

<b>SPECIMEN NIT No. 09 /NIT/ENGG/ELECT/2021-22</b>		
Technical Sanction No.	:	103/35/(D-IV)/2021/Engg/BSF/8846-48
Name of Work		Supplying, Installation, Testing and Commissioning of 25 kwp Off Grid solar power plant at 20 BOPs of SHQ BSF AIZAWL, M&C FTR SILCHAR.
Estimated Cost	:	Rs. 5,35,30,000/-
Earnest Money	:	Rs. 10,70,600/-
Security Deposit	:	2.5% of tendered amount
Time Allowed		365 days

Certified that NIT contains 42 pages, including correction slips.

**Approved**

**---Sd-**

**AE(ELECT)**

**EE (ELECT)**

**SE(ELECT)**

**INDEX**

**Name of work: -** Supplying, Installation, Testing and Commissioning of 25 kwp Off Grid solar power plant at 20 BOPs of SHQ BSF AIZAWL, M&C FTR SILCHAR.

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**E- TENDER**

Name of work	:	Supplying, Installation, Testing and Commissioning of 25kwp Off Grid Solar power plant at 20 BOPs of SHQ BSF AIZAWL, M&C FTR SILCHAR.
Estimated Cost	:	Rs. 5,35,30,000/-
Earnest Money	:	Rs. 10,70,600/-
Security Deposit	:	2.5% of tendered value
Performance Guarantee	:	3% of tendered value
Time Allowed	:	365 Days

**(NOTICE TO BE POSTED ON WEB SITE)**

No.

Dated, the\_\_ Dec' 2021

**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 tender on **EPC mode** from approved and eligible contractors of CPWD and those of appropriate list of MES, BSNL, Railways, state PWD having valid electrical licence and manufacturer & Authorised OEM of Solar Power Plant equipment's for the following work (s):

Name of work	:	Supplying, Installation, Testing and Commissioning of 25kwp Off Grid solar power plant at 20 BOPs of SHQ BSF AIZAWL, M&C FTR SILCHAR including 5 years maintenance and warranty.
NIT no.	:	<b>09/NIT/ENGG/ELECT/2021-22</b>
Estimated Cost	:	Rs.5,35,30,000/-
Earnest Money	:	Rs. 10,70,600/-
Period of Completion	:	365 Days
Last date & time of submission of bid	:	<b>As per Tender Notice up to _____ hrs.</b>
Date and time of opening of online technical bid	:	<b>As per Tender Notice up to _____ hrs.</b>
Date and time of opening of online financial bid	:	Will be intimated online later after approval of technical bid by competent authority.

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

- Earnest money in the form of Treasury Challan/Demand Draft/Pay order or Banker's Cheque /Deposit at Call Receipt of any Scheduled Bank issued in favour of **DIG SHQ BSF AIZAWL, Durtlang North, Mizoram.**
- Valid Enlistment order, electrical licence, manufacturer/ OEM certificate/MNRE Approval certificate of the Contractor, MSME certificate, PAN Card and GST Return.
- Certificates of similar type of work experience as per para 1.2.1/1.2.2/1.2.3 of Form-6.
- Registration certificate under GST.
- FORM "D" FORMAT FOR UNDERSTANDING THE PROJECT SITE  
(on Bidder Letter Head) as per format provided in NIT
- FORM "E" **FORMAT FOR NO DEVIATION CERTIFICATE** (on Bidder Letter Head) as per format provided in NIT
- FORM "F" **FORMAT FOR INTEGRITY PACT** (on Bidder Letter Head) as per format provided in NIT
- Signed copy of NIT
- Affidavit as per clause 1.2.3 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."

3. The original EMD should be deposited in the office of Superintending Engineer inviting bids within the period of bid submission i.e. on or before **As per Tender Notice up to 1200 hrs.** Failing which bid submitted shall become invalid. MSME registered firms are exempted from the payment of EMD as per Guidelines.

4. 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.bsf.nic.in](http://www.bsf.nic.in) /[eprocure.gov.in](http://eprocure.gov.in)

5. Conditional tender will be summarily rejected without assigning any reason.

Superintending engineer (Elect)/Commandant  
FHQ BSF New Delhi

**Distributions:**

- IT WING: For uploading on BSF Website Please.

**GOVERNMENT OF INDIA  
BORDER SECURITY FORCE  
NOTICE INVITING TENDER  
FORM-6 For E-tendering**

Item rate bids on EPC mode are invited on behalf of President of India from approved and eligible contractors of CPWD and those of appropriate list of M.E.S., BSNL, Railway, and State P.W.D. having electrical licence and manufacturer & Authorised OEM of Solar Power Plant equipment for the Work of

**Supplying, Installation, Testing and Commissioning of 25kwp Off Grid solar power plant at 20 BOPs of SHQ BSF AIZAWL, M&C FTR SILCHAR.**

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. 5,35,30,000/- 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)**

**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 -Nil-

**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 shall 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 as per provisions of **clause 1.2.1** above, 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**.

2. Agreement shall be drawn with the successful bidders on prescribed Form No. CPWD 7/8 (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](http://www.bsf.nic.in). Bidders shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.
3. The time allowed for carrying out the work will be **365 Days** 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.
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](http://www.eprocure.com) or [www.bsf.nic.in](http://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 BSF AIZAWL, Durtlang North, Aizawl, Mizoram) shall be scanned and uploaded to the e-Tendering website within the period of bid submission. The original EMD should be deposited in the office of Superintending Engineer inviting bids within the period of bid submission. MSME registered firms are exempted 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 tender opening authority. Online bid documents submitted by intending bidders shall be opened only of those bidders, whose original EMD deposited with **Superintending** Engineer and other documents scanned and uploaded are found in order.

The bid submitted shall be opened at \_\_\_\_ **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 in the 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.

11. The contractor whose bid is accepted will be required to furnish performance guarantee of 3% (Three Percent) of the bid amount within the period specified in Schedule F. In the form of bank/Banker's cheque of any scheduled bank/Demand Draft of any scheduled bank/ Pay order of any Scheduled Bank of any scheduled bank or Fixed Deposit Receipts of any Scheduled Bank or the State Bank of India in accordance with the prescribed form. 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.

18. The bid for the works shall remain open for acceptance for a period of **seventy five days(75) days** from the date of opening of bids in case of single bid system/sixty (60) 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 7/8 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 underclause 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 with the performance of any agency, he can direct the contractor to change the agency executing such items of work and 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.

**FORM- 8**  
**GOVERNMENT OF INDIA**  
**BORDER SECURITY FORCE**

STATE	Delhi	CIRCLE	HQ DG BSF New Delhi
BRANCH	Engg	DIVISION	FTR HQ M&C
ZONE	FHQ	SUB-DIV	SHQ BSF AIZAWL

Item Rate Tender & Contract for Works

Tender for the work of: - **Supplying, Installation, Testing and Commissioning of 25kwp Off Grid solar power plant at 20 BOPs of SHQ BSF AIZAWL, M&C FTR SILCHAR.**

(i) To be submitted by **As per Tender Notice** by e-tendering.

.....

(ii) To be opened in presence of tenderers who may be present at \_\_\_ **As per Tender Notice** in the office of **DIG SHQ BSF AIZAWL, MIZORAM.**

TENDER

I/We have read and examined the notice inviting tender, schedule, A, B, C, D, E & F Specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of Contract, clauses of contract, Special conditions, Schedule of Rate & other documents 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 execution of the work 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 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 respect of accordance with, such conditions so far as applicable.

We agree to keep the tender open for ninety (90) days from the due date of its opening / ninety days from the date of opening of financial bid in case tenders are invited on 2/3 envelop system (strike out as the case may be) and not to make any modification in its terms and conditions.

A sum of **Rs. 10,70,600/-** is hereby forwarded in ~~cash~~/receipt treasury challan /deposit at call receipt of a scheduled bank/fixed deposit receipt of scheduled bank/demand draft of a scheduled bank/bank guarantee issued by a scheduled bank as earnest money. If I/We, fail to furnish the prescribed performance guarantee within prescribed period. I/We agree that the said 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 earnest money and the performance guarantee absolutely, otherwise the said earnest money shall be retained by him towards security deposit 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 12.2 and 12.3 of the tender form. Further, I/We agree that in case of forfeiture of Earnest Money & Performance Guarantee as aforesaid. I/We shall be debarred for participation in the re-tendering process of the work.

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 of the State.

Dated:

Signature of Contractor

Witness  
Address:  
Occupation:

Postal Address

**ACCEPTANCE**

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for anon 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)

For & on behalf of President of India

Signature .....

Designation

Dated:

.....

**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: **Supplying, Installation, Testing and Commissioning of 25kwp Off Grid solar power plant at 20 BOPs of SHQ BSF AIZAWL, M&C FTR SILCHAR.**

Estimated cost of work : **Rs. 5,35,30,000/- Only**

(i) Earnest Money : **Rs.10,70,600/-Only**

(ii) Performance Guarantee : 3% of tendered value

(iii) Security Deposit : 2.5% of tendered value

## SCHEDULE 'F'

## GENERAL RULES &amp; 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 : Commandant(Elect)/SE

2(viii) Accepting Authority : Commandant(Elect)/SE

2(x) Percentage on cost of materials and Labour to cover all overheads and profits: 15%

2(xi) Standard Schedule of Rates : DSR 2018/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 : **15 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 : **10 days.**

Mile stone(s) as per table given below:-

Table of Mile Stones (s)

S. No.	Description of Milestone (Physical)	Time Allowed in days (from date of start)	Amount to be with-held in case of non-achievement of milestone.
1.		Nil	

Time allowed for execution of work : **365 Days**

Authority to decide:

(i) Extension of time : Commandant(Elect)/SE  
(Engineer in Charge or Engineer in Charge of Major Component in case of Composite Contracts, as the case may be)

(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, 6A

Clause applicable - (6 or 6A). : 6A

Clause 7

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 : - Nil

## Clause 10A

List of testing equipment to be provided by the contractor at site lab.

1..... 2. .... 3..... -Nil  
 4..... 5. .... 6.....

## Clause 10B(ii)

Whether Clause 10 B (ii) shall be applicable -No

## Clause 10C

Component of labour expressed as percent of value of work -Nil

## 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

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

Schedule of component of other Materials, Labour, POL etc. for price escalation. Component of Elect (except materials covered under clause 10CA) /Electrical construction Materials expressed as percent of total value of work.

Xm .....%

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

Specifications to be followed for execution of work

: CPWD/MNRE/Manufacturer Specifications.

## Clause 12

12.2 & 12.3 Deviation Limit beyond which Clauses 12.2 & 12.3 shall apply for Building work

:

12.5 Deviation Limit beyond which Clauses 12.2 & 12.3 shall apply for Foundation work

:

## Clause 16

Competent Authority for deciding reduced rates

: SE (Elect)/Comdt(E)

## Clause 18

List of mandatory machinery, tools & plants to be deployed by the contractor at site:-

1. .... 2. ....  
3. .... 4. ....

## Clause 36 (i)

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

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

## Clause 42

(i) (a) Schedule/statement for determining theoretical quantity of cement & bitumen on the basis of Delhi Schedule of Rates DSR 2018 printed by C.P.W.D.

(ii) Variations permissible on theoretical quantities:

(a) Cement for works with estimated cost put to tender not more than Rs. 5 lakh.

For works with estimated cost put to tender more than Rs.5 lakh.

(b) Bitumen All Works

(c) Steel Reinforcement and structural steel sections for each diameter, section and category

(d) All other materials.

Nil

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.

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

The Superintending Engineer(Elect), FHQ BSF New Delhi on behalf of President of India invites online tender on EPC mode from approved and eligible contractors of CPWD and those of appropriate list of M.E.S., BSNL, Railway, State P.W.D. having electrical licence and manufacturer & Authorised OEM of Solar Power Plant equipment 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 & time of opening of bid
1	2	3	4	5	6	7	8
1.	<u>09/NIT/ENGG/ELECT/2021-22</u>	Supplying, Installation, Testing and Commissioning of 25kwp Off Grid solar power plant at 20 BOPs of SHQ BSF AIZAWL, M&C FTR SILCHAR.	5,35,30,000/-	10,70,600/-	365 days	<b>As per Tender Notice</b>	<b>As per Tender Notice</b>

- 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.
- Information and Instructions for bidders posted on website shall form part of bid document.
- 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](http://www.eprocure.gov.in) or [www.bsf.nic.in](http://www.bsf.nic.in) in free of cost.
- But the bid can only be submitted after deposition of original EMD in the office of Superintending Engineer inviting bids within the period of bid submission and uploading the mandatory scanned documents such as Demand draft or Pay order or Bankers Cheque or Deposit at call Receipt or Fixed Deposit Receipts of any scheduled Bank towards EMD in favour of DIG SHQ BSF AIZAWL, MIZORAM as mentioned in NIT and other documents as specified.
- 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.
- The intending bidder must have valid class-III digital signature to submit the bid.
- 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 Treasury Challan/Demand Draft/Pay order or Banker’s Cheque /Deposit at Call Receipt of any Scheduled Bank issued in favour of DIG SHQ BSF AIZAWL, MIZORAM.
- b) Valid Enlistment order, electrical licence, manufacturer/ OEM certificate/MNRE Approval certificate of the Contractor, MSME certificate, PAN Card and GST Return.
- c) Certificates of similar type of work experience as per para 1.2.1/1.2.2/1.2.3 of CPWD-6.
- d) Registration certificate under GST.
- e) **FORM “D” FORMAT FOR UNDERSTANDING THE PROJECT SITE**  
*(on Bidder Letter Head) as per format provided in NIT*
- f) **FORM “E” FORMAT FOR NO DEVIATION CERTIFICATE** *(on Bidder Letter Head) as per format provided in NIT*
- g) **FORM “F” FORMAT FOR INTEGRITY PACT** *(on Bidder Letter Head) as per format provided in NIT*
- h) Affidavit as per clause 1.2.3 of CPWD- 6.
- i) Signed copy of NIT

**ADDITIONAL CONDITION OF CONTRACT**

1. The work shall be carried out as per 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
4. 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 be enacted 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.
13. All the DB's switchgears shall have identification marking 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 (Appendix F) of General specifications for Electrical works Part-I Internal 2013.
19. All concealed work & earthing 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 wiring.
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 piecemeal manner, as and when required.
27. The contractor will ensure the disbursement of wage and documentary evidence paper shall be submitted along with bill by AE (E) while submitting in Division office.
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 rates quoted shall include all costs, allowances, taxes/levies/cess or any other charges including any enhanced labour rates etc which 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 also be submitted by the contractor

**SECTION-A**

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**SCOPE OF WORK & TECHNICAL SPECIFICATIONS**

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The Scope of work of project for Contractor includes Design, Supplying, Installation, Testing and Commissioning of 25 KWp Solar PV Plant & Alternative Lighting Arrangement for 22 BOPs under Mizoram Sector of BSF 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 six hour battery back-up for 20 BOPs under various frontiers 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:**

BOP's are located mostly in the remote border areas of Mizoram State.

Please note that site locations are at 20 BOPs under SHQ BSF AIZAWL, M&C FTR SILCHAR.

## **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 and make of the module should be as per MNRE approved vendors list. Minimum cell efficiency shall be as per latest MNRE standard.

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:

Crystalline Silicon PV module: IEC 61215/IS14286

In addition, the modules must conform to IEC 61730 Part-1- requirement for construction & part-2- requirement for testing, for safety qualification or equivalent IS (Under Dev.)

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

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.

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.

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

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

#### **b) Battery bank**

The minimum storage capacity shall be 7.2 VAH/Wp i.e 240 volt/750 AH battery bank, consistent of 120 Nos of 2 volt/750 AH for 25 KWp solar power plant. VRLA tubular GEL type shall be as per relevant Bureau of Indian standard codes (BIS) specifications/ latest Ministry of New and Renewable Energy (MNRE) specifications/ conform to latest edition IEC and make of the battery should be as per MNRE approved vendors list. The contractor shall provide necessary arrangement for storage of batteries of solar PV plant as per requirement for their proper protection shall have to be done by the contractor. Appropriate cabinets for battery banks, with the provision of racks for batteries should also be done if required; battery room (control room) adequate size with proper ventilation shall have to be prepared. The batteries shall be designed for operating in ambient temperature of the particular site. Battery bank connection to the PCU is taken through proper protection for preventing damage to the batteries.

#### **c) 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/m<sup>2</sup>, 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.

#### **d) Solar Inverters/ Power Conditioning Unit**

The capacity shall be 25 KVA, programmable, smart inverter, off grid, hybrid as per relevant Bureau of Indian standard (BIS) codes (IEC 61683/IS 61683 & IEC 60068-2(1,2,14,30)) specifications/ Ministry of New and Renewable Energy (MNRE) specifications.

#### **Power Conditioning Unit (PCU)**

As SPV array produces direct current (DC) and it is necessary to convert this to alternating current (AC) and adjust the voltage levels before powering equipment designed for nominal mains AC supply. Conversion shall be achieved using an electronic inverter and the associated control and protection devices. All these components of the system are termed the Power Conditioning Unit or simply the PCU. In addition, the PCU shall also house MPPT (Maximum Power Point Tracker), to maximize Solar PV array controller and inverter and shall be supplied as integrated unit or different units of charge controller and inverter depending on rating & size of the power plant.

#### **Maximum Power Point Tracker (MPPT) :**

Maximum Power Point Tracker (MPPT) shall be integrated into the PCU to maximize energy drawn from the SPV array. The MPPT should be Microprocessor / Microcontroller based to minimize power losses.

#### **CHARGE CONTROLLER:**

DC electricity from the array is used to feed inverter as well as charge the battery bank for night time use. The total energy received from the array being dependent upon the availability of sunshine during the day which in turn varies from season to season; there may be occasions when the Power Plant generates surplus energy. Similarly in monsoon season, prolonged overcast sky could Battery Bank getting drained beyond the maximum allowed depth of discharge (DOD). To guard against battery overcharge or deep discharge, the charge controller shall be incorporated by the contractor.

#### **INVERTER :**

Inverter shall be hybrid inverter, off grid based on PWM technology. It must have built-in meter and data logger to monitor plant performance through external computer. The DSP controller is used for controlling the whole unit in quick time. Rating of the inverter is 25 kVA, suitable D.C./AC voltage rating, pure sine wave inverter with inbuilt MPPT Charge controller with the output power of 25 kW. The output voltage wave is good quality sine wave. External battery charging facility through AC is also to be provided.

**e ) 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 JB's 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 JB's 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.

**f) 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:**

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 cable.**

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

**The changeover switches/panels, cabling work should be undertaken by the contractor as part of the project.**

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.

The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.

All indoor panels shall have the protection of IP54 or better. All outdoor panels shall have the protection of IP65 or better.

It should conform to Indian Electricity Act and rules (till last amendment).

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

**g) 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.

#### **h) LIGHTNING PROTECTION**

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 lightning protection and suitable maintenance free chemical earthing (Minimum 4 nos.) such that induced transients find an alternate route to earth.

#### **SURGE PROTECTION**

Internal surge protection shall consist of three MOV type surge – arrestors connected from +ve and –ve terminals to earth (via Y arrangement)

#### **i) EARTHING PROTECTION**

Each array structure of the PV yard shall be grounded/earthed properly as per IS:3043-1987. In addition the lightning arrester/masts shall also be earthed inside the array field. Earth Resistance shall be tested in presence of the representative of BSF as and when required after earthing by calibrated earth tester. PCU, ACDB and DCDB etc. shall also be earthed properly.

Earth resistance shall not be more than 5 ohms. It shall ensure that all the earthing points are bonded together to make them at the same potential.

#### **j) 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.

#### **k) Control room for solar plant:**

The size of control room of prefabricated Structure shall be of size 300 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:

- Copper wiring with PVC conduit.
- Exhaust fan- 2 Nos.
- Ceiling Fan- 2 Nos.
- LED tube light- 2 Nos.
- LED Flood light (30-40 watt) -1 no. (for external illumination)
- 6/16 Amp. switch socket – 2 Nos. each
- Sock proof rubber mat
- Fire Extinguisher

**l) Contractor shall prepare the drawings for control room and get it approved from BSF before execution.**

**m) Electrical Load wiring/cabbling for Existing Building:**

Separate Electrical load wiring with PVC conduit shall be in the scope of contractor in all the existing BOPs buildings at the project site for solar PV plant supply including conduiting, wiring, switch socket, MCB distribution boards, MCBs, interconnection cables of existing buildings with Solar PV Plant complete in all respect. The wiring should be as per latest CPWD specifications. Contractor shall also repair/replace existing switch sockets, plate etc. as per site requirement. Suitable rating MCBs with distribution boards to be used for electrical protection with proper earthing. The Contractor shall make arrangement for by-pass system/Changeover switches (Manual/automatic type with interlocking arrangement , MCCBs, Panels, Equipment's, switchgears and all other accessories as per actual requirement of site) so that power supply can be transferred easily without long duration/disruption. No extra cost will be paid to the contractor for the same.

Min. Size of wire for lighting ckt. – 1.5 sq. mm copper flexible wire

Min. Size of wire for power ckt. – 4 sq. mm copper flexible wire

Cable- XLPE Armoured /Un armoured as per requirement of suitable size.

Switch/socket – Modular/piano type with complete plate, box as per site requirement

Distribution Boards with MCBs- Double door single phase / three phase.

**n) Leveling, 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/MNRE specifications, site condition and directions of Engineer-in- charge. No extra cost shall be paid for the same.

**o)** Any other equipments/ 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/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 associated accessories

- 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**

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/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 State wise 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 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 equipments 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.

## **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 the Qualified engineer who has adequate experience with installation of the PV system.

## 9.0 TIME SCHEDULE

S.No.	Deliverables	Timelines
1.	Final Architectural and Design Report (soft and 2 Hard copies)	15 days from the date of Signing of Agreement
2.	Draft Final Detailed Project Report (DPR) includes detailed drawings for constructions and BOQ (soft and 2 Hard copies)	21 days from the date of Signing of Agreement
3.	Final Detailed Project Report (DPR) includes detailed drawings for constructions and BOQ (soft and 3 Hard copies)	7 days from the date of comments on Draft DPR
4.	Supply of material at site	2.5 months from the date of Signing of Agreement
5.	Installation, testing and commissioning and handing over of the project	6-12 months from the date of Signing of Agreement
6.	Onsite comprehensive maintenance and warranty	5 years after and handing over of the project

## 10.0 GURANTEED TECHNICAL PARTICULARS (TO BE FILLED BY THE SUCCESSFUL BIDDER) SPV Module

SI No.	Description	Data filled by Bidder
1	<b>SPV Module</b>	
	Make	
	Total power of PV Module	
	Single PV Module power	
	Type	
	PV Module efficiency	
	Area required (square feet)	
	No. of cells in one PV module	
	DC rating of one module (Wp)	
	Connection configuration	
	Rated DC current of one module	
	Rated DC voltage of one module (Vmpp)	
	No. of PV module in one array (all in series)	
	Max. DC output voltage of Array (Volt)	
	No. of Arrays	

## INVETER

1.	Rating of the PCU	
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	

## MOUNTING STRUCTURE

SI 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

SI 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 volatge	
10	IS Standard	
11	Accessories	
12	Design Cycle	
13	Charge Efficiency	
14	Rack	

**11.0 LIST OF APPROVED MAKES OF EQUIPMENT AND MATERIALS**

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	ENERTECH, LUMINOUS, PPS, SMA or other MNRE approved vendor
2	SPV PANEL	CEL, BEL, BHEL, TATA or other MNRE approved vendor
3	Distribution board	Legrand, ABB, schneider, Siemens or other reputed make (ISI Marked)
4	MCB,RCCB, disconnectors	Legrand, ABB, schneider, Siemens or other reputed make (ISI Marked)
5	DCstring cable- copper	Apar/ Siechemm/Lapp or other reputed make (ISI Marked)
6	DC main cable	KEI/Polycab/Ravin cables or other reputed make (ISI Marked)
7	DC surge protection device	ABB/CITEL/ISKRA or other reputed make (ISI Marked)
8	660/1100 volt grade stranded PVC unsheathed wire with copper conductor	Finolex/RR Kabel/Polycab/KEI or other reputed make (ISIMarked)
9	Modular type switches, Sockets, bell push, etc	Crabtree, Legrand Mosaic, MK Blenze, Northwest make (ISI Marked)
10	1.1kV Cu/Al Cable	Havells/NICCO/Torrent/CCI/Gloster/Polycab/Ravin/ KEI (ISI Marked)
11	Conduits PVC /MS	BEC/AKG/ Balco or other reputed make (ISI Marked)
12	Battery	EXIDE, NED, HBL or other MNRE approved vendor
13	Fan & Exhaust fan	Bajaj/ Havells / Orient /CG (ISI Marked)
14	LED Light	Philips/Bajaj/Havells (ISI Marked)
15	Ordinary Portland Cement Grade 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/Water ProofingPaint	BERGER, ASIAN, DULUX
19	Powder Coating	AKZONOBEL, ASIAN
20	Epoxy Paint	FIBREX/BASF
21	Floor & Wall Tile(Vitrified & Ceramic)	KAJARIA, ORIENTBELL ,SOMANY
22	Construction/Waterproofing Chemical, Admixtures	ROFFE, FOSROC, SIKA, ULTRACON



## SELECTION AND QUALIFYING CRITERIA

### 1.0 Project Site Visit & Site Conditions

It is seen that the BOP's are located mostly in the remote areas in the border areas under Aizawl, Mizoram sector of BSF . There is no proper road connectivity to the sites in almost all BOPs. The material has to be transported through small goods carrier vehicle. At some places material shall be transported through labours manually as there is no proper roads for vehicles. At some places material shall be unloaded and loaded again to cross the river through boat/security check/Border Fencing. Some BOPs are also located in hilly area. In addition, material has to be transported by muddy/kaccha road.

The BOPs which are located in flood prone areas, special care (elevated structure up to 6 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 20 BOPs of SHQ BSF AIZAWL, M&C FTR SILCHAR.

**FORM "D"**  
**FORMAT FOR UNDERSTANDING THE PROJECT SITE**  
*(on Bidder Letter Head)*

To  
**SUPERINTENDING ENGINEER (Elect)**  
**ENGG. DTE FHQ BSF**  
**New Delhi -110003**  
**Subject: Undertaking of the Site Visit for --- (Name of the work / project)**

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:

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

FORM "E"

**FORMAT FOR NO DEVIATION CERTIFICATE**  
[To be submitted on Bidder's Letter Head+]

To,

**SUPERINTENDING ENGINEER (Elect)**  
**ENGG. DTE FHQ BSF**  
**New Delhi -110003**  
**Subject: No Deviation Certificate for -----(name of Work /Project)**

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:

(Signature, name and designation  
of the Authorized signatory)

Place:

**Name and seal of Bidder**

**FORM "F"**  
**FORMAT FOR INTEGRITY PACT**

\*To be submitted on Bidder's **Original** Letter Head]

To,  
**SUPERINTENDING ENGINEER (Elect)**  
**ENGG. DTE FHQ BSF**  
**New Delhi -110003**

**Sub: Integrity Pact for ----- (Name of Work / Project)**

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 in accordance with terms and conditions of the tender/bid.

Yours faithfully,

Date:

Place:

(Signature, name and designation  
of the Authorized signatory)

## 2.0 ADDITIONAL CONDITIONS

1. It is mandatory for the bidders to attend Pre-bid meeting.
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 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 from 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 equipments 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 statutory 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 statutory 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/NOC from all local Government/ Statuary Authorities including Fire, Forest, Electrical, Environment, DG Set, required before handing over the project to the client. 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 statutory 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 labor/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 Architectural drawings (Submitted by contractor) and structural drawings approved, by the Engineer-in-Charge. Before commencement of any item of work the contractor shall correlate all the relevant architectural and structural drawings, nomenclature of items and specifications etc. approved for the work and satisfy himself that the information available there from is complete and unambiguous. The figure and written dimension of the drawings shall be superseding the measurement by scale. The discrepancy, if any, shall be brought to the notice of the Engineer-in-charge before execution of the work. The contractor alone shall be responsible for any loss or damage occurring by the commencement of work on the basis of any erroneous and/ or incomplete information and no claim whatsoever shall be entertained on this account.

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. Contractor shall have to execute a Guarantee Bond in respect of Water Proofing works as per Performa attached in this N.I.T. at Annexure II. He shall also have to execute guarantee bonds for the work on the proforma available at Annexure I.

30. Wherever work is specified to be done or material procured through specialized agencies, their names shall be got approved well in advance from Engineer in charge. Failure to do so shall not justify delay in execution of work. It is suggested that immediately after award of work, contractor should negotiate with concerned specialist agencies and send their names for approval to Engineer in charge. Any material procured without prior approval of Engineer in charge in writing is liable to be rejected. Engineer in charge reserves right to get the materials tested in laboratories of his choice before final acceptance. Nonstandard materials shall not be accepted.

31. The gradation of fine sand to be used in plaster work, shall be strictly as per Table 3.1 (clause 3.1.3) of CPWD Specification 2009 Vol. - I conforming to IS 1542-1977. The plastered surface shall be fairly smooth without any undulation of any kind for applying paint/white wash.

32. No chase cutting/dismantling of plaster/RCC/CC shall be allowed, so contractor has to execute the electrical work accordingly.

33. The contractor shall take instruction from the Engineer in charge for stacking of materials at any place. No excavated earth or Project material shall be stacked on areas where other buildings, roads, services or compound walls are to be constructed.

34. If as per municipal/BSF rules, the huts for labour are not be created at the site of work by the contractors, the contractor are required to provide such accommodation as is acceptable to local bodies/BSF and nothing extra shall be paid on this account.

35. Royalty at the prevalent rates shall be payable by the contractor on all the boulders, metals, shingle, sand and bajri etc. collected by him for the execution of the work, direct to the Revenue authority or authorized agent of the state Government concerned or Central Government. No such claim of Contractor on royalty shall be entertained by the BSF.

36. 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.

37. It must be ensure 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.

38. 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.

39. 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.

#### 40. Special conditions for Cement

The contractor shall procure 53 grade Ordinary Portland Cement (conforming to IS : 8112), Portland pozzolona cement (confirming to IS : 1489 : Part –I) as required in the work, from reputed manufacturers of cement such as ACC, Ultratech, Ambuja, Jaypee Cement, and or from any other reputed cement manufacturer, having a production capacity not less than one million tones per annum as approved by BSF. The tenderers may also submit a list of names of cement manufacturers which they propose to use in the work. The tender accepting authority reserves right to accept or reject name(s) of cement manufacture(s) which the tenderer proposes to use in the work. No change in the tendered rates will be accepted if the tender accepting authority does not accept the list of cement manufactures, given by the tenderer, fully or partially. The cement brought to the site for execution of work shall be in bags bearing manufacturer's name & ISI marking. Weight of cement in each bag shall be 50 kg. Samples of cement arranged by the contractor shall be taken by the Engineer- in-Charge and got tested in accordance with provisions of relevant BIS codes. In case the test results indicate that the cement arranged by the contractor does not conform to the relevant BIS codes, the same shall stand rejected and it shall be removed from the site by the contractor at his own cost within 7 days of written order from the Engineer-in-Charge to do so.

#### 41. Special Conditions for Steel:-

The contractor shall procure TMT bars of Fe500/Fe500D/Fe550/Fe550D grade (the grade to be procured is to be specified) from primary steel producers such as SAIL, Tata Steel Ltd., RINL, Jindal Steel & Power Ltd. and JSW Steel Ltd. or any other producer as approved by BSF who are using iron ore as the basic raw material / input and having crude steel capacity of 2.0 Million tonnes per annum and above.

#### 42. 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.

43. 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.



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

45. Contractor should hand over the warranty of the specialized items to the BSF.

46. The contractor is required to deploy resources as per availability of site. However no claim will be entertained for idle labour, idle machinery, idle technical/no-technical staff, idle T&P etc.

47. Contractor shall not divert any advance payments or part thereof for any work other than that needed for completion of the contracted work. All advance payments received as per terms of the contract (i.e. mobilisation advance, secured advance against materials brought at site, secured advance against plant & machinery and/or for work done during interim stages, etc) are required to be re-invested in the contracted work to ensure advance availability of resources in terms of materials, labour, plant & machinery needed for required pace of progress for timely completion of work.

48. All running account bills preferred by the contractor for advance payments shall be processed only if Engineer-in-charge is satisfied that upto date investments (excluding security deposit & performance guarantee, which are not considered as investments) made by the contractor against contracted work are more than the payments received. Accordingly, all running account bills shall be supported with an account of up-to-date payments received vis-a-vis upto date investments made on the work to enable engineer-in-charge to check to his satisfaction that the payments made by engineer-in-charge are properly utilised only on the work and nowhere else.

**For & on behalf of Tenderer**

### Summary of Cost

Supplying, Installation, Testing and Commissioning of 25kwp Off Grid solar power plant at 20 BOPs of SHQ BSF AIZAWL, M&C FTR SILCHAR.

S No	Particular	Total Quoted Amount Per BOP (In Figure)	Total Quoted Amount Per BOP (In Words)
1	Supply, Installation, Testing and Commissioning of 25 KWp Solar PV Power Plant equipment's, Design , drawings transportation, material storage, PV modules, Inverter, PCU, Battery bank, mounting structure, cables, DBs, Junction Boxes, Control room, wiring etc. complete as per Scope of Work & Technical Specifications mentioned in section A. of tender documents plus five year onsite maintenance and warranty. The rate shall be Net of subsidy from MNRE if any, all taxes, installation, structural cost, transportation, loading & unloading charges and unforeseen expenses if any at the time of installation, approval from concerned electricity department complete		
2	Total Amount in figures Per BOP		
3	Total Amount in words Per BOP		
4	Total Amount for 20 nos. BOP in figures		
5	Total Amount for 20 nos. BOP in words		