Government of India
Border security force
FTR HQ BSF Gujarat
N.I.T.

NIT No. 01/SE(Elect)/NIT/FTR GUJARAT/ENGG/2024-25		
Technical Sanction No.	:	26/Engg/BSF/Elect/2024-25
Name of Work		Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn(Now 08BN) of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room).
Estimated Cost	:	Rs. 3,62,66,923/-
Earnest Money	:	Rs. 7,25,338/-
Performance guarantee	:	5% of tendered amount
Security Deposit	:	5% of tendered amount
Time Allowed		12 months

Certified that NIT contains-63 pages.

Approved/Not Approved

This NIT has been prepared for the above particular work on the base of sample NIT approved by SE(Elect). The approved sample NIT is placed below this NIT which may be treated as approved.

SE(ELECT) FHQ DELHI

CONTRACTOR SE(ELECT) FHQ DELHI

I N D E X

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PRESS NOTICE TO BE PUBLISHED ON WEB SITE

No: Engg(EL)/e-Tender/SHQ GNR/_____ Dated, the ____Nov 2025.

Notice Inviting e -Tenders

The Superintending Engineer (Electrical), HQrs DG BSF, Block No.10, CGO Complex, Lodhi Road, New Delhi on behalf of President of India invites online **percentage rate**tender on **EPC mode I** from approved and eligible contractors of CPWD and those of appropriate list of MES, BSNL, Railways, state PWD Gujarat, state renewable energy Gujarat having valid electrical licence OR manufacturer / Authorised OEM of Solar Power Plant equipment approved by MNRE for the following work :

Name of work	:	Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn(Now 08 Bn) of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room).
NIT no.	:	**01/SE(Elect) /NIT/FTR GUJARAT./ENGG/ 2024-25**
Estimated Cost	:	Rs. 3,62,66,923/-
Earnest Money	:	Rs.7,25,338/-
Performance guarantee	:	5% of tendered amount
Security Deposit	:	5 % of tendered amount
Period of Completion	:	12 months
Last date & time of submission of bid	:	**Date 3/12/2025 up to 1100 hrs.**
Submission of physical EMD	:	**From Date 14/11/2025 1200 HRS To Date 03/12/2025 1030 HRS**
Date and time of opening of online technical bid	:	**Date 04/12/2025 at1100Hrs.**
Date and time of opening of online financial bid	:	Will be intimated online later after approval of technical bid by competent authority.

Technical bid shall be considered valid only of those contractors who will upload the scanned copies of the following documents along with technical bid and physical deposition of EMD.

a) Earnest Money in the form of Insurance Surety/safety Bonds, Account Payee bank Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee including e- Bank Guarantee from any of the Commercial Banks drawn in favour of DIG SHQ BSF Gandhinagar**.**

b) Documents to be submitted online-

(i) **FOR CONTRACTORS** - Valid Enlistment order, electrical license, PAN Card, GST & IT return latest as applicable with Work experience as Para b (ix)

(ii) **FOR OEM**- OEM certificate on proper format with MNRE approval, PAN Card, GST & IT return latest as applicable with average annual turnover as mentioned at Para b (x).

(iii) **MNRE APPROVED FIRM/AUTHORIZED FIRM** - OEM Authorization certificate, PAN Card, GST & IT return latest as applicable with average annual turnover as mentioned at Para b (x).

(iv) FORM "D" FORMAT FOR UDERSTANDING THE PROJECT SITE *(on Bidder Letter Head) as per format provided in NIT*

(v) FORM "E" **UNDERTAKING FOR NO DEVIATION CERTIFICATE** *(on Bidder Letter Head) as per format provided in NIT*

(vi) FORM "F" **UNDERTAKING FOR INTEGRITY PACT** *(on Bidder Letter Head) as per format provided in NIT*

(vii) Signed copy of NIT

(viii) Following certificates to be enclosed :-

For Photovoltaic Modules & Cells

(1) Valid BIS certificate of PV module Panel.

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(2) NABL lab test of solar PV Module.

A) IEC 61730 Part 1 for construction of PV modules test report .
B) IEC 61730 Part 2 for safety of PV modules test report .
C) IEC 61701/IS of PV modules test report .
D) IEC 61215/IS 14286 of PV Module test report.

For Battery

1) NABL Lab test of solar Battery

A) IEC 61427
B) IEC 60896 21/22
C) TEC/GR /TX/BAT/003/02 MAR 2011

For PCU(power conditioning Unit)

1) NABL Lab test of PCU

A) IEC 61683/IS 61683 procedure for measuring efficiency test report.
B) IEC 60068-2(1, 2,14,30) environment test report.
C) IEC 62109-1 test report.
D) IEC 62109- 2 test report.
E) IEC 61000-3- 12:2011 test report.
F) IEC 16169:2014/IEC 62116:2008 test report.

(ix) Certificates of similar type of work experience as per para 1.2.1/1.2.2/1.2.3 of Form-6

FOR CONTRACTORS only- Three similar works each of value not less than 40% or two similar works each of value not less than 60% or one similar work of value not less than 80% of estimated cost (all figures rounded to nearest Convenient figure in last 7 years ending last day of the month previous to the one in which tender are invited.) (Similar works means at least one work of solar plant of respective percentage value of work and for balance no of works, any electrical work of respective percentage will be considered.

(X) Average annual financial turnover on construction works should be at least 30% of the estimated cost put to tender during the immediate last three consecutive financial years duly signed by authorised person. The value of annual turnover figures shall be brought to current value by enhancing the actual turnover figures at simple rate of 7% per annum

(XI) Affidavit as per clause 1.2.2 of Form 6.

"I/We undertake and confirm that eligible similar work(s) has/have not been got executed through another contractor on back to back basis. Further, if such a violation comes to the notice of Department, then I/We shall be debarred for tendering in BSF/CPWD in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-charge shall be free to forfeit the entire amount of the Earnest money /Performance Guarantee."

(XII) The provision of PPP-MII (Make in India) incorporated in the tender documents**.**

3. Earnest Money shall be scanned and uploaded on the e-Tendering website within the period of bid submission. The original EMD should be deposited alongwith prescribed format mentioned in Form-A of CPWD Manual/ appendix-"A' to any of BSF DDOs/Engg Officers of **Command HQ/ FHQ/ Frontier HQ / Sector HQ / Training Centre/ Bn HQ BSF** before last date & time of submission of bid. The EMD receiving authority of any BSF establishment shall examine EMD in original form and issuea receipt of deposit of earnest money to the bidder. Firm/bidder should uploaded the receipt with tender documents. The authority receiving the original EMD also intimates to tender inviting authority about deposition of EMD by the agency
4. The bid document consisting of specifications, the schedule of quantities of various types of items to be executed, the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website ***www.bsf.nic.in*** **/ www.*eprocure*.gov.in**
5. Conditional tender will be summarily rejected without assigning any reason.

Sdxx
Commandant/Superintending engineer (Elect)
SE(ELECT) FHQ DELHI

CONTRACTOR

Copy To:

1	Comn Branch (Computer Cell) FTR HQ BSF Guj	:	For info and request to upload the tender notice in BSF website http://guj.bsf.gov.infor wide publicity
2	Vigilance Cell, SHQ BSF Gandhinagar	:	For info please
3	FHQ BSF N/Delhi &HQ Spl DG BSF (WC),Chandigarh	:	For info along with copy of tender notice for displaying on notice board for wide publicity
4	Ftr HQ BSF Guj (Engg Branch)		-do-
5	SHQ BSF Barmer/Bhuj/84/21/08/137Bn BSF	:	-do-
6	Executive Engineer (E),BFD CPWD , Nr, BSF campus Mundra Road Bhuj (Guj)-370001	:	-do-
7	Executive Engineer, R&B Div, GandhinagarGuj)	:	-do-
8	HQ CWE (AF) Chiloda Military Engineering Services P.O. CRPF campus Vayu Shakti Nagar, Gandhinagar-382042	:	-do-
9	Contractor's Association, Gandhinagar (Guj)	:	-do-
10	SC/ST Contractor Association, Gandhinagar (Guj)	:	-do-
11	Notice Board	:	-do-
12	File	:	

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GOVERNMENT OF INDIA
BORDER SECURITY FORCE
NOTICE INVITING TENDER
FORM-6 FOR PERCENTAGE RATE E-TENDERING ON EPC MODE 1

The Superintending Engineer (Electrical), HQrs DG BSF, Block No.10, CGO Complex, Lodhi Road, New Delhi on behalf of President of India invites online **percentage rate**tender on **EPC mode I** from approved and eligible contractors of CPWD and those of appropriate list of MES, BSNL, Railways, state PWD of Gujarat, state renewable energy of Gujarat having valid electrical licence or MNRE approved manufacturers / Authorised OEMs of Solar Power Plant equipment's for the following work (s):

Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn(now 08N) of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room).

The enlistment of the contractors should be valid on the last date of submission of bids.

In case the last date of submission of bid is extended, the enlistment of contractor should be valid on the original date of submission of bids.

1.1.1 The work is estimated to cost **Rs. 3,62,66,923/- Only**. This estimate, however, is given merely as a rough guide.

1.1.1 The authority competent to approve NIT for the combined cost and belonging to the major discipline will consolidate NITs for calling the bids. He will also nominate Division which will deal with all matters relating to the invitation of bids.

For composite bid, besides indicating the combined estimated cost put to bid, should clearly indicate the estimated cost of each component separately. The eligibility of bidders will correspond to the combined estimated cost of different components put to bid.

1.2 Intending bidders is eligible to submit the bid provided he has definite proof from the appropriate authority, which shall be to the satisfaction of the competent authority, of having satisfactorily completed similar works of magnitude specified below:-
Criteria of eligibility for submission of bid documents

1.2.1 Conditions for CPWD as well as Non-CPWD registered contractors: **Supplying, Installation, Testing and Commissioning of solar power plant including construction of RCC framed structure for battery room)**

(Three similar works each of value not less than 40% or two similar work each of value not less than 60% or one similar work of value not less than 80% of estimated cost (all figures rounded to nearest Convenient figure in last 7 years ending last day of the month previous to the one in which tender are invited.)

1.2.2 **To become eligible for issue of bid, the bidders shall have to furnish an affidavit as under:-**
I/We undertake and confirm that eligible similar works(s) has/have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of Department, then I/we shall be debarred for bidding in BSF in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge s hall be free to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee. (Scanned copy to be uploaded at the time of submission of bid)

1.2.3 When bids are invited from non CPWD contractors and CPWD contractors asper provisions of **clause** 1.2.1above, it will be mandatory for non CPWD contractors and CPWD contractors to upload the work experience certificate(s) and the affidavit as per the provisions of **clause 1.2.1.**

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2. Agreement shall be drawn with the successful bidders on prescribed Form No**. CPWD 7** (up to date)(or other Standard Form as mentioned) which is available as a Govt. of India Publication and also available on website **www.bsf.nic.in.** Bidders shall quote his rates as per various terms and conditions of the said form which will form partof the agreement.

3. The time allowed for carrying out the work will be **12 months**from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the bid documents.

4. The site for the work is available/made available in parts.

5 The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents except Standard General Conditions of Contract Form can be seen on website **www.eprocure.com**or **www.bsf.nic.in free of cost.**

6. After submission of the bid the contractor can re-submit revised bid any number of times but before last time and date of submission of bid as notified.

7. While submitting the revised bid, contractor can revise the rate of one or more item(s) any number of times (he need not re-enter rate of all the items) but before last time and date of submission of bid as notified.

8. When bids are invited in three stage system and if it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. If not submitted then the bid submitted earlier shall become invalid.

9. Earnest Money in the form of Treasury Challan or Demand Draft or Pay order or Banker's Cheque or Deposit at Call Receipt or Fixed Deposit Receipt (drawn in favour of **DIG SHQ Gandhinagar**) shall be scanned and uploaded to the e-Tendering website within the period of bid submission. The original EMD should be deposited physically (NOT BY POST) 30 minutes prior to the opening of tender in the office of **DIG BSF Gandhinagar** inviting as per NIT NOTICE. MSME registered firms may be exempted (on submission of valid document) from the payment of EMD as per Guidelines.

Copy of Enlistment Order and certificate of work experience and other documents as specified in the press notice shall be scanned and uploaded to the e-Tendering website within the period of bid submission. However, certified copy of all the scanned and uploaded documents as specified in press notice shall have to be submitted by the lowest bidder only within a week physically in the office of **DIG BSF Gandhinagar**. Online bid documents submitted by intending bidders shall be opened only of those bidders, whose original EMD deposited in the office of **DIG BSF Gandhinagar** and other documents scanned and uploaded are found in order.

The bid submitted shall be opened at office of **DIG BSF Gandhinagar** as per tender notice.

10. The bid submitted shall become invalid if
    (i) The bidder is found ineligible.
    (ii) The bidder does not upload scanned copies of all the documents stipulated in the bid document.
    (iii) If any discrepancy is noticed between the documents as uploaded at the time of submission of bid and hard copies as submitted physically by the lowest bidder inthe office of bid opening authority.
    (iv) If a tenderer quotes nil rates against each item in item rate tender or does not quote any percentage above/below on the total amount of the tender or any section / sub head in percentage rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.
    (v) EMD does not submitted with the office of **DIG BSF Gandhinagar**

11. The contractor whose bid is accepted will be required to furnish performance guarantee of 5%(Five Percent) of the bid amount within the period specified in Schedule F. In the form of bank guarantee /Banker's cheque of any commercial bank/Demand Draft of any commercial bank/ Pay order of any commercial Bank or Fixed Deposit Receipts of any commercial Bank or the State Bank of India in accordance with the prescribed form.

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In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule'F',

including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor. The earnest money deposited along with bid shall be returned after receiving the aforesaid performance guarantee**.** The contractor whose bid is accepted will also be required to furnish either copy of applicable licenses/ registrations or proof of applying for obtaining labour licenses, registration with EPFO, ESIC and BOCW Welfare Board including Provident Fund Code No. If applicable and also ensure the compliance of aforesaid provisions by the sub-contractors, if any engaged by the contractor for the said work and programme chart (Time and Progress) within the period specified in Schedule F.The successful firm will also furnish the original documents which were submitted with the bid.

12. **The description of the work is as follows:**
Intending Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A bidder shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidders shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidder implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

13. The competent authority on behalf of the President of India does not bind itself to accept the lowest or any other bid and reserves to itself the authority to reject any or all the bids received without the assignment of any reason. All bids in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidders shall be summarily rejected.

14. Canvassing whether directly or indirectly, in connection with bidders is strictly prohibited and the bids submitted by the contractors who resort to canvassing will be liable for rejection.

15. The competent authority on behalf of President of India reserves to himself the right of accepting the whole or any part of the bid and the bidders shall be bound to perform the same at the rate quoted.

16. The contractor shall not be permitted to bid for works in the BSF Circle responsible for award and execution of contracts, in which his near relative is posted a Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer and Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any gazetted officer in the BSF or in the Ministry of Home Affairs. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department.

17. No Engineer of Gazetted Rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the prior permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the bid or engagement in the contractor's service.

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18. The bid for the works shall remain open for acceptance for a period of **75 (seventy five)days** from the date of opening of bids in case of single bid system/**90 (Ninety) days** from the date of opening of technical bid in case bids are invited on 2 or 3 bid envelop system. If any bidders withdraw his bid before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the bid which are not acceptable to the department, then the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the bidders shall not be allowed to participate in the rebidding process of the work.

19. This notice inviting Bid shall form a part of the contract document. The successful bidders/contractor, on acceptance of his bid by the Accepting Authority shall within 15 days from the stipulated date of start of the work, sign the contract consisting of:-

(a) The Notice Inviting Bid, all the documents including additional conditions, specifications and drawings, if any, forming part of the bid as uploaded at the time of invitation of bid and the rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.

(b) Standard C.P.W.D. Form 7 or other Standard C.P.W.D. Form as applicable.

20. For Composite Bids

20.1.1 The Executive Engineer in charge of the major component will call bids for the composite work. The cost of bid document and Earnest Money will be fixed with respect to the combined estimated cost put to tender for the composite bid.

20.1.2 The bid document will include following three components:

Part A:-CPWD-6, CPWD-7/8 including schedule A to F for the major component of the work, Standard General Conditions of Contract for CPWD 2014 as amended/ modified up to ……..

Part B:-General / specific conditions, specifications and schedule of quantities applicable to major component of the work.

Part C:-Schedule A to F for minor component of the work. Competent authority under clause 2 and clause 5 shall be same authority as mentioned in schedule A to F for major components), General/specific conditions, specifications and schedule of quantities applicable to minor component(s) of the work.

20.1.3 The bidders must associate himself, with agencies as per NIT conditions

20.1.4 The eligible bidders shall quote rates for all items of major component as well as for all items of minor components of work.

20.1.5 After acceptance of the bid by competent authority, the EE in charge of major component of the work shall issue letter of award on behalf of the President of India. After the work is awarded, the main contractor will have to enter into one agreement with EE in charge of major component and has also to sign two or more copies of agreement depending upon number of EE's/DDH in charge of minor components. One such signed set of agreement shall be handed over to EE/DDH in charge of minor component(s). EE of major component will operate **Part A** and **Part B** of the agreement. EE/DDH in charge of minor component(s) shall operate **Part C** along with **Part A** of the agreement.

20.1.6 Entire work under the scope of composite bid including major and all minor components shall be executed under one agreement.

20.1.7 Security Deposit will be worked out separately for each component corresponding to the estimated cost of the respective component of works.

20.1.8 The main contractor has to associate agencies for specialized components (s) conforming to eligibility criteria as defined in the bid document and has to submit detail of such agency(s) to Engineer-in-charge of relevant component(s).within prescribed time. Name of the agency(s) to be associated shall be approved by Engineer-in-charge of relevant component(s).

20.1.9 In case the main contractor intends to change any of the above agency/agencies during the operation of the contract, he shall obtain prior approval of Engineer-in-charge of relevant specialized component(s). The new agency/agencies shall also have to satisfy the laid down eligibility criteria. In case Engineer-in-charge is not satisfied withthe performance of any agency, he can direct the contractor to change the agency executingsuch items of workand this shall be binding on the contractor.

20.1.10 The main contractor has to enter into MoU with agencies contractor(s) associated by him. Copy of such MoU shall be submitted to EE/ DDH in charge of each relevant component as well as to EE in

charge of major component. In case of change of associate contractor, the main contractor has to enter into agreement with the new contractor associated by him.

20.1.11 Running payment for the major component shall be made by EE of major discipline to the main contractor. Running payment for minor components shall be made by the Engineer- in-charge of the discipline of minor component directly to the main contractor.

20.1.12A. The composite work shall be treated as complete when all the components of the work are complete.The completion certificate of the composite work shall be recorded by Engineer-in-charge of major component after record of completion certificate of all other components.

20.1.12B. Final bill of whole work shall be finalized and paid by the EE of major component. Engineer(s) in charge of minor component(s) will prepare and pass the final bill for their component of work and pass on the same to the EE of major component for including in the final bill for composite contract.

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GOVERNMENT OF INDIA
BORDER SECURITY FORCE
GENERAL RULES AND GUIDELINE FOR CONTRACTOR

1. All works proposed for execution by contract will be notified in the form of invitation to tender posted on website. This form will state the work to be carried out, as well as the date for submitting and opening tenders and the time allowed for carrying out the work, also the amount of earnest money to be deposited with the tender, and the amount of the security deposit and Performance guarantee to be deposited by the successful tenderer and the percentage, if any, to be deducted from bills, Copies of the specifications, designs, drawings and any other document applicable to the work shall be open for inspection by the contractor in the office of officer inviting tender during office hours.

   The work involves execution as per name of work under either EPC Mode I or Mode II or Mode III as specified in Schedule F.

   Mode I involves Engineering (preparation of Architectural, structural and services design and drawings), procurement & construction by the contractor based on conceptual architectural drawings attached with the tender documents.

   Mode II involves part Engineering (preparation of structural and services design and drawings), procurement & construction by the contractor based on Preliminary/ Conceptual Architectural design and drawings attached with the tender documents; detailed Architectural design and drawings may be provided by the Engineer-in-Charge in stages/ parts during execution.

   Mode III involves procurement & construction by the contractor based on Architectural, structural and services design and drawings attached with the tender documents or to be provided by the Engineer-in-Charge in stages / parts during execution.

   The Type of building i.e Permanent or Semi-Permanent, based on the expected economic life of the building, shall be as specified in Schedule-F.

   Tenders invited in Mode I and Mode II are technology neutral. Bidders can choose any of the approved technologies depending upon type of building, other suitability conditions (such as seismic zone, number of storeys etc.) as per Schedule F under Mode I and II as per structural design, subject further to the condition that the structural system technologies categorized under Pre-cast Construction System and adopted for buildings under Seismic Zone IV as per IS 1893(Part-I) :2016 amended from time to time, shall have passed the full scale type testing for pseudo-static reversed cyclic test as detailed below:

   Pseudo-Static Reversed -Cyclic Test
   The test shall be conducted on typical three storeys of multi-storey building, which (a) are built with the full-scale components precast as per technology (b) are the weakest and/or most flexible, and (c) have all the typical connections of the building in precast,namely interior, exterior and corner wall to wall (vertical) connections, wall to slab (horizontal) connections and wall to wall (horizontal) connections, if any, as built in the original system with minimum four room layout plan.

   The bottom of the first storey shall be connected to the strong floor of the test facility, and the floors of the upper storeys to the Displacement-controlled actuators of the requisite Displacement (and force) capacity. This proto-type shall be loaded with the due vertical gravity load representing service level dead and live loads. The profile of displacement loading shall be as per the force distribution profile specified in IS 1893 (part I):2016 in the Equivalent Static Method of design.

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Displacement controlled loading:

At least 3 loading cycles (Full positive and Full negative) at Each of the displacement excursions of 0.1%, 0.2%, 0.3%,0.4%, 0.5%, 0.75%, 1%, 1.5%, 2%, 2.5%, 3%, 3.5%, 4%, 5% and 6% drift of specimen, or failure of the specimen, whichever is earlier.

A) 6% drift requirement is an upper limit. Actual drift is expected to be lesser than 6% depending on: Deformability of the building, and Flexibility of the connections.
The test may be stopped when either 6% drift or the maximum lateral force of 3 times the design base shear is reached.

B) Pseudo-static reversed cyclic test does not require a Shake Table facility.

Number of samples and Frequency: One sample shall be tested unless the structure shows premature failure before reaching at least 6% overall drift, either elastically or in elastically. If the structure fails to meet 6% drift requirement, then another sample be tested to reconfirm the failure pattern observed in the first specimen. If both samples fail, said configuration of the technology shall not be adopted in the work.

One test for every new type of connection system adopted shall be conducted. If the connection type / combination of elements under approved technology are changed, either in part or in full, the system will be treated as new.
The test should have been already got conducted from any government academic institute of repute or government R&D organization in India.
The testing charges shall be borne by the contractor.

2) In the event of tender being submitted by a firm/company, it must be signed separately by each partner/director thereof or in the event of the absence of any partner/director, it must be signed on behalf by a person holding a power of attorney authorizing him to do so, such power of attorney to be produced with the tender, and it must disclose that the firm/company is duly registered under the applicable Indian Partnership Act 1932/ Companies Act 2013.

3) Receipts for payment made on account of work, when executed by a firm/company, must also be signed by all the partners/directors, except where contractors are described in their tender as a firm/company, in which case the receipts must be signed in the name of the firm by one of the partners/directors (duly authorized by the firm/company), or by some other person having due authority to give effectual receipts for the firm/company.

4A) In case of Percentage Rate EPC tenders, contractor shall fill up percentage below/ above (in figures as well as in words) the total estimated cost given in Schedule of Quantities at Schedule-A, he will be willing to execute the work. The tender submitted shall be treated as invalid if:

I. The contractor does not quote percentage above/below on the total amount of tender or any section/sub head of the tender.

II. The percentage above/below is not quoted in figures & words both on the total amount of tender or any section/sub head of the tender.

III. The percentage quoted above/below is different in figures &words on the total amount of tender or any section/sub head of the tender. Tenders, which propose any alteration in the work specified in the said form of invitation to tender, or in the time allowed for carrying out the work, or which contain any other conditions of any sort including conditional rebates, will be summarily rejected.

4B). In case the lowest tendered amount (estimated cost + amount worked on the basis of percentage above/below) of two or more contractors is same, such lowest contractors will be asked to submit sealed revised offer in the form of letter mentioning percentage above/ below on estimated cost of tender including all sub sections/sub heads as the case may be, but the revised percentage quoted above/below on tendered cost or on each sub section/ sub head should not be higher than the percentage quoted at the time of submission of tender. The lowest tender shall be decided on the basis of revised offers.

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In case any of such contractor refuses to submit revised offer, then it shall be treated as withdrawal of his tender before acceptance and 50% of earnest money shall be forfeited.

If the revised tendered amount of two more contractors received in revised offer is again found to be equal, the lowest tender, among such contractors, shall be decided by draw of lots in the presence of SE of the circle, or CE of the zone EE(s) in-charge of major & minor component(s) (also DDH in case Horticulture work is also included in the tender), & the lowest contractors those have quoted equal amount of their tenders.

In case all the lowest contractors those have quoted same tendered amount, refuse to submit revised offers, then tenders are to be recalled after forfeiting 50% of EMD of each contractor. Contractor(s), whose earnest money is forfeited because of non-submission of revised offer, shall not be allowed to participate in the re-tendering process of the work.

5. The officer inviting tender or his duly authorized representative will open tenders in the presence of any intending contractors who may be present at the time of opening of tenders.

6. The officer inviting tenders shall have the right of rejecting all or any of the tenders and will not be bound to accept the lowest or any other tender.

7. The receipt of an accountant or clerk for any money paid by the contractor will not be considered as any acknowledgment or payment to the officer inviting tender and the contractor shall be responsible for seeing that he procures a receipt signed by the officer inviting tender or a duly authorized Cashier.

8. In case of Percentage Rate EPC Tenders only percentage quoted shall be considered. Any tender containing item rates is liable to be rejected. Percentage quoted by the contractor in percentage rate EPC tender shall be accurately filled in figures and words, so that there is no discrepancy.

9. In Percentage Rate EPC Tender, the tenderer shall quote percentage below/above (in figures as well as in words) at which he will be willing to execute the work. He shall also work out the total amount of his offer and the same should be written in figures as well as in words in such a way that no interpolation is possible. In case of figures, the word 'Rs.' should be written before the figure of rupees and word 'P' after the decimal figures, e.g. 'Rs. 2.15P and in case of words, the word 'Rupees' should precede, and the word 'Paisa' should be written at the end.

10. (i)The Contractor whose tender is accepted, will be required to furnish performance guarantee at specified percentage of the tendered amount as mentioned in Schedule 'E' and within the period specified in Schedule F. This guarantee shall be in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt or Bank Guarantee of any Commercial Bank.

(ii)The contractor whose tender is accepted, will also be required to furnish by way of five nos Security Deposit for the fulfilment of his contract, each value equal to 1 % of project cost of different validity after immediate completion of work. The security amount will also be accepted in the shape of bank guarantee from any of the commercial banks will be accepted for the purpose provided confirmatory advice is enclosed after completion of project.

11. On acceptance of the tender, the name of the accredited representative(s) of the contractor who would be responsible for taking instructions from the Engineer-in-Charge shall be communicated in writing to the Engineer-in-Charge.

12. GST or any other tax applicable in respect of inputs procured by the contractor for this contract shall be payable by the Contractor and Government will not entertain any claim whatsoever in respect of the same. However, component of GST at time of supply of service (as provided in CGST Act 2017) provided by the

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contract shall be varied if different from that applicable on the last date of receipt of tender including extension if any. Accordingly, payment or recovery shall be done.

13. The contractor shall give a list of both gazetted and non-gazetted BSF employees related to him.

14. The tender for composite work includes, in addition to building work, all other works such as sanitary and water supply installations drainage installation, electrical work, horticulture work, roads and paths etc.

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GOVERNMENT OF INDIA
CENTRAL PUBLIC WORKS DEPARTMENT
Percentage Rate Tender on EPC Mode (I)
BORDER SECURITY FORCE

STATE	Gujarat	CIRCLE	HQ DG BSF New Delhi
BRANCH	Engg	DIVISION	FTR HQ BSF GUJ
ZONE	…….	SUB-DIV	SHQ BSF Gandhinagar

(A) Tender for the work of: Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn(Now 08 BN) of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room).

(1) To be uploaded by**As per Tender Notice**

(2) To be opened in presence of tenderers who may wish be present **As per Tender Notice** in the office of **DIGBSF Gandhinagar**.

TENDER

I/We have read and examined the notice inviting tender, schedule A,B,C, D, E & F Specifications, Drawings & Designs, General Rules and Directions, Conditions of Contract, clauses of contract, Special conditions, Schedule of Rates, other documents, regulations, Acts and Rules referred to in the conditions of contract and all other contents in the tender document for the work.

I/We hereby tender for the planning, designing and execution of the work as per scope mentioned in this tender document specified for the President of India within the time specified in Schedule 'F' viz., schedule of quantities and in accordance in all respect with the applicable municipal byelaws, regulations, Acts, NGT guidelines, specifications, designs, drawing and instructions in writing referred to in Rule-1 of General Rules and Directions and in Clause 11 of the Conditions of contract and with such materials as are provided for, by, and in accordance with, such conditions so far as applicable.

I/We agree to keep the tender open for Seventy-Five (75) days from the due date of its opening in case of single bid system Or ninety (90) days from the date of opening of technical bid in case tenders are invited in 2 /3 bid system for work and not to make any modification in its terms and conditions.

I/We have deposited EMD for the prescribed amount in the office of concerned Executive Engineer as per the bid document.

A copy of earnest money deposit receipt of prescribed amount deposited in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee (as prescribed) issued by a Commercial Bank, is scanned and uploaded (strike out as the case may be). If I/We, fail to furnish the prescribed performance guarantee within prescribed period, I/We agree that the President of India or his successors, in office shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely.

Further, if I/We fail to commence work as specified, I/ We agree that President of India or the successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said performance guarantee absolutely. The said Performance Guarantee shall be a guarantee to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12 of the tender form. Further, I/We agree that in

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case of forfeiture of Earnest Money or Performance Guarantee as aforesaid, I/We shall be debarred for participation in the re-tendering process of this work.

I/We undertake and confirm that eligible similar work(s) has/have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of department, then I/We shall be debarred for tendering in CPWD as per enlistment rules applicable. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-charge shall be free to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee.

I/We hereby declare that I/We shall treat the tender documents, drawings and other records connected with the work as secret/confidential documents and shall not communicate information derived there from to any person other than a person to whom I/We am/are authorized to communicate the same or use the information in any manner prejudicial to the safety & integrity of the State.

Dated Signature of Contractor
Witness: Postal Address
Address:
Occupation:

A C C E P T A N C E

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on behalf of the President of India for a sum of Rs. …….....Rupees (.....
...…….....)

The letters referred to below shall form part of this contract agreement:

(a)

(b)

(c)

For & on behalf of President of India

Signature ……

Dated: Designation ……

CONTRACTOR SE(ELECT) FHQ DELHI

SCHEDULES

SCHEDULE 'A'
Schedule of quantities (Enclosed)

SCHEDULE 'B'
Schedule of materials to be issued to the contractor.

S.No.	Description of item	Quantity	Rates in figures & words at which the material will be charged to the contractor	Place of issue
1	2	3	4	5

---------- NIL----------

SCHEDULE 'C'

Tools and plants to be hired to the contractor

S.No.	Description	Hire charges per day	Place of issue
1	2	3	4

----------NIL----------

SCHEDULE 'D'

Extra schedule for specific requirements/document for the work, if any.

SCHEDULE 'E'

Reference to General Conditions of contract.

Name of Work: Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn(Now 08 BN) of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room).

(i) Estimated cost of work : **Rs.3,62,66,923/- Only**

(ii) Earnest Money **:** **Rs. 7,25,338/-Only**

(iii) Performance Guarantee : 5% of tendered amount

(iv) Security Deposit : 5% of tendered amount

NOTE:-Successful bidder will have to deposit bank guarantee on account of Security Deposit @ 5 % of project cost. There will be 5 nos of bank guarantee having equal value and value of each work guarantee shall 1 % of project cost. The BGs shall be submitted by the successful bidder after completion of work. BSF shall release respective BG after completion of each year of warranty period. The validity of bank guarantee shall be as below :

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1. 1st BG of 1 % value of project value for 1 year.
2. 2nd BG of 1 % value of project value for 2 year.
3. 3rd BG of 1 % value of project value for 3 year.
4. 4th BG of 1 % value of project value for 4 year.
5. 5th BG of 1 % value of project value for 5 year.

SCHEDULE 'F'

GENERAL RULES &DIRECTIONS:

Officer inviting tender	:	Commandant(Elect)/SE
Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with Clauses 12.2 & 12.3	:	See below Definitions:
2(v) Engineer-in-Charge	:	EE(ELECT) FTR HQ BSF GUJARAT
2(viii) Accepting Authority	:	Commandant(Elect)/SE(Elect)
2(ix) Percentage on cost of materials and Labour to cover all overheads and profits:	:	15%
2(xi) Standard Schedule of Rates	:	DSR 2022/MR/MNRE
2(xii) Department	:	BORDER SECURITY FORCE

9(ii) Standard CPWD Contract Form GCC 2014, CPWD Form 7/8 modified Corrected up to date

Clause 1 (i) Time allowed for submission of Performance Guarantee from the date of issue of letter of acceptance	:	**07 days**
(ii) Maximum allowable extension beyond the period provided in (i) above	:	**07 days**
Clause 2 Authority for fixing compensation under clause 2	:	Commandant /SE (Elect)
Clause 2A Whether Clause 2A shall be applicable	:	No
Clause 5		
Number of days from the date of issue of letter of acceptance for reckoning date of start	:	**10days.**
Mile stone(s) as per table given below:- condition at page no 46	:	As per sr. no 9 of additional

Table of Mile Stones (s)

S.	Description of Milestone	Time Allowed in days	Amount to be with-held in case of

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No.	(Physical)	(from date of start)	non-achievement of milestone.
1.			

Time allowed for execution of work : **12 months**

Authority to decide:

(i) Extension of time : EE(Elect) FTR HQ BSF Gujarat

(ii) Rescheduling of mile stones : Commandant(Elect)/SE
(Superintending Engineer in Charge or Superintending Engineer in Charge of Major Component in case of Composite Contracts, as the case may be)

Clause 6 (computerized measurement book) : Applicable

Clause 7 : Nil
Gross work to be done together with net payment /adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment :

Clause 8 & 8A : Applicable
(Completion certificate & Completion plans)

Clause 10A : Applicable
(Materials to be provided by contractor)

List of testing equipment to be provided by the contractor at site lab.
1..... 2. ..... 3..... : Nil
4..... 5. ..... 6.....

Whether Clause 10B shall be applicable : No

Clause 10C
Component of labour expressed as percent of value of work : 10%

Clause 10CA

	Materials covered under this clause	Nearest Materials(other than cement, reinforcement bars and structural steel) for which All India Wholesale Price Index to be followed	Base price of all the Materials covered under Clause 10 CA
1.		Nil	

* Base price of all the materials covered under clause 10 CA is to be mentioned at the time of approval of NIT.

Clause 10CC : Nil
Clause 10 CC to be applicable in contracts with stipulated period of completion exceeding the period shown in next column 24 months

Schedule of component of other Materials, Labour, POL etc.

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for price escalation. Component of Elect (except materials covered under clause 10CA) /Electrical construction Materials expressed as percent of total value of work. X.....%

Component of Labour -expressed as percent of total value of work. Y .....%

Component of P.O.L. -expressed as percent of total value of work. Z .....%

Clause 11 : CPWD/MNRE/Manufacturer Specifications.
Specifications to be followed for execution of work

Clause 12 : NA
Deviations/Variations Extent & Pricing

Clause 13 : Applicable
Foreclosure of contract due to abandonment or reduction in scope of work

Clause 16 : Applicable
Action in case work not done as per specifications

Clause 17(Excluding 17.6) : Applicable
Damages and defect liabilities

(Clause 17.6) : Applicable as mentioned in Schedule "E"
Release of security Deposit

Competent Authority for deciding reduced rates : SE (Elect)/Comdt(E)

Clause 32 : Applicable
Employment of Technical staff and employees

Sl No	Minimum Qualification of Technical Representative	Discipline	Minimum Experience	Number	Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause 36(i)	
					Figures	Words
1	Graduate Engineer or Diploma Engineer	Electrical	5 Years or 10 Years respectively	01	Rs 25000 / month	Rupees Twenty-Five Thousand per month.

Assistant Engineers retired from Government services that are holding Diploma will be treated at par with Graduate Engineers.

RECOVERY RATES FOR QUANTITIES BEYOND PERMISSIBLE VARIATION

Sl. No.	Description of item	Rates in figures and words at which recovery shall be made from the Contractor	
		Excess beyond permissible variation	Less use beyond the permissible variation
1.	Cement	-	On prevailing market rate.

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INFORMATION AND INSTRUCTIONS FOR BIDDERS FOR E-TENDERING FORMING PART OF BID DOCUMENT

The Superintending Engineer (Electrical), HQrs DG BSF, Block No.10, CGO Complex, Lodhi Road, New Delhi on behalf of President of India invites online **percentage rate** tender on **EPC mode I** from approved and eligible contractors of CPWD and those of appropriate list of MES, BSNL, Railways, state PWD of Gujarat, state renewable Gujarat energy having valid electrical licence and MNRE approved manufacturer & Authorised OEM of Solar Power Plant equipment's for the following work (s):

Sr. No.	NIT no.	Name of work & Location	Estimated cost put to bid (Rs.)	Earnest Money	Stipulated Period of Completion of work (in months)	Last date of online submission of bid, scanned copy of original EMD along with original EMD and other documents as specified in the bid document.	Date & timeof openingof bid
1	2	3	4	5	6	7	8
1.	**01/SE(Elect)/NIT/FTR GUJ/ENGG//2024-25**	Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn (Now 08 BN)of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room).	**Rs 3,62,66,923/-**	**Rs 7,25,338/-**	**12 Months**	**03/12/2024 upto 1100 Hrs**	**04/12/2024 upto 1100 Hrs**

1. The intending bidder must read the terms and conditions of Form-6 carefully. He should only submit his bid if he consider himself eligible and he is in possession of all the documents required.
2. Information and Instructions for bidders posted on website shall form part of bid document.
3. The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website www.eprocure.gov.in or www.bsf.nic.in free of cost.
4. The bid has to be submitted online along with all relevant documents and Earnest Money shall be scanned and uploaded on the e-Tendering website within the period of bid submission. The original EMD should be deposited alongwith prescribed format mentioned in Form-A of CPWD Manual/ appendix-"A' to any of BSF DDOs/Engg Officers of **Command HQ/ FHQ/ Frontier HQ / Sector HQ / Training Centre/ Bn HQ BSF** before last date & time of submission of bid. The EMD receiving authority of any BSF establishment shall examine EMD in original form and issue a receipt of deposit of earnest money to the bidder. Firm/bidder should uploaded the receipt with tender documents. The authority receiving the original EMD also intimates to tender inviting authority about deposition of

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EMD by the agency within the period of submission as mentioned in notice along with other documents as specified

5. Those contractors not registered on the website mentioned above, are required to get registered beforehand. If needed they can be imparted training on online bidding process as per details available on the website.
6. The intending bidder must have valid class-III digital signature to submit the bid.
7. On opening date, the contractor can login and see the bid opening process. After opening of bids he will receive the competitor bid sheets.
8. Contractor can upload documents in the form of PDF format.
9. Contractor must ensure to quote rate in the column (5) meant for quoting rate in figures appears in blue colour and the moment rate is entered, it turns sky blue. In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as "0". Therefore, if any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as "0" (ZERO).
   However, If a tenderer quotes nil rates against each item in item rate tender or does not quote any percentage above/below on the total amount of the tender or any section / sub head in percentage rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.

List of Documents to be scanned and uploaded within the period of bid submission:

a) Earnest Money in the form of Insurance Surety/safety Bonds, Account Payee bank Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee including e- Bank Guarantee from any of the Commercial Banks (drawn in favour of DIG SHQ BSF Gandhinagar).

b) Valid Enlistment order, electrical licence, manufacturer/ OEM certificate approved by MNRE/Dealership certificate, PAN Card, GST and IT Return latest as applicable.

(i) **FOR CONTRACTORS** - Valid Enlistment order, electrical license, PAN Card, GST & IT return latest as applicable with Work experience as Para b (ix)

(ii) **FOR OEM**- OEM certificate on proper format with MNRE approval, PAN Card, GST & IT return latest as applicable with average annual turnover as mentioned at Para b (x).

(iii) **MNRE APPROVED FIRM/AUTHORIZED FIRM** - OEM Authorization certificate, PAN Card, GST & IT return latest as applicable with average annual turnover as mentioned at Para b (x).

(iv) FORM "D" FORMAT FOR UDERSTANDING THE PROJECT SITE *(on Bidder Letter Head) as per format provided in NIT*

(v) FORM "E" **UNDERTAKING FOR NO DEVIATION CERTIFICATE** *(on Bidder Letter Head) as per format provided in NIT*

(vi) FORM "F" **UNDERTAKING FOR INTEGRITY PACT** *(on Bidder Letter Head) as per format provided in NIT*

(vii) Signed copy of NIT

(viii) Following certificates to be enclosed :-

<u>For Photovoltaic Modules & Cells</u>

(3) Valid BIS certificate of PV module Panel.

(4) NABL lab test of solar PV Module.

E) IEC 61730 Part 1 for construction of PV modules test report .
F) IEC 61730 Part 2 for safety of PV modules test report .
G) IEC 61701/IS of PV modules test report .
H) IEC 61215/IS 14286 of PV Module test report.

<u>For Battery</u>

2) NABL Lab test of solar Battery

D) IEC 61427
E) IEC 60896 21/22
F) TEC/GR /TX/BAT/003/02 MAR 2011

<u>For PCU(power conditioning Unit)</u>

2) NABL Lab test of PCU

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G) IEC 61683/IS 61683 procedure for measuring efficiency test report.
H) IEC 60068-2(1, 2,14,30) environment test report.
I) IEC 62109-1 test report.
J) IEC 62109- 2 test report.
K) IEC 61000-3- 12:2011 test report.
L) IEC 16169:2014/IEC 62116:2008 test report.

(ix) Certificates of similar type of work experience as per para 1.2.1/1.2.2/1.2.3 of Form-6

FOR CONTRACTORS only- Three similar works each of value not less than 40% or two similar works each of value not less than 60% or one similar work of value not less than 80% of estimated cost (all figures rounded to nearest Convenient figure in last 7 years ending last day of the month previous to the one in which tender are invited.) (Similar works means at least one work of solar plant of respective percentage value of work and for balance no of works, any electrical work of respective percentage will be considered.

(XIII) Average annual financial turnover on construction works should be at least 30% of the estimated cost put to tender during the immediate last three consecutive financial years duly signed by authorised person..The value of annual turnover figures shall be brought to current value by enhancing the actual turnover figures at simple rate of 7% per annum

(XIV) Affidavit as per clause 1.2.2 of Form 6.

"I/We undertake and confirm that eligible similar work(s) has/have not been got executed through another contractor on back to back basis. Further, if such a violation comes to the notice of Department, then I/We shall be debarred for tendering in BSF/CPWD in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-charge shall be free to forfeit the entire amount of the Earnest money /Performance Guarantee."

(XV) The provision of PPP-MII (Make in India) incorporated in the tender documents**.**

3. Earnest Money shall be scanned and uploaded on the e-Tendering website within the period of bid submission. The original EMD should be deposited alongwith prescribed format mentioned in Form-A of CPWD Manual/ appendix-"A' to any of BSF DDOs/Engg Officers of **Command HQ/ FHQ/ Frontier HQ / Sector HQ / Training Centre/ Bn HQ BSF** before last date & time of submission of bid. The EMD receiving authority of any BSF establishment shall examine EMD in original form and issue a receipt of deposit of earnest money to the bidder. Firm/bidder should uploaded the receipt with tender documents. The authority receiving the original EMD also intimates to tender inviting authority about deposition of EMD by the agency
4. The bid document consisting of specifications, the schedule of quantities of various types of items to be executed, the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website ***www.bsf.nic.in*** **/ www.*eprocure*.gov.in**
5. Conditional tender will be summarily rejected without assigning any reason.

CONTRACTOR SE(ELECT) FHQ DELHI

FORM-A

FORMAT FOR DEPOSITING EARNEST MONEY

Receipt of Deposition of Original EMD

Receipt No……. Date……..

1.	Name of work	Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn (Now 08 BN)of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room).
2.	NIT No	**01/SE(Elect) /NIT/FTRGUJARAT/ENGG/ 2024-25**
3.	Estimated Cost	Rs. 3,62,66,923/-
4.	Amount of EMD	Rs. 7,25,338/-in favour of DIG SHQ BSF Gandhinagar
5.	Last date of submission of bid	**03/12/2025 at 1100 Hrs**

(To be filled by NIT approving authority at the time of issue of NIT and uploaded along with NIT)

 # To be filled by EMD receiving officer

1.	Name of contractor #	
2.	Form/shape of EMD No & Date #	
3.	Amount EMD Deposit#	
4.	Date of submission of EMD#	

Signature, Name and Designation of EMD receiving DDO along with Office stamp

CONTRACTOR SE(ELECT) FHQ DELHI

INTEGRITY PACT

To,

……..,

……..,

……..

Sub: NIT No. **01/SE(Elect) /NIT/FTR GUJARAT /ENGG/ 2024-25**

For the work: - Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn(Now 08 BN) of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room).

Dear Sir,

It is here by declared that BSF is committed to follow the principle of transparency, equity and competitiveness in public procurement.

The subject Notice Inviting Tender (NIT) is an invitation to offer made on the condition that the Bidder will sign the integrity Agreement, which is an integral part of tender/bid documents, failing which the tenderer/bidder will stand disqualified from the tendering process and the bid of the bidder would be summarily rejected.

This declaration shall form part and parcel of the Integrity Agreement and signing of the same shall be deemed as acceptance and signing of the Integrity

Agreement on behalf of the BSF

Yours faithfully,

SE(ELECT) FHQ BSF N/DELHI

CONTRACTOR SE(ELECT) FHQ DELHI

FORM "F"

FORMAT FOR INTEGRITY PACT

*(To be submitted on Bidder's **Original** Letter Head)

To,

The SUPERINTENDING ENGINEER (ELECT)
ENGG. DTE FHQ BSF
NEW DELHI -110003

Sub: Integrity Pact for :-Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn(Now 08 BN) of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room).

Dear Sir,

I/We acknowledge that BSF is committed to follow the principles thereof as enumerated in the Integrity Agreement enclosed with the tender/bid document at **Enclosure-I.**

2. I/We agree that the Notice Inviting Tender (NIT) is an invitation to offer made on the condition that I/We will sign the enclosed integrity Agreement, which is an integral part of tender documents, failing which I/We will stand disqualified from the tendering process. I/We acknowledge that THE MAKING OF THE BID SHALL BE REGARDED AS AN UNCONDITIONAL AND ABSOLUTE ACCEPTANCE of this condition of the NIT.

3. I/We confirm acceptance and compliance with the Integrity Agreement in letter and spirit and further agree that execution of the said Integrity Agreement shall be separate and distinct from the main contract, which will come into existence when tender/bid is finally accepted by BSF. I/We acknowledge and accept the duration of the Integrity Agreement, which shall be in the line with Article 1 of the enclosed Integrity Agreement.

4. I/We acknowledge that in the event of my/our failure to sign and accept the Integrity Agreement, while submitting the tender/bid, BSF shall have unqualified, absolute and unfettered right to disqualify the tenderer/bidder and reject the tender/bid is accordance with terms and conditions of the tender/bid.

Yours faithfully,

Date:

Place:

(Signature, name and designation
of the Authorized signatory)

CONTRACTOR SE(ELECT) FHQ DELHI

Be signed by the bidder and same signatory competent / authorized to sign the relevant contract on behalf of BSF.

INTEGRITY AGREEMENT

This Integrity Agreement is made at ..... on this .....day of .....20.....

BETWEEN

President of India represented through Superintending Engineer

(Hereinafter referred as the '**Principal/Owner**', which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

AND

.....

(Name and Address of the Individual/firm/Company)

through ..... (Hereinafter referred to as the (Details of duly authorized signatory)

"**Bidder/Contractor**" and which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

Preamble

WHEREAS the Principal / Owner has floated the Tender (NIT No.....) (hereinafterreferred toas "**Tender/Bid**") and intends to award, under laid down organizational procedure, contract for "Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn(Now 08 BN) of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room)."(herein **after referred to as "theContract**").

AND WHEREAS the Principal/Owner values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/transparency in its relation with its Bidder(s) and Contractor(s).

AND WHEREAS to meet the purpose aforesaid both the parties have agreed to enter into this Integrity Agreement (hereinafter referred to as "**Integrity Pact**" or "**Pact**"), the terms and conditions of which shall also be read as integral part and parcel of the Tender/Bid documents and Contract between the parties.

NOW, THEREFORE, in consideration of mutual covenants contained in this Pact, the parties hereby agree as follows and this Pact witnesses as under:

Article 1: Commitment of the Principal/Owner

1) The Principal/Owner commits itself to take all measures necessary to prevent corruption and to observe the following principles:

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(a) No employee of the Principal/Owner, personally or through any of his/her family members, will in connection with the Tender, or the execution of the Contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

(b) The Principal/Owner will, during the Tender process, treat all Bidder(s) with equity and reason. The Principal/Owner will, in particular, before and during the Tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the Tender process or the Contract execution.

(c) The Principal/Owner shall endeavour to exclude from the Tender process any person, whose conduct in the past has been of biased nature.

2) If the Principal/Owner obtains information on the conduct of any of its employees which is a criminal offence under the Indian Penal code (IPC)/Prevention of Corruption Act, 1988 (PC Act) or is in violation of the principles herein mentioned or if there be a substantive suspicion in this regard, the Principal/Owner will inform the Chief Vigilance Officer and in addition can also initiate disciplinary actions as per its internal laid down policies and procedures.

Article 2: Commitment of the Bidder(s)/Contractor(s)

1) It is required that each Bidder/Contractor (including their respective officers, employees and agents) adhere to the highest ethical standards, and report to the Government / Department all suspected acts of **fraud or corruption or Coercion or Collusion** of which it has knowledge or becomes aware, during the tendering process and throughout the negotiation or award of a contract.

2) The Bidder(s)/Contractor(s) commits himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the Tender process and during the Contract execution:

a) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal/Owner's employees involved in the Tender process or execution of the Contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the Tender process or during the execution of the Contract.

b) The Bidder(s)/Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to cartelize in the bidding process.

c) The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act. Further the Bidder(s)/Contract(s) will not use improperly, (for the purpose of competition or personal gain), or pass on to others, any information or documents provided by the Principal/Owner as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

d) The Bidder(s)/Contractor(s) of foreign origin shall disclose the names and addresses of agents/representatives in India, if any. Similarly, Bidder(s)/Contractor(s) of Indian Nationality shall disclose names and addresses of foreign agents/representatives, if any. Either the Indian agent on behalf of the foreign principal or the foreign principal directly could bid in a tender but not both. Further, in cases where an agent participates in a tender on behalf of one manufacturer, he shall not be allowed to quote on behalf of another manufacturer along with the first manufacturer in a subsequent/parallel tender for the same item.

e) The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the Contract.

3) The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

4) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm indulge in fraudulent practice means a wilful misrepresentation or omission of facts or submission of fake/forged documents in order to induce public official to act in reliance thereof, with the purpose of obtaining unjust advantageby or causing damage to justified interest of others and/or to influence the procurement process to the detriment of the Government interests**.**

5) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm use Coercive Practices (means the act of obtaining something, compelling an action or influencing a decision through intimidation, threat or the use of force directly or indirectly, where potential or actual injury may befall upon a person, his/ her reputation or property to influence their participation in the tendering process).

Article 3: Consequences of Breach

Without prejudice to any rights that may be available to the Principal/Owner under law or the Contract or its established policies and laid down procedures, the Principal/Owner shall have the following rights in case of breach of this Integrity Pact by the Bidder(s)/Contractor(s) and the Bidder/ Contractor accepts and undertakes to respect and uphold the Principal/Owner's absolute right:

1) If the Bidder(s)/Contractor(s), either before award or during execution of Contract has committed a transgression through a violation of Article 2 above or in any other form, such as to put his reliability or credibility in question, the Principal/Owner after giving 14 days notice to the contractor shall have powers to disqualify the Bidder(s)/Contractor(s) from the Tender process or terminate/determine the Contract, if already executed or exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the Principal/Owner. Such exclusion may be forever or for a limited period as decided by the Principal/Owner**.**

2) **Forfeiture of EMD/Performance Guarantee/Security Deposit**:
If the Principal/Owner has disqualified the Bidder(s) from the Tender processprior to the award of the Contract or terminated/determined the Contract or has accrued the right to terminate/determine the Contract according to Article 3(1), the Principal/Owner apart from exercising any legal rights that may have accrued to the Principal/Owner, may in its considered opinion forfeit the entire amount of Earnest Money Deposit, Performance Guarantee and Security Deposit of the Bidder/Contractor.

3) **Criminal Liability:**
If the Principal/Owner obtains knowledge of conduct of a Bidder or Contractor, or of an employee or a representative or an associate of a Bidder or Contractor which constitutes corruption within the meaning of IPC Act, or if the Principal/Owner has substantive suspicion in this regard, the Principal/Owner will inform the same to law enforcing agencies for further investigation.

Article 4: Previous Transgression

1) The Bidder declares that no previous transgressions occurred in the last 5 years with any other Company in any country confirming to the anticorruption approach or with Central Government or State Government or any other Central/State Public Sector Enterprises in India that could justify his exclusion from the Tender process.
2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the Tender process or action can be taken for banning of business dealings/ holiday listing of the Bidder/Contractor as deemed fit by the Principal/ Owner.
3) If the Bidder/Contractor can prove that he has resorted / recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal/Owner may, at its own discretion, revoke the exclusion prematurely.

Article 5: Equal Treatment of all Bidders/Contractors/Subcontractors

1) The Bidder(s)/Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact. The Bidder/Contractor shall be responsible for any violation(s) of the principles laid down in this agreement/Pact by any of its Subcontractors/sub-vendors.
2) The Principal/Owner will enter into Pacts on identical terms as this one with all Bidders and Contractors.
3) The Principal/Owner will disqualify Bidders, who do not submit, the duly signed Pact between the Principal/Owner and the bidder, along with the Tender or violate its provisions at any stage of the Tender process, from the Tender process.

Article 6- Duration of the Pact

1) This Pact begins when both the parties have legally signed it. It expires for theContractor/ Vendor 12 months after the completion of work under the contract or till the continuation of defect liability period, whichever is more and for all other bidders, till the Contract has been awarded.
2) If any claim is made/lodged during the time, the same shall be binding and continue to be valid despite the lapse of the pact as specified above, unless it is so discharged/determined by the Competent Authority.

Article 7- Other Provisions

1) This Pact is subject to Indian Law, place of performance and jurisdiction is the **Headquarters of the Division** of the Principal/Owner, who has floated the Tender.
2) Changes and supplements need to be made in writing. Side agreements have not been made.
3) If the Contractor is a partnership or a consortium, this Pact must be signed by all the partners or by one or more partner holding power of attorney signed by all partners and consortium members. In case of a Company, the Pact must be signed by a representative duly authorized by board resolution.
4) Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to their original intensions.
5) It is agreed term and condition that any dispute or difference arising between the parties with regard to the terms of this Integrity Agreement / Pact, any action taken by the Owner/Principal in accordance with this **Integrity Agreement/ Pact or interpretation thereof shall not be subject to arbitration.**

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Article 8- LEGAL AND PRIOR RIGHTS

1) All rights and remedies of the parties hereto shall be in addition to all the other legal rights and remedies belonging to such parties under the Contract and/or law and the same shall be deemed to be cumulative and not alternative to such legal rights and remedies aforesaid. For the sake of brevity, both the Parties agree that this Integrity Pact will have precedence over the Tender/Contact documents with regard any of the provisions covered under this Integrity Pact.
2) IN WITNESS WHEREOF the parties have signed and executed this Integrity Pact at the place and date first above mentioned in the presence of following witnesses:

.....
(For and on behalf of Principal/Owner)

.....
(For and on behalf of Bidder/Contractor)

WITNESSES:

1. .....
(signature, name and address)

Place:……dated……

2. .....
(signature, name and address)

Place:……dated……

CONTRACTOR SE(ELECT) FHQ DELHI

FORM OF EARNEST MONEY (BANK GUARANTEE)

WHEREAS, contractor..... (Name of contractor) (hereinafter called "the contractor") has submitted histender dated ..... (date) for the work "Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn (Now 08 BN)of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room). (hereinafter called "the Tender")

KNOW ALL PEOPLE by these presents that we ..... (name of bank) having our registered office at ..... (hereinafter called "the Bank") are bound unto .....(Name and division of Executive Engineer) (hereinafter called "the Engineer-in-Charge") in the sum of Rs..... in words (Rupees.....) for which payment well and truly to be made to the said Engineer-in-Charge the Bank binds itself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this .....day of ..... 2024.

THE CONDITIONS of this obligation are:

(1) If after opening of the tender, the Contractor withdraws his tender during the of validity period of tender (includingextended validity period) specified in the Form of Tender;

and

(2) If the contractor having been notified of the acceptance of his tender by the Engineer-in-Charge:

(a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to contractor, ifrequired. OR

(b) fails or refuses to furnish the Performance Guarantee, in accordance with the provisions of tenderdocument and Instructions to contractor,OR

(c) fails or refuses to start the work, in accordance with the provisions of the contract and Instructions tocontractor.

We undertake to pay to the Engineer-in-Charge up to the above amount upon receipt of his first written demand, without the Engineer-in-Charge having to substantiates his demand, provided that in his demand the Engineering-Charge will note that the amount claimed by his is due to him owing to the occurrence of one or any of the above conditions, specifying the occurred condition or conditions.This Guarantee will remain in force up to 5 year after the completion of project as such deadline is stated in the Instructions to contractor or as it may be extended by the Engineer-in-Charge, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guaranteeshould reach the Bank not later than the above date.

DATE .....

SIGNATURE OF THE BANK (SIGNATURE, NAME AND ADDRESS)

WITNESS ..... SEAL

CONTRACTOR SE(ELECT) FHQ DELHI

Form of Performance Security

(Guarantee)

Bank Guarantee Bond

In consideration of the President of India (hereinafter called "The Government") having offered to accept the terms and conditions of the proposed agreement between……and ……

(hereinafter called "the said Contractor(s)") for the workwork "Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn(Now 08 Bn) of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room) (hereinaftercalled "the said agreement") having agreed to production of an irrevocable Bank Guarantee for Rs. ……

(Rupees …… only) as a security/guarantee from the contractor(s) for compliance of his

obligations in accordance with the terms and conditions in the said agreement.

1. We, …… (hereinafter referred to as "the Bank") hereby undertake to pay to the Government an amount not exceeding Rs. …….. (Rupees……

…….. Only) on demand by the Government.

2. We, ……..(indicate the name of the Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demure, merely on a demand from the Government stating that the amount claimed as required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. …… (Rupees ……only).

3. We, the said bank further undertake to pay the Government any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment thereunder and the Contractor(s) shall have no claim against us for making such payment.

4. We, …… (indicate the name of the Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the Government under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Engineering-Charge on behalf of the Government certified that the terms and conditions of the said agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.

5. We, …… (indicate the name of the Bank) further agree with the Government that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligation hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s) or for any forbearance, act of omission on the part of the Government or any indulgence by the

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Government to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or theContractor(s).

7. We, …… (indicate the name of the Bank) lastly undertake not to revoke this guaranteeexcept with the previous consent of the Government in writing.

8. This guarantee shall be valid up to ……unless extended on demand by the Government.

9. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs.……..(Rupees
……) and unless a claim in writing is lodged with us within six monthsof the date of expiry or the extended date of expiry of this guarantee all our liabilities under this guaranteeshall stand discharged.

Dated the ……..day of ……for…….(indicate the name of the Bank)

DATE .....

SIGNATURE OF THE BANK (SIGNATURE, NAME AND ADDRESS)

WITNESS ..... SEAL

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ADDITIONAL CONDITION OF CONTRACT

1. The work shall be carried out as per MNRE/CPWD specifications Part-I (Internal) 2013 Part-II External 2005, amended up to date & as per additional specifications & conditions for this work& as per CPWD sub - station specifications 2013 and Electrical Work specification internal (Part - I 2007,2013-14 and external 1994) and sub - station amended up to date .
2. The department reserves the right to send such materials to the manufactures authorized test laboratory to verify the genuineness & quality of the product.
3. The contractor is advised to visit the site before quoting for this tender to apprise himself about the site environments & other condition. The contractor should see the site and understand the work requirements, the condition in regard to accessibility of site and nature of ground, working condition including stacking of materials, installations of T & P etc. conditions affecting accommodation and movement of labour etc and in case of doubt, obtain required particulars, which may in any way influence his tender, from the BSF as no claim whatsoever will be entertained for any alleged ignorance thereof Before submitting the tender, the contractor should visit the site and satisfy himself as to the conditions prevalent there

2. Time is the essence of the Contract. Any piece meal work may also require completing in odd hours in order to restore electrical supply as per requirement of department/for ongoing activities for preparation of flight. If such work arises it will be sole responsibility of contractor to get done the work in given time. The rates shall be inclusive of all such eventualities as well as of all taxes, levies, packing, transportation handling etc.Nothing extra shall be paid. The contractor shall be responsible for getting all approvals and clearance about labour passes etc as well as all the effort in this connection should be in the preview of contractor. No claim of the contractor shall be entertained by the department for the idle labour.

5. The contractor shall be responsible for any damage done to the building of electrical installations during the execution of the work. Damage, if any shall have to be made good by the contractor at his own cost otherwise the same shall be got rectified made good at the risk & cost the contractor.

6. The work shall be carried out engineering like manner & bad workmanship shall be rejected summarily. For redoing the job, no claim of the contractor shall be entertained on this account.

7. The site shall be cleared of malba, debris caused by working at site by the electrical contractor without any extra cost to the department.
8. The contractor or his authorized representative shall sign the site order book & comply with the remarks entered therein by the representative of the department

9. The Client is not concerned with any rise or fall in the prices of any materials. The rates quoted shall include all costs, allowances, taxes/levies/cess or any other charges including any enhanced labour rates etc., which may beenacted from time to time by the State and/or Central Government.
10. The contractor will ensure that all the skilled persons deployed for executing the electrical work possesses the wireman license issued by approved authorities. Consequences arising due to the default of the contractor to comply with this condition would be contractor's responsibility only.
11. The contractor will make his own arrangement for storage of his material. If issued to him departmentally, the material shall be issued to him from JE (E)"s store. The watch & ward of the materials & of the installations would be responsibility of contractor till the work is completed and handed over to the department. Nothing extra shall be paid to the contractor on this account.
12. The contractor shall make his own arrangement for carriage of materials, fittings, cables etc required for execution of work/issued to him departmentally from the site of work at his own cost. Nothing extra shall be paid on this account.

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13. All the DB"s switchgears shall have identification making on them written in white paint. Nothing extra shall be paid on this account.
14. Earth points with studs are to be provided on each of the switch boards/ DB"s
15. The drawings showing layout of the main board, allied equipment shall be got approved by the contractor from the Engineer-in-charge before fabrication & execution.
16. All hardware, fastening material viz, nuts, bolts, washers & screws etc to be used on work shall be of zinc and cadmium plated iron.
17. The contractor shall have to furnish the insulation test report, earth report, along all required details of electrical load on the prescribed Performa for the electric connection from Supply Company as reqd.
18. The contractor shall submit the completion certificate & completion plan as per clause 2.30 (AppendixF) of General specifications for Electrical works Part-I Internal 2013.
19. All concealed work &earthings shall have to be done in the presence of Engineer-in-charge or his authorized representative.
20. A list of approved make of materials to be used in the work is appended as Annexure-I. The contractor should use only the approved makes of materials in the work specified in the Annexure-I. The make of MCB DB should be same as of MCB.
21. The quoted rates shall be inclusive of all taxes such as GST, WCT, E-Cess & Cess etc. & nothing extra shall be paid on this account.
22. Only FRLS wires up to 1100V. Grade shall be used in wring.
23. Thimbles, lugs are to be provided whenever required by the contractor without any extra cost.
24. Loop earthing wire-in place of bare copper wire green/yellow insulated copper wire to be used as per CPWD specification Part-I (Internal) 2013.
25. Proper temporary connections shall have to be provided for maintaining electrical supply to the building during the progress of work, without any extra cost with no hindrance to work of repair maintenance of Solar power plant.
26. The work will also be carried out at different locations in piece meal manner, as and when required.
27. The contractor will ensure the disbursement of WAGEs/EPF/ESICetc and documentary evidence thereof shall be submitted by him to AE (E) for further submission to Division office along with bill.
28. Nothing extra will be paid on account of Sales tax/Excise, GST/Turnover Tax or any other Taxes.
29. Any balance items, which are not explicitly spelt out here, but are required for the completeness of the work, shall also be included in bidder's scope.
30. The Client is not concerned with any rise or fall in the prices of any materials. The ratesquoted shall include all costs, allowances, taxes/levies/cess or any other charges including any enhanced labour rates etcwhich may be enacted from time to time by the State and/or Central Government.
31. The original test certificate of Transformer/VCB / cable tested carried out by the manufacturer shall alsobe submitted by the contractor.

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SECTION–A

SCOPE OF WORK & TECHNICAL SPECIFICATIONS

The Scope of work of project for Contractor includes Design, Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn(Now 08 BN) of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room)**as per site condition, including 5 years onsite maintenance & warranty.**

1.0 INTRODUCTION:

Border Security Force (BSF) through this tender intends to establish 25 KWp Solar PV Plant with minimum six hourbattery back-up for **11 BOPs** under FRONTIER HQ GUJARAT of BSF to utilize solar energy efficiently. The aim of the project will be to utilize latest technology to harness power from sun, maintain and continuously monitor the performance of the system. Hence efficient solar panel in market is envisaged for the system.

2.0 PROPOSED SITE LOCATIONS:

S.NO	SHQ	NAME OF BOP	LOCATION OF BOP	APPROX DISTANCE FROM SHQ TO BOP	REMARKS IF ANY
1.	**SHQ BSF GNR**	Nadeshwari	**Nearest VillNadabet via suigamBanaskata Gujarat – 385570**	**340 kms.**	**Indo-Pak Border area**
2.		Sargudi		**345 kms.**	
3.		Jagmal		**350 kms.**	
4.		Akudiya		**355 kms.**	
5.		Khejadiya		**360 kms.**	
6.		Tanwar		**365 kms.**	
7.		Ridamal		**370 kms.**	
8.		Parabana		**375 kms.**	
9.		Kakrala		**380 kms.**	
10.		Silasichi		**385 kms.**	
11.		Ranchordas		**390 kms.**	

3.0 SCOPE OF WORK & TECHNICAL SPECIFICATION:

3.1 The bidder should note that the specifications furnished in the tender is of general nature only and it is the responsibility of the bidder to design, supply, install, commission and put in operation of the equipment and services required for the satisfactory performance of the solar PV power Plant.

3.2 The scope of this specification shall cover study of site condition and based on that design, engineering, manufacture, shop testing, inspection at site and plant, packing & forwarding, transportation up to project site, loading & unloading, storage in safe custody, erection, carrying out preliminary tests at site, commissioning, performance testing of solar photovoltaic power plant and connecting the plant with all existing buildings at the site with associated components and handing over to the BSF all the equipment installed including 5 years maintenance & warranty from the date of Handing over and an additional warranty (by manufacturer) as specified in conditions of contract.

3.3 Each 25 KWp solar PV power plant systems shall be complete with following items:

a) Solar PV modules to achieve total capacity of 25KWp (minimum 330 Watt / solar panel)- Made in India, Mono Crystalline silicon solar cells as per latest Ministry of New and Renewable Energy (MNRE) specifications/ relevant Bureau of Indian standard codes (BIS) specifications/latest edition of IEC SPECIFICATIONS. Minimum cell efficiency shall be as per latest MNRE standard.

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The PV modules must conform to the latest edition of any of the following IEC/ equivalent BIS Standards for PV module design qualification and type approval:

(A1)TECHNICAL STANDARDS OF SOLAR PHOTO VOLTAIC MODULES & CELLS

Mono crystalline Silicon Solar Photo-voltaic Modules:

1.1 The PV modules must conform to the latest edition of any of the following IEC/equivalent BIS standard for PV module design qualification and type approval. Crystalline silicon terrestrial PV modules: IEC 61215 / IS 14286.

1.2 In addition, the module must conform to IEC 61730 part-1 requirements for construction & part-2 requirements for testing, for safety qualification or equivalent IS/BIS manufacturer should submit BIS certificate of module.

1.3 If PV modules to be used in a highly corrosive atmosphere (coastal areas, etc.) must qualify Salt Mist Corrosion Testing as per IEC61701/IS61701.

1.4 The amount of power they produce is roughly proportional to the intensity and the angle of the light reaching them. They are therefore required to be positioned to take maximum advantage of available sunlight within string constraints. Bidder will position the PV modules in such a manner that the maximum power is obtained with the sun's movements during the day. PV modules and associated accessories shall be suitable for continuous outdoor use and withstand with weather condition of the particular site location.

1.5 Module deployed must use a RF identification tag as per latest MNRE specifications. Protective devices against surges at the PV module shall be provided. Low voltage drop bypass diodes shall be provided.

1.6 PV Module must be tested and approved by one of the IEC authorized test centre.

1.7 Module frame shall be made of corrosion resistant materials, preferably having anodized aluminium.

(A2) DETAILS OF TECHNICAL SPECIFICATION SOLAR PHOTO VOLTAIC MODULES –

1) PV modules used in solar power plants/system must be having conversion efficiency shall not be less than 16.5%. andwarranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. All specifications refer to the standard Test condition (STC) above modules should be as per MNRE/IEC Norms & Tested at Test centres accredited by MNRE.

2) The total Solar PV minimum array capacity should be as per requirement and should comprise of modules with latest technological features to provide minimum of 16.5% module efficiency with minimum 330 Wp and above wattage of module. The module type must be qualified as per IEC 61215. SPV module conversion efficiency should be equal to or greater than 19% under STC of 1000w/m2 and cell operating temp of 25^0 C and AM 1.5 radiations. Modules must qualify to IEC 61730 Part I and II for safety qualification testing. Certificate for module qualification from IEC or equivalent to be submitted as part of the bid offer.

3) The PV module shall perform satisfactorily in humidity up to 100% with temperature between – 40^0C to + 85^0C. Since the modules would be used in a high voltage circuit, the high voltage insulation test shall be carried out on each module and a test certificate to that effect provided.

4) Other general requirement for the PV modules and subsystems shall be the following

a) The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of 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 IP65 rated.

b) Necessary I-V curves at 25^0c, 45^0c, 60^0c and at NOCT are required to be furnished. Offers to provide PV module warranty of 10 years with no more than 10% degradation in performance/output.

5) The PV modules convert the light reaching them into DC power. The amount of power they produce is roughly proportional to the intensity and the angle of the light reaching them. They are therefore required to be positioned to take maximum advantage of available sunlight within string constraints. Bidder will position the PV modules in such a manner that the maximum power is obtained with the sun's movements during the day.
6) The Photovoltaic modules must be qualified as per IEC 61215 and in addition, the modules must conform to IEC 61730-1 and IEC 61730-2 requirements for construction & Part-2 requirements for testing, for safety qualification. The modules shall be RoHS compliant. The test certificates can be from any of the International Accredited Testing Calibration Laboratories.
7) The PV Modules shall be "PID Free" and the certification of the same shall be submitted along with the modules by the supplier from a Internationally Recognized certification agency for PID testing.
8) The PV Modules shall be "LID Free" and there shall not any effect of LID on the modules in the first year of installation.
9) Minimum proven cell efficiency shall be greater than or equal to 22% on commercial scale and on lab scale the minimum proven cell efficiency shall be greater than or equal to 25%.
10) The efficiency of the module should be greater than or equal to 19**%.** Supplier shall follow the latest engineering practice; ensure long-term compatibility requirements and continuity of equipment supply and the safety of the operating staff.
11) The PV Modules shall be Salt Mist Corrosion Tested Panels of min severity level 5 or above, since the modules may be installed very close to seashore or factories emitting pollutant gases or harsh environmental conditions.
12) The optimum generation of electricity of PV capacity installed vis-à-vis available solar radiation at the site may be obtained through use of either a seasonal tilt structural arrangement or single axis solar tracking system, lower cable losses, maximization of power transfer from PV modules to electronics, maximization of power generation by enhancing incident radiation by optional methods like seasonally changing tilt angles etc.
13) The manufacturer of the modules shall provide certification on qualification of PV modules.
14) The SPV cells shall be manufactured using unique highly efficient diffusion process or any other technology in vogue so as to ensure uniform diffusion profiler to achieve close spread and higher efficiency for each cell.
15) Stabilized net output of the Solar PV Array for the Solar Power System should not be less than the Nominal design level for the System under Standard Test Condition.
16) The PV module shall perform satisfactorily in humidity up to 100 % with temperature between -40 deg. C to +65deg C and with stand wind dust up to 170 km/h from back side of the panel. Photo / electrical conversion efficiency of the modules of SPV module shall be greater than or equal to 16.5 %.Since the modules would be used in a low/medium voltage circuit, the insulation test shall be carried out on each module and a test certificate to that effect provided. The bidder shall indicate minimum efficiency. PV modules used in solar power plants/ systems must be warranted for minimum 90% output of Pmin capacity for the first ten years and 80% output of Pmin capacity at the end of 25 years**.** The product workmanship shall be guaranteed for 10 years.
17) The panel should have positive tolerance of Maximum output power and the maximum voltage shall not exceed 1000V. The negative temperature coefficient of power max shall be equal to or less than -0.3% per deg C temperature.
18) The PV modules shall be suitable for continuous outdoor use.

19) The material used for constructing the PV module shall be selected in such a way that its gives the maximum efficiency and the latest technology shall be adopted for the construction of PV module.
20) PV module shall be provided with frame of Anodized Aluminium (either Black or Other) channels for size and simplicity in installation offered as a single module or series parallel combination of modules. The module frame, if any, shall be made of a corrosion-resistant material which shall be electrolytic ally compatible with the structural material used for mounting the modules
21) The PV modules shall be made of light weight cells, resistant to abrasion, hail impact, rain, water and environmental pollution. The PV modules shall be provided with Anti Reflection coating and the Glass shall be AR Coated tempered glass.
22) The PV module shall use lead wire with weatherproof connector for output terminal.
23) The power output of the PV system under Standard Test Conditions (STC) should be sufficient to meet the requirement and the required power made of suitable module size depending upon manufacturer prudent practice with required output voltage. The number of modules to be supplied shall be worked out accordingly. Module less than 330Wp capacity should not be supplied or installed.

24) Copper pipe type chemical earthing - 04 Nos. for (lighting arrestor, Solar panel, Inverter & electrical panel).

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1.0 IDENTIFICATION AND TRACEABILITY

Each PV module must use a RF identification tag (RFID), which must contain the following information.

(i) Name of the manufacturer of PV module

(ii) Name of the manufacturer of solar cells

(iii) Month and year of the manufacturer (Separately for solar cells and module)

(iv) Country of origin (Separately for solar cells and module)

(v) I-V curve for the module (Separately for solar cells and module)

(vi) Peak wattage, Im, Vm and PF for the module

(vii) Unique serial No and model No of the module

(viii) Date and year of obtaining IEC PV module qualification certificate

(ix) Name of the test lab issuing IEC certificate

(x) Other relevant information on traceability of solar cells and module as per ISO 9000 series. RFID shall be placed inside or outside of each solar module laminate and must be capable to withstand environmental conditions as per latest guideline of MNRE, Govt of india.

NOTE:1. Only indigenously manufactured PV modules approved by MNRE should be used in Solar PV power Plants under this scheme.

(B)TECHNICAL SPECIFICATION OF VRLA TYPE SOLAR TUBULAR GEL BATTERY –

(B1) TECHNICAL STANDARDS OF VRLA TYPE SOLAR TUBULAR GEL BATTERY

The solar tubular gel batteries must be confirming toIEC 61427 / IEC 60896-21/22, TEC/GR/TX/BAT-003/02 MAR 2011.

a) The battery bank capacity should be as specified in the tender document for solar tubular gel type.
b) 75% of the rated capacity of the battery should be between fully charged & load cut off conditions.
c) The minimum rating of battery voltage (V) and Ah at C/10 rate of discharge of different voltages are already shown above.

(B2) TECHNICAL SPECIFICATION OF VRLA TYPE SOLAR TUBULAR GEL BATTERIES 2 VOLTS 750/800 ah CAPACITY– 120/114 NOS BATTERIES. (TOTAL BATTERY BANK CAPACITY 1,80,000 Wh)

The General specifications shall be as under.

1 The battery bank shall consist of required number of deep-discharge electrochemical storage cells of 2volts, suitably incorporated as required. Parallel connections of storage cells will be discouraged.
2 The cells shall be capable of deep discharge and frequent cycling with long maintenance intervals and high columbic efficiency. Automotive or car batteries shall not be accepted.
3 The nominal voltage and capacity of the storage bank shall be selected and specified by the supplier in the bid.
4 The self-discharged rate of the battery bank or individual cell shall not exceed four (4) percent per month.
5 The permitted maximum depth of discharge (DOD), shall be specified by the supplier in the bid. Supplier should also specify the expected life of battery bank.
6 The cells include explosion proof safety vents.

7 The cells shall include the required number of corrosion resistant inter cell required chemicals electrolyte packed in separate containers. Full instructions and technical details shall be provided for electrolyte filling and battery recharging at site for the first time.

8 The cells shall preferably be supplied in dry charged condition, complete with all required chemicals electrolyte packed in separate containers. Full instructions and technical details shall be provided for electrolyte filling and battery recharging at site for the first time.

9 If the cells are supplied in uncharged conditions, then the supplier shall provide full instructions for first time charging including, but not limited to, the following:

A check list of all items required:

i. Minimum specification with possible alternatives of the required battery charger for the first time charging.

ii. Instruction of electrolyte filling, battery charging etc. and instructions on the transportation of charged batteries, if required.

10 Suitable no of corrosion resistant and anti-acid proof storage racks shall be supplied to accommodate the cells tester and other accessories. The rack design shall be such that minimum space is required, without any way obstructing the maintenance requirements. For metallic racks, standard specified for control panel enclosures and other metallic shall govern.

11 All the connectors should be insulated except for the end portion.

12 All technical and other details pertaining to the storage cells shall be supplied including but not limited to the following: -

a) Rated voltage and ampere hour capacity of each storage cell as the rated discharge rate.
b) Permitted maximum DOD.
c) Self-discharge rate.
d) Cycle life of the storage cell and anticipated life (In years) of the battery bank.
e) Total no of storage cells in use.
f) Details on cell interconnections, if any. All the connectors should be insulated except at both ends from where the connectors are connected to battery terminals. Every cell should have proper numbering marked clearly for its identification. Only pre-insulated connectors should be used.

Bidders have to design battery Ah capacity keeping the following into consideration: Plant should have two-day autonomy i.e. (Battery should accommodate two-day generation) with 6 Hrs daily battery backup, 70% Depth of discharge for the given solar capacity. Bidders have to design batteries for the solar capacity mentioned in tender. Bidders have to provide battery connectivity diagram for each package. Bidders have to provide **VRLA type Solar Tubular Gelbattery each of 2V.** Battery bank capacity will be minimum **7.2 Vah/Wp** as per MNRE guideline.

C) BATTERY RACK

Placement of battery should be such that maintenance of the battery could be carried out easily. The non-reactive acid proof material should be provided to cover the entire floor space covering the battery bank.

Battery rack should compulsorily be placed on the appropriate rubber pads to avoid the contact of wooden/metal racks with the floor, to protect wooden rack particularly from termite.

D) POWER CONDITIONING UNIT (PCU):

PCU should comprise of inverter, charge controller, visual display and necessary protections. Power conditioners/ Inverters including MPPT and protections must confirm to IEC 61683 / IS 61683, IEC 60068-2 (1, 2, 14, 30) / IEC 62109 or equivalent BIS standard, for efficiency measurement and environmental testing. In case if the charge controller is in built in the inverter, no separate IEC test is required and must additionally confirm to the relevant national/international electrical safety standard wherever applicable.

1. LCD and piezoelectric keypad operator interface Menu driven Automatic fault conditions reset for all parameters like voltage, frequency and/or black out.

2. MOV type surge arresters on AC and DC terminals for over voltage protection fromlightning-induced surges or else suitable arrangement shall be provided externally.

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3. The inverter shall have AC /DC side dis-connector of appropriate rating or else suitablearrangement shall be provided externally.
4. INVERTER should be rated to operate at 0 –55 deg centigrade unless provision for air conditioning is included in INVERTER.
5. All parameters should be accessible through an industry standard communication link.
6. The INVERTER Power factor at the point of utility service connection shall be >0.99 lagging or leading when operating at above 25 percent of the rated output, but may be less than 0.99 lagging below 25 percent of the rated output.
7. The high voltage and power circuits of the INVERTER shall be separated from the low-voltage and control circuits. The internal copper wiring of the INVERTER shall have flame resistant insulation. Use of PVC is not acceptable. All conductors shall be made of standard copper.
8. The INVERTER shall withstand a high voltage test of 2000 V rms, between either the input or the output terminals and the cabinet (chassis).
9. The INVERTER shall not produce Electromagnetic Interference (EMI) which may cause malfunctioning of electronic and electrical instruments including communication equipment, which are located within the facility in which the INVERTER is housed.
10. The INVERTER shall have an appropriate display on the front panel to display the instantaneous AC power output and the DC voltage, current and power input. Each of these measurement displays shall have an accuracy of 1 percent of full scale or better. The display shall be visible from outside the INVERTER enclosure. Operational status of the INVERTER, alarms, trouble indicators and ac and the dc disconnect switch positions shall also be communicated by appropriate messages or indicator lights on the front cover of the INVERTER enclosure.
11. Communication Modbus protocol with supported communication interface CAT 6 Cable/RS485 Cable.
12. The INVERTER enclosure shall be weatherproof and capable of surviving climatic changes and should keep the INVERTER intact under all conditions in the room where it will be housed. The INVERTER shall be located indoor with suitable protection and should be either wall/ pad mounted. Moisture condensation and entry of rodents and insects shall be prevented in the INVERTER enclosure. The enclosure for housing the inverter shall be minimum IP54 protection level. The inverter itself shall be minimum IP20 protection level.
13. Components and circuit boards mounted inside the enclosures shall be which shall also serve to identify the items on the supplied drawings.
14. All doors, covers, panels and cable exists shall be gasket or otherwise designed to limit the entry of dust and moisture. All doors shall be equipped with locks. All openings shall be provided with grills or screens with openings no larger than 0.95 cm. (about 3x8 inch).
15. In the design and fabrication of the INVERTER the site temperature (5^{O} to 55^{O} C), incident sunlight and the effect of ambient temperature on component life shall be considered carefully and derating shall be applied. Similar consideration shall be given to the heat sinking and thermal for blocking diodes and similar components.
16.

The PCU should be design in such a way that excess power produced can be exported to the grid and imported from the grid, as and when required.

Main features of PCU:

Switching element	IGBT
Type of charger	MPPT
MPPT range	AS APPLICABLE

Nominal inverter/ Inverters capacity	As per design to the supply the desired power to meet load.
Output voltage	415 Volt, 3 phase (For 25 KVA/20 KW)
Battery bank nominal volt	As per design
Inverter surge rating @ 40 deg C	105% > 60 sec
Inverter output frequency	50 +/- 5%
Inverter efficiency @ 40 deg C, nominal load	<3%
Operating ambient temperature	As per latest MNRE guideline
Humidity	0 to 50 deg C
Enclosure	Free standing, IP 21
Cooling	Temperature controlled fan forced
Protections	1. Short circuit 2.Overload 3.Over temperature 4.Over voltage 5.Surge 6.Phase imbalance (In case of three phase output) 7.Reverse polarity and accidentally open circuit 8. Array ground fault
Standards	To comply IEC-62109-1 IEC-62109-2, IS 16169:2014/IEC 62116:2008, IEC60068-2 (1,2,14,30), IEC 61683, IEC 61000-3-12:2011 and all latest IS/IEC standards as per latest guidelines of MNRE.(Test report to be submitted) Inverter manufacturer must have BIS certificate for the above-mentioned Inverter.

Note: Bidders should submit manufacturer authorization on non-judicial stamp paper of appropriate value for Solar panel, Battery & inverter.

F) MODULE MOUNTING STRUCTURES (MMS)

MMS shall be as per site condition and shall be so designed to withstand the speed of the wind zone of that particular location (minimum design wind speed of 170 KM/ Hour), clamps and accessories, necessary civil works, as per relevant Bureau of Indian standard codes (BIS) specifications/ Ministry of New and Renewable Energy (MNRE) specifications.

Each structure should have angle of inclination as per the site condition to take maximum insolation. However, to accommodate more capacity the angle inclination may be reduced until the plant meets the specified performance. It must be ensured that the design has been certified by recognized lab/Institute in this regard and submit wind loading sheet to BSF. Suitable fastening arrangement such as grouting and calming should be provided to secure the

installation against the specific wind speed. The PV array structure design shall be appropriate with a factor of safety of min. 1.5. The structure shall be designed to withstand operating environmental conditions for a period of minimum 25 years.

Civil Work for Module Mounting Structure in flood prone area and other locations as per site requirement & as per the instruction of Engineer in Charge:- Foundation shall be provided considering the flood prone area and structure should be designed to save guard against the flood, with providing the RCC footing like pilling/raft footing etc. and columns to be braced with beam at top column as per structural design/site requirement. Contractor shall be totally responsible against the any damage occurs to the structure due to flood and natural climate like tornado etc. The height of the base of module shall be as per Drawing.

The total load of the structure (when installed with PV modules) on the terrace should be less than 60kg/m2, approved structural engineers should certify after the building inspection that the building on which PV plant is to be installed is able to take such loads. The total responsibility is with contractor to check and verify the same. Installation of grid structure for solar PV mounting should not tamper with the water proofing of roofs. In the event of any seepages/leakages, contractor has to rectify with standard water treatment mechanism to the satisfaction of BSF.

Array/module/panels support structure shall be fabricated using corrosion resistant hot dip galvanized with minimum thickness of coating not less than 80 micron on each side. The mounting structure steel shall be as per latest IS2062:1992 and galvanization of the mounting structure shall be in compliance of the latest IS 4759, 2629, 4736 as applicable.

Structure material shall be corrosion resistant and electrolytic ally compatible with the materials used in the module frame, its fasteners, nuts and bolts.

The ground mounting structure design must follow the existing land profile. The proper clearance between lower edge of PV panel and ground level shall be maintained for allowing proper ventilation for cooling , also ease of cleaning and maintenance of panel. The PV panel structures shall be designed in such a way that cleaning of the panels shall be carried out safely.

Each PV panel structures shall incorporate one bird repellent spike at a level higher than the panel edge. The location of the spike should be selected for minimum shadow effect.

All fasteners should be primarily stainless steel to resist corrosion. The support structure shall be free from corrosion when installed.

PV modules shall be secured to support structure using screw fasteners and /or metal clamps. Screw fasteners shall use existing mounting holes provided by modules manufacturer, adequately treated to resist corrosion.

Adequate spacing shall be provided between any two modules secured on PV panel for improved wind resistance.

The grid structure should be installed in manner to leave sufficient space for repair and maintenance aspect of the roof top, particularly for leakages.

G) JUNCTION BOXES (JBS) shall be as per equivalent BIS Standard, IP 65 (for outdoor use) and IP 54 (for indoor use)

The junction boxes are to be provided in the PV array for termination of connecting cables. The JBs shall be made of GRP/FRP/Powder Coated Aluminium /cast aluminium alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cables lugs. The JBs shall be such a way that the input & output terminated can be made through suitable cable glands. Copper bus bars/terminal blocks housed in the junction box with suitable termination threads Conforming to IP65 standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry. Single /double compression cable glands. Provision of earthings. It should be placed at feet height or above for ease of accessibility.

Each Junction Box shall have High quality suitable capacity Metal Oxide varistors (MOVs)/SPDs, suitable Reverse Blocking Diodes. The Junction Boxes shall have suitable arrangement monitoring and disconnection for each of the

groups. Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification.

H) AC/DC DISTRIBUTION BOARD: Shall be as per equivalent BIS Standard/ latest MNRE specification**.** DC Distribution panel shall receive the DC output from the array field. DC DPBs shall have sheet from enclosure of dust & vermin proof conform to IP 65 protection. The bus bars shall be made of copper of desired size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the PCU along with necessary surge arrestors**.**

AC DISTRIBUTION PANEL BOARD:

a. AC Distribution Panel Board (DPB) shall control the AC power from PCU/inverter, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar of exiting building through proper size copper cable.
b. All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/IS60947 part I, II and III.
c. The changeover switches/panels, cabling work should be undertaken by the contractor as part of the project.
d. All the Panel's shall be metal clad, totally enclosed, rigid, floor mounted, air-insulated, cubical type suitable for operation on three phase/single phase, 415 or 230 volts, 50 Hz.
e. The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.
f. All indoor panels shall have the protection of IP54 or better. All outdoor panels shall have the protection of IP65 or better.
g. It should conform to Indian Electricity Act and rules (till last amendment).
h. All the 415 AC or 230 volts devise/equipment like bus support insulators, circuit breakers, SPDs, VTs etc. mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions

I) CABLES

Shall be as per relevant Bureau of Indian standard codes (BIS) Std. (IEC 60227/IS 694 & IEC 60502/ IS1554 (Pt. I&II)/Ministry of New and Renewable Energy (MNRE) specifications.

All cables/wires shall be routed in a G.I. Cable tray/raceway/conduit suitably tagged and marked with proper manner by good quality ferrule or by other means so that cable easily identified. Power Cables of adequate rating shall be required for interconnection of:

- Modules/panels within array
- Array & DCDB
- DCDB /inverter/Battery bank
- Inverter & ACDB & Interconnection of existing buildings with ACDB/SOLAR PV Plant
- Any other cable as per site requirement

The cables shall be of 1100 volt grade, copper conductor, XLPE/PVC insulated, PVC sheathed, armoured and overall PVC sheathed, strictly as per IS: 7098 (Part I & II) – 1976 or IS 1554. Colour of the outer sheath shall be Black.

Power cables size for 1.1 kV systems shall be chosen taking into account the full load current & voltage drop. The allowable voltage drop at terminal of the connected equipment shall be max. 3% at full load. The derating factors viz. group duration of temp. Duration shall also be considered while choosing the conductor size.

Control cables shall be FRLS type 1100 volts grade, copper conductor, PVC insulated, PVC sheathed, armoured and overall PVC sheathed, strictly as per IS: 1554 (Part I) and other relevant standards.

The permissible voltage drop from the SPV Generator to the Charge controller shall not be more than 1% of peak power voltage of the SPV power source (generating system). In the light of this fact the cross-sectional area of the cable chosen is such that the voltage drop introduced by it shall be within 2% of the system voltage at peak power.

All connections should be properly terminated, soldered and/or sealed from outdoor and indoor elements. Relevant codes and operating manuals must be followed. Extensive wiring and terminations (connection points) for all PV components is needed along with electrical connection to lighting loads.

The cable with suitable rating from PV module to inverter to battery bank, inverter to ACDB , ACDB to panel and panel to existing building etc. shall be provided by the bidder as per the site requirement. The rate shall be inclusive in the quoted amount in the bill of quantities. Nothing extra will be paid in this regard.

(1) TECHNICAL SPECIFICATIONS FOR CABLES & WIRES

(i) Cabling: Cabling shall be carried out as per IE Rules. All other cabling above ground should be suitably mounted on cable trays with proper covers. Only LSHZ XLPO cables must be used for DC side, DC grade cables shall be used. For AC power shall be XLPE insulated PVC sheathed aluminium / copper conductor cables.

(ii) Wires: Only FRLS copper wires of appropriate size and of reputed make shall have to be used.

(iii) Cables Ends: All connections are to be made through suitable cable/lug/terminals/ MC-4 connectors; crimped properly & with use of Cable Glands.

(iv) Cable Marking: All cable/wires are to be marked in proper manner by good quality ferule or by other means so that the cable can be easily identified.

Any change in cabling schedule/sizes if desired by the Contractor/Contractor be got approved after citing appropriate reasons. All cable schedules/layout drawings have to be got approved from the Department prior to installation. All cable tests and measurement methods should confirm to IEC 60189.

(v) Multi Strand, Annealed high conductivity copper conductor

- Overall PVC insulation for UV protection and confirm to IEC 69947
- All cables shall conform to BIS standards (IS 694) and (IS 1554) 28
- The size of each type of cable selected shall be based on minimum voltage drop, however, the maximum drop shall be limited to 2%
- Selected cable should carry a current density of minimum 1.2 Amp/Sq.mm
- All electrical control / power cables / wires inside the building to be fixed in accordance with CPWD specifications for electrical works Part-I internal only Rigid Steel Conduit should be used for wiring inside the building
- Proper laying of cables have to be ensured in appropriate cable trays, pipes / trenches as per site requirement.
- For laying / termination of cables, latest BIS / IEC codes / standards be followed.

(2) CHANGE OVER FROM MAIN SUPPY

Contractor will provide suitable load cable from solar invertor ac output to exiting substation in BOP and will provide suitable change over form main to solar as per capacity of solar power plant output.

J) <u>LIGHTNING PROTECTION</u>

The SPV power plants and control room shall be provided with lightning & overvoltage protection. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc. The entire space occupying the SPV array and control room shall be suitably protected against Lightning by deploying required number of Lightning Arrestors. Lightning protected against induced high-voltages shall be provided by the use of suitable numbers of Early Streamer Emission air terminal(ESE) air terminal / conventional lighting protection and suitable maintenance free chemical earthing (Minimum 4 nos.) such that induced transients find an alternate route to earth.

1. SURGE PROTECTOR CATEGORY II

i. The surge Protection manufacturer shall offer a complete line of surge Protection product to support the requirements for the Distribution. The surge protector at this stage shall be provided to protect the downstream electrical and electronics against any induced switching surges that may be passed on to the downstream electrical & electronic system.

ii. The Protection unit shall be based on Single High Capacity Metal Oxide Varistors (MOV), capable of handling 8/20 µs surges and shall be able to give an indication in the event module failure and be pluggable to facilitate the in-service replacement without distributing the lines.

2. POWER OPTIMIZERS:

DC Power Optimizers must be provided between each two Solar modules and should be linked with real time monitoring in control room with all necessary electrical and instrumentation data. Optimizer to be able to instantaneously clamp DC voltage to 1V DC (Safe DC) per optimizer when AC power is shut off. DC Power Optimizer must be warranted for 25 Year against any manufacturing defects.

3. Remote monitoring system performance including generation in the solar PV system should be with PANEL LEVEL MONITERING.

K) EARTHING PROTECTION ELECTRICAL SAFETY AND PROTECTION

1) Each array structure of the PV yard shall be grounded/earthed properly as per IS:3043-1987. In addition the lighting arrester/masts shall also be earthed inside the array field. Earth Resistance shall be tested in presence of therepresentative of BSF as and when required after earthing by calibrated earth tester. PCU, ACDB and DCDB etc. shall also be earthed properly.
2) Earth resistance shall not be more than 5 ohms.
3) It shall ensure that all the earthing points are bonded together tomake them at the same potential.
4) Internal Faults: In built protection for internal faults including excess temperature, commutation failure, and overload and cooling fan failure (if fitted) is obligatory.
5) Galvanic Isolation: Galvanic Isolation is required to avoid any DC component being injected into the grid and the potential for AC components appearing at the array (required inc central inverters).
6) Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations in the grid itself and internal faults in the power conditioner, operational errors and switching transients.
7) Earth fault supervision: An integrated earth fault device shall have to be provided to detect eventual earth fault on DC side and shall send message to the supervisory system.
8) Fast acting semiconductor type current limiting fuses at the main bus-bar to protect from the grid short circuit contribution. The INVERTER shall include an easily accessible emergency OFF button located at an appropriate position on the unit
9) The INVERTER shall include ground lugs for equipment and PV array grounding. The DC circuit ground shall be a solid single point ground connection in accordance with IEC 69042.
10) All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise

L) FIRE EXTINGUISHERS, DANGER BOARDS, RUBBER MAT AND SIGNAGE'S

Danger boards should be provided as and where necessary as per IE Act /IE rules as amended up to date. Three signage shall be provided one in each at battery cum control room, solar array area, and main entry from BOPs. Text of the signage may be finalized in consultation with Engineer-in-charge/owner.

Firefighting system for the proposed power plant for fire protection shall be consisting of the following:

a) Portable fire extinguishers in control room for fire caused by electrical short circuit

b) Sand bucket in control room

The installation of fire extinguishers should conform to TAC REGULATIONS AND BIS standards. The fire extinguishers shall be provided in the control room housing PCUs as well as on the roof or site where PV array have been installed.

M)CONTROL ROOM FOR SOLAR PLANT:

The size of control room of RCCStructure shall be of size 150 sq. feet (minimum), with head room of minimum 2.9 meters & plinth height shall be minimum 1.8 meter in flood prone areas& 0.9 meter in other areas from natural ground level as per drawing and direction of Engineer-in-charge. The flooring should be of RCC (must withstand the load of batteries and other equipment). Steel gate must be installed in control room. Roof of control room must be so designed to prevent water lodging. Following test must be conducted at each site during execution:

1. Compressive strength test for cube and brick.
2. Slump Test
3. Sieve Analysis of fine and course aggregate.
4. Silt content.
5. Fineness Modulus

The specifications shall be as per CPWD /IS standards and as per drawing and direction of Engineer-in charge. The control room should be complete with internal electrification (as per CPWD specifications) which include following:

1. Copper wiring with PVC conduit.
2. Exhaust fan- 2 Nos.
3. Ceiling Fan- 2 Nos.
4. LED tube light- 2 Nos.
5. LED Flood light (20 watt) -4Nos. (For external illumination)
6. 6/16 Amp. Switch socket – 2 Nos. each
7. Sock proof rubber mat
8. Fire Extinguisher

N) Contractor shall prepare the drawings for control room and get it approved from BSFbefore execution.

O) Levelling, Internal roads and paths including storm water drains for SOLAR PV plant shall be in the scope of contractor. Work shall be done as per CPWD/MNREspecifications, site condition and directions of Engineer-in- charge. No extra cost shall be paid for the same.

P) Any other equipment's/ activities which are not specifically mentioned in this documents but necessary for safe and efficient operation of the SPV plant shall be executed by the contractor and no extra cost shall be paid for the same. Site Survey, Layout Planning & Drawings/Documents Before start of work contractor shall conduct survey of the site and finalize the plant location, control room location layout planning and prepare the detailed design & drawings for the complete Solar PV Plant.

The Contractor shall furnish the following drawings after Award and obtain approval from BSF.

a) General arrangement drawings and schematic drawings indicating all the specifications of hardware shall be provided to BSF before starting the installation. The installations shall be only as per the approved drawing of BSF.

b) General arrangement and dimensioned layout Schematic Drawing showing the SPV panel and protection system including battery bank design and any logical control diagram as required.

c) Control room drawings

d) Array/Module mounting structure design calculation and drawing along with stand pro, It must be ensured that the design has been certified by recognized lab/Institute in this regard and submit wind loading sheet to BSF

e) Item wise bill of material for complete SPV plant covering major components and associatedaccessories

f) Overall layout showing SPV Plant

g) Electrical schematic drawings with details/ specifications of components of 25 KWp solar power plant with battery bank.

h) Manufacture's test certificates/ warranty certificates wherever applicable.

i) Format for reports and charts for analysis of various parameters.

j) All safety/ fire protection items as per specifications. Danger boards, warning boards, route marker etc. also to be provided as per statutory regulations. Format for annual maintenance and preventive maintenance and the maintenance activities are required.

3.4 **Test Reports/Certificate**

Contractor shall submit the test certificate/reports for items /components from any of the NABL/IEC Accredited testing laboratories or MNRE approved test centres. The list of MNRE approved test centres will be reviewed and updated from time to time.

Type test certificates for all the tests specified for the factory built Solar PV modules, and the component parts shall be submitted by the contractor.

Contractor shall furnish copies of the test reports for approval before dispatch. (Two sets of copies of the compiled and approved test certificates shall be submitted to the BSF).

3.5 **Maintenance and warranty**

Successful bidder will have to deposit BG on account of Security Deposit @ 5 % of project cost. The BGs shall be submitted by the successful bidder after completion of work. BSF shall release respective BG after completion of each year of warranty period. The validity of bank guarantee shall be as below :

6. 1st BG of 1 % value of project value for 1 year.
7. 2ndBG of 1 % value of project value for 2year.
8. 3rdBG of 1 % value of project value for 3year.
9. 4thBG of 1 % value of project value for 4year.
10. 5thBG of 1 % value of project value for 5year.

The Standard Comprehensive Onsite Maintenance & Warranty will be valid for five years including battery bank, mechanical structures, electrical works, inverters, PV Module, charge controllers, maximum power point tracker units, distribution boards, digital meters, switch gear, and overall workmanship of SPV power plant. System must be warranted against any manufacturing / design/ installation defect.

Warranty period will start from the date of handing over of the site to BSF including testing and successfully commissioning of the work of Solar PV plant in all respect.

Warranty will be free of cost and nothing will be paid for repair/ replacement of defective parts /preventive maintenance or any other job on account of works required to execute during warranty period. **The contractor shall sign Service level Agreement (SLA) with BSF on Rs. 100/- stamp paper as per the standard format approved by BSF.**

Contractor shall appoint Statewise maintenance team and attend any defects within 24 hours.Original warranty certificate of equipment's (equipment's having more than 5 years warranty) shall be handed over to BSF after completion of 5 year warranty period.

3.6 The scope of supply shall also include comprehensive insurance of the products against theft/damage/defects and human beings involved against accidents up to completion of work and handing over. Storage & transportation is also in the scope of the contractor.

3.7 All the Electrical works shall be carried out as per the relevant codes and standards and as per the guidelines of prevailing Electrical inspectorate. All liaison work required for Electrical inspectorate approval shall be in the scope of the contractor and the

CONTRACTOR SE(ELECT) FHQ DELHI

rate quoted by the contractor shall be inclusive of the same. The contractor shall not claim any additional fee for liaison work and he shall prepare the all the necessary documents such as drawings as required for the approval & sanction order.

3.8 The civil works, if any, for the supports for SPV/ any chipping works and refinishing by plastering and painting for installation of complete system shall also be in scope of the contractor.

3.9 All the necessary co-ordination with regard to sub-contracted items shall be carried out by the Bidder. The purchaser/Engineer will communicate only with the Bidder for all matter pertaining to this contract.

3.10 The contractor shall be responsible for obtaining necessary statutory approvals / prior approvals, from Local bodies, Electrical Inspectorate, State Pollution Control Board, etc. if any as applicable. All MNRE guidelines for the material and installation should be followed by the bidders. Nothing extra shall be paid to the contractor for the same.

3.11 The total price quoted for this contract shall be all-inclusive basis and shall cover all items and service necessary for successful completion of the contract. All the fittings and accessories that might not have been mentioned specifically in the specification but are necessary for equipment's of the system, shall be deemed to be included in the specification and shall be supplied and furnished by the Contractor without any extra charge.

3.12 The power from Hybrid inverters shall be taken to a distribution panel with multifunction meters at outgoing (Ammeter, Voltmeter,PF, Energy Consumption with a logger that has communication port of RS 232 shall be provided). Necessary number of MCCB with suitable overload and short circuit rating shall be provided for incomer and outgoing.

3.13 The outgoing of the main SPV panel shall be taken through DC cable with proper protection (Through GI Raceways with suitable size) of suitable rating and shall be hooked up over existing panels/DBs. The rate for any modification of existing panel shall be inclusive of the rate quoted.

3.14 The Contractor shall also furnish 2 sets of the approved manuals of instructions at the time of inspection and taking over of the equipment. These manuals shall be properly bound in book form and contain all information, description of equipment, diagram etc., necessary to enable the customer to operate and maintain the whole system. In order to maintain the plant, Spare parts for keeping minimum stock with measuring instruments are to be provided by the contractor.

3.15 Pre dispatch Inspection of Material

Pre dispatch Inspection of PV Module , Module mounting structure, Inverter, Battery, cables shall be carried out at manufacturer's works/plant by BSF representative. Contractor shall be responsible for arranging the inspection. Any test carried out at plant, the expenditure for the same shall be borne by the contractor. No extra cost shall be paid to contractor for the same. Inspection call to be given at least 7-10 days in advance.

4.0 CODES AND STANDARDS

All Equipment and accessories shall comply to requirement of standards published by latest MNRE Specifications/ Bureau of Indian Standards (BIS). In case no BIS codes exist, the equipment's shall meet the requirement of international standard including IEC/ IEEE for design and installation of PV system. The list of standards adopted shall be indicated in the bid. Latest CPWD specifications to be followed for Electrical works. In addition to the above standards, the whole system must conform to the relevant National/ International electrical safety standards.

5.0 **TOOLS AND SPARES**

After completion of installation & commissioning of the power plant, necessary tools &spares are to be provided free of cost by the contractor for maintenance purpose. A list of requisite spares, Fuses, MCCBs etc along with spare set of PV modules to be indicated, shall be supplied along with the equipment.

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6.0 ACCEPTANCE OF SYSTEMS AND PERFORMANCE EVALUATION

The installer must verify that the system has been installed according to the manufacturer's procedures and latest MNRE guidelines. A checkout procedure should be developed to ensure an efficient and complete installation.

7.0 **SYSTEM DOCUMENTATION:**

It is essential that the owner have complete documentation on the system. System documentation should include an owner's manual, warranty certificates, test certificates, as build drawings and copies of relevant drawings for whatever system maintenance might be required in the future.

8.0 **INSTALLATION**

Installation shall be done by qualified engineer who has adequate experience with installation of thePV system.

9.0TIME SCHEDULE

S.No.	Deliverables	Timelines
1.	FinalArchitecturalandDesignReport(softand2 hardcopies)	10 days from the date ofSigning of Agreement
2.	DraftFinalDetailedProjectReport(DPR)includes detaileddrawingsforconstructionsas per NIT (softand 2 Hardcopies)	21daysfromthedateofSigningof Agreement
3.	FinalDetailedProjectReport(DPR)includesdetailed drawingsforconstructionsas per NIT(softand3Hardcopies)	7daysfromthedateofcomments on DraftDPR
4.	Supply of material at site	90 Days fromthedateofSigningof Agreement
5.	Installation, testing and commissioning and handing over of the project	Within target dateofSigningof Agreement
6.	Onsite comprehensive maintenance and warranty	5 yearsafterhandingoverofthe project

10.0 GURANTEED TECHNICAL PARTICULARS (TO BE FILLED BY THE SUCCESSFUL BIDDER) SPVModule

Sl No.	Description	Data filled by Bidder
1	SPV Module	
2	Make	
3	Total power of PV Module	
4	Single PV Module power	
5	Type	
6	PV Module efficiency	
7	Area required (square feet)	
8	No. of cells in one PV module	
9	DC rating of one module (Wp)	
10	Connection configuration	
11	Rated DC current of one module	

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12	Rated DC voltage of one module (Vmpp)	
13	No.ofPVmoduleinonearray(allinseries)	
14	Max. DC output voltage of Array(Volt)	
15	No. of Arrays	

INVERTER

1.	Rating of the PCU/Inverter unit	
2.	Make	
3.	Nominal DC Input Voltage (SPV Array)	
4.	Low Voltage cut off (SPV Array)	
5.	High Voltage cut off (SPV Array)	
6.	Nominal DC Input Voltage (Battery)	
7.	Low Voltage cut off (Battery)	
8.	High Voltage cut off (Battery)	
9.	Type of Controller	
10.	Switching device	
11.	Continuous Rating	
12.	Over Load Capacity	
13.	Output wave form	
14.	Total harmonic Distortion	
15.	Output Voltage	
16.	Output Frequency	
17.	Efficiency	
18.	Cooling	
19.	Ambient temperature	
20.	Humidity range	
21.	LED / LCD Display	
22.	Protection	
23.	Enclosure	
24.	Standard	

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MOUNTING STRUCTURE

Sl No.	Description	Data filled by Bidder
1	Type	
2	Material	
3	Overall dimensions	
4	Coating	
5	Wind rating .	
6	Tilt angle	
7	Foundation	
8	Number of Module structure	
9	Fixing type	

BATTERY BANK

Sl No.	Description	Data filled by Bidder
1	Make	
2	Battery type	
3	Storage Capacity	
4	Cell voltage	
5	Container	
6	Cover	
7	Efficiency	
8	Max. depth of discharge	
9	Cell cut off voltage	
10	IS Standard	
11	Accessories	
12	Design Cycle	
13	Charge Efficiency	
14	Rack	

11.0 OF APPROVED MAKES OF EQUIPMENT ANDMATERIALS

All material should be as per MNRE approved manufacturer list amended up to date

Sl. No.	Item	Make of Materials/Equipment
1	Inverter/Charge Controller/PCU	WAAREE / HBL / FUJI ELECTRIC / POWERION / OPS (OPTIMAL POWER SOLUTION) or any brand approved by MNRE
2	SPV PANEL	Waaree / Adani / HVR / Shakti Solar/ ADM/SAHEJor any brand approved by MNRE
3	Distribution board	Legrand, ABB, schneider, Siemens orother reputed make (ISI Marked)
4	MCB,RCCB, dis-connectors	Legrand, ABB, schneider,L& T , Siemens orother reputed make (ISI Marked)

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5	DCstring cable- copper	Apar/ Siechemm/Lappor other reputed make (ISI Marked)
6	DC main cable	KEI/Polycab/Havells cables or other reputed make (ISI Marked)
7	DC surge protection device	ABB/CITEL/ISKRA or other reputed make (ISI Marked)
8	660/1100voltgradestrandedPVC unsheathedwirewithcopperconductor	Finolex/RRKabel/Polycab/KEI/Havellsor other reputed make (ISI Marked)
9	Modular type switches, Sockets, bell push, etc	Crabtree,LegrandMosaic,Anchor,MK Blenze,Northwestmake (ISI Marked)
10	1.1kV Cu/Al Cable	Havells/Polycab/ KEI orother reputed make (ISI Marked)
11	Conduits / PVC/MS	BEC/AKG/ Balco or other reputed make (ISI Marked)
12	VRLA type SOLAR TUBULAR GEL Battery	EXIDE / HBL / WAAREE / OKAYA / MICROTEK / LUMINOUS / SERVOTEC / V-GUARD and any other confirming to IEC 61427, IEC 60896-21/22, TEC/GR/TX/BAT-003/02 MAR 2011
13	Fan & Exhaust fan	Usha/ Havells/ Orient /CG or other reputed make (ISI Marked)
14	LED Light	Philips/CG/Oshram /Wipro or other reputed make (ISI Marked)
15	Ordinary PortlandCementGrade 43/53	BIRLA,JK,ACC,ULTRATECH,JAYPEE,AMBUJA, SHREE
16	Reinforcement Steel	TATA , SAIL, RINL, JINDAL, JSW, STEEL, SRMB
17	Wall Putty	JK/BIRLA
18	Paint/Polish/Primer/WaterProofingPaint	BERGER, ASIAN, DULUX
19	Powder Coating	AKZONOBEL, ASIAN
20	Epoxy Paint	FIBREX/BASF
21	Floor & Wall Tile(Vitrified & Ceramic)	KAJARIA, ORIENTBELL ,SOMANY
22	Construction/WaterproofingChemical, Admixtures	ROFFE, FOSROC, SIKA, ULTRACON
23	Data Monitoring system	WAAREE / HBL / FUJI ELECTRIC / POWERION / OPS (OPTIMAL POWER SOLUTION)or any brand approved by MNRE

1. Firm will take the prior approval of Commandant(Electrical)/SE, FHQ before choosing any MNRE approved brand.
2. SE(Elect) FHQ BSF New Delhi can change the make and model of any item as per availability in local market and as per site requirement.

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SELECTION AND QUALIFYING CRITERIA

1.0 PROJECT SITE VISIT & SITE CONDITIONS

The BOPs which are located in flood prone areas, special care (elevated structure up to 5 feet etc.) needs to be taken, while designing the Solar PV Plant and control room.

Intending Bidder(s) are advised to satisfy themselves before submitting their bids as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid as it is "EPC basis" contract. A bidder(s) shall be deemed to have full knowledge of all the sites whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidder(s) shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidder(s) implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

Please note that site locations are at **11 BOPs of SHQ BSF GNR**

S.NO	SHQ	NAME OF BOP	LOCATION OF BOP	APPROX DISTANCE FROM SHQ TO BOP	REMARKS IF ANY
1.	**SHQ BSF GNR**	Nadeshwari	**Nearest VillNadabet via suigamBanaskata Gujarat – 385570**	**340 kms.**	**Indo-Pak Border area**
2.		Sargudi		**345 kms.**	
3.		Jagmal		**350 kms.**	
4.		Akudiya		**355 kms.**	
5.		Khejadiya		**360 kms.**	
6.		Tanwar		**365 kms.**	
7.		Ridamal		**370 kms.**	
8.		Parabana		**375 kms.**	
9.		Kakrala		**380 kms.**	
10.		Silasichi		**385 kms.**	
11.		Ranchordas		**390 kms.**	

FORM "D"

UNDERTAKING FOR UDERSTANDING THE PROJECT SITE

(On Bidder Letter Head)

To

THE SUPERINTENDING ENGINEER (ELECT)
ENGG. DTE FHQ BSF
NEW DELHI -110003

Subject: Undertaking of the Site Visit for Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn(Now 08 BN) of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room).

Sir,
I/we hereby certify that I/we have examined & inspected the sites & its surrounding satisfactorily, where the project is to be executed as per the scope of works. I/ We are well aware about the following

a) Location of all proposed site and its allied works.
b) Site clearance and no cutting off the matured trees.
c) Topography and contouring of the land where the project is to be executed to understand the cutting & filling during the construction and about depth of column/ foundation below the plinth beam.
d) Nature of the ground & sub-soil of the site and accessibility to the site.
e) Existing surrounding road level to finalize solar plant location as per standard norms.
f) Location of Existing Sewer line & Water pipe line network to connect the proposed building and allied works to make the building functional.
g) Location of existing buildings, Electric Sub-Station/D.G and proposed solar plant to supply the electricity for the existing buildings and allied works to make the building functional.
h) Law and order condition at site.
i) Rules and regulations of Security Agencies/ BSF authorities at BOPs for executing works by external agencies.
j) Availability of water and construction Material.

I / We hereby submit our BID considering above all facts gathered during site visit and each & every aspect have been considered in the Quoted cost of the project since **it is Engineering, Procurement and Construction (EPC) Contract**. I / We hereby confirm that no extra/additional cost shall be claimed on above aspects.

Yours faithfully,

Date:

Place :

(Signature, name and designation of the Authorized signatory)
Name and seal of Bidder

CONTRACTOR

SE(ELECT) FHQ DELHI

FORM "E"

UNDERTAKING FOR NO DEVIATION CERTIFICATE

(To be submitted on Bidder's Letter Head)

To,

THE SUPERINTENDING ENGINEER (ELECT)
ENGG. DTE FHQ BSF
NEW DELHI -110003

Subject: No Deviation Certificate for "Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn (Now 08 BN)of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room).

Dear Sir,

With reference to above this is to confirm that as per Tender conditions we have visited site before submission of our Offer and noted the job content and site condition etc. We also confirm that we have not changed/modified the above tender document and in case of observance of the same at any stage it shall be treated as null and void.

We hereby also confirm that we have not taken any deviation from Tender Clause together with other reference as enumerated in the above referred Notice Inviting Tender and we hereby convey our unconditional acceptance to all terms & conditions as stipulated in the Tender Document.

In the event of observance of any deviation in any part of our offer at a later date whether implicit or explicit, the deviations shall stand null and void.

Thanking you,

Yours faithfully,

Date:

Place:

(Signature, name and designation of the Authorized signatory)

Name and seal of Bidder

CONTRACTOR

SE(ELECT) FHQ DELHI

2.0 ADDITIONAL CONDITIONS

1. It is mandatory for the bidders to attend Pre-bid meeting if any.
2. All deputed Staff/ Manpower/Engineers at different BOPs of BSF should possess valid police verification document, valid IDs/Aadhar Card as per requirement of BSF.
3. Due to sensitivity of sites and security reasons of BOPs, work shall be executed in day time only (till 5 PM). Manpower shall not be allowed to stay at BOPs. Labour huts / staff residence shall be arranged by contractor at his own cost.
4. The contractor shall himself arrange the required Water facility, electricity for construction/ personal purposes at BOPs at his cost.
5. Load/light wiring, fixing/replacement of switches/ sockets, distribution board with MCB etc. of existing buildings at BOP's shall be in Contractor's Scope. Nothing extra shall be paid to contractor for the same.
6. Suitable change-over switches shall be provided for Grid supply/ DG set/ Solar Power at BOPs.
7. The Standard Comprehensive Onsite Maintenance and Warranty will be valid for five years including Battery bank form the date of taking over of installation of Solar Plant including repair and replacement of defective parts including batteries. Warranty will be free of cost and nothing will be paid for repair/maintenance or any other job on account of works required to execute during Maintenance and Warranty period.
8. Contractor shall appoint state wise maintenance team and attend any defects within 24 hours
9. Contractor shall sign Service Level Agreement (SLA) with BSF on Rs. 100/- stamp paper as per the standard format approved by BSF.
10. Insurance of all the equipment's installed at site shall be in the Contractor's Scope.

11. Phone, photography, camera not allowed at BOPs.

12. The Contractor shall be responsible for consequential effects arising out during the inspection done by the Chief Technical Examiner Cell, Central Vigilance Commission or by the Building Works Committee or third party authorized by BSF or any statuary committee or by any duly authorized representative of BSF, during the progress or any time after the construction and development of project up to the defect liability period, and will take appropriate action for rectification of defective work. Rectification of defective works or replacement of sub-standard materials or articles, as pointed out by the Chief Technical Cell, Central Vigilance Commission, Building Works Committee or authorized representative of BSF or third party authorized by BSF or any statuary committee, will be carried out or replaced by the Contractor at his own risk and cost. BSF will not pay any extra amount for such rectification or replacement.

13. Handing Over of the Project: Contractor will hand over the project to Owner /Client after successful completion of each component of the project in all respect and complete satisfaction of Engineer-In-charge. The partial handing over of project components shall not be considered. Contractor shall also provide necessary Completion Certificate. The onsite maintenance and warranty period will be five years after such handing over.

14. The Contractor shall render all help and assistance in documenting the total sequence of this project by way of photography, slides, audio-video recording etc. nothing extra shall be payable to the agency on this account.

15. Contractor shall arrange water electricity food and lodging at his own cost for workers employed at site, his technical staff and site staff.

16. The work will be commenced by the Contractor only after the approval of drawings from the concerned local authorities including fire fighting's department or any other department as per statuary requirement.

17. The Contractor shall be solely responsible to follow the general clauses of the contract including labour

regulations, registration of contractor, obtaining labour license from labour department, safety precautions, etc. and all other statutory provisions related to labour/works as per the prevailing General Clauses of Contract amended from time to time. The Contractor shall stick to the schedule of all activities and carry out it with mutually agreed time frame.

18. Rates and amount Quoted by contractor shall be firm and fixed for entire contract period as well as extended period for completion of the works. No escalation shall be applicable on this contract.

19. Unless otherwise provided in the schedule of quantities the rates tendered by the contractor shall be all inclusive and shall apply to all heights lifts, leads and depths of the structure and nothing extra shall be payable on this account.

20. The contractor shall make his own arrangements for obtaining electric connection and water Connection/arrangement (if required) and make necessary payments directly to the department concerned. No dispute in this regard shall be entertained.

21. Some restrictions may be imposed by the security staff etc. on the working and for movement for labour materials etc. The contractor shall be bound to follow all such restrictions / instructions and nothing extra shall be payable on this account. Labours are not allowed to stay at site after 5 P.M.

22. (a) The Project work will be carried out in the manner complying in all respects with the requirements of relevant bye laws of the local body under the jurisdiction of which the work is to be executed or as directed by the Engineer in charge and nothing extra will be paid on this account.
(b) The contractor shall comply with proper and legal orders and directions of the local or public authority or municipality and abide by their rule and regulations and pay all fees and charges which he may be liable.

23. The contractor shall give a performance test of the entire installation (s) as per standing specification before the work is finally accepted and nothing extra whatsoever shall be payable to the contractor for the test.

24. The work shall be carried out in accordance with the drawings approved, by the Engineer-in-Charge.
25. The contractor shall bear all incidental charges for cartage, storage and safe custody of materials.
26. The contractor shall have to make approaches to the site, if so required and keep them in good condition for transportation of labour and materials as well as inspection of works by the Engineer in charge. Nothing extra shall be paid on this account.
27. No payment will be made to the contractor for damage caused by any accidents, rains, or other natural calamities during the execution of the works and no such claim on this account will be entertained.
28. Various factory made materials shall be procured from reputed and MNRE approved manufacturers or their authorized dealers. List of such approved manufacturers is available at Annexure VII. For the items / materials not appearing in the list the decision of Engineer in charge shall be final and binding.
29. The contractor shall take instruction from the Engineer in charge for stacking of materials at any place.
30. The material shall conform to the quality and make as per attached list in Annexure VII. However, for the items not appearing in the list preference shall be given to those articles which bear ISI certification marks. In case articles bearing ISI certification marks are not available the quality of sample brought by the Contractor shall be judged by the standard laid down in the relevant ISI specification/CPWD/MNRE specification. All materials and articles brought by the contractor to the site for use shall conform to the samples approved, which shall be preserved till the completion of the work. However, such articles which bear ISI mark but stand banned by CPWD/MNRE will not be used. Notwithstanding the case of materials of "Preferred Make" as given in Annexure VII, provisions of Clause 10A of the General Conditions of Contract for Central PWD works shall be applicable on

the materials of "Preferred Make" also.

31. It must be ensured that all materials to be used in work bear BIS certification mark. In cases where BIS certification system is available for a particular material/product but not even a single producer has so far approached BIS for certification the material can be used subject to the condition that it should confirm to CPWD specification/MNRE

Specifications and relevant BIS codes. In such case written approval of the Engineer-In-Charge may be obtained before use of such material in the work.

32. The final approval of the brand to be used shall be as per the direction of Engineer-in-Charge. The brand used shall be one of the brands in case specified in the list of preferred make / materials annexure-VII.

33. In case of non-availability of material of the brands specified in the list of approved materials an equivalent brand may be used after getting written approval of BSF giving details to indicate that the brand proposed to be used is equivalent to the brands mentioned in the agreement.

34. **Removal of rejected/sub-standard materials.**

The following procedure shall be followed for the removal of rejected/sub-standard materials from the site of work:

(i) Whenever any material brought by the contractor to the site of work is rejected, entry thereof should invariably be made in the Site Order Book under the signature of the Engineer-In-Charge, giving the approximate quantity of such materials.

(ii) As soon as the material is removed, a certificate to that effect shall be recorded by the Engineer-In-Charge against the original entry, giving, the date of removal and mode of removal, i.e., whether by truck, carts, or by manual labour. If the removal is by truck, the registration number of the truck should be recorded.

(iii) When it is not possible for the Engineer-In-Charge to be present at the site of work at the time of actual removal of the rejected/sub-standard materials from the site, the required certificate should be recorded by the Authorized Representative of BSF, and the Engineer-In-Charge should countersign the certificate recorded by the Authorized Representative.

35. The contractor has to take permission from the BSF & local authorities etc. if required for work during night hours. No claim / hindrance on this account shall be considered if work is not allowed during night time.

36. Once the Project is completed and the contractor shall be responsible to attend defects pointed out by BSF and then hand over the Project to the client.

37. BOPs are in remote area at INDO PAK border. successful bidder should be aware about the roads and pathway to access to BOPs .it is the bidder responsibility to ensure that works may not stop at site.

For & on behalf of Tenderer

CONTRACTOR SE(ELECT) FHQ DELHI

SCHEDULE OF QTY

Name of Work: Providing, Installation, testing and commissioning of 25 KWp off Grid Solar Power Plants at BOPs Nadeshwari, Sargudi, Jagmal, Akudiya, Khejadiya, Tanwar, Ridmal, Parabana, Kakrala, Silasichi and Ranchordas of 194 Bn (Now 08 BN)of SHQ BSF Gandhinagar (Including construction of RCC framed structure for battery room).

S.No	Description of Item	Qty	Unit	Rate	Amount
1	Planning, Designing, Providing, installation, testing and commissioning of Hybrid/off-grid (with the provision to charge from main power source) Solar Photovoltaic Power Plant conforming to MNRE specifications as amended, consisting of Mono Crystalline silicon solar cells, necessary protections, earthing, mounted on RCC structure of suitable strength with following components complete as required as per Appdx "A" The rates quoted should be inclusive of all taxes, transportation charges , loading/unloading at site etc as reqd:- a) Solar Photovoltaic Module of capacity 350 Wp or above, manufactured in India, conforming to IS 14286/IEC 61215, IEC 61730-Part-1, IEC 61730-Part-2. Solar Photovoltaic Module conversion efficiency shall not be less than 16.5%. PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. b) Power Conditioning Unit (PCU) of 350-800 V DC Input voltage range and 400 V AC, three phase, 4 wire, 50Hz +/- 2.5 Hz, output voltage suitable to generate AC Power with efficiency not less than 97%, total harmonic distortion less than 3% and suitable for ambient temperature from 0 to 50 degree C. c) Data Monitoring System complete with accessories. d)Fixing of Array junction box & Main junction box with IP 65 protection and termination arrangement for incoming and outgoing cable along with glands, lugs and other accessories etc. as required. e) Lightning and surge voltage protection. f) Connections & Interconnections by supplying & fixing required size XLPE insulated copper conductor 1.1 kV grade armoured power and control cables between solar modules, main power cable to grid supply PCU unit ,Changeover, along with supplying & fixing of necessary channel/conduit lugs and other accessories etc. as required. g) Battery bank of solar power plant VRLA type SOLAR TUBULAR GEL BATTERIES eachof 2 volt 750/800ah 120 (Total battery bank capacity is 1,80,000Wh) fulll load battery backup up to 06 hrs as per MNRE standards, along-with battery rack and interconnections. h) Cost for construction of RCC structure as required for Battery bank / Control room shall be of size 150 sq. feet (minimum), with head room of minimum 2.9 meters & plinth	11	Set	Rs. 32,96,993/-	Rs. 3,62,66,923/-

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	height shall be minimum 1.8 meter (minimum) from natural ground level as per drawing to be approved by Engineer-in-charge. The flooring should be of RCC (must withstand the load of batteries and other equipment). Steel gate, window-02 nos (minimum) , opening for exhaust must be installed in control room. Roof of control room must be so designed to prevent water lodging and proving approach path of cement concrete from battery room to solar panel(upto 40 mtr) total (120 sqmtr) etc. complete as per Scope of Work & Technical Specifications .				
				TotalRs.	**3,62,66,923/-**

NITAPPROVED FOR RUPEES THREE CRORE SIXTY TWO LAKH SIXTY SIX THOUSAND NINE HUNDRED TWNETY THREE ONLY

Commandant/Superintending engineer (Elect)
FHQ BSF New Delhi

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SE(ELECT) HQ DELHI

Signature Not Verified
Digitally signed by DEBASHIS SAHU
Date: 2025.11.13 23:46:46 IST
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