# STANDARD BIDDING DOCUMENT

# PROCUREMENT OF

# "Supply, Installation, Testing and Commissioning of Solar Roof System with Operation and Maintenance."

## COMPLETE BIDDING DOCUMENT



**Gujarat Biotechnology University, Near GIFT City, Gandhinagar- 382355**


**Department of Science and Technology,**
**Government of Gujarat**

# Index

# INVITATION FOR BID

## (IFB)

## NATIONAL COMPETITIVE BIDDING

1. The Registrar, Dist. Gandhinagar invites bids for the construction of works detailed in the table. The bidders may submit bids for any or all of the following works.

**TABLE**

| Package No. | Name of work | Estimated Cost of Works (Rs.) | Bid Security (EMD) (Rs.) | Cost of Document (Tender Fee) | Period of completion | Class of Registration of Contractors & Special Category Building |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Supply, Installation, Testing, and Commissioning of Solar Roof System with Operation and Maintenance. | ₹ 1,26,54,649.00 | ₹ 3,79,639/- | ₹ 15,000/- | 3 Months | **"C" Class** |

**2.** Prospective / Interested bidder may download the Bid Documents from website https://www.tender.nprocure.com free of cost till the Time and Date as mentioned on online NIT at website https://www.tender.nprocure.com.

3. However, Bidder who is submitting the Bid Online will have to pay the Bid Document Fee / Tender Fee through Demand Draft only of any Schedule Bank payable at Gandhinagar and in favor of The Registrar, Gujarat Biotechnology University. Once the Bid is received online, Bid Document / Tender Fee will not be refundable.

   The Demand Draft for Bid Document / Tender fee and FDR / Bank Guarantee against Bid Security / EMD shall be submitted in electronic format through online (by scanning) while uploading the bid, this submission shall mean that bid document / tender fee and Bid Security / EMD has been received. Accordingly, the offer of only those shall be opened whose Bid Document / Tender Fee and Bid Security / EMD have been received electronically. However, for the purpose of realization of Demand Draft, and FDR / Bank Guarantee bidder shall send the same in original through R.P.A.D. so as to reach to '**The Registrar**, Gujarat Biotechnology University, Gandhinagar within 3 Days from the last day of bid submission.
   Penaltative action for not submitting Demand Draft / FDR / Bank Guarantee in original to The Registrar, GBU by bidder shall be initiated.

4. Bids received online, will be opened on the time, date and place as specified in the online NIT at website https://www.nprocure.com in the presence of the bidders or their authorized representatives, who wish to remain present.
   If the office happens to be closed on the day of opening of the bids as specified, the bids will be opened on the next working day at the same time and venue.
5. A pre bid meeting will be held on ……at ……..hrs. at the office of The Registrar, Gujarat Biotechnology University at Gandhinagar to clarify the issues and to answer questions on any matter that may be raised at that stage as stated in clause 9.2 of 'instructions to Bidders' of the bidding documents.
6. Bid Security (EMD) Amount is **Rs. 3,79,639/-**
7. put to bid / tender and should be rounded off to the next thousand rupees.
8. Other Information is as under:

A. Agencies can prepare and edit their offers a number of times before the end of the tender submission date and time. After the tender submission date and time, the bidder cannot modify / edit / withdraw their submitted offer in any case. No written or online request in this regard shall be granted.

B. Offers in physical form will not be accepted in any case.

C. Demand Draft purchased by the other then bidder and issued after the last date of submission of Bids, will not be considered or accepted.

D. The cost incurred by the contractor for this offer for clarification or attending discussion, conferences or sitevisits will not be reimbursed by the Employer or Engineer-in-Charge.

E. Conditional tender shall not be accepted.

F. Any changes, addition, alternation made in the prescribed form attached with tender are liable to be rejected.

G. Any change in format or conditional Bank Guarantee will not be accepted and the bidder will be considered non-responsive.

H. All the bidders are instructed to fill in information strictly in accordance with the format given in the checklist /qualification document / tender document.

I. It is mandatory for the bidders to supply each and every information as asked strictly in electronic format at appropriate places only.

J. Blank / insufficient information shall be treated as nil information and shall result in disqualification.

K. Even if the bidder has been qualified in a similar or larger size of project in the past, it shall not be deemed to be a ground / reason for not giving required information for this work / bid.

L. Information supplied for earlier projects shall not be considered while evaluation of this bid. The Government will not ask for any other information, unless it is found absolutely necessary by the competent authority.

M. If found necessary, the contractor will be intimated for negotiation,

# **For the works costing up to 7.5 crore (ROAD), 7.0 crore (BUILDING & BRIDGE) kindly refer to SSR-10-2015-17-C dated 03-02-2017**

For the works costing under 7.5 crore for Road Works and 7.0 crore for Building and Bridge Works following documents shall be submitted in electronic format only through online by scanning but the (i) Bid Document Fee / Tender Fee (ii) Bid Security / EMD should be sent in original to the Tender opening authority through RPAD, so as to reach the The Registrar within 3 days from last day of submission of Bid.

(i) Bid Document Fee / Tender Fee **(From Bidders A/C Only)**
(ii) Bid Security / EMD or Valid EMD Exemption Certificate of Appropriate Class of Registration of Approved Contractors
(iii) Registration Certificate of Appropriate Class
(iv) GST Number & PAN Number
(v) Work Experience, if necessary…
(vi) EPF Registration Number & ESIC Registration Number
(vii) Other Documents, as required…

## SECTION - 1

# INSTRUCTIONS TO BIDDERS

# (ITB)

# Section 1: Instructions to Bidders

**Table of Clauses**

## A. GENERAL

### 1. Scope of Bid

1.1 The **Gujarat Biotechnology University, Department of Science and Technology**, Government of Gujarat invites bids for the Construction of works (as defined in these documents and referred to as 'the works") detailed in the table given in IFB. The bidders may submit bids for any or all of the works detailed in the table given in IFB.

The **Gujarat Biotechnology University Department of Science and Technology**, Government of Gujarat, Supply, Installation, Testing, and Commissioning of Solar Roof System with Operation and Maintenance. The successful bidder will be expected to complete the works by the intended completion date specified in the Contract data.

1.2 Throughout these bidding documents, the terms 'bid' and 'tender' and their derivatives (bidder/ tenderer, bid / tender, bidding/ tendering, etc.) are synonymous.

### 2. Source of Funds

2.1 The expenditure on this project will be met from the budget of Govt. of Gujarat / Govt. of India for centrally sponsored projects.

### 3. Eligible Bidders

3.1 This Invitation for Bids is open to all eligible bidders.

3.2 All bidders shall provide in Section 2, Forms of Bid and Qualification Information, a statement that the Bidder is neither associated, nor has been associated, directly or indirectly, with the consultant or any other entity that has prepared the design, specifications, and other documents for the Project or being proposed as Project Manager for the Contract. A firm that has been engaged by the Employer to provide consulting services for the preparation or supervision of the works, and any of its affiliates, shall not be eligible to bid.

### 4. Qualification of the Bidder

4.1 All bidders shall provide in Section 2, Forms of Bid and Qualification Information, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary. The proposed methodology should include a program of construction backed with equipment planning and deployment duly supported with broad calculations and quality assurance procedures proposed to be adopted justifying their capability of execution and completion of work as per technical specifications, within stipulated period of completion.

4.2 Deleted

4.3 Deleted

4.4 Deleted

**#4.5 QUALIFICATION CRITERIA:**
**(Applicable for the works which require Post Qualification)**

**4.5.1** Qualification will be based on Applicant's meeting all the following minimum pass/ fail criteria regarding the Applicant's general and particular experience, personnel and equipment capabilities and financial positions, as demonstrated by the applicant's responses in the forms attached to the letter of application ( specified requirement for joint ventures are given under para 4.6 below )

Subcontractors experience and resources shall not be taken in to account in determining the applicants compliance with the qualifying criteria

To qualify for more than one contract, the applicant must demonstrate having experience and resources sufficient to meet the aggregate of the qualification criteria for each contract given in paragraphs 4.5.4, 4.5.5 and 4.5.9 below.

**4.5.2 Base year and Escalation**

The base year shall be taken as Current financial year

Following enhancement factors will be used for the costs of works executed and the financial figure to a common base value for works completed in India.

| Year | Financial Year | Multiplying factor |
|---|---|---|
| Base year of inviting tender | 2025-2026 | 1.00 |
| -1 | 2024-2025 | 1.10 |
| -2 | 2023-2024 | 1.21 |
| -3 | 2022-2023 | 1.33 |
| -4 | 2021-2022 | 1.46 |
| -5 | 2020-2021 | 1.61 |

Applicant should indicate actual figures of costs and amount for the works executed by them without accounting for the above-mentioned factors.

**4.5.3. General Experience.**

The Applicant shall meet with the following minimum criteria:

(a) **Annual Turn Over**

Achieved a minimum annual financial turnover (defined as billing for works in progress and completed in all classes of civil engineering construction works only) in any one year, over the last five years of the annual value of contract / contracts applied for.

**Annual turnover of any one of the last five financial years from current financial year, updated to the current financial year shall be not less than Rs. 0.63 Crore**

For arriving at updated value, turnover of any financial year shall be multiplied by the enhancement factor corresponding to that year. These enhancement factors shall be as given in 4.5.2

**Joint Venture NOT Allowed.**

**(b) Successful Experience**

The works may have been executed by the applicant as prime contractor ~~or as a member of a joint venture~~ or as a nominated sub-contractor. As subcontractor, he should have acquired the experience of execution of all major items of works under the proposed contract~~. In case a project has been executed by a joint venture, weight towards experience of the project would be given to each joint venture in proportion to their financial participation in the joint venture.~~

Completed works means those works which are 100 % completed as on the date of submission (i.e. gross value of work done up to the last date of

submission is 100 % or more of the original contract price).

For these, a certificate from the employers shall be submitted along with the application incorporating clearly the name of the work, contract value, billing amount, date of commencement of works, satisfactory performance of the contractor and any other relevant information. (as attached Form – 3A)

Bidder must have as prime contractor or as nominated (Approved by Employer) ~~Sub Contractor~~ successful Experience as follows:

I. Similar work **means** Supply, Installation, Testing, and Commissioning of Solar Roof System with Operation and Maintenance. **Work of various Government/ Public Sector UTS /Private Sector** having updated completion installed solar capacity not less than 100 KW.
II. Such Work must have been completed (i.e. gross value of work done up to the last date of submission is 100 % or more of the original contract price) within last 5 financial years I.e. from 01/04/2020 till the due date of bid for the proposed work.
III. A work would qualify as similar work only if it meets with definition given in Appendix – A.
IV. For updating completion cost of the work to the current financial year procedure narrated in Cl.4.5.2 and Appendix-2 ITB Section-1, Sr. No.18 itself mutatis mutandis apply.

**4.5.4. Personnel Capabilities.**

Availability for his work of personnel with adequate experience as required; as per **Appendix.**

**4.5.5. Equipment Capabilities**

Based on the studies carried out by the Engineer, the minimum suggested major equipment to attain the completion of works in accordance with the prescribed construction schedule are shown in the Appendix.

The bidders should, however, undertake their own studies and furnish with their bid, a detailed construction planning and methodology supported with layout and necessary drawings and calculations to allow the employer to review their proposals. The numbers, types and capacities of each plant/equipment shall be shown in the proposals along with the cycle time for each operation for the given production capacity to match the requirements.

**4.5.6. Financial Position**

The Applicant should give undertaking that he has access to, or has available, liquid assets (aggregate of working capital, cash in hand and uncommitted bank guarantees) and / or credit facilities up to Rs. **0.32 Crore**.

The audited balance sheets for the last five years should be submitted, which must demonstrate the soundness of the applicant's financial position, showing long – term profitability including an estimated financial projection for the next two years, if necessary, the employer will make inquiries with the applicant's bankers.

Bidder should have the positive Profit in last Three (3) Financials Year.

**4.5.7.** The audited balance sheets for the last five years should be submitted, which must demonstrate the soundness of the applicant's financial position, showing long –

term profitability including an estimated financial projection for the next two years, if necessary, the employer will make inquiries with the applicant's bankers.

**4.5.8. Litigation History**

The Applicant should provide accurate information on any litigation or arbitration resulting from contracts completed or under execution by him over the last five years. A consistent history of awards against the Applicant or ~~any partner of a joint venture may result in failure of the applicant.~~

**4.5.9. Disqualification**

Even though the applicants meet the above criteria, they are subject to be disqualified if they have:

Made misleading or false representation in the forms, statements submitted, and / or Record of poor performance such as abandoning the work, rescinding of contract for which the reasons are attributable to the non – performance of the contractor; consistent history of litigation awarded against the applicant or financial failure due to bankruptcy. ~~The rescinding of contract of a joint venture on account of reasons other than non – performance, such as Most Experienced partner of joint venture pulling out, court directions leading to breaking up of a joint venture before the start of work, which are not attributable to the poor performance of the contractor will, however, not affect the qualification of the individual partners.~~

**4.6 JOINT VENTURE: NOT ALLOWED**

**4.7 Bid** Capacity.

Applicants who meet the minimum qualification criteria will be qualified only if their available bid capacity at the expected time of bidding is more than the total estimated cost of the works. The available bid capacity will be calculated as under:

**Assessed Available Bid Capacity = (A*N*2-B), where**

A = Maximum value of work executed in any one year during the last five financial years i.e. from **2020-21 to 2024-25** (updated to the price level of the year indicated in appendix) taking into account the completed as well as works in Progress.

B = Value at current price level of the existing commitments and ongoing works to be completed during the next **3 Months** (period of completion of work for which bids are invited); and

N = Number of years prescribed for completion of the works for which the bids are invited.

**Note: - JOINT VENTURE NOT ALLOWED**

**4.8 Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have:**

- Made misleading or false representation in the forms, statements and

Attachments the submitted in proof the qualification requirements; and / or

- Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delay in completion, litigation history, or financial failures etc.; and/ or
- Participated in the previous bidding for the same work and had quoted unreasonably high bid prices and could not furnish rational justification to the employer.

## 5. One bid per bidder

5.1. Each bidder shall submit only one bid for one package. A bidder who submits or participates in more than one bid (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the bidder's participation to be disqualified.

## 6. Cost of Bidding

6.1. The bidder shall bear all costs associated with the preparation and submission of his Bid, and the Employer will in no case be responsible and liable for those costs.

## 7. Site Visit

7.1. The Bidder, at the Bidder's own responsibility and risk is encouraged to visit and examine the Site of work and its surrounding and obtain 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.

**Bidders Registration Class and Building Category**

Registration certificate of R & B Registered in C **Class (Electrical) /** Water Resources Department, The contractors, who are registered in appropriate category of C.P.W.D., M.E.S., Railways and Indian State Governments, can also bid provided the bidder produce such registration certificate at the time of bidding and obtain and submit registration in required class & category from the Gujarat State R&BD/W.R.D before issue of work order in case they emerge as L-1 Bidder. Bidder will solely be responsible for obtaining and submitting the certificate before issue of work order.

For Electrical and ELV works shall be executed by Electrical contractor registered in Road and Buildings department in **"C" Class** and above.

**Note**: Criteria No. 1 to 7 shall be treated as mandatory qualification requirements. Any bidder failing to satisfy these criteria shall be deemed disqualified, and the financial bid of such bidder shall not be opened. The work order will be issued to the contractor on basis of site clearance.

**APPENDIX – A**

- Definition of similar work:

1. The bidder must have experience of having successfully completed similar nature of work during last 5 years ending last day of month previous to the one in which applications are invited. Should be either of the following:

**Similar Nature of Work means Supply, Installation, Testing, and Commissioning of Solar Roof System with Operation and Maintenance at Gujarat Biotechnology University. The right to interpret "similar work" is reserved by Tendering Authority (The Registrar)**.

## B. BIDDING DOCUMENTS

### 8. Content of Bidding Documents

8.1 The set of bidding documents comprises the documents listed below and addenda issued in accordance with Clause 10:

| Section | Particulars | Volume No. |
|---|---|---|
| - | Invitation for Bids | I |
| 1 | Instructions to Bidders | |
| 2 | Qualification Information, and other forms | |
| 3 | Conditions of Contract | |
| 4 | Contract Data | |
| 5 | Technical Specifications | II |
| 6 | Form of Bid | III |
| 7 | Bill of Quantities | |
| 8 | Securities and other forms | |
| 9 | Drawings | IV |
| 10 | Documents to be furnished by bidder | V |

8.2. Volumes I, II, III and IV are available online and documents to be furnished by the bidder in compliance to section 2 will be prepared by him and furnished as Volume- V in two parts (refer clause 12).

8.3. The bidder is expected to examine carefully all instructions, conditions of contract, contract data, forms, terms, and technical specifications, bill of quantities, forms, Annexes and drawings in the Bid Document. Failure to comply with the requirements of Bid Documents shall be at the bidder's own risk. **Pursuant to clause 26 hereof**, bids which are not substantially responsive to the requirements of the Bid Documents shall be rejected.

### 9. Clarification Bidding Documents

9.1 A prospective bidder requiring any clarification of the bidding documents may notify the Employer in writing or through E-mail at the Employer's address indicated in the invitation to bid. The Employer will respond to any request for clarification which he received earlier than 15 days prior to the deadline for submission of bids. Employer's response will be published on website including a description of the enquiry but without identifying its source.

### 9.2. Pre-bid meeting

9.2.1. The bidder or his official representative is invited to attend a pre-bid meeting which will take place at the address, venue, time and date as indicated in the appendix.

9.2.2. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

9.2.3. The bidder shall be required to submit any questions in writing or e-mail estate@gbu.edu.in to reach the Employer not later than 03 days before the meeting.

9.2.4 Minutes of the meeting, including the question raised (Without identifying the source of enquiry) and the responses given will be published without delay on the tender website i.e. www.tender.nprocure.com. Any modification of the bidding documents listed in sub-Clause 8.1 which 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 Clause 10 and not through the minutes of the pre-bid meeting.

9.2.5. Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.

## 10. Amendment of Bidding Documents

10.1 Before the deadline for submission of bids, the Employer may modify the bidding documents by issuing addenda.

10.2. Any addendum thus issued shall be part of the bidding documents. The Employer will assume no responsibility for the same.

10.3. To give prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may, at his discretion, extend as necessary the deadline for submission of bids, in accordance with Sub-Clause 20.2 below.

## C. PREPARATION OF BIDS

### 11. Language of the Bid

11.1 All documents relating to the bid shall be in the English language.

### 12. Documents Comprising the Bid

12.1 The bid be submitted by the bidder as Volume V of the bid document (refer Clause 8.1) shall be in two separate parts:

**<u>Part I</u> shall be named "Technical Bid" and shall comprise**

- Bid Security in the form specified in Section 8
- Qualification Information and supporting documents as specified in Section 2
- Certificates, undertakings, affidavits as specified in Section 2
- Any other information pursuant to Clause 4.5 of these instructions
- Undertaking that the bid shall remain valid for the period specified in Clause 15.1

**Part II shall be named "Financial Bid" and shall comprise**

(i) Form of Bid as specified in Section 6

(ii) Priced Bill of Quantities for items specified in Section 7

12.2 The Bidder shall submit the details / information pertaining to each part i.e. technical as well as financial and must be submitted online only.

12.3 Following documents will be deemed to be part of the bid.

| Section | Particulars | Volume No. |
|---|---|---|
| | **Invitation for Bids (IFB)** | |
| 1 | Instruction to Bidders | Volume I |
| 3 | Conditions of Contract | |
| 4 | Contract Data | |
| 5 | Specifications | Volume II |
| 9 | Drawings | Volume IV |

### 13. Bid Prices

13.1 The Contract shall be for the whole works as described in Sub-Clause 1.1, based on the priced Bill of Quantities submitted by the Bidder.

13.2 The bidder shall fill in rates and prices and line item total (both in figures and words) for all items of the Works described in the Bill of Quantities along with total bid price

(Both in figures and words). Items for which no rate or price is entered by the bidder will not be paid for by the Bill of Quantities.

13.3 All duties, taxes, and other levies except GST payable by the contractor under the contract, or for any other cause shall be included in the rates, prices and total Bid Price submitted by the Bidder. (GST will be paid extra)

13.4 Deleted

**13.5** The rates and prices quoted by the bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of Clause 47 of the Condition of Contract **(Irrespective of the time limit and Bid Amount)**

## 14. Currencies of Bid and Payment

14.1 The unit rates and the prices quoted by the bidder shall be entirely in Indian Rupees. All payments shall be made in Indian Rupees.

## 15. Bid Validity

15.1 Bids shall remain valid for a period of not less than 180 days from the date of technical bid opened.

15.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the bidders may extend the period of validity for a specified period. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid, but will be required to extend the validity of his security for a period of the extension, and in compliance with Clause 16 in all respects.

## #16. Bid Security

16.1. The Bidder shall furnish, as part of his Bid, a Bid security in the amount as shown in column 4 of the table of IFB for this particular work. This Bid security shall be in favor of Employer as named in Appendix and may be in one of the following forms;

a. Bank Guarantee from any scheduled Indian bank, in the format given in Volume III. **(Bank Guarantee is applicable only for Bid Estimated Amount of 01 Crore and above) and Bank** Guarantee of Schedule and Private Banks shall be considered as per GoG Finance Department's Circular No. FD/MSM/e- file/4/2023/0057/D.M.O. Date 21/04/2023 or as per their latest amendment.

b. Fixed Deposit Receipt issued by any Scheduled Indian Bank or a foreign Bank approved by the Reserve Bank of India.

**OR**

# A Valid Bid Security / EMD Exemption Certificate issued by (1) Road & Building Department or (2) Narmada Water Resources, Water Supply and Kalpsar Department of Govt of Gujarat. **Exemption Certificate is applicable only when Registration Certificate of Appropriate Class and Category of Approved Contractors is required as eligible criteria of bidder.**

16.2. Bank guarantees (and other instruments having fixed validity) issued as surety for the bid shall be valid for 45 days beyond the validity of the bid i.e. total validity of 180+45 = 225 Days

16.3. Any bid not accompanied by an acceptable Bid Security and not secured as indicated in Sub-Clauses 16.1 and 16.2 above shall be rejected by the Employer as non-responsive.

16.4. The Bid Security of unsuccessful bidders will be returned within 28 days of the end of the bid validity period specified in Sub-Clause 15.1

16.5 The Bid Security of the successful bidder will be discharged when the bidder has signed the Agreement and furnished the required Performance Security.

16.6. The bid Security may be forfeited

(a) If the Bidder withdraws the bid after Bid opening during the period of Bid validity.

(b) If the Bidder does not accept the correction of the Bid Price, if any or

(c) In the case of a successful Bidders, if the Bidder fails the specified time limit to
   (i) Sign the Agreement; or
   (ii) Furnish the requirement Performance Security.

(d) #If found necessary, the bidder will be intimated for negotiation, He will be intimated maximum three times within the validity period for negotiation, If contractor does not respond in time, his Bid Security (EMD) will be forfeited and his tender will be rejected. Punitive action will be taken on such contractors. (As per GoG R&B Dept's Gr. No. S/22/2017/6369/D, Dt.08/06/2018)

## 17. Alternative Proposals by Bidders.

17.1. Bidders shall submit offers that fully comply with the requirements of the bidding documents, including the conditions of contract (including mobilization advance or time for completion), basic technical design as indicated in the drawing and specifications. Conditional offers or alternative offers will not be considered further in the process of tender evaluation.

## 18. Format and Signing of Bid

18.1. The Bidder shall prepare documents comprising the bid as described in Clause 12 of these Instructions to bidder as the "Technical Bid "and "Financial Bid" in separate parts to be uploaded.

## D. SUBMISSION OF BIDS

**19. Deleted**

**20. Deadline for Submission of the Bids**

20.1. Complete Bids must be received online by the Employer at the tender website specified above not later than the date indicated in appendix.

20.2. The Employer may extend the deadline for submission of bids by issuing an amendment in accordance with Clause 10, in which case all right and obligation of the Employer and the bidders previously subject to the original deadline will then be subject to the new deadline.

**21. Deleted**

**22. <u>Modification and Withdrawal of Bids</u>**

22.1. Bidders may modify or withdraw their bids online before the deadline prescribed in Clause 20 or pursuant to Clause 23.

22.2 Deleted

22.3. No bid shall be modified or withdrawn after the deadline for submission of Bid.

22.4. Withdrawal or modification of a bid between the deadline for submission of bids and the expiration of the original period of bid validity specified in Clause 15.1 above or as extended pursuant to Clause 15.2 may result in the forfeiture of the Bid security pursuant to Clause 16.

# E. BID OPENING AND EVALUATION

## 23. Bid Opening

23.1 The Employer will open all the Bids received including modifications made pursuant to Clause 22, in the presence of the Bidders or their representatives who choose to attend at time, date and the place specified in Appendix in the manner specified in Clauses 20 and 23.3, In the event of the specified date of Bid opening being declared a holiday for the Employer, the Bids will be opened at the appointed time and location on the next working day.

23.2. Deleted.

23.3. The "Technical Bid" shall be opened. The amount, form and validity of the bid security furnished with each bid will be announced. If the bid security furnished does not conform to the amount and validity period as specified in the invitation for bid (ref. Column 4 and paragraph 3), and has not been furnished in the form specified in Clause 16, the technical bid will not be opened.x`

23.4. (i) Subject to confirmation of the bid security by the issuing Bank, the bids accompanied with valid bid security will be taken up for evaluation with respect to the Qualification information and other information furnished in part I of the bid pursuant to Clause 12.1.

(ii) If required, the bidder will be asked in writing to clarify his Qualification Documents with respect to any required clarification.

(iii) The bidders will respond in not more than 7 days of issue of the clarification letter.

(iv) Immediately (usually within 3 or 4 days), on receipt of these clarification the Evaluation Committee will finalize the list of responsive bidders whose financial bids are eligible for consideration.

23.5. Deleted

23.6 At the time of opening of "Financial Bid", the names of the bidders were found responsive in accordance with Clause 23.4(iv) will be announced. The bids of only these bidders will be opened. The responsive Bidders' names, the Bid prices, the total amount of each bid, any discount and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening.

23.7 the time of opening of "Financial Bid", the names of the bidders were found responsive in accordance with Clause 23.4(iv) will be announced. The bids of only these bidders will be opened. The responsive Bidders' names, the Bid prices, the total amount of each bid, any discount, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening.

23.8 In case bids are invited for more than one package, the order for opening of the "Financial Bid" shall be in order of estimated amount of Bids from highest to lowest.

23.9 The Employer shall prepare minutes of the Bid opening, including the information disclosed to those present in accordance with Sub-Clause 23.6.

## 24 Process to be Confidential

24.1 Information relating to the examination, clarification, evaluation, and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any effort by Bidder to influence the Employer's processing of Bids or award decisions may result in the rejection of his Bid.

## 25. Clarification of Financial Bids

25.1. To assist in the examination, evaluation, and comparison of Bids, the Employer may, at his discretion, ask any Bidder for clarification of his Bid, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by e-mail, but no change in the price or substances of the Bid shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids.

25.2 Subject to sub-clause 25.1, no Bidder shall contact the Employer on any matter relating to his Bid opening to the contract is awarded. If the Bidder wishes to bring additional information to the notice of the Employer, it should do so in writing.

25.3. Any effort by the Bidder to influence the Employer in the Employer's bid evaluation, bid comparison or contract award decision may result in the rejection of the Bidders' bid.

## 26. Examinations of Bids and Determination of Responsiveness

26.1 During the detail evaluation of "Technical Bid", the Employer will determine whether each Bid (a) meets the eligibility criteria defined in Clause 3 and 4; (b) has been properly signed; (c) is accompanied by the required securities and; (d) is substantially responsive to the requirements of the Bidding document. During the detailed evaluation of the "Financial Bid", the responsiveness of the bids will be further determined with respect to the remaining bid conditions, i.e., priced bill of quantities, technical specifications, and drawings.

26.2 A substantially responsive "Financial Bid" is one which confirms all the terms, conditions and specifications of bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the Bidding documents, the Employer's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Bids.

26.3 If a "Financial Bid" is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

## 27. Deleted

## 28. Deleted

## 29. Evaluation and Comparison of Financial Bids

29.1. The Employer will evaluate and compare only the Bids determined to be substantially responsive in accordance with Sub-Clause 26.2.

29.2. Deleted.

29.3. The Employer reserves the right to accept or reject any variation or deviation. Variation and deviations and other factors, which are in excess of the requirements of the Bidding documents or otherwise result in unsolicited benefits for the Employer, shall not be taken in to account in Bid evaluation.

29.4. The estimated effect of the price adjustment conditions under Clause 47 of the Conditions of Contact, during the period of implementation of the Contract, will not be taken in to account in Bid evaluation.

29.5. If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer's estimate of the cost of work to be performed under the contract the Employer may require the Bidder to produce detailed consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, the Employer may require that the amount of the performance security set forth in Clause 34 be increased at the expense of the successful /bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.

29.6. A bid which contains several items in the bill of Quantities which are unrealistically priced low and which cannot be substantiated satisfactorily by the bidder may be rejected as non-responsive. (Applicable for item rate tender only)

## 30. Deleted

## F. AWARD OF CONTRACT

### 31. Award Criteria

31.1. Subject to Clause 32, the Employer will award the contract to the Bidder whose Bid has been determined.

(i) to be substantially responsive to the Bidding documents and who has offered the lowest evaluated Bid Price; and

(ii) to be within the available bid capacity adjusted to account for his bid price which is the lowest evaluation in any of the packages opened earlier than the one consideration.

In no case, the contract shall be awarded to any bidder whose available bid capacity is less than the evaluated bid price, even if the said bid is the lowest evaluated bid. The contract will in such cases be awarded to the next lowest bidder at his evaluation bid price.

### 32. Employer's Right to Accept any Bid and to Reject any or all Bids

32.1. Notwithstanding Clause 31, the Employer reserves the right to accept or reject any Bid, and to cancel the Bidding process and reject all Bids, at any time prior to the award of contract, without thereby incurring any liability to the affected bidder or Bidder or any obligation to inform the affected Bidder or Bidders of the grounds for the Employer's action.

### 33. Notification of Award and Signing of Agreement

33.1. The Bidder whose Bid has been accepted will be notified of the award by the Employer prior to expiration of the Bid validity period by cable, telex or facsimile confirmed by registered letter. This letter (hereinafter and in the condition of contract called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").

33.2 The notification of award will constitute the formation of the contract, subject only to the furnishing of a performance security in accordance with the provisions of Clause.

33.3. The Agreement will incorporate all agreements between the Employer and the successful Bidder. It will be signed by the Employer and to the successful Bidder, within 28 days following the notification of award along with the Letter of Acceptance. Within 21 days of receipt, the successful Bidder will sign the Agreement and deliver it to the Employer.

33.4. Upon the furnishing by the successful Bidder of the Performance Security, the Employer will promptly notify the other Bidders that their Bids have been unsuccessful.

### 34. Performance Security

34.1. (A) Within 10 (Ten) days of receipt of Letter of Acceptance, the successful Bidder shall furnish to the Employer an irrevocable and unconditional guarantee from a Bank in the form set forth in Section 8 (the "Performance Security") for an amount equal to 5% (five percent) of its Contract Price. In case of bids mentioned below, the successful Bidder, along with the Performance Security,

shall also furnish to the Authority an irrevocable and unconditional guarantee from a Bank in the same form given at Section 8 towards an Additional Performance Security (The "Additional Performance Security") for an amount calculated as under:

(a) If the Contract Price offered by the Selected Bidder is lower than 10% but upto 20% of the Estimated Project Cost, then the Additional Performance Security shall be calculated @ 20% of the difference in the (i) Estimated Project Cost (as mentioned in Bid Document) - Minus 10% of the Estimated Project Cost and (ii) Contract Price offered by the selected Bidder.

(b) If the Contract Price offered by the Selected Bidder is lower than 20% of the Estimated Project Cost, then the Additional Performance Security shall be calculated @ 30% of the difference in the (i) Estimated Project Cost (as mentioned in Bid Document) - Minus 10% of the Estimated Project Cost and (ii) Contract Price offered by the selected Bidder.

(c) This Additional Performance Security shall be treated as part of the Performance Security.

(B) The Performance Security shall be valid beyond 60(sixty) days of the Defects Liability Period and the Additional Performance Security shall be valid beyond 28 (twenty-eight) days of Project Completion Date.

34.2. If the performance security is provided by the successful Bidder in the form of a Bank Guarantee, it shall be issued either (a) at the Bidder's option, by a Nationalized/Scheduled Indian bank or (b) by a foreign bank located in India and acceptable to the Employer. As per GoG Finance Department's Circular No. FD/MSM/e-file/4/2023/0057/D.M.O. Date 21/04/2023 or as per their latest amendment.

34.3. Failure of the successful Bidder to comply with the requirement of Sub-Clause 34.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Bid Security.

## 35 Advance Payment and Security

35.1 Clause – DELETED (NO ADVANCE PAYMENT)

## 36. Deleted

## 37. Corrupt of Fraudulent Practices

37.1 The Employer will reject a proposal if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in completing for the contract in question and will declare the firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract with National Highways Authority of India/ State PWD and any other agencies, if it at any time determines that the firm has engaged in corrupt or fraudulent practices in completing for the contractor, or in execution.

37.2 Furthermore, Bidders shall be aware of the provision stated in Sub- Clause 59.2 of the Conditions of Contract.

# `APPENDIX TO ITB

**Clause Reference**
**With respect to**
**Section –I**

| | | |
|---|---|---|
| 1. | The Name of the Employer is Registrar, Gujarat Biotechnology University | [ Cl.1.1] |
| 2. | The last five years.<br>2024 – 2025<br>2023 – 2024<br>2022 – 2023<br>2021 – 2022<br>2020 – 2021 | |
| 3. | This Annual Financial Turnover Amount is Rs **0.63** Crore | [Cl.4.5.3 (a)] |
| 4. | Value of Work is Rs. **1.26** Crore | |
| 5. | Deleted | |
| 6. | The cost of electric work is Rs. 1.26 Crore | |
| 7. | The cost of water supply / sanitary works is Rs.0 | |
| 8. | Liquid assets and / or availability of credit facilities (i.e.25% of contract value/ estimated cost) is Rs. 0.32 cr. | [Cl.4.5.6] |
| 9. | Price level of the financial year 2024-25 | [Cl. 4.5.2] |
| 10. | The pre-bid meeting will take place at ……. | [Cl. 9.2.1] |
| 11. | The technical Bid will be opened at the office of the Registrar, Gujarat Biotechnology University, Gandhinagar on dt at ……AM/PM | |
| 12. | Address of the Employer: The Registrar, GBU, Near Gift City, Gandhinagar, 382355 | |
| 13. | Deleted | |
| 14. | The bid should be submitted latest by As stated on online NIT | [Cl. 20.1 & 20.2] |
| 15. | The bid will be opened at As stated on online NIT | [Cl. 23.1 ] |
| 16. | The Bank Draft in favour of The Registrar, Gujarat Biotechnology University" | |
| 17. | Deleted | |
| 18. | Escalation factors (for the cost of works executed and financial figure to a common base value) for works completed | [Cl.4.5.2] |

| **Year** | **Financial Year** | **Multiplying factor** |
|---|---|---|
| Base year of inviting tender | 2025-2026 | 1.00 |
| -1 | 2024-2025 | 1.10 |
| -2 | 2023-2024 | 1.21 |
| -3 | 2022-2023 | 1.33 |
| -4 | 2021-2022 | 1.46 |
| -5 | 2020-2021 | 1.61 |

## #LIST OF KEY PLANT & EQUIPMENT TO BE DEPLOYED ON CONTRACT WORK

## [Reference CL. 4.5.5]

### For building works upto 2 Cr. and as mention under:

**The contractors shall also give a list of machineries in his possession and which they propose to use on the work.**

| Sr. No. | Plant or Machinery | Nos. | Location | Age of Machinery (maximum 15 years) | Make | Capacity | Approximate Value | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 2(a) | 2(b) | 2(c) | 3 | 4 | 5 | 6 | 7 |
| 1 | Tipper Trucks | 2 | - | | | | | |
| 2 | Concrete mixer with integral way batch facility | 2 | | | | | | |
| 3 | Needle Vibrator | 4 | | | | | | |
| 4 | Surface Vibrator | 2 | | | | | | |
| 5 | Diesel Generator | 1 | | | | | | |
| 6 | Concrete Conveying System and Trolley | 1 | | | | | | |
| 7 | Excavator | 1 | | | | | | |
| 8 | Steel/ Wooden shuttering (Scaffolding, props) | 2000 Sqmt | | | | | | |
| 9 | Concrete breaker | 1 | | | | | | |
| 10 | Surveying Equipment (Total Station & Other) | 1 | | | | | | |
| 11 | Welding machine | 1 | | | | | | |
| 12 | Bar Bending and Cutting machines | 1 | | | | | | |
| 13 | Goods lift for | 1 | | | | minimum capacity of 300 Kg. | | |
| 14 | Water tanker | 1 | | | | | | |

**For building works more than Rs. 2 Cr. and less than Rs.7 Cr. as mention under:**

**The contractors shall also give a list of machineries in his possession and which they propose to use on the work.**

| Sr. No. | Plant or Machinery | Nos. | Location | Age of Machinery (maximum 15 years) | Make | Capacity | Approximate Value | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 2(a) | 2(b) | 2(c) | 3 | 4 | 5 | 6 | 7 |
| 1 | Tipper Trucks | 3 | - | | | | | |
| 2 | Concrete mixer with integral way batch facility or Concrete batching plant with automatic way baching facility (15 CMT Capacity) | 3<br>Or<br>1 | | | | | | |
| 3 | Needle Vibrator | 4 | | | | | | |
| 4 | Surface Vibrator | 2 | | | | | | |
| 5 | Diesel Generator | 1 | | | | | | |
| 6 | Concrete Conveying System and Trolley | 1 | | | | | | |
| 7 | Excavator | 1 | | | | | | |
| 8 | Steel/ Wooden shuttering (Scaffolding, props) | 5000 Sqmt | | | | | | |
| 9 | Concrete breaker | 1 | | | | | | |
| 10 | Surveying Equipment (Total Station & Other) | 1 | | | | | | |
| 11 | Welding machine | 1 | | | | | | |
| 12 | Bar Bending and Cutting machines | 1 | | | | | | |
| 13 | Goods lift for | 1 | | | | minimum capacity of 300 Kg. | | |
| 14 | Water tanker | 2 | | | | | | |

## For building works more than Rs.7 Cr. as mention under

**The contractors shall also give a list of machineries in his possession and which they propose to use on the work.**

| Sr. No. | Plant or Machinery | Nos. | Location | Age of Machinery (maximum 15 years) | Make | Capacity | Approximate Value | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 2(a) | 2(b) | 2(c) | 3 | 4 | 5 | 6 | 7 |
| 1 | Concrete batch mix plant with electronic control panel Minimum 30Cu.Mt/Hr. Admixture unit | 1 | - | | | | | |
| 2 | Hopper Mixer | 4 | | | | | | |
| 3 | Steel/ Wooden shuttering (Scaffolding, props) or as suggested by Engineer in Charge | 10000 Sqmt. | | | | | | |
| 4 | Steel props (with Adjustable accessories) | 20000 Nos. | | | | | | |
| 5 | Excavator | 3 | | | | Poclan 0.9 Cmt. Bucket capacity | | |
| 6 | Trucks / Dumpers with capacity not less than 5 Cum | 5 | | | | | | |
| 7 | Concrete mixture machine with integral weigh batching facilities | 5 | | | | | | |
| 8 | Needle Vibrator | 10 | | | | | | |
| 9 | Surface vibrators | 10 | | | | | | |
| 10 | Laboratory set up List of site Laboratory Testing Machines (Attach Separate List) | 1 | | | | | | |
| 11 | Air compressor | 2 (Big, Small) | | | | | | |
| 12 | Concrete breaker | 2 | | | | | | |
| 13 | Welding machine | 2 | | | | minimum capacity of 300 Kg. | | |
| 14 | Surveying Equipment (Total Station & Other) | 2 | | | | | | |
| 15 | Construction Tower Cranes (20 Tone) | 1 | | | | | | |
| 16 | Bar Bending and Cutting machines | 3 | | | | | | |
| 17 | Goods cum lift for minimum capacity of 300 Kg. | 2 | | | | | | |
| 18 | Water Tanker | 3 | | | | | | |
| 19 | Concrete pouring Pump and Motor | 2 set | | | | | | |
| 20 | RMC Transit Mixture | 6 | | | | | | |
| 21 | Suspended Scaffold | 5000 Sqmt | | | | | | |

## List of Key Personnel to be deployed on Contract Work

## (Reference Cl. 4.5.4)

**# Employment of a qualified site Engineer by the Contractor.**

The Contractor shall employ full-time technically qualified staff during the execution of this work as under: -

1. One graduate Electrical Engineers and One diploma Electrical Engineers when cost of the work to be executed is more than Rs.50 lakhs but less than Rs.200 lakhs and above Rs. 2 Cr. to Rs. 7 Cr. additional One graduate Electrical Engineer and above Rs. 7 Cr. For.
2. One graduate & One Diploma, Electrical Engineers when the cost of the work to be executed is more than Rs.15 lakhs but less than Rs.50 lakhs.
3. Minimum one Diploma Electrical Engineer when the cost of work is less than Rs.15 lakhs but more than Rs.5 lakhs.
4. Minimum One Diploma Electrical Engineers for the work when the cost of work to be executed is less than Rs. 5 lakhs. The Engineer so employed for the Government work must have sufficient experience to handle the work independently. Such an Engineer shall have to stay at the site of work and he shall not be entrusted with other duty except this work.
5. And Additional as under: As per below table.

Bidder should propose the structure and composition of the team dedicated for carrying out the Assignment. Bidder should list the main disciplines of the assignment, the key personnel responsible, and proposed technical and support staff. The personnel schedule shall be consistent with the approach and methodology, detailed work plan, activity schedule.

| Sr. No | Position | No. Of Resources | Min Qualification | Deployment |
|---|---|---|---|---|
| **Key Personal** | | | | |
| 1 | Sr. Electrical Engineer | 1 | BE (Electrical) + 7 Year of Experience into Construction Works or M.E. + 5 Year Min, Min 1 Engineers know AutoCAD Application. | Full time for Project |
| 2 | Jr. Electrical Engineer | 1 | BE (Electrical) +3 Year of Experience into Solar Works, Min 2 Engineers know AutoCAD Application. | Full time for Project |
| 3 | Sr. Electrical Engineer | 1 | BE (Electrical) + 7 Year of Experience into Solar Works. | As and when required |
| 6 | Safety Engineer | 1 | Graduate (Electrical Engineer). | Full time for Project |

Within 15 days of issue of work-order the Contractor will have to furnish to The Registrar of the work the Name, Qualifications, copy of marksheet, Colour Photograph and the appointment order issued such engineers engaged for this contract work. If 15 days after issue of work order such designated Site Engineers do not resume or do not remain present on site of work, the recovery at the rate of Rs.15000-00 per month per Engineer will be made from the bills/deposit/dues of the contractor. Such recovery shall be non-refundable.

## SECTION - 2

# QUALIFICATION INFORMATION

## QUALIFICATION INFORMATION

The information to be filled in by the Bidder in the following pages will be used for the purpose of post qualification as provided for in Clause 4 of the Instruction to Bidders. This information will not be incorporated in the Contract.

### 1. For Individual Bidders

1.1 Constitution or legal status of Bidder
(Attach Copy)

Place of registration _____

Principal place of business _____

Power of attorney of signatory of Bid

(Attach)

1.2 Total value of Solar Work performed in the last five years (in Rs. Lakhs)

| Year | Work done value (in Rs. Lakhs) | Supporting documents certified by CA |
|---|---|---|
| 2020-21 | | |
| 2021-22 | | |
| 2022-23 | | |
| 2023-24 | | |
| 2024-25 | | |

1.3.1 Work performed as prime contractor, work performed in the past as a nominated sub-contractor will also be considered the sub-contract involved execution of all main items of work described in the bid documents, provided further that all other qualification criteria are satisfied (in the same name) on works of a similar nature over the last five years** and in current year before the submission of the bid.

| Project Name | Name of the Employer | Description of work | Contract No. | Value of contract (Rs. Crore) | Date of issue of work order | Stipulated period of completion | Actual date of completion* | Remark explaining reasons for delay & work Completed |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

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

** Immediately preceding the financial year in which bids are received.

Preferably standard 3-A certificate issued by various government authority/if work is private it should be by employer and private work should be supported by TDS work order, final bill payment, work order and as instructed in ITB.

#1.3.2 Quantities of work executed as prime contractor, work performed, in the past as a nominated sub-contractor, will also be considered provided the sub-contract involved execution of all main items of work described in the bid document, provided, further that all other qualification criteria are called (in the same name and style) in the last five years** and in current year before the submission of the bid.

| Year | Name of the work | Name of the Employer | Quantity/Capacity of work performed (Capacity or Amount) | | | | | | | | Remarks* (indicate contract Ref) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ~~MGPS~~ **(DELETED)** | | ~~CSSD System~~ **(DELETED)** | ~~HVAC (Capacity)~~ | ~~Fire System~~ | Solar | Lift Work | ~~MOT~~ **(DELETED)** | |
| | | | ~~No. of Points~~ | ~~Value~~ | ~~Value~~ | ~~Value of Work~~ | ~~Value of Work~~ | Value of Work | Value of Work | ~~Nos.~~ | |
| 20_-20_ | | | | | | | | | | | |
| 20_-20_ | | | | | | | | | | | |
| 20_-20_ | | | | | | | | | | | |
| 20_-20_ | | | | | | | | | | | |
| 20_-20_ | | | | | | | | | | | |

1.4 Information on Bid Capacity (works for which bids have been submitted and works which are yet to be completed) as on the date of this bid.

(A) Existing commitments and on-going works:

| Name of Building/Hospital works | Place & State | Contract No. | Name & Address of Employer | Value Contract (Rs. Cr) | Stipulated Period of Completion | Value of Works* remaining to be completed (Rs. Cr) | Anticipated of completion | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| | | | | | | | | |

*Attach certificate (s) from the Engineer(s) in-charge
** Immediately preceding the financial year in which bids are received.

1.5 Availability of key items of Contractors Equipment for carrying out the works (Ref. Clause 4.5.5). The Bidder should list all the information requested below.

| Sr. No. | Plant or Machinery | Nos. | Location | Age of Machinery (maximum 15 years) | Make | Capacity | Approximate Value | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 2(a) | 2(b) | 2(c) | 3 | 4 | 5 | 6 | 7 |
| | | | | | | | | |

1.6 Qualifications and experience of key personnel required for administration and execution of the contract. Attach biographical data. Refer also to Sub Clause 9.1 of the Conditions of Contract.

| Bidder should propose the structure and composition of the team dedicated for carrying out the Assignment. Bidder should list the main disciplines of the assignment, the key personnel responsible, and proposed technical and support staff. The personnel schedule shall be consistent with the approach and methodology, detailed work plan, activity schedule. | | | | |
|---|---|---|---|---|
| **Sr. No** | **Position** | **No. Of Resources** | **Min Qualification** | **Deployment** |
| **Key Personal** | | | | |
| | | | | |

1.7 Proposed sub-contract and firms involved

| Sections of the works | Value of Sub-Contractor | Sub-Contractor (Name & Address) | Experience in similar work |
|---|---|---|---|
| ~~ELV~~ | | | |
| ~~HVAC~~ | | | |
| ~~Fire System~~ | | | |
| ~~Lift/ Elevators~~ | | | |
| ~~MEP~~ | | | |
| ~~Any Other sub work~~ | | | |

Attach copies of certificates on possession of valid license for executing water supply/ sanitary work/ building electrification works.

1.8 Financial reports for the last five years: balance sheets, profit and loss statements, auditors' reports (in case of companies/corporations), etc. List them below and attach copies.

1.9 Evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List them below and attach copied documents.

1.10 Name, address, and telephone, mobile number and Email ID of the Bidders bankers who may provide references if contacted by the Employer.

1.11 Information on Litigation history in which the Bidder is involved. Format is attached.

| **Other Party (ies)** | **Employer** | **Cause of Dispute** | **Amount Involved** | **Remarks showing Present Status** |
|---|---|---|---|---|
| | | | | |

1.12. Statement of compliance under the requirements of Sub Clause 3.2 of the instruction to Bidders. (Name of Consultant engaged for project preparations is *.....)

1.13 Proposed work method and schedule. The Bidder should attach descriptions, drawings and charts as necessary to comply with the requirements of the Bidding documents. (Refer ITB Clause 4.1)

1.14 Programme

**2. Deleted**

**3. Additional Requirements**

3.1 Bidders should provide any additional information required to fulfill the requirements of Clause 4 of the Instructions to the Bidders, if applicable.

(i) Affidavit
(ii) Undertaking
* Fill the name of consultant

## SAMPLE FORMAT FOR EVIDENCE OF ACCESS TO OR AVAILABILITY OF CREDIT FACILITIES

(CLAUSE 4.5.6 OF ITB)

BANK CERTIFICATE

This is to certify that M/s._____is a reputed company with a good financial standing.

If the contract for the work, namely_____is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs._____to meet their working capital requirements for executing the above during the contract period. Estimated Cost

_____

(Signature)

Name of Bank

Senior Bank Manager

Address of the Bank

ANNEXURE **– I**

**(Form No. 3 A) (Self attested)**

Referred to in Rules No. 1.3.1

**DETAILS OF SIMILAR WORK COMPLETED**

1. Name of Contractor :
2. Name of Work :
3. Estimated cost of Work put to tender :
4. Revised Estimated Cost :
5. Tender Amount :
6. Date of Starting the Work :
7. Date of completion of the work (As per contract agreement) :
8. Actual date of the Completion of work :
9. Amount of Actual completion of the total project:
   - A) Electrical (Solar) Work cost:
   - ~~B) HVAC Work cost~~: **DELETED**
   - ~~C) ELV Work cost:~~
   - ~~D) MGPS Work cost~~: **DELETED**
   - ~~E) CSSD Work cost:~~ **DELETED**
   - ~~F) MOT Work cost:~~ **DELETED**
10. State whether the details as above given by the contractor are correct if not state as to what is the correct information :
11. State whether the contractor has executed the work in progress. Satisfactory as per specification if not give the correct position of the work. :
12. Period rate & amount of compensation if levied. :
13. Period of extension granted if any :
14. Reason for delay in granted if any :
15. Any other remarks :

Particulars of work completed :

**Date :**

**-Authorized Signature-**

## ANNEXURE – II

# Testing Of Material

For ensuring quality control and workmanship, various test prescribed below corresponding to the material concerned shall be taken at periodic intervals as stipulated below.

| Item No. as per Sch. B | Brief Description of Materials to be Tested | Prescription of Test which Shall be Carried Out | Frequency @which Test Shall be Carried Out | Total No. of Test to be Carried Out |
|---|---|---|---|---|
| | Coarse Aggregate (Metal, Kapchi, Gravel, etc.) | • Gradation Test<br>• Impact Value<br>• Flakiness Index<br>• Water Absorption<br>• Stripping Value | • 1 to 100 Cum – 1 Test<br>• 100 to 500 – 3 Test<br>• 500 to 1500 – 5 Test<br>• 1500 to 5000 – 7 Test | |
| | Grit | • Stripping Value | • One Test per Work | |
| | Sand | • Gradation<br>• Fineness Modulus<br>• Specific Gravity<br>• Water Absorption<br>• Silt Content | • One Test per 150 Cum or as per requirement of relevant specification | |
| | Tiles | • Dimension Test<br>• Transverse Strength<br>• Water Absorption<br>• Abrasion Test | • One Test per 2000 Tiles | |
| | Teakwood | • Anatomy Test<br>• Density Test<br>• Moisture Content Test | • One Test per work | |
| | Bricks | • Dimension and Tolerance<br>• Water Absorption<br>• Effluence<br>• Compressive Strength | • One Test @ 50,000 Bricks | |
| | Cement | • Consistency<br>• Setting Time | • Up to 50 MT – 1 Test | |

| | | | | |
|---|---|---|---|---|
| | | • Compressive Strength<br>• Fineness<br>• Chemical Analysis<br>• Soundness | • 50 – 100 MT – 2 Test<br>• 100 – 200 MT – 3 Test<br>• 200 – 300 MT – 4 Test<br>• 300 – 500 MT – 5 Test | |
| | Steel | • Tensile Strength<br>• Yield Stress<br>• Elongation<br>• Size | • One test / 40 tonnes / per category | |
| | C.C. Cube test 1:2:4 | • Compressive Strength | • 1 to 5 Cum – 1 Test<br>• 6 to 15 Cum – 2 Test<br>• 16 to 20 Cum – 3 Test<br>• 51 & Above Cum- 4 + 1 for each additional 50 Cum or part thereof | |
| | Aluminium Sections | • Gauge, Section | • One Test for each section | |

# LAB TESTING EQUIPMENT

**The BIDDER shall provide adequate information for testingequipment and surveying equipment**

| | Name of Testing Equipment | Minimum Requirements | Equipment with Agency | |
|---|---|---|---|---|
| | | | Equipment in hand | Equipment to be procured |
| **1** | **A - General Lab Equipment** | | | |
| | a) Electronic balance 7 Kg. to 10 Kg. capacitysemi self-indication type accuracy 1 gm. | 2 Nos. | | |
| | b) Pan balance 10 kg capacity accuracy 0.01 gm | 12 nos. | | |
| | c) Electronic balance 500 gm capacity accuracy 0.001 gm | 2 Nos. | | |
| | I) Sieves as per I.S. 460-1962 | Full IS Set. | | |
| | II) Stop watches, 1/5 sec. accuracy | 2 Nos. | | |
| **2** | **B - For Cement and Cement Concrete** | | | |
| | **I) Moulds** | | | |
| | a) 150mm dia. x 300mm height cylinder with capping component | As required | | |

| | | | | |
|---|---|---|---|---|
| | b) Cubes 150mm | As required | | |
| | III) High frequency mortar cube Vibrator for cement testing | 1 No. | | |
| | iv) Concrete mixer power driven, 0.03 m3capacity | 1 No. | | |
| | V) Variable frequency and amplitude vibrating table size 1 meter x 1 meter as per the relevantBritish standard. | 1 No. | | |
| | Vi) Flow table as per the relevant ISspecifications. | 4 Nos. | | |
| | Vii) a) 2000 Kn (Least count 10 Kn) compressiontesting machine for concrete cube. | 1 No. | | |
| | b) 500 Kn (least count 2 Kn) compression testing machine for cement mortar cube. | 1 No. | | |
| | viii) Equipment for slump test | 2 Nos. | | |
| | xi) Needle Vibrator | 1 No. | | |
| | xii)Cement Testing Equipment | 1 No. | | |
| | xiii)Soil Testing Equipment | 1 No. | | |
| | xiv)Aggregate Testing Equipment | 1 No. | | |
| | Apparatus of Drinking Water: Total Dissolved Solid | 1 No. | | |
| | Apparatus of water for construction purpose: Acidity, Alkalinity, Chloride, Inorganic Solid, Organic Solid, pH, Sulphate, Total Suspended Solid | 1 No. | | |
| | Apparatus of Brick: Compressive Strength, Compressive Strength, Dimension-Height, Dimension-Length, Dimension width, Efflorescence, Water Absorption | 1 No. | | |
| | Apparatus of Cement: Compressive Strength, Density, Fineness by Blain's air permeability, Nominal Consistency, Setting time (Final), setting time (Initial), soundless by Le Chattelier | 1 No. | | |
| | Apparatus of Coarse Aggregate: 10% Fine value, Crushing Value, Elongation Index, Flakiness index, Impact value, Loss Angle Abrasion, Sieve Analysis (sieve size 75micron to 90mm), specific Gravity, Water absorption | 1 No. | | |
| | Apparatus of Concrete: Compressive strength, Slump test | 1 No. | | |
| | Apparatus of Fine Aggregate: Bulk Density, Material finer than 75u, Sieve Analysis (sieve size 75micron to 90mm), Specific Gravity, water absorption | 1 No. | | |
| | Apparatus of Paver block: Compressive Strength, water absorption | 1 No. | | |
| | Apparatus of Steel HSD Bar/TMT Bar: Yield Strength, Elongation, Section weight per meter, Ultimate Tensile Strength | 1 No. | | |
| | Apparatus of Soil: Liquid Limit, Plastic Limit, grain Size analysis, Specific Gravity, Unconfined compression strength, Direct Shear (Angle), Direct shear (C), Standard penetration test | 1 No. | | |
| | Apparatus of Any Reinforced Concrete structure surface: Cover measurement of Reinforcement from top surface of member | 1 No. | | |
| | Apparatus of Any Reinforced Concrete surface: Half Cell Potential Corrosion Measurement test, Pulse velocity test in concrete specimen, Rebound Hammer test on Concrete surface | 1 No. | | |
| | Apparatus of Concrete Element (Core) : Carbonation | 1 No. | | |

**ANNEXURE-III (Electrical work and ELV WORK)**

**MOU**

**Memorandum of Understanding between bidder and nominated sub-contractor for Electrical and ELV work**

This Memorandum of understanding (MOU) made on Date---------- between M/S (name of the bidder) having their registered office …… (hereinafter called the "Bidder") and Sub-contractor (Here after called nominated sub-contractor) is a Bonafide experienced Civil Contractor of sound financial standing and reputation fulfilling the requirements , specifications and mandatory and special conditions mentioned in tender document to take up the work of _____Whereas Nominated Sub-contractor (Name and address of Nominated sub-contractor) is a Bonafide medical gas Contractor of sound financial standing and reputation fulfilling the requirement to take up HVAC, Electrical and ELV works (electrical work shall be executed by electrical contractor registered in Road and Buildings department in appropriate **"D" class and above**) .

And whereas Bidder and Nominated sub-contractor having recognized their strengths of each other's unique position and having felt it necessary to enter into this Memorandum of Understanding

Nominated Sub-contractor having completed similar standard and nature of HVAC, Electrical and ELV works.

NOW THEREFORE THIS DEED WITNESSED AS UNDER:

Nominated sub-contractor (Name and address of nominated sub-contractor) i.e. the "Associates" for HVAC, Electrical and ELV work has shown their interest to quote for HVAC, Electrical and ELV.

The "Bidder" and the Nominated sub-contractor shall fulfil the Mandatory Pre qualifications criteria and also submit all the mandatory documents as per PQ criteria,

This Memorandum of Understanding should not be construed as deed of partnership and shall be governed by applicable laws in India.

Dated this

| | |
|---|---|
| For | For |
| (Name and address of Bidder ) | Name and address of Nominated Sub Contractor |
| Position: | Position: |

**ANNEXURE-IV (HVAC, Electrical and ELV WORK)**

**Declaration/ Undertaking on Rs. 300/-nonjudicial stamp paper notarized affidavit**

I/We……Resident of (Address)do solemnly pledge and affirm:

That I am the proprietor/partner/authorized signatory of M/S…… …… hereby giving assurance that we will supply and install all ELV system, as per referenced standard …….. (Mention name of standard) and Corresponding tender technical specifications. There will be no change in declared standard and tender technical specifications at any time of the project execution.

**Name, Signature &Address of the tenderer**

**With Stamp**

## ANNEXURE-V

### Declaration / Undertaking on Letter Head for LIFT

### (To be submitted by bidder/Nominated Sub-Contractor, as may be the case)

_____, am the Partner/Proprietor/Authorized signatory of_____ (Mention name of firm and its complete address) do here by solemnly affirm and declare as under: -

1. That our Firm/company i.e. _____ (Mention name of firm and its complete address) is registered vide Registration No. _____ under the provisions of _____ (mention the name of the Act.)

2. That our Firm/company i.e. (Mention name of firm) has applied in response to the tender for the work of _____(Name of work)_____.

3. That _____ (Mention name of firm) is eligible to submit the aforesaid proposal as it is not under liquidation, court receivership or similar proceedings.

4. That _____ (Mention name of firm) has not been barred and/or blacklisted by the Central Government / State Government / or any Government under taking at the time of submission of tender.

5. That _____ (Mention name of firm) has during the last three years neither failed to perform on any agreement nor was expelled from any project or agreement terminated for any breach by the applicant.

6. That _____ (Mention name of firm) has no contracts with the state/central government that are in arbitration. (In case some contract (s) are in arbitration give the details of such contract in a schedule to be attached with this affidavit).

**Name, Signature &Address of Tenderer**
**With Stamp**

**ANNEXURE-VI**
**MANUFACTURER'S AUTHORISATION FORM**

The Registrar,
Gujarat Biotechnology University,
Near GIFT City, Gandhinagar- 382355

Dear Sir,

Ref: Your TE document No

Dated

We, Who…….. are proven and reputable manufacturers of (name and description of the goods offered in the tender) having factories at ……..hereby authorize M/s. ……. (name and address of the agent) to submit a tender, process the same further and enter into a contract with you against your requirement as contained in the above referred tender documents for LIFT system products manufactured by us……..

We also hereby extend our full warranty, as per General conditions of contract, we also hereby confirm that we would be responsible for the satisfactory execution of contract placed on the authorized agent we also confirm that the price quoted by our agent shall not exceed the price which we would have quoted directly"

Yours faithfully,

[Signature with date, name and designation]

For and on behalf of M/s. [Name & address of the manufacturers]

Note: 1. this letter of authorization should be on the letter head of the manufacturing firm and should be signed by a person competent

**Annexure -VII**

**MOU**

**Memorandum of Understanding between bidder and nominated sub-contractor for LIFT**

This Memorandum Of Understanding (MOU) made on Date---------- between M/S (Name of the bidder) having their registered office ---------- (hereinafter called the "Bidder") and Sub-contractor (Here after called nominated sub-contractor) is a Bonafede experienced Civil Contractor of sound financial standing and reputation fulfilling the requirements , specifications and mandatory and special conditions mentioned in tender document to take up the _____(Name of Work)_____ .

Whereas Nominated Sub-contractor (Name and address of Nominated sub-contractor) is a Bonafede Lift OEM/Contractor of sound financial standing and reputation fulfilling the requirement to take up the Lift works.

And whereas Bidder and Nominated sub-contractor having recognized their strengths of each other's unique position and having felt it necessary to enter into this Memorandum of Understanding.

Nominated Sub-contractor having completed similar standard and nature of Lift Works.

NOW THEREFORE THIS DEED WITNESSED AS UNDER:

Nominated sub-contractor (Name and address of nominated sub-contractor) i.e. the "Associates" for Lift works has shown their interest to quote for the Lift works.

The "Bidder" and the Nominated sub-contractor shall fulfil the Mandatory Pre-qualifications criteria and also submit all the mandatory documents as per PQ criteria, further I (Bidder) shall abide to submit all the remaining documents specified in special conditions of tender document within one month of issue of work order failing which Department / Employer can take appropriate action as per tender clause and conditions.

**Upon receiving a complaint, the issue must be resolved within two hours. Failure to address and resolve the issue within this timeframe will result in a penalty of INR 1,000 for each day of delay.**

This Memorandum of Understanding should not be construed as deed of partnership and shall be governed by applicable laws in India.

In Witness whereof the parties through their authorized representative have executed those present and common seal of their respective companies on the day, month and year mentioned below.

Dated this

| For ( Name and address of Bidder ) | For ( Name and address of nominated Sub-contractor ) |
|---|---|
| Name : | |
| Address : | |
| Position: | |

**ANNEXURE- VIII**
**FOR LIFT**
**Declaration / Undertaking on Letter Head**

I/We……Resident of (Address) do solemnly pledge and affirm :– That I am the proprietor/partner/authorized signatory of M/S…… …… …… hereby giving assurance that we will supply and install all Lift system, as per referenced standard …….. (NAME OF PARTICULAR STANDARD TO BE MENTIONED, i.e. Latest (Amendment) Rules of The Gujarat Lifts and Escalators as the Chief Electrical Inspector and Collector of Electricity Duty, GoG) and corresponding tender technical specifications. There will be no change in declared standard and tender technical specifications at any time of the project execution. Moreover, I/We will execute all the LIFT items as per approved technical specifications.

**Name, Signature & Address of the tenderer**
**With Stamp**

**ANNEXURE- IX**

**Affidavit for appointment of Specialised Agency ( HVAC )**

**Date:** __/__/____

**Subject: Appointment of Specialised Agency for _____Works**

**Project:** _____

We Here by Produce affidavit that We _____ having our registered office at _____ is willing to participate in the upcoming project of _____. As per the Pre-Qualification Criteria Clause _____, we hereby submit this affidavit and confirm that if our Techno-Commercial Bid is found successful and LOA/LOI is issued, we shall submit MOU with prospective sub-contractor or manufacturer or authorised dealer who has specific experience qualifying the clause _____ of the tender document before agreement.

We understand that if we fail to submit such MOU within specified time as per the affidavit and tender documents, Client has right to take appropriate action including forfeiting the EMD also.

**Authorized Signatory**

**ANNEXURE- X**

**Affidavit for appointment of Specialised Agency (ELV)**

**Date: __/__/____**

**Subject: Appointment of Specialised Agency for _____Works**

**Project: _____**

We Here by Produce affidavit that We _____ having our registered office at _____ is willing to participate in the upcoming project of _____. As per the Pre-Qualification Criteria Clause _____, we hereby submit this affidavit and confirm that if our Techno-Commercial Bid is found successful and LOA/LOI is issued, we shall submit MOU with prospective sub-contractor or manufacturer or authorised dealer who has specific experience qualifying the clause _____ of the tender document before agreement.

We understand that if we fail to submit such MOU within specified time as per the affidavit and tender documents, Client has right to take appropriate action including forfeiting the EMD also.

**Authorized Signatory**

**ANNEXURE- XI**

**Affidavit for appointment of Specialised Agency (Electrical)**

**Date:** __/__/____

**Subject: Appointment of Specialised Agency for _____Works**

**Project:** _____

We Here by Produce affidavit that We _____ having our registered office at _____ is willing to participate in the upcoming project of _____. As per the Pre Qualification Criteria Clause _____, we hereby submit this affidavit and confirm that if our Techno-Commercial Bid is found successful and LOA/LOI is issued, we shall submit MOU with prospective sub contractor or manufacturer or authorised dealer who has specific experience qualifying the clause _____ of the tender document before agreement and the requirement for an Electrical Contractor License as per the tender amount and " " class registration.

We understand that if we fail to submit such MOU within specified time as per the affidavit and tender documents, Client has right to take appropriate action including forfeiting the EMD also.

**Authorized Signatory**

_____

**ANNEXURE- XII**

**Affidavit for appointment of Specialised Agency**
**( Lift )**

**Date: __/__/____**

**Subject: Appointment of Specialised Agency for _____Works**

**Project: _____**

We Here by Produce affidavit that We _____ having our registered office at _____ is willing to participate in the upcoming project of _____. As per the Pre-Qualification Criteria Clause _____, we hereby submit this affidavit and confirm that if our Techno-Commercial Bid is found successful and LOA/LOI is issued, we shall submit MOU with prospective sub-contractor or manufacturer or authorised dealer who has specific experience qualifying the clause _____ of the tender document before agreement.

We understand that if we fail to submit such MOU within specified time as per the affidavit and tender documents, Client has right to take appropriate action including forfeiting the EMD also.

**Authorized Signatory**

# AFFIDAVIT

1. I, the undersigned, do hereby certify that all the statements made in the required attachments are true and correct.

2. The undersigned also hereby certifies that neither our firm M/s. _____ _____ have not abandoned any work of Government of Gujarat/Government of India/any Board or Corporation under Government of Gujarat/Government of India nor any contract awarded to us for such works have been rescinded, during last five years prior to the date of this bid.

3. The undersigned hereby authorize(s) and request (s) any bank, person, firm or corporation to furnish pertinent information deemed necessary and requested by the Department to verify this statement or regarding any (our) competence and general reputation.

4. The Undersigned understands and agrees that further qualifying information may be requested, and agrees to furnish any such information at the request of the Department/ Project implementing agency.

_____

(Signed by an Authorized Officer of the Firm)

_____

Title of Officer

_____

Name of Firm

_____

Date

# UNDERTAKING

I, the undersigned do hereby undertake that our firm M/s.....would invest a minimum cash up to 25% of the value of the work during implementation of the contract.

_____

(Signed by an Authorized officer of the firm)

_____

Title of officer

_____

Name of firm

_____

DATE

## NON-BLACKLISTING CERTIFICATE

(On stamp paper of value not less than Rs 300)

Format for Affidavit certifying that the Entity/Promoter/s / Director/s of Bidder/ Party are not blacklisted

### Non-Blacklisting Affidavit

I/ We M/s _____ (name of the bidder(s)), (name and addresses of the registered office) hereby certify and confirm that we or any of our promoter/s / director/s are not barred by Government of Gujarat (GoG) / any other entity of GoG or blacklisted by any state government or central government/ Government Undertaking /department / Local Government / agency in India or from abroad from participating in Project(s) as on the _____-(Bid submission Date)

We further confirm that we are aware that our Bid for the captioned Project would be liable for rejection in case any material misrepresentation is made or discovered with regard to the requirements of this SBD at any stage of the Bidding Process or thereafter during the agreement period. Dated this ____day of _____2025.

Name of the Bidder
Signature of the Authorized person
Name of the Authorized Person

## SECTION - 3

# CONDITIONS OF CONTRACT

# Conditions of Contract

Table of Contents

## CONDITIONS OF CONTRACT

### A. GENERAL.

### 1. Definitions

1.1 Terms which are defined in the Contract Data are not also defined in the Conditions of Contract but keep their defined meaning.

**Bill of Quantities** means the priced and completed Bill of Quantities forming part of the Bid

**Compensation Events** are those defined in Clause 44 hereunder

The **Completion Date** is the date of completion of the Works as certified by the Engineer in accordance with Sub Clause 55.1

The Contract is the contract between the Employer and Contractor to execute, complete and maintain the Works **till the completion of Defects Liability Period.** It consists of the documents listed in Clause 2.3 below.

The **Contract data** defines the documents and other information which comprise the Contract.

The **Contractor** is a person or corporate body whose Bid to carry out the Work has been accepted by the Employer.

The **Contractor's Bid** is the completed Bidding document submitted by the Contractor to the Employer and includes Technical and Financial Bids.

The **Contract Price** is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

**Days** are calendar days: **months** are calendar months.

The **Defects Liability Period** is the period named in the Contract Data and calculated from the Completion Date.

The **Employer- The Registrar,** Employers representative: Registrar who is overall in charge of the works and contract signing authority.

**The Engineer** is the person named in the Contract Data (or any other competent person appointed and notified to the contractor to act in replacement of the Engineer) who is responsible for supervising the Contractor, administering the Contract, certifying payments due to the Contractor, issuing and valuing Variations to the Contract, and valuing the Compensations Events under the control of Superintending Engineer.

**Equipment** is Contractor's machinery and vehicles brought temporarily to the site to construct the Works.

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

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 Contract Data. The Intended Completion Date may be revised only by the Engineer by issuing an extension of time.

**Materials** are all supplies, including consumables, used by the contractor for incorporation in the works.

**Plant** is any integral part of the work which is to have mechanical, electrical, electronic or chemical or biological functions.

The **Site** is the area defined as such in the Contract Data.

**Site Investigation Reports** are those which were included in the Bidding documents and are factual interpretive reports about the surface and subsurface conditions at the site.

**Specifications** means the Specifications of the works included in the Contract and any modification or addition made or approved by the Engineer.

The **Start Date** is given in the Contract Data or Indicating in Work Order. It is the date when the Contractor shall commence execution of the works. It does not necessarily coincide with any of the Site Possession Dates.

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.

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

A **Variation** is an instruction given by the Engineer, which varies the Works.

The **Works** are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the Contract Data.

## 2. Interpretation

2.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter and the other way around. Heading have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Engineer will provide instructions clarifying queries about Conditions of Contract.

2.2 If sectional completion is specified in the Contract Data, references in the Conditions of Contract to the Works, the Completion date, and Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion date for the whole works)

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

(1) Agreement
(2) Letter of Acceptance, notice to proceed with works
(3) Contractor's Bid

(4) Contract Data
(5) Conditions of Contract including Conditions of Contract
(6) Specifications
(7) Drawings
(8) Bills of quantities and
(9) Any other document listed in the Contract Data as forming part of the Contract.

**3. Language and Law**

3.1 The language of the Contract and the law governing the Contract are stated in the Contract Data.

**4. Engineers Decisions**

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

**5. Delegation**

5.1 The Engineer may delegate any of his duties and responsibilities to other people after notifying the Contractor and may cancel any delegation after notifying the Contractor.

**6. Communications**

6.1 Communications between parties which are referred to in the conditions are effective only when in writing. A notice shall be effective only when it is delivered (in terms of Indian Contract Act).

**7. Sub-Contracting**

**7.1** The Contractor may subcontract any portion of work, up to a limit specified in contract data, with the approval of the engineer but may not assign the Contract without the approval of the Employer in writing. Subcontracting shall not alter the Contractor's obligations. **Sub-contracting of supply or specific items of work is not allowed.**

7.2 The sub-contractor must be registered in appropriate class and category for the part of work to be subcontracted.

**8. Other Contractors**

8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities and the Employer between the dates given in the Schedule of other Contractor. The Contractors shall as refer to in the Contract Data, 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 modifications.

## 9. Personnel

9.1 The Contractor shall employ the key personnel named in the Schedule of Key Personnel as referred to in the Contract Data to carry out the functions stated in the Schedule or other personnel approved by the Engineer. The Engineer will approve any proposed replacement of key personnel only if their qualifications, abilities, and relevant experience are substantially equal to or better than those of the personnel listed in the Schedule.

9.2 If the engineer asks the Contractor to remove a person who is a member of the Contractor Staff or his work force stating the reasons the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

## 10. Employer's and Contractors Risks

10.1 The Employer carries the risk which these Contract states are Employer's risks, and the Contractor carries the risks which these Contracts states are Contractors risk.

## 11. Employer's Risks

11.1 The employer is responsible for the excepted risks which are (a) in so far as they directly affect the execution of the Works, the risks of war, hostilities, invasion, act of foreign enemies, rebellion, revolution, insurrection or military or usurped power, civil war, riot commotion or disorder (unless restricted to the Contractor's employees), and contamination from any nuclear fuel or nuclear waste or radioactive toxic explosive.

## 12. Contractor's Risks

12.1 All risks of loss of or damages to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks are the responsibility of the Contractor.

## 13. Insurance

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

(a) Loss of or damage to the works, Plant and materials,

(b) Loss of or damage to Equipment
(c) Loss of or damages of property (expect the Works, Plant, Materials and Equipment) in connection with the Contract; and

(d) Personal injury or death.

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

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

13.4 Alterations to the terms of an insurance shall not be made without the approval of the Engineer.

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

~~**14. Site Investigation Report**~~

~~14.1 The Contractor in preparing the Bid shall rely on any site Investigation reports referred to in the Contract Data, supplemented by any information available to the Bidder.~~

**15. Queries about the Contract data**

15.1 The engineer will clarify queries on the Contract Data

**16. Contractor to Construct the Works**

16.1 The Contractor shall construct and install the works in accordance with the specification and Drawings.

**17. The Works to be completed by the Intended Completion Date**

17.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the programme submitted by the Contractor, as updated with the approval of the Engineer, and complete them by the Intended Completion date

**18. Approval by the Engineer**

18.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary works to the Engineer, who is to approve them if they comply with the Specifications and drawings.

18.2 The Contractor shall be responsible for design of temporary works.

18.3 The Engineer's approval shall not alter the contractor responsibility for design of the Temporary works.

18.4 The Contractor shall obtain approval of third parties to the design of the Temporary works where required.

18.5 All Drawings prepared by the Contractors for the execution of the temporary or permanent work are subject to prior approval by the Engineer before their use.

**19. Safety**

19.1 The Contractor shall be responsible for the safety of all activities on the Site.

## 20. Discoveries

20.1 Anything of historical or other interest or of significant value unexpectedly discovered on the site is the property of the Employer. The contractor is to notify the engineer of such discoveries and carry out the Engineer's instructions for dealing with them.

## 21. Possession of the Site

21.1 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 Contract Data the Employer is deemed to have delayed the start of the relevant activities and this will be a Compensation Event.

21.2 If within 25% of the time limit of the project, 80% of possession of the site is not handed over to the Contractor, then contractor/ Employer may fore-close the contract. Contractor/Employer has to foreclose the work within as decided by Employer. after lapse of 25%-time limit and after 30 days foreclosure option will be closed.

## 22. Access to the Site

22.1 The Contractor shall allow the Engineer and any person authorized by the Engineer access to the Site, to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where materials or plants are being manufactured/ fabricated/ assembled for the works.

## 23. Instructions

23.1 The Contractor shall carry out all instructions of the Engineer pertaining to works which comply with the applicable laws where the site is located.

23.2 The Contractor shall permit the Employer 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 Employer, if so required by the Employer.

## 24. Disputes

24.1 If the Contractor is of the view that a decision taken by the Engineer was either outside the authority given to the Engineer by the Contract or that the decision was wrongly taken, the decision shall be referred to #**The Registrar** (Higher Authority) within 30 days of the notification of the Engineer's decision. If the issue is not resolved, any party can refer the matter for conciliation within 30 days from the decision given by the #The Registrar.

24.2

(a) For the work up to Rs.100 Cr., if any of the parties is not satisfied with the decision of the #Superintending Engineer, both the parties have to refer to the Registrar concern for the conciliation process.

(b) For the work more than Rs.100 Cr., if any of the parties is not satisfied with the decision of the #Registrar, both the parties have to refer to the #Secretary, Roads & Building Department, Government of Gujarat for the conciliation process.

If the dispute is not resolved through the conciliation process, he may refer the dispute to Gujarat Public Works Contract Dispute Arbitration Tribunal. If the Contractor fails to refer a claim / dispute to the Higher Authority within 14 days of the notification of the Engineer's decision, the Contractor shall not be entitled to any additional payment/claim if he doesn't follow the above sequence in stipulated time and he should not stop the work.

## 25. Procedure for Disputers

25.1 The arbitration shall be conducted in accordance with the arbitration procedure stated in the Special Conditions of Contract.

## 26. Deleted

## B. TIME CONTROL

### 27. Programme

27.1 Within the time stated in the Contract Data the Contractor shall submit to the Engineer for approval a Programme showing the general methods, arrangements orders, and timing for all the activities in the works along with monthly cash flow forecast.

27.2 An update of the Programme shall be a programme 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.

27.3 The Contractor shall submit to the Engineer, for approval an updated programme at intervals no longer than the period stated in the Contract data. If the Contractor does not submit an updated programme within this period, the Engineer may withhold the amount stated in the Contract data from the next payment after the date on which the overdue programme has been submitted.

27.4 The Engineer's approval of the programme shall not alter the Contractor's obligations. The Contractor may revise the programme and submit it to the Engineer again at any time. A revised programme is to show the effect of Variations and Compensations events.

### 28. Extension of the Intended Completion Date

28.1 The Engineer 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 and which would cause the Contractor to incur additional cost.

28.2 The Engineer shall decide whether and by how much to extend the Intended Completion Date within 35 days of the Contractor asking the Engineer for a decision upon the effect of a compensation event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

28.3 The Engineer shall within 14 days of receiving full justification from the contractor for extension of Intended Completion Date refer to the Employer his decision. The employer shall in not more than 21 days communicate to the engineer the acceptance or otherwise of the Engineer's decision. If the employer fails to give his acceptance, the Engineer shall not grant the extension and the contractor may refer the matter under Clause 24.1

### 29. Deleted

### 30. Delays Ordered by the Engineer

30.1 The Engineer may instruct the Contractor to delay the start or progress of any activity within the works.

## 31. Management Meetings

31.1 Either the Engineer 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.

31.2 The Engineer shall record the business of management meetings and is to provide copies of his record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken is to be decided by the Engineer either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

## 32. Early Warning

32.1 The Contractor is to warn the Engineer 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 works. The Engineer 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 is to be provided by the Contractor as soon as reasonably possible.

32.2 The Contractor shall cooperate with the Engineer in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Engineer.

## C. QUALITY CONTROL

### # 33. Identifying Defects/ Defect liability period

33.1 : Defect liability period: The contractor shall be responsible to make good and remedy at his own expense any defect which may develop or may be noticed before the period mentioned here under from the certified date of completion. The Engineer in charge shall give the contractor a notice in writing about the defects and the contractor shall make good the same within 15 days of receipt of the notice. In the case of failure on the part of the contractor, the Engineer-in-charge may rectify or remove or re-execute the work at the risk & cost of the contractor. The Engineer-in-charge shall be entitled to appropriate the whole or any part of the amount of security deposit towards the expenses, if any, Incurred by him in rectification, removal or re-execution. The Defects Liability period shall be as under….

(a) The defects liability period shall be 12 Months from the certified date of completion.

33.2 Free maintenance guarantee period for works of building and allied system construction

(a) Deleted

(b) Deleted

~~(c) Building and allied system of MGPS, MOT, CSSD, Lift, Electrification, ELV, Water Supply System, Drainage System, HVAC contractor shall maintain in operational condition by repairing, replacing, renovating of any component of building or allied system above as per mention period Cl.33 (D) also contractor shall deploy the qualified manpower for the operation of the system as per requirement~~

However, this amount shall be released against fixed deposit or bank guarantee pledged in the name of The Registrar after completion certificate of work is issued.

(1) Deleted

(2) Deleted

(3) Deleted

(4) Deleted

further that such interruption and diversion shall be undertaken by the Contractor only with the prior written approval of the The Registrar which approval shall not be unreasonably withheld. For the avoidance of doubt, it is agreed that the Contractor shall at all times be responsible for ensuring safe operation of the road.

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

## 34. Tests

34.1 If the engineer 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.

34.2 #1% of the amount of **work done** should be deducted from R.A. Bill of the contractor, for testing the quality of material workmanship, irrespective of actual charges. We may allow testing certificates of GERI, NABL or Government approved Lab by R&B Department.

34.3 Agency has to establish testing laboratory on site for the various test to be carried out in the work for this purpose agency shall construct a pukka laboratory building with all facility on site at location specified by the engineer in charge. Penalty as per R&B Circular no._____ Dt._____.

## 35. Correction of defects

35.1 The engineer 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 contract data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

35.2 Every time notice of a Defect is given, the Contractor shall correct the notified defect within the length of time specified by the Engineer's notice.

## 36. Uncorrected Defects

36.1 If the Contractor has not corrected a defect within the time specified in the Engineer's notice, the Engineer will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

## D. COST CONTROL

### 37. Bill of Quantities

37.1 The bill of Quantities shall contain items for the constructions, installation, testing and commissioning work to be done by the Contractor.

37.2 The bill of Quantities is used to calculate the Contract price. The Contractor is paid for the quantity of the work done at the rate in the Bill of Quantities for each item.

### 38. Change in the Quantities

38.1 The Engineer shall have power to make any alterations in or addition to the original specifications , drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work and the contractor shall be bound to carry out the work in accordance with any instruction in this connection which may be given to him in writing signed by the Engineer and such alteration shall not invalidate the contract and any additional work which the contractor may be directed to do in the manner above specified as part of the work shall be carried out by the contractor on the same conditions in all respects on which he agreed to do the main work and at the same rate as are specified in the tender for the main work.

Except that when the quantity of any item exceeds the quantity as in the tender by more than 130%, the contractor will be paid for the quantity in excess of 130%, at the rate entered in the SOR of the year during which the excess in quantity is first executed.

### 39. Variations

39.1 All Variations shall be included in updated programmes produced by the Contractor.

### 40. Payments for Variations

40.1 If the additional or altered work includes any class of work for which no rate is specified in this contract, then such class of work shall be carried out as under.

(i) At the rate derived from the item within the contract which is comparable to the one involving additional or altered class of work; where there are more than one comparable items, the item of the contract which is nearest in comparison with regard to class or classes of the work involved shall be selected and the decision of the Superintending Engineer as to the nearest comparable item shall be final and binding on the contractor.

(ii) If the rate cannot be derived in accordance with (i) above, such class of works shall be carried out at the rate entered in the Schedule of Rates of the division

for the year in which the tender was received, increased or decreased by the percentage by which the tender amount is more or less as compared to the amount arrived at the rates in the "Schedule of Rates" of the Division in the year in which the tender was received. If the Schedule of rates of the Division does not contain all the items, the percentage increase or decrease of the tender shall be calculated considering such items which were included in the "Scheduled Rates" of the division for the year and for materials consumed on such item the rate to be charged would be the basic rate taken into account for fixing the rate in S.O.R. referred to above.

(iii) If it is not possible to arrive at the rate from (i) and (ii) above, such class of work shall be carried out at the rate decided by the competent authorities on the basis of detailed rate analysis after hearing the contractor before a Committee of two Superintending Engineers stationed at the same place or the nearest place.

40.2 If the additional or altered work, for which no rate is entered in the "Schedule of Rates" of the Division is ordered to be carried out before the rate is agreed upon, then the contractor shall within seven days of the date of receipt by him of the order to carry out the work, inform the Engineer-in-charge of the rate, which it is his intention to charge for such class of work and if the Engineer in charge does not agree to this rates, he shall by notice in writing be at liberty to cancel his order to carry out such class of work and arrange to carry it out in such manner as he may consider it advisable, provided always that if the contractor shall commence work or incur any expenditure in regard thereof before the rates shall have been determined as lastly herein before mentioned, then in such cases he shall only be entitled to be paid in respect of the work carried out or expenditure incurred by him prior to the date of the determination of the rate as aforesaid according to such rate or rates as shall be fixed by the Engineer-in-charge. In the event of the dispute, the decision of the Superintending Engineer of the Circle shall be final.

Where, however, the work is to be executed according to the designs, drawings and specifications recommended by the contractor and accepted by the competent authority, the alternation above referred to shall be within the scope of such designs, drawings and specifications appended to the tenders.

The time limit for the completion of the work shall be extended in the proportion that the increase in the cost occasioned by alterations bears to the cost of the original work and the certificate of the Engineer-in-charge as to such proportion shall be final and conclusive.

## 41. Cash Flow Forecasts

41.1 When the programme is updated, the contractor is to provide the engineer with an updated cash flow forecast.

## 42. Payment certificates.

42.1 The Contractor shall submit to the Engineer monthly statements of the estimated value of the work completed less the cumulative amount certified previously.

~~42.2 The Engineer shall check the Contractor's monthly statement within 14 days and certify the amount to be paid to the Contractor after taking in to account any credit or debit for the month in question in respect of materials for the works in the relevant amounts and under conditions set forth in sub-clause 32.3 of the Contract Data (secured Advance).~~

42.3 The value of work executed shall be determined by the Engineer.

42.4 The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities completed.

42.5 The value of work executed shall include the valuation of variations and compensation events.

42.6 The Engineer 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

## 43. Payments

43.1 Payments shall be adjusted for deductions for retention, other recoveries in terms of the contract and taxes at source, as applicable under the law. The Employer shall pay the Contractor the amounts certified by the Engineer within 28 days of the date of each certificate.

43.2 Payment of GST (prevailing rates) on the amount payable under the contract to the Contractor will be made by the Employer. Hence, it is the responsibility of the contractor to pay the GST to the concerned Authority of Government. We should decide policy for estimate base on R&B SOR other than 2023-24 and other RA items and electrical items.

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

## 44. Compensation events

44.1 The following are compensation Events unless they are caused by the Contractor:

(a) The Employer does not give access to a part of the Site by the site Possession date stated in Contract data to the Contractor

44.2 In case of compensation event occurs and it prevents the work being completed beyond the Intended Completion Date then Authority will approve Extension of Time with eligible contractual price escalation.

## 45. Tax

45.1 The rates quoted by the Contractor must be inclusive of all taxes prevailing on due date of bid submission except GST. However, any subsequent changes in the tax structure by Government after due date of bid submission will be compensated (+/-) on availability or submission of actual documentation. Contractor will have to intimate Engineer regarding changes occurred in the tax structure after bid submission. If the contractor fails to provide such information and if any financial obligation may arise due to change in tax structure, same will be recovered from the contractor.

45.2 GST will be paid separately on the bills. Hence, it is the responsibility of the contractor to pay the GST to the concerned Authority. Ref. 43.2

## 46. Currencies.

46.1 All payment shall be made in Indian Rupees.

## 47. Price Adjustment
**Deleted**

47.1 To the extent that full compensation for any rise or fall in costs to the contractor is not covered by the provisions of this or other clause in the contract, the unit rates and prices included in the contract shall be deemed to include amounts to cover the contingency of such other rise or fall in costs.

## 48. Retention

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

48.2 On Completion of the whole of the Works half the total amount retained is repaid to the Contractor and half when the Defects Liability Period has passed and the Engineer has certified that all Defects notified by the Engineer to the Contractor before the end of this period have been corrected.

48.3 On completion of the whole works, the contractor may substitute retention money with an "on demand" Bank guarantee.

In case, Contractor requests for refund of the Retention Money deducted by the Employer under the provision of this clause, Employer shall consider the said request of the Contractor provided that the refund hereunder shall be made in tranches of not less than 1% (One Percent) of the Contract Price and Contractor furnishes an irrevocable and unconditional Bank guarantee for an equal amount substantially in the format of Bank Guarantee for Performance Guarantee enclosed with SBD and valid up to 60 day beyond the scheduled / extended Defects Liability Period. On completion of the whole works, the contractor has however an option to submit a fresh irrevocable and unconditional Bank Guarantee for an amount equal to 5% of the total value of work executed substantially in the format of Bank Guarantee for Performance Guarantee enclosed with SBD and valid up to 60 days beyond the Defect Liability Period and yet refund the Retention Money Bank Guarantee submitted for refund of Retention Money.

## 49. Liquidated Damages

49.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date (for the whole works or the milestone as stated in the contract data). The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Employer may deduct liquidated damages from payment due to the Contractor. Payment of liquidated damages does not affect the Contractor's liabilities.

49.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Engineer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall not be entitled for any interest on the over payment calculated from the date of payment to the date of repayment.

49.3 If the contractor fails to comply with the time for completion as stipulated in the tender, then the contractor shall pay to the employer the relevant sum stated in the Contract Data as Liquidated damages for such default and not as penalty for everyday or part of day which shall elapse between relevant time for completion and the date stated in the taking over certificate of the whole of the works on the relevant section, subject to the limit stated in the contract data.

The employer may, without prejudice to any other method of recovery deduct the amount of such damages from any monies due or to become due to the contractor. The payment or deduction of such damages shall not relieve

the contractor from his obligation to complete the works on from any other of his obligations and liabilities under the contract.

49.4 If, before the Time for Completion of the whole of the Works or, if applicable any Section, a Taking Over Certificate has been issued for any part of the Works or of a Section, the liquidated damages for delay in completion of the remainder of the Works or of that Section shall, for any period of delay after the date stated in such Taking-Over-Certificate, and in the absence of alternative provisions in the Contract, be reduced in the proportion which the value of the part so certified bears to the value of the whole of the Works or Section, as applicable. The provisions of this Sub-clause shall only apply to the rate of liquidated damages and shall not affect the limit thereof.

**50 Bonus**

No Bonus will be applicable

**51. Advance Payment**.

No Advance Payment shall be made.

**52. Securities**

52.1 The performance Security (including additional security for unbalanced bids) shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank or surety acceptable to the Employer, and denominated in Indian Rupees. The performance Security shall be valid until a date 60 days from the date of expiry of Defects Liability Period and the additional security for unbalanced bids shall be valid until a date 28 days from the date of issue of the certificate of completion.

**53. Deleted**

**54. Cost of Repairs**.

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

## E. FINISHING THE CONTRACT

### 55. Completion

55.1 The Contractor shall request the Engineer to issue a Certificate of Completion of the works and the Engineer will do so upon deciding that the work is completed.

### 56. Taking Over

56.1 The Employer shall take over the Site and the Works within seven days of the Engineer issuing a certificate of Completion.

### 57. Final Account

57.1 The Contractor shall supply to the Engineer a detailed final account of the total amount that the Contractor considers payable as full and final settlement of all claims under the Contract for items before the end of the Defects Liability Period. The Engineer shall issue a Defect 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 Engineer 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 Engineer shall decide on the amount payable to the Contractor and issue a payment certificate, within 56 days of receiving the Contractor's revised account.

57.2 If reversal in characteristic of tender (L1 becoming L2) on account of excesses and savings in final account is observed, the Engineer/Employer shall be at liberty to restrict the final payment of BOQ items to the lowest amount evaluated of the bids considering the final quantities and the rates quoted including the rebates if any. Payment of variation items shall however be made at the rates approved by the Employer, within 90 days from the physical completion of work. (Applicable for item rate tender only)

### 58. Operating and Maintenance Manuals

58.1 If "as built" drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the Contract data.

58.2 If the Contractor does not supply the Drawings and/or manuals by the dates stated in the Contract data, or they do not receive the Engineer's approval, the Engineer shall withhold the amount stated in the Contract Data from payments due to the Contractor.

### 59. Termination

59.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.

59.2 Fundamental breaches of Contract include, but shall not be limited to the following:

1. The contractor stops work for 28 days when no stoppage of work is shown on the current programme and the stoppage has not been authorized by the Engineer

2. The Engineer instructs the Contractor to delay the progress of the Works and the instructions is not withdrawn within 28 days;

3. The Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstructions or amalgamation

4. A payment certified by the Engineer is not paid by the Employer to the Contractor within 56 days of the date of the Engineer's certificate

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

6. The Contractor does not maintain a security which is required;

7. The Contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be paid as defined in the Contract data; and

8. If the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

For the purpose of this paragraph: "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the borrower, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition.

59.3 When either party to the Contract gives notice of a breach of contract to the Engineer for a cause other than those listed under Sub Clause 59.2 above, the Engineer shall decide whether the breach is fundamental or not.

59.4 Notwithstanding the above, the employer may terminate the Contract for convenience.

## 60. Payment upon Termination

60.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer shall issue a Certificate for the value of the work done less advance payments received up to the date of the issue of the

certificate, less other recoveries due in terms of the contract, less taxes due to deducted at source as per applicable law and less the percentage to apply to the work not completed as indicated in the Contract data. 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.

60.2 If the Contract is terminated at the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Engineer shall issue a certificate for the value of the work done, the cost of balance material brought by the contractor and available at site, the reasonable cost of removal of equipment, repatriation of the Contractor's personnel employed solely on the works, and the Contractor's cost of protecting and securing the Works and less advance payment received up to the date of the certificate, less other recoveries due in terms of the contract and less taxes due to deducted at source as per applicable law.

## 61. Property

61.1 All materials on the Site, Plant Equipments, Temporary Works and Works are deemed to be property of the Employer, if the Contract is terminated because of a Contractor's default.

## 62. Release from Performance

62.1 If the Contract is frustrated by the outbreak of war of by any other event entirely outside the control of either the Employer or the Contractor the Engineer 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 commitment was made.

## F. SPECIAL CONDITIONS OF CONTRACT

### 63. LABOUR

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

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

### 64. COMPLIANCE WITH LABOUR REGULATIONS

During continuance of the contact, the Contractor and his sub-contractor shall abide at all times by all existing labour enactments and rules made thereunder, regulations, notification and bye laws of the State or central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notifications that may be issued under any labour law in future either by the State or the Central Government or the local authority. Salient features of some of the major labour laws that are applicable to the construction industry are given below. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made thereunder, regulations or notifications including amendments. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for observance of the provisions stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if any, on the part of the Contractor, the Engineer/employer shall have the right to deduct any money due to the Contractor including his amount of performance security. The Employer/Engineer shall also have the right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.

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

SALIENT FEATURES OF SOME MAJOR LABOUR AND OTHER LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN BUILDING AND OTHER CONSTRUCTIONS WORK

A) **Workmen Compensation Act 1923** :- The Act provides for compensation in case of injury by accident arising out of and during the course of employment.

B) **Payment of Gratuity Act. 1972** :- Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years service or more on death, the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.

C) **Employees P.F. and Miscellaneous Provision Act 1952:-** The Act Provides for monthly contributions by the employer plus workers @ 10% or 8.33% The benefits payable under the Act are :

1. Pension or family pension on retirement or death, as the case may be.
2. Deposit linked insurance on the death in harness of the worker.
3. Payment of P.F. accumulation on retirement/death etc.

D) **Maternity Benefit Act 1951** :- The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.

E) **Contract Labour (Regulation & Abolition) Act 1970** : The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by Law. The principal Employer is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer, if they employ 20 or more contract labour.

F) **Minimum Wages Act 1948 :-** The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act, if the employment is a scheduled employment. Construction of Building, Roads, Runways are scheduled employment.

G) **Payments of wages Act 1936:-** It lays down as to by what date the wages are to be paid, when it will be paid and what deductions can be made from the wages of the workers.

H) **Equal remunerations Act 1979 :-** The Act provides for payment of equal wages for work of equal nature to Male and Female workers and for not making discrimination against female employees in the matter of transfer, training and promotions etc.

I) **Payments of Bonus Act 1965** :- The Act is applicable to all establishments employing 20 or more employees. The Act provides for payments of annual bonus subject to a minimum of 8.33% of wages and maximum of 20 % of wages to employees drawing Rs. 3500/- per month or less. The bonus to be paid to employees getting Rs, 2500/- per month or above Rs. 3500/- per month shall be worked out by taking wages as Rs. 2500/- per month only. The Act does not

apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of this Act.

J) **Industrial Disputes Act 1947** :- The Act lays down the machinery and procedure for resolutions of Industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.

K) **Industrial employment (standing Orders) Act 1946 :-** It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the State and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.

L) **Trade Unions Act 1926:-** The Act lays the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have given certain immunities from civil and criminal liabilities.

M) **Child Labour (Prohibition & Regulation Act 1986 :-** The Act prohibits employment of children below 14 years of age in certain occupations and process and provides for regulation of employment of children in all other occupations and processes. Employment of Child labour is prohibited in Building and Construction Industry.

N) **Inter – State Migrant workmen's (Regulation of Employment & Conditions of service) Act 1979:-** The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state).The inter-state migrant workmen, is an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home upto the establishment and back, etc.

O) **The Building and Other Construction workers (Regulation of employment and Conditions of Service) Act 1996 and the Cess Act of 1996:-** All the establishments who carry on any building or other constructions work and employ 10 or more workers are covered under this Act.

All such establishments are required to pay cess at the rate not exceeding 1% of the cost of construction as may be modified by the government. The Employer of the establishment is required to provide safety measures at the Building or construction work and other welfare measures, such as canteens, First Aid facilities, Ambulance, Housing accommodations for workers near the workplace etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officers appointed by the Government.

P) **Factories Act 1948 :-** The Act lays down the procedure for approval of plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power engaged in the manufacturing process.

Q) **Royalty charges-**The contractor shall pay the royalty to the competent authority as per rule. The **royalty** charges paid shall be borne by the contractor and shall not be reimbursed by the Employer.

R) **Following Pollution control Acts and amendments made thereof from time to time shall be applicable**.

1. Water (Preservation and control of Pollution) Act, 1974
2. Air (Prevention and Control of Pollution Act 1981
3. Environmental (Protection) Act 1986

The contractor must commit to adopting Environmental management plan for best energy use, waste management, the reduction of pollution as in EMS (Environmental Management system)ISO-14001- 2015

**65. ARBITRATION (GCC Clause 24)**

The procedure for arbitration will be as follows: -

65.1 If the Contractor is of the view that a decision taken by the Engineer was either outside the authority given to the Engineer by the Contract or that the decision was wrongly taken, the decision shall be referred to #**Superintending Engineer** (Higher Authority) within 14 days of the notification of the Engineer's decision. If the issue is not resolved, any party can refer the matter for conciliation within 15 days from the decision given by the #Superintending Engineer.

65.2

1. For the work up to Rs.250 Cr., if any of the parties is not satisfied with the decision of the #Superintending Engineer, both the parties have to refer to the #Registrar concerned for the conciliation process.
2. For the work more than Rs.250 Cr., if any of the parties is not satisfied with the decision of the Registrar, both parties have to refer to the #Secretary, Health Department, Government of Gujarat for the conciliation process.

   If the dispute is not resolved through the conciliation process, contractor may refer the dispute to Gujarat Public Works Contract Dispute Arbitration Tribunal. If the Contractor fails to refer a claim / dispute to the Higher Authority within 14 days of the notification of the Engineer's decision, the Contractor shall not be entitled to any additional payment/claim if he doesn't follow the above sequence in stipulated time. However, during such period, he would not stop the work in any case.

## SECTION - 4

# CONTRACT DATA

## #CONTRACT DATA

**Clause Reference With respect To section 3**

**Item marked "N/A" do not apply to this Contract.**

1. The Employers is [CL.1.1]
   Name: Registrar, Gujarat Biotechnology University
   Address: Near GIFT CITY, Gandhinagar
   Name of authorized Representative (Registrar)

2. Name of Authorized Representative: The Registrar

3. The Defects Liability Period is 36 Months from the date of completion. [CL.1.1&33]

4. The Start Date shall be **1st** days for the date of issue of the Notice to proceed with the work. [CL.1.1]

5. The Intended Completion Date for the whole of the works is **3 Months** after start of work with the following milestones: [CL.1.1,17&2]
   Milestone dates: [CL.2.2& 49.1]
   Physical works to be completed Period from the start date
   Milestone 1 i.e. 10 % on 9 days.
   Milestone 2 i.e. 40 % on 36 days.
   Milestone 3 i.e. 80% on 72 days.
   Milestone 4 i.e. 100% on 90 days.

6. The Site is located at Ahmedabad [CL.1.1]

7. The name and identification number of the Contract is: [CL.1.1]

8. The works consist of Building Work with items as per B.O.Q. The works shall, inter alia, include the following, as Specified or as directed: [CL.1.1]

~~**(A) Road Works**~~

~~Site clearance; setting – out and layout; widening of existing carriageway and strengthening including camber corrections; construction of new road/ Parallel service road; bituminous pavements remodeling/construction of Junctions, intersections, bus bays, lay-bays; supplying and placing of drainage Channels, flumes, guard posts and guard other related items; construction/extension of cross drainage works, bridge, approaches and other related stones; protective works for roads/bridge; all aspects of quality assurance of various components of the works; rectification of The defects in the completed works during the Defects Liability Period; submission of "As-built'' drawings and any other related documents; and other item of work as may be required to be carried out for completing the work in accordance with the drawings and the provisions of the contract and to ensure safety.~~ ~~**Delete**~~

**(B~~) Bridge Works~~**

~~Site clearance; setting out, provision of foundations, piers abutments and bearing; prestressed/reinforced cement concrete superstructure; wearing coat, hand railings, expansion joints, approach slabs, drainages spouts/ downtake pipes, arrangements for fixing light posts, water mains, utilities etc; provision of suitably designed protective works; providing wing/return walls; provision of road markings, road signs etc.; all aspects of quality assurance; clearing the site and handing over the works on completion; rectification of the defects during the Defects Liability Period and submission of "As-built" drawings and other related documents; and other items of work as may be required to be carried out for completing the works in accordance with the drawings and the provisions of the contract and to Insure safety~~ **~~Delete~~**

**(C) Building Works** [CL.1.1]

**(D) Other Items**

Any Other Items as required to fulfill all contractual obligations as per the Bid documents.

10. The following documents also form part of the Contract: [CL.2.3(9)]
_____As per clause 2-3_____

11. The law which applies to the Contract is the law of Union of India [CL.3.1]

12. The language of the Contract documents is English [CL.3.1]

13. Limit of subcontracting 25% of the Initial Contract Price [CL.7.1]

14. The Schedule of Other Contractors [CL.8]

15. The Schedule of Key Personnel As per Annex – II to Section I [CL.9]

16. The minimum insurance cover for physical property, injury and death is Rs. 5 lakhs per occurrence with the number of occurrences limited to four. After each occurrence, the contractor will pay an additional premium necessary to make insurance valid for four occurrences always. [CL13]

17. Site Investigation report [CL.14]
18. The Site Possession dates shall be from date of Work Order. [CL.21]
19. The period for submission of programme for approval of the engineer shall be 21 days from the issue of Letter of Acceptance. [CL. 27.1]
20. The period between program updates will be 30 days. [CL.27.3]
21. The amount to be withheld for late submission of an updated programme shall be Rs. 1 lakh [CL. 27.3]
22. The following events shall also be Compensation Events [CL. 44]
Substantially adverse ground conditions encountered during the course of execution of work not provided for in the bidding document.
    (i) Removal of underground utilities detected subsequently
    (ii) Significant changes in classification of soil requiring additional mobilization by the contractor, e.g. ordinary soil to rock excavation,
    (iii) Removal of unsuitable material like marsh, debris dumps, etc. not caused by the contractor.

(iv) Artesian conditions
(v) Seepage, erosion landslide
(vi) River training requiring protection of permanent work
(vii) Presence of historical, archeological or religious structures, monuments interfering with the works
(viii) Restriction of access to ground imposed by civil, judicial, or military authority

23. The currency of the Contract is Indian Rupees [CL. 46]

24. Deleted

25. The proportion of payments retained (retention money) shall be 6% {CL. 48} from each bill subject to a maximum of 5% of final contract price.

| | | |
|---|---|---|
| 26. | Amount of Liquidated damages for delay in completion of works | For Whole of work {CL.49} $(1/2000)^{th}$ of the Initial contract price, rounded off to the nearest Thousand, per day. For sectional Completion (wherever specified In item 6 of Contract data) $(1/2000)^{th}$ of initial contract price for #5 km Section, rounded off to the nearest thousand per day. |

| | | | |
|---|---|---|---|
| 27. | Maximum limit of liquidated damages For delay in completion work | 10 percent of the Initial Contract Price rounded off to the nearest thousand | {CL. 49} |
| ~~28.~~ | ~~Amount of Bonus for early completion~~ | ~~Amount of bonus for early completion of work shall be given as per CL.50 of Section-3~~ | |
| ~~29.~~ | ~~Maximum limit of bonus for early Completion of work~~ | ~~**5 percent** of the Contract Price~~ | ~~{CL. 50}~~ |

30. ~~The amount of the advance payment are: {CL. 51 & 52}~~

| ~~#~~ | ~~**Nature of Advances**~~ | | ~~**Amount (Rs.) Conditions to Be fulfilled**~~ |
|---|---|---|---|
| ~~i~~ | ~~Mobilization~~ | ~~10% of the contract Price~~ | ~~On submission of unconditional Bank Guarantee. (to be drawn before the end of 20% of the contract period). The contractor may furnish four bank guarantees of 2.5 % of each valid for the full period.~~ |
| ~~ii~~ | ~~Equipment~~ | ~~90% for new and 50% of depreciated value for old equipment. Total amount will be subject to a maximum of 5% of the Contract Price~~ | ~~After equipment is brought to site (provided the Engineer is satisfied That the equipment is required for performance of the contract) and on submission of unconditional Bank Guarantee for amount of advance~~ |
| iii | Secured Advance for Non-persish able material Brought to site | **Deleted** | |

~~(The advance payment will be paid to the Contractor no later than 28 days after fulfillment of the above conditions).~~

31. ~~**Repayment of advance payment for mobilization and equipment** {CL. 51.3}~~

~~The advance loan shall be repaid with percentage deduction from the interim payments certified by the Engineer under the Contract. Deduction shall commence in the next Interim Payment Cer tificate following that in which the~~

~~total of all such payments to the Contractor has reached not less than 20 percent of the Contract Price or 6 (six) months from the date of payment of first installment of advance, whichever period concludes earlier, and shall be made at the rate of 20~~ percent ~~**(collectively for both Mobilization Advance and Equipment Advance)**~~ ~~of the amounts of all Interim Payment Certificate until such time as the loan has been repaid, always provided that the loan shall be completely repaid prior to the expiry of the original time for completion pursuant to Clause 17 and 28.~~

32. Deleted
33. The securities shall be for the following minimum amounts equivalent {CL. 52}
    As a percentage of the Contract Price:
    Performance Security for 5 percent of contract price plus Rs. …….. (to be decided after evaluation of the bid) as additional security in terms of ITB Clause 29.5

    The standard form of Performance security acceptable to the Employer shall be an unconditional Bank Guarantee of the type as presented in Section 8 of the Bidding Documents.
34. The Schedule of Operating and maintenance Manuals…..N/A. {CL. 58}
35. The date by which "as– built" drawings (in scale as directed) in 2 sets {CL. 58} are required within 28 days of the issue of certificate of completion of the whole or section of the work, as the case may be.
36. The amount to be withheld for failing to supply "as built" drawings {CL. 58} by the Date required is Rs…….. Lakhs.
37. The following events shall also be fundamentals breach of contract: {CL.59.2} "The Contractor has contravened Sub- clause 7.1 and Clause 9 of GCC"
38. The percentage to apply the value of the work not completed representing {Cl 60} the Employer's additional cost for completing the Works shall be 20 per cent.

## SECTION - 5

# TECHNICAL SPECIFICATION

# A. SWITCHGEARS :

## MOULDED CASE CIRCUIT BREAKER (MCCB)

- Moulded-case circuit breakers shall comply with IEC 60947-1, IEC 60947-2, IEC 60947-3, IEC 60947-4-1 and IEC 61000 Standards & RoHS Directive.
- Moulded-case circuit breakers must have a rated insulation voltage minimum 800 V AC.
- The MCCB shall have rated ultimate short circuit breaking capacity (Icu) equal to rated service short circuit breaking capacity (Ics) i.e. Ics = 100% Icu.
- It shall be possible to supply power either from the upstream or downstream side i.e. there should be no Load line bias and shall provide positive isolation.
- In view of Standardization and Uniformity, mixing of two series of switchgear (even from the same manufacturer) for either MCCB or ACB will not be permitted.
- Circuit breakers must be available in versions with different breaking capacities, starting from 3 kA up to 100 kA @ 690V AC.
- Fixed, Plug-in and Withdrawable version moulded-case circuit breakers must be able to be installed both horizontally and vertically, and in the lying down position, without detriment to their performances and without jeopardising their functionality.
- Operating temperature: -25°C ... +70°C (ambient temperature).
- Double insulation on MCCBs must guarantee total separation between the power circuits and the auxiliary circuits, between the internal live parts and in the terminal area and compliance with IEC Standards.
- Positive operation: an operating lever which always indicates the precise position of the circuit breaker contacts (I= closed, O= open, yellow-green line = open due to trip unit tripping)
- Trip free mechanism and Circuit breaker opening and closing and tripping involve all the poles simultaneously.
- Suitable for isolation in clearly and indelibly marked on the circuit breaker.
- The moulded-case circuit breakers, can be equipped with thermomagnetic up to 250 A it shall be possible to choose between a thermomagnetic and an electronic protection as per the requirement/BOM.
- Microprocessor release should have Thermal memory and can have option of switch ON and OFF from MCCB.
- Full microprocess range - s.c. should be with time delay option for better coordination. and microprocessor Release, setting should be done through DIP switch for accurate setting.

## MINIATURE CIRCUIT BREAKER

- **Functionalities:**
  - Protection against overcurrent (overload and short circuit)
  - Miniature Circuit Breaker (MCB), according to standards IEC/IS 60898-1
  - MCB shall be suitable for isolation as per IEC 60947-1

- **Technical features:**
  - Number of poles: 1P, 2P, 3P, 4P, 1P+N, 3P+N
  - Characteristics: B-, C-, D-Curve
  - Rated short-circuit capacity Icn: 10k

- All MCB should have phase specific short circuit fault indications for clear differentiation between short circuit and overload fault.
- Rated Current: 0.5A, 1A, 1.6A, 2A, 3A, 4A, 6A, 10A, 16A, 20A, 25A, 32A, 40A, 50A, 63A
- Rated Voltage: 1P: 240/415 VAC, 1P + N: 240 VAC, 2…4P: 415 VAC, 3P + N: 415 VAC
- Max. power frequency recovery voltage (Umax): 1P: 264 VAC, 2…4P : 457 VAC, 1P: 60 VDC, 2P: 120 VDC
- Electrical endurance: In < 32A: 20,000 ops., In ≥ 32A: 10,000 ops.; 1,000 ops. (DC); 1 cycle (2s - ON, 13s - OFF, In ≤ 32A), 1 cycle (2s - ON, 28s - OFF, In > 32A)
- Mechanical endurance: 20,000 ops.
- Contact position indication: clear position indication
- The MCB shall operate satisfactorily between temperate range of -25 deg. C to +60 deg. C
- Supply by means of cables or busbars, both form top and bottom terminals

➢ **Accessories:**

- Auxiliary contact
- Signaling contact / auxiliary switch
- Shunt trip
- Under voltage release
- Overvoltage release
- Padlock device
- Rotary handle
- Motor operating device

**1. ACCESSORIES:**

➢ **CONTACTORS**

- The air break contactors shall be of electromechanical, triple pole type conforming to AC3 category of duty. However for motors in inching or reversing rotating service, utilization category AC4 shall be used.
- The auxiliary contactors shall have 4 NO + 4 NC contacts with at least 2 NO + 2 NC auxiliary contacts for owner's exclusive use. The spare contacts shall be wired up to the terminal block.
- The contactor coil shall be suitable for the specified control voltage. The coils shall have grade "H' insulation and shall be suitable for use in the ambient temperature of 450c. The design of the contactor shall ensure easy access to auxiliary contacts and coil. Mechanical ON-OFF indication shall be provided for the contactors. Wherever mechanical indications are not provided, indicating lamps shall be provided for ON indication of the contactor. The contactor shall pick up at 80% to 110 % of the control voltage and shall not drop out for voltage up to 45%. Incoming and outgoing terminals shall be segregated.
- The contactor rating shall be chosen to provide Type-2 co-ordination as per IS 13947. In case of Star-delta starter feeder, rating of all three contactors shall be identical.

➢ **TIMERS**

- For reacceleration duty, timers unless otherwise stated, shall be pneumatic type and shall have adjustable time setting of 0-60 secs. Alternatively static timer shall be considered. The time settings, where specified, shall be accurately set before dispatch of the switchboard.
- Timers for auto - transfer schemes shall be of static type with timing ranges suitable for the scheme employed.

➢ **POWER FEEDER PROTECTION RELAYS**

**Thermal Overload Relays:**

- OLR shall have Built-in Single Phasing Protection
- They shall be Ambient temperature compensated upto 55 deg C
- Relay shall be of Trip class 10A unless specified otherwise
- They shall have both Manual and Auto Reset Mode

**Electronic Overload Relays:**

- The EOLR should be direct mounting type on the contactor and should not require additional power supply
- It should have the option to select trip class 10, 20 or 30 by means of dip switches on the unit.
- The EOLR unit should guard the feeder against
- Overload,
- Single phasing,
- Locked rotor
- Phase unbalance and
- Phase sequence reversal and
- Ground fault
- Relays shall have necessary potential free contacts for use in control circuit, annunciation etc. It should be equipped with a mechanical flag for trip status indication.
- The EOLR should be equipped with Auto/ Manual reset option and it should be selectable through a dip switch on the unit.
- All relays shall be ambient temperature compensating type.

➢ **MEASURING INSTRUMENTS (DIGITAL MULTIFUNCTION METER) & ANALOG METERS**

**Incoming Multifunction Meter (MFM)**

- 96 X 96 mm size multifunction advanced meter as per IEC 62053-21 for Class 1.
- Meter shall have multiline LED display with following parameters:
- Phase wise instantaneous and Average values – Voltage, Current, Power Factor
- Phase wise instantaneous and Average values – Active Power, Reactive Power lead & lag, Apparent Power
- Import & Export Cumulative values– Active Energy, Reactive Energy lead & lag, Apparent Energy.
- PF for 3 phases and average
- Instantaneous Frequency
- Total Harmonics Distortion – Phase wise Voltage and Phase wise Current
- Min and max of VLL, VLN, A, F, W, VA, VAr, PF with date and time stamp
- Battery backed RTC with 2 years of power down time.
- Demand calculations based on W, VA, VAr
- Demand sync – Sliding window or block window site selectable
- Demand interval: 5 to 30 min
- Individual harmonics upto 31st order for voltage and current
- Percentage Unbalance – Voltage and Current
- Cumulative Run Hours
- Sampling rate of 128 samples / cycle
- Frequency : 50/60Hz
- Aux supply: 80-300VAC / DC
- Measuring circuit burden should be lesser than 0.2 VA
- Aux burden < 5VA

- Meter shall be suitable for CT secondary 1A /5A
- It should be possible to program CT ratio and PT ratio on site through key pad provided at the front facia of the meter. Programming shall be achievable only through password protected feature provided in the meter.
- Direct access key for Basic, Power, Energy parameters
- Menu driven feature on front facia.
- Meters shall have RS485 port with MODBUS RTU protocol
- All meters shall have protection of IP 51 from front end preventing from dust and moisture.

**Outgoing Multifunction Meter (MFM)**

- 96 X 96 mm size multifunction meter as per IEC 62053-21 for Class 1.
- Meter shall have multiline LED display with following parameters:
- Phase wise instantaneous and Average values – Voltage, Current, Power Factor
- Phase wise instantaneous and Average values – Active Power, Reactive Power lead & lag, Apparent Power
- True PF and Displacement PF for 3 phases and average
- Instantaneous Frequency
- Total Harmonics Distortion – Phase wise Voltage and Phase wise Current
- Min and max of VLL, VLN, A, F, W, VA, VAr, PF
- Percentage Unbalance – Voltage and Current
- Cumulative Run Hours
- Sampling rate of 64 samples / cycle
- Frequency : 50/60Hz
- Aux supply: 80-300VAC / DC
- Measuring circuit burden should be lesser than 0.2 VA
- Aux burden < 5VA
- Meter shall be suitable for CT secondary 1A /5A
- It should be possible to program CT ratio and PT ratio on site through key pad provided at the front facia of the meter. Programming shall be achievable only through password protected feature provided in the meter.
- Direct access key for Basic, Power, Energy parameters
- Menu driven feature on front facia.
- Meters shall have RS485 port with MODBUS RTU protocol
- All meters shall have protection of IP 51 from front end preventing from dust and moisture.

- **INSTRUMENT TRANSFORMERS (CTs/PTs)**
  - Current transformers shall generally conform to IS: 2705. For general guidance the vendor shall note that the protective current transformers shall have an accuracy class "5P" and an accuracy limit factor greater than"10". However CTs for differential & restricted earth fault shall be of class "PS". Vendor shall co-ordinate the knee point voltage, magnetizing current for PS class CTs to avoid saturation and mismatching of CTs provided at other end by other vendor.
  - Current transformers for instruments shall have an accuracy class 1.0 and accuracy limit factor less than 5.0. The current transformers shall be capable of withstanding the applicable peak momentary short circuit and the symmetrical short circuit current for 1.0 second and shall have a minimum rating of 10 VA.
  - The voltage transformers shall be cast resin type. PT shall be provided and miniature circuit breakers with auxiliary contact on the secondary side.

- **CONTROL SUPPLY & ACCESSORIES**
  - Control supply for CB shall be 110V D.C or as indicated in the data sheet/SLD.
  - 110V DC control supply from Battery Charger shall be provided for tripping and closing circuits of circuit breakers. Alternatively if battery & battery charger are not provided separately by the Owner, inbuilt DC POWER PACK unit of required VA shall be supplied along with the lv switchboard. 240V AC control supply shall be provided for spring charging motor, auxiliary power and heater circuits. Vendor shall provide suitable control switch and fuse at the point of receiving control supply. Vendor shall be required to loop both these supplies to all the panels forming one unit. Any other intermediate voltage required in the panel shall be derived by providing suitable control transformer.

- **CONTROL CIRCUITS**
  - For the protection of the different circuits such as control voltage supply, charging motor, heater etc., where applicable MCB's shall be provided individually for each cubicle circuit.
  - For receiving and distributing AC and DC power for control circuit suitably rated 2 pole MCB's to be considered.
  - "MCB Off" indicating lamp to be considered in case of MCB (DC) is "OFF"
  - Two number control supply feeders shall be provided for each switchgear. Suitable control supply monitoring & selection scheme shall be developed by vendor.

- **CONTROL SWITCHES**
  - Each electrically operated circuit breaker shall be provided with trip-neutral-close (T-N-C) control switch and local remote selector switch.
  - All circuit breaker operating switches shall be of the pistol grip type, spring return to neutral and lockable in neutral position. They shall be arranged to close the breaker by being turned clockwise. The trip, neutral and close positions shall be clearly indicated. The movement shall be such that the switch cannot be operated inadvertently and that it is mechanically interlocked to trip before close. The operating switch shall be located on the centre line at about 1.5 meters from the floor level. Two spare ways shall be provided on these switches.
  - Ammeter selector switches shall have 'make' before break feature on its contacts. The selector switch shall generally have four positions for reading three phase currents and the neutral current.
  - The voltmeter selector switch shall also have four positions. Three shall be used to measure phase to phase voltages and the fourth shall be 'OFF' position.
  - Based on operational philosophy, if required, Auto / Manual selector switch shall be provided.

*WORKMANSHIP*

The D.B. shall be properly grouted in the wall in concealed manner taking care that the powder coating is not scratched and dents are not formed on the D.B. The MCBs and ELCBs. In the distribution boards shall be fixed as per the circuit details provided. All the wires terminating in the MCBs and the ELCBs shall be lugged for proper contact and ferrules depicting the circuit nos shall be provided. D.B.s mounted in concealed manner shall have a groove around it so as to save the finish of the plaster and colour during future opening of the door. The distribution boards shall have circuit chart tagged on the door for future maintenance. Danger notice plates shall be fitted to the distribution boards with screws and not stuck so as to assure its presence for a longer duration.

**MODE OF MEASUREMENT**

The distribution boards shall be measured in nos and the MCBs and ELCBs shall be measured in numbers separately.

## Note:

All material and workmanship have to be as per latest IS / International standards.

# B. 1.1 KV GRADE L.T. CABLES AND CABLE TERMINATION:

## *1.0 SPECIFICATIONS*

2.0

**L. T. XLPE CABLE***:*

**GENERAL:**

The medium voltage cables shall be supplied, laid, connected, tested and commissioned in accordance with the drawings, specifications, relevant Indian Standards specifications, manufacturer's instructions.
The cables shall be delivered at site in the original drums with manufacturer's name, size and type clearly written on the drums.
All cables shall be adequately protected against any risk of mechanical damage to which they may be liable in normal conditions of handling during transportation, loading, unloading etc.
The cable shall be supplied in single length i.e. without any intermediate joint or cut unless specifically approved by the client.
The cable ends shall be suitably sealed against entry of moisture, dust, water etc. with cable compound as per standard practice.

**CONDUCTOR:**

Uncoated, annealed copper / aluminium, of high conductivity, upto 4 $mm^2$ size the conductor shall be solid and above 4 $mm^2$ the conductors shall be concentrically stranded as per IEC: 228.

**INSULATION:**

Cross link polyethylene (XLPE) extruded insulation rated at 70$^o$c.

**CORE INDENTIFICATION:**

| | | |
|---|---|---|
| Two cores | : | Red and Black |
| Three cores | : | Red, Yellow and Blue |
| Four cores | : | Red, Yellow, Blue and Black |
| Single core | : | Green, Yellow for earthing. |

Black shall always be used for neutral.

**ASSEMBLY:**

Two, three or four insulated conductors shall be laid up, filled with non-hygroscopic material and covered with an additional layer of thermoplastic material.

**ARMOUR:**

Galvanized steel flat strip / round strips applied helically in single layers complete with covering the assembly of cores.

For cable size upto 10 sq mm : Armour of 1.4 mm dia G.I. round wire
For cable size above 10 sq mm : Armour of 4 mm wide 0.8 mm thick GI strip

**SHEATH:**

ST -2 PVC along with polypropylene fillers to be provided.
Inner sheath shall be extruded type and shall be compatible with the insulation provided for the cables.
Outer sheath shall be of an extruded type layer of suitable PVC material compatible with the specified ambient temp. of 50$^o$c and operating temperature of cables. The sheath shall be resistant to water,

ultra violet radiation, fungus, termite and rodent attacks. The colour of outer sheath shall be black.
Sequential length marking along with size and other standard parameters shall be required at every 1.0 mtr on the outer sheath.

**TESTING:**
Finished cable tests at manufacturers works: The finished cables shall be tested at manufacturer's works for all the routine tests for all the length and size of cables to be delivered at site and the certificate for the same shall be furnished to client. If required the cables shall be tested in presence of the client's representative.
Voltage test: Each core of cable shall be tested at room temperature at 3 KV A.C. R.M.S. for duration of 5 minutes.
Conductor resistance test: The D.C. resistance of each conductor shall be measured at room temperature and the results shall be corrected to $20^{o}$c to check the compliance with the values specified in the Is 8130 – 1976.
Cable tests before and after laying cables at site:
Insulation resistance test between phases, phase to neutral and phase to earth.
Continuity test of all the phases, neutral and earth continuity conductor.
Earth resistance test of all the phases and neutral.
All the tests shall be carried out in accordance with the relevant IS code of practice and Indian Electricity Rules. The bidder shall provide necessary instruments, equipments and labour for conducting the above tests and shall bear all the expenses in connection with such tests. All tests shall be carried out in the presence of client and the results shall be prescribed in forms and submitted.

**CABLE MARKING:**
The outer sheath shall be legibly embossed at every meter with following legend:

ELECTRIC CABLE: 1100 V, SIZE: ___C X ____ $MM^2$ with Manufacturers name, year of manufacturing and ISI symbol.

**SEALING DRUMMING AND PACKING:**

After tests at manufacturer's woks, both ends of the cables shall be sealed to prevent the ingress of moisture during transportation and storage.

Cable shall be supplied in length of 500 mtrs or as required in non-returnable drums of sufficiently sturdy construction.

Cables of more than 250 meters shall also be supplied in non-returnable drums.

The spindle hole shall be minimum 110 mm in diameter.

Each drum shall bear on the outside flange, legibly and indelibly in the Englist literature, a distinguishing number, the manufacturer's name and particulars of the cable i.e. voltage grade, length, conductor size, cable type, insulation type, and gross weight shall also be clearly visible. The direction for rolling shall be indicated by an arrow. The drum flange shall also be marked with manufacturer's name and year of manufacturing etc.

**CABLE TERMINATION:**
Cable terminations shall be made with aluminium crimped type solder less lugs for all aluminium cables and stud type terminals. For copper cables copper crimped solder less lugs shall be used.
Crimping shall be done with the help of hydraulically operated crimping tool.
For joints where by cable is with aluminium conductor and busbars are aluminium, bimetallic lugs shall be used with compound. CUPAL type of washers shall be used.
Crimping tool shall be used for crimping any size of cable.

**CABLE GLANDS***:*
Cable glands shall be of brass single compression type. Generally single compression type cable glands shall be used for indoor protected locations and double compression type shall be used for outdoor locations.

**FERRULES:**
Ferrules shall be of self-sticking type and shall be employed to designate the various cores of the control cable by the terminal numbers to which the cores are connected, for ease in identification and maintenance.

**CABLE JOINTS:**
Kit type joint shall be done and filled with insulating compound. The joint should be for 1.1 KV grade insulation.

## 1.1 WORKMANSHIP

Cables shall be laid in the routes marked in the drawings. Where the route is not marked, the Contractor shall mark it out on the drawings and also on the site and obtain the approval of the CLIENT AND/OR ITS ARCHITECT before laying the cable. Procurement of cables shall be on the basis of actual site measurements and the quantities shown in the schedule of work shall be regarded as a guide only.

Cables shall be laid on walls, cable trays, inside shafts or trenches. Saddling or support for the cable shall not be more than 500 mm apart. Plastic identification tags shall be provided at every 30 m.

Cables shall be bent to a radius not less than 12 (twelve) times the overall diameter of the cable or in accordance with the manufacturer's recommendations whichever is higher.

In the case of cables buried directly in ground, the cable route shall be parallel or perpendicular to roadways, walls etc unless marked on drawing by architect / consultant. Cables shall be laid on an excavated, graded trench, over a sand or soft earth cushion to provide protection against abrasion. Cables shall be protected with brick or cement tiles on all the three sides as shown on drawings. Width of excavated trenches shall be as per drawings. Back fill over buried cables shall be with a minimum earth cover of 750 mm to 1000 mm. The cables shall be provided with cables markers at every 10 meters and at all loop points.

All cables shall be full runs from panel to panel without any joints or splices. Cables shall be identified at end termination indicating the feeder number and the Panel/Distribution board from where it is being laid. Cable termination for conductors up to 4 sq.mm. may be insertion type and all higher sizes shall have compression type lugs. Cable termination shall have necessary brass glands. The end termination shall be insulated with a minimum of six half-lapped layers of PVC tape. Cable armouring shall be earthed

at both ends.
In case of cables entering the buildings. It would be done duly only through pipes. The pipes shall be laid in slant position, so that no rainwater may enter the building. After the cables are tested the pipes shall be sealed with M. seal & then tarpaulin, shall be wrapped around the cable for making the entry watertight.

**Testing:** MV cables shall be tested upon installation with a 500 V Meggar and the following readings established:
Continuity on all phases.
Insulation Resistance.
between conductors.
all conductors and ground.
All test readings shall be recorded and shall form part of the completion documentation.
Cable joints shall be done as per regular practice and check shall be carried out for loose connections and leakages. Insulation cutting shall be done properly taking care that no area of the conductor remains exposed. Crimping shall be done with the help of hydraulic tool. Proper insulation tape shall be applied at the cable and lug joint.

Format for cable testing certificate:

a. Drum no. from which cable is taken :
b. Cable from _____ to _____
c. Length of run of this cable _____ mtr
d. Insulation resistance test
   Between core 1 to earth _____mega-ohm
   Between core 2 to earth _____mega-ohm
   Between core 3 to earth _____mega-ohm
   Between core 1 to core 2 _____mega-ohm
   Between core 2 to core 3 _____mega-ohm
   Between core 1 to core 3 _____mega-ohm
   Duration used:
e. High voltage test: Voltage Duration
   Between core and earth Between individual cores

## Note:

All material and workmanship have to be as per latest IS / International standards.

## C. TECHNICAL SPECIFICATIONS SOLAR POWER GENERATION

1. This document contains the requirement of Solar Photo Voltaic (SPV) power supply Grid Tied System. Suitable size of solar photovoltaic system is to be installed at each location and has to feed the electric loads of all the areas at that location. The power conditioning unit (PCU) shall be Grid Tied, i.e. with a priority for use of Solar power for light load and if the solar power becomes inadequate due to sun outage or the fault in solar generation system then Main/grid supply shall be used for light load.
2. A Grid Connected Solar Rooftop Photo Voltaic (SPV) power plant consists of SPV array, Module Mounting Structure, Inverter/Power Conditioning Unit (PCU) consisting of Maximum Power Point Tracker (MPPT) and Controls & Protections interconnect cables and switches. PV Array is mounted on a suitable structure. Grid connected SPV power plant should be designed with necessary features to supplement the grid power during day time. Components and parts used in the SPV power plants including the PV modules, metallic structures, cables, junction box, switches, inverters/PCUs etc. should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable.
3. GRID TIED SPV POWER SUPPLY SYSTEM: Grid tied solar inverters are suited for outdoor use and the ideal solution for small commercial building rooftop and other application. The inverters provide a wide maximum point power tracking (MPPT) voltage range on EU (European union) efficiency of 97%.
4. SPV MODULE/ARRAY:
    - SPV Module: SPV Module is the basic building block of the SPV power supply, which consists of a number of Solar cells (a Semiconductor Devices which when exposed to sunlight produces DC electricity) connected in series and hermetically sealed with a toughened and highly transparent front glass cover. These modules are connected in series and parallel to get the desired power and voltage. The Rated DC current of One module shall be 330Wp orhigher.
    - SPV Panel: SPV Modules of same rating are connected in series to form a SPV panel to get the desired voltage.
    - SPV Array: A number of panels are connected in parallel to get the desired power. This Whole combination is called an array. The SPV array is so designed that, it provides simultaneously meets the load demand, when sufficient Sunshine is available.
    - Design Features: The mechanical design and construction of SPV modules, panels and mounting structures shall be inherently robust and rigid under all conditions of operation, adjustment, storage and transport. Sharp edges shall be avoided.

**5. SOLAR PHOTO VOLTAIC MODULES:**

(i) The efficiency of the PV modules should beminimum18%.

(ii) Test Certificate issued by one of the IEC authorized testcenters.

(iii) Modules of any type mono/poly crystalline film can beused

(iv) The module type must be qualified as per IEC 61215 latest edition. Modules must qualify to IEC 61730 Part I and II for construction and safety qualification testing. Certificate for module qualification from IEC or equivalent to be submitted as part of the bidoffer.

(v) The total solar PV array capacity should not be less than allocated capacity (kWp) and should comprise of solar crystalline modules of minimum 330Wp and above wattage. Module capacity less than minimum 330 Watts shall not beaccepted.

(vi) Protective devices against surges at the PV module shall be provided. Low voltage drop bypass diodes shall beprovided.

(vii) The module frame shall be made of corrosion resistant materials having anodized aluminum or as per manufacturerstandard.

(viii) The bidder shall carefully design & accommodate requisite numbers of the modules to achieve the ratedpower.

(ix) Other general requirement for the PV modules and subsystems shall be the following:

a) Theratedoutputpowerofanysuppliedmoduleshallhavetoleranceof±3%.

b) The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary by more than 2 (two) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case maybe.

c) The module shall be provided with a junction box with weatherproof lid of sealed type and IP-65rated.

d) Warranties: The PV Modules must be warranted for output wattage, which should not be less than 90% at the end of 10 years and not less than 80% at the end of 25 years.

**6. SOLAR PV MODULE (ELECTRICAL FEATURES)**

i) The Solar PV modules used must qualify to the latest edition of IEC PV module qualification test or equivalent BIS standards Crystalline Silicon Solar Cell Modules IEC 61215 and IS14286. In addition, the modules must conform to latest edition of IEC/IS 61730 Part 1 requirements for construction & Part 2 - requirements for testing, for safety qualification or equivalent IS.

ii) For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC/IS 61701.

iii) All modules shall be certified as per the IEC 62804 Certified PV modules should be PID free, documents for the same should be submitted with conditions of the PID test should be for a humidity of 85% and a cell temperature of 85 °C at 1000 Volts, IEC 61701.

iv) The certified Bill of Material (BOM) to be used in the PV Modules should be the same as used during the IEC certification of reference PV Module certified by renowned agency like TUV, UL, etc.

v) The total solar PV array capacity (kWp) should not be less than allocated capacity (kW) and should comprise of solar Mono-PERC modules of minimum 540 Wp and above wattage with minimum 72-cell configuration. Module capacity less than 540 Wp shall not be accepted.

vi) Efficiency of PV Module shall be more than 19% for Mono-PERC.

vii) Temperature co-efficient of power (Pmax) shall be -0.40%/°C or better..

viii) Protective devices against surges at the PV module shall be provided. Low voltage drop bypass diodes shall be provided.

ix) PV modules must be tested and approved by one of the IEC/MNRE authorized test centers. Bidder shall submit Type test report as mentioned in the Tender from approved IEC/MNRE authorized test lab. GBU/TPE AGENCY may depute their engineer for material inspection at OEM factory prior to dispatch.

x) The module frame shall be made of corrosion resistant materials, preferably having anodized aluminium.

xi) SPV module shall have module safety class-II and should be highly reliable, light weight and must have a service life of more than 25 years

xii) All materials used for manufacturing solar PV module shall have a proven history of reliability and stable operation in external applications. It shall perform satisfactorily in relative humidity up to 85% with temperature between -40°C to +85°C and shall withstand adverse climatic conditions, such as high-speed wind, blow with dust, sand particles etc for wind speed of 180 km/hr on the surface of the panel as per IEC 61730.

xiii) Modules only with the same rating and manufacturer shall be connected to inverter. Modules shall compulsorily bear following information in the form of ID encapsulated with solar cell in the manner so as not to cast shadow on the active area and to be clearly visible from the top. s.

xiv) The SPV modules shall have suitable encapsulation and sealing arrangements to protect the silicon cells from environment. The encapsulation arrangement shall ensure complete moisture proofing for the entire life of solar modules. t.

xv) The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary by more than 2 (two) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case may be. U

xvi) The module shall be provided with a junction box with provision of sealed type and with arrangement for provision of min. 3 by-pass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP-67 rated. v.

xvii) IV curves at STC for each PV module should be provided by bidder. w.

xviii) GBU/or its authorized representative reserves the right to inspect the modules at the manufacturer's site prior to dispatch. x.

xix) Plants installed in high dust geographies in Gujarat must have the solar modules tested with relevant dust standards (Applicable standard would be IEC 60068-2 or equivalent) Y.

xx) Before finalisation of Solar PV Module Vendor, QAP along with Grade A PV Cell shall be approved by GBU. z.

xxi) Warranties Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001

1) Material Warranty: 1. Material Warranty is defined as: The manufacturer should warrant the Solar Module(s) to be free from the defects (including Potential induced degradation [PID] effect) and/or failures specified below for a period not less than twenty-five (25) years from the date of sale to the original customer ("Customer") ii. Defects and/or failures due to manufacturing iii. Defects and/or failures due to quality of materials iv. Nonconformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s), at the Owners sole option.

2) Performance Warranty: i. The predicted electrical degradation of power generated not exceeding 20% of the minimum rated power over the 25-year period and not more than 10% after ten years period of the full rated original output. Degradation in first year shall be allowed up to 3% for mono crystalline and in any subsequent year degradation shall not be more than 0.7% per annum. ii. The manufacturer should warrant the output of Solar Module(s) If, Module(s) fail(s) to exhibit such power output in prescribed time span, the Contractor will either deliver additional PV Module(s) to replace the missing power output with no change in area used or repair or replace the PV Module(s) with no change in area of roof used at GBU's sole option. Total are available from ULB's premises is fixed and the bidder shall design the plant so that in this case he has enough space to accommodate additional capacity.

xxii) Pre-dispatch Inspection of PV Modules at Manufacturing Facility: The Contractor shall provide pre-dispatch inspection call to GBU for inspection at manufacturer works for PV Modules, as per GBU approved drawings like GTP and QAP. Prior to inviting GBU for pre - dispatch inspection, vendor shall submit detailed quality assurance plan (QAP) for GBU approval. QAP shall include type tests, routine tests, factory acceptance tests, sampling

plan, applicable standards etc. For all bought out items, test certificates as per relevant standards shall be submitted along with factory acceptance test reports. The bidder shall bear the lodging, boarding, accommodation and traveling charges of GBU for PDI. After the inspection, complete set of test reports shall be submitted for dispatch clearance. Bidder shall provide the solar module as per latest circular issued by MNRE (Ministry of New and Renewable Energy) for ALMM (Approved List of Module Manufacturers).

xxiii) The bidder shall carefully design & accommodate requisite numbers of the modules to achieve the rated power in his bid.

xxiv) The rated output power of any supplied module shall have tolerance up to + 3%. No negative tolerance in the rated capacity of solar PV module is allowed. o.

xxv) The module mismatch losses for modules connected to an inverter should be less than 1%

xxvi) The SPV module shall be made up of high transmissivity glass & front surface shall give high encapsulation gain and the module shall consist of impact resistance, low iron and high transmission toughened glass. The module frame shall be made of corrosion resistant material, which shall be electrically compatible with the structural material used for mounting the modules.

xxvii) Crystalline high-power cells shall be used in the Solar Photovoltaic module. Solar Module shall be laminated using laminating technology using established polymer (EVA) and Tedlar/Polyester laminate. The solar modules shall have suitable encapsulation and sealing arrangement to protect the silicon cells from the environment. The arrangement and the material of encapsulation shall be compatible with thermal expansion properties of the Silicon cells of the module framing arrangement/ material. The encapsulation arrangement shall ensure complete moisture proofing during life of solar modules.

xxviii) SPV Module conversion efficiency should be greater than 18% Module shall be made of high transmissivity glass front surface giving high encapsulation gain.

xxix) All materials used shall be having a proven history of reliable and stable operation in external outdoor/indoor applications

**xxx)** Module rating is considered under standard test conditions, however Solar modules shall be deigned to operated and perform in relative humidity up to 100% with temperature between- 10Deg C and +85 Deg C and with stand guts up to 180Km/h from back side of the panel.

xxxi) Sample modules and production processes employed in the manufacture of the offered module shall be in accordance with the requirement of **IEC 61730 with appropriate certificate**.

xxxii) Each PV module used in any solar power project must use a RF (Radio frequency identification tag. The following information must be mentioned in the RFID used on each

module. This can be inside or outside the laminate, but must be able to withstand harsh environmental conditions.

a. Name of the manufacturer of PV module
b. Name of the manufacturer of Solarcells
c. Month and year of the manufacturer (Separately for Solar cell and module)
d. Country of origin (Separately for Solar cell andmodule)
e. I-V curve for themodule
f. Wattage, Im, Vm and FF for themodule
g. Unique Serial No and Model No of themodule
h. Date and year of obtaining IEC PV module qualification certificate
i. Name of the test lab issuing IEC certificate

**7. SOLAR PV MODULE (MECHANICAL FEATURES)**

Solar PV module design shall conform to following Mechanical requirement:

(i) Toughened, low ironcontent.
(ii) High transmissivity frontglass.
(iii) Anodized AluminumFrame.
(iv) Ethyl vinyl Acetate (EVA)
(v) Silicon edge sealant aroundlaminate.
(vi) Tedlar/ Polyester trilaminate backsurface.
(vii) Weather proof DC rated modular connections easier and secure, not allowing for any loose connections, Resistant to water, abrasion, hail impact, humidity & other environment factor for the worst situation at site.

**8. JUNCTION BOXES (JBs):**

(i) The junction boxes are to be provided in the PV array for termination of connecting cables. The J. Boxes (JBs) shall be made of GRP/FRP/Powder Coated Aluminum /cast aluminum alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JBs shall be such that input & output termination can be made through suitable cableglands.

(ii) Copper bus bars/terminal blocks should be housed in the junction box with suitable termination threads Conforming to IP66 standard and IEC 62208. Hinged door should be used with EPDM rubber gasket to prevent waterentry.

(iii) Each Junction Box shall have High quality Suitable capacity Metal Oxide Varistors (MOVs) (semiconductor diode with resistant applied voltage)/ surge arrestors and suitable Reverse Blocking Diodes etc. The Junction Boxes shall have suitable arrangement for monitoring and disconnection for each of thegroups.

**9. PV ARRAY CONFIGURATION**

i) The Solar array shall be configured in multiple No. of sub- arrays, providing optimum DC power. The bidder shall submit their own design indicating configuration of PCU and respective subarrays.

ii) The PV modules should be mounted on aluminum structures powder coated of adequate strength and appropriate design, which can withstand load of modules and high wind velocities up to 180 km perhour.

iii) The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPVpanels

iv) Regarding civil structures the bidder needs to take care of the load bearing capacity of the roof and to arrange suitable structures based on the quality of roof. The total load of the structure (when installed with PV modules) on the terrace should be less than 60 kg/$m^2$. Suitable civil work for installation of the structure is to be done by the EPC contractor. Civil Structure should be Neat & Clean, with proper alignment and round in shape with emphasis on proper grouting and there should not be leakage, seepage in roof after installation ofplant.

**10. MODULE MOUNTING STRUCTURE**

The mounting structure would be designed to sustain wind loading up to 180Kmph and shall be protected by using Eco friendly anticorrosion on structure. The entire structure including array will be earthed to an independent pit with redundant paths. Mounting Structures with fixed/adjustable tilt shall be provided. The Hardware shall be made of Stainless-Steel material or as per manufacturer standard.

(i) The structure design shall be appropriate and innovative and must follow the existing structure andprofile

(ii) Design, drawing with material selected shall be submitted for prior approval of engineer in-charge.

(iii) The structure shall be designed to allow easy replacement of anymodule.

(iv) The structure shall be designed for simple mechanical and electrical installation. It shall support SPV module at a given orientation, absorb and transfer the mechanical loads to the roofproperly.

(v) Nut & bolts supporting structure including module Mounting Structures shall have to be adequately protected with atmosphere and weather prevailing in the area; Nut & bolts shall begalvanized.

(vi) The bidder/manufacturer shall specify installation details of the PV modules and the support structures with appropriate diagrams anddrawings.

(vii) The drawings along with detailed design shall be submitted in three sets to the engineer- in- charge for approval before starting the execution of work. The work will be carried out as per designs approved by the engineer-in- charge.

(viii) The roof top solar plant generation units shall be installed by using supporting Galvanized MS structure (mass of zinc coating shall be as per IS 4759:1996) having minimum head room clearance of 2.4 meter above the terrace level / ground level to have maximum installation. Reference image for mounting structure is shown in fig below.

## 11. POWER CONDITIONING UNIT (PCU)

Power Conditioning Unit (PCU) is critical equipment in Grid Connect SPV Power Plant. This equipment converts DC power generated by SPV array, into single phase/three phase medium voltage AC to be connected to Grid. It also provides necessary protections for Grid Synchronization and Data Logging/Monitoring. The DC energy, thus produced has to be utilized to maximum and supplied to the DC bus for inverting to AC voltage with the help of Power Conditioning Unit using its Maximum Power Point tracking MPPT (The efficiency of MPPT shall not be less than 97% & shall be designed to meet the Solar PV Array capacity control) to extract maximum energy from solar array and provides 415V AC, 3-ph 50Hz to synchronize with localgrid.

a. The PCU shall have protection features such as, over current, short circuit, over temperature to name afew.
b. The PCU shall be of very high quality having high efficiency (>92%) and shall be capable of running in isolatedmode.
c. The PCU should be designed to be completely compatible with the SPV array voltage and grid supplyvoltage.
d. The PCU should be designed for continuous, reliable power supply as per specifications.
e. The PCU shall have internal protection arrangement against any sustained fault.
f. It should have user friendly LCD display for programming and view on line parameters such as DC power input, DC input voltage, DC current, AC power output, AC voltage and AC current and Powerfactor.
g. The PCU shall have arrangement for adjusting DC input current and should trip against sustainable fault downstream and shall not start till the fault is rectified.
h. The Grid connect PCU shall incorporate latest Technological advances to provide highly reliable and efficient energy conversion from DC to AC. The PCU incorporates a new system design which uses multiple power stacks which work in tandem. The PCU should be Single phase static solid state type power conditioning units/string

invertors suitability connected & synchronized to give three phase supply output. Both AC & DC lines shall have suitable fuses/MCBs and contactors to allow safe start up and shut down of the system. Fuses/MCBs used in the DC circuit should be DC rated. The PCU shall have provision for input and output isolation. Each solid-state electronic device shall have to be protected to ensure long life of the inverter as well as smooth functioning of theinverter.

**AC side**

| | |
|---|---|
| Nominal AC power | As per Manufacturer design |
| Output AC Voltage | 330V/ 415V with a variation + 10% at nominal voltage |
| Frequency | 50 c/s (Hz) + 5% |
| Total Harmonic Distortion | <3% |
| Under frequency protection | Yes |
| Under Voltage Protection | Yes |

**DC Side:**

| | |
|---|---|
| PV Power | As per Manufacturer design |
| Maximum DC Voltage | As per Manufacturer design |
| MPPT voltage range | As per Manufacturer design |
| Maximum DC Current | As per string rating |
| DC over voltage protection | Yes |
| DC Voltage ripple | <3% |
| Minimum Efficiency (MPPT) | >97% |
| Ambient temperature range | 0-50°C |
| Humidity (non condensing) | 30-95% |
| Degree of protection | IP21 for internal units and IP 66 for outdoor units |
| Dimensions approx (HXWXD | As per Manufacturer design |

| | |
|---|---|
| Weight | As per Manufacturer design |
| Recommended LCD Display on Front Panel | Accurate displays on the front panel: |
| | DC input voltage |
| | DC current |
| | AC Voltage (all 3phases, in case of 3 phase) |
| | AC current (all 3phases in case of3 phase) |
| | Ambient temperature |
| | Instantaneous & cumulative output Power |
| | Daily DC energy produced |
| | Battery Voltage (in case of Hybrid PCU) |
| | Solar charge current and ambient temperature, |
| | Individual power stage heat sink and cabinet temperature, |

| | |
|---|---|
| | Solar Radiation (with external pyranometer with inscope)<br>- Inverteron<br>- Gridon<br>- Inverter under voltage/overvoltage<br>- Inverter overload<br>- Inverter overtemperature. |
| Communication interface | RS485/RS232<br>PCU shall also house MPPT (Maximum Power Point Tracker), an interface between<br>Solar PV array to the power conditioning unit/inverter should also be DG setinteractive |
| Power Factor | > 0.9 |
| Test Certificates | The PCU/ inverters should be tested from the MNRE approved test centers / NABL /BIS /IEC accredited testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses |

i. The PCU shall be able to withstand an unbalanced load conforming to relevant IEC standard and Indian electricity condition. The PCU shall include appropriate self-protective and self-diagnostic features to protect itself and the PV array from

damage in the event of PCU component failure or from parameters – beyond the PCU s safe operating range due to internal or external causes. The self-protective features shall not allow signals from the PCU front panel to cause the PCU to be operated in a manner which may be unsafe or damaging. Faults due to malfunctioning within the PCU, including commutation feature, shall be cleared by the PCU protective devices and not by the existing site utility grid service circuitbreaker.

j. The PCU shall go to shutdown/standby mode, with its contacts open, under the following conditions before attempting an automatic restart after an appropriate timedelay.

k. When the power available from the PV array is insufficient to supply the losses of the PCU, the PCU shall go to standby/shutdown mode.

l. The PCU control shall prevent excessive cycling of shut down during insufficient solar radiance.

m. Operation outside the limits of power quality should cause the power conditioner to disconnect the grid. Additional parameters requiring automatic disconnectionare

i. Neutral voltagedisplacement
ii. Over current
iii. Earthfault
iv. Reverse power

In each of the above cases, tripping time should be very less.

n. PCU / Inverter should be tested from the test centers / NABL / BIS / IEC accredited testing calibration laboratories.

**12. WIRING**

All instruments and Panel wiring shall be of heat resisting and self extinguishing type in compliance with IS. Plastic or porcelain cleats of the limited compression type shall be used for holding wiring runs. All wires shall be suitable for bending to meet the terminal studs at right angles. Metal cases of all apparatus mounted on panels shall be separately earthed. The following colour scheme of the wiring shall be used as per IS : 375.

a) AC three phasecircuits:
   i) No.1 Phase: Red. No.2 Phase: Yellow. No.3 Phase: Blue
   ii) Neutral Conductor: Black
   iii) Connection to Earth: Green
b) D.C. circuits: Grey

**13. CABLE ACCESSORIES**

- Only terminal cable joints shall be accepted. No cable joints to join two cable ends shall be accepted.
- Cable terminations shall be made with suitable cable lugs & sockets etc., crimped properly and passed through brass compression type cable glands at the entry and exit point of the cubicles. The panels bottoms should be properly sealed to prevent entry of snakes/lizard etc. inside thepanel.
- The terminal end of cables and wires are to be fitted with good quality numbered ferrules of proper sizes so that the cables can be identified easily.

**14. INTEGRATION OF PV POWER WITH GRID:**

i) In this case, Power plant is without battery bank (i.e. with string inverter), the uni-directional meter shall be installed for gross metering of solargeneration.

ii) CEA guideline 2013 or latest for interconnecting solar power with Grid shall be followed.

iii) Certification of Islanding protection in the inverter/PCU from the manufacturer of The equipment shall be mandatory. This shall be arranged by the supplier from the manufacturer.

iv) Verification report/test report shall be issued by the Electric Supply Agency or their authorizedagency.

**15. DATA MONITORING OF POWER PLANT:**

PCU to log the inverter performance data and transmits the same to the Data logger. Data logger shall then gather information and monitor the performance of the inverter. It shall also supports measurements from the external sensors. The data can be acquired remotely via modem.

**16. LIGHTNING & OVER VOLTAGE PROTECTION:**

The SPV Power plant should be provided with Lightning and surge voltage protection connected to proper earth electrodes.
The Lightning Conductors shall be made as per applicable Indian Standards in order to protect the entire Array Yard/Shed from Lightning stroke. Necessary concrete foundation for holding the lightning conductor in position to be made after giving due consideration to maximum wind speed at site in future.
The lightning conductor shall be earthed through flats and connected to the Earth electrodes as per applicable Indian Standards with earth pits. Each

Lightning Conductor shall be fitted with individual earth pit as per required Standards including accessories, and providing masonry enclosure with cast iron cover plate having locking arrangement, watering pipe using charcoal or coke and salt as per required provisions of IS.

The bidder shall ensure adequate lightning protection to provide acceptable degree of protection as per IS for the array Yard/Shed. If necessary, more numbers of Lightning conductors may beprovided.

For each earth pit, necessary Test Point shall have to be provided.

**17. EARTHING SYSTEM:**

i. Each array structure of the SPV shall be grounded properly. The array structure is to be connected to earth pits as per CPWD General Specifications. Junction boxes shall be connected to the main earthing conductor/electrode.

j. Earthing system installation shall be in strict accordance with CPWD General Specifications Part-I internal 2013 as amended up todate.

k. Necessary Test Point provision shall be made for bolted isolating joints of each earthing pit for periodic checking of earthresistance.

l. In compliance to Rule 33 and 61 of Indian Electricity Rules, 1956 (as amended up to date) all non-current carrying metal parts shall be earthed with two separate and distinct earth continuity conductors to an efficient earthelectrode.

m. Earth resistance of the earth pits shall be tested in presence of the representative ofEngineer-in-charge.

n. The items for earthing protection shall be included in the scope ofwork.

**18. AC Distribution Box (ACDB)**

i) All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS60947 part I, II and III.

ii) The change-over switches, cabling work, Manual isolation of Inverters/Grid should be undertaken by the bidder as part of the project within quotedrates.

iii) Web based remote monitoring which shall also be linked with servers of deptt/ Board or

software such as SCADA (Supervisory control and data acquisition) monitoring system must be provided by agency. If needed access to MNRE (Ministry of new renewable Energy) CREST shall also be provided.

iv) PV array energy production: Digital Energy Meters to log the actual value of AC/ DC voltage, Current & Energy generated by the PV system shall be provided.

v) All instantaneous data shall be shown on the computerscreen.

vi) The bidder must take approval/NOC from the Concerned Electricity department for the connectivity, technical feasibility, and synchronization of SPV plant with distribution network and submit the same before commissioning of SPV plant. Nothing extra shall be paid on thisaccount.

**19. PRIORITY FOR POWER CONSUMPTION:**

**Grid Islanding:**

In the event of a power failure on the electric grid, it is required that any independent power-producing inverters attached to the grid turn off in a short period of time. This prevents the DC-to-AC inverters from continuing to feed power into small sections of the grid, known as "islands." Powered islands present a risk to workers who may expect the area to be unpowered, and they may also damage grid-tied equipment. The Rooftop PV system shall be equipped with islanding protection. In addition, to disconnection from the grid (due to islanding protection) disconnection due to under and over voltage conditions shall also be provided.

i) A manual disconnect pole isolation switch beside automatic disconnection to grid would have to be provided at utility end to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall be locked, if required, by the utilitypersonnel.

**20. PAINTING & FINISH**

i. All metal surfaces shall be thoroughly cleaned of rust, scale, oil, grease, dirt etc. Fabricated structures shall be pickled and then rinsed to remove any trace of acid. The under surface shall be made free from all imperfections before undertaking the finishingcoat.

ii After Phosphate treatment, two (2) coats of yellow zinc chromate primer shall be applied followed by two(2) coats of epoxy based synthetic enameledpaint.

iii. All unpainted steel parts shall be cadmium plated or suitably treated to prevent rust formation. If these parts are moving elements, then they shall begreased.

## A. BALANCE OF SYSTEM (BoS)ITEMS/COMPONENTS:

The BoS items/components of the SPV power plants/systems deployed under the work must conform to the latest edition of IEC/equivalent BIS standards as specified below :

| **BoS Item/component** | **Applicable IEC/equivalent BIS standard** | |
|---|---|---|
| | **Standard Description** | **Standard Number** |
| Power conditioner/ Inverters* | Efficiency Measurements Environmental Testing | EN61000–6-3 EN 50178 |
| MPPT units* | Design Qualification Environmental Testing | EN 50178 UL 1741 CSA 107.1 |
| Cables | General test and measuring methods PVC insulated cables for working voltage up to and including 1100 V- Do-UV resistant for outdoor installation | IEC 60189 IS 694 / IS 1554 IS/IEC 69947 |
| Switches/Circuit Breakers/Connectors | General Requirements Connectors - Safety | IS/IEC 60947 part I, II& III, EN 50521 |
| Junction Boxes/ Enclosures | General Requirements | IP 65 (for outdoor)/IP 21 (for indoor) IEC 62208 |
| SPV System Design | PV Stand-alone Systems Design verification | IEC6121 5 IEC6173 0 IEC61701 |
| Installation Practices | Electrical installation of buildings requirements for SPV power supply systems | IEC 61730 |

*Must additionally conform to the relevant national/international electrical safety standards.

## 3.2 SPECIFICATION FOR SPV PANEL

| Sl. No | Description | As per NIT |
|---|---|---|
| 1 | Max. output (Pmax) as per STC | 320-330 Wp ± 5% |
| 2 | Voc/Isc | 45.96V/8.75A |

| | | |
|---|---|---|
| 3 | MPP Voltage (Vmpp) V | 37.65 |
| 4 | MPP current (imp) A | 8.5 |
| 5 | Open circuit voltage (Voc)V | 45.96 |
| 6 | Normal operating cell temperature | 44± 2 °C |
| 7 | Module dimensions (LxWxH)Appx. | As per manufacturer |
| 8 | PV Module type | Mono/Polycrystalline |
| 9 | No. of PV cells per Module | As per manufacturer |
| 10 | Min. efficiency of module | 18% |
| 11 | Solar module frame material | Aluminium |
| 12 | Weather resistant junction | IP66 |
| 13 | Glass | Toughened |
| 14 | Glassiron content | Low Iron |
| 15 | glass transmissivity | High transmissivity |
| 16 | Frame | Anodized aluminum |
| 17 | Encapsulation | Ethyl Vinyl Acetate(EVA) |
| 18 | Trilaminatebacksurface | Tedlar /Polyester |
| 19 | By-passdiode | To beprovided |
| 20 | | Standard IEC 61215 / IS 14286 & IEC 61730 Part 1 &Part2 |
| 21 | | Performance guarantee 10 years of 90% power output 25 years of 80% poweroutput 10 years againstmanufacturing defects. |

## 3.3 SPECIFICATION OF SOLAR INVERTER (GRIDTIED)

| Sl. No. | Description | As perNIT |
|---|---|---|
| 1 | Type | Gridtied |
| 2 | Max. DC ArrayInputVoltage | 1000V |
| 3 | | DCvoltagetolerance `-20%+15% of the DC array input voltage in Sr. No. 1above |
| 4 | Type of solarchargecontroller | MPPT based solar charge controller |

| | | |
|---|---|---|
| 5 | SwitchingDevice | MOSFET / IGBTBASED |
| 6 | Continuous inverteroutputrating | Specified according tobuilding |
| 7 | Outputwave form | Pure Sine waveoutput |
| 8 | totalharmonicdistortion | < 3% with resistiveload |
| 9 | Nominal AC output voltageand frequency | 415V, 3 phase, 50Hz |

| | | |
|---|---|---|
| 10 | Outputfrequency | 50 Hz + 0.5Hz |
| 11 | Grid frequencytolerance | `+3% |
| 12 | Grid frequencysynchronization range | `+3Hz |
| 13 | No-Loadlosses | <1% |
| 14 | Powerfactor | >0.9 |
| 15 | PCUefficiency | >97 % at nominal voltage &power |
| 16 | Noiselevel | < 57 db |
| 17 | Certifications | IEC61727,CE,IEC62109-1,IEC |
| 18 | Idle current | < 4 % of ratedcapacity |
| 19 | Regulation | Line regulation and loadregulation -2% |
| 20 | Overload features | 150% for oneminute' |
| 21 | Cooling | Forced air cooling with temperature controlledcooling |
| 22 | OperatingTemperature | (-)20°C to50°C |
| 23 | Relative Humidity | 95%Maximum |
| 24 | LED/LCDdisplay | Indications display shall indicate system functional parameters and protection functionalindicators. |
| 25 | Data Monitor anddisplay controls | RS 485, Ethernet or RS232 connectivity |
| 26 | Protections | 1) Input overVoltage<br>2) Low/Highfrequency<br>3) ShortCircuit<br>4) Under/over outputvoltage<br>5) Over Temperature<br>6) Grid input under voltage/over voltage with autorecovery<br>7) DC disconnectdevice<br>8) DC reverse polarity<br>9) Anti Islanding protection as per thestandard |
| 27 | EnclosureProtectionSafety | IP 65 (foroutdoor) |

| | | |
|---|---|---|
| | | Galvanic isolation at input &output throughtransformer |
| 28 | Warranty 10years. | |

11

## 3.4 SPECIFICATIONS FOR PV PANEL SUPPORTSTRUCTURE

| Sl. No | Description | As per NIT |
|---|---|---|
| 1 | Material | Hot dip galvanized steel |
| 2 | Thickness of member | 4mm |
| 3 | Overall dimensions | As per manufacturer standard (SPV panel Supporting structure bottom to rooftop distance Min 2400mm) 180Km |
| 4 | Wind rating | / hour |
| 5 | Tilt angle and adjustment | 25° Potriat |
| 6 | Peach of structure | Max. 7 Mtr or as per manufacturer standard |
| 7 | Hard wears & fastener | SS 304 |
| 8 | Foundation | CC 1:2:4 |

**21. TECHNICAL PARTICULARS OF ENERGY METERS**

| Sl. No | Description | |
|---|---|---|
| 1 | Applicable IS | IS 13779 or IS 14679 depending upon accuracyof meters. |
| 2 | Accuracy Class Index | 0.5 or better up to 650V |
| 3 | Display | LCD/LED |
| 4 | Power factor range | Zero lag –unity- zerolead |
| 5 | Display parameters | a) Display parameters: LCD test, KWH import,KWH export, MD in KW export, MD in KW import, Date & Time, AC current and voltages and power factor (Cumulative KWH will be indicated continuously by default & other parameters through push-button) |
| 6 | Power Consumption | Less than 1 Watt & 4VA in Voltage circuit and 2 VAfor Current circuit |
| 7 | Frequency | 50 Hz with + / - 5%variation |
| 8 | MD Registration | a) Meter shall store MD in every 30 min. periodalong with date & time. At the end of every 30 min, new |

| | | |
|---|---|---|
| | | MD shall be compared with previous MD and store whichever is higher and the same shall be displayed.<br>b) It should be possible to reset MD automatically at the defined date (or period) or through MRI. c) Manual MD resetting using sealable push button is an optional. |
| 9 | Memory | Non volatile memory independent of batterybackup, memory should be retained up to 10 year in case of power failure. |
| 10 | Climaticconditions | a) As per IS: 13779 or IS: 14697 for climatic conditions. b)The meter should function satisfactorily in India with high end temperature as 50°C and humidity upto100%. |

| | | |
|---|---|---|
| 11 | Insulation | A meter shall withstand an insulation test of 4 KVand impulse test at 8 KV |
| 12 | Battery | Lithium with guaranteed life of 10Years |

# (ANNEXURE-I)

**22. SPECIFICATION FOR SPV PANEL**

| Sl. No | Description | To be provided by the firm to whom the work is awarded |
|---|---|---|
| 1 | Make | |
| 2 | Max. output (Pmax) as per STC | |
| 3 | Voc/Isc | |
| 4 | MPP Voltage (Vmp) V | |
| 5 | MPP current (imp) A | |
| 6 | Open circuit voltage (Voc)V | |
| 7 | Normal operating cell temperature | |
| 8 | Module dimensions (LxWxH) Appx. | |
| 9 | PV Module type | |
| 10 | No. of PV cells per Module | |
| 11 | Min. efficiency of solar cell | |
| 12 | Solar module frame material | |
| 13 | Weather resistant junction | |
| 14 | Glass | |
| 15 | Glass iron content | |
| 16 | glass transmissivity | |
| 17 | Frame | |
| 18 | Encapsulation | |
| 19 | Trilaminate back surface | |
| 20 | By-pass diode | |
| 21 | Standard | |
| 22 | Performance guarantee | |

**23. SPECIFICATION OF SOLAR INVERTER (GRID TIED)**

| Sl. No. | Description | To be filled bidder |
|---|---|---|
| 1 | Make | |
| 2 | Type | |
| 3 | Max. DC Array Input Voltage | |
| 4 | DC voltage tolerance | |
| 5 | Type of solar charge controller | |
| 6 | Switching Device | |
| 7 | Continuous inverter output rating | |
| 8 | Output wave form | |
| 9 | total harmonic distortion | |

| | | |
|---|---|---|
| 10 | Nominal AC output voltage and frequency | |
| 11 | Output frequency | |
| 12 | Grid frequency tolerance | |
| 13 | Grid frequency synchronization range | |
| 14 | No-Load losses | |
| 15 | Power factor | |
| 16 | PCU efficiency | |
| 17 | Noise level | |
| 18 | Certifications | |
| 19 | Idle current | |
| 20 | Regulation | |
| 21 | Overload features | |
| 22 | Cooling | |
| 23 | Operating Temperature | |
| 24 | Relative Humidity | |
| 25 | LED/LCD display | |
| 26 | Data Monitor and display controls | |
| 27 | Protections | |
| 28 | Enclosure Protection Safety | |

**Note:**

**All material and workmanship have to be as per latest IS / International standards.**

## SECTION - 6

# FORM OF BID

**FORM OF BID**

Description of the Works:

---

---

---

BID

To :

Address :

1. We offer to execute the Works described above and remedy any defects therein in conformity with the conditions of Contract, specification, drawings, Bill of Quantities and Addenda for the sum (s) of

   _____

   _____

   (----------)

2. We undertake, if our Bid is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Engineer's notice to commence, and to complete the whole of the Works in the Contact within the time stated in the document.

3. We agree to abide by this Bid for the period of 180 Days from the date fixed for receiving the same, and it shall remain binding upon it and may be accepted at any time before the expiration of that period.

4. Unless and until a formal Agreement is prepared and executed this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.

5. We understand that you are not bound to accept the lowest or any tender you may receive.

   Dated this ---------- day of ---------- 20

   Signature ---------- in the capacity of ----------

   ------- duly authorized to sign bids for and on behalf of ----------

   ----------

   _____

   (in block capitals or typed)

Address

_____

_____

Witness

_____

_____

Address

_____

_____

Occupation

_____

_____

## SECTION - 7

# BILL OF QUANTITIES

## BILL OF QUANTITIES

### Preamble

1. The bill of Quantities shall be read in conjunction with the Instructions to Bidder, 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 Engineer and valued at the rates and prices tendered in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix within the terms of the Contract.

3. The rates and prices tendered in the priced Bill of Quantities shall, except in so far as it is otherwise provided under the Contract, include all constructional plant, layout, supervision, materials, erection, maintenance, insurance, profit, taxes and duties, together with all general risks, liabilities and obligations set out or implied in the Contract.

4. The rates and prices shall be quoted entirely in Indian Currency.

5. A rate or prices shall be entered against each item in the Bill Quantities, whether quantities are stated or not. The cost of Items against which 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 (in case of Item rate contract).

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 direction and descriptions of work and materials are not necessarily repeated or summarized in the Bill of Quantities. References to the relevant sections of the contract documentation shall be made before entering rates or prices against each item in the Bill of Quantities.

8. The method of completed work of payment shall be in accordance with the specification for Road and Bridge works. For building works specifications for building are to be followed.

9. Errors will be corrected by the Employer for any arithmetic errors pursuant to **Clause 29** of the Instructions to Bidder.

10. Rock is defined as all materials which, in the opinion of the Engineer, required blasting, or the use of metal wedges and sledgehammers, or the use of compressed air drilling for its removal, and which cannot be extracted by ripping with a tractor of at least 150 kw with a single rear mounted heavy duty ripper.

**BILL OF QUANTITIES**

**(A) Percentage Rate Tender (Up to INR 50 Cr.)** SOR Year 2023-2024

| Item No | Description of Item (with brief specification and reference to book of specifications) | Quantity | Unit | Rate In figures | Amount |
|---|---|---|---|---|---|
| | | | | | |

I/We am/are willing to carry out the work at…….% above/below percent(Should be written in figures and words) of the estimated rate mentioned above. Amount of my /our tender works out as under.

Estimated amount put to tender

Deduct……% below

Net

In words

Estimated amount put to tender

Add……% Above

Net

In words

~~**(B) For Item Rate Tender (For above INR 50 Cr.):** SOR Year 20__-20__ -~~DELETED

| ~~Item No~~ | ~~Description of Item (with brief specification and reference to book of specifications)~~ | ~~Quantity~~ | ~~Unit~~ | ~~Rate~~ | | ~~Amount~~ |
|---|---|---|---|---|---|---|
| | | | | ~~In figures~~ | ~~In Words~~ | |
| | | | | | | |

~~(A) Total Tendered Amount~~
~~(B) Rebate on above tendered amount (if any) % (in figure) ……~~
~~(in words)……~~
~~(C)Net Tendered Amount (A-B) (in figure) ……~~
~~(in words)……~~

#

| | |
|---|---|
| 1 | The Contractor shall exhibit a board with detailed specification and details of work as directed by the Engineer-In-Charge for which no extra payment shall be made. |
| 2 | The labour cess will be deducted as per prevailing rules i.e. 1% of the work done. |
| 3 | GST and Income tax TDS will be deducted at a source while making payments of bills |
| 4 | In all R.C.C. Items in Rate Analysis Standard Cement Consumption has been taken as per Govt. G.R.: PRC-10/2017 Cement Consumption/16/C Date:11/05/2017 as stated in S.O.R. therefore in R.C.C. items where there is a change as per actual mix design the cost of difference of cement consumption have been deducted from the rate of original item at the rate of input rate mentioned in all the tender. Input rate is Rs. 6100 MT. |
| 5 | GST extra applicable in case of work based on SOR 2023-24 only. |

## SECTION - 8

# SECURITIES AND OTHER FORMS

**BID SECURITY (BANK GUARANTEE)**

WHEREAS, ---------- (name of Bidder) (hereinafter called the "The Bidder") has submitted his bid Dated ---------- (Date) for the construction of ---------- (Name of Contractor hereinafter called "the Bid")

KNOW ALL PEOPLE by these presents that We ---------- (Name of Bank) of ---------- (name of country) having our registered office at ---------- ( hereinafter called "the bank") are bound unto (name of Employer) (hereinafter called "The Employer") in the sum of ---------- * for which payment well and truly to be made to the said Employer the Bank itself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this ---------- day of -------20

THE CONDITIONS of these obligations are:

(1) If after Bid opening the Bidder withdraws his bid during the period of Bid validity specified in the Form of Bid;

**Or**

(2) If the Bidder has been notified of the acceptance of his bid by the Employer during the period of Bid Validity:

A Fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required; or

B. Fails or refuse to furnish the Performance Security, in accordance with the Instructions to Bidders; or

C. does not accept the correction of the Bid Price pursuant to Clause 27 (Correction of Errors)

We undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him is due to him owing to the occurrence of one or any of the three conditions, specifying the occurred conditions or conditions.

This Guarantee will remain in force up to and including the date ---------- ** days after the deadline for submission of Bids as such the 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

DATE ---------- SIGNATURE----------

WITNESS ---------- SEAL ----------

---

(Signature, name and address)

* The Bidder should insert the amount of the guarantee in words and figures denominated in Indian Rupees. This figure should be the same as shown in Clause 16.1(Bid Security) of the Instructions to Bidders.

****45 days** after the **end of the validity period** of the Bid. Date should be inserted by the Employer before the Bidding documents are issued.

**PERFORMANCE SECURITY**

TO,
Registrar (GBU), Near GIFT City, Gandhinagar- 382355, (Address of Employer)

WHEREAS ---------- (name and address of contractor) (hereafter called "the Contractor") has undertaken, in pursuance of Contracts No. ---------- dates ---------- to execute ---------- --------- (name of Contract and brief description of Works) (hereinafter called "The Contract")

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligation in accordance with the Contract.

AND WHEREAS we have agreed to give the Contractors such a bank Guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you on behalf of the Contractor, up to a total of ---------- (amount of guarantee)*---------- (in words), such sum being payable in types and proportions of currencies in which the Contract prices is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of ---------- (amount of guarantee) as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the contractor before presenting is with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract to of the Works to be performed thereunder or of any of the Contract documents which may be made between your and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such charge, addition or modifications.

This guarantee shall be valid until 60 days from the date of expiring of the Defect Liabilities period.

Signature and Seal of the guarantor ----------

Name of Bank ----------

Address ----------
Date ----------

*An amount shall be inserted by the Guarantor, representing the percentage the Contract price specified in the Contract denominated in Indian Rupees.

**ADDITIONAL PERFORMANCE SECURITY**

[Clause 34.1. (A)]

TO,
Registrar (GBU), Near GIFT City, Gandhinagar- 382355, (Address of Employer)

WHEREAS ---------- (Name and address of contractor) (hereafter called "The Contractor") has undertaken, in pursuance of Contracts No. ---------- dates ---------- to execute ---------- --------- (Name of Contract and brief description of Works) (hereinafter called "The Contract")

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligation in accordance with the Contract.

AND WHEREAS we have agreed to give the Contractors such a bank Guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you on behalf of the Contractor, up to a total of ---------- (amount of guarantee)---------- (in words), such sum being payable in types and proportions of currencies in which the Contract prices is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of ---------- (amount of guarantee) as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the contractor before presenting is with the demand

We further agree that no change or addition to or other modification of the terms of the Contract to of the Works to be performed thereunder or of any of the Contract documents which may be made between your and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such charge, addition or modifications.

This guarantee shall be valid until **28 days** from the project completion date.

Signature and Seal of the guarantor ----------

Name of Bank ----------

Address ----------

Date ----------

**BANK GUARANTEE FOR ADVANCE PAYMENT**

TO,

Registrar (GBU), Near GIFT City, Gandhinagar- 382355, (Address of Employer)

---------- (Name of Contractor)

Gentlemen:

In accordance with the provisions of the Conditions of Contract, sub-clause 51.1 ("Advance Payment") of the above-mentioned Contract, ---------- (name and address of Contractor) (hereinafter called "the Contractor") shall deposit with (name of Employer) a bank guarantee his proper and faithful performance under the said Clause of the Contract in an amount of - (amount of Guarantee) * ---------- in words).

We, the ---------- (bank of financial institution), as instructed by the Contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to ---------- (name of Employer) on his first demand without whatsoever right of obligation on our part and without his first claim to the Contractor, in the amount not exceeding ---------- (amount of guarantee)* ---------- (in words)

We further agree that no change or addition to or other modifications of the terms of the Contractor or Works to be performed thereunder or of any of the Contract documents which may be made between ---------- (name of Employer) and the Contractor, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modifications.

This guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until ---------- (name of employer) receives full repayment of the same amount from the contractor.

YOUR'S TRULY

Signature and Seal _____
Name of Bank/ Financial Institution _____
Address _____
Date _____

* An amount shall be inserted by that Bank or Financial Institution representing the amount of the Advance Payment, and denominated in Indian Rupees.

**Letter of Acceptance**

(Letter head paper of the Employer)

_____ (date)

To,

_____ (Name and address of the Contractor)

_____

_____

Dear Sirs,

This is to notify you that your Bid dated_____for execution of the_____(Name of the contract and identification number, as given in the Instructions to Bidders) for the Contract Price of Rupees _____ (_____) (amount in words and figures) as corrected and modified in accordance with the Instructions to Bidders* is hereby accepted by our agency.

You are requested to furnish performance security, in the form detailed in para 34.1 of ITB for an amount equivalent to Rs._____within **10 days** of the receipt of this letter of acceptance up to beyond **60 days** from the date of expiry of defects Liability period i.e. up to_____and the Additional Performance Security for an amount equivalent to Rs._____shall be valid beyond 28 (twenty-eight) days of Project Completion Date i.e. up to_____and sign the contract, failing which action as stated in Para 34.3 of ITB will be taken.

Yours Faithfully

Authorized Signature
Name and title of Signatory
Name of Employer

---

* Delete "Corrected and" or and modified if only one of these actions applies. Delete as corrected and modified in accordance with the Instructions to Bidders, if corrections or modifications have not been affected.

**Issue of Notice to proceed with the work**

(Letterhead of the Employer)

---------- (date)

To,

_____ (Name and address of the Contractor)

_____

_____

Dear Sirs,

Pursuant to your furnishing the requisite security in ITB Clause 34.1 and signing of the Contract for the construction of_____

_____

_____ at a bid Price of Rs.

_____.

You are hereby instructed to proceed with the execution of the said works in accordance with the contract documents.

Yours faithfully

(Signature, name and title of signatory authorized
To sign on behalf of Employer)

**AGREEMENT FORM**

This agreement, made on the _____ day of _____ between

_____ (name and address of Employer) (Hereinafter called "the Employer) and _____ (name and address of contractor) hereinafter called "the Contractor" of the other part.

Whereas the Employer is desirous that the Contractor execute

_____

Name and identification number of contract (hereinafter called "the works") and the employer has accepted the Bid by the Contractor for the execution and completion of such works and the remedying of any defects therein, at a cost of Rs.

_____

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS

1. In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the conditions of contract hereinafter referred to and they shall be deemed to form and be read construed as part of this Agreement.

2. In Consideration of the payment to be made by the Employer to the contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to executive and complete the works and remedy any defects therein in conformity in all aspects with the provisions of the contracts.

3. The employer hereby covenants to pay the Contractor in consideration of the execution and completion of the works and the remedying the defects wherein 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.

4. The Following documents shall be deemed to form and be ready and construed as part of this Agreement viz

   i ) letter of Acceptance
   ii ) Notice to proceed with the works:
   iii ) Contractor's Bid

iv ) Conditions of contract: General and Special

v ) Contract Data

vi) Additional conditions

vii ) Drawings

viii ) Bill of Quantities and

ix ) Any other documents listed in the Contract data as forming part of the Contract.

In witness whereof the parties there to have caused this Agreement to be executed the day and year first before written

The Common seal of _____

Was hereunto affixed in the presence of :

Signed, sealed and Delivered by the said _____

---

In the presence of

Binding signature of Employer _____

Binding Signature of Contractor _____

# UNDERTAKING
**(For Investment)**

I, the undersigned do hereby undertake that our firm M/s …….. would invest a minimum cash up to **25%** of the value of the work during implementation of the contract.

_____

(Signed by an Authorized officer of the firm)

Title of officer _____

Name of firm _____

DATE _____

# UNDERTAKING
**(For Validity)**

I, the undersigned do hereby undertake that our firm M/s …….. …….. Agree to abide by this bid for a period.....days for date fixed for receiving the same and it shall be binding on us and may be accepted at any time before the expiration of that period.

_____

(Signed by an Authorized officer of the firm)

Title of officer _____

Name of firm _____

DATE _____

**- : DETAILS OF LITIGATION: -**

Name of applicant / or parties:

Applicant should provide information on any History of litigation or arbitration resulting from contracts executed in last five years or currently under execution as per format on letterhead. :

| Years | Award for / or against applicant | Name of client Cause of Litigation & matter of dispute. | Disputed Amount in Rupees. |
|---|---|---|---|
| | | | |

**NOTE: -**

- The above information shall be supported with necessary documents otherwise the same shall be treated as null & void.
- If the information to be furnished in this schedule will not be given & come to the notice subsequently will result in disqualification of bidder.

Signature of Applicant

## SECTION - 9

# DRAWINGS

Attached Separately

# SECTION - 10

## DOCUMENTS TO BE FURNISHED BY BIDDER

## As per requirement of PQ criteria & Tender Terms & Conditions.

# SECTION - 11

## Approved Make list for Supply, installation, Testing and Commissioning of Solar roof system with Operation and maintenance

## MAKE OF MATERIALS

### A. SOLAR WORK

| SR. NO. | ITEM DESCRIPTION | MAKE LIST |
|---|---|---|
| 1. | MEDIUM VOLTAGE CABLES & WIRES FOR INTERNAL WIRING | RR CABLE / HAVELLS / POLYCAB / AVOCAB |
| 2. | DISTRIBUTION BOARD | LEGRAND-Ekinox 3/ SCHNEIDER-ACTI9 / LK-E&A (L&T)- EXORA |
| 3. | MCB, RCCB | LEGRAND-DX3/ SCHNEIDER-ACTI9 / LK-E&A (L&T)- EXORA |
| 4. | LT PANEL | ACTIVE ENGINEEERS / SWATI SWEATCH GEAR P. L. / ADISHWARAM |
| 5. | LUGS / BIMETALLIC LUGS | DOWELL`S / HMI / COMET / HEX |
| 6. | CABLE GLAND | JAINSON / COMET / POLYCAB / HEX |
| 7. | PVC PIPE & ACCESSORIES | PRECISION / ANCHOR BY PANASONIC/ BBC / VRAJ |
| 8. | SOLAR PV MODULS | WAAREE ENERGIES / ADANI / SOLEX / TATA POWER / RAYZON |
| 9. | STRUCTURAL PIPE | TATA/ SAIL / JINDAL / ASIAN /APOLLO |
| 10. | DC WIRE | POLYCAB / KEI / LAPP INDIA P. L. / HAVELLS / FINOLEX |
| 11. | DC DISTRIBUTION BOARD | LK / ABB / SIMENS |
| 12. | EARTHING | OBO / JEF / JSR EARTHING SOLUTION |
| 13. | INVERTOR | SOFAR / ABB (FIMER) / FRONIUS / SUNGROW / HAVELLS |
| 14. | Structural Hollow Steel, Rolled Steel sections -beams, channels, tee, flats, angles, bars (round, square, hexagonal) | Tata, SAIL, RINL, Jindal, Essar, Asian |

# SECTION - 12

# SPECIAL CONDITION OF CONTRACT

# SPECIAL CONDITION OF CONTRACT

1. All work shall commence only after the Contractor has submitted the shop drawings and received approval from the Architect and the Client. All materials proposed for use must be submitted by the Contractor along with their respective Technical Data Sheets (TDS) and shall be subject to review and approval by both the Architect and the Client prior to procurement, delivery, or installation on site.
2. The contractor will have to get all permission / certificates/ NOC from Private / semi-Government / Government or any other relevant competent Authority as per Norms and standards. i. e. Special Economic Zone - (SEZ) clearance, Costal region Zone (CRZ) / Nagar Palika, Water and Drainage connection from local body, Lift License Fire Fighting Services NOC, D. G. Set approval and other required documents.
3. The material shall strictly confirm to relevant standard mention in the detailed item specifications and prevailing IS / ASTN / ISO / IRC / ICE, local authority and standard guideline as directed by Engineer in charge / Consultant / Architect. The prior approval of the materials to be used should be get from Engineer in charge / Consultant / Architect. Work should be executed in accordance with specification and best modern practices.

4. Contractor shall bare own arrangement for drawing water, distribution water, power connection for construction / testing other facilities like D. G. Set, Compressor etc. for construction work.
5. Permanent Benchmark for each special features shall be furnished by contractor prior to procurement of material, actual installation, lay out and fixing level etc. shall be done at his own cost.
6. Contractor is solely responsible for the damage of existing/ adjoining/ nearby structures during the construction. Any damages or defects shall have to be rectified by his own cost and risk. No any payment shall be made against for the same.
7. Condition of contract is as per form B2 attached herewith and as per special condition of contract attached herewith.
8. The project will be Governed as per prevailing Indian Standards and other equivalent standards other than mentioned in the tender document as approved by engineer in charge/ Consultant / Architect.
9. The law governing in the contract will be Indian law.
10. All the rates are inclusive of all taxes excluding GST levied by state and central Government. No any separate payment shall be paid.
11. State Govt. R & B Department all GR applicable to Contractor for their Execution work. Also During contract period if any new GR from R & B Department will be

publish, It will be also Considered.

**General Note:**

1. All Concrete Work content as per grade (without fly ash as per item description) and as per latest IS 456 for all PCC & RCC elements of all shape, all size, at all places and heights/ depths including transporting, laying of concrete to site by any means like pumping or tower crane etc., finishing and curing etc. and including Admixtures in recommended proportions as per IS 9103 to accelerate, retard setting of concrete as per direction of Engineer-in- charge. Rate shall be inclusive of providing grooves, drip molds, ghazis, pockets, cut outs etc. and labour for insert sleeves if any wherever required while casting. Rate also to include lift charges and scaffolding for any heights / depths from FFL/GL. (unless otherwise specified)
2. All formwork should be rigid & water tight using best quality of ordinary shuttering ply /steel plates with supporting system of MS adjustable steel props / spans / frames for any shapes, sizes, planes including strutting, propping, bracing, staging etc., complete to give smooth & fair finish & including false staging work
3. Production of cement concrete shall be in fully computerized batching plant and placing the concrete by pump / placer boom / Tower crane etc.
4. If “Equivalent Make” is proposed for the items then contractor is required to submit detailed specification/certificates for the proposed make for

BOQ item, which shall be considered/approved by the GBU after evaluating that make shall comply provision of relevant IEC codes and standard guide lines and also performance is consultation under engineer in charge. Necessary documents is support of the same shall be submitted before procurement to engineer in charge for approval.

5. All structural steel fabrication work shall be carried out in accordance with the latest IS codes (IS 800, IS 816, IS 808, IS 2062) and as per approved fabrication drawings submitted by the contractor and approved by the Engineer-in-Charge. Structural members shall be fabricated using standard rolled sections (ISMB, ISMC, ISA, etc.) of specified grade (e.g., E250), procured from approved manufacturers with valid test certificates. Fabrication shall include accurate cutting, drilling, welding (as per IS 816), grinding, and fitting, with no gas cutting unless approved. All welds shall be visually inspected, and where required, subjected to NDT tests such as DPT, UT, or radiography at no extra cost. Fabricated members shall be cleaned of rust, oil, and grease, and immediately coated with one coat of red oxide primer; final painting shall be as per specification. All components shall be stored, transported, and erected using proper safety measures. Bolts, nuts, and washers shall conform to IS standards, and all required accessories such as gusset plates, cleats, base plates, and anchor bolts shall be provided as per approved

shop drawings, with alignment and erection verified by the Engineer-in-Charge.

**Electrical Special Conditions**

1. No deviation from the approved list of makes shall be permitted. In case, certain items of equivalent is mentioned, the same shall be got approved from GBU and Consultant, before ordering.
2. Contractor shall provide all the shop drawings/working drawings, for all the services before starting any work or placing any order for any of the services like internal electrification, internal water supply, internal plumbing, HVAC system, Solar system, firefighting system, lifts etc. These shop drawings shall be got approved from consultant before implementation and this shall be binding on the contractor.
3. Contractor shall get the drawings approved from the local bodies/Competent body before strting the work for Lifts, transformer and fire fighting for the building and shall obtain the completion certificate/Occupancy certificate /Fire Dept. Approval/or any other relevant drawings. Nothing extra shall be payable to the contractor on this account.
4. The contractor's electrical installation shall conform in all respects to the relevant rules, rgulations, statutory provision and codes of practice as also be in accordance with the rules of the local license Undertaking (as the case may be) as existing new or as may be amended/enforced from time to time in the future.

Installation test reports shall invariably be furnished by the contractor before any load is connected.

5. The Contractor shall submit documents, such as the TDS (Technical Data Sheet), for prior approval
6. Payments shall be made generally as follows for the items which covers SITC scope in individual items. However, Engineer decision will be final for sub-break-up if required.
7. Payment Breakup of item rates:

- 70% Against Supply

- 20% Against installation

- 10% Against successfully commissioning, acceptance of client / consultant, approval from concern authority and as built drawing's.

# SECTION - 13

## COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT (CAMC) SCOPE/CONDITIONS

# Comprehensive Annual Maintenance Contract for Solar (For 5 Years after completion of Defect Liability Period)

The Contract shall be effective after completion of **defects liability period**. A Comprehensive Annual Maintenance Contract (CMC) for an Solar system. The CMC helps ensure that the Solar system runs smoothly and efficiently. A Solar system CMC (Annual Maintenance Contract) scope of work typically includes preventive maintenance checks, cleaning, component inspections, firmware updates, repair or replacement of all faulty parts, immediate response to breakdowns, and ensuring optimal system performance throughout the contract period, all while adhering to manufacturer guidelines and specified service level

**Preventive Maintenance Visits:**

- Preventive maintenance: Monthly inspections, testing, and cleaning to identify and fix potential issues
- Repair services: Diagnosis and repair or replacement of all faulty components
- Emergency support: 24/7 on-call support to address urgent issues
- Replacement of consumables: Replacement of worn-out or faulty components.
- Panel Cleaning: Removing dust, dirt, and debris from solar panels to maximize energy production.
- Addressing any issues that arise, including cleaning panels, fixing loose connections, and repairing or replacing faulty components.
- Mounting Structure Inspection: Checking for damage or corrosion in the mounting structures.
- Electrical Checks: Ensuring proper connections and functionality of all electrical components.
- Inverter Functionality: Verifying the inverter is operating correctly and efficiently.
- Shade Management: Addressing any shading issues caused by trees, vegetation, or other obstacles.

**Breakdown Maintenance:**

- Immediate response to reported faults and system failures.
- Diagnosis of the issue and necessary repairs.
- Replacement of faulty components with OEM parts.
- Restoration of system functionality within agreed service level timeframes.

**Reporting and Documentation:**

- Detailed service reports after each monthly maintenance visit
- Recording of any issues identified, parts replaced, and corrective actions taken
- Providing reports on system health and performance trends

**Service Level Agreements (SLAs):**

Response required within maximum 24 hrs after intimation for service or breakdown.

**Spare Parts Coverage:**

All Spare parts including Consumable & Non-consumable which required to repair or replace during preventive & breakdown maintenance are included in the same.

**On-site Support:**

With Preventive maintenance Service, Breakdown Maintenance & as per additional requirement immediate onsite support required as per requirement.