i>
ITB 1.1	The Employer is: <i>Madan Bhandari University of Science and Technology Development Board</i>
ITB 1.1	The name of the ICB is: <i>Construction of 500 kWp Grid Connected Solar PV with Energy Storage System</i> The identification number of the ICB is: <i>MBUSTDB/W/ICB-01/2021/22</i> The number and identification of lots comprising this bidding process is: N/A
ITB 2.1	The name of the Project is <i>Construction of 500 kWp Grid Connected Solar PV with Energy Storage System</i> The DP is: <i>NA</i> The implementing agency is: <i>Madan Bhandari University of Science and Technology Development Board</i> GoN Funded or DP Funded: GoN Funded
ITB 4.1 (a)	Maximum number of partners in a joint venture shall be: 3 (three) In case of Foreign Bidder, Joint Venture with Nepalese Bidder is Mandatory.
ITB 4.2	Eligible countries: All Countries
ITB 4.4	A list of debarred firms is available at http://www.ppmo.gov.np
ITB 4.9	The foreign bidder shall declare to submit the following documents at the time of contract agreement: Temporary PAN and VAT Registration Certificate But, Resident foreign bidder shall submit PAN/VAT certificate and tax clearance certificate for the F/Y 2076/77
B. Bidding Document	
ITB 7.1	For clarification purposes only, the Employer's address is: Attention: Sujan Adhikari Address: Sainbu, Lalitpur Metropolitan City, Ward No. 18, Nepal Telephone: (+977) 9840088016, 9840436793 and 6846848053 Electronic mail address: info@mbustb.edu.np and info@mbustb.org
ITB 7.4	A Pre-Bid meeting <i>shall be</i> held.

	<p>The Online Pre-Bid Meeting will Take place at the following date and time:</p> <p>Date: November 25, 2021, Thursday</p> <p>Time: 3:00 PM (Nepal Standard Time)</p> <p>Interested bidders may request for link and password through e-mail for attending the Online Pre-Bid Meeting.</p> <p>A site visit shall not be organized by the Employer.</p>
ITB 7.5	Time for request: Requests for clarification should be received by the Employer no later than 15 days prior to the deadline for submission of bids.
C. Preparation of Bids	
ITB 10.1	The language of the bid is: English
ITB 11.2 (i)	<p>The Bidder shall submit with its Technical Bid the following additional documents</p> <ol style="list-style-type: none"> a) Letter of Technical Bid; b) Up to date firm/company registration certificate. c) Business Registration licenses/Certificate d) PAN/VAT registration certificate. e) TAX clearance certificate for the Fiscal year 2076/077 (2019/2020) f) Bank voucher for cost of bid document. g) Bid Security in accordance with ITB 19; h) Power of Attorney of Bid signatory, written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2; i) Documentary evidence in accordance with ITB 17, establishing the Bidder's qualifications to perform the contract; j) Technical Proposal in accordance with ITB 16; k) Clause-by-clause compliance with the technical specifications l) Technical datasheets, ISO certificates, IEC test certificates, manufacturer's authorization, warranty and all other relevant documents/certificates as mentioned in the technical specifications m) Design and drawings as mentioned in the technical specifications n) In the case of a bid submitted by a JV, the JV agreement, or letter of intent to enter into a JV including a draft agreement, indicating at least the parts of the Works to be executed by the respective partners along with the above company documents of each JV partner; and o) Tax clearance certificate and JV agreements for the verification of the turnover of best three years
ITB 11.3 (b)	In accordance with ITB 12 and ITB 14, the following schedules shall be submitted with the bid, including the priced Bill of Quantities for Unit Rate: Manpower Schedule, Equipment Schedule, Project Organization, Mobilization Schedule, Construction Schedule
11.3 (d)	<p>The Bidder shall submit with its Price Bid the following additional documents:</p> <ol style="list-style-type: none"> (a) Letter of price bid in separate envelope

	(b) Bill of quantities
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 shall not be permitted.
ITB 14.6	The prices quoted by the Bidder shall not be subject to adjustment during the performance of the Contract.
ITB 15.1	If the currency of the Bid and payment is other than Nepalese currency: The currency applicable shall be USD/INR/GBP The maximum ratio of Nepalese Currency to Foreign Currency with respect to the evaluated bid price shall not be more than 70:30
ITB 16.	ITB Clause 16.1 has been amended as: 16.1 The Bidder shall furnish a Technical Proposal 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 requirements and the completion time.
ITB 18.1	The bid validity period shall be: One Hundred Twenty (120) days.
ITB 19.1	The Bidder shall furnish a bid security, from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law with a minimum of USD 25,000 or NPR 2,900,000.00 which shall be valid for 30 days beyond the validity period of the bid (i.e. April 14, 2022).
ITB 19.2 (b)	Not Applicable
ITB 20.1	In addition to the original of the bid, the number of copy/ies is/are: Not Applicable
ITB 20.2	The written confirmation of authorization to sign on behalf of the Bidder shall indicate: (a) The name and description of the documentation required to demonstrate the authority of the signatory to sign the Bid such as a Power of Attorney; and (b) In the case of Bids submitted by an existing or intended JV, an undertaking signed by all parties (i) stating that all parties shall be jointly and severally liable, and (ii) nominating a Representative who shall have the authority to conduct all business for and on behalf of any and all the parties of the JV during the bidding process and, in the event the JV is awarded the Contract, during contract execution.
D. Submission and Opening of Bids	
ITB 21.1	Bidders shall have the option of submitting their bids by electronic only .
ITB 22.1	For bid submission purposes only, the Employer's address is: Attention: Prof. Rajendra Dhoj Joshi, Chairperson, MBUSTDB

	<p>Address: Sainbu, Lalitpur Metropolitan City, Ward No. 18, Nepal</p> <p>The deadline for bid submission is: Date: December 28, 2021</p> <p>Time: 13:00 hours (Nepal Standard Time)</p>
ITB 25.1	<p>The Technical Bid opening shall take place at:</p> <p>Address: Sainbu, Lalitpur Metropolitan City, Ward No. 18, Nepal Date: December 28, 2021</p> <p>Time: 14:00 hours (Nepal Standard Time)</p>
ITB 29.2	<p>Following sub-clause has been added after bullet (d):</p> <p>(e) Clause-by-clause compliance with the technical specifications</p> <p>(f) Technical datasheets, ISO certificates, IEC test certificates, manufacturer's authorization, warranty, and all other relevant documents/certificates as mentioned in the technical specifications</p> <p>(g) Design and drawings as mentioned in the technical specifications</p>
E. Evaluation and Comparison of Bids	
ITB 33.1	<p>The currency that shall be used for bid evaluation and comparison purposes to convert all bid prices if permitted and expressed in various currencies into a single currency is: USD</p> <p>The source of exchange rate shall be: Nepal Rastra Bank</p> <p>The date for the exchange rate shall be: 30 days prior to the deadline for submission of bids.</p>
ITB 34.1	<p>a) Domestic prefer shall apply for domestic bidders.</p> <p>Margin of preference of 5% if applicable to the domestic bidders.</p> <p>The application methodology shall be as stipulated in Section 3 (Evaluation and Qualification Criteria)</p>
ITB 35.1	<p>Contractor's proposed subcontracting: Maximum percentage of subcontracting permitted is: 25% of the total contract amount.</p>
ITB 36.5	<p>The amount of the performance security be increased by Eight (8) percent of the contract price.</p>
ITB 41.1	<p>Letter of Commitment for Bank's Undertaking for Line of Credit shall be of USD 350,000 or NPR 40.6 Million or equivalent</p>

Section III: Evaluation and Qualification Criteria

This Section contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders by post-qualification exercise. GoN/DP requires bidders to be qualified by meeting predefined, precise minimum requirements. The method sets pass-fail criteria, which, if not met by the bidder, results in disqualification. In accordance with ITB 32 and ITB 35, no other methods, criteria and factors shall be used. The Bidder shall provide all the information requested in the forms included in Section IV (Bidding Forms).

1. Evaluation

In addition to the criteria listed in ITB 35.2 (a) - (e) the following criteria shall apply:

Note:

Use the evaluation criteria listed below as appropriate and required for the project.

1.1 Adequacy of Technical Proposal

Evaluation of the Bidder's Technical Proposal will include an assessment of the Bidder's technical capacity, to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section VI (Works Requirements).

1.2 Multiple Contracts

Multiple Contracts, if permitted under ITB 35.4, will be evaluated as follows:

Award Criteria for Multiple Contracts [ITB 35.4]:

Bidders have the option to Bid for any one or more Contracts. Bids will be evaluated taking into account discounts offered, if any, for combined contracts. The contract(s) will be awarded to the Bidder or Bidders offering the lowest evaluated cost to the Employer for combined contracts, subject to the selected Bidder(s) meeting the required qualification criteria for combination of multiple contracts as the case may be.

Qualification Criteria for Multiple Contracts:

The criteria for qualification shall be the sum of the minimum requirements for respective individual contracts as specified under items 2.3.2, 2.3.3, and 2.4.2b.

With respect to the Contracts of Similar Size and Nature under item 2.4.2(a). of Section III, the evaluation shall be done as below:

N is the minimum number of contracts as per Note (2) of 2.4.2 Specific Construction Experience

V is the minimum value of a single contract as per Note (3) of 2.4.2 Specific Construction

Experience

i. Minimum requirements for combined contract(s) shall be the aggregate requirements for each contract for which the bidder has submitted bids as follows, and N1, N2, N3, etc. shall be different contracts:

Contract 1: N1 contracts, each of minimum value V1;

Contract 2: N2 contracts, each of minimum value V2;

Contract 3: N3 contracts, each of minimum value V3;----etc.

and

ii. Total number of contracts is equal or less than $N1 + N2 + N3$ +--but the total value of all such contracts is equal or more than $N1 \times V1 + N2 \times V2 + N3 \times V3$ +---.

1.3 In Case, other than Multiple Contracts

Bidders have the option to Bid for any one or more Contracts. The contracts will be awarded to the Bidder or Bidders offering the lowest evaluated cost to the Employer, subject to the selected Bidder(s) meeting the required qualification which shall be the sum of the minimum requirements for respective individual contracts as specified under items Required Bid Capacity as per 2.3.3. Under this case, Contract shall be awarded based on Least Cost Combination to the Employer.

1.4 Completion Time

An alternative Completion Time, if permitted under ITB 13.2, will be evaluated as follows:

NA

1.5 Alternative Technical Solutions

Alternative technical solutions, if permitted under ITB 13.4, will be evaluated as follows:

NA

1.6 Domestic Preference

In comparing domestic bids with foreign bids, a Domestic preference as per ITB 34.1 shall be granted to eligible domestic contractors, as defined below, in accordance with the following provisions.

- (A) For application of domestic preference, all responsive bids shall first be classified into the following two categories:
- (I) Category I: Bids offered by domestic contractors (domestic bidder firms, institutions, or company either in single or in joint venture (all partners); and
 - (II) Category II: Bids offered by International firms, institutions or company or collaboration with domestic forms, institutions, company
- (B) The lowest evaluated bid of each category shall then be determined by comparing all evaluated bids in each category among themselves.
- (C) Such lowest evaluated bids shall next be compared with each other and if, as a result of this comparison, a bid from category I is found to be the lowest, it shall be selected for the award of contract.
- (D) If, however, as a result of the comparison under (C) above, the lowest bid is found to be from Category II, it shall be further compared with the lowest evaluated bid from Category I. For the purpose of this further comparison only an upward adjustment (domestic preference) shall be made to the lowest evaluated bid price of Category II by adding an amount equal to Five (5%) of the bid price. If, after such comparison, the

Category I bid is determined to be the lowest, it shall be selected for the award of contract; if not, the lowest evaluated bid from category II shall be selected.

44. Qualification

2.1 Eligibility

Criteria		Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
2.1.1 Nationality					
2.1.1 Conflict of Interest					
No conflicts of interest in accordance with ITB Sub-Clause 4.3.	must meet requirement	existing or intended JV must meet requirement	must meet requirement	not applicable	Letter of Technical Bid
2.1.2 Government/DP Eligibility					
Not having been declared ineligible by government/DP, as described in ITB Sub-Clause 4.4.	must meet requirement	must meet requirement	must meet requirement	not applicable	Letter of Technical Bid
2.1.4 Government-owned Entity					
Bidder required to meet conditions of ITB Sub-Clause 4.5.	must meet requirement	existing or intended JV must meet requirement	must meet requirement	not applicable	Forms ELI - 1, ELI - 2, with attachments
2.1.5 UN Eligibility					
Not having been declared ineligible based on a United Nations resolution or Employer's country law, as described in ITB Sub-Clause 4.8.	must meet requirement	existing or intended JV must meet requirement	must meet requirement	not applicable	Letter of Technical Bid
2.1.6 Other Eligibility					
Firm Registration Certificate	must meet requirement	not applicable	must meet requirement	not applicable	Document attachment
Business Registration Certificate	must meet requirement	not applicable	must meet requirement	not applicable	Document attachment
VAT/PAN Registration certificate (only for National Bidders)	must meet requirement	not applicable	must meet requirement	not applicable	Document attachment
Tax Clearance Certificate of F.Y. 2076/77	must meet requirement	not applicable	must meet requirement	not applicable	Document attachment

2.1.5 VAT and PAN Registration

a. Domestic Bidder	Bidders required to meet conditions of ITB Sub-Clause	Must meet requirement	Existing or intended JV must meet requirement	Must meet requirement	Not applicable	PAN and VAT registration certificate
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	4.9.					
b. Foreign Bidder	Bidders required to meet conditions of ITB Sub-Clause 4.9	Must meet requirement	Existing or intended JV must meet	Must meet requirement	Not applicable	Declaration to submit PAN and VAT Registration Certificate at the time of Contract agreement

2.2. Pending Litigation

Criteria		Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
2.2.1 Pending Litigation					
All pending litigation shall be treated as resolved against the Bidder and so shall in total not represent more than 50 percent of the Bidder's net worth.	must meet requirement by itself or as partner to past or existing JV	not applicable	must meet requirement by itself or as partner to past or existing JV	not applicable	Form LIT - 1

2.3 Financial Situation

Criteria		Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
2.3.1 Historical Financial Performance					
Submission of audited balance sheets and income statements, for the last five (5) years to demonstrate the current soundness of the Bidder's financial position. As a minimum, a Bidder's net worth calculated as the difference between total assets and total liabilities should be positive.	must meet requirement	not applicable	must meet requirement	not applicable	Form FIN - 1 with attachments
2.3.2 Average Annual Turnover					
Minimum average annual turnover of USD 1.5 million or equivalent calculated as total certified payments	must meet requirement	must meet requirement	must meet 25% of the requirement	must meet 40% of the requirement	Form FIN -2

received for contracts in progress or completed, of the best 3 years within the last 10 years					
---	--	--	--	--	--

Only the net amount shall be calculated after deducting the amount for VAT and such amount shall be adjusted to present value by applying wholesale price index of Nepal Rastra Bank.

2.3.3 Required Bid Capacity					
The bidding capacity of the bidder should be equal to or more than the USD 1 million.	must meet requirement	must meet requirement	must meet 25% of the requirement	must meet 40% of the requirement	Form FIN -3,4

2.4 Experience

Criteria		Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture			Submission Requirement
		All Partners Combined	Each Partner	One Partner	
2.4.1 General Experience					
Experience under similar contracts in the role of contractor, subcontractor, or management contractor for at least the last Five Years prior to the proposal submission deadline.	must meet requirement	not applicable	must meet requirement	not applicable	Form EXP - 1

2.4.2 Specific Experience

(a) Contracts of Similar Size and Nature

Participation as Prime contractor, management contractor, or subcontractor, in at least One Contract , with at least USD 1 million or equivalent excluding VAT that have been completed prior to the proposal submission deadline and that are similar to the proposed works within the last ten (10) years. The similarity shall be based on the physical size, complexity, methods, technology or other characteristics as described in Section VI, Works Requirements.	must meet requirement	Not applicable	not applicable	must meet requirement	Form EXP – 2(a)
---	-----------------------	----------------	----------------	-----------------------	-----------------

Only the net amount shall be calculated after deducting the amount for VAT and such amount shall be adjusted to the present value by applying wholesale price index of Nepal Rastra Bank.

(b) Construction Experience in Key Activities					
<p>For the above or other contracts executed during the period stipulated in 2.4.2(a) above, a minimum construction experience in the following key activities: At least one Grid Connected Solar PV with Energy Storage System Project with Capacity of at least 400 kWp completed within the period of 7.5 months in last ten (10) years. The copy of contract agreement and end user certificate must be provided.</p>	must meet requirement	Not applicable	not applicable	Must meet requirement	Form EXP - 2(b)

2.5 Personnel

The Bidder must demonstrate that it has the personnel for the key positions that meet the following requirements:

SN.	Position	Required No.	Academic Qualification (Minimum)	Total Work Experience [Minimum]	Experience in Similar Works [Minimum]
1.	Project Manager (Solar PV Expert)	One	Master Degree in Electrical/Electronic or Renewable Energy Engineering	10 years in Solar PV System	7 Years of demonstrated experience in designing, technical standards and specifications, installation, testing & commissioning of Solar PV Projects
2.	Electrical Engineer	Two	Bachelor in Electrical/Electronic Engineering	5 years in Solar PV System	5 Years of demonstrated experience in designing, installation, testing & commissioning of Solar PV Projects
3.	Civil Engineer	One	Bachelor in Civil Engineering	5 Years	5 Years of demonstrated experience in solar PV system, design drawings and structural analysis
4.	AutoCAD Designer	One	Bachelor in Civil Engineering	5 Years	5 Years of demonstrated experience in 3D, 2D, AutoCAD design drawings in the field of solar PV system

In case the bidder proposes to consider Personnel that may be spared from committed/ongoing contracts for evaluation, the bidder shall provide details of personnel which will be spared from such committed/ongoing contracts based on the physical progress at the date of bid submission.

The Bidder shall provide details of the proposed personnel and their experience records in the relevant Information Forms included in Section IV (Bidding Forms).

Note:

The managerial and technical competence of a contractor is largely related to the key personnel on site. The extent to which the Bidder should demonstrate having staff with extensive experience should be limited to those requiring critical operational or technical skills. The qualification criteria should therefore refer to a limited number of such key personnel, for instance, the project manager and those superintendents working under the project manager who will be responsible for major components (e.g., superintendents specialized in designing, installation, testing & commissioning, as required for each particular project). Criteria of acceptability should be based on:

(a) a minimum number of years of experience in a similar position;

(b) a minimum number of years of experience and/or number of comparable projects carried out in a specified number of preceding years; and

(c) Minimum education qualification only in case the position requires. It is appropriate to specify that certain positions are filled by individuals who have held posts of comparable authority for, say, three years with the Bidder, so that key staff in executive site positions have sufficient knowledge of the Bidder's management, policy, procedures, and practices to act with confidence and authority within that framework.

2.6 Equipment (Not Applicable)

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

No.	Equipment Type and Characteristics	Min. Number Requirement
1.		
2.		

In case the Bidder proposes to consider Equipment that may be spared from committed/ongoing contracts for evaluation, the Bidder shall provide details of Equipment which will be spared from committed / ongoing contracts clearly demonstrating the availability of such equipment with respect to the physical progress of the ongoing contracts on the date of bid submission.

In case of Equipment to be leased/ hired the same procedure as mentioned above shall apply.

The Bidder shall provide further details of proposed items of equipment using the relevant Form in Section IV (Bidding Forms)

Note:

An inventory of construction equipment represents a high capital cost overhead to a contractor. Consequently, not all competent potential bidders will maintain an inventory of high-value items that are in suitable condition for major contracts. This is particularly so with management contractors, who undertake construction projects mainly by subcontracting. In most cases Bidders can readily purchase, lease, or hire equipment; thus, it is usually unnecessary for the assessment of a contractor's qualification to depend on the contractor's owning readily available items of equipment. The pass-fail criteria adopted should therefore be limited only to those bulky or specialized items that are critical for the type of project to be implemented, and that may be difficult for the contractor to obtain quickly. Examples may include items such as heavy lift cranes and piling barges, dredgers, tunnel boring machines, asphalt mixing plants, etc. Even in such cases, contractors may not own the specialized items of equipment, and may rely on specialist subcontractors or equipment-hire firms. The availability of such subcontractors and of the specified equipment should be subject to verification prior to contract award. The terms of any lease or hire agreement for equipment should preferably include provision that the equipment will remain on the site (or be vested in the Employer) in the event of default of the Contractor, thereby ensuring more timely continuity of work by a replacement contractor

2.7 Subcontractors

The experience and financial capacity of the sub-contractors shall not be added to those of the Bidder for purposes of qualification of the Bidder.

The sub-contractors proposed shall be fully qualified for their work proposed, and meet the following criteria:

2.7 (a) Nature of Works that can be sub contracted:

- (i)
- (ii)

Note: Employer should specify the nature of work, if sub-contracting is permitted.

2.7 (b) Qualification Criteria

The proposed sub-contractor shall meet the following requirements:

- 1) Completion of 80% of the quantity of the work being sub contracted
- 2) Average Annual Construction Turnover for the work being sub contracted should be at least V/T where V is the proposed value of sub contract and T is time in year. For contract duration of up to 1 year, T shall be "1".
- 3) Financial Resources: The sub contract must demonstrate that it has the financial resources to meet its current contract commitment plus three months' requirements for the sub contracted work.

Section IV: Bidding Forms

This Section contains the forms which are to be completed by the Bidder and submitted as part of its Bid.

Letter of Technical Bid

The Bidder must accomplish the Letter of Bid in its letterhead clearly showing the Bidder's complete name and address.

Date:

Name of the contract:

Invitation for Bid No.: **MBUSTDB/W/ICB/01/2021/22**

To: **Madan Bhandari University of Science and Technology Development Board,
Setopati, Sainbu, Lalitpur Metropolitan City Ward 18, Nepal,**

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) Clause 8.
- (b) We offer to execute in conformity with the Bidding Documents the following Works:
- (c) Our Bid consisting of the Technical Bid and the Price Bid shall be valid for a period of 90 (ninety) days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
- (d) Our firm, including any subcontractors or suppliers for any part of the Contract, have nationalities from eligible countries in accordance with ITB 4.2 and meet the requirements of ITB 3.4, & 3.5
- (e) We are not participating, as a Bidder or as a subcontractor, in more than one Bid in this bidding process in accordance with ITB 4.3(e), other than alternative offers submitted in accordance with ITB 13.
- (f) Our firm, its affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the contract, has not been declared ineligible by DP, under the Employer's country laws or official regulations or by an act of compliance with a decision of the United Nations Security Council;
- (g) We are not a government owned entity/We are a government owned entity but meet the requirements of ITB 4.5;¹
- (h) We declare that, we including any subcontractors or suppliers for any part of the contract do not have any conflict of interest in accordance with ITB 4.3 and we have not been punished for an offense relating to the concerned profession or business.
- (i) We declare that we are solely responsible for the authenticity of the documents submitted by us. The document and information submitted by us are true and correct. If any document/information given is found to be concealed at a later date, we shall accept any legal actions by the Employer.
- (j) We agree to permit the Employer/DP or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by the Employer.
- (k) If our Bid is accepted, we commit to mobilizing key equipment and personnel in accordance with the requirements set forth in Section III (Evaluation and Qualification Criteria) and our technical proposal, or as otherwise agreed with the Employer.
- (l) We are committed to submit the Letter of Commitment for Bank's Undertaking for Line of Credit of NRs 34.3.Millions at the time of contract agreement, if the bid is awarded to us.

Name:

In the capacity of

Signed

Duly authorized to sign the Bid for and on behalf of

Date

Letter of Price Bid

The Bidder must accomplish the Letter of Bid in its letterhead clearly showing the Bidder's complete name and address.

Date:

Name of the contract:

Invitation for Bid No.: **MBUSTDB/W/ICB/01/2021/22**

**To: *Madan Bhandari University of Science and Technology Development Board,
Setopati, Sainbu, Lalitpur Metropolitan City Ward 18, Nepal***

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) Clause 8;
- (b) We offer to execute in conformity with the Bidding Documents the following Works:
- (c) The total price of our Bid, excluding any discounts offered in item (d) below is: NPR; or when left blank is the Bid Price indicated in the Bill of Quantities.
- (d) The discounts offered and the methodology for their application are:.....
- (e) Our bid shall be valid for a period of 120 days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (f) If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Document;
- (g) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract:¹

Name of Recipient	Address	Reason	Amount
.....
.....

- (h) We understand that this bid, *together with your written acceptance thereof* included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed;
- (i) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive; and
- (j) We declare that we are solely responsible for the authenticity of the documents submitted by us.
- (k) We agree to permit the Employer/DP or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by the Employer.

¹ If none has been paid or is to be paid, indicate "None".

Name:

In the capacity of

Signed

Duly authorized to sign the Bid for and on behalf of

Date

Table of Price Adjustment Data (Not Applicable)
[To be used if Price Adjustment is applicable as per GCC 53.1]

Not Applicable

Code	Index Description	Source of Index*	Base Value and Date	Employer's Proposed Weighting Range (coefficient)	Bidder's Proposed Weighting (coefficient)**
1	2	3	4	5	6
	Non - Adjustable (A)			0.15	0.15
	Labor (b)				
	Materials (c)				
	Equipment usage (d)				
		Total			1.00

*Normally following source of index shall apply. Public Entity shall choose applicable Index for each item.

(a) Labor: "National Salary and Wage Rate Index"- "Construction Labor" of Nepal Rastra Bank or rate fixed by District Rate Fixation Committee

(b) Material: "National Wholesale Price Index" - Construction Materials" of Nepal Rastra Bank

(c) Equipment usage: "National Wholesale Price Index" - Machinery and Equipment" of Nepal Rastra Bank or "Fuel" Price fixed by Nepal Oil Corporation.

** Bidders proposed weightings should be within the range specified by the Employer in column - 5

Table of Price Adjustment Data (Not Applicable)

[To be used if Price Adjustment is applicable as per GCC 53.6]

Not Applicable

Code	Construction Material*	Unit	Base Price (NRs/Unit) (Ex-factory)	Source (Factory)**
1	2	3	4	5

* Major construction materials to be specified by Employer in column - 2.

** Base Price and source normally to be specified by Employer (or alternatively informed to be proposed by bidder) in column 4 and 5.

Note:

The base prices of the construction materials shall be taken as of 30 days before the deadline for submission of the Bid as quoted by the Bidder and verified by the Employer. For the purpose of calculation of price adjustment, the Ex-factory price of the same source shall be taken into consideration.

Bid Security

Bank Guarantee

Bank's Name, and Address of Issuing Branch or Office

(On Letter head of the Commercial bank or any Financial Institution eligible to issue Bank Guarantee as per prevailing Law)

Beneficiary: **Madan Bhandari University of Science and Technology Development Board,
Setopati, Sainbu, Lalitpur Metropolitan City Ward 18, Nepal**.....

Date: Bid Security No.:

We have been informed that. **[insert name of the Bidder]** (hereinafter called "the Bidder") intends to submit its bid (hereinafter called "the Bid") to you for the execution of **Construction of 500 kWp Grid Connected Solar PV with Energy Storage System** under Invitation for Bids No. **MBUSTDB/W/ICB/01/2021/22** ("the IFB").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

At the request of the Bidder, we..... **name of Bank** hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of **amount in figures**
(. **amount in words**) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

- (a) has withdrawn or modifies its Bid:
 - i) during the period of bid validity specified by the Bidder on the Letter of Technical and Price Bid, in case of electronic submission
 - (ii) from the period twenty-four hours prior to bid submission deadline up to the period of bid validity specified by the Bidder on the Letter of Technical Bid and Price Bid, in case of hard copy submission; or
- (b) does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB"); or
- (c) changes the prices or substance of the bid while providing information pursuant to clause 27.1 of ITB; or
- (d) having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Agreement, or (ii) fails or refuses to furnish the performance security, in accordance with the ITB.
- (e) is involved in fraud and corruption in accordance with the ITB

This guarantee will remain in force up to and including the date **number** days after the deadline for submission of Bids as such deadline is stated in the instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this guarantee should reach the Bank not later than the above date.

This Bank guarantee shall not be withdrawn or released merely upon return of the original guarantee by the Bidder unless notified by you for the release of the guarantee.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758.

... Bank's seal and authorized signature(s) ...

Note:

The bid security of has been counter guaranteed by the Bank on
..... (Applicable for Bid Security of Foreign Banks).

Technical Proposal Format

1. Personnel

2. Equipment

3. Site Organization

The Bidder shall show here in an Organogram format the organization of his site personnel showing clearly designated duties and responsibilities and the chain of command throughout the structure. Included in the chart shall be the names of respective personnel.

4. Method Statement

The Bidder shall provide here a brief description of how the Works are to be undertaken. The description shall indicate how each activities are to be undertaken.

5. Mobilization Schedule

The Bidder shall provide here a general description of the arrangements and methods which he proposes to adopt for the execution of the Works which shall include but not be limited to:- i) Mobilization period including periods required for establishing the Contractor's offices, workshops etc. and the facilities required for the Engineer and his staff. ii) Sources of Contractor's equipment and mobilization periods for equipment.

6. Construction Schedule

The Bidder shall provide here his proposed program for construction of the Works within the Time for Completion. The program shall be presented in the form of a bar chart showing main construction activities with Milestones. Associated groups of construction equipment shall be listed.

7. Schedule of Subcontractors

The bidder shall enter in the following table a list of the sections and appropriate value of the work for which he proposes to use subcontractors, together with the names and addresses of the proposed subcontractors. The bidder shall also enter a statement of similar works previously executed by the proposed subcontractors, including description, location and value of work, year completed, and name and address of the employer/engineer.

Item Nos.	Description of work	Approximate value (NPR)	Name and address of Subcontractor	Statement of similar works executed
-----------	---------------------	-------------------------	-----------------------------------	-------------------------------------

Notwithstanding **such information the bidder, if awarded the Contract, shall remain entirely and solely responsible for the satisfactory completion of the Works.**

8. Clause-by-clause compliance with the technical specifications
9. Design and drawings
10. Technical datasheets
11. ISO certificates
12. IEC test certificates and all other relevant documents/certificates
13. Manufacturer's authorizations
14. Warranty document
15. Others, as specified in ITB 11.2 (h)

Personnel

Form PER - 1: Proposed Personnel

Bidders should provide the names of suitably qualified personnel to meet the specified requirements for each of the positions listed in Section III (Evaluation and Qualification Criteria). The data on their experience should be supplied using the Form below for each candidate.

No.	Name	Position*	Academic Qualification	Total Work Experience [Years]	Experience in Similar Works [years]
1.					
2.					
3.					
4.					
5.					

* As listed in Section III (Evaluation and Qualification Criteria).

Notes:

1) The required certificates, if in any other language than English, shall be translated into English and notarized by authorized entity.

Form PER - 2: Resume of Proposed Personnel

The Bidder shall provide all the information requested below. Fields with asterisk (*) shall be used for evaluation.

Position*		
Personal Information	Name	Date of Birth
	Professional qualifications	
Present employment	Name of employer	
	Address of employer	
	Telephone	Contact (manager/personnel officer)
	Fax	E-mail
	Job title	Years with present employer

Summarize professional experience over the last twenty years in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

From*	To*	Company, Project, Position and Relevant Technical and Management Experience*

Note:

1. In case of e-submission the Resume of Proposed Personnel shall be submitted on notification by the Employer as per ITB 27.
2. Confirmation of purposed personnels’ availability for the execution of the work shall be submitted in writing as a written statement signed by each personnel along with the bid. This will be reconfirmed in writing at time of negotiations/signing the contract.

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. The Bidder shall provide all the information requested below, to the extent possible. Fields with asterisk (*) shall be used for evaluation.

(i) For the equipment under Bidder's ownership

No.	Equipment Type and Characteristics	Total Nos. of Equipment under Bidder's Ownership	No. of Equipment engaged/proposed for ongoing/committed contracts	Nos. of Equipment proposed for this contract
1.				
2.				
3.				
4.				
5.				

(ii) For the Equipment to be leased/hired

No.	Equipment Type and Characteristics	Total Nos. of Equipment under the ownership of lease/hire provider	No. of Equipment engaged/committed for other works	Nos. of Equipment proposed to be leased/hired for this contract
1.				
2.				
3.				
4.				
5.				
Type 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 <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured		

The following information shall be provided only for equipment not owned by the Bidder.

Owner	Name of owner
-------	---------------

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

The Bidder shall be solely responsible for the data provided. However, this shall not limit the right of Employer to verify the authenticity of submitted information.

Note:

1. In case of e-submission the "Agreements" shall be submitted on notification by the Employer as per ITB 27.1
2. Ownership attestation documentation for each item of equipment and wherever relevant, the original leasing agreements (or ownership of leasing agency, as applicable) shall be attached.
3. The invoice/ documents/ agreements/ certificates, if in any other language than English, shall be translated into English and notarized by authorized entity.
4. Resources committed by the Bidder should be physically mobilized at site as per requirement of Work Schedules.
5. The equipment older than 15 years of age shall not be considered for evaluation.

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.

Form ELI - 1: Bidder's Information Sheet

Bidder's Information	
Bidder's legal name	
In case of JV, legal name of each partner	
Bidder's country of constitution	
Bidder's year of constitution	
Bidder's legal address in country of constitution	
Bidder's authorized representative (name, address, telephone numbers, fax numbers, e-mail address)	
Attached are copies of the following original documents.	
<ol style="list-style-type: none">1. In case of single entity, articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and 4.2.2. Authorization to represent the firm or JV named in above, in accordance with ITB 20.2.3. In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1.4. In case of a government-owned entity, any additional documents not covered under 1 above required to comply with ITB 4.5.	

Form ELI - 2: JV Information Sheet

Each member of a JV must fill in this form

JV / Specialist Subcontractor Information	
Bidder's legal name	
JV Partner's or Subcontractor's legal name	
JV Partner's or Subcontractor's country of constitution	
JV Partner's or Subcontractor's year of constitution	
JV Partner's or Subcontractor's legal address in country of constitution	
JV Partner's or Subcontractor's authorized representative information (name, address, telephone numbers, fax numbers, e-mail address)	
Attached are copies of the following original documents.	
<ol style="list-style-type: none"> 1. articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and 4.2. 2. Authorization to represent the firm named above, in accordance with ITB 20.2. 3. In the case of government-owned entity, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB 4.5. 	

Form LIT - 1: Pending Litigation

Each member of a JV must fill in this form

Pending Litigation			
<input type="checkbox"/> No pending litigation in accordance with Criteria 2.2 of Section III (Evaluation and Qualification Criteria) <input type="checkbox"/> Pending litigation in accordance with Criteria 2.2 of Section III (Evaluation and Qualification Criteria)			
Year	Matter in Dispute	Value of Pending Claim in NRs or Equivalent US\$	Value of Pending Claim as a Percentage on Net Worth

Form FIN - 1: Financial Situation

Each Bidder or member of a JV must fill in this form

Financial Data for Previous 5 Years [in NRs or Equivalent US\$]						
Year 1:	Year 2:	Year 3:	Year 4	Year 5		

Information from Balance Sheet

Total Assets			
Total Liabilities			
Net Worth			
Current Assets			
Current Liabilities			

Information from Income Statement

Total Revenues			
Profit Before Tax			
Profit After Tax			

- Attached are copies of financial statements (balance sheets including all related notes, and income statements) for the last three or above years, as indicated above, complying with the following conditions.
- All such documents reflect the financial situation of the Bidder or partner to a JV, and not sister or parent companies.
- Historic financial statements must be audited by a certified auditor.
- Historic financial statements must be complete, including all notes to the financial statements.
- Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

Note:

Attested Financial reports, including balance sheets, profit and loss statements and auditors reports for the last 5 years should be attached.

In case of e-submission the attachments should not be uploaded but shall be submitted on notification by the Employer as per ITB 27.1

Form FIN - 2: Average Annual Construction Turnover

Each Bidder or member of a JV must fill in this form

The information supplied should be the Annual Turnover of the Bidder or each member of a JV in terms of the amounts billed to clients for each year for work in progress or completed to NRs or in US Dollars in case of foreign bidders at the rate of exchange at the end of the period reported.

Annual Turnover Data for the Last 10 Years			
Year	Amount Currency	Exchange Rate	US\$ Equivalent

- **Average Annual Turnover**

Form FIN - 3: Bid Capacity

Each Bidder or member of a JV must fill in this form

Bid Capacity = [(7 x A) – B]

A = Average Annual Turnover of best three years within the last ten fiscal years.

B = Annual Value of the existing commitments and works (ongoing) to be completed, calculated from **FIN-4**.

SN	Name of Bidder	Pan No.	A, in Million	B, in Million	Bid Capacity, in Million
1					
2					
3					

Total Bid Capacity:

Signature of Bidder

Form FIN-4: Current Contract Commitments / Works in Progress

Bidders and each partner 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 (For Calculation of B with reference of FIN-3)									
No.	Name of Contract	Name of the Contractor/s	Employer's Contact Address, Tel, Fax	Contract Share in % (a)	Contract Amount in Millions (b)	Contract Date (yyyy-mm) (c)	Initial or Revised Contract Duration (months) (d)	Value of outstanding works [In Millions, NRS] [#] (e)	Estimated Time in Month to Complete the outstanding works (f) = (c) + (d) – Date of Invitation of Bid (f)
1									
2									
3									

Signature of Bidder

The Outstanding Works means Contract Price (excluding Vat) minus Work Evaluated by Employer till the reference date. Bidder shall have to submit the relevant documentary evidence to substantiate the facts/figures.

Note 1: “B” shall be calculated as : $B = \sum \left[\frac{(e) \times (a)}{(f)} \right] \times 12$, If (f) is less than 12, then value of (f) shall be taken as 12.

Note 2: If Initial or Revised Contract Date is run out with respect to Date of Invitation of Bid, the Estimated Time in Month to Complete the outstanding works shall be taken equal to 12 months.

Form EXP - 1: General Experience

Each Bidder or member of a JV must fill in this form.

General Construction Experience				
Starting Month and Year	Ending Month and Year	Months	Contract Identification and Name and Address of Employer Brief Description of the Works Executed by the Bidder	Role of Bidder

Form EXP - 2(a): Specific Construction Experience

Fill up one (1) form per contract.

Contract of Similar Size and Nature			
Contract No..... of.....	Contract Identification		
Award Date			
Initial Contract Completion Date (As per Contract Document)			
Actual Contract Completion Date (As per Completion Certificate)			
Role in Contract	<input type="checkbox"/> Contractor	<input type="checkbox"/> Management Contractor	<input type="checkbox"/> Subcontractor
Total Contract Amount	<input type="checkbox"/> USD		
If Partner in a JV or subcontractor, specify participation of total contract amount	Percent of Total	Amount	
Employer's Name Address Telephone/Fax Number E-mail			
Description of the similarity in accordance with Criteria 2.4.2 (a) of Section III			
<i>One contract for Grid Connected Solar PV with Energy Storage System Project employing a Fixed Mounting System of at least USD 1 million excluding VAT using Crystalline Silicon, Grid Connected Inverter, Bidirectional Storage Inverter, LiFePO4 technology and other characteristics as described</i> in Section VI (Work Requirements)	Bidder to provide description demonstrating similarity of experience to requirements described in the left box.		

Form EXP - 2(b): Specific Construction Experience in Key Activities

Fill up one (1) form per contract.

Contract of Similar Size and Nature			
Contract No..... of.....	Contract Identification		
Award Date			
Initial Contract Completion Date (As per Contract Document)			
Actual Contract Completion Date (As per Completion Certificate)			
Role in Contract	<input type="checkbox"/> Contractor	<input type="checkbox"/> Management Contractor	<input type="checkbox"/> Subcontractor
Solar PV Project with Storage, CapacitykWp		
Project completion period	Start date: End date:		
Total Contract Amount	<input type="checkbox"/> USD or NRS		
If Partner in a JV or subcontractor, specify participation of total contract amount	Percent of Total	Amount	
Employer's Name Address Telephone/Fax Number E-mail			
Description of the similarity in accordance with Criteria 2.4.2 (a) of Section III			
<i>Describe the detailed scope of work.</i>			

Notes for specific construction experience and experience in key activities

1. All work experiences shall be substantiated or evidenced with experience certificates or letters issued by the Owner or the Employer or the Engineer and notarized by authorized entity.
2. All the certificates, if in any other language than English, shall be translated into English and notarized by authorized entity.

3. The rates of exchange for currency conversion during proposal evaluation shall be the exchange rates (selling) of Nepal Rastra Bank for similar transactions prevailing at the end of the Fiscal Year (in case of project in Nepal) or Gregorian Year (in case of project outside of Nepal) when the work was completed.

Section V - Eligible Countries

For the purpose of ITB 4.2: **“All Countries”**;

Part II :BIDDING PROCEDURES

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(a) Scope of Work

This section: (a) describes the general context of the works; (b) elaborates the scope of work of the Contractor beyond articulated in other parts of the bid document; (c) clarifies Employer's obligations to ensure smooth execution of the Contract; and (d) provides a brief description of the micro-grid.

(a) General Context of Works

The purpose of the Grid Connected Solar PV with Energy Storage System is to meet energy requirements of the Madan Bhandari University of Science and Technology. The solar plant, tied to the grid, is an integral part of the university micro-grid comprising the grid connected solar with energy storage system and the planned pump storage plant.

(b) Scope of Work of the Bidder/Contractor

The Scope of Work of Bidder/Contractor under this tender comprises of but not limited to the following.

- 1) The bidder shall carry out the detailed site survey at their own expenses;
- 2) The bidder shall fill up and furnish the clause-by-clause compliance with the technical specifications;
- 3) The bidder shall submit all the technical datasheets, ISO certificates, IEC test certificates, manufacturer's authorizations, warranty and all other relevant documents/certificates as mentioned in the technical specifications;
- 4) The bidder shall submit the manufacturer's authorization from the principal manufacturer for the equipment as mentioned in the technical specifications;
- 5) The bidder shall submit the detailed work schedule of the project in compliance with the duration specified in the bid document;
- 6) The bidder shall prepare the detailed designs and drawings as mentioned in the technical specifications after the award of the contract and are subject to approval from the Employer prior commencing the supply and construction works;
- 7) The solar PV system design must take into the account its planned integration into the micro-grid comprising the solar PV system and pump storage plant;
- 8) The successful bidder (referred to as "the contractor" hereinafter) shall perform the supply, installation, testing, commissioning, grid interconnection and handover of Solar PV System;
- 9) The contractor shall organize each lot inspection and testing of PV modules as per IEC Standards from the IEC accredited independent laboratory. The inspection and testing report must be provided to the employer and get approval from the employer before the procurement;
- 10) The contractor shall deliver the PV modules in a box resting on a Pallet inside the container during transportation;
- 11) The contractor shall deliver the equipment/material at site as per the requirement. The storage of the equipment/material shall be the responsibility of the contractor till completion of installation and commissioning;
- 12) The contractor shall carry out the installation work after the inspection of equipment at the contractor's warehouse by the employer and the inspection report certifying the equipment;
- 13) The contractor shall be responsible to fully ensure safety and security of the workers and the materials used in the project. The Contractor must submit its OHS plan of workers during construction;
- 14) The contractor must have insurance policy for the works for liability for breach of professional duty, for injury to persons and damage of property, for injury of employees, and other

insurances required by the laws. All such costs of insurance shall be deemed as being included in the contract price;

- 15) The contractor shall be responsible to manage all the required tools, material, equipment and logistics for the completion of the project;
- 16) The contractor shall perform and carry out the testing and commissioning of the system in presence of the Employer;
- 17) The contractor shall clear the site and handover the work/item under the contract to the employer after the construction work is completed;
- 18) The contractor shall consider all the taxes and duties including the VAT for the equipment in its price quotation for the equipment and installation work as per the Government Rule;
- 19) The contractor shall submit the Project Completion Report including as-built drawings, testing and commissioning report, operation & maintenance manual after the completion of the project;
- 20) The contractor shall prepare all the required documents in coordination with the employer and coordinate with NEA and complete the connection agreement. The contractor must have considered the applicable costs associated with this service in its price quotation;
- 21) The contractor shall provide the operation and maintenance service for the period of 5 years from the date of commissioning including repair and maintenance services. The contractor shall depute one full time technical operator and equipment for the operation of solar PV system. The contractor must have considered the applicable costs associated with this service in its price quotation;
- 22) The contractor shall be responsible for any other necessary arrangement and works needed for the completions of works, if any, which are not mentioned above to complete project at its own cost.
- 23) This should be read in conjunction with the Technical Bid.

(c) Scope of Work of the Employer

The Scope of Work of Employer under this tender comprises of but not limited to the following.

1. The employer shall facilitate by providing access to all the locations to carry out the detailed site survey;
2. The employer shall provide the drawings, PV layout, single line diagram of solar PV system, support structure details for the bidding as required, as applicable;
3. The employer shall approve all the required design drawings provided by the contractor before the procurement, if it complies with the requirement;
4. The employer, upon request by the contractor, shall issue all the required letters for the exemption of taxes and VAT to the Concerned Authority, if applicable;
5. The employer shall conduct the inspection of the equipment at the contractor's warehouse before the installation;
6. The employer shall supervise the installation, testing, commissioning, grid interconnection and handover of Solar PV System;
7. The employer shall provide all the required documents and letters to NEA for the connection agreement, if applicable.

(d) A Brief Description of Micro-Grid

Madan Bhandari University of Science and Technology (MBUST) is envisioned as a world-class university designed to play a catalytic role in country's economic development by enhancing the competitiveness of its produces in the world market through upgrading of the technology of production. To this end the

university will strive to develop new technology and produce human resources capable of research and innovation.

Climate change and alarming degradation of earth's resources have demonstrated that the current paradigm of development is not sustainable. Therefore, the university has chosen to be guided by the agenda of sustainable development.

MBUST is aiming at incorporating the above principles right from the design of the university. In this context, the design of the university micro-grid is underpinned by the following concepts:

- Greater use of solar energy is one of the key strategies for limiting and eventually reducing greenhouse gases. MBUST will strive to meet all its energy demands through use of solar energy.
- As interruptions in the grid supply is frequent and unpredictable there should be a source of backup power supply. The usual backup of power supply is diesel generation. MBUST aims at getting rid of diesel-powered backup supply with a view to mitigate greenhouse gas production.
- In principle, it is possible to provide backup supply through battery banks. But this modality, on the one hand, is not environmentally friendly, on the other is not cost effective due to high operating costs. Therefore, the university is planning to keep a relatively small battery bank and mainly use a pump storage facility for energy storage.
- The storage of energy in water for the purpose of addressing the mismatch between temporal demand and supply of power, which also can be used for backup energy supply, is common for grids. But this concept has not been tried out for mini-grids. Therefore, the university mini-grid will have value in terms of research and development. There will be a scope of introduction of artificial intelligence (AI) for optimum operation of the university micro-grid.

Micro-Grid Operation

Micro-grid operation comprising the solar plant and the grid only is described here. When the solar power is higher than the university load the excess power will be exported to the grid. And when the university load is greater than the total power available from solar arrays power will be imported from the grid.

When the grid supply is interrupted, the solar arrays will be temporarily – till the bidirectional inverter comes into operation– disconnected. The number of invertors resuming the solar supply will be adjusted commensurate with the university load. In case the total power supply from the invertors is lower than the university load, the load will be reconnected on priority basis. For this purpose, the university load will be divided into a number of groups formed on the basis of prioritization. For the university load requiring uninterrupted power supply a separate arrangement will be made.

The micro-grid is designed to operate in fully automated mode. A suitable controller and SCADA will be employed for this purpose. The data from the solar plant will be fed into the SCADA and Controller. The monitoring and data acquisition system of the solar plant should be designed taking this requirement into consideration.

Detailed control and protection requirements for the microgrid is described under the specifications.

(b) Technical Specifications

Technical Specifications Attached in a separate file

Notes on the Specifications

A set of precise and clear specifications is a prerequisite for Bidders to respond realistically and competitively to the requirements of the Employer without qualifying or conditioning their Bids. The specifications must be drafted to permit the widest possible competition and, at the same time, present a clear statement of the required standards of workmanship, materials, and performance of the goods and services to be procured. Only if this is done will the objectives of economy, efficiency and fairness in procurement be realized, responsiveness of Bids be ensured, and the subsequent task of bid evaluation facilitated. The specifications should require that all goods and materials to be incorporated in the Works be new, unused, of the most recent or current models, and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.

Samples of specifications from previous similar projects are useful in this respect. The use of metric units is encouraged by the Funding Agency in case of funding assisted projects. Most specifications are normally written specially by the Employer or Project Manager to suit the Contract Works in hand. The available standard specification of works of Ministry of Physical Infrastructure and Transport, DoLIDAR and Other line Ministries can be adopted for respective civil construction works.

There are considerable advantages in standardizing General Specifications for repetitive Works in recognized public sectors, such as highways, urban housing, irrigation, and water supply, in the same country or region where similar conditions prevail. The General Specifications should cover all classes of workmanship, materials, and equipment commonly involved in construction, however it may not necessarily be adequate to be used in a particular Works Contract and may necessitate preparation of Particular (Special) Specifications to amend and or supplement the provision of the General Specifications to meet the requirement of the particular Works.

Care must be taken in drafting specifications to ensure that they are not restrictive. In the specification of standards for goods, materials, and workmanship, recognized international standards should be used as much as possible. Where other particular standards are used, whether national standards of Nepal or other standards, the specifications should state that goods, materials, and workmanship that meet other authoritative standards, and which ensure substantially equal or higher quality than the standards mentioned, will also be acceptable.

Employers should decide whether technical solutions to specified parts of the Works are to be permitted. Alternatives are appropriate in cases where obvious (and potentially less costly) alternatives are possible to the technical solutions indicated in the Procurement Documents for certain elements of the Works, taking into consideration the comparative specialized advantage of potential bidders. For example:

The Employer should provide a description of the selected parts of the Works with appropriate references to Drawings, Specifications, Bill of Quantities, and Design or Performance criteria, stating that the alternative solutions if applicable shall be at least structurally and functionally equivalent to the basic design parameters and specifications.

Such alternative solutions shall be accompanied by all information necessary for a complete evaluation by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, proposed construction methodology, and other relevant details.

Sample Clause: Equivalency of Standards and Codes

Wherever reference is made in the Contract to specific standards and codes to be met by the goods and materials to be furnished, and work performed or tested, the provisions of the latest current edition or revision of the relevant standards and codes in effect shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national, or relate to a particular country or region, other authoritative standards that ensure a substantially equal or higher quality than the standards and codes specified will be accepted subject to the Project Manager's prior review and written consent. Differences between the standards specified and the proposed alternative standards shall be fully described in writing by the Contractor and submitted to the Project Manager at least 30 days prior to the date when the Contractor desires the Project Manager's consent. In the event the Project Manager determines that such proposed deviations do not ensure substantially equal or higher quality, the Contractor shall comply with the standards specified in the documents.

These Notes for Preparing Specifications are intended only as information for the Employer or the person drafting the Procurement Documents. They should not be included in the final documents.

(c) Drawings

Note:

1. Complete set drawings can be downloaded from <https://mbustb.org/> or reviewed at the Board Office.

(d) Supplementary Information

Not Applicable

Section VII: Bill of Quantities²

Notes for Unit Rate Contracts:

Objectives

The objectives of the Bill of Quantities are

- (a) to provide sufficient information on the quantities of Works to be performed to enable Bids to be prepared efficiently and accurately; and*
- (b) when a Contract has been entered into, to provide a priced Bill of Quantities for use in the periodic valuation of Works executed.*

In order to attain these objectives, Works should be itemized in the Bill of Quantities in sufficient detail to distinguish between the different classes of Works, or between Works of the same nature carried out in different locations or in other circumstances which may give rise to different considerations of cost. Consistent with these requirements, the layout and content of the Bill of Quantities should be as simple and brief as possible.

Content

The Bill of Quantities should be divided generally into the following sections:

- (a) Preamble;*
- (b) Work Items (grouped into parts);*
- (c) Day works Schedule;*
- d) Provisional Sums; and*
- (d) Summary.*

Preamble

The Preamble should indicate the inclusiveness of the unit prices, and should state the methods of measurement which have been adopted in the preparation of the Bill of Quantities and which are to be used for the measurement of any part of the works.

Work Items

The items in the Bill of Quantities should be grouped into sections to distinguish between those parts of the Works which by nature, location, access, timing, or any other special characteristics may give rise to different methods of construction, or phasing of the Works, or considerations of cost. General items common to all parts of the works may be grouped as a separate section in the Bill of Quantities.

Day work Schedule

A Day work Schedule should be included only if the probability of unforeseen work, outside the items included in the Bill of Quantities, is high. To facilitate checking by the Employer of the realism of rates quoted by the Bidders, the Day work Schedule should normally comprise the following:

- (a) A list of the various classes of labor, materials, and Constructional Plant for which basic day work rates or prices are to be inserted by the Bidder, together with a statement of the conditions under which the Contractor will be paid for work executed on a day work basis.*
- (b) Nominal quantities for each item of Day work, to be priced by each Bidder at Day work rates as bid. The rate to be entered by the Bidder against each basic Day work item should include the Contractor's profit, overheads, supervision, and other charges.*

²In lump sum contracts, delete "Bill of Quantities" and replace with "Schedule of Activities" throughout this section.

Provisional Sums

Provisional Sums included and so designated in the Bill of Quantities shall be expended in whole or in part at the direction and discretion of the Project Manager in accordance with the Conditions of Contract.

Summary

The Summary should contain a tabulation of the separate parts of the Bill of Quantities carried forward, with provisional sums for Day work, for physical (quantity) contingencies, and for price contingencies (upward price adjustment) where applicable.

Preamble of Bill of Quantities

A. General

1. The Bill of Quantities shall be read in conjunction with the Instructions to Bidders, General and Special Conditions of Contract, Technical Specifications, and Drawings.
2. The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Project Manager and valued at the rates and prices bid in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Project Manager may fix within the terms of the Contract.
3. For any item for which measurement is based on records made before or during construction the records shall be prepared and agreed between the Engineer and the Contractor. Should the Contractor carry out such work without the prior agreement of the Engineer, the Engineer may request the Contractor to carry out investigations to confirm the extent of the work and the quantity of work certified for payment shall be solely at the Engineer's discretion. The cost of any such investigation shall be borne by the Contractor.
4. The rates and prices bid in the priced Bill of Quantities shall, except as otherwise provided under the Contract, include all construction equipment, labor, supervision, materials, erection, maintenance, insurance, profit, taxes, and duties, together with all general risks, liabilities, and obligations set out or implied in the Contract.
5. A rate or price shall be entered against each item in the priced Bill of Quantities, whether quantities are stated or not. The cost of items against which the Contractor has failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Bill of Quantities.
6. The whole cost of complying with the provisions of the Contract shall be included in the Items provided in the priced Bill of Quantities, and where no Items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related Items of Work.
7. General directions and descriptions of work and materials are not necessarily repeated nor summarized in the Bill of Quantities. References to the relevant sections of the Contract documentation shall be made before entering prices against each item in the priced Bill of Quantities. The Specification Clause references where given in the item description of the Bills of Quantities are for the convenience of bidders and generally refer to the principal relevant-specification clause but do not necessarily represent the whole of the specification requirements for the work required within the item. The presence of a Specification clause reference shall not in any way reduce the Bidders obligation to complete work in accordance with all the requirements of the Specification.
8. Provisional Sums included and so designated in the Bill of Quantities shall be expended in whole or in part at the direction and discretion of the Project Manager in accordance with the Conditions of Contract.
9. The method of measurement of completed work for payment shall be in accordance with the Specifications.
10. The abbreviations and symbols used in this Bill of Quantities are:*[Insert as applicable]*

B. Day work Schedule

a)General

1. Work shall not be executed on a day work basis except by written order of the Project Manager. Bidders

shall enter basic rates for day work items in the Schedules. These rates shall apply to any quantity of day work ordered by the Project Manager. Nominal quantities have been indicated against each item of day work, and the extended total for day work shall, be carried forward as a Provisional Sum to the Summary Total Bid Amount. Unless otherwise adjusted, payments for day work shall be subject to price adjustment in accordance with the provisions in the Conditions of Contract.

b) Day work Labor

1. In calculating payments due to the Contractor for the execution of day works, the hours for labor will be reckoned from the time of arrival of the labor at the job site to execute the particular item of day work to the time of departure from the job site, but excluding meal breaks and rest periods. Only the time of classes of labor directly doing work ordered by the Project Manager and are competent to perform such work will be measured. The time of gangers (charge hands) actually doing work with the gangs will also be measured but not the time of foremen or other supervisory personnel.
2. The Contractor shall be entitled to payment in respect of the total time that labor is employed on day work, calculated at the basis rates entered by it in the " SCHEDULE OF DAY WORK RATES: 1. LABOR". The rates for labor shall be deemed to cover all costs to the Contractor including (but not limited to) i) the amount of wages paid to such labor, transportation time, overtime, subsistence allowances, ii) any sums paid to or on behalf of such labor for social benefits in accordance with Nepal law, iii) Contractor's profit, overheads, superintendence, liabilities and insurance and iv) charges incidental to the foregoing.

c) Day work Equipment

1. The Contractor shall be entitled to payments in respect of Constructional Plant already on site and employed on day work at the basis rental rates entered by him in the "SCHEDULE OF DAY WORK RATES:2 EQUIPMENT ". The said rates shall be deemed to include due and complete allowance for depreciation, interest, indemnity and insurance, repairs, maintenance, supplies, fuel, lubricant, and other consumables and all overhead, profit and administrative costs related to the use of such equipment. The cost of drivers, operators and assistants also shall be included in the rate of the equipment and no separately payment shall be made for it.
2. In calculating the payment due to the Contractor for Constructional Plant employed on day work, only the actual number of working hours will be eligible for payment, except that where applicable and agreed with the Project Manager, the travelling time from the part of the Site where the Construction Plant was located when ordered by the Project Manager to be employed on day work and the time for return journey there to shall be included for payment.

d) Day work Materials

1. The Contractor shall be entitled to payment in respect of materials used for day work (except for materials for which the cost is included in the percentage addition to labor costs as detailed heretofore), at the rates entered by him in the "SCHEDULE OF DAY WORK RATES: 3 MATERIALS" and shall be deemed to include overhead charges and profit as follows;
 - (i) the rates for materials shall be calculated on the basis of the invoiced price, freight, insurance, handling expenses, damage, losses, etc. and shall provide for delivery to store for stockpiling at the Site.
 - (ii) the cost of hauling materials for use on work ordered to be carried out as day work, from the store or stockpile on the Site to the place where it is to be used also shall be include in the same rate.

Provisional Sums

A general provision for physical contingencies (quantity overruns) may be made by including a provisional sum in the Summary Bill of Quantities. Similarly, a contingency allowance for possible price increases should be provided as a provisional sum in the Summary Bill of Quantities. The inclusion of such provisional sums often facilitates budgetary approval by avoiding the need to request periodic supplementary approvals as the future need arises. Where such provisional sums or contingency allowances are used, the SCC should state the manner in which they will be used, and under whose authority (usually the Project Manager's).

The estimated cost of specialized work to be carried out, or of special goods to be supplied, by other contractors should be indicated in the relevant part of the Bill of Quantities as a particular provisional sum with an appropriate brief description. A separate procurement procedure is normally carried out by the Employer to select such specialized contractors. To provide an element of competition among the Bidders in respect of any facilities, amenities, attendance, etc., to be provided by the successful Bidder as prime Contractor for the use and convenience of the specialist contractors, each related provisional sum should be followed by an item in the Bill of Quantities inviting the Bidder to quote a sum for such amenities, facilities, attendance, etc.

Bill of Quantities

**Project: Construction of 500kWp Grid Connected Solar PV with Energy Storage System at Chitlang,
Thaha Municipality Ward 9, Makwanpur**

S.N.	Item Description	Unit	Quantity	Rate in USD		Amount in USD
				In Figure	In Words	
1	Solar Photovoltaic Array of Total Minimum Capacity 500kWp (Size of individual PV module: At least 400Wp, Mono Crystalline Silicon) and installation all complete	Set	1			
2	Weather Station, Data Logger, Mounting Structure with accessories, cabling, earthing and installation all complete	Set	1			
3	Three Phase Grid Connected Inverter with MPPT Input of Total Minimum Capacity 450kVA, including DC Isolators, AC Isolators, DC SPDs, AC SPDs and installation all complete	Set	1			
4	Three Phase Bidirectional Storage Inverter of Total Minimum Capacity 250kVA, including DC Isolators, AC Isolators, AC SPDs with STS Cabinet and installation all complete	Set	1			
5	Lithium Iron Phosphate (LiFePO4) of Total Minimum Capacity 400kWh with BMS, battery rack, BMU, Master BMU integrated with EMS, DC junction box, cables & accessories and installation all complete	Set	1			

S.N.	Item Description	Unit	Quantity	Rate in USD		Amount in USD
				In Figure	In Words	
6	Solar PV Module support structure, hot dipped galvanized MS with accessories and installation all complete	Set	1			
7	Junction Boxes with accessories and installation all complete	Set	1			
8	Grid Connected AC Combiner Box with AC Isolators, AC MCCBs, AC SPDs, 3-Phase Digital Meters, accessories and installation all complete	Set	1			
9	AC Distribution Board with AC ACBs with remote tripping & making function, AC SPDs, 3-Phase Digital Meters, other associated system, accessories and installation all complete	Set	1			
10	Operation Control Panel Board with all the display and control system, accessories and installation all complete	Set	1			
11	Multi-strand Copper PVC insulated PV string cables, cable laying, accessories and installation all complete	Set	1			
12	AC Aluminium XLPE insulated armoured with extruded PVC inner sheath cables (Grid Connected Inverter to Grid Connected AC Combiner Box), cable laying, accessories and installation all	Set	1			

S.N.	Item Description	Unit	Quantity	Rate in USD		Amount in USD
				In Figure	In Words	
	complete					
13	Earthing System for PV modules frame, array structure, junction boxes, earthing cable, cable laying, accessories and installation all complete (Ground Mounted)	Set	1			
14	Earthing System for PV modules frame, array structure, junction boxes, grid connected inverter, earthing cable, cable laying, accessories and installation all complete (Roof Mounted)	Set	2			
15	Earthing System for Grid Connected Inverter, earthing cable, accessories and installation all complete	Set	4			
16	Earthing System for Grid Connected AC Combiner Box, LiFePO4 Battery System, Bidirectional Storage Inverter, AC Distribution Board, Operation Control Panel Board & other associated system, earthing cable, accessories and installation all complete	Set	1			
17	Lightning Protection System, accessories and installation all complete	Set	7			
18	Equipotential Bonding Bus Bar (Copper Earth Bus Bar with at least 8 connection point), accessories and installation all complete	Set	8			

S.N.	Item Description	Unit	Quantity	Rate in USD		Amount in USD
				In Figure	In Words	
19	AC Aluminium XLPE insulated armoured with extruded PVC inner sheath cables (Grid Connected AC Combiner Box to AC Distribution Board to Transformer), cable laying, accessories and installation all complete	Set	1			
20	Monitoring System and Data Acquisition System with Plant Monitoring Station & accessories, Optical Fiber laying and installation all complete	Set	1			
21	Containerized System (Control Room) with all accessories and installation all complete	Set	2			
22	Civil works for 500kWp solar PV array foundations and installation all complete	LS	1			
23	Fence for PV array location and installation all complete	Meter	560			
24	Site Development (Earth cutting and filling, compaction/ramming, surface drainage) all complete	LS	1			
25	0.4/11kV 630kVA Transformer System with OLTC, cable laying, accessories and installation all complete	Set	1			
26	Earthing System for Transformer, accessories and	Set	3			

S.N.	Item Description	Unit	Quantity	Rate in USD		Amount in USD
				In Figure	In Words	
	installation all complete					
27	HT Metering System (TOD Meter, CT, PT with accessories) and installation all complete as per NEA requirements	Set	1			
28	Fire Fighting System (Fire Extinguishers and Sand Buckets) and installation all complete	Set	6			
29	Aluminium Foldable Pole Ladder of Extended Length of at least 9 meter all complete	No	1			
30	Transportation of all Equipment to Project Site all complete	LS	1			
31	Operation and Maintenance for the period of five years all complete	LS	1			
32	Spare Parts all complete	Set	1			
						Sub-total (USD)
						VAT 13%
						Total (USD)

Part III:

CONDITIONS OF CONTRACT AND CONTRACT FORMS

Contract

between

***Madan Bhandari University of Science and Technology
Development Board, Setopati, Sainbu, Lalitpur
Metropolitan City Ward 18, Nepal***

and

[Insert name and address of the Contractor]

for

***The Construction of 500 kWp Grid Connected Solar PV with
Energy Storage System at Chitlang***

Contract ID No: MBUSTDB/W/ICB/01/2021/22

Section VIII: General Conditions of Contract

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General Conditions of Contract

A. General

1. Definitions	<p>Boldface type is used to identify defined terms.</p> <ul style="list-style-type: none">(a) 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) The Activity Schedule is a schedule of the activities comprising the construction, installation, testing, and commissioning of the Works in a lump-sum contract. It includes a lump-sum price for each activity, which is used for valuations and for assessing the effects of Variations and Compensation Events.(c) Bill of Quantities means the priced and completed Bill of Quantities forming part of the Bid.(d) Compensation Events are those defined in GCC Clause 42 hereunder.(e) The Completion Date is the date of completion of the Works as certified by the Project Manager, in accordance with GCC Sub-Clause 57.1.(f) 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.(g) The Contractor is the party whose Bid to carry out the Works has been accepted by the Employer.(h) The Contractor's Bid is the completed bidding document submitted by the Contractor to the Employer.(i) The Contract Price is the Accepted Contract Amount stated in the Letter of Acceptance and thereafter as adjusted in accordance with the Contract.(j) Days are calendar days; months are calendar months.(k) Dayworks 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.(l) A Defect is any part of the Works not completed in accordance with the Contract.(m) The Defects Liability Certificate is the certificate issued by Project Manager upon correction of defects by the Contractor.(n) The Defects Liability Period is the period named in the PCC pursuant to GCC Sub-Clause 38.1 and calculated from the
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	<p>Completion Date.</p> <p>(o) 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 Project Manager for the execution of the Contract.</p> <p>(p) The Employer is the party who employs the Contractor to carry out the Works, as specified in the PCC.</p> <p>(q) Equipment is the Contractor’s machinery and vehicles brought temporarily to the Site to construct the Works.</p> <p>(r) “In writing” or “written” means hand-written, type-written, printed or electronically made, and resulting in a permanent record;</p> <p>(s) The Initial Contract Price is the Contract Price listed in the Employer’s Letter of Acceptance.</p> <p>(t) 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 Project Manager by issuing an extension of time or an acceleration order.</p> <p>(u) Materials are all supplies, including consumables, used by the Contractor for incorporation in the Works.</p> <p>(v) Plant is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function.</p> <p>(w) The Project Manager is the person named in the PCC (or any other competent person appointed by the Employer and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract.</p> <p>(x) PCC means Particular Conditions of Contract.</p> <p>(y) The Site is the area defined as such in the PCC.</p> <p>(z) 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.</p> <p>(aa) Specification means the Specification of the Works included in the Contract and any modification or addition made or approved by the Project Manager.</p> <p>(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.</p> <p>(cc) 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.</p>
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	<p>(dd) Temporary Works are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works.</p> <p>(ee) A Variation is an instruction given by the Project Manager which varies the Works.</p> <p>(ff) The Works are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the PCC.</p> <p>(gg) “Contractor’s Personnel” refers to all personnel whom the Contractor utilizes on the Site or other places where the Works are carried out, including the staff, labor and other employees of each Subcontractor.</p> <p>(hh) “Key Personnel” means the positions (if any) of the Contractor’s personnel that are stated in the Specification.</p> <p>(ii) “ES” means Environmental and Social (including Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH)).</p> <p>(jj) “Sexual Exploitation and Abuse” “(SEA)” means the following: Sexual Exploitation is defined as any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another; Sexual Abuse is defined as the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions.</p> <p>(kk) “Sexual Harassment” “(SH)” is defined as unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature by the Contractor’s Personnel with other Contractor’s or Employer’s Personnel; and</p> <p>(ll) “Employer’s Personnel” refers to the Project Manager and all other staff, labor and other employees (if any) of the Project Manager and of the Employer engaged in fulfilling the Employer’s obligations under the Contract; and any other personnel identified as Employer’s Personnel, by a notice from the Employer or the Project Manager to the Contractor.</p>
<p>2. Interpretation</p>	<p>2.1 In interpreting these GCC, words indicating 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 Project Manager shall provide instructions clarifying queries about these GCC.</p> <p>2.2 If sectional completion is specified in the PCC, references in the GCC to the Works, the Completion Date, and the Intended</p>

	<p>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).</p> <p>2.3 The documents forming the Contract shall be interpreted in the following order of priority:</p> <ul style="list-style-type: none"> (a) Agreement, (b) Letter of Acceptance, (c) Contractor’s Bid, (d) Particular Conditions of Contract, (e) General Conditions of Contract, including Appendices, (f) Specification, (g) Drawings, (h) Bill of Quantities,³ and (i) any other document listed in the PCC as forming part of the Contract.
3. Language and Law	<p>3.1 The language of the Contract and the law governing the Contract are stated in the PCC.</p> <p>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 when</p> <ul style="list-style-type: none"> (a) as a matter of law or official regulations, the Borrower’s country prohibits commercial relations with that country; or (b) 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 any country, person, or entity in that country.
4. Project Manager’s Decisions	<p>4.1 Except where otherwise specifically stated, the Project Manager shall decide contractual matters between the Employer and the Contractor in the role representing the Employer.</p>
5. Delegation	<p>5.1 Unless otherwise specified in the PCC, the Project Manager 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.</p>
6. Communications	<p>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.</p>
7. Subcontracting	<p>7.1 The Contractor may subcontract with the approval of the Project Manager, but may not assign the Contract without the approval of</p>

³ In lump-sum contracts, delete “Bill of Quantities” and replace with “Activity Schedule.”

	<p>the Employer in writing. Subcontracting shall not alter the Contractor's obligations. The Contractor shall require that its Subcontractors execute the Works in accordance with the Contract, including complying with the relevant ES requirements and the obligations set out in Sub-Clause 28.1.</p> <p>7.2 Submission by the Contractor for approval of the Project Manager, addition of any Subcontractor not named in the Contract, shall also include the Subcontractor's declaration in accordance with Appendix C- Sexual exploitation and Abuse (SEA) and/or Sexual Harassment (SH) Performance Declaration.</p>
<p>8. Other Contractors</p>	<p>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.</p> <p>8.2 The Contractor shall also, as stated in the Specification or as instructed by the Project Manager, cooperate with and allow appropriate opportunities for the Employer's or any other personnel, notified to the Contractor by the Employer or Project Manager, to conduct any environmental and social assessment.</p>

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 Project Manager. The Project Manager 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 The Project Manager may require the Contractor to remove (or cause to be removed) any person employed on the Site or Works, including the Key Personnel (if any), who:

- (a) persists in any misconduct or lack of care;
- (b) carries out duties incompetently or negligently;
- (c) fails to comply with any provision of the Contract;
- (d) persists in any conduct which is prejudicial to safety, health, or the protection of the environment;
- (e) based on reasonable evidence, is determined to have engaged in Fraud and Corruption during the execution of the Works;
- (f) has been recruited from the Employer's Personnel;
- (g) undertakes behavior which breaches the Code of Conduct for Contractor's Personnel (ES).

If appropriate, the Contractor shall then promptly appoint (or cause to be appointed) a suitable replacement with equivalent skills and experience.

Notwithstanding any requirement from the Project Manager to remove or cause to remove any person, the Contractor shall take immediate action as appropriate in response to any violation of (a) through (g) above. Such immediate action shall include removing (or causing to be removed) from the Site or other places where the Works are being carried out, any Contractor's Personnel who engages in (a), (b), (c), (d), (e) or (g) above or has been recruited as stated in (f) above.

9.3 The Contractor shall take all necessary safety measures to avoid the occurrence of incidents and injuries to any third party associated with the use of, if any, Equipment on public roads or other public infrastructure. The Contractor shall monitor road safety incidents and accidents to identify negative safety issues, and establish and implement necessary measures to resolve them.

9.4 Labor

9.4.1 *Engagement of Staff and Labor.* The Contractor shall provide and employ on the Site for the execution of the Works such skilled, semi-skilled and unskilled labor as is necessary for the proper and timely execution of the Contract. The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labor with appropriate qualifications and experience from sources within the Country.

Unless otherwise provided in the Contract, the Contractor shall be responsible for the recruitment, transportation, accommodation and welfare facilities in accordance with GCC Sub-Clause 9.4.6, of the Contractor's Personnel, and for all payments in connection therewith.

The Contractor shall provide the Contractor's Personnel information and documentation that are clear and understandable regarding their terms and conditions of employment. The

<p>10. Employer's and Contractor's Risks</p>	<p>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.</p>
<p>11. Employer's Risks</p>	<p>11.1 From the Start Date until the Defects Liability Certificate has been issued, the following are Employer's risks:</p> <ul style="list-style-type: none"> (a) The risk of personal injury, death, or loss of or damage to property (excluding the Works, Plant, Materials, and Equipment), which are due to <ul style="list-style-type: none"> (i) use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works or (ii) negligence, breach of statutory duty, or interference with any legal right by the Employer or by any person employed by or contracted to him except the Contractor. (b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Employer or in the Employer's design, or due to war or radioactive contamination directly affecting the country where the Works are to be executed. <p>11.2 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</p> <ul style="list-style-type: none"> (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 (c) the activities of the Contractor on the Site after the Completion Date.
<p>12. Contractor's Risks</p>	<p>12.1 From the Starting Date until the Defects Liability Certificate has been issued, the risks of personal injury, death, and loss of or damage to property (including, without limitation, the Works, Plant, Materials, and Equipment) which are not Employer's risks are Contractor's risks.</p>
<p>13. Insurance</p>	<p>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:</p> <ul style="list-style-type: none"> (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. <p>13.2 Policies and certificates for insurance shall be delivered by the</p>

	<p>Contractor to the Project Manager for the Project Manager'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.</p> <p>13.3 If the Contractor does not provide any of the policies and certificates required, the Employer may effect the insurance which the Contractor should have provided and recover the premiums 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.</p> <p>13.4 Alterations to the terms of an insurance shall not be made without the approval of the Project Manager.</p> <p>13.5 Both parties shall comply with any conditions of the insurance policies.</p>
<p>14. Site Data</p>	<p>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.</p>
<p>15. Contractor to Construct the Works</p>	<p>15.1 The Contractor shall construct and install the Works in accordance with the Specification and Drawings.</p> <p>15.2 If the Contract specifies that the Contractor shall design any part of the permanent Works, the Contractor shall take into account the Employer's requirements which may include, if stated in the Specification:</p> <ul style="list-style-type: none"> (a) designing structural elements of the Works taking into account climate change considerations; (b) applying the concept of universal access (the concept of universal access means unimpeded access for people of all ages and abilities in different situations and under various circumstances; and (c) considering the incremental risks of the public's potential exposure to operational accidents or natural hazards, including extreme weather events.
<p>16. The Works to Be Completed by the Intended Completion Date</p>	<p>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 Project Manager, and complete them by the Intended Completion Date.</p> <p>16.2 The Contractor shall not carry out mobilization to the Site unless the Project Manager gives approval, an approval that shall not be unreasonably delayed, to the measures the Contractor proposes to address environmental and social risks and impacts, which at a minimum shall include applying the Management Strategies and Implementation Plans (MSIPs) and Code of Conduct for Contractor's Personnel submitted as part of the Bid and agreed as part of the Contract.</p> <p>The Contractor shall submit, to the Project Manager for its approval any additional MSIPs as are necessary to manage the ES risks and impacts of ongoing Works. These MSIPs collectively comprise the Contractor's Environmental and Social Management Plan (C-ESMP).</p>

	<p>The Contractor shall review the C-ESMP, periodically (but not less than every six (6) months), and update it as required to ensure that it contains measures appropriate to the Works. The updated C-ESMP shall be submitted to the Project Manager for its approval.</p>
<p>17. Approval by the Project Manager</p>	<p>17.1 The Contractor shall submit Specification and Drawings showing the proposed Temporary Works to the Project Manager, for his approval.</p> <p>17.2 The Contractor shall be responsible for design of Temporary Works.</p> <p>17.3 The Project Manager’s approval shall not alter the Contractor’s responsibility for design of the Temporary Works.</p> <p>17.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, where required.</p> <p>17.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Project Manager before this use.</p>
<p>18. Health, Safety and Protection of the Environment</p>	<p>18.1 The Contractor shall be responsible for the safety of all activities on the Site.</p> <p>18.2 The Contractor shall:</p> <ul style="list-style-type: none"> (a) comply with all applicable health and safety regulations and Laws; (b) comply with all applicable health and safety obligations specified in the Contract; (c) take care for the health and safety of all persons entitled to be on the Site and other places, if any, where the Works are being executed; (d) keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons; (e) provide fencing, lighting, safe access, guarding and watching of the Works until the issue of the Contract Completion Certificate; (f) provide any Temporary Works (including roadways, footways, guards and fences) which may be necessary, because of the execution of the Works, for the use and protection of the public and of owners and occupiers of adjacent land; (g) provide health and safety training of Contractor’s Personnel as appropriate and maintain training records; (h) actively engage the Contractor’s Personnel in promoting understanding, and methods for, implementation of health and safety requirements, as well as in providing information to Contractor’s Personnel, training on occupational safety and health, and provision of personal protective equipment without expense to the Contractor’s Personnel; (i) put in place workplace processes for Contractor’s Personnel to report work situations that they believe are not safe or healthy, and to remove themselves from a work situation

which they have reasonable justification to believe presents an imminent and serious danger to their life or health.

- (j) Contractor's Personnel who remove themselves from such work situations shall not be required to return to work until necessary remedial action to correct the situation has been taken. Contractor's Personnel shall not be retaliated against or otherwise subject to reprisal or negative action for such reporting or removal;
- (k) where the Employer's Personnel, any other contractors employed by the Employer, and/or personnel of any legally constituted public authorities and private utility companies are employed in carrying out, on or near the site, of any work not included in the Contract, collaborate in applying the health and safety requirements, without prejudice to the responsibility of the relevant entities for the health and safety of their own personnel; and
- (l) establish and implement a system for regular (not less than six-monthly) review of health and safety performance and the working environment.

Subject to GCC Sub-Clause 16.2, the Contractor shall submit to the Project Manager for its approval a health and safety manual which has been specifically prepared for the Works, the Site and other places (if any) where the Contractor intends to execute the Works.

The health and safety manual shall be in addition to any other similar document required under applicable health and safety regulations and laws.

The health and safety manual shall set out all the health and safety requirements under the Contract,

(a) which shall include at a minimum:

- (i) the procedures to establish and maintain a safe working environment without risk to health at all workplaces, machinery, equipment and processes under the control of the Contractor, including control measures for chemical, physical and biological substances and agents;
- (ii) details of the training to be provided, records to be kept;
- (iii) the procedures for prevention, preparedness and response activities to be implemented in the case of an emergency event (i.e. an unanticipated incident, arising from both natural and man-made hazards, typically in the form of fire, explosions, leaks or spills, which may occur for a variety of different reasons including failure to implement operating procedures that are designed to prevent their occurrence, extreme weather or lack of early warning);
- (iv) remedies for adverse impacts such as occupational injuries, deaths, disability and disease;
- (v) the measures to be taken to avoid or minimize the potential for community exposure to water-borne, water-based, water-related, and vector-borne diseases,
- (vi) the measures to be implemented to avoid or minimize the spread of communicable diseases (including transfer of

	<p>Sexually Transmitted Diseases or Infections (STDs), such as HIV virus) and non-communicable diseases associated with the execution of the Works, taking into consideration differentiated exposure to and higher sensitivity of vulnerable groups. This includes taking measures to avoid or minimize the transmission of communicable diseases that may be associated with the influx of temporary or permanent Contract-related labor;</p> <p>(vii) the policies and procedures on the management and quality of accommodation and welfare facilities if such accommodation and welfare facilities are provided by the Contractor in accordance with GCC Sub-Clause 9.4.6; and</p> <p>(b) any other requirements stated in the Specification.</p> <p>18.3 Protection of the environment</p> <p>The Contractor shall take all necessary measures to:</p> <p>(a) protect the environment (both on and off the Site); and</p> <p>(b) limit damage and nuisance to people and property resulting from pollution, noise and other results of the Contractor's operations and/ or activities.</p> <p>The Contractor shall ensure that emissions, surface discharges, effluent and any other pollutants from the Contractor's activities shall exceed neither the values indicated in the Specification, nor those prescribed by applicable laws.</p> <p>In the event of damage to the environment, property and/or nuisance to people, on or off Site as a result of the Contractor's operations, the Contractor shall agree with the Project Manager the appropriate actions and time scale to remedy, as practicable, the damaged environment to its former condition. The Contractor shall implement such remedies at its cost to the satisfaction of the Project Manager.</p>
<p>19. Archaeological and Geological Findings</p>	<p>19.1 All fossils, coins, articles of value or antiquity, structures, groups of structures, and other remains or items of geological, archaeological, paleontological, historical, architectural or religious interest found on the Site shall be placed under the care and custody of the Employer. The Contractor shall:</p> <p>(a) take all reasonable precautions, including fencing-off the area or site of the finding, to avoid further disturbance and prevent Contractor's Personnel or other persons from removing or damaging any of these findings;</p> <p>(b) train relevant Contractor's Personnel on appropriate actions to be taken in the event of such findings; and</p> <p>(c) implement any other action consistent with the requirements of the Specification and relevant laws.</p> <p>The Contractor shall, as soon as practicable after discovery of any such finding, notify the Project Manager of such discoveries and carry out the Project Manager's instructions for dealing with them.</p>

<p>20. Possession of the Site</p>	<p>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, the Employer shall be deemed to have delayed the start of the relevant activities, and this shall be a Compensation Event.</p>
<p>21. Access to the Site</p>	<p>21.1 The Contractor shall allow the Project Manager and any person authorized by the Project Manager (including the consultants acting on the Employer’s behalf, stakeholders and third parties, such as independent experts, local communities, or non-governmental organizations), including to carry out environmental and social audit, as appropriate, 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.</p>
<p>22. Instructions, Inspections and Audits</p>	<p>22.1 The Contractor shall carry out all instructions of the Project Manager which comply with the applicable laws where the Site is located.</p>
	<p>22.2 The Contractor shall keep, and shall make all reasonable efforts to cause its Subcontractors and sub-consultants 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.</p>
<p>23. Appointment of the Adjudicator</p>	<p>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 days of receipt of such request.</p> <p>23.2 Should 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 days, the Adjudicator shall be designated by the Appointing Authority designated in the PCC at the request of either party, within 14 days of receipt of such request.</p>
<p>24. Procedure for Disputes</p>	<p>24.1 If the Contractor believes that a decision taken by the Project Manager was either outside the authority given to the Project Manager by the Contract or that the decision was wrongly taken, the decision shall be referred to the Adjudicator within 14 days of the notification of the Project Manager’s decision.</p> <p>24.2 The Adjudicator shall give a decision in writing within 28 days of receipt of a notification of a dispute.</p> <p>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 a decision of the Adjudicator to an Arbitrator within 28 days of the Adjudicator’s written</p>

	<p>decision. If neither party refers the dispute to arbitration within the above 28 days, the Adjudicator’s decision shall be final and binding.</p> <p>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.</p>
<p>25. Fraud and Corruption</p>	<p>25.1 If the Purchaser determines that the Supplier has engaged in corrupt, fraudulent, collusive, coercive or obstructive practices, in competing for or in executing the Contract, then the Purchaser may, after giving 14 days notice to the Supplier, terminate the Supplier’s employment under the Contract and the provisions of GCC Clause 34.1 shall apply.</p> <p>For the purposes of this Sub-Clause:</p> <ul style="list-style-type: none"> (i) “corrupt practice” is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party; (ii) “fraudulent practice”⁴ is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation; (iii) “collusive practice”⁵ is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party; (iv) “coercive practice”⁶ is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party; (v) “obstructive practice” is <ul style="list-style-type: none"> (aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a GoN/DP investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or (bb) acts intended to materially impede the exercise of the GoN/DP’s inspection and audit rights provided for under ITB Clause 3.5 and GCC Clause 25.

⁴ a “party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.

⁵ “parties” refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

⁶ a “party” refers to a participant in the procurement process or contract execution.

	<p>25.2 Without prejudice to any other rights of the Purchaser under this Contract, GoN may blacklist a Bidder/Supplier for its conduct for a period of one (1) to three (3) years on the following grounds and seriousness of the act committed by the bidder:</p> <ul style="list-style-type: none"> (e) if it is established that the Supplier committed acts specified in ITB 25.1, (f) if it is established later that the Bidder has committed substantial defect in implementation of the contract or has not substantially fulfilled its obligations under the contract or the completed work is not of the specified quality as per the contract.
<p>26. Stakeholder Engagement</p>	<p>26.1 The Contractor shall provide relevant contract- related information, as the Employer and/or Project Manager may reasonably request to conduct Stakeholder engagements. “Stakeholder” refers to individuals or groups who:</p> <ul style="list-style-type: none"> (i) are affected or likely to be affected by the Contract; and (ii) may have an interest in the Contract. <p>The Contractor may also directly participate in Stakeholder engagements, as the Employer and/or Project Manager may reasonably request</p>
<p>27. Suppliers (other than Subcontractors)</p>	<p>27.1 Forced Labor: The Contractor shall take measures to require its suppliers (other than Subcontractors) not to employ or engage forced labor including trafficked persons as described in GCC Sub-Clause 9.4.14. If forced labor/trafficking cases are identified, the Contractor shall take measures to require the suppliers to take appropriate steps to remedy them. Where the supplier does not remedy the situation, the Contractor shall within a reasonable period substitute the supplier with a supplier that is able to manage such risks.</p> <p>27.2 <i>Child Labor</i>: The Contractor shall take measures to require its suppliers (other than Subcontractors) not to employ or engage child labor as described in GCC Sub-Clause 9.4.15. If child labor cases are identified, the Contractor shall take measures to require the suppliers to take appropriate steps to remedy them. Where the supplier does not remedy the situation, the Contractor shall within a reasonable period substitute the supplier with a supplier that is able to manage such risks.</p> <p>27.3 <i>Serious Safety Issues</i>: The Contractor, including its Subcontractors, shall comply with all applicable safety obligations, including as stated in GCC Sub-Clause 18.2. The Contractor shall also take measures to require its suppliers (other than Subcontractors) to adopt procedures and mitigation measures adequate to address safety issues related to their personnel. If serious safety issues are identified, the Contractor shall take measures to require the suppliers to take appropriate steps to remedy them. Where the supplier does not remedy the situation, the Contractor shall within a reasonable period substitute the supplier with a supplier that is</p>

	<p>able to manage such risks.</p> <p>27.4 <i>Obtaining natural resource materials in relation to supplier:</i> The Contractor shall obtain natural resource <i>materials</i> from suppliers that can demonstrate, through compliance with the applicable verification and/ or certification requirements, that obtaining such materials is not contributing to the risk of significant conversion or significant degradation of natural or critical habitats such as unsustainably harvested wood products, gravel or sand extraction from river beds or beaches.</p> <p>If a supplier cannot continue to demonstrate that obtaining such materials is not contributing to the risk of significant conversion or significant degradation of natural or critical habitats, the Contractor shall within a reasonable period substitute the supplier with a supplier that is able to demonstrate that they are not significantly adversely impacting the habitats.</p>
<p>28. Code of Conduct</p>	<p>28.1 The Contractor shall have a Code of Conduct for the Contractor’s Personnel.</p> <p>The Contractor shall take all necessary measures to ensure that each Contractor’s Personnel is made aware of the Code of Conduct including specific behaviors that are prohibited, and understands the consequences of engaging in such prohibited behaviors.</p> <p>These measures include providing instructions and documentation that can be understood by the Contractor’s Personnel and seeking to obtain that person’s signature acknowledging receipt of such instructions and/or documentation, as appropriate.</p> <p>The Contractor shall also ensure that the Code of Conduct is visibly displayed in multiple locations on the Site and any other place where the Works will be carried out, as well as in areas outside the Site accessible to the local community and project affected people. The posted Code of Conduct shall be provided in languages comprehensible to Contractor’s Personnel, Employer’s Personnel and the local community.</p> <p>The Contractor’s Management Strategy and Implementation Plans shall include appropriate processes for the Contractor to verify compliance with these obligations.</p>
<p>29. Security of the Site</p>	<p>29.1 The Contractor shall be responsible for the security of the Site, and:</p> <ul style="list-style-type: none"> (a) for keeping unauthorized persons off the Site; (b) authorized persons shall be limited to the Contractor’s Personnel, the Employer’s Personnel, and to any other personnel identified as authorized personnel (including the Employer’s other contractors on the Site), by a notice from the Employer or the Project Manager to the Contractor. <p>Subject to GCC Sub-Clause 16.2, the Contractor shall submit for the Project Manager’s No-objection a security management</p>

	<p>plan that sets out the security arrangements for the Site</p> <p>The Contractor shall (i) conduct appropriate background checks on any personnel retained to provide security; (ii) train the security personnel adequately (or determine that they are properly trained) in the use of force (and where applicable, firearms), and appropriate conduct towards Contractor's Personnel, Employer's Personnel and affected communities; and (iii) require the security personnel to act within the applicable Laws and any requirements set out in the Specification.</p> <p>The Contractor shall not permit any use of force by security personnel in providing security except when used for preventive and defensive purposes in proportion to the nature and extent of the threat.</p> <p>In making security arrangements, the Contractor shall also comply with any additional requirements stated in the Specification.</p>
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B. Time Control

<p>30. Program and Progress Reports</p>	<p>30.1 Within the time stated in the PCC, after the date of the Letter of Acceptance, the Contractor shall submit to the Project Manager for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works. In the case of a lump-sum contract, the activities in the Program shall be consistent with those in the Activity Schedule. The Project Manager's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Project Manager again at any time. A revised Program shall show the effect of Variations and Compensation Events.</p> <p>30.2 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.</p> <p>30.3 The Contractor shall monitor progress of the Works and submit to the Project manager progress report and any updated Program showing the actual progress achieved and the effect of the progress achieved on the timing of the remaining Works, including any changes to the sequence of the activities, at intervals no longer than the period stated in the PCC. If the Contractor does not submit an updated Program within this period, the Project Manager 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 lump-sum Contract, the Contractor shall provide an updated Activity Schedule within 14 days of being instructed to by the Project Manager.</p> <p>30.4 Unless otherwise stated in the Specification, each progress report shall include the Environmental and Social (ES) metrics set out in Appendix B.</p> <p>30.5 In addition to the progress reports, the Contractor shall inform the Project Manager immediately of any allegation, incident or accident in the Site, which has or is likely to have a significant adverse effect on the</p>
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	<p>environment, the affected communities, the public, Employer’s Personnel, Project Manager’s personnel or Contractor’s Personnel. This includes, but is not limited to, any incident or accident causing fatality or serious injury; significant adverse effects or damage to private property; or any allegation of SEA and/or SH. In case of SEA and/or SH, while maintaining confidentiality as appropriate, the type of allegation (sexual exploitation, sexual abuse or sexual harassment), gender and age of the person who experienced the alleged incident should be included in the information.</p> <p>The Contractor, upon becoming aware of the allegation, incident or accident, shall also immediately inform the Project Manager of any such incident or accident on the Subcontractors’ or suppliers’ premises relating to the Works which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Employer’s Personnel, or Contractor’s, its Subcontractors’ and suppliers’ personnel. The notification shall provide sufficient detail regarding such incidents or accidents. The Contractor shall provide full details of such incidents or accidents to the Project Manager within the timeframe agreed with the Project Manager.</p> <p>The Contractor shall require its Subcontractors and suppliers (other than Subcontractors) to immediately notify the Contractor of any incidents or accidents referred to in this Subclause.</p>
<p>31. Extension of the Intended Completion Date</p>	<p>31.1 The Project Manager 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.</p> <p>31.2 The Project Manager shall decide whether and by how much to extend the Intended Completion Date within 21 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.</p>
<p>32. Acceleration</p>	<p>32.1 When the Employer wants the Contractor to finish before the Intended Completion Date, the Project Manager 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.</p> <p>32.2 If the Contractor’s priced proposals for an acceleration are accepted by the Employer, they are incorporated in the Contract Price and treated as a Variation.</p>
<p>33. Delays Ordered by the Project</p>	<p>33.1 The Project Manager may instruct the Contractor to delay the start or progress of any activity within the Works.</p>

Manager	
34. Management Meetings	<p>34.1 Either the Project Manager 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.</p> <p>34.2 The Project Manager 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 Project Manager either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.</p>
35. Early Warning	<p>35.1 The Contractor shall warn the Project Manager 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.</p> <p>35.2 The Contractor shall cooperate with the Project Manager 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 Project Manager.</p>
C. Quality Control	
36. Identifying Defects	<p>36.1 The Project Manager 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 Project Manager may instruct the Contractor to search for a Defect and to uncover and test any work that the Project Manager considers may have a Defect.</p>
37. Tests	<p>37.1 If the Project Manager 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.</p>
38. Correction of Defects	<p>38.1 The Project Manager 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.</p> <p>38.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Project Manager's notice.</p>
39. Uncorrected	<p>39.1 If the Contractor has not corrected a Defect within the time</p>

Defects	specified in the Project Manager’s notice, the Project Manager shall assess the cost of having the Defect corrected, and the Contractor shall pay this amount.
D. Cost Control	
40. Contract Price	40.1 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.
41. Changes in the Contract Price	<p>41.1 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 percent, provided the change exceeds 1 percent of the Initial Contract Price, the Project Manager shall adjust the rate to allow for the change. The Project Manager shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 15 percent, except with the prior approval of the Employer.</p> <p>41.2 If requested by the Project Manager, the Contractor shall provide the Project Manager with a detailed cost breakdown of any rate in the Bill of Quantities.</p>
42. Variations	<p>42.1 All Variations shall be included in updated Programs⁷ produced by the Contractor.</p> <p>42.2 The Contractor shall provide the Project Manager with a quotation for carrying out the Variation when requested to do so by the Project Manager. The Contractor shall also provide information of any ES risks and impacts of the Variation The Project Manager shall assess the quotation, which shall be given within seven (7) days of the request or within any longer period stated by the Project Manager and before the Variation is ordered.</p> <p>42.3 If the Contractor’s quotation is unreasonable, the Project Manager may order the Variation and make a change to the Contract Price, which shall be based on the Project Manager’s own forecast of the effects of the Variation on the Contractor’s costs.</p> <p>42.4 If the Project Manager 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.</p> <p>42.5 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.</p> <p>42.6 If the work in the Variation corresponds to an item description in the Bill of Quantities and if, in the opinion of the Project Manager, the quantity of work above the limit stated in GCC Sub-Clause 41.1 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</p>

	<p>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.</p> <p>42.7 Value Engineering: The Contractor may prepare, at its own cost, a value engineering proposal at any time during the performance of the contract. The value engineering proposal shall, at a minimum, include the following;</p> <ul style="list-style-type: none"> (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; (c) a description of any effect(s) of the change on performance/functionality; and (d) a description of the proposed work to be performed, a program for its execution and sufficient ES information to enable an evaluation of ES risks and impacts. <p>The Employer may accept the value engineering proposal if the proposal demonstrates benefits that:</p> <ul style="list-style-type: none"> (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, <p>without compromising the functionality of the Works.</p> <p>If the value engineering proposal is approved by the Employer and results in:</p> <ul style="list-style-type: none"> (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.
<p>43. Cash Flow Forecasts</p>	<p>43.1 When the Program,⁸ is updated, the Contractor shall provide the Project Manager 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.</p>

⁸ In lump-sum contracts, add “or Activity Schedule” after “Program.”

<p>44. Payment Certificates</p>	<p>44.1 The Contractor shall submit to the Project Manager monthly statements of the estimated value of the work executed less the cumulative amount certified previously.</p> <p>44.2 The Project Manager shall check the Contractor’s monthly statement and certify the amount to be paid to the Contractor.</p> <p>44.3 The value of work executed shall be determined by the Project Manager.</p> <p>44.4 The value of work executed shall comprise the value of the quantities of work in the Bill of Quantities that have been completed.⁹</p> <p>44.5 The value of work executed shall include the valuation of Variations and Compensation Events.</p> <p>44.6 The Project Manager 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.</p> <p>44.7 If the Contractor was, or is, failing to perform any ES obligations or work under the Contract, the value of this work or obligation, as determined by the Project Manager, may be withheld until the work or obligation has been performed, and/or the cost of rectification or replacement, as determined by the Project Manager, may be withheld until rectification or replacement has been completed. Failure to perform includes, but is not limited to the following:</p> <ul style="list-style-type: none"> (a) failure to comply with any ES 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; (b) failure to regularly review C-ESMP and/or update it in a timely manner to address emerging ES issues, or anticipated risks or impacts; (c) failure to implement the C-ESMP e.g. failure to provide required training or sensitization; (d) failing to have appropriate consents/permits prior to undertaking Works or related activities; (e) failure to submit ES report/s (as described in Appendix B), or failure to submit such reports in a timely manner; (f) failure to implement remediation as instructed by the Project Manager within the specified timeframe (e.g. remediation addressing non-compliance/s).
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⁹ In lump-sum contracts, replace this paragraph with the following: “The value of work executed shall comprise the value of completed activities in the Activity Schedule.”

<p>45. Payments</p>	<p>45.1 Payments shall be adjusted for deductions for advance payments and retention. The Employer shall pay the Contractor the amounts certified by the Project Manager within 30 days of the date of each certificate. If the Employer makes a late payment, the Contractor shall be paid interest on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made at the prevailing rate of interest for commercial borrowing for each of the currencies in which payments are made.</p> <p>45.2 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.</p> <p>45.3 Unless otherwise stated, all payments and deductions shall be paid or charged in the proportions of currencies comprising the Contract Price.</p> <p>45.4 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.</p>
<p>46. Compensation Events</p>	<p>46.1 The following shall be Compensation Events:</p> <ul style="list-style-type: none"> (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 Project Manager orders a delay or does not issue Drawings, Specification, or instructions required for execution of the Works on time. (d) The Project Manager instructs the Contractor to uncover or to carry out additional tests upon work, which is then found to have no Defects. (e) The Project Manager 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 bidders (including the Site Investigation Reports), from information available publicly and from a visual inspection of the Site. (g) The Project Manager 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 advance payment is delayed.

	<p>(j) The effects on the Contractor of any of the Employer’s Risks.</p> <p>(k) The Project Manager unreasonably delays issuing a Certificate of Completion.</p> <p>46.2 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.</p> <p>46.3 As soon as information demonstrating the effect of each Compensation Event upon the Contractor’s forecast cost has been provided by the Contractor, it shall be assessed by the Project Manager, and the Contract Price shall be adjusted accordingly. If the Contractor’s forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager’s own forecast. The Project Manager shall assume that the Contractor shall react competently and promptly to the event.</p> <p>46.4 The Contractor shall not be entitled to compensation to the extent that the Employer’s interests are adversely affected by the Contractor’s not having given early warning or not having cooperated with the Project Manager.</p>
<p>47. Tax</p>	<p>47.1 The Project Manager shall adjust the Contract Price if taxes, duties, and other levies are changed between the date 30 days before the submission of bids for the Contract and the date of the last Completion certificate. The adjustment shall be the change in the amount of tax payable by the Contractor, provided such changes are not already reflected in the Contract Price or are a result of GCC Clause 49.</p>
<p>48. Currencies</p>	<p>48.1 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.</p>
<p>49. Price Adjustment</p>	<p>49.1 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> $P_c = A_c + B_c \text{ Imc/loc}$ <p>where:</p> <p>P_c is the adjustment factor for the portion of the Contract</p>

	<p>Price payable in a specific currency “c.”</p> <p>A_c and B_c are coefficients¹⁰ specified in the PCC, representing the nonadjustable and adjustable portions, respectively, of the Contract Price payable in that specific currency “c;” and</p> <p>I_{mc} is the index prevailing at the end of the month being invoiced and I_{lc} is the index prevailing 30 days before Bid opening for inputs payable; both in the specific currency “c.”</p> <p>49.2 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.</p>
50. Retention	<p>50.1 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.</p> <p>50.2 Upon the issue of a Certificate of Completion of the Works by the Project Manager, in accordance with GCC Sub-Clause 57.1, 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 Project Manager to the Contractor before the end of this period have been corrected. The Contractor may substitute retention money with an “on demand” Bank guarantee.</p>
51. Liquidated Damages	<p>51.1 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.</p> <p>51.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Project Manager 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 45.1.</p>
52. Bonus	<p>52.1 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.</p>
53. Advance	<p>53.1 The Employer shall make advance payment to the Contractor of the amounts stated in the PCC by the date stated in the PCC, against</p>

<p>Payment</p>	<p>provision by the Contractor of an Unconditional Bank Guarantee in a form and by a bank acceptable to the Employer in amounts and currencies equal to the advance payment. 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 not be charged on the advance payment.</p> <p>53.2 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 Project Manager.</p> <p>53.3 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. 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.</p>
<p>54. Securities</p>	<p>54.1 The Performance Security, and if so specified in the PCC an environmental and social (ES) performance security, 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 30 days from the date of issue of the Certificate of Completion in the case of a Bank Guarantee, and until one year from the date of issue of the Certificate of Completion in the case of a Performance Bond.</p>
<p>55. Day works</p>	<p>55.1 If applicable, the Day works rates in the Contractor’s Bid shall be used only when the Project Manager has given written instructions in advance for additional work to be paid for in that way.</p> <p>55.2 All work to be paid for as Day works shall be recorded by the Contractor on forms approved by the Project Manager. Each completed form shall be verified and signed by the Project Manager within two days of the work being done.</p> <p>55.3 The Contractor shall be paid for Day works subject to obtaining signed Day works forms.</p>
<p>56. Cost of Repairs</p>	<p>56.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor’s cost if the loss or damage arises from the Contractor’s acts or omissions.</p>

E. Finishing the Contract

<p>57. Completion</p>	<p>57.1 The Contractor shall request the Project Manager to issue a</p>
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	<p>Certificate of Completion of the Works, and the Project Manager shall do so upon deciding that the whole of the Works is completed.</p>
58. Taking Over	<p>58.1 The Employer shall take over the Site and the Works within seven days of the Project Manager's issuing a certificate of Completion.</p>
59. Final Account	<p>59.1 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 Project Manager shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 56 days of receiving the Contractor's account if it is correct and complete. If it is not, the Project Manager shall issue within 56 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 Project Manager shall decide on the amount payable to the Contractor and issue a payment certificate.</p>
60. Operating and Maintenance Manuals	<p>60.1 If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the PCC.</p> <p>60.2 If the Contractor does not supply the Drawings and/or manuals by the dates stated in the PCC pursuant to GCC Sub-Clause 60.1, or they do not receive the Project Manager's approval, the Project Manager shall withhold the amount stated in the PCC from payments due to the Contractor.</p>
61. Termination	<p>61.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.</p> <p>61.2 Fundamental breaches of Contract shall include, but shall not be limited to, the following:</p>
	<ul style="list-style-type: none"> (a) the Contractor stops work for 28 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Project Manager; (b) the Project Manager instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 28 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 days of the date of the Project Manager's certificate; (e) the Project Manager 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 Project Manager; (f) the Contractor does not maintain a Security, which is

	<p>required;</p> <p>(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; or</p> <p>(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 fourteen (14) days written notice to the Contractor, terminate the Contract and expel him from the Site.</p> <p>61.3 Notwithstanding the above, the Employer may terminate the Contract for convenience.</p>
	<p>61.4 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.</p>
	<p>61.5 When either party to the Contract gives notice of a breach of Contract to the Project Manager for a cause other than those listed under GCC Sub-Clause 61.2 above, the Project Manager shall decide whether the breach is fundamental or not.</p>
<p>62. Payment upon Termination</p>	<p>62.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Project Manager 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.</p> <p>62.2 If the Contract is terminated for the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Project Manager 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.</p>
<p>63. Property</p>	<p>63.1 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.</p>
<p>64. Release from Performance</p>	<p>64.1 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 Project Manager 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.</p>

Section IX. Particular Conditions of Contract

A. General	
GCC 1.1 (p)	The Employer is: is <i>Madan Bhandari University of Science and Technology Development Board, Sainbu, Lalitpur Metropolitan City, Ward No. 18, Nepal</i>
GCC 1.1 (t)	The Intended Completion Date for the whole of the Works shall be <i>7.5 months from the date of the issuance of Work Order</i>
GCC 1.1 (w)	The Project Manager is: The Project Manager and Engineer are synonyms
GCC 1.1 (y)	The Site is located at <i>Chitlang, Makwanpur</i>
GCC 1.1 (bb)	The Start Date shall be the date of the issuance of work order
GCC 1.1 (ff)	The Works consist of Construction of 500kWp Grid Connected Solar PV with Energy Storage System
GCC 2.2	Sectional Completions are: Not applicable.
GCC 2.3(i)	The following documents also form part of the Contract: Not applicable
GCC 3.1	The language of the contract is English/Nepali. The law that applies to the Contract is the law of Nepal
GCC 5.1	The Project manager <i>may</i> delegate any of his duties and responsibilities.
GCC 8.1	Schedule of other contractors: Not Applicable
GCC 13.1	The minimum insurance amounts and deductibles shall be: <ol style="list-style-type: none"> 1. The minimum cover for loss of or damage to the Works, Plant and Materials is: <i>110% of the Value of Assets/Work</i> 2. The maximum deductible for insurance of the Works and of Plant and Materials is: <i>NPR 50,000</i> 3. The minimum cover for loss or damage to Equipment is: <i>110% of the Value of Assets</i> 4. The maximum deductible for insurance of Equipment is: <i>NPR 25,000</i> 5. The minimum for insurance of other property is: <i>110% of the Value of Assets</i> with unlimited number of occurrences 6. The maximum deductible for insurance of other property is: <i>NPR 50,000</i>

	<p>7. The minimum cover for personal injury or death insurance</p> <p>i. for the Contractor's employees is that specified in the Labor act of Nepal and</p> <p>ii. for other people is: <i>NPR 1 Million</i> per person for 20 persons with an unlimited number of occurrences</p>
GCC 14.1	<p>Site Data are: Elevation for solar PV site 1770 to 1805m above sea level. Minimum average monthly temperature is 3^o C in January and maximum monthly temperature is 27^o C in May. Temperature drops below 0^o C at night time. Latitude 27.64^o N and longitude 85.18^o E.</p>
GCC 17	<p>The Project Manager's duties and authorities are restricted to the extent as mentioned below:</p> <p>The Project Manager has to obtain the specific approval of the Employer for taking any of the following actions:</p> <p>a. Approving subcontracting of any part of the works under General Conditions of Contract Clause 13;</p> <p>b. Certifying additional costs determined under General Conditions of Contract Clause 50;</p> <p>c. Determining start date under General Conditions of Contract Clause 1;</p> <p>d. Determining the extension of the intended Completion Date under General Conditions of Contract Clause 35;</p> <p>e. Issuing a Variation under General Conditions of Contract Clause 1 and 46, except in an emergency situation, as reasonably determined by the Project Manager; emergency situation may be defined as the situation when protective measures must be taken for the safety of life or of the works or of adjoining property.</p> <p>f. Adjustment of rates under General Conditions of Contract Clause 45;</p>
GCC 20.1	<p>The Site Possession Date(s) shall be: within 15 days from <i>the date of Agreement</i></p>
GCC 23.1 & GCC 23.2	<p>Appointing Authority for the Adjudicator:</p>
GCC 24.3	<p>Hourly rate and types of reimbursable expenses to be paid to the Adjudicator: NPR 2,000</p>
GCC 24.4	<p>Institution whose arbitration procedures shall be used for contract with international <i>contractors</i>:</p> <p><i>“United Nations Commission on International Trade Law (UNCITRAL)</i></p>

	<p><i>Arbitration Rules:</i></p> <p>Any dispute, controversy, or claim arising out of or relating to this Contract, or breach, termination, or invalidity thereof, shall be settled by arbitration in accordance with the UNCITRAL Arbitration Rules as at present in force.”</p> <p>or</p> <p><i>“Rules of Conciliation and Arbitration of the International Chamber of Commerce (ICC):</i></p> <p>All disputes arising out of or in connection with the present Contract shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with said Rules.”</p> <p>or</p> <p><i>“Rules of Arbitration Institute of the Stockholm Chamber of Commerce:</i></p> <p>Any dispute, controversy, or claim arising out of or in connection with this Contract, or the breach, termination, or invalidity thereof, shall be finally settled by arbitration in accordance with the Arbitration Rules of the Arbitration Institute of the Stockholm Chamber of Commerce.”</p> <p>or</p> <p><i>“Rules of the London court of International Arbitration:</i></p> <p>Any dispute arising out of or in connection with this Contract, including any question regarding its existence, validity, or termination shall be referred to and finally resolved by arbitration under the LCIA Rules, which Rules are deemed to be incorporated by reference to this clause.”</p> <p>The place of arbitration shall be: <i>[Insert city and country]</i></p>
	<p>B. Time Control</p>
<p>GCC 30.1</p>	<p>The Contractor shall submit for approval a Program for the Works within 7 days from the date of the Letter of Acceptance.</p>
<p>GCC 30.3</p>	<p>The period between Program updates is 30 days.</p> <p>The amount to be withheld for late submission of an updated Program is NPR 5,00,000/-</p>

	The period for submission of progress reports is 7 days
C. Quality Control	
GCC 38.1	The Defects Liability Period is: 365 days.
D. Cost Control	
GCC 42.7	If the value engineering proposal is approved by the Employer the amount to be paid to the Contractor shall be N/A
GCC 48.1	The currency of the Employer's Country is: NPR.
GCC 49.1	The Contract " <i>is not</i> " subject to price adjustment.
GCC 50.1	The proportion of payments retained is: 5%
GCC 51.1	The liquidated damages for the whole of the Works are 0.05 <i>percentage of the final Contract Price</i> per day. The maximum amount of liquidated damages for the whole of the Works is 10 % of the final Contract Price.
GCC 53.1	The Advance Payments shall be: 10% of contract price and shall be paid to the Contractor no later than 30 days upon submission of request and the unconditional advance bank guarantee equal to the advance payment amount from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law of Nepal as well as evidence of team mobilization, submission of insurance policy and completion of site survey.
GCC 54.1	<p>54.1 Within Fifteen (15) days of the receipt of Letter of Acceptance from the Employer, the successful Bidder shall furnish the performance security in accordance with the Conditions of Contract, as specified below from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal using Sample Form for the Performance Security included in Section 9 (Contract Forms), or another form acceptable to the Employer. The performance security issued by any foreign Bank outside Nepal must be counter guaranteed by Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal.</p> <p>i) If bid price of the bidder selected for acceptance is up to 15 (fifteen) percent below the approved cost estimate, the performance security amount shall be 5 (five) percent of the bid price.</p> <p>ii) For the bid price of the bidder selected for acceptance is more than 15 (fifteen) percent below of the cost estimate, the performance security amount shall be determined as follows:</p> <p>Performance Security Amount = [(0.85 x Cost Estimate – Bid Price) x 0.5] +</p>

	<p>5% of Bid Price.</p> <p>The Bid Price and Cost Estimate shall be inclusive of Value Added Tax.</p> <p>Within Fifteen (15) days of the receipt of Letter of Acceptance from the Employer, the successful Bidder shall furnish the Letter of Commitment for Bank's Undertaking for Line of Credit of the amount as specified in the BDS, using Sample Form for the Line of Credit included in Section 9 (Contract Forms) at the time of contract agreement.</p> <p>54.2 Failure of the successful Bidder to submit the above-mentioned Performance Security and Line of Credit 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 next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily. In such case, the award process shall be repeated according to ITB 40.</p>
<p>E. Finishing the Contract</p>	
<p>GCC 60.1</p>	<p>The date by which operating and maintenance manuals are required is within 15 days of completion date</p> <p>The date by which "as built" drawings are required is within 15 days from the date of completion</p> <p>The amount to be withheld for failing to produce "as built" drawings and/or Operating and maintenance manuals is: Rs. 250,000/-</p>
<p>GCC 60.2</p>	<p>The amount to be withheld for failing to produce "as built" drawings and/or operating and maintenance manuals by the date required in GCC Sub-Clause 60.1 is NRP. 250,000/-</p>
<p>GCC 61.2 (g)</p>	<p>The maximum number of days is: 200 days.</p>
<p>GCC 62.1</p>	<p>The percentage to apply to the value of the work not completed, representing the Employer's additional cost for completing the Works, is 25%.</p>

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 contract award.

Letter of Intent
[on letterhead paper of the Employer]

Date:

To:*Name and address of the Contractor*.....

Subject: Issuance of letter of intent to award the contract.

This is to notify you that, it is our intention to award the contract *[insert date]*for execution of the **Construction of 500 kWp Grid Connected Solar PV with Energy Storage System, Contract identification number MBUSTDB/W/ICB/01/2021/22** to you as your bid price *[insert amount in figures and words in Nepalese Rupees]* as corrected and modified in accordance with the Instructions to Bidders is hereby selected as substantially responsive lowest evaluated bid.

Authorized Signature:

Name:

Title:

CC:

[Insert name and address of all other Bidders, who submitted the bid]

[Notes on Letter of Intent

The issuance of Letter of Intent is the information of the selection of the bid of the successful bidder by the Employer and for providing information to other unsuccessful bidders who participated in the bid as regards to the outcome of the procurement process. This standard form of Letter of Intent to Award should be filled in and sent to the successful Bidder only after evaluation and selection of substantially responsive lowest evaluated bid.]

Letter of Acceptance
[on letterhead paper of the Employer]

Date:

To:*Name and address of the Contractor*.....

Subject: Notification of Award

This is to notify that your Bid dated*date*for execution of the ***Construction of 500 kWp Grid Connected Solar PV with Energy Storage System, Contract identification number MBUSTDB/W/ICB/01/2078/79*** for the Contract price of Nepalese Rupees [***insert amount in figures and words in Nepalese Rupees***], as corrected in accordance with the Instructions to Bidders is hereby accepted in accordance with the Instruction to Bidders.

You are hereby instructed to contact this office to sign the formal contract agreement within 15 days with Performance Security of **NPR** in accordance with the Conditions of Contract, using for that purpose the Performance security Form included in Section X (Contract Forms) of this Bidding Document.

Authorized Signature:

Name and Title of Signatory:

Contract Agreement

THIS AGREEMENT made theday of.....between **Madan Bhandari University of Science and Technology Development Board**, Setopati, Sainbu, Lalitpur Metropolitan City Ward 18, Nepal, (**hereinafter “the Employer”**), of the one part, andname of the Contractor(hereinafter “the Contractor”), of the other part:

WHEREAS the Employer desires that the Works known as **Construction of 500 kWp Grid Connected Solar PV with Energy Storage System at Chitlang** should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects in the sum of NRs[**insert amount of contract price in words and figures including taxes**](hereinafter “the Contract Price”).

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.
 - (a) the Letter of Acceptance;
 - (b) the Letters of Technical and Price Bid;
 - (c) the Addenda Nos **Insert addenda numbers if any**
 - (d) the Special Conditions of Contract;
 - (e) the List of Eligible Countries that was specified in Section V of the bidding document,
 - (f) the General Conditions of Contract;
 - (g) the Specification;
 - (h) the Drawings;
 - (i) Bill of Quantities (or Schedules of Prices for lump sum contracts), and
 - (j) Table of Price Adjustment Data
 - (k) List of Approved Subcontractors [*For GoN funded project*]
 - (l).....[**Specify if there are any other document**]
3. In consideration of the payments to be made by the Employer to the Contractor as indicated 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.
4. 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 Nepal on the day, month and year indicated above.

Signed by
for and on behalf the Contractor in the presence of

Witness, Name Signature, Address, Date

Signed by.....
for and on behalf of the Employer in the presence of

Witness, Name, Signature, Address, Date

List of Approved Subcontractors

In accordance with GCC Sub-Clause 13.1, The following Subcontractors are approved for carrying out the work as specified below.

Name of Subcontractors	Description of Works	Value/Percentage of subcontract

Letter of Commitment for Bank's Undertaking for Line of Credit

Bank's Name, and Address of Issuing Branch or Office

(On Letter head of the Commercial bank or any Financial Institution eligible to issue Bank Guarantee as per prevailing Law)

Date:

Contract No:

Name of Contract:

To:

[Name and address of the Employer]

CREDIT COMMITMENT No: [insert number]

We are pleased to know that [name of Contractor] (hereinafter called "the Contractor") has been awarded the Contract for the execution of the Works of [description of works] for above contract.

Furthermore, we understand that, according to your conditions, the Contractor's Financial Capacity i.e. Liquid Asset must be substantiated by a Letter of Commitment of Bank's Undertaking for Line of Credit.

At the request of, and arrangement with, the Contractor, we [name and address of the Bank] do hereby agree and undertake that [name and address of the Contractor] will be provided by us with a revolving line of credit, for execution of the Works viz. [insert name of the works], for an amount not less than NRs[in figure] (in words) for the sole purpose of the execution of the above Contract. This Revolving Line of Credit will be maintained by us until [Insert "Initial Contract Period"] months by the Procuring Entity.

This committed line of credit shall not be terminated or cancelled without the prior written approval of Employer.

In witness whereof, authorised representative of the Bank has hereunto signed and sealed this Letter of Commitment.

Signature

Signature

Name:

Name:

Designation:

Designation:

Performance Security

(On letterhead paper of the Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal.)

..... *Bank's Name, and Address of Issuing Branch or Office*

Beneficiary: **Madan Bhandari University of Science and Technology Development Board,
Setopati, Sainbu, Lalitpur Metropolitan City Ward 18, Nepal**

Date:

Performance Guarantee No.:.....

- We have been informed that *[insert name of the Contractor]* (hereinafter called "the Contractor") has been notified by you to sign the Contract No. **MBUSTDB/W/ICB/01/2021/22** for the execution of **Construction of 500 kWp Grid Connected Solar PV with Energy Storage System at Chitlang** (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 Contractor, we... .. *[insert name of the Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of*[insert name of the currency and amount in figures*]* (... .. *insert amount in words*) such sum being payable in Nepalese Rupees, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the.....Day of **, and any demand for payment under it must be received by us at this office on or before that date.

.....
Seal of Bank and Signature(s)

Note:

All italicized text is for guidance on how to prepare this demand guarantee and shall be deleted from the final document.

* The Guarantor shall insert an amount representing the percentage of the Contract Price specified in the Contract in Nepalese Rupees.

** Insert the date thirty days after the date specified for the Defect Liability Period. 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], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee".

Advance Payment Security
(On letterhead paper of the Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal.)

..... **Bank's Name, and Address of Issuing Branch or Office**.....

Beneficiary: **Madan Bhandari University of Science and Technology Development Board,
Setopati, Sainbu, Lalitpur Metropolitan City Ward 18, Nepal**

Date :

Advance Payment Guarantee No.....

We have been informed thathas entered into Contract No. **Name and Address of Employer**.....**name of the Contractor**.....(hereinafter called "the Contractor")..reference number of the Contract.....dated with you, for the execution of ...contract and brief description of Works **Construction of Grid Connected Solar PV with Energy Storage System.** (hereinafter called "the Contract").

Furthermore, we understand that, according to the Conditions of the Contract, an advance payment in the sum..... name of the currency and amount in figures*...(.... **amount in words**) is to be made against an advance payment guarantee.

At the request of the Contractor, we..... **name of the Bank** hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of.....name of the currency and amount in figures*... ..(**amount in words**) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than the costs of mobilization in respect of the Works.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated 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 eighty (80) percent of the Contract Price has been certified for payment, or on the day of**, whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

.....
Seal of Bank and Signature(s)

Note:

All italicized text is for guidance on how to prepare this demand guarantee and shall be deleted from the final document.

*The Guarantor shall insert an amount representing the amount of the advance payment in Nepalese Rupees of the advance payment as specified in the Contract.

** Insert the date Thirty days after the expected completion date. 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], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee".

Annex-1
Technical Specifications

Technical Specifications

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1. Grid Connected Solar PV with Energy Storage System

The bidder must clearly response the technical specifications and standards asked for the system components in their technical proposal. The bidder must provide the data sheet and technical specifications of all the components including IV curve, efficiency curves, test certificates/reports, warranty certificate, international standards.

1.1 Solar Photovoltaic (PV) Module

The total required PV array capacity must be at least 500kWp. The capacity of individual PV array for 3 different sites must be as follows.

S.N.	Description	Minimum PV Capacity (kWp)
1	Ground Mounted	420
2	GPB 1 Roof Mounted	40
3	GPB 2 Roof Mounted	40

The PV modules shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing PV modules: At least 10 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015, ISO 14001:2004 or ISO 14001:2015, OHSAS 18001:2007 or OHSAS 18001:2017 or ISO 45001:2018 Certificates and must be Tier 1		
4	Peak Power of Individual Module at STC: At least 400 Watt-peak		
5	Array Capacity: At least 500kWp		
6	PV Module Efficiency: At least 20%		
7	Module Type: Monofacial		
8	Cell type: Mono PERC Crystalline		
9	No. of Cells per Module: At least 72		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
10	Power Tolerance: 0 to +3%		
11	Fill Factor: At least 75%		
12	The cable connected to the module junction box must be of copper multi-strand, PVC insulated and UV resistant and be provided with minimum cross section of 4mm ² and length of at least 1 meter with PV connectors		
13	Degree of Protection (Junction Box): At least IP68 according to IEC 60529		
14	Degree of Protection (PV Connectors): At least IP68 according to IEC 60529 The PV connectors must comply with IEC 62852.		
15	Operating Temperature: Minimum range of -20°C to +85°C		
16	Nominal Module Operating Temperature: 42±3 °C		
17	System Voltage: At least 1000 VDC		
18	A letter provided by principal PV module manufacturer in their letter head stating the warranty period for their PV module. Product Warranty: ≥ 10 years Power Output Warranty: First year: ≥ 97% of STC power 10 years: ≥ 90% of STC Power 25 years: ≥ 80% of STC Power and linear warranty ≤ 0.6% per year from year 2 and onwards		
19	Local Certification required: RETS Certificate (PIT Certificate must be submitted with Bid and RST Certificate must be submitted before the installation)		
20	International Certification: IEC 61215-1:2016, IEC 61215-2:2016 or IEC 61215-1:2021, IEC 61215-2:2021,		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	<p>IEC 61730-1:2004, IEC 61730-2:2004 or IEC 61730-1:2016, IEC 61730-2:2016 and IEC 62804-1:2015</p> <p>The test certificates must be provided. The Test Certificates from IEC accredited independent laboratory must be provided. The PV Module must be certified by Certification Body Testing Laboratory (CBTL) or National Certification Body (NCB) enlisted in the IECEE website. The enlisted CBTL or NCB must have Scope of PV Module Testing.</p>		
21	The Datasheet and Name Plate Information of PV Module must comply as per EN 50380.		
22	The PV Module must comply as per IEC 60904.		
23	The manufacturer must have accreditation for conformity to ISO/IEC 17025 or IEC 62941. The document/certificate must be provided.		
24	All PV modules offered for the project must be of same type, same model, same power rating and from the same manufacturer.		
25	The PV modules must be packed in a box made from triple strength cardboard resting on a wooden or plywood Pallet. There must be at least 15mm spacing gap between the modules during the packaging.		
26	The Bidder must submit the technical datasheet of PV Module and PV Connector.		

1.2 Weather Station

The weather station along with the data logger shall be provided for adequate meteorological data to evaluate system performance and shall have capability of recording and storing data into the data logger. The weather station shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in meteorological measurement system: At least 5 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015 Certificate		
4	Pyranometer (Horizontal and POA)		
	Type: Spectrally Flat Class A Secondary Standard		
	Calibration Uncertainty: <1.2%		
	Non Stability: < 0.5%		
	Non Linearity < 0.2%		
	Temperature Sensor: 10kΩ Thermistor		
	Sensor Type: Thermopile		
	Cable: At least 5m cable with connector		
	IP Protection: At least IP67 according to IEC 60529		
	Operating Temperature: Minimum range of -20°C to +50°C		
	Humidity Range: 0 to 100%		
	Fitting Arrangement: The mounting structure for Pyranometer should be parallel to the earth surface provided with stainless steel nut and bolts at the highest point of PV Module		
	Compensated Calibrated Cell with internal temperature compensation: <ul style="list-style-type: none"> At least 2 numbers with minimum dimension of 266mm x266mm x35mm Voltage Radiation Relation: 65 mVdc per output = 1000W/m² 		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	±2,1% • Measurement Error: ±0.1%		
	International Certification: Comply with ISO 9060:2018, IEC 61724		
5	Pyrheliometer with Sun Tracker Direct Normal Irradiance (DNI) measuring sensor (Pyrheliometer) with Dual Axis Sun Tracker which can be used in combination with any pyranometer to measure the DNI and Global Horizontal Irradiance (GHI) should be provided. • Range: 0-2000 W/m ² • Drift: upto +/- 2% /year • Accuracy: +/- 5% of Full scale • Operating Temperature: -40 -65C • Spectral response: 300-3000 nm • Degree of Protection: At least IP67 according to IEC 60529		
6	Wind Speed Sensor • Range: 0 to 125 mph (0 to 57 m/s) or more • Accuracy: ±2mph (3km/h, 1m/s) or ±5 %, whichever is greater • Resolution: 1mph (1Knot, 0.1m/s, 1km/hr)Time Constant: no more than 2 seconds		
7	Wind Direction Sensor • Operating Range: 360° mechanical; 355° electrical (5° open) or • Range: 0°to 360°or 16 compass points • Accuracy: +/- 7° • Resolution: 1°, 22.5°between compass points.		
8	Air Temperature Sensor • Resolution: +/- 0.04 (min) to max +/- 0.01		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	<ul style="list-style-type: none"> • Typical accuracy: +/- 0.3 (maximal is +/- 1.5) Repeatability is (+/-) 0.1 celsius • Operating Range: -10 to +60 Celsius. • Long term drift: < 0.04 Celsius/year. 		
9	<p>Wet-Bulb Temperature Meter</p> <p>Stevenson screen including stands and other related materials and items to house dry bulb/air temperature thermometer/ Wet bulb temperature thermometer</p> <ul style="list-style-type: none"> • Measurement ranges: 0 to 100% r.h., -30 to 100°C • Resolution: 0.01% r.h. 0.01°C • Accuracy: ±2.0% r.h. at 25°C, ±0.5°C at 25°C 		
10	<p>Relative Humidity Sensor</p> <ul style="list-style-type: none"> • Range: 0 to 100%, non-condensing • Accuracy: + 1% RH from 3 to 95%; • Response time: less than 20s 		
11	<p>Rain Precipitation Sensor</p> <ul style="list-style-type: none"> • Temperature: 0 to + 50° C • Diameter of aperture: 225mm • Orifice: 400cm² • Resolution/Sensitivity: 0.2mm • Rainfall capacity: Unlimited • Capacity per Minute: Max. 30 tips (3 resp. 6mm) • Accuracy: ± 1% (at 25 mm/hr.) 		
12	<p>Pressure Sensor</p> <ul style="list-style-type: none"> • Range is 300-1100 hPa, • Resolution is 0.06 hPa to 0.02hPa. • Operating range is -40C to 85C. Best results in 0C to 65C range. • Long term stability is +/- 1 hPa/year. 		
13	Soil Temperature Sensor and Soil		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	Moisture Sensor		
	Soil Temperature Sensor: <ul style="list-style-type: none"> • Measuring surface-soil temperatures WMO standard • The sensor levels should correspond to the WMO instructions (WMO No. 8), with additional sensors at ground level and 5 cm above it • Measurement range: -20 to +60 °C • Resolution: 0.1 °C • Accuracy: ± 0.1 		
	Soil Moisture Sensor: <ul style="list-style-type: none"> • Soil water content measurements between 10cm and 1m • Precision: < ±0.2% volume • Operating range: - 10° to 60°C 		
14	Evaporation Pan Sensor <ul style="list-style-type: none"> • Range: 0 to 250 mm water gauge • Accuracy: 1mm of water dept 		
15	Mounting Structure <ul style="list-style-type: none"> • Single Pole - 3.5-meter installation (SS Pole) • Concrete work to be done to provide more stability to the system • All the related accessories to be provided 		
16	Data Logger <ul style="list-style-type: none"> • A multipurpose Meteorological Data Measurement Logger to receive data from at least 12 meteorological sensors. Capacity to store recorded values for a minimum of one year on disconnection of the network • Data synchronization in case of non-availability of network, data is stored locally which is pushed further when network is available 		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	<ul style="list-style-type: none"> • The software must support WMO compliant measuring methods, especially for wind gust monitoring (4 samples per second) and wind vector monitoring • Local RTC - Local I2C based RTC with low drift with respect to time. • PC software for SD card - PC software for reading data from SD card of at least 8GB • The stored data must be able to be retrieved by direct connection to the logger with laptop computer. Data is also transmitted to a central data receiving system via a GPRS modem which, ideally, should be housed within the logger enclosure/case • 8 Bit micro-controller with low power consumption and functionality to go in deep sleep mode to consume less power. Controller should have 10-bit ADC resolution, 8 Analog inputs I2C port, UART port, Ability to change data push interval • Data protocol - Bencode based data protocol should be used to transfer data from weather station to Webserver in real time. • Power: It should run either from 12V DC power supply or Solar power • Battery Back-up: 4.4 Ah Lithium Polymer battery which should at least give back-up of 7 days without recharge • Enclosure: At least IP65 based weatherproof enclosure with MX connectors to connect the sensor 		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	<p>so that the logger is totally insulated from the surrounding environmental conditions</p> <ul style="list-style-type: none"> • Compatibility: Window 10 or Linux or better 		
17	Web Dashboard and Web Server		
	<ul style="list-style-type: none"> • Webserver to receive, store and analyse data. • Weekly and Monthly reports on the mail. • SMS/Email based alert mechanism. • REST API for further integration or development of institute own dashboard. Visualization of data on last 6 hour, last 24-hour, last week • Functionality to download data between a specified date intervals. • Public access - If requested, same data should be made available to public also 		
18	Power Supply from Solar: PV module capacity: At least 75Wp Charge controller: At least 6A Battery: At least 40Ah		
19	Communication Interface: RS485 or Ethernet or USB-C		
20	Monitoring: Remote data sensing		
21	The Bidder must submit the technical datasheet of all the measurement system of Weather Station		

1.3 Grid Connected Inverter

The total required Grid connected inverter capacity must be at least 450kVA. The Grid connected inverter shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
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S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing inverters: At least 10 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015, ISO 14001:2004 or ISO 14001:2015, OHSAS 18001:2007 or OHSAS 18001:2017 or ISO 45001:2018 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from inverter manufacturer in their letter head signed and stamped		
5	Inverter type: Three Phase Grid Connected and Multi-MPPT String		
6	Maximum No. of PV Strings per MPPT: 2 No. of Independent MPPT Inputs: At least 8 for 110kVA and at least 4 for 40kVA		
7	AC Output Power: Total Cumulative Capacity of at least 450kVA@45°C No. of Inverters: At least 6 Ground Mounted: At least 3 x 110kVA + 1x40kVA GPB 1 Roof Mounted: At least 40kVA GPB 2 Roof Mounted: At least 40kVA		
8	AC output Voltage: Three Phase 400±10% Vac (L-L), Single Phase 230 ±10% Vac (L-N)		
9	Isolation: Transformerless		
10	Output Frequency: 50 Hz ± 2.5%		
11	Output Wave form: Pure Sine Wave		
12	Peak efficiency: At least 97%		
13	Euro efficiency: At least 97%		
14	Inverter efficiency: The efficiency when operating loads at power levels within 40% to 90% of the rated load must be greater than 90%. The bidder		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	must submit efficiency curve of the inverter to justify operational efficiency.		
15	Total Harmonic Distortion (THD): < 3%		
16	Power factor at nominal power: >0.99 Power factor range: 0.85 lag to 0.95 lead		
17	Degree of Protection: At least IP66 according to IEC 60529		
18	The inverter must be provided with <ul style="list-style-type: none"> • SPDs at both DC and AC side • DC Isolator at DC side • AC Isolator at AC Side (if not included inside the inverter, external isolator with at least IP65 enclosure must be provided and must have IEC 60947-3) 		
19	Protection: DC reverse polarity, grid monitoring, PV string current monitoring, overvoltage, AC short circuit		
20	Grid support: LVRT, HVRT, Active and reactive power control		
21	Operating Temperature: Minimum range of -20°C to +50°C		
22	Communication Interface: Modbus or RS232 or RS485 or Ethernet, must communicate with other equipment & monitoring system and must have data logging features		
23	International Certifications: IEC 61727:2004, IEC 62116:2014, IEC 62109-1:2010 & IEC 62109-2:2011, IEC 61683:1999, IEC 60068 and IEC 61000, IEC 60947-3 for AC Isolator The test certificates must be provided. The Test Certificates from IEC		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	accredited independent laboratory must be provided. The Inverter must be certified by Certification Body Testing Laboratory (CBTL) or National Certification Body (NCB) enlisted in the IECEE website. The enlisted CBTL or NCB must have Scope of Inverter Testing.		
24	The Datasheet and Name Plate Information of Photovoltaic Inverter must comply as per IEC 62894.		
25	All Grid connected inverters offered for the project must be of same type and from the same manufacturer.		
26	The Bidder must submit the technical datasheet of Grid Connected Inverter and AC Isolator (if provided externally).		

1.4 Bidirectional Storage Inverter

The total required bidirectional storage inverter capacity must be at least 250kVA. The inverter shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing inverters: At least 10 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015, ISO 14001:2004 or ISO 14001:2015, OHSAS 18001:2007 or OHSAS 18001:2017 or ISO 45001:2018 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from inverter manufacturer in their letter head		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	signed and stamped		
5	Inverter type: Three Phase and AC interactive		
6	AC Output Power: Total Cumulative Capacity of at least 250kVA		
7	Battery Chemistry: LiFePO4		
8	AC output Voltage: Three Phase 400±10% Vac (L-L), Single Phase 230 ±10% Vac (L-N)		
9	Isolation: Transformer		
10	Output Frequency: 50 Hz ± 2.5%		
11	Output Wave form: Pure Sine Wave		
12	Peak efficiency: At least 95%		
13	Total Harmonic Distortion (THD): < 3%		
14	Power factor at nominal power: >0.99 Power factor range: 0.85 lag to 0.95 lead		
15	Degree of Protection: At least IP20 according to IEC 60529		
16	Surge Handling Capacity: At least 150% for 3sec		
17	Low battery disconnect/cut off voltage: Configurable		
18	The inverter must be provided with <ul style="list-style-type: none"> • DC Isolator at DC side • AC Isolator at AC Side • SPD at AC side 		
19	STS Cabinet		
	The inverter must be provided with Static Transfer Switch (STS) Module or Cabinet to achieve automatic switching between on-grid and off-grid mode. The STS module built-in in inverter cabinet or external STS cabinet shall be provided.		
	Input Voltage Range: -25%±15% Output Voltage Range: -25%±15%		
	Switching Time: < 20ms		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	Conversion Efficiency: At least 99% at full load		
	Protection: AC overvoltage/undervoltage, over frequency/under frequency, AC phase reverse, overload, over temperature		
	Communication Interface: Modbus or RS232 or RS485 or Ethernet		
20	Protection: AC overvoltage/undervoltage, over frequency/under frequency, AC phase reverse, Ground fault, overload, over temperature		
21	Operating Temperature: Minimum range of -20°C to +50°C		
22	Features: Bidirectional function, capable to support in battery backup and must be compatible with Grid connected inverter.		
23	Communication Interface: Modbus or RS232 or RS485 or Ethernet, must communicate with Battery Management Unit (BMU) and Energy Management System (EMS) and must have data logging features		
24	International Certifications: IEC 62477-1:2012 or IEC 62109-1:2010 & IEC 62109-2:2011, IEC 61000 The test certificates must be provided. The Test Certificates from IEC accredited independent laboratory must be provided. The Inverter must be certified by Certification Body Testing Laboratory (CBTL) or National Certification Body (NCB) enlisted in the IECEE website. The enlisted CBTL or NCB must have Scope of Inverter Testing.		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
25	The Bidder must submit the technical datasheet of Bidirectional Storage Inverter and STS Cabinet.		

1.5 Lithium Iron Phosphate Battery

The total required lithium iron phosphate (LiFePO₄) battery systems size must be at least 400kWh. The battery shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing LiFePO ₄ Battery: At least 5 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015, ISO 14001:2004 or ISO 14001:2015, OHSAS 18001:2007 or OHSAS 18001:2017 or ISO 45001:2018 Certificates		
4	A letter provided by principal battery manufacturer in their letter head stating the warranty period for their battery. Product Warranty: ≥ 5 years Performance Warranty: ≥ 10 years		
5	Battery Type: Lithium Iron Phosphate (LiFePO ₄)		
6	Battery Capacity: At least 400kWh		
7	The battery system must be supplied with battery rack, battery management unit for each battery cluster, master battery management unit for whole battery system, integrated with EMS, properly sized cables & accessories.		
8	The battery management system must be integrated inside each battery module and battery management unit must be configured for each battery		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	cluster.		
9	Battery Management System Function: voltage, current, temperature monitoring on cell level		
10	Battery Management Unit Function: collect battery data, monitor and control the cluster of batteries		
11	Cycle usage: At least 5,000 cycles at 90% DoD		
12	Average Self Discharge: ≤3% per month at 25°C		
13	Operating Temperature: Minimum range of -10°C to +50°C		
14	The battery rack and enclosure cabinet shall be rated for installation suitable inside the room and must be rated for at least IP20 according to IEC 60529.		
15	The installation materials for each battery set must be supplied complete in all including mounting racks, enclosure cabinet, cell connecting copper flexible cables of suitable size, stainless steel screws, bolts, washers, insulated terminal post covers, cable shoes, fixing accessories.		
16	International Certification: IEC 62619:2017 for Cell and Battery Cluster The test certificates must be provided. The Test Certificates from IEC accredited independent laboratory must be provided. The battery must be certified by Certification Body Testing Laboratory (CBTL) or National Certification Body (NCB) enlisted in the IECEE website. The enlisted CBTL or NCB must have Scope of Battery Testing.		
17	All batteries offered for the project must be of same type, same model,		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	same capacity rating and from the same manufacturer.		
18	The Bidder must submit the technical datasheet of LiFePO4 Battery System and Material Safety Data Sheet.		

1.6 Support Structure for PV Modules

The Support Structure shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name		
2	Manufacturer's experience in manufacturing support structure: At least 5 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015, ISO 14001:2004 or ISO 14001:2015 Certificates		
4	Tilt angle and orientation: Optimum PV production angle at given latitude/longitude of the site, oriented towards south		
5	The support structure design and foundation or fixation mounting arrangements shall consider all static and dynamic loads suitable for site. The support structure design and foundation or fixation mounting arrangements must withstand wind speed up to 170 km/hr. The wind + snow load analysis must be provided.		
6	The PV module structure must be made of MS hot dip galvanized suitable sections of rectangular tubes, angles and channels. The minimum standards to be followed are:		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	<p>Vertical leg (Main leg): Minimum 80mmx40mmx2mm Rectangular Hollow Section</p> <p>Rafter: Minimum 80mmx40mmx2mm Rectangular Hollow Section</p> <p>Purlin: Minimum 80mmx40mmx2mm Rectangular Hollow Section</p> <p>Column bracing or supporting bracing: Minimum 40mmx40mmx5mm angle</p> <p>The horizontal spacing between 2 vertical legs must be between 1.5-2 meters as per load conditions. The PV array must be designed with cross section with maximum 2 numbers for vertical placement and maximum 4 numbers for horizontal placement. There must be minimum of 25mm uniform spacing between the modules.</p> <p>The minimum thickness of galvanization must be at least 90 microns throughout the surface. The test report for random sampling of structure members must be provided from authorized test laboratory.</p>		
7	<p>The support structure and its accessories shall be able to resist at least 25 years of outdoor exposure without suffering damage or corrosion.</p>		
8	<p>The support structure shall be installed in such a way that PV array shading is minimized as much as possible considering site condition</p>		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
9	The minimum clearance between ground level and bottom edge of the PV modules/arrays must be at least 50cm.		
10	Stainless Steel (SS 304) nuts, bolts, washers must be used for fixing modules with the structure. Stainless Steel (SS 304) or Galvanized nuts, bolts, washers, mounting clamps should be used for fixing structure and compatible with materials which it is being fixed. In case of welding structure, the galvanization must be done after the fabrication work.		
11	For ground mounted system, the foundation of PV structure shall be minimum 0.8 meter deep with 0.3(L) x 0.3(B) size with 0.3m thick stone soling with sand filling and 0.3(L) x 0.3(B) x 0.8(H) pillar in 1:2:4 PCC with 0.3m pillar above ground.		
12	For roof mounted system, the foundation of PV structure shall be 1:2:4 RCC of minimum 0.3(L) x 0.3(B) x 0.3m(H) above the roof floor level and anchor plate with minimum 200mmx200mmx6mm(GI with at least 90 microns)& galvanized anchor bolt with minimum 100mmxø12 with galvanized nuts, washers.		

1.7 Junction Box

The junction boxes are to be provided in the PV array for the termination of PV string connecting cables. The Junction box shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing junction boxes:		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	At least 5 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015, ISO 14001:2004 or ISO 14001:2015 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from junction box manufacturer in their letter head signed and stamped		
5	The Junction box must be rated for exterior installation suitable for the site conditions, shall be UV and weather resistant. Degree of Protection: At least IP65 according to IEC 60529		
6	The junction box installation must be protected from direct rain, sun and dust. The junction box must be suitable for mounting on the module support structures.		
7	If the fuses are not provided at input side of grid connected inverter (inside the inverter), each junction box must include the PV string fuses as recommended by PV module manufacturer. The PV string fuse must be provided in both positive & negative sides in the box and must have IEC 60947-3.		
8	Fuses must be cylindrical type mounted on appropriately sized non exposed type DC fuse block or DC fuse holders. The fuse holders/block may be DIN rail adapted. Degree of Protection: At least IP20 according to IEC 60529		
9	The Fuse must be designed for at least nominal voltage of DC 1000V.		
10	The junction box must be provided with copper bus bars with suitable termination blocks.		
11	The junction box must be provided		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	for each PV String.		
12	The junction box must be provided with IEC 62208 hinged door with EPDM rubber gasket to prevent water entry.		
13	All cables must be connected properly and cable entering/outings into/from the box must be sealed properly (use of cable glands, copper cables lugs, cable ties) so that dust and insects, mice cannot enter the box.		
14	The PV Connectors to be used connecting to the MPPT input of the Inverter must be compatible with the original PV module connector. Only the connector type supplied by the module manufacturer or approved by the module manufacturer must be used and must comply with IEC 62852.		
15	The PV Connectors must be provided with degree of protection of at least IP68 according to IEC 60529.		
16	The cable glands must be provided with degree of protection of at least IP66 according to IEC 60529.		
17	<p>International Certification: IEC 61439-1:2011, IEC 61439-2:2011 or IEC 61439-1:2020, IEC 61439-2:2020, IEC 60947-3 for PV string fuse</p> <p>The test certificates must be provided. The Test Certificates from IEC accredited independent laboratory must be provided. All the components must be certified by Certification Body Testing Laboratory (CBTL) or National Certification Body (NCB) enlisted in</p>		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	the IECEE website. The enlisted CBTL or NCB must have Scope of Testing.		
18	The Bidder must submit the technical datasheet of Junction Box and PV String Fuse.		

1.8 Grid Connected AC Combiner Box

The Grid connected AC combiner box shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing combiner boxes: At least 5 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015, ISO 14001:2004 or ISO 14001:2015 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from combiner box manufacturer in their letter head signed and stamped		
5	The Grid Connected AC combiner box must be rated for exterior installation suitable for the site conditions, shall be UV and weather resistant. Degree of Protection: At least IP65 for outdoor and at least IP54 for indoor according to IEC 60529		
6	The combiner box must be provided with copper bus bars with suitable termination blocks.		
7	The combiner box must be provided with IEC 62208 hinged door with EPDM rubber gasket to prevent water entry		
8	The combiner box must have		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	AC 4P Isolator: At least 200A& 80A connecting the output of 110kVA & 40kVA Grid Connected Inverters respectively and Isolator must have IEC 60947-2.		
9	The combiner box must have AC 4P MCCB: At least 200A& 80A connecting the output of 110kVA & 40kVA Grid Connected Inverters respectively AC 4P MCCB: At least 800A connecting the input of AC Distribution Board and MCCB must have IEC 60947-2.		
10	The MCCB must be used to isolate each output of Inverter and the output of AC combiner box. Degree of Protection: At least IP20 according to IEC 60529		
11	The combiner box must have appropriately sized AC surge protection device for each inverter output. The SPD must have IEC 61643-11:2011 and grounded adequately.		
12	The SPD must be Type 1+2, 20kA nominal discharge and 40 kA maximum discharge current. Degree of Protection: At least IP20 according to IEC 60529		
13	The MCCB and SPD must be designed for at least nominal voltage of AC 400V.		
14	The following parameters shall be displayed in combiner box for all incoming and outgoing feeders <ul style="list-style-type: none"> • Indicators for each phase • Voltage, Current and Power (kVA, kW, KVAr) • Power Factor and Frequency • Energy 		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	<ul style="list-style-type: none"> Protection:AC overvoltage/undervoltage, over frequency/under frequency, AC phase reverse, overload, earth fault <p>All the instrumentation above must be digital with accuracy class of 0.5 and RS485 or Modbus communication port.</p>		
15	All cables must be connected properly and cable entering/outings into/from the box must be sealed properly (use of cable glands, copper cables lugs, cable ties) so that dust and insects, mice cannot enter the box.		
16	The cable glands must be provided with degree of protection of at least IP66 according to IEC 60529.		
17	<p>International Certifications: IEC 60947-2 for AC MCCB, IEC 60947-3 for AC Isolator, IEC 61643-11:2011 for AC SPD IEC 61439-1:2011, IEC 61439-2:2011 or IEC 61439-1:2020, IEC 61439-2:2020for AC Combiner Box</p> <p>The test certificates must be provided. The Test Certificates from IEC accredited independent laboratory must be provided. All the components must be certified by Certification Body Testing Laboratory (CBTL) or National Certification Body (NCB) enlisted in the IECEE website. The enlisted CBTL or NCB must have Scope of Testing.</p>		
18	The Bidder must submit the technical datasheet of Grid connected AC combiner box, AC Isolator, AC MCCB, AC SPD and		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	3-Phase Digital Meter.		

1.9 AC Distribution Board

The AC Distribution Board shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing distribution board: At least 5 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015, ISO 14001:2004 or ISO 14001:2015 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from distribution board manufacturer in their letter head signed and stamped		
5	The AC Distribution Board must be rated for installation suitable inside the control room. Degree of Protection: At least IP65 for outdoor and at least IP54 for indoor according to IEC 60529		
6	The distribution board must be provided with copper bus bars with suitable termination blocks.		
7	The distribution board must be provided with hinged door with EPDM rubber gasket.		
8	The distribution board must have AC 4P ACB: At least 800A connecting the output of Grid Connected AC Combiner Box AC 4P ACB: At least 1000A connecting the system output to grid and ACB must have IEC 60947-2.		
9	The distribution board must have 4 number of AC 4P ACB or		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	appropriate switchgears, each of at least 250A for supplying power to four feeders of different priority level.		
10	The ACB must have remote electronic tripping and making function with protection system such as AC overvoltage/undervoltage, over frequency/under frequency, overload, earth fault		
11	Degree of Protection for ACB: At least IP20 according to IEC 60529		
12	The distribution board must have appropriately sized AC surge protection device. The SPD must have IEC 61643-11:2011 and grounded adequately.		
12	The SPD must be Type 1+2, 20kA nominal discharge and 40 kA maximum discharge current. Degree of Protection: At least IP20 according to IEC 60529		
13	The ACB and SPD must be designed for at least nominal voltage of AC 400V.		
14	<p>The following parameters shall be displayed in combiner box for all incoming and outgoing feeders</p> <ul style="list-style-type: none"> • Indicators for each phase • Voltage, Current and Power (kVA, kW, KVAr) • Power Factor and Frequency • Energy • Protection: AC overvoltage/undervoltage, over frequency/under frequency, AC phase reverse, overload, earth fault <p>All the instrumentation above must be digital with accuracy class of 0.5 and RS485 or Modbus communication port.</p>		
15	All cables must be connected		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	properly and cable entering/outings into/from the box must be sealed properly (use of cable glands, copper cables lugs, cable ties) so that dust and insects, mice cannot enter the box		
16	The cable glands must be provided with degree of protection of at least IP66 according to IEC 60529.		
17	International Certifications: IEC 60947-2 for AC ACB, IEC 61643-11:2011 for AC SPD IEC 61643-11:2011 for AC SPD IEC 61439-1:2011, IEC 61439-2:2011 or IEC 61439-1:2020, IEC 61439-2:2020 for AC Distribution Board The test certificates must be provided. The Test Certificates from IEC accredited independent laboratory must be provided. All the components must be certified by Certification Body Testing Laboratory (CBTL) or National Certification Body (NCB) enlisted in the IECEE website. The enlisted CBTL or NCB must have Scope of Testing.		

1.10 Cables and Accessories

The cables and accessories shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand		
2	Manufacturer's experience in manufacturing cables: At least 5 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015,		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	ISO 14001:2004 or ISO 14001:2015 Certificates		
4	PV String Cable:		
	The cables sizes shall be selected considering the power loss, current carrying capacity, voltage drop, and the period of short circuit to meet the anticipated currents.		
	The PV string cable must be copper multi-strand, PVC insulated and UV resistant. The string cable must be PV1-F type and must comply with IEC 62930 or EN 50618, IEC 60228, IEC 60332-1 or EN 50575, IEC 60754-1 or EN 50525		
	The PV string cable must be specific for PV application with double insulation layers.		
	The PV string cable must be 1100 V (minimum) grade, single/multi core.		
5	Cabling for DC Cables:		
	The cables must be laid underground in trenches and through suitable size of flexible HDPE Pipe with minimum PN6 Class wherever required and necessary according to relevant IEC standards and best installation practice.		
	The underground installation cables must be laid at depth not less than 0.8m below ground level. Prior to cable laying, the bottom of the trench shall be well compacted and bedded with fine sand of at least 75mm. Subsequently the second layer of fine sand of at least 75mm shall be spread over the cable and		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	then covered by brick and compacted soil.		
	AC Cable from Grid Connected Inverter to Grid Connected AC Combiner Box & Grid Connected AC Combiner Box to AC Distribution Board to Transformer		
	The cables sizes shall be selected considering the power loss, current carrying capacity, voltage drop, maximum short circuit duty and the period of short circuit to meet the anticipated currents.		
	The cable from Grid connected inverter to Grid connected AC combiner box, must be 1100V (minimum) grade, multi core, aluminium XLPE insulated with extruded PVC inner sheath.		
6	The conductor shall be high conductivity annealed copper and shall be smooth, uniform in quality and free from scale and any defects.		
	The maximum conductor temperature for PVC insulation shall not exceed 70°C during continuous operation at full rated current. The temperature after short circuit for 1 second shall not exceed 160°C with initial conductor temperature of 70°C.		
	The cable from Grid connected AC combiner box to AC distribution board to transformer must be 1100V (minimum) grade, multi core, aluminium XLPE insulated with extruded PVC inner sheath.		
	The maximum conductor temperature for XLPE insulation shall not exceed 90°C during continuous operation at full rated		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	current. The temperature after short circuit for 1 second shall not exceed 250°C with initial conductor temperature of 90°C.		
	The cables shall be armoured with mild steel wires or strips as required for underground and in trench installations.		
	The cables must comply with IEC 60502-1 and IEC 60228.		
7	Cabling for AC Cables:		
	The cables must be laid underground in trenches and through pipe sleeves wherever required and necessary according to relevant IEC standards and best installation practice.		
	The underground installation cables must be laid at depth not less than 0.8m below ground level. Prior to cable laying, the bottom of the trench shall be well compacted and bedded with fine sand of at least 75mm. Subsequently the second layer of fine sand of at least 75mm shall be spread over the cable and then covered by brick and compacted soil.		
	In case of road crossing, all cables must be installed in conduit, suitable flexible HDPE Pipe with minimum PN6 Class and 1:2:4 RCC concrete.		
	All cable terminations must be mechanically and electrically sound and shall comply with relevant standards.		
	All the excavation and back fill required for the installation of the cables must be carried out. The contractor must restore all surfaces, roadways, side walls,		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	curbs, walls, landscaping or other works cut for excavation to their original condition. Underground cables and cable joints shall be marked on the surface by markers generally manufactured and tested to the requirements of relevant standards.		
8	The fiber/other communication cables must be laid separately from DC and AC cables according to relevant IEC standards and best installation practice.		
9	<p>The allowable voltage drop from</p> <ul style="list-style-type: none"> • PV Module or PV Array to Grid connected inverter must not exceed 3% • Bidirectional storage inverter to LiFePO4 battery system must not exceed 1% • Grid connected inverter/Bidirectional storage inverter to AC distribution board must not exceed 5% • AC distribution board to transformer must not exceed 3% 		
10	<p>The cross section of DC and AC cable must be as follows.</p> <p>PV String Cable: At least 4mm²</p> <p>AC Cable from Grid Connected Inverter to Grid Connected AC Combiner Box (Ground Mounted Solar): At least 3.5C x 240mm² and 3.5C x 120mm² for 110kVA and 40kVA inverters respectively</p> <p>AC Cable from Grid Connected Inverter to Grid Connected AC Combiner Box (Roof Mounted Solar): At least 3.5C x 120mm²</p>		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	<p>AC Cable from Bidirectional Storage Inverter: 2 numbers with each of at least 3.5C x 240mm²</p> <p>AC Cable from Grid Connected AC Combiner Box to AC Distribution Board to Transformer: 4 numbers with each of at least 3.5C x 240mm²</p>		
11	<p>International Certification: IEC 62930 or EN 50618 for PV String Cable</p> <p>The test certificate must be provided. The Test Certificate from IEC accredited independent laboratory must be provided. The cables must be certified by Certification Body Testing Laboratory (CBTL) or National Certification Body (NCB) enlisted in the IECEE website. The enlisted CBTL or NCB must have Scope of Testing.</p>		
12	The Bidder must submit the technical datasheet of DC and AC Cables, HDPE Pipe.		

1.11 Earthing System

The earthing system shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	<p>Manufacturer's experience in manufacturing Earthing System: At least 10 years</p>		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015,		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	ISO 14001:2004 or ISO 14001:2015 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from earthing system manufacturer in their letter head signed and stamped		
5	All the metallic parts of the PV modules frame must be interconnected by insulated multi-stranded copper earth wire of minimum cross section of 16mm ² and tinned copper compression lug		
6	The PV array connected to each Grid connected inverter, must have separate equipotential bonding system.		
7	The PV modules frame, array structure, SPDs, junction boxes, must be connected to equipotential bonding system by insulated multi-stranded copper earth wire of minimum cross section of 16mm ² .		
8	The equipotential bonding system must be connected to the earth termination system by insulated multi-stranded copper earth wire of minimum cross section of 25mm ² . The maximum allowable earth resistance is 5 Ohms.		
9	Each Grid connected inverter must be connected to separate earth termination system by insulated multi-stranded copper earth wire of minimum cross section of 25mm ² . The maximum allowable earth resistance is 5 Ohms.		
10	The Grid connected AC combiner box, Bidirectional storage inverter, LiFePO4 battery system, AC distribution board, operation control panel board and other associated		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	<p>system must be connected to separate earth termination system by insulated multi-stranded copper earth wire of minimum cross section of 25mm².</p> <p>The maximum allowable earth resistance is 5 Ohms.</p>		
11	<p>The underground earth cable must be of bare copper earth conductor with minimum cross section of 25mm².</p>		
12	<p>The cables must be laid underground in trenches and through suitable size of flexible HDPE Pipe with minimum PN6 Class wherever required and necessary according to relevant IEC standards and best installation practice.</p>		
13	<p>The underground installation cables must be laid at depth not less than 0.8m below ground level. Prior to cable laying, the bottom of the trench shall be well compacted and bedded with fine sand of at least 75mm. Subsequently the second layer of fine sand of at least 75mm shall be spread over the cable and then covered by brick and compacted soil.</p>		
14	<p>Earth Termination System:</p>		
	<p>The earth electrode must be of Pipe-in-Pipe technology and the inner space must be filled with highly conductive and corrosion resistant compound.</p>		
	<p>The length of earth electrode must be at least 2.5 meters.</p>		
	<p>The earth electrode must be made of copper.</p>		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	The earth electrode must have outer diameter of at least 50mm and inner diameter of at least 25mm.		
	A hole of minimum 100mm diameter or as per manufacturer's recommendation must be dug for the length of electrode.		
	The earth wire must be connected to the individual earth electrode with the use of tinned copper compression lug.		
	The certified low resistivity earth enhancement material must be used to fill the hole with the electrode.		
	The earth enhancement material must be at least 50kg for each earthing electrode.		
	The maximum allowable earth resistance is 5 Ohms.		
	The earth inspection pit of each earthing electrode must be made of solid concrete with the minimum dimension of 300mm x 300mm x300mm. The cover must be marked with the word "Earth".		
	The earth termination system must comply with IEC 62305.		
15	<p>Earthing 1: PV modules frame, array structure, junction boxes, Grid connected AC combiner box (Ground mounted system)</p> <p>Earthing 2,3,4&5: Grid connected inverter (Ground Mounted)</p> <p>Earthing 6: PV modules frame, array structure, junction boxes, Grid connected inverter (GPB 1)</p> <p>Earthing 7: PV modules frame, array structure, junction boxes, Grid connected inverter (GPB 2)</p> <p>Earthing 8: Grid connected AC combiner box, Bidirectional storage</p>		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	inverter, LiFePO4 battery system, AC distribution board, Operation control panel board and other associated system (Control Room)		
16	Earthing 1: At least 2nos of earth electrode for ground mounted system Earthing 2,3,4&5: At least 1 no of earth electrode for each Grid connected inverter Earthing 6&7: At least 1 no of earth electrode for each roof mounted system Earthing 8: At least 1 no of earth electrode		
17	Separation between earthing system: At least height of earthing electrode		
18	The Bidder must submit the technical datasheet of Earthing System and HDPE Pipe.		

1.12 Lightning Protection System

The lightning protection system shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model:		
2	Manufacturer's experience in manufacturing Lightning Protection System: At least 10 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015, ISO 14001:2004 or ISO 14001:2015 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from lightning protection system manufacturer in		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	their letter head signed and stamped		
5	The lightning protection system must be designed according to the IEC 62305.		
6	Air Termination System		
	The air terminal rod must be at a minimum height of 2 meter above the highest point of the PV array to be protected.		
	The length of air terminal rod must be at least 1 meter.		
	The air terminal rod must be made of solid copper.		
	The diameter of air terminal rod must be at least 15mm.		
	The air terminal rod must have at least 4 spikes at minimum angle of 25° with the horizontal surface and arrester base.		
	The air terminal rod must be rated to withstand a discharge current capacity of 200kA.		
	The air terminal rod must be installed on a separate concrete base as a free standing air terminal mast. The mast must be made of solid GI pipe of at least 75mm diameter and 3mm thickness.		
	At least one air terminal rod must be used for each LPS.		
	The separation distance between the air terminal rod and the closest metallic part of PV array must be as per IEC 62305.		
The separation distance between the air terminal rods must be at least the height of earthing electrode.			
Each terminal rod must have separate earth termination system.			

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	The air termination system must comply with IEC 62305.		
7	Down Conductor:		
	The size of down conductor must be at least 25mm width x 6mm thickness copper strip, connecting the lower extremity of air terminal rod to the earthing electrode of earth termination system		
	The cable must be buried at minimum 0.5 height at ground level.		
	The copper strip must be connected to the earth electrode with the use of copper compression lug.		
	The earth termination system must comply with IEC 62305.		
8	Lightning Counter		
	The lightning counter must be rated to withstand a discharge current capacity of 200kA.		
	Count Number: At least 4 digits		
	The mounting arrangement of counter must be compatible with the size of down conductor.		
	Working mode: Without battery		
	Degree of protection: At least IP67 according to IEC 60529.		
9	Earth Termination System:		
	The earth electrode must be of Pipe-in-Pipe technology and the inner space must be filled with highly conductive and corrosion resistant compound.		
	The length of earth electrode must be at least 2.5 meters.		
	The earth electrode must be made of copper.		
	The earth electrode must have outer diameter of at least 50mm and inner diameter of at least 25mm.		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	A hole of minimum 100mm diameter or as per manufacturer's recommendation must be dug for the length of electrode.		
	The certified low resistivity earth enhancement material must be used to fill the hole with the electrode.		
	The earth enhancement material must be at least 50kg for each earthing electrode.		
	The maximum allowable earth resistance is 5 Ohms.		
	The earth inspection pit of each earthing electrode must be made of solid concrete with the minimum dimension of 300mm x 300mm x300mm. The cover must be marked with the word "Earth".		
	The test link must be provided and connected to the down conductor at minimum 1 meter height from the ground level. The test link must be made up of phosphorous bronze.		
	The earth termination system must comply with IEC 62305.		
10	LPS 1,2,3&4: Ground mounted system LPS 5: Control Room LPS 6: GPB 1 LPS 7: GPB 2		
11	The number of earth electrodes must be at least 3 for each LPS.		
12	The Bidder must submit the technical datasheet of Air Termination System, Down Conductor, Lightning Counter and Earth Termination System.		

1.13 Monitoring System and Data Acquisition System

The Monitoring System and data acquisition system shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing monitoring system: At least 5 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015, ISO 14001:2004 or ISO 14001:2015 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from monitoring system manufacturer in their letter head signed and stamped		
5	RS485 or Modbus communication port for receiving data from PV strings, grid connected inverters, bidirectional storage inverter, Master BMU with EMS, AC distribution boardetc		
6	RS232 or LAN port or Modbus for local monitoring or network monitoring		
7	Internet connection via GSM modem, CDMA, GPRS, 3G, 4G, ADSL, VSAT		
8	The system must have remote monitoring software with the latest software/hardware configuration and service connectivity for online/real time data monitoring. The following parameters shall be accessible via the operating interface display in real time. <ul style="list-style-type: none"> • Array DC Voltage, Current & Power • Battery voltage, current, temperature • Inverter AC Output Voltage and Current (all 3 phases and lines) • AC Power (Active and Apparent) 		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	<ul style="list-style-type: none"> • Power Factor • Frequency • AC Energy (all 3 phases and cumulative) 		
10	The system must have plant control and monitoring station with necessary software/app compatible with the overall system.		
11	The plant monitoring station must be provided as follows. Processor: At least Intel Core 10 th Generation i7 Memory: At least 16GB Hard Drive: At least 1TB SSD Wireless LAN: Dual band LED Monitor: At least 32" FHD		
12	The communication medium from PV Plant location to Control Room must be of Optical Fiber Cable with fiber switch, splice box and all necessary accessories for complete system operation. The fiber cable must be of at least 12 Core.		
13	The fiber/other communication cables must be laid underground in trenches and through pipe sleeves and suitable size of flexible HDPE Pipe with minimum PN6 Class according to relevant IEC standards and best installation practice.		
14	The bidder must submit the technical datasheet of Monitoring System, Data Acquisition System, Fiber Optics System and HDPE Pipe.		

1.14 Operation Control Panel Board

The 500 kWp grid-connected solar PV with 400 kWh energy storage system (further referred to as a solar plant) is designed to provide uninterrupted reliable power supply to the university when the grid fails and also export energy to the grid when there is surplus energy. The solar

plant is constituent part of the planned microgrid comprising the solar plant and a 600 kW pump storage plant. At the initial stage the university power system will be fed by the solar plant and grid only. The solar plant, in principle, is also a microgrid as the university power system is designed to operate with or without a connection to the grid. Therefore, the proposed power plant should include controls required for smooth operation of the power system not withstanding fluctuations in the power demand and supply within the university and in various fault scenarios, including those related to the grid. Separate operation control panel board must be provided with all necessary instrumentation, control devices, accessories, compatible with system operation & control requirements. The control and protection requirements to be provided is described below.

Grid available

When the grid is available, energy export to the grid should be allowed only after batteries are fully charged. In the case of energy import, charging the batteries should remain the highest priority. This implies that when the power demand is higher than the power available from the grid and solar PVs the batteries should not be allowed to discharge. To fulfill this requirement the controller should be designed to switch off the lowest priority load (supply to the university system is provided through four feeders of different priority) till the batteries are fully charged. In the very unlikely event of the total of the first, second and third priority loads being higher than the total power available from the grid and solar PVs, the controller should also switch off the third priority feeder till the batteries are fully charged. In addition, batteries should not be allowed to supply energy when the grid is available.

Grid not available

When the grid is not available charging batteries should be the highest priority load. When the university load is higher than that of the PV power generation, the supply to other loads should depend upon the battery voltage (V), which is correlated with stored retrieval energy. Assume the following four battery voltage ranges:

- $(V_{\min} + (V_{\text{nom}} - V_{\min})/4) \Rightarrow V > V_{\min}$ **(first priority feeder)**
- $(V_{\min} + (V_{\text{nom}} - V_{\min})/4) > V \geq (V_{\min} + (V_{\text{nom}} - V_{\min})/2)$ **(first and second priority feeders)**
- $(V_{\min} + (V_{\text{nom}} - V_{\min})/2) > V \geq (V_{\min} + (V_{\text{nom}} - V_{\min}) * (3/4))$ **(for first, second and third priority feeders)**
- $> (V_{\min} + (V_{\text{nom}} - V_{\min}) * (3/4))$ **(for first, second and third priority feeders; selective loads of fourth priority feeder)**

where, V_{\min} - minimum permissible discharge voltage and V_{nom} – nominal voltage

The feeders receiving supply from the battery corresponding to various battery voltage ranges is indicated in bold alongside the voltage ranges above.

When PV power generation is higher than the university load, energy export will take place once the university power requirement is fully met that is all four feeders will be switched on.

Fault Scenarios

Grid failure

The university power system should be designed to respond to the grid failure, which is frequent at Chitlang, with minimal impact in terms of the reliability of the power supply. The following sequence of operation needs to be ensured for this purpose:

1. Switching off grid-tie inverters and bidirectional inverters resulting in supply failure in the university
2. Switching on bidirectional inverters at the earliest and resumption of supply to the university
3. Switching on grid-tie inverters if there is solar generation

Grid supply resumption

The following sequence of operation needs to be ensured for ensuring university supply with minimum interruption:

1. Wait for a predefined period of time after the supply resumption to ensure that there is a reliable supply
2. Once supply is found to be reliable, switching off the bidirectional inverter and grid tie inverters (if on)
3. Switching on bidirectional inverter within the shortest period
4. Switching on grid tie invertors within the shortest period

A controller designed to meet above operational requirements and protect the system in case of various faults should be supplied. The controller should be programable to respond to changes in the system parameters such as the share of power of priority feeders, wait time when grid supply resumes etc.

The Operation Control Panel Board shall comply with following technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015, ISO 14001:2004 or ISO 14001:2015 Certificates		
3	Warranty: Manufacturing warranty of at least 5 years from operation control panel board manufacturer in their letter head signed and stamped		
4	PLC Module must have High Speed Universal CPU module with Processing Speed < 3.9ns Storage capacity >520 kB		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
5	PLC module must have sufficient IO points for the functional requirement described in 1.21 Operational requirement for control panel board.		
6	PLC module must be expandable up to 700 points.		
7	PLC module shall have overvoltage, over current, inrush current and momentary power failure protection.		
8	PLC module must have full communication support with ethernet TCP/IP.		
9	The control panel board must have local control, remote manual control and remote control through HMI.		
10	The required software for PLC, HMI must be provided with full single license.		
11	International Certifications: IEC61000, IEC55011, IEC 61131, IEC60664, IEC61010		

1.15 Containerized System (Control Room)

The containerized system shall comply with following technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing containerized system: At least 5 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015, ISO 14001:2004 or ISO 14001:2015 Certificates		
4	Warranty: Manufacturing warranty of		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	at least 5 years from containerized system manufacturer in their letter head signed and stamped		
5	The Containerized System must be rated for exterior installation suitable for the site conditions, shall be UV and weather resistant. Degree of Protection: At least IP65 according to IEC 60529		
6	External Dimension: Minimum 6.09m (L) x 2.43m (W) x 2.59m (H) Internal Dimension: Minimum 5.89m (L) x 2.35m (W) x 2.38m (H)		
7	The container must be provided with double door design on both ends		
8	The containerized system must include the LiFePO4 Battery System, Bidirectional Storage Inverter, STS Cabinet, Grid Connected AC Combiner Box, AC Distribution Board, Monitoring System & Data Acquisition System, Operation Control Panel Board, other associated system and all accessories.		
9	There must be separate containerized system for LiFePO4 Battery System. No. of Containerized System: At least 2 nos.		
10	The container must have a separate compartment for LV switchgears and separate for monitoring system & data acquisition system.		
11	The container must be made of corrugated steel and must comply as per Standard Shipping Container.		
12	The floor of the container must bear the floor loading of the equipment.		
13	The container must have ventilation louvres to maintain the inside		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	temperature.		
14	The container must provide mounting board for AC Distribution Board, Monitoring System, Control System and all other accessories.		
15	The container must be protected by 2-pack paint system i.e. single coat of primer & top 2 coat (Standard color: RAL 9010)		
16	The Containerized System must comply with ISO/TC 104.		
17	The Bidder must submit the technical datasheet of Containerized System.		

1.16 Transformer

The transformer shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing transformer: At least 10 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015 Certificate		
4	Warranty: Manufacturing warranty of at least 2 years from transformer manufacturer in their letter head signed and stamped		
5	Transformer type: Three phase and outdoor oil filled		
6	Rated Capacity: At least 630kVA		
7	Rated Voltage: Primary Voltage (LV): 400V Secondary Voltage (HV): 11000V		
8	Frequency: 50 Hz		
9	Type of Cooling: ONAN		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
10	Impedance at 75°C: 5%		
11	Tolerance on Impedance: ±10%		
12	Duty: Continuous		
13	Max. Temp. Rise over an ambient of 50°C Oil (Temperature rise measurement by thermometer): 50°C Winding Temperature rise measurement by resistance method): 55°C		
14	Windings: System Apparent Short circuit level (kA): as per IEC 60076-1 Winding Connection: LV: Star HV: Delta		
15	Vector Group: Dyn11		
16	Insulation: Uniform		
17	Insulation Level: LV: At least 2 kVrms HV: At least 28 kVrms		
18	Basic Impulse Level: HV: At least 75kVp		
19	Highest voltage (kV) for each winding: 12kV		
20	Method of earthing: Solidly earthed		
21	LV & Neutral Bushing: Rated Voltage: At least 1.1kV Rated current: At least 1000A Wet & Dry Power frequency Withstand Voltage: At least 2kVrms Min. Total Creepage Distance: 300mm Mounting: Tank / Transformer Body		
22	HV Bushing: Rated Voltage: At least 12kV Rated current: At least 100A Basic Impulse Level: At least 75kVp Wet & Dry Power frequency Withstand Voltage: At least		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	28kVrms Mounting: Tank / Transformer Body		
23	Terminal Details: LV & Neutral: Cable Box HV: Suitable for 11kV Cable or Over Head Conductor		
24	Min. Clearance in Air: Ph-Ph (LV/HV): 25/280 Ph-Earth (HV/LV): 25/140		
25	Factory Test:		
	All standard routine tests in accordance with latest issue of IEC: 60076 shall be carried out on each transformer.		
	In addition to all type and routine tests, transformer shall also conform to following additional type tests as per IEC: 60076. a) Measurement of zero sequence impedance b) Short circuit test c) Measurement of capacitance and tan delta of transformer winding. d) Test on oil samples as per IS 60296		
	All auxiliary equipment shall be tested as per the relevant IS Test Certificates shall be submitted for bought out items.		
	High voltage withstand test shall be performed on auxiliary equipment and wiring after complete assembly.		
	Tank Tests: i) Routine Tests: As per IEC: 60076 Part-1		
26	The transformer must be supplied along with LA, DO Fuse, 11kV cable, cable termination kits and all accessories Cross section of 11kV aluminium cable: At least 3Cx25mm ²		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
27	The transformer must be ground mounted with mounting foundation and fencing.		
28	On Load Tap Changer (OLTC)		
	The OLTC must be in HV side with 17th position of 2.5% steps.		
	Tap Range: -30%+10%		
	The OLTC must be supplied with Remote Tap Changer Control (RTCC) Panel and Automatic Voltage Regulator (AVR) with complete necessary control/protection system, all necessary cables & accessories.		
29	The HT Metering System (TOD Meter, CT, PT with all accessories) must be supplied as per NEA requirements.		
30	The Bidder must submit the technical datasheet of Transformer System, CT, PT, 11kV Cable.		

1.17 Earthing System for Transformer

The earthing system shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing Earthing System: At least 10 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015, ISO 14001:2004 or ISO 14001:2015 Certificates		
4	Earthing Conductor:		
	The Body, Neutral of Transformer and LA must be connected to separate earth termination system		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	by at least 25mm width x 6mm thickness copper strip.		
	The cable must be buried at minimum 0.5 height at ground level.		
	The copper strip must be connected to the earth electrode with the use of copper compression lug.		
5	Earth Termination System:		
	The earth electrode must be of Pipe-in-Pipe technology and the inner space must be filled with highly conductive and corrosion resistant compound.		
	The length of earth electrode must be at least 2.5 meters.		
	The earth electrode must be made of copper.		
	The earth electrode must have outer diameter of at least 50mm and inner diameter of at least 25mm.		
	A hole of minimum 100mm diameter or as per manufacturer's recommendation must be dug for the length of electrode.		
	The earth wire must be connected to the earth electrode with the use of tinned copper compression lug.		
	The certified low resistivity earth enhancement material must be used to fill the hole with the electrode.		
	The earth enhancement material must be at least 50kg for each earthing electrode.		
	The maximum allowable earth resistance is 5 Ohms.		
The earth inspection pit of each earthing electrode must be made of solid concrete with the minimum			

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	dimension of 300mm x 300mm x300mm. The cover must be marked with the word "Earth".		
	The earth termination system must comply with IEC 62305.		
6	Earthing 9: Body Earthing 10: Neutral Earthing 11: LA		
7	Earthing 9,10&11: At least 1 no of earth electrode for each earthing		
8	Separation between earthing system: At least height of earthing electrode		
9	The Bidder must submit the technical datasheet of Earthing System.		

1.18 Fire Fighting System

The fire fighting system shall comply with following technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing fire fighting system: At least 5 years		
3	The manufacturer shall have: ISO 9001:2008 or ISO 9001:2015, ISO 14001:2004 or ISO 14001:2015 Certificates		
4	The Fire Extinguishers with wall mounting bracket must be set-up in the PV array location and in the control room.		
	Extinguisher: Portable CO ₂ Fire Extinguisher		
	Type: Stored pressure operated		
	Capacity: At least 5 kg		
	Propellant Gas: CO ₂		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	Throw Length: At least 4 meters		
	Suitability for electrical equipment: up to 1000V		
	Color: Red (RAL 3000)		
	Gross Weight: At least 14kg		
	Standard: EN3		
	PV array location: At least 2 numbers Control Room: At least 2 numbers GPB 1: At least 1 number GPB 2: At least 1 number		
5	The sand buckets with stand must be provided. Ground mounted system: At least 2 nos Control Room: At least 2 nos GPB 1: At least 1 no GPB 2: At least 1 no		
6	The installation of Fire Extinguishers should confirm to TAC regulations.		

1.19 Fencing

The fencing shall comply with following technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	The chain link mesh size must be at least 2" x 2" of 10 guage.		
2	The metal post must be at least 1.5 m high from ground level with MS angle iron of minimum size 50mm*50mm*5mm, with the maximum spacing of 2 m center to center.		
3	The iron angle post must be at least 0.5m below ground level in M15 concrete (1:2:4) with 0.2m*0.2m cover.		
4	Fencing must include a MS iron		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	lockable gate of 1.5m width and 2.5m height.		
5	All angle iron must be MS hot dip galvanized. The minimum thickness of galvanization must be at least 90 microns throughout the surface.		
6	There must be a free space of at least 3 m between the front of PV array and the fencing.		
7	There must be a free space of at least 3 m between the side of PV array and the fencing.		
8	There must be a free space of at least 2 m on the back of PV array and the fencing.		

1.20 Design and Drawings

The bidder shall prepare and include all the required design and drawings in the technical proposal document.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	2D Layout of Solar PV System		
2	Single Line Diagram and Design of GridConnected Solar PV with ESS, Protection System and Cable Size (DC and AC both)		
3	Design and drawing of LiFePO4 battery system, including the Battery Management Unit (BMU), Master BMU integrated with EMS		
4	Design and drawing of Support Structure with Foundation (Ground Mounted and Roof Mounted)		
5	Design and drawing of Wind +Snow Load Analysis		
6	Shading Analysis		
7	Design and drawing of Remote Monitoring System and Data		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	Acquisition System		
8	Design and drawing of Junction Box		
9	Design and drawing of Grid Connected AC Combiner Box		
10	Design and drawing of AC Distribution Board		
11	Design and drawing of Operation Control Panel Board		
12	Design and drawing of Containerized System (Control Room)		
13	Design and drawing of Earthing System		
14	Design and drawing of Lightning Protection System		
15	Design and Drawing of Fencing with Foundation		
16	Design and drawing of Transformer System		
17	Design and drawing of Grid Interconnection System		

1.21 System Operation and Maintenance

The Contractor shall provide the cleaning schedule and shall be fully responsible for any kind of operation and maintenance jobs, including the cleaning of PV modules. The contractor will depute one full time operator (Technical), equipment/tools, for operation of Grid Connected Solar PV with Energy Storage System for five (5) years from the date of commissioning. A minimum of half yearly site visit must be done by the contractor's engineer to make sure the preventative maintenance and assure that all the system components are fully functional. The site visit report shall be submitted to MBUST within a week of each visit.

1.22 Project Information Board

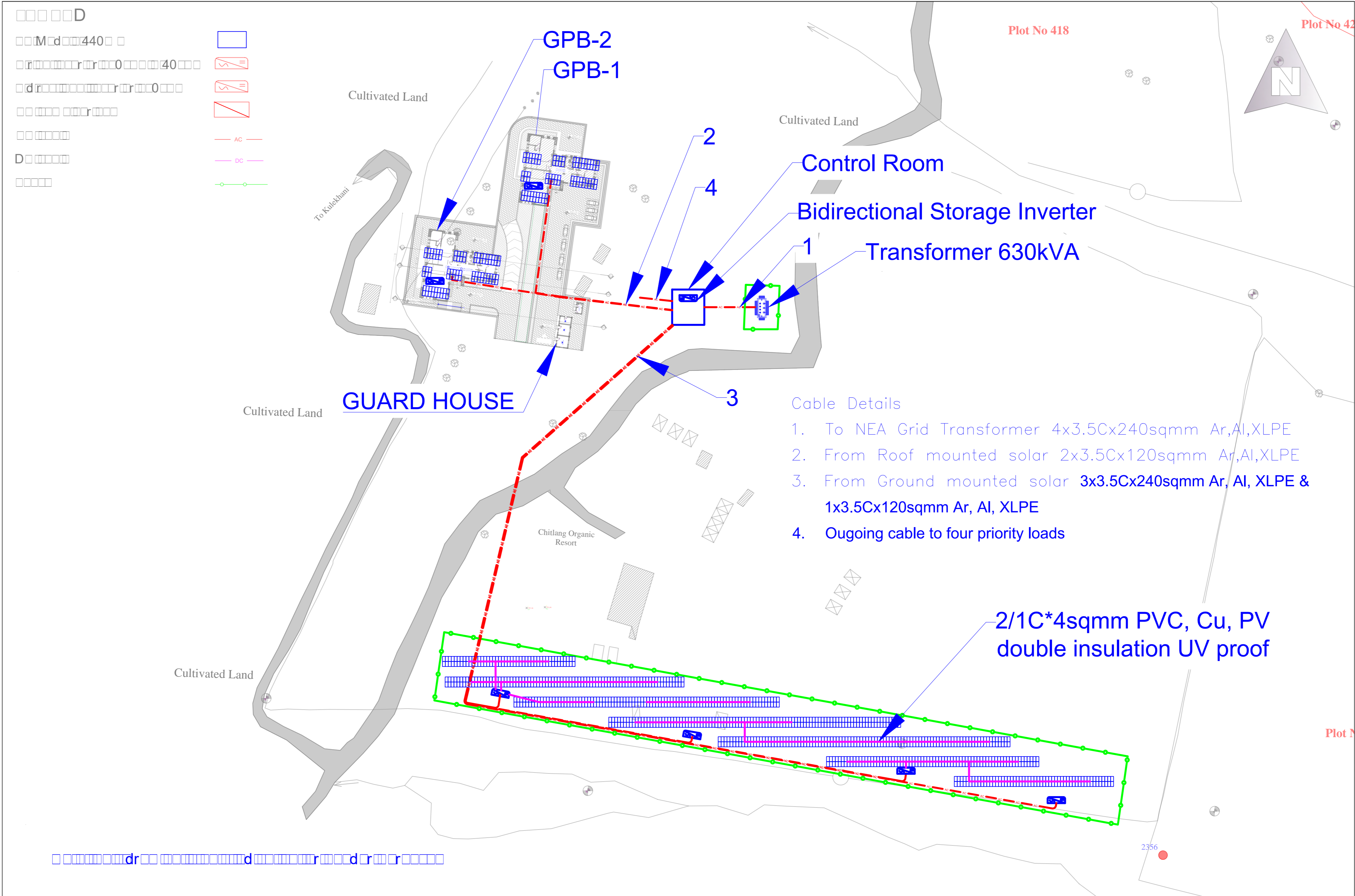
The project information board must be installed at the installation site. The minimum information to be shown are:

- Name of the Project
- Location of the Project
- Date of Commissioning
- Name of the Employer
- Name of the Contractor
- Name of the Consultant

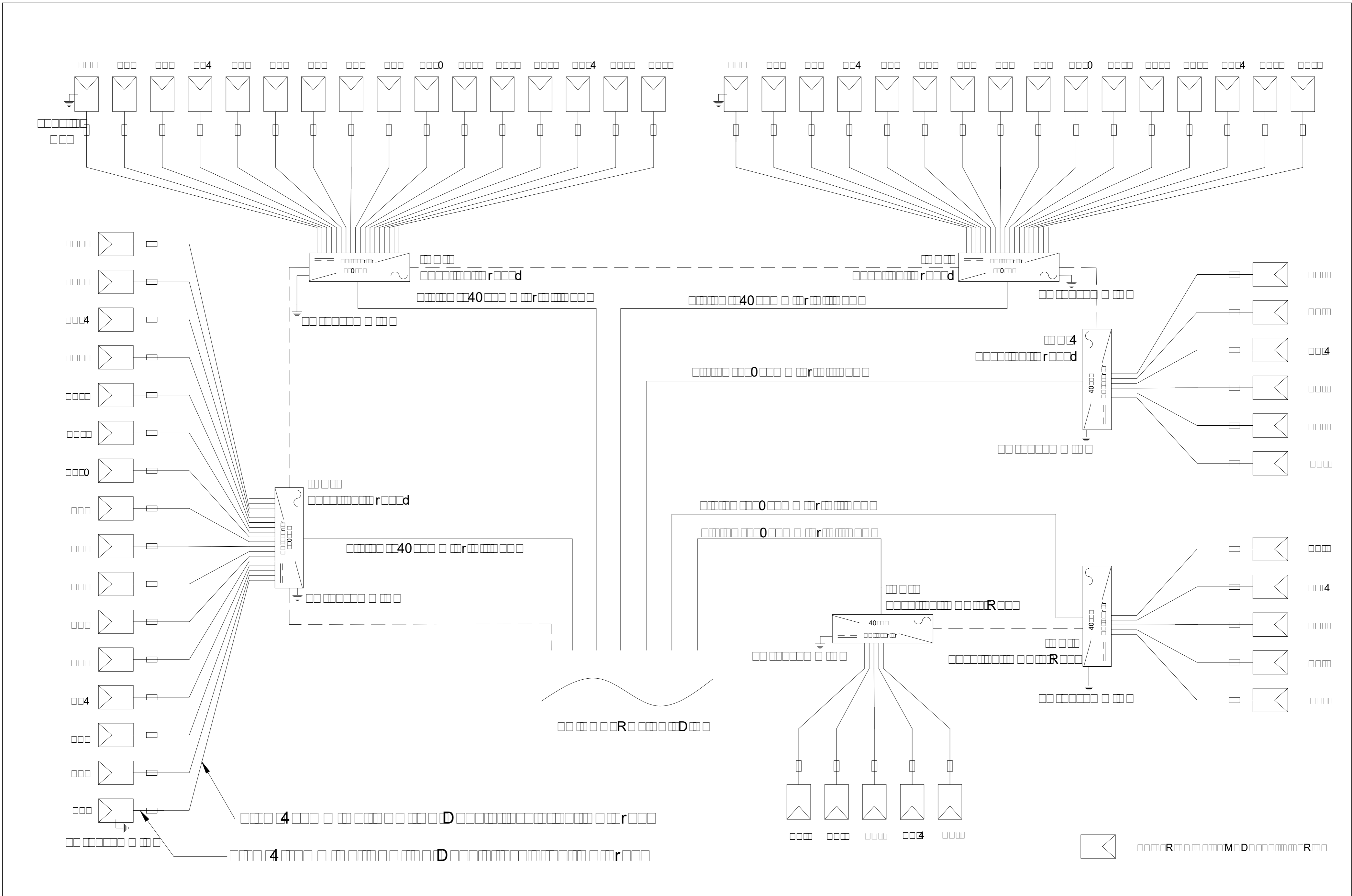
1.23 Spare Parts

The bidder must provide the following minimum spare parts before the testing and commissioning.

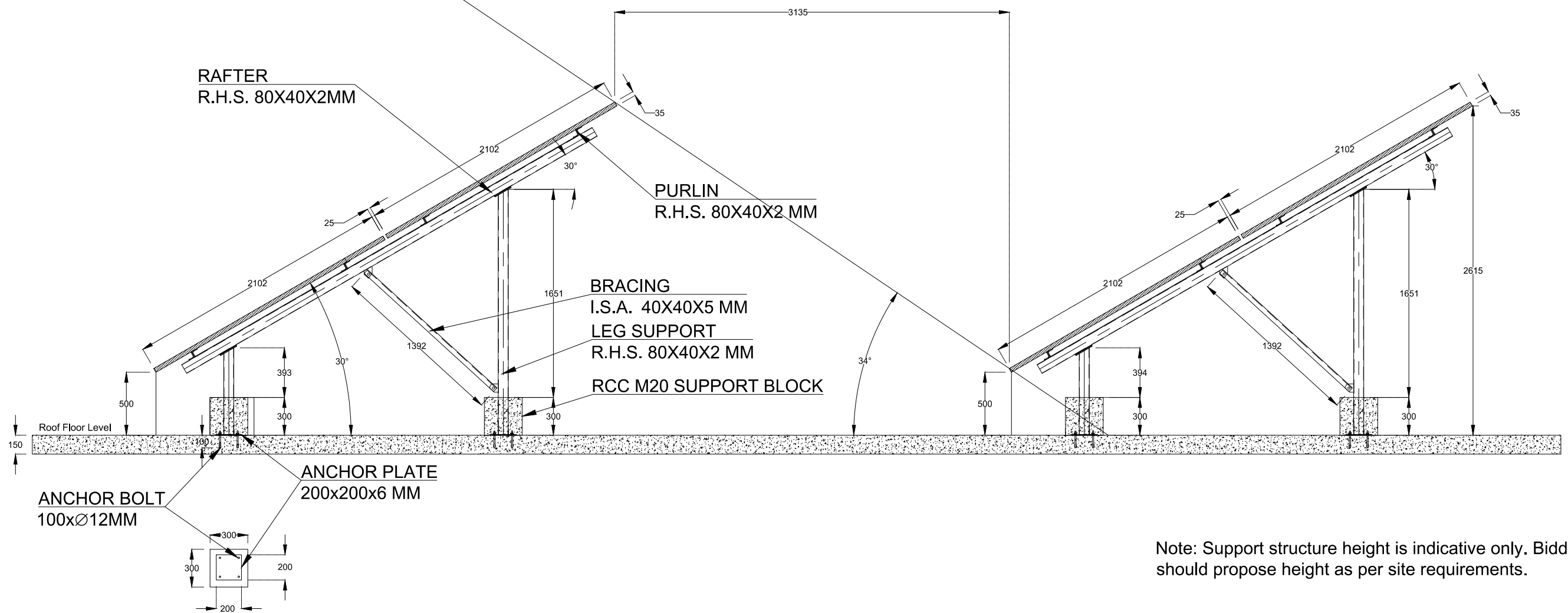
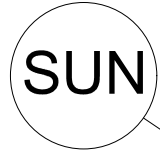
S.N.	Items	Quantity
1	PV Module (0.5% of Total)	At least 6 Nos
2	PV Connector (5% of Total)	At least 10 Pairs
3	String Fuse	At least 10 Nos
4	Stainless Steel (SS 304) nuts, bolts, washers (1% of Total)	1 Set
5	Galvanized nuts, bolts, washers (0.5% of Total)	1 Set
6	AC SPD	At least 4 Nos
7	Cable Lugs of various sizes (5% of Total)	1 Set
8	Cable Glands of various sizes (5% of Total)	1 Set
9	Insulating Gloves	5 Pairs
10	Safety Helmets	5 Nos
11	Safety Boots	2 Pairs
12	Torque Wrench (Japan Make)	1 No
13	Spanner Set (Japan Make)	1 Set
14	Screw Driver Set (Japan Make)	1 Set
15	Allen Key Set (Japan Make)	1 Set
16	Hydraulic Crimping Tool	2 Set
17	True RMS Clamp Meter (Fluke Make)	1 No
18	Insulation Tester (up to 1000V)	1 No
19	Earth Resistance Tester	1 No
20	Hammer	3 Nos
21	Insulating Tapes	20 Nos



Madan Bhandari University of Science and Technology Chitlang, Makwanpur, Nepal	Project Name: 500kWp MBUST Solar Project Chitlang, Makwanpur, Nepal	Title: PV Layout Plan	DESIGNED BY:	Scale Not in Scale	Note:	Date: August 2021 Drawing No. 1
			CHECKED BY:			
			APPROVED BY:			



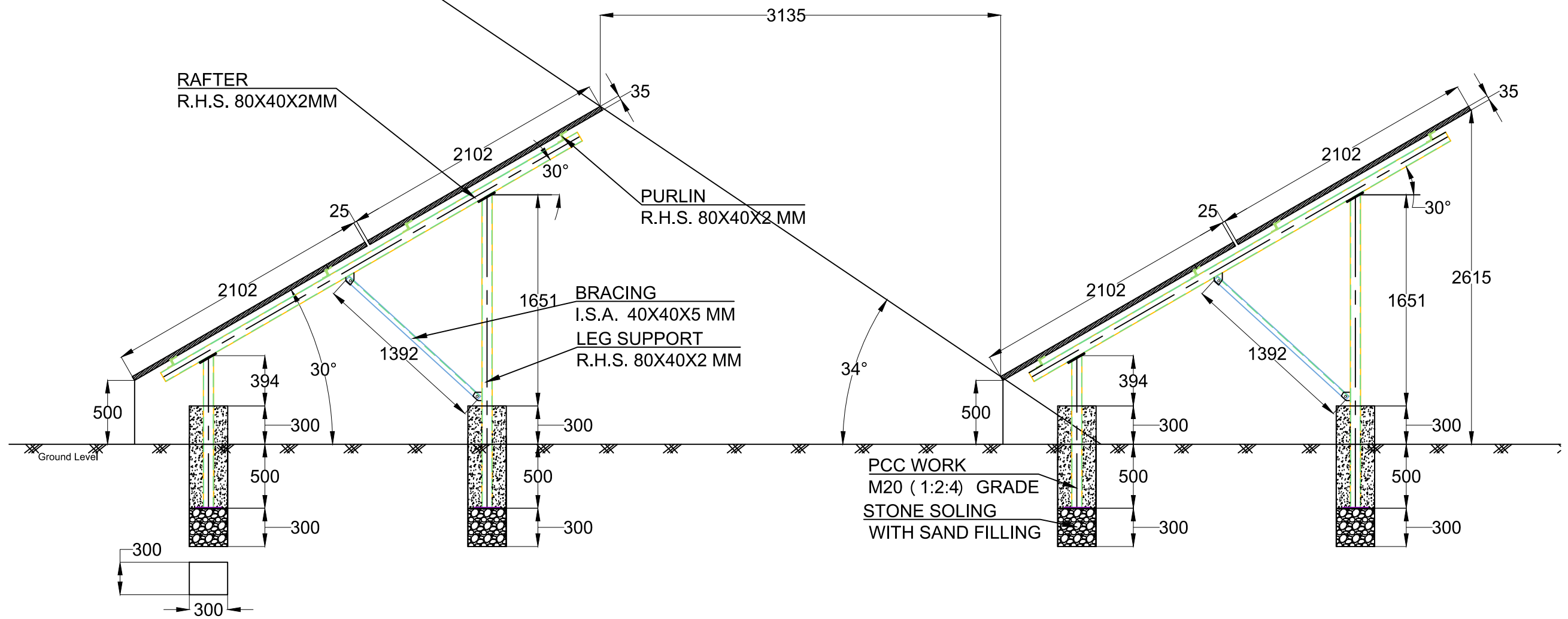
<p>Md</p>	<p>0000 M</p>	<p>D</p>	<p>Not in Scale</p>	<p>D</p>	<p>Dr</p>
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Note: Support structure height is indicative only. Bidder should propose height as per site requirements.

Madan Bhandari University of Science and Technology Chitlang, Makwanpur, Nepal	Project Name: 500kWp MBUST Solar Project Chitlang, Makwanpur, Nepal	Title: Solar Support Structure Details for Roof Mounted System	DESIGNED BY:	Scale Not in Scale	Note:	Date: August 2021
			CHECKED BY:			Drawing No. 4
			APPROVED BY:			

SUN



Madan Bhandari University of Science and Technology Chitlang, Makwanpur, Nepal	Project Name: 500kWp MBUST Solar Project Chitlang, Makwanpur, Nepal	Title: Solar Support Structure Details for Ground Mounted System	DESIGNED BY:	Scale Not in Scale	Note:	Date: August 2021
			CHECKED BY:			
			APPROVED BY:			
					Drawing No. 5	

SECTION-VI

Bill of Quantities

Notes for Unit Rate Contracts :

Objectives

The objectives of the Bill of Quantities are

- (a) to provide sufficient information on the quantities of Works to be performed to enable Bids to be prepared efficiently and accurately; and
- (b) when a Contract has been entered into, to provide a priced Bill of Quantities for use in the periodic valuation of Works executed.

In order to attain these objectives, Works should be itemized in the Bill of Quantities in sufficient detail to distinguish between the different classes of Works, or between Works of the same nature carried out in different locations or in other circumstances which may give rise to different considerations of cost. Consistent with these requirements, the layout and content of the Bill of Quantities should be as simple and brief as possible.

Content

The Bill of Quantities should be divided generally into the following sections:

- (a) Preamble;
- (b) Work Items (grouped into parts);
- (c) Day works Schedule;
- d) Provisional Sums; and
- (d) Summary.

Preamble

The Preamble should indicate the inclusiveness of the unit prices, and should state the methods of measurement which have been adopted in the preparation of the Bill of Quantities and which are to be used for the measurement of any part of the works.

Work Items

The items in the Bill of Quantities should be grouped into sections to distinguish between those parts of the Works which by nature, location, access, timing, or any other special characteristics may give rise to different methods of construction, or phasing of the Works, or considerations of cost. General items common to all parts of the works may be grouped as a separate section in the Bill of Quantities.

Day work Schedule

A Day work Schedule should be included only if the probability of unforeseen work, outside the items included in the Bill of Quantities, is high. To facilitate checking by the Employer of the realism of rates quoted by the Bidders, the Day work Schedule should normally comprise the following:

- (a) A list of the various classes of labor, materials, and Constructional Plant for which basic day work rates or prices are to be inserted by the Bidder, together with a statement of the conditions under which the Contractor will be paid for work executed on a day work basis.
- (b) Nominal quantities for each item of Day work, to be priced by each Bidder at Day work rates as bid. The rate to be entered by the Bidder against each basic Day work item should include the Contractor's profit, overheads, supervision, and other charges.

Provisional Sums

A general provision for physical contingencies (quantity overruns) may be made by including a provisional sum in the Summary Bill of Quantities. Similarly, a contingency allowance for possible price increases should be provided as a provisional sum in the Summary Bill of Quantities. The inclusion of such provisional sums often facilitates budgetary approval by avoiding the need to request periodic supplementary approvals as the future need arises. Where such provisional sums or contingency allowances are used, the Contract Data should state the manner in which they will be used, and under whose authority (usually the Project Manager's).

Summary

The Summary should contain a tabulation of the separate parts of the Bill of Quantities carried forward, with provisional sums for Day work, for physical (quantity) contingencies, and for price contingencies (upward price adjustment) where applicable.

These Notes for Preparing Specifications are intended only as information for the Employer or the person drafting the Bidding documents. They should not be included in the final documents.

Bill of Quantities

1 Provisional Sum

Procurement Item Details

SL. No	Item Description	Unit	Quantity	Unit Rate(NPR)	Amount(NPR)
1	Information Board as per Specification	nos	1.0	10000.0	10,000.00

2 Electricity gas nuclear energy and fuels steam hot water and other sources of energy

2.1 Solar energy

2.1.1 Solar installation

Procurement Item Details

SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
1	Solar Photovoltaic Array of Total Minimum Capacity 500kWp (Size of individual PV module: At least 400Wp, Mono Crystalline Silicon) and installation all complete	Set	1.0			
2	Weather Station, Data Logger, Mounting Structure with accessories, cabling, earthing and installation all complete	Set	1.0			
3	Three Phase Grid Connected Inverter with MPPT Input of Total Minimum Capacity 450kVA, including DC Isolators, AC Isolators, DC SPDs, AC SPDs and installation all complete	Set	1.0			
4	Three Phase Bidirectional Storage Inverter of Total Minimum Capacity 250kVA, including DC Isolators, AC Isolators, AC SPDs with STS Cabinet and installation all complete	Set	1.0			
5	Lithium Iron Phosphate (LiFePO4) of Total Minimum Capacity 400kWh with BMS, battery rack, BMU, Master BMU integrated with EMS, DC junction box, cables & accessories and installation all complete	Set	1.0			
6	Solar PV Module support structure, hot dipped galvanized MS with accessories and installation all complete	Set	1.0			
7	Junction Boxes with accessories and installation all complete	Set	1.0			
8	Grid Connected AC Combiner Box with AC Isolators, AC MCCBs, AC SPDs, 3-Phase Digital Meters, accessories and installation all complete	Set	1.0			
9	AC Distribution Board with AC ACBs with remote tripping & making function, AC SPDs, 3-Phase Digital Meters, other associated system, accessories and installation all complete	Set	1.0			

Procurement Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
10	Operation Control Panel Board with all the display and control system, accessories and installation all complete	Set	1.0			
11	Multi-strand Copper PVC insulated PV string cables, cable laying, accessories and installation all complete	Set	1.0			
12	AC Aluminium XLPE insulated armoured with extruded PVC inner sheath cables (Grid Connected Inverter to Grid Connected AC Combiner Box), cable laying, accessories and installation all complete	Set	1.0			
13	Earthing System for PV modules frame, array structure, junction boxes, earthing cable, cable laying, accessories and installation all complete (Ground Mounted)	Set	1.0			
14	Earthing System for PV modules frame, array structure, junction boxes, grid connected inverter, earthing cable, cable laying, accessories and installation all complete (Roof Mounted)	Set	2.0			
15	Earthing System for Grid Connected Inverter, earthing cable, accessories and installation all complete	Set	4.0			
16	Earthing System for Grid Connected AC Combiner Box, LiFePO4 Battery System, Bidirectional Storage Inverter, AC Distribution Board, Operation Control Panel Board & other associated system, earthing cable, accessories and installation all complete	Set	1.0			
17	Lightning Protection System, accessories and installation all complete	Set	7.0			
18	Equipotential Bonding Bus Bar (Copper Earth Bus Bar with at least 8 connection point), accessories and installation all complete	Set	8.0			
19	AC Aluminium XLPE insulated armoured with extruded PVC inner sheath cables (Grid Connected AC Combiner Box to AC Distribution Board to Transformer), cable laying, accessories and installation all complete	Set	1.0			
20	Monitoring System and Data Acquisition System with Plant Monitoring Station & accessories, Optical Fiber laying and installation all complete	Set	1.0			
21	Containerized System (Control Room) with all accessories and installation all complete	Set	2.0			
22	Civil works for 500kWp solar PV array foundations and installation all complete	LS	1.0			
23	Fence for PV array location and installation all complete	Meter	560.0			

Procurement Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
24	Site Development (Earth cutting and filling, compaction/ramming, surface drainage) all complete	LS	1.0			
25	0.4/11kV 630kVA Transformer System with OLTC, cable laying, accessories and installation all complete	Set	1.0			
26	Earthing System for Transformer, accessories and installation all complete	Set	3.0			
27	HT Metering System (TOD Meter, CT, PT with accessories) and installation all complete as per NEA requirements	Set	1.0			
28	Fire Fighting System (Fire Extinguishers and Sand Buckets) and installation all complete	Set	6.0			
29	Aluminium Foldable Pole Ladder of Extended Length of at least 9 meter all complete	No	1.0			
30	Transportation of all Equipment to Project Site all complete	LS	1.0			
31	Operation and Maintenance for the period of five years all complete	LS	1.0			
32	Spare Parts all complete	Set	1.0			
Total of Procurement Items						
Total Item Price						
VAT						
Grand Total						