



भारतीय जीवन बीमा निगम
LIFE INSURANCE CORPORATION OF INDIA

Engineering Department, North Central Zonal Office, 16/275 Civil lines, Kanpur-208001

Technical BID

Design Supply Installation Testing & Commissioning of 40kWp ON Grid Solar power Plant without battery backup in Zonal Office Kanpur

C O N T E N T S

	Pages
1. General Qualification & Min. eligibility Criteria	02 - 03
2. Activity Schedule	04– 04
3. Conditions of Contract	05 - 21
4. GENERAL INSTRUCTIONS TO CONTRACTORS	22 - 24
5. Appendix to the Condition of Contract / Special Conditions	25 - 27
6. GENERAL Preamble to schedule of Quantities	28- 29
7. Special term & Condition	30- 38
8. Terms & Conditions of CAMC for 40KWp solar power plant	39 - 41
9. Technical Specifications of the 40 KWp Solar power plant	42 - 50
10. Approved List of electrical Material	51 - 51
11. Annexure's I - VI	52 - 59
12. Scope of work	60 – 61
13. Check List of Annexure's	62 - 62
14. Bank guarantee Performa	63 - 66
15. Performance Guarantee Performa	67 - 69
16.. Article of Agreement Performa	70 - 71

GENERAL QUALIFICATIONS

- i. This tender document is opened to all Indian Firms / Companies who are eligible to do business in India under relevant Indian Laws as in force at the time of bidding and are approved by Bureau of Indian Standard or MNRE approved Channel Partner / SPV Module manufacturer (Copies of certificate be attached / to carry out such type of work.
- ii- Firm/Company should have installed at least one Grid connected Solar PV Power Plant having capacity of not less than 40 kW or 2 nos. of 20 KW Grid connected system and which should have been commissioned during last two years.
- iii- The SPV modules / SPV systems must be tested and approved from MNRE's Solar Energy Centre/ MNRE authorised testing laboratories/centres. For assessing this manufacturer shall furnish latest type test reports. (Copies of approval and test reports be attached.
- iv- The bidder should have minimum three years experience of successful installation of grid connected PV projects. The bidder should have installed at least one Grid connected Solar PV Power Plant having capacity of not less than 50 kW or 2nos of 25 KW which should have been commissioned during last two years .copies of work completion certificate and electrical inspector(Central/State) certificate for the work to be enclosed.
- v. Firm/Company declared by Central Governments / State Governments / Public Sectors to be ineligible to participate on account of corrupt, fraudulent or any other unethical business practice shall not be eligible during the period for which such ineligibility is declared. Simultaneously the companies blacklisted by any such Government Department / established Institutions shall also be ineligible for the tender.
- vi. **Preferably the company shall have office / Service centre in Kanpur / Lucknow / Delhi / Delhi NCR for providing after sales services / AMC service.**

MINIMUM ELIGIBILITY CRITERIA

The preliminary evaluation will be done on the following parameters and offers from firms not conforming to any of these parameters will be rejected.

Financial & Technical Parameters

Sr. no.	Parameters	Remark
1-	Average annual Turn Over during last 4 years.	The firms should have average annual sales turnover of Rs.92.40 lacs or above during each of the last 4 financial years(2014-15, 2013-14, 2012-13 & 2011-12) (Financial Balance Sheets to be enclosed duly attested by Chartered Accountant)
2-	Minimum Banker's Solvency certificate not more than 3 months old.	Rs.9.20 Lacs
3-	Qualifying value of single work completed during last 7 years	Three Similar work completed costing not less than Rs.18.48 Lacs or 2 Similar completed works costing not less than Rs.27.72 lacs or one similar completed work not less than Rs.36.96 lacs. And One completed work of any nature (either part of above or a separate one) costing not less than Rs.18.48 lacs with some central Govt. department, Central Autonomous Body/ Central Public sector undertaking / state public sector undertaking/ City Development Authority/ Municipal Corporation of City Formed under any act by Central /State Government and published in Central State Gazette.

The firm / agency must have satisfactory experience at least of three years in respective field. The prospective bidders meeting the above requirements may submit their sealed offer in three parts namely

Part – I Enrolment Form and Earnest Money Deposit” (EMD) of Rs.69300/-

Part – II Technical Bid (TB)”

“Part - III “Financial Bid (FB)”

The tender documents can be downloaded from LIC website and filled in tender to be duly signed on each page and book bind in three parts separately i.e. Enrolment Form and Earnest Money Deposit” (EMD) of Rs.69300/-, Technical bid & Price bid from **13.10.2015 to 29.10.2015** on payment of non refundable tender cost of Rs.2000.00 (Rupees Two thousand only) by Demand Draft / Pay Order in favour “Life Insurance Corporation of India” payable at Kanpur. The last date for submission of filled in offers (along with EMD of Rs.69300/-) is 06.11.2015 upto 15.00 Hrs. Part-1 and the “Technical Bids” will be opened on the same day at 15.30 Hrs. by the tender opening committee in the presence of bidders or their authorized representatives willing to participate. The date of opening of Price bid shall be intimated separately. For complete details please log on to www.licindia.in go to tenders and click on the link **“D/S/I/T/C of 40KWp solar power plant in our Zonal Office building, Jeevan Vikas, 16/275, Civil lines Kanpur”**.

DY. CHIEF ENGINEER (I/C)

ACTIVITY SCHEDULE

Sr. no.	Activity	Details
1	Tender Date	13.10.2015
2	EMD	Rs.69300.00 (Rupees Sixty Nine Thousand Three Hundred only)
3	Tender Fee	Rs.2000.00
4	Address For submission of Tender (to be put in Tender Box in engineering department)	Dy. Chief Engineer (I/C) LIC of India Engineering Department, NCZO 16/275 Civil Lines Kanpur-208001
5	Submission of Bids date & Time	Bidders fulfilling the general qualification & eligibility conditions should submit technical and financial bids in separate sealed covers super scribed as "Technical Bid" & "Financial Bid" put together in a large sealed cover super scribed as " Tender for SITC of 40kWp ON Grid Solar power Plant without battery backup in Zonal Office Kanpur " shall reach us on or before 06.11.2015 at 15.00 Hrs. at the above Address.
6	Pre Bid Meeting	Will be held on 30.10.2015 at 11.00 am. Venue : Conference Hall, 2nd Floor DO- Kanpur . Only 1(one) representative per bidder will be allowed to attend the meeting and the name of the attendees will have to be informed to the officials mentioned in column 9 at least one working day in advance. Officials attending the pre bid meeting will have to bring their company ID Cards/ authorization letters at the time of Pre-Bid meeting for verification. Last Date for receiving Pre Bid meeting queries : 30.10.2015 upto 11 a.m either in writing or through e-mail at ncz_engg@licindia.com
7	Technical Bid Opening Date/ Venue	The sealed covers having Technical Bids will be opened by the tender opening committee on 06.11.2015 at 15.30 Hours in the presence of bidders or one of their representatives who choose to attend. Venue as in the address above.
8	Financial Bid	The Financial Bid will be opened on a later date which will be Intimated separately to technically qualified bidders only.
9	Contact Details Name	Sh. Devendra , Dy. Chief Engineer Telephone No. 0512-2365595 E mail Id : ncz_engg@licindia.com
10	Official Website(URL)	http://www.licindia.in/tender_notice.htm
11	Opening of Price bid	Shall be intimated to eligible agencies at a later date.

Dy. Chief Engineer (I/C)

CONDITIONS OF CONTRACT

1. INTERPRETATIONS :

- 1.1 In construing these conditions, the Specifications, the Priced Schedule of Quantities, Tender and Agreement, the following words shall have the meanings herein assigned to them except where the subject or context otherwise requires. :
- 1.2 “Employer” shall mean **“Chief Engineer / Dy.Chief Engineer (I/C), LIC of India, NCZO Kanpur”** and his (their) heirs, legal Representatives, assignees and successors.
- 1.3 **“Dy.CHIEF ENGINEER (I/C)”** shall mean the person occupying the post of head of the Engineering Department of the Life Insurance Corporation of India, North Central Zonal Office, Kanpur.
- 1.4 “Corporation’s Engineers” shall mean such Deputy Chief Engineers, Superintending Engineers and/or Executive Engineers of the Corporation, who shall from time to time be appointed by the Chief Engineer for supervising the work carried out by the Contractor or for any purpose in connection therewith:
- 1.5 The term “Site Engineer” shall mean the person appointed and paid by the Employer, acting under the advice of the Corporation’s Engineers to superintend the work.
- 1.6 The Contractor shall mean the individual, firm or company whether incorporated or not, who is awarded the contract & shall include the legal representative of such individual or the persons composing such firm or company or the successors of such individual, firm or company and the permitted assignees of such individual, firm or company.
- 1.7 The “Site” shall mean the lands/buildings and/or other places on, in, into or through which work is to be executed under the contract or any adjacent land, path or street which may be allotted or used for the purpose of carrying out the contract.
- 1.8 “This Contract” shall mean the Articles of Agreement, these Conditions, the General Instructions to Contractor, General Preambles to Schedule of Quantities, Special Conditions, the priced Schedule of Quantities, the Specifications, the Appendices, the Drawings and other related correspondence.
- 1.9 “Act of Insolvency” shall mean any act of insolvency as defined by the Presidency Towns Insolvency Act, or the Provincial Insolvency Act or any amending Statute.
- 1.10 “Notice in Writing’ or written notice shall mean a notice in written, typed or printed characters, sent (unless delivered personally or otherwise proved to have been received) by registered post to the last known private or business address or registered office of the addressee and shall be deemed to have been received when in the ordinary course of post it would have been delivered.
- 1.11 Words importing persons include Firms and Corporations, words importing the singular only also include the plural and vice versa where the context so requires.
- 1.12 The titles of the Clauses shall not affect or alter the meaning of Clauses and are solely for the purpose of facilitating reference.
- 1.13 Deleted
- 1.14 Wherever the words ‘approved”, “directed”, “as required”, “selected” or words of like effect are used, it is to be understood that the approval/direction requirement or selection of the Corporation’s Engineer are intended unless otherwise specified.
- 1.15 The words “as described” shall mean the description in the Special Conditions, Specifications, General Instructions, Drawings etc. of this tender.

- 1.16 The words "allow" shall mean that the Contractor shall include in his rates for the particular matter referred to.
- 1.17 "Day Work" shall mean items of labour and /or materials which in the opinion of the Corporation's Engineer are not capable of being evaluated by the accepted method of measurement and analysis.

2.0 SCOPE OF CONTRACT

- 2.1 The contractor shall carry out and complete the works in every respect in accordance with the Contract and in accordance with the directions and to the satisfaction of the Corporation's Engineer. The Corporation Engineer may issue further drawings and / or written instructions, details, directions and explanation in regard to:
- The variation or modification of the Design, quality of work or the addition or omission or substitution of any work;
 - Any discrepancy in the Drawing or between the Schedule of Quantities and/or Drawing and / or Specifications :
 - The removal from the site of any materials brought thereon by the Contractor and the substitution of any other material thereof :
 - The removal and / or re-execution of any work executed by the Contractor:
 - The dismissal from the work of any persons employed thereupon :
 - The opening up for inspection of any work covered thereupon :
 - The amending and making good of any defects under relevant Clause giving details of defects after completion.
- 2.2 The Contractor shall forthwith comply with and duly execute all works comprised in such instructions subject to the provisions of relevant specific conditions of the Contract. In the event of any dispute or difference of opinion the contractor shall refer the matter within 7 (seven) days of the issue of such instruction to the **Dy. Chief Engineer (I/C)** whose decision shall be final & binding.

3. DISCREPANCIES :

- 3.1 If there are varying or conflicting provision made in any one document forming part of Contract, the **Dy. Chief Engineer (I/C)** shall be the deciding authority with regard to the intention of the document and his decision shall be final and binding on the contractor.
- 3.2 The several documents forming the Contract are to be taken as mutually explanatory of one another, and the order of precedence shall be as follows.
- Special conditions
 - General preambles to schedule of quantities
 - General instructions
 - Conditions of contract
- 3.3 In case of discrepancies between the Schedule of Quantities, the specifications and/or drawings the following order of precedence shall be observed.
- Description in Schedule of Quantities
 - Specifications of relevant Trade

- c) Drawings; details drawings shall be followed in preference to small scale drawings and figured dimension in preference to scale.
- d) Indian Standard Specifications of 'BIS'

4. DRAWINGS AND SCHEDULE OF QUANTITIES :

4.1 DELETED

5.0 CONTRACTOR TO PROVIDE EVERYTHING NECESSARY FOR EXECUTION OF WORK :

- 5.1 The Contractor shall provide everything necessary for the proper execution of the work according to the intent and meaning of Drawings / contract. Priced Schedule of Quantities and Specifications taken together, whether the same may or may not be explicitly shown or described therein provided that the same can reasonably be inferred there from and if the Contractor finds any discrepancy therein he shall immediately and in writing refer the same to the **Dy. Chief Engineer (I/C)**, whose decision shall be final and binding on the Contractor.
- 5.2 The Contractor shall supply, fix and maintain at his cost, during the execution of any work, all the necessary Centering, Scaffolding, Staging, Planking, Timbering, Strutting, Shoring, Pumping, Fencing, Boarding, Watching and Lighting by night as well as by day, required not only for the proper execution and protection of the said work, but also for the protection of the public and the safety of any adjacent Roads, Streets, Cellars, Vaults, Ovens, Pavements, Walls, Houses, Buildings, and all other erections, matters or things and the Contractors shall take down and remove any or all such Centering, Scaffolding, Staging, Planking, Timbering, Strutting, Shoring, etc. as occasion shall require or when ordered to do so and shall fully reinstate and make good all matters and things disturbed during the execution of the work to the satisfaction of the Corporation's Engineer.

6.0 AUTHORITIES NOTICES AND PATENTS

- 6.1 The Contractor shall conform to the provisions of any Acts of the Legislature relating to the work, and to the Regulations and Bye-Laws of any Authority and/or any Water, Lighting and other Companies and/or Authorities with whose system the structure is proposed to be connected and shall before making any variations from the Drawings or Specifications that may be necessitated by so conforming give to the **Dy. Chief Engineer (I/C)** written notices specifying the variations proposed to be made and the reasons for making them and apply for instructions thereon. In case the Contractor shall not within 7 (seven) days receive such instructions, he shall proceed with the work conforming with the Provisions, Regulations or Bye-Laws in question:
- 6.2 In particular, the Contractors shall be responsible to Register themselves under the Contract Labour (Regulation and Abolition) Act 1970 and Rules there under and any amendment thereto; they must comply with and carry out all the provisions and obligations under the said Act and Rules and furnish all information to Employer as may be required, by it and shall indemnify the Employer against any penalties /claims arising from any default on their part.
- 6.3 The Contractor shall arrange to give all notices required by the said Acts, Regulations or Bye Laws to be given to any Authority and to pay to such Authority or to any Public Office all fees that may be properly chargeable in respect of the work and lodge the receipts with the Employer.
- 6.4 The Contractor shall indemnify the Employer against all claims in respect of patent rights and shall defend all actions arising from such claims unless he has informed the **Dy. Chief Engineer (I/C)** (before any such infringement and received his permission to proceed and should himself pay all royalties, license fees, damages, costs and charges of all and every sort that may be legally incurred in respect thereof:

6.5 The Contractor should observe that his work shall not cause any nuisance to the Public in general and to the neighboring occupants in particular.

6.6 Should the Contractor desire to work on Sundays, Holidays and during night hours, permission in writing from the Employer must be obtained in time. It shall be the responsibility of the Contractor to obtain permission from Civil Authorities, if necessary;

7.0 SETTING OUT WORK :

7.1 The Contractor shall set out the work and shall be responsible for the true and perfect setting out of the same and for the correctness of the positions, levels, dimensions and alignment of all parts thereof. If at any time, any error shall appear during the progress of any part of the work, the Contractor shall at his own cost rectify such error, if called upon, to the satisfaction of the Corporation's Engineer. The Contractor must not commence work until the outlines of the building and Centre line layout have been pegged out and approved by the Corporation's Engineer.

8.0 CONTRACTOR IMMEDIATELY TO REMOVE OFFENSIVE MATTER :

8.1 All soil, filth or other matter of an offensive nature taken out of any trench, sewer, drain, cesspool, or other place shall not be deposited on the surface, but shall be at once carted away by the Contractor to some pit or place provided by him.

9.0 MATERIALS AND SAMPLES :

9.1 All the materials stores and equipment required for the full performance of the Contract must be provided through normal trade channels and must include **Octroi / LBT**, excise and import duties, sales tax payable to all authorities and other charges. They shall be of approved quality and the best of their kind available and the Contractor must be entirely responsible for the proper and efficient carrying out of the work. The Contractor shall order all materials required for the execution of the work from local/outside sources as early as necessary to the satisfaction of the Corporation's Engineer and to ensure that such materials are on site well ahead of requirement for use in the work.

9.2 Before ordering such materials, the Contractor shall get samples of the materials approved well in time. Preference shall be given to ISI marked products and approved brands of requisite quality as mentioned in the tender. For materials, which are neither approved brands nor ISI marked, the same shall be got tested from approved laboratories at the Contractor's cost before approval. Approved brand and ISI marked product will also be tested if desired by the **Dy. Chief Engineer (I/C)** and if the test results are satisfactory, the cost of testing shall be borne by the Employer otherwise by the Contractor. No claim will be allowed for delay to the progress of work caused by test. If called upon by the Corporation's Engineer the Contractor shall produce proof for having arranged for the supply of materials well in time.

9.3 The Contractor shall furnish well in time before work commences at his own cost, any samples of workmanship that may be called for by the Corporation's Engineer for his approval and any further samples in case of rejection until such samples are approved. Such samples when approved shall be the minimum standard for the work to which they apply. In case of items like suspended ceilings, partitions, etc., typical sample panels or proto-types shall be erected in position for approval before undertaking work. Rates quoted shall cover for such preliminary work.

10. ACCESS :

10.1 Any of the Corporation's Engineers or any persons authorized by any one of them shall at all reasonable time have free access to the work and / or to the workshops, factories or other places where materials are being prepared or constructed for the Contract and also to any place where the materials are lying or from which they are being obtained and the Contractor shall give every facility

to all of them necessary for inspection and examination and test of the materials and workmanship. Except the representatives of the Public Authorities no persons shall be allowed on the work at any time without the written permission of the Corporation's Engineer. If any work is to be done at a place other than the site of the work, the Contractor shall obtain written permission of the Corporation's Engineer for doing so.

11. CONTRACTOR'S SUPERVISION & MINIMUM REQUIREMENT OF TECHNICAL STAFF :

- 11.1 The Contractor shall either himself supervise the execution of the contract or may appoint a Competent Agent approved by the **Dy. Chief Engineer (I/C)** to act in his stead.
- 11.2 Where the contractor is not a qualified Engineer or even if he is so qualified, he cannot in the opinion of the **Dy. Chief Engineer (I/C)** give his full personal attention to the works, he shall at his own expense employ person(s) possessing a Government recognized Diploma in Civil / Electrical / Mechanical Engineering and minimum of 2 years experience as his accredited agent to supervise the works and to receive instructions from Corporation's Engineers. Any directions, instructions or notices given by the Corporation's Engineer to such supervisor(s) shall be deemed to be given to the contractors.

If the contractor fails to employ suitable person(s) to supervise the work or fails to appoint replacement(s) when necessitated, amount as stipulated in the Appendix to the conditions of contract shall be recovered from the contractor for each Engineer and each supervisor for the period of non-employment.

12. DISMISSAL OF WORKMEN:

- 12.1 The Contractor shall, on the instruction of the Corporation's Engineer, immediately dismiss from the work any person employed thereon, who may, in the opinion of the Corporation's Engineer, be unsuitable or incompetent or who may misconduct himself and such person shall not be again employed or allowed on the work without the permission of the Corporation's Engineer.

13. DATES OF COMMENCEMENT AND COMPLETION:

- 13.1 The "Date of Commencement" shall be as stated in the Work Order and the Contractor shall thereupon and forthwith begin the work and shall regularly proceed with and complete the same on or before the "Date of Completion" stated in the Work Order, subject to the provisions for extension of time hereinafter contained.

14. ASSIGNMENT:

- 14.1 The whole of the work included in the Contract shall be executed by the Contractor and the Contractor shall not directly or indirectly transfer, assign nor underlet neither the Contract nor any part, share of interest therein nor shall he take a new partner without the written consent of the **Dy. Chief Engineer (I/C)** and no subletting shall relieve the Contractor from the full and entire responsibility of the Contract or from the active superintendence of the work during its progress.

15. DEVIATION, VARIATION, EXTRA/DEVIATED ITEMS AND PRICING:

- 15.1 The Contractor should note that unless otherwise stated, the tender is strictly on Item Rate basis and his attention is drawn to the fact that rates for each and every item should be correct, workable and self supporting. The quantities in the Schedule of Quantities approximately indicate the total extent of work and no variation i.e. additions, omissions or subtractions shall vitiate the Contract. No liability shall attach to the Employer for any error therein or variation there from.

- 15.2 The contractor may when authorized and shall when directed, in writing by the **Dy. Chief Engineer (I/C)** or the Corporation's Engineers, whom the **Dy. Chief Engineer (I/C)** may for that purpose appoint, add to, omit from, make alterations in, substitutions for, or vary the works shown upon the Drawings or described in Specifications or included in the priced Schedule of Quantities but the Contractor shall make no additions, omissions, alterations, substitutions or variations without such authorization or direction. A verbal authority or direction by the **Dy. Chief Engineer (I/C)** if confirmed by the contractor in writing within 7 (seven) days, be deemed to have been given in writing.
- 15.3 The rates of such altered, additional or substituted works shall be determined in accordance with the following.
- The net rates or prices in the original tender shall determine the valuation of the extra work where such extra work is of similar character and executed under similar conditions as the work priced therein.
 - The net price of the items in the original tender shall determine the value of the items omitted. However, if omissions vary the conditions under which any remaining items of the work are carried out or if the amount of any omission relative to the amount of the whole of the Contract works or to any part thereof shall be such that in the opinion of the **Dy. Chief Engineer (I/C)** the net rate or price contained in the Priced Schedule of Quantities or Tender or for any item of work involves loss or expenses beyond that reasonably contemplated by the Contractor and is by reason of such omission rendered unreasonable or inapplicable, the **Dy. Chief Engineer (I/C)** shall fix another rate or price as in the circumstance he shall think reasonable and proper.
 - If the rate for any altered, additional, or substituted item of work is not specified in the schedule of quantities, the rate for that item shall be derived from the rate for the nearest similar item specified therein.
 - If the rate for altered, additional or substituted item of work cannot be determined in the manner specified above, then such items of work shall be priced on the basis of coefficients of labour and materials as given in the latest CPWD rate analysis handbook and rates for labour and materials wherever applicable shall be the market rate prevailing at the time of execution.
 - Where such co-efficient are not available in C.P.W.D. rate analysis, the actual Labour / Materials involved and recorded by the Contractor's Engineer in executing the items shall be considered.
 - Where extra work cannot be properly measured or valued, the Contractor shall be allowed "Day Work" prices at the net rates stated in the Tender or the Priced Schedule of Quantities or, if not so stated, then in accordance with the local "Day Work" rates and wages for the district, provided that in either case vouchers specifying the date and time (and if required by the Contractor's Engineer the names of workmen employed) and materials incorporated be delivered for verification to the Corporation Engineer or his representative at or before the end of the week following that in which the work has been executed. The Corporation Engineer is not bound to recognize the cost of materials furnished in vouchers; the **Dy. Chief Engineer (I/C)** will fix the price of such materials based upon market value.
 - While fixing rates of extra items 15% (Fifteen percent only) shall be allowed over and above the cost of material, labour and all applicable taxes, cess, statutory levies (excluding Income Tax) to cover all supervision, overheads and profits. This shall not however apply where 100% advance is given by the employer for purchase of any material (such as cement, steel etc.). In such cases 3.75% of the cost of materials only shall be allowed as handling charges and 15% shall be allowed only on the labour cost apart from above mentioned taxes etc.

- h. Where the quantities of any item in the schedule exceeds by 100% in foundation and in plinth, and 50% in super-structure (above plinth), these extra quantities over 100% & 50% respectively will be treated as extra items of work and priced accordingly as above. [Items such as roads, pavements etc. shall be considered as below plinth]. The decision of the **Dy. Chief Engineer (I/C)** for terming items below or above plinth is final & binding on the contractor.
- i. For all extra items of work, the contractor should submit to the concerned Corporation's Engineer the necessary particulars along with his analysis and the rate he proposes to claim for consideration within a period of 4 (four) weeks from the time of cropping up of any authorized extra / deviated item. He shall also ensure that all the authorized claims are included in the final bill. If the contractor fails to submit his claim within the stipulated period or the period duly extended by the **Dy. Chief Engineer (I/C)** shall proceed to fix the rate for the item(s) and the same shall be final and binding on the Contractor.
- j. The Contractor shall note that Extra/Deviated items claim and/or any other claim whatsoever if submitted after submission of his Final Bill will not be entertained and considered by the Employer. The Contractor shall not be allowed to make any Additions/ Alterations/ Revisions /Changes/ Modifications/ Variations in the final bill, after the final bill is submitted by him.

16. **SUB-CONTRACTORS:**

- 16.1 All specialist Merchants, Tradesmen and others, executing any work or supplying, fixing any goods for which provisional sums are included in the Schedule of Quantities and/or Specifications, who may be nominated or selected by **Dy. Chief Engineer (I/C)**, who shall be the final authority are hereby declared to be Sub-Contractors and are herein referred to as nominated Sub-Contractors.
- 16.2 No nominated Sub-contractor shall be employed on or in connection with the work against whom the Contractors shall make reasonable objection or (save where the **Dy. Chief Engineer (I/C)** and the Contractor shall otherwise agree) who will not enter into a Contract providing:
 - a. That the nominated Sub-Contractor shall indemnify the Contractor against the same obligation in respect of the Sub-Contractor as the Contractor is under, in respect of this Contract;
 - b. That the nominated Sub-Contractor shall indemnify the Contractor against claims in respect of any negligence by the Sub-Contractor or his servants or agents or any misuse by him or them of any scaffolding or other plant or the property of the Contractor or under any Workmen's Compensation Act in force.

17. **THIRD PARTY LIABILITY, DAMAGE TO NEIGHBOURING PROPERTY LOSS OF MATERIAL AND WORKMEN'S COMPENSATION:**

- 17.1 The Contractor shall be responsible for all injury to persons, animals or things, and for all damage to structural and/or decorative part of property which may arise from the operations or neglect of himself or of any Sub-contractor or any of his Sub- Contractor's employees, whether such injury or damage arise from carelessness, accident or*any other cause whatsoever in any way connected with the carrying out of his Contract. This Clause shall be held to include inter-alia, any damage to Building, whether immediately adjacent or otherwise and any damage to roads, streets, footpaths, bridges, or ways as well as all damage caused to the building, and the works forming the subject of this Contract by frost, rain, wind or other inclemency of the weather. The Contractor shall fully indemnify the Employer and hold him harmless in respect of all and any expenses arising from any such injury or damage to persons or property as aforesaid and also in respect of all and any claim made in respect of injury or damage under any acts of Government or otherwise and also in respect of any award or compensation or damages consequent upon such claim.

- 17.2 The Contractor shall fully indemnify the employer against any loss, damage or deterioration for whatever reason, of all materials brought at site and especially material supplied by or paid for partly or wholly by the employer.
- 17.3 The Contractor shall reinstate all damage and loss of every sort mentioned in this Clause so as to deliver up the whole of the Contract works complete and perfect in every respect and so as to make good or otherwise satisfy all claims for damage to the property of the third parties.
- 17.4 The Contractor shall fully indemnify the Employer against all claims which may be made against the Employer, by any member of the Public or other third party in respect of anything which may arise in respect of the works or in consequence thereof.
- 17.5 The contractor shall at his own expense arrange to effect from the date of commencement & maintain till the date of virtual completion of contract, with any licensed general insurance company, a **POLICY OF INSURANCE (Contractor's All Risk Policy)** to cover all such risks detailed above viz. loss, damage & third party liability etc. The policy shall be of an amount as mentioned in Appendix to Conditions of Contract and in the joint names of the employer & contractor and shall be deposited with the employer and renewed as required from time to time during the currency of the contract.
- 17.6 The Contractor shall also fully indemnify the Employer against all claims which may be made upon the Employer, whether under the **WORKMEN'S COMPENSATION ACT** or any other **STATUTE** in force during the currency of this Contract or at Common law in respect of any Employee of the Contractor or any Sub-Contractor and shall at his own expense effect and maintain until the Virtual completion of the work, with "Licensed General Insurance Company" a **POLICY OF INSURANCE** of adequate amount i.e. **5% of accepted tender amount** in the joint names of the Employer and the Contractor against such risks and deposit such policy or policies with the employer & renew the same as required from time to time during the currency of the Contract.
- 17.7 The Contractor shall be responsible for anything, which may be excluded from the Insurance Policies above referred to, and also for all other damage to any property arising out of or incidental to the negligence or defective carrying out of the Contract.
- 17.8 The amount of insurance to be taken for the above policies shall be as mentioned at 17.5 & 17. 6 above which is based on the tendered cost, nature of work, location of site, local hazards etc.
- 17.9 In default of the Contractor insuring as provided above, or having insured failing to renew the same as required the Employer on his behalf may so insure/renew and may deduct the premiums paid from any monies due or which may become due to the Contractor together with penalty as the **Dy. Chief Engineer (I/C)** deems appropriate.
- 17.10 The Contractor shall also fully indemnify the Employer in respect of any costs, charges or expenses arising out of any claim or proceedings at law and also in respect of any award of compensation of damages arising there from.
- 17.11 The Employer shall be at liberty and is hereby empowered to deduct fully the amount of any damages, compensation costs, charges and expenses arising or accruing any such claim of damage from any sum or sums due or to become due to the Contractor.

18. DELAY AND EXTENSION OF TIME:

- 18.1 If the works be delayed due to any of the following:
- (a) by force Majuro
 - (b) by reason of any exceptionally inclement weather,

- (c) by reason of proceedings taken or threatened by, or disputes with. Adjoining or neighboring owners, or public authorities,
- (d) by the work, or delays, of other Contractors or Tradesmen engaged by the Employer,
- (e) by reason of any additional work or instruction ordered by the employer,
- (f) by reason of Civil Commotion, local commotion of workmen or strike or lockout affecting any of the building trades,
- (g) In consequence of the Contractor not having received in due time necessary instructions from the **Dy. Chief Engineer (I/C)** for which he shall have specifically applied in writing,
- (h) from other causes which the **Dy. Chief Engineer (I/C)** may certify as beyond the Control of the Contractor,
- (i) by reason of non-payment of interim certificate at specified time, then upon the happening of any such event causing delay the contractor shall immediately, give notice thereof in writing to the Corporation's Engineer, but shall nevertheless use constantly his best endeavors to make good this delay.

- 18.2 Request for extension of time shall be made by the contractor at the earliest but not later than 14 (fourteen) days of the event causing the delay.
- 18.3 In case of strike or lockout the Contractor shall give written notice thereof to the **Dy. Chief Engineer (I/C)** as soon as possible but he shall nevertheless constantly use his endeavors to prevent delay and shall do all that may reasonably be required to the satisfaction of the **Dy. Chief Engineer (I/C)** to proceed with the work.
- 18.4 The **Dy. Chief Engineer (I/C)** shall make a fair and reasonable assessment of the delay and grant extension of time accordingly. Such extension shall be communicated to the contractor by the Corporation's Engineer within 3 (Three) months of the date of receipt of such request. Non application by the contractor for extension shall however not be a bar for giving fair and reasonable extension which shall be as decided by the **Dy. Chief Engineer (I/C)**.
- 18.5 The decision of the **Dy. Chief Engineer (I/C)** as communicated by the Corporation's Engineer to the contractor on the extension of time shall be final & binding.
- 18.6 No claim in respect of compensation or otherwise, howsoever arising, as a result of extension granted under the above conditions shall be admissible.

19. **DAMAGE FOR NON-COMPLETION:**

- 19.1 If the Contractor fails to complete the work by the date of completion stated in the "Appendix to Condition of Contract" or within time properly extended under Clause (18) hereof and the **Dy. Chief Engineer (I/C)** certifies in writing that in his opinion the same ought, reasonably so, to have been completed, the Contractor shall pay or allow the Employer the sum named in the Appendix as "Liquidated Damages" for the period during which the said works shall so remain incomplete, and the Employer may deduct such damages from any money due to the Contractor. In case liquidated damages in accordance with the above provision accrue to maximum limit as mentioned in the Appendix to the Conditions of the Contract, the **Dy. Chief Engineer (I/C)** shall be at liberty to rescind the Contract and to get it completed entirely at the risk and cost of the Contractor through any other agency he decides to appoint. All extra expenses incurred shall be recoverable from the money due to Contractor or lying to his credit with the Employer against the present or any other Contract.

20. **FAILURE BY CONTRACTOR TO COMPLY WITH DY. CHIEF ENGINEER (I/C)(LIC NCZO KANPUR) INSTRUCTIONS**

- 20.1 If the Contractor after receipt of written notice from the **Dy. Chief Engineer (I/C)** requiring compliance with such further Drawings and/or. his instructions, fails within 7 (seven) days to comply with the same the **Dy. Chief Engineer (I/C)** may employ and pay other persons to execute any such work whatsoever as may be necessary to give effect thereto and all additional costs incurred in connection therewith shall be deducted from any money due or to become due to the Contractor.

21. **MEASUREMENT OF WORK:**

- 21.1 All items having a financial value shall be entered by corporation engineer in the measurement book after taking joint measurements with contractor at site. All measurements and levels shall be taken jointly by the Contractor or his authorized representative and Site Engineer or his authorized representative from time to time during the progress of the work and such measurements shall be signed and dated by both the parties in token of their acceptance. If any of the measurements recorded are objected by any one of the party, a note shall be made to that effect with reason, signed by both parties and referred to Corporation's Engineer whose decision in the matter shall be final and binding.
- 21.2 If the contractor or his authorized representative does not record the measurements periodically for the completed works, then the site Engineer shall take measurements after giving notice in writing of at least 3 (three) days. Measurements recorded in the absence of Contractor shall be intimated with a copy of such measurements to contractor. If the Contractor fails to countersign or record objections within a week from the date of measurement, then, such measurements recorded in his absence by the Site Engineer shall be deemed to be accepted by and binding on the Contractor.
- 21.3 The Contractor shall, without any extra charge provide all assistance with every appliance, labour and other things necessary for taking measurements (either by him or by site Engineer) and recording levels including test checking of such measurements by any person authorised by the Employer.
- 21.4 All work shall be measured net as fixed in its place. All measurements of 'cutting' shall be held to include for the consequent wastage on the materials used.
- 21.5 Except where any general or detail description of the works expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the specifications not withstanding any provision in the relevant Standard Method of Measurement or any general or local custom. In the case of items for which procedure is not covered in the specification, measurement shall be taken in accordance with the relevant Standard Method of measurement issued by BIS and if for any item no such standard is available then a mutually agreed method shall be followed.
- 21.6 Measurements of all hidden/concealed items of work including extra items if any, such as, work in foundations including excavations, plinth filling, masonry, concrete etc. steel in all R.C.C. work, pipe to be encased etc. shall be jointly recorded by the Contractor and Site Engineer or his authorized representative before they are covered up. Immediately after the work is ready for measurements, Contractor will give specific notice to the Site Engineer for recording the measurements. If the Site Engineer or his authorized representative fails to attending recording of the measurements, the Contractor will refer the matter to the Corporation's Engineer for instructions, but in no case shall cover up work without the latter's permission.

22. **PAYMENTS:**

- 22.1 The Contractor shall be paid by the Employer, from time to time, by installment under Interim Certificate to be issued by the Site Engineer & Corporation's Engineer i.e consultant to the

Contractor on account of the work executed, as mentioned in the Appendix to the Conditions of Contract subject however to recoveries under this Contract. The Interim Certificate shall be based upon Interim Bills or Running Account Bills to be prepared by the Contractor and supported by the detailed measurements (as per Annexure M and M1). Adequate references, sketches and cross references wherever necessary are also to be provided with detailed measurements. The Corporation's Engineer/Site Engineer may allow inclusion in the Interim Certificate such amount as he may consider proper on account of materials delivered upon the site by the Contractor for use in the work but not incorporated in it.

- 22.2 Provided always that the issue by the Corporation's Engineer of any Certificate during the progress of the works or after their completion shall not relieve the Contractor from his liability in cases of fraud, dishonesty or fraudulent concealment relating to the work or materials or any matter dealt with in the Certificate in case of all defects and insufficiencies in the work or materials which a reasonable examination would not have disclosed. No Certificate of the Corporation's Engineer shall of itself be conclusive evidence that any work or materials to which it related are in accordance with the Contract;
- 22.3 Payment upon the Corporation's Engineer's Certificate shall be made within the periods named in the Appendix "Period for honouring Interim Certificate" after such a Certificate has been delivered to the Employer;
- 22.4 The **Dy. Chief Engineer (I/C)** shall have power to withhold any Certificate if the work or any parts thereof are not being carried out to his satisfaction. However, if the final certificate is not issued within the period as mentioned under Clause No. 22.5, 22.6 due to Audit para by CTE etc., the amount involved for such items of deficient work as decided by the **Dy. Chief Engineer (I/C)** would be with held. The same would be allowed as agreed upon by the CTE & the **Dy. Chief Engineer (I/C)** and the final certificate would accordingly be issued and final bill passed. For such with held amount, a simple interest @ 6% per annum shall be paid to the contractor along with the said payment. Such interest will be calculated from the last date (as mentioned in Appendix to Conditions of Contract) for honouring final certificate till the date of payment.
- 22.5 The measurements and valuation in respect of the Contract shall be completed within the "period of Final Measurement" stated in the Appendix or if not so stated then within six months of the completion of the contract works as defined in Clause (26) hereof. No further claim shall be made by the contractor after submission of the final bill and these shall be deemed to have been waived and extinguished.
- 22.6 The final certificate shall be based on the submission of final measurements or overall measurements of the work (to be taken if so directed by Corporation's Engineer) with all relevant details similar to 22.1 above. The **Dy. Chief Engineer (I/C)** may direct the Contractor to resubmit details if the same are found incomplete to issue the final certificate and his decision to accept the details is final and binding on the Contractor. Final Certificate shall be issued by the **Dy. Chief Engineer (I/C)** after the conditions are met with as per 22.4, 22.6 and 26 and Contractor's submission of **No Claim certificate cum receipt** as per the Proforma given in Appendix to Conditions of Contract.

23. SECURED ADVANCE AGAINST MATERIALS

- 23.1 The Contractor shall be entitled to be paid advance along with interim bill against materials which are not perishable and which are in the opinion of Corporation's Engineer, required for the works and have been brought on site for incorporation in the work but have not been so incorporated and are safeguarded against loss due to any cause whatsoever, (refer clause no-17)The amount of such advance against materials shall be arrived at on the following basis:
 - a. 80% of the market value of materials required for the work and brought on site.

OR

80% of the cost of such materials (brought on site) as derived from the relevant accepted tender rate for the particular item involving such materials; whichever is lower.

- b. Such advance payment made against materials shall be recovered from or adjusted from the interim bills as and when the materials are utilized in the work.

Examples of certain perishable materials on which no advance shall be paid are Sand, Paint, Bitumen, Hard Boards/Soft Boards and other paper products. Petroleum Products, Coal Tar, Insulating Boards etc.

- 23.2 In case of dispute, the decision of the **Dy. Chief Engineer (I/C)** on whether advance payment can be made against specific materials shall be final and binding.

24. UNFIXED MATERIALS AND EQUIPMENTS:

- 24.1 All tools, plants and materials brought to the site by the Contractor shall vest in the Employer and shall not be removed from the site of works except by permission of the Corporation's Engineer in writing. The Employer shall have a lien on these materials and plants.

25. REMOVAL OF IMPROPER WORK:

The Corporation's Engineer shall during the progress of the work have power to order in writing from time to time the removal from the work within such reasonable time or as may be specified in the order, of any materials, which in their opinion are not in accordance with the Specifications or instructions, the substitution of proper materials and the removal and proper re-execution of any work executed with materials or workmanship not in accordance with the Drawings and Specifications or Instructions and the Contractor shall forthwith carry out such an order at his own cost. In case of default on the part of the Contractor to carry out such an order, the Employer shall have the power to employ other persons to carry out the same and all expenses consequent thereon or incidental thereto as certified by the Corporation Engineer shall be borne by the Contractor and may be deducted from any amounts due or that may become due to the Contractor.

26. VIRTUAL COMPLETION:

- 26.1 The work shall be completed in accordance with the Contract and to the entire satisfaction of the **Dy. Chief Engineer (I/C)**. All unused materials, tools, plants, scaffoldings, temporary structures, hutments and things belonging to the Contractor shall be removed and the site of works cleared of rubbish and all waste materials by the contractor at his own expenses and delivered up tidy to the employer. After completion of the work, the contractor will serve a written notice to the **Dy. Chief Engineer (I/C)** to this effect. The **Dy. Chief Engineer (I/C)** after satisfying himself shall there upon approve the virtual completion on behalf of Employer. The Defect Liability Period shall commence from the date of such certification.

27. DEFECTS AFTER COMPLETION:

- 27.1 The defects, shrinkage, settlements or other faults, which may appear within "the Defects Liability Period, stated in the "Appendix to the Conditions of Contract" or if not stated then, within 12 (twelve) months after virtual completion of the work, arising on account of materials or workmanship not in accordance with the Contract shall, upon the directions in writing of the Corporation's Engineer and within such reasonable time specified therein, be amended and made good by the Contractor at his own cost unless the **Dy. Chief Engineer (I/C)** shall decide that he ought to be paid for such amendment and for making good, and in case of default, the **Dy. Chief Engineer (I/C)** may employ and pay other persons to amend and make good such

defects, shrinkage, settlement or other faults, and all damages, loss and expenses consequent thereon or incidental thereto shall be recovered from any monies due or that may become due to the Contractor. **Dy. Chief Engineer (I/C)** may in lieu of such amending and making good by the Contractors, deduct from any money due or that may become due to the Contractor, a sum to be determined by the **Dy. Chief Engineer (I/C)** equivalent to the cost of amending such work. Should any defective work have been done or materials supplied by any Sub-Contractor employed on the work, who has been nominated or approved by the **Dy. Chief Engineer (I/C)** as provided in Clause No. 16 the Contractor shall be liable to make good in the same manner as if such work or material had been done or supplied by the Contractor and been subjected to the provisions of this Clause and Clause No.2 hereof. The Contractor shall remain liable under the provision of this Clause notwithstanding the payment of any Certificate or the passing of any accounts.

28. PROVISIONAL SUMS, APPLICATION OF:

- 28.1 For all the work listed under items for which provisional sums are provided in the tender, the **Dy. Chief Engineer (I/C)** reserves the right to invite separate tenders or select or order from any manufacturer or firms at his discretion and reserves to himself the right of paying direct to persons or firms for any such work. The Contractor will not have any claims over these items, but if tenders are invited for such items, he will also be invited to quote along with others.
- 28.2 If ordered by the **Dy. Chief Engineer (I/C)** Contractor shall be required to carry out provisional sum items at the same conditions and rates as applicable for this Contract.

29. OTHER PERSONS ENGAGED BY THE EMPLOYER:

- 29.1 The **Dy. Chief Engineer (I/C)** reserves the right to execute any work not included in this Contract, which he may desire to have carried out, by other persons and the Contractor shall allow all reasonable facilities and the use of his scaffolding and plant for the execution of such work, but is not required to provide any special plant or materials for the execution of such work except by special arrangement with the Employer. Such work shall be carried out in such manner as not to impede the progress of the work included in the Contract and the Contractor shall not be responsible for any damage or delay which may happen to or be occasioned by such work.

30. SUSPENSION BY THE CONTRACTOR:

- 30.1 If the Contractor except on account of any legal restraint upon the Employer preventing the continuance of the work, shall suspend the work or in the opinion of the **Dy. Chief Engineer (I/C)** shall neglect or fail to proceed with due diligence in the performance of his part of the Contract or if he shall make default in respect of Clause No.2, the Employer shall have the power to give notice in writing to the Contractor requiring that the work be proceeded within a reasonable manner and with reasonable dispatch. Such Notice shall purport to be a notice under this clause. After such notice is given, the Contractor shall not be at liberty to remove from the site of the work or from any ground contiguous thereto any plant or materials belonging to him, which shall have been placed thereon for the work and the Employer shall have a lien upon all such plant and materials to subsist from the date of such notice being given until the notice shall have been complied with. If the Contractor shall fail for 7 (seven) days after such notice given to proceed with the work as therein prescribed, the Employer may proceed as provided in Clause No.31.

31. **DETERMINATION OF CONTRACT BY EMPLOYER:**

- 31.1 If the Contractor (being an individual or a firm) commit any "Act of Insolvency" or shall be adjudged as Insolvent or shall make an assignment or composition of the greater part in number or amount of his creditors or shall enter into a deed of assignment with his creditors, or being an Incorporated Company shall have an order made against him or pass an effective resolution for winding up either compulsorily or subject to the supervision of the Court or Voluntarily or if the official Assignee of the Contractor shall repudiate the Contract or if the official Assignee or the Liquidator in any such winding up shall be liable within 7 (seven) days after notice to him requiring him to do so, to show to the reasonable satisfaction of the **Dy. Chief Engineer (I/C)** that he is able to carry out and fulfill the Contract and if required by the **Dy. Chief Engineer (I/C)** to give security therefore or if the Contractor (whether an Individual Firm or Incorporated Company) shall suffer execution to be issued or if the Contractor shall suffer any payment under this Contract to be attached by or on behalf of any of the Creditors of the Contractors or if the contractor shall assign or sublet the Contract without the consent in writing of the **Dy. Chief Engineer (I/C)** first obtained or if the Contractor shall charge or encumber this Contract or any payment due or which may become due to the Contractor there under, or if the **Dy. Chief Engineer (I/C)** shall certify in writing that in his opinion the Contractor.
- a. has abandoned the Contract, or
 - b. has failed to commence, the work, or has without any lawful excuse under these conditions suspended the progress of the work for 7 (seven) days after receiving from the **Dy. Chief Engineer (I/C)** written notice to proceed. Or
 - c. has failed to proceed with work with such due diligence and failed to make such due progress as would enable the work to be completed within the time agreed upon, OR
 - d. has failed to complete the work within the stipulated date including authorized extensions or
 - e. has failed to remove the materials from the site or to pull down and replace the work within 7 (seven) days after receiving a written notice from the Corporation's Engineer that the said materials or work were condemned or rejected OR
 - f. has neglected or failed persistently to observe and perform all or any of the acts, matters, or things, by this Contract to be observed and performed by the Contractor for 7 (seven) days after written notice shall have been given to the Contractor requiring the Contractor to observe or perform the same, or
 - g. has to the detriment of good workmanship or in defiance of the **Dy. Chief Engineer (I/C)** instructions to the contrary sub-let any part of the Contract. then and in any of the said causes, the Dy. Chief Engineer (I/C) notwithstanding any previous waiver, after giving 7 (seven) days notice in writing to the Contractors. determine the Contract, but without thereby affecting the powers of the Dy. Chief Engineer (I/C) or the obligations and liabilities of the Contractor, the whole of which shall continue to be in force as fully as if the contract has not been so determined and as if the work subsequently executed had been executed by or on behalf of the Contractor. And further, the Employer, his agents or servants, may enter upon and take possession of the work and all plant, tools, scaffolding, sheds, machinery, steam and other power, utensils and materials, lying upon the premises or the adjoining lands or road and use the same as his own property or may employ the same by means of his own servants and workmen in carrying on and completing the work or by employing any other Contractors or other person or persons to complete the work, and the Contractor shall not in any way interrupt or do any act, matter, or thing to prevent or hinder such other Contractor, other persons or person employed for completing and finishing or using the materials and plant for the work. When the work shall be completed or as soon thereafter as convenient, the Dy. Chief Engineer (I/C), shall

give a notice in writing to the Contractor to remove his surplus materials and plant and should the Contractor fail to do so within a period of 14 (Fourteen) days after receipt thereof by him, the Employer may sell the same by public auction and shall give credit to the Contractor for the amount so realised. The Dy. Chief Engineer (I/C), shall thereafter ascertain and certify in writing under his hand what (if anything) shall be due or payable to or by the Employer for the value of the said plant and materials so taken possession of by the Employer and the expense or loss which the Employer shall have been put to in getting the work to be so completed, and the amount, if any, owing to the Contractor and the amount, which shall be so certified shall thereupon be paid by the Employer to the Contractor or by the Contractor to the Employer, as the case may be and the Certificate of the Dy. Chief Engineer (I/C), shall be final and conclusive between the parties.

32. TERMINATION OF CONTRACT BY CONTRACTOR:

- 32.1 If payment of the amount payable by the Employer under any Certificate of the Corporation Engineer, shall be in arrears as unpaid for 60 (sixty) days after notice in writing requiring payment of the amount with interest of aforesaid shall have been given by the Contractor to the Employer, or if the work be stopped for six months under order of the Dy. Chief Engineer (I/C) or by any injunction or other order of any Court of Law, then and in any of the said cases, the Contractor shall be at liberty to determine the Contract by notice in writing to the Employer and he shall be entitled to recover from the Employer payment for all the work executed and for any loss, he may sustain upon any plant or material supplied or purchased or prepared for the purpose of the Contract.
- 32.2 In arriving at the amount of such payment, the net rates contained in the Contractor's original tender shall be followed or where the same may not apply, valuation shall be made in accordance with Clause No. 15 hereof.

33. DETERMINATION OF CONTRACT DUE TO ABANDONMENT OR REDUCTION IN SCOPE OF WORK:

- 33.1 If at any time after the acceptance of the tender, the Employer shall for any reasons whatsoever not require the whole or any part of the works to be carried out, the Dy. Chief Engineer (I/C), shall give notice in writing to the Contractor who shall have no claim to any payment of compensation or otherwise whatsoever on account of any profit or advantage which he might have derived from the Execution of the whole of the works. The Contractor shall be paid at contract rates for the full amount of work executed and in addition:
- The cost at site of all surplus approved materials collected for incorporation in the work, which the Contractor does not wish to retain and which shall thereafter become the property of the Employer.
 - Where the Contractor desires to retain the surplus of approved materials (excepting materials supplied by the Employer or obtained in Employer's name, which shall, in any case, be returned to the Employer) the cost of handling and cartage charges for removal from the site to a reasonable distance not exceeding 25 kms.
 - If upon the determination of the Contract under this condition, the Contractor is of the opinion that he has suffered hardship by reason of the operation of these conditions, he may refer the circumstances with full details to the Dy. Chief Engineer (I/C), who on being satisfied that such hardship exists or has existed, shall make such allowance, if any as in his opinion is reasonable and his decision shall be final, conclusive and binding.

34. DISPUTES TO BE FINALLY DETERMINED BY DY. CHIEF ENGINEER (I/C):

- 34.1 The Instruction, Decision, Opinion, Direction, Certificate or Valuation of the Dy. Chief Engineer (I/C), with respect to all or any of the matters under Clause (2), (3), (5), (6), (9), (14), (15), (18), (23), (27), (30), (31) and (33) hereof (which matters are herein referred to as EXCEPTED MATTERS) shall be final and conclusive and binding on the parties hereto and shall be without appeal. Any other

Decision, Opinion, Direction, Certificate or Valuation of the Dy. Chief Engineer (I/C) or any refusal of the Dy. Chief Engineer (I/C) to give any of the same shall be subject to the right of Arbitration and review as given under Clause No.36.

35. SECURITY DEPOSIT:

- 35.1 Amount towards Security deposit shall be calculated as per details given under Serial No.9 of "APPENDIX TO CONDITIONS OF CONTRACT" in Part II of the tender. Security Deposit can be either in Cash or in the form of Bank Guarantee. In case of cash option, the EMD shall be retained as part of Security Deposit and balance Security Deposit shall be accumulated through deductions from Running Account Bills at 7.5% (maximum) of gross-amount of bill. In case of Bank Guarantee option,, the Contractor shall furnish one Bank Guarantee for full amount of Security deposit valid till end of defects liability period OR, two Bank Guarantees of like amounts each equal to half the Security deposit; one valid till virtual completion and the other till end of defects liability period.
- 35.2 Performance Guarantee under 9(b) of "Appendix to Conditions of Contract" shall be only in the form of Bank Guarantee valid up to scheduled date of completion. (Item no.35.2 stands deleted)
- 35.3 The Bank Guarantee/s shall be from any Nationalized / Scheduled Bank approved by the Sr. Joint Director, which is located at the Regional Office Headquarters of IRDA within whose jurisdiction the work falls or at the place of work.
- 35.4 Bank Guarantee/s (BGs) against Security Deposit (SD) and Performance Guarantee (PG) shall be executed as per the specimen pro-forma at Annexure B and C. These guarantee/s shall be submitted within 20 (twenty) days of issuance of letter of acceptance.
- 35.5 In case of failure by the contractor to furnish the Bank Guarantee against Performance Guarantee as per CL35.2 by the stipulated date or extended date if any, Employer shall without prejudice to any other right or remedy available in law, be at liberty to cancel the tender which may and forfeit the Earnest Money absolutely.
- 35.6 50% of the Security Deposit (cash option) shall be refunded after the certificate of virtual completion is issued to the contractor & provided that the employer has no claim for forfeiture of part or whole of the said deposit.
- 35.7 Balance 50% of Security deposit will be refunded to the contractor after the satisfactory completion of the defects liability period, subject to deductions for any appropriations thereof required to be made by the employer as per the conditions of contract.
- 35.8 If one Bank Guarantee in lieu of total Security Deposit is furnished, the same will be released only after the successful completion of Defects Liability period subject to any appropriations as aforesaid.
- 35.9 If two Bank Guarantees in lieu of Security deposit are furnished, the First Bank Guarantee will be released after the certificate of Virtual completion is issued to the contractor and second shall be released after the satisfactory completion of Defects Liability Period subject to any appropriations as aforesaid.
- 35.10 Bank Guarantees towards Performance Guarantees (where applicable) shall be released after the virtual completion is issued.
- 35.11 Contractor shall keep the Security Deposit and Performance, Guarantee, where applicable, replenished to its full value whenever any' recovery or appropriation there from occurs. The employer reserves the right to do so from any money(s) due to the contractor lying with them.
- 35.12 The Contractor should note that no interest will be allowed on any part of the Security deposit.

- 35.13 No deductions will be effected from the bills when the total security deposit is paid in the form of Bank Guarantee(s) and the E.M.D shall be refunded after acceptance of Bank Guarantee(s).
- 35.14 In the event of failure by the contractor to submit Bank Guarantee(s) by the specified extended date; recovery of Security deposit shall be affected from the R.A Bills. However, where the contractor fails to furnish Bank Guarantee against Performance Guarantee the matter shall be dealt with as per Cl. 35.5 above.
- 35.15 In all cases of Bank Guarantees, there shall be further provision of claim period of 6 months. If the contract period gets extended for any reason whatsoever, the contractor shall obtain the required extensions to the Bank Guarantee(s).

36. SETTLEMENT OF DISPUTES, ARBITRATION:

- 36.1 All disputes and differences of any kind whatsoever arising out of or in connection with the Contract or the carrying out of the work (whether during the progress of the work or after its completion and whether before or after determination, abandonment or breach of the Contract) shall be referred by the Contractor to the Dy. Chief Engineer (I/C), within 15 (fifteen) days of any such matter arising. The CM shall upon receipt of such reference convey his written instructions or decision within 30 (Thirty) days to the contractor. If the contractor be dissatisfied with the decision of the Dy. Chief Engineer (I/C), on any matter, other than EXCEPTED MATTERS, then and in any such case, the Contractor shall within 30 (Thirty) days after receiving notice of such decision give a written notice to the Employer requiring that such matters in dispute (other than excepted matters) be arbitrated upon. Such written notice shall specify the matters which are in dispute or difference of which such written notice has been given and no other shall be and is hereby* to be referred to the Arbitration. In case the Contractor fails to serve the written notice on any or all the issues in dispute within 30 (Thirty) days the decision conveyed by the Employer shall be taken as final, binding and conclusive and shall not be open to arbitration.
- 36.2 Any disputes or differences that the employer may have with the contractor shall also be referred to Arbitration.
- 36.3 All disputes between the parties to the contract (other than those for which the decision of the Employer or any other person is by the contract expressed to be final & binding) shall after written notice by either party to the contract to the other of them be referred to sole arbitration by an Arbitrator to be appointed by the Employer which shall be final and binding.
- 36.4 If the arbitrator so appointed resigns his appointment or vacates his office or is unable or unwilling to act due to any reason whatsoever, the appointing authority shall appoint a new arbitrator in his place.
- 36.5 Unless both the parties agree in writing, reference of such disputes to arbitration shall not take place until after the completion or alleged completion of the work or termination or determination of contract.
- 36.6 The Sole Arbitrator shall determine all matters in disputes other than EXCEPTED MATTERS (referred in CLNo.34) which shall be referred to the Sole Arbitrator.
- 36.7 The Arbitration shall be conducted in accordance with the provisions of the Arbitration and Conciliation Act 1996 or any statutory modifications thereof.
- 36.8 The Contractor hereby also agrees that Arbitration under this Clause shall be a condition precedent to any right of action under the Contract.

Contractor

Dy. Chief Engineer (I/C)

GENERAL INSTRUCTIONS TO CONTRACTORS

INSPECTION OF SITE:

The Tenderer shall visit and examine the site of work, the correct dimensions of the work site and facilities for obtaining materials and shall obtain generally his own information on all matters affecting the execution of the work. No extra charge made, in consequence of any misunderstanding or incorrect information on any of these points or on the grounds of insufficient description will be allowed. All expenses incurred by the Tenderer in connection with obtaining information for submitting this tender including his visits to site and efforts in compiling the Tender shall be borne by the Tenderer and no claims for reimbursement thereof shall be entertained.

WHOLE WORK TO BE COMPLETED IN THE SPECIFIED COMPLETION PERIOD:

The whole work is to be completed within the completion period stated in the Appendix to Conditions of Contract or the extended date of completion, if any. The Contractor will be required if necessary, to work overtime to complete the work by the stipulated date. No extra will be allowed on the Contract sum for such overtime work.

ORDER OF WORK:

The Dy. Chief Engineer (I/C) reserves the right to fix the order in which the various items of work involved in this Contract is to be executed and Contractor shall comply with the same. There shall be no extra claims on account of this.

WORKMANSHIP:

The Work calls for a high standard of workmanship combined with speed.

REJECTED WORKMANSHIP OR MATERIALS:

Any workmanship, or materials not complying with the specific requirements or approved samples, or which have been damaged, contaminated or deteriorated, must be removed immediately from the site and replaced at the Contractor's expense as directed.

QUOTED RATES:

- a. Contractor should note that unless otherwise stated the tender is strictly on Item Rate basis and his attention is drawn to the fact that rates for each and every item should be correct, workable and, self supporting.
- b. If called upon by the Dy.Chief Engineer (I/C), detailed analysis of any, or of all the rates shall be submitted by the Contractor. The Dy.Chief Engineer (I/C), is not bound to recognize Contractor's analysis and reserves the right to reject abnormal high rates quoted by the Contractor. In case, there are inconsistencies in the rates for item of same description, quoted in the different parts of the Schedule of Quantities, the lowest of such rates shall be considered unless Dy.Chief Engineer (I/C), finds that there is justification for such inconsistent rate.



Engineering Department, North Central Zonal Office, 16/275 Civil lines, Kanpur-208001

WATCHING AND LIGHTING:

The Contractor from the time of being placed in possession of the site must allow for watching, lighting and protecting the work, the site and surrounding, properly by day and night on all days including Sundays or other holidays, at his own cost.

WATER:

The rates quoted by the Contractors shall include for providing all water required for the work including that required by special tradesmen and Sub- Contractors and pay all charges required by Local Municipal or other Authorities. Water must be clean, fresh, pure and free from earth, vegetable or organic matters, acid or alkaline substance in solution or suspension. The Contractors shall make their own arrangements for water supply. If supply from the Municipality or other local bodies be inadequate, the Contractor should provide tube well or wells or open well at his own cost. The Contractors must execute any temporary plumbing and pay all fees and charges. All health regulations in force shall be strictly observed by the Contractor and pay all necessary charges.

ELECTRICITY:

The Contractor shall arrange with the concerned Electricity Supply Authorities for a temporary meter and supply to the site and shall provide all temporary wiring, power and lighting points for the whole of the works and clear away when no longer required. He shall pay all charges for the same and for electricity consumed, including that consumed by Sub-Contractors. The Contractor should submit disconnection & no dues certificate from the supplying authority along with his final bill. However if surplus electricity is available same may be made available for which electricity charges will be deducted @ 0.25 % of the gross value of work done from the bill.

SECURITY AND PROTECTION:

- a. The Contractor shall at his cost, provide any necessary temporary enclosures, gates, entrances, etc. for the protection of the work and materials and for altering and adapting same as may be required and removing at completion of the works and making good all works disturbed.
- a. Should the work be suspended by reason of rain, strike, lock-outs or any other cause, the Contractor shall at his cost take all precautions necessary for the protection of the work and shall make good any damage arising from any of these causes.

MINIMUM WAGES ACT:

The Contractor shall pay rates of wages and observe hours of work and conditions of employment to existing rules under Minimum Wages Act. Further, it shall be Contractor's responsibility to ensure that he pays his workmen wages, which are not lower than the minimum prescribed by the Union Government and State Government in which area this Contract, is being operated.

SIGN BOARD AND HOARDINGS:

The Contractor shall not affix or place any placards or advertisement of any description or permit the same to be affixed or placed in or upon any hoarding, gantry, buildings or structure other than that approved by the Dy.Chief Engineer (I/C).

SCIENTIFIC AND MEASURING INSTRUMENTS

All instruments found necessary on the works, shall be provided by the Contractor at his expense for the due performance of this Contract as instructed by the Corporation's Engineer.



भारतीय जीवन बीमा निगम
LIFE INSURANCE CORPORATION OF INDIA

Engineering Department, North Central Zonal Office, 16/275 Civil lines, Kanpur-208001

ALTERNATIVE ITEMS:

In regard to alternative items, if any, specified in the Schedule of Quantities, Contractor should note that the Employer reserves the right to order the Principal item or its alternatives at the Dy.Chief Engineer (I/C),’s discretion.

OCCUPATION BY EMPLOYER

The Employer reserves the right to occupy the works by sections as completed, as may be considered by the Dy.Chief Engineer (I/C), both practicable and reasonable and without hindrance to the Contractor’s progress.

TAXES, DUTIES, LEVIES AND DEDUCTION AT SOURCE

- a- The Contractors shall be responsible to pay all statutory levies imposed by the State and Central Government such as Income Tax/ Sales Tax/ Sales Tax on works contract, Value Added Tax (VAT), Service Tax, Excise Duty, Octroi etc. and the rates quoted in the tender shall allow for the same.
- a- Deduction at source of Income/Sales Tax on works contract etc. shall be made by LIC of India as per the provisions prevailing from time to time from the Running Account or Final Bills and remitted to the concerned Taxation Authorities/State Government on behalf of the contractor.

Contractor

Dy.Chief Engineer(I/C)

Tender for Design Supply Installation Testing & Commissioning of 40KWp ON Grid Solar power Plant without battery backup in Jeevan Vikas Building, 16/275 Civil Lines, Kanpur

APPENDIX TO THE CONDITIONS OF CONTRACT

ESTIMATED COST	: Rs.46.20 Lacs
PERIOD FOR COMPLETION	: Four Months
EARNEST MONEY DEPOSIT	: Rs.69300.00 (Rupees Sixty Nine Thousand Three Hundred only). Earnest Money shall be remitted in the form of crossed Demand Draft on any Nationalized /scheduled bank at Kanpur.

Sl. No.	Clause Nos.	Description	Remarks
1.	11	Minimum requirement of Technical staff ;Recovery for Non Employment	a) Engineer Rs. Nil p.m. b) Supervisor Rs. Nil p.m
2.	13	Date of commencement	1. Either 21 (twenty one) days from the date of acceptance letter issued to the contractor OR 2. The day on which contractor is instructed to take possession of the site, whichever is earlier.
3.	13 & 26	Date of completion	04 (Four) months from the date of commencement
4.		Defect Liability Period	05 years from the date of virtual completion of work.
5.	19	Liquidated damages	1% per week of contract sum subject to a maximum of 10%.
6.	21	Period of final measurement	60 (Sixty) days
7.	22	Interim certificate	After delivery of entire material at site.
8.	22	Period of honouring interim certificate(R.A Bills)	20 (Twenty) days
9.	22	Period of honouring final certificate	90 (Ninety) days from the date of submission of final measurements with details
10.	35	Security Deposit and Performance Guarantee:	5% of accepted tender amount (Rounded off to next Hundred Rupees) as Security Deposit only, which can be either in cash option or in the form of bank guarantee. 50% shall be refunded after virtual completion of work and balance 50% after completion of DLP of 5 years.



भारतीय जीवन बीमा निगम
LIFE INSURANCE CORPORATION OF INDIA

Engineering Department, North Central Zonal Office, 16/275 Civil lines, Kanpur-208001

Sl. No.	Clause Nos.	Description	Remarks
11.	35	Recovery of Security Deposit	In case of cash option, EMD shall be retained as part of Security Deposit and balance of Security Deposit shall be recovered from R.A. Bills at 7.5% of Gross amount of bill. (If Security Deposit is paid in the form of Bank Guarantee, no recovery from R.A. Bills shall be made and EMD shall be refunded after acceptance of Bank Guarantee).
12.	17.5	Contractor's All Risk Policy inclusive of Third Party Liability	7.5% of Contract value
13.	17.5	Workman's Compensation Policy	As per mutual agreement (Min. no. of required personal deployed in a day to complete the work in specified time)
14	22.6	No Claim certificate cum receipt	To be given on Contractor's letterhead.
15	10	Recovery of Electricity charges from Contractor's bill	0.25 % of the Gross value of work done
16	11	Recovery of water charges from Contractor's bill	0.25 % of the Gross value of work done
17	17-a	Defects liability period	The mechanical structures, electrical works including power conditioners / inverters / charge controllers / maximum power point tracker units/ distribution boards/ digital meters/ switchgear/ storage batteries etc. and overall workmanship of the SPV power plants/ systems must be warranted against any manufacturing / design / installation defects for a minimum Period of 5 years
18	9.	Payment	a- 40% against supply of Material at site. b- 35 % after completing the installation of Solar Plant. c- 17.5 % after final commissioning plant & after execution of agreement with UPPCL for connecting the above solar power plant ON Grid. Balance 7.5% + 50% of SD (Total 10% as retention money) after expiry of the defects liability period of five (05) years.

NOTE:- The rates quoted should be inclusive of all taxes as applicable i.e. Sales tax / Trade Tax, Labour cess / Octroi, GST, Works Contract Tax, Excise Duty, transportation, loading & unloading etc at site and any such taxes and duties levied by the government/local bodies etc. and shall be F.O.R. at Site. LIC shall not issue any road permit / Form-C or any other form to vendors for procuring the material from any where or for claiming any tax exemption etc. Service tax if applicable shall be paid extra at prevailing rates.

Contractor

Dy.Chief Engineer (I/C)



भारतीय जीवन बीमा निगम
LIFE INSURANCE CORPORATION OF INDIA

Engineering Department, North Central Zonal Office, 16/275 Civil lines, Kanpur-208001

NO CLAIM CERTIFICATE CUM-STAMPED RECEIPT

"Received Rupees _____ (Rupees _____) being
the amount against my/our final bill dated _____ for _____
(Name of Work) in full and final settlement of bill.

I/We have no further claim for any amount on above work.

Contractor

(Signature of Contractor on Revenue stamp)
Rubber stamp/seal of the contractor/company

GENERAL PREAMBLES TO SCHEDULE OF QUANTITIES

These preambles apply to all the sections of the "Schedule of Quantities".

1. RATE TO COVER:

- 1.1 The rates quoted by the Contractor shall be held to include for providing and fixing, all conveyance and delivery, loading & unloading, carrying in, storing, hoisting, all labour, setting, fitting and fixing in position, making straight, cutting, waste, return of packing and all materials and labour and everything else necessary for the proper completion of each item of work to the approval of Corporation's Engineer and for Establishment Charges, overheads and profits. The Contractor shall provide at his expense all labour, materials and things required by the Corporation's Engineer for testing and measuring the work, for weighing, testing the efficiency of any portion of the work, all planking, gangways etc. necessary for affording access to every part of the work except where specifically stated otherwise.
- 1.2 The Contractor should also cover in his rates for the method of work, cost of materials, labour etc., to comply with the "Trade Specifications", General Instructions to Contractor", "Conditions of Contract", "Special Conditions", (if any), and all documents of this contract.
- 1.3 All the materials or procedure or Specifications for work, unless otherwise stated, shall conform to the current Indian Standard whether or not specific mention is made thereof. The Contractor shall be responsible for and shall replace or make good at his own expense, any materials lost or damaged, or of quality not approved, temporarily disturbed roads, pavements, approaches, gates, walls or any such dismantling carried out to execute the work.
- 1.4 All rates quoted shall include for Supplying and fixing although the same may not have been mentioned in the item of the Schedule of Quantities. Words "Providing and Fixing where used shall have same meaning as "Supplying and Fixing".
- 1.5 Rates quoted shall include for hoisting to any height, and the work at all levels and lift of materials shall not form any criterion for any extra claims, except where otherwise specified.

2 PRICE FLUCTUATION / VARIATION:

- 2.1 Rates quoted by the Contractor shall be firm throughout the currency of the Contract including extensions of time, if any granted. No price adjustment due to variation in cost of materials or labour or any variation under any State or Central Legislation or any other reason whatsoever shall be allowed, except as stated in relevant clauses below with regard to variation in price on materials & labour and price fluctuation in Cement & Steel.

3 "PRINCIPAL MAKE/S OR OTHER EQUAL AND APPROVED" FOR MATERIALS /PRODUCTS:

- 3.1 The Contractor shall note that materials having "ISI" monogram shall primarily be used in the work. If in the tender "Certain Principal Make / Makes or other equal and approved of any material / Product is mentioned in any item or Trade Preambles relating to the particular items in its respective Trade Schedule, the Contractor shall have to use the Principal Make/Makes specified in the relevant item or the trade Preambles. In case the specified particular Principal make / makes of the materials product is/are not readily available, the Contractor shall take prior permission and approval of the Chief Engineer in writing before use of the alternative equivalent make of the Material / Product.



भारतीय जीवन बीमा निगम
LIFE INSURANCE CORPORATION OF INDIA

Engineering Department, North Central Zonal Office, 16/275 Civil lines, Kanpur-208001

- 3.2** All principal makes specified for any item shall be treated at par as per the accepted quoted rate.
- 3.3** Use of the make other than the Principal Make/Makes (which shall be treated as an Equivalent make) shall be at the discretion of the Dy. Chief Engineer (I/C) and such Make/Makes shall be used after the approval of the Chief Engineer (I/C).
- 3.4** In such cases the Contractor will not be paid any extra payment over the accepted quoted rate in any case. However if it is ascertained that the price of approved Equivalent Make or the Material/product is lower than that for the Principal Make/Makes of the same material / product the difference of the price shall be payable by the contractor to LIC. Such difference of price shall be suitably decided by the Dy. Chief Engineer (I/C) whose decision shall be final and binding to the Contractor in this regard.

Contractor

Dy. Chief Engineer (I/C)

SPECIAL TERMS & CONDITIONS

1- VALIDITY

The Tender shall be valid for acceptance by the competent authority for a period of **three months** from the date of opening of the price bid.

2- **LAST DATE:-**

The tenders in a sealed cover super scribed "**Tender for Design Supply Installation Testing & Commissioning of 40kWp ON Grid Solar power Plant without battery backup in Zonal Office Kanpur**", shall be submitted at the office of the Dy. Chief Engineer (I/C), L.I.C.I., 1st floor, "Jeevan Vikas", 16/275 Civil lines Kanpur -208001, and put in the tender box kept in the office on or before the specified date and time i.e. **06.11.2015** upto 15:00Hrs.

3- **ACCEPTANCE / REJECTION OF TENDER: -**

Life insurance Corporation of India Reserve the right to reject the lowest or any other Tender without assigning any reason whatsoever.

4- **PRE BID MEETING**

A Pre bid meeting will be held on **30.10.2015 at 11 A.M.**, details of which are mentioned in Tender Notice enclosed with the tender. The Corporation reserves the right to change the technical specifications after the Pre-Bid meeting. Any modification will be published on our website www.licindia.in/tender_notice.htm and will form part of the original tender. A Demonstration may be required to be given by the tenderers who qualify in Technical Bid. The queries related to pre-bid meeting to be submitted by **30.10.2015 upto 11 AM** either in writing or through email at ncz_engg@licindia.com.

5- **CRITERIA OF DISQUALIFICATION**

The Corporation may adopt such criteria for disqualification of a bidder as it may consider appropriate. Such Criteria may include without limitations of the following:-

- Failure of any Bidder (s) to provide all of the information / documents required in the bid proposal or any additional information / documents as sought by the Corporation including supporting documents.
- Non receipt of Bid proposal on or before due date and time.
- Misrepresentation in the Bid proposal
- Non Payment of Tender Fee / Earnest Money Deposit (EMD)
- Incomplete or conditional Bid.
- Use of unfair means /misrepresentation.
- Bid found in unsealed envelop, unsigned bids, bids signed by unauthorized person and any unconfirmed material alteration.
- Technical Bids containing any price information.
- Tender not quoted by MNRE approved forms/Co./ Channel partner/ manufacturer.
- Conditional/Subject to tenders is liable to be rejected.

6- **CROSS CHECKING**

The Corporation shall have the right to contact and verify bidder's information, references and data submitted in the bid proposal without further reference to the bidder.

7- FORFEITURE OF EMD

- a) Earnest Money Deposit (E.M.D) will be forfeited in case the tenderer refuses to execute the order, either in full or part, if placed at their quoted/agreed rates. In that event LIC may decide to debar/blacklist the concerned Supplier and the decisions will be final and binding on all concerned.
- b) Once the tender is submitted, no tenderer will be allowed to withdraw the tender. Even if, any tenderer withdraws the tender, E.M.D. of that tenderer will be forfeited in full.
- c) Any error on the part of the tenderer while quoting the rates will not be accepted as an excuse for refusal to execute the order for any or all items, if order is placed on the basis of the quoted rates. For refusal of the order, the E.M.D. of the tenderer will be forfeited in full.

8- NO PRICE VARIATIONS

The Financial Bid shall be on a fixed price basis. **No upward revision in the price will be considered on account of subsequent increase in foreign exchange, customs duty, excise tax, sales tax, etc.** However, if there is any reduction in government levies/taxes, during the offer validity period, the same shall be passed on to the Corporation

9- TERMS OF PAYMENT

- (a) **40%** payment of the total order value will be released against the supply of complete material of Solar system at site.
- (b) **35%** payment of the total order value will be released after completing installation of Solar system on mounting structure at site.
- (c) **17.5 %** payment of the total order value will be released after final commissioning plant & after execution of agreement with UPPCL for connecting the above solar power plant ON Grid
- (d) Balance 7.5% + 50% of SD (Total 10%) will be retained with us as retention money till the completion of DLP of 5 Years. After completion of DLP the above solar system will come in CAMC. Retention money will be released to the contractor after the Security deposit (Cash / BG) for CAMC have been deposited. Alternatively this retention money will be converted into the SD for CAMC.
- (e) Security deposit shall carry no interest

10- ELECTRICITY :

If surplus electricity is available same may be made available for which electricity charges will be deducted @ 0.25 % of the gross value of work done from the bill.

11-Water:

If surplus water is available same may be made available for which water charges will be deducted @ 0.25 % of the gross value of work done from the bill.

12- TAXES, OCTROI & OTHER DUTIES

The rates quoted shall be F.O.R. destination and deemed to be inclusive of all taxes including sale tax on work contract & duties nothing on this account will be paid for. Service Tax if applicable shall be paid extra on prevailing rate on production of proof.

13- Risk Cover

The contractor shall be responsible for all injuries/ damages to men, material and properties etc which may arise from the operations or negligence of him and or his subcontractor's to LIC.

14- TRAINING OF STAFF

During the erection & testing, the successful tenderer will have to train personnel of LIC regarding operation of the system. Operating and maintenance instruction shall be supplied at the time of delivery of equipment at the site without any extra charges. Required parts will be replaced free of cost

15- DESIGN, SUPPLY, INSTALLATION, COMMISSIONING & TESTING

- a) The above solar plant shall be designed by the contractor and detailed design, drawings lay out plans, Single line diagram shall be prepared by the contractor and got approved from us without any extra cost.
- b) An energy meter shall be installed in between the solar grid inverter and the building distribution board to measure gross solar AC energy.
- c) For the purpose of net-metering a bidirectional (import kWh and export kWh) service connection meter (the "Solar Service Connection Meter") shall be installed and contractor will do follow up with KESCO for the same will arrange to install the meter. Any fee required to be deposited shall be reimbursed to the contractor on production of receipt.
- d) Tenderer must arrange to obtain Entry Permits, Road Permits and Certificates that might be required, from all concerned local / other authorities for final delivery and should not look to Corporation to obtain such entry permits. Delay arising in the final delivery because of delay in obtaining such permits and certificates for whatsoever reasons will also attract penalty as defined under Liquidated Damages of the tender. Custom duty, if imported has to be borne by the tenderer himself. Further charges that may become payable towards demurrage or similar expenses will be borne by the tenderer or will be deducted from the bill.
- e) The Successful bidder shall comply with all Local, State & Central Govt Rules, Regulations, Ordinances, Codes & Law relating to the work or the conduct thereof.
- f) The Corporation reserves the right to add / delete any point not exclusively mentioned in the bid document but found necessary for incorporation at any time during the period of technical discussion before placement of order. The same shall be considered a part of tender and shall be mandatory and binding on the Vendor.

16- SERVICES TO BE PROVIDED BY LIC

Unless otherwise agreed by LIC, only the following services shall be provided in connection with this work:

Enclosed indoor space for locating PC, control, monitoring, data loggers etc. and PCU (if required)

Single point water source for cleaning of SPV panels near to the solar plant. Further plumbing for distribution of water to various array locations to be provided by the contractor.

Provision of necessary switchgear in the LT distribution panel with IP 65 protection like 4 pole MCCB, Surge protections with MCB etc for connecting the solar energy based AC power to LIC Power grid. However, the termination of cable to the switchgear shall be in the scope of the successful tenderer.

17- INSPECTION/TEST OF EQUIPMENTS/SYSTEM

- a- The Pre-delivery & Post-delivery inspections may be carried out by the officials authorized by the LIC.
- b- The Inspection may be carried out at factory, destination or a place specified by LIC on getting inspection call from the tenderer.
- c- The tenderer shall not be paid for supplies rejected.
- d- Tenderer shall neither claim nor be entitled to payment for any damage that rejected supplies may suffer from any harm whatsoever incidental to a full & proper examination & test of such supplies.
- e- LIC shall not be under any liability what so ever for rejected items & the same will be at the tenderer's risk.
- f- Rejected Supplies shall be removed by the tenderer at his own expenses within 10 days after notice has been issued to him of such rejection.

18- AUTHORISED TESTING LABORATORIES / CENTERS

The PV modules must be tested and approved by one of the IEC authorized test centres. Test certificates can be from any of the NABL / BIS Accredited Testing / Calibration Laboratories.

Test certificates for the BoS items / components can be from any of the NABL / BIS Accredited Testing Calibration Laboratories / MNRE approved test centres.

- 19-** Each PV module used in any solar power project must use a RF identification tag (RFID), which must contain the following information. The RFID shall mandatorily be placed inside the module Laminate, but must be able to withstand harsh environmental conditions.

- i) Name of the manufacturer of PV Module
- ii) Name of the Manufacturer of Solar cells of PV Module
- iii) Month and year of the manufacture (separately for solar cells and module).
- iv) Country of origin (separately for solar cells and module)
- v) I-V curve for the module
- vi) Peak Wattage, I_m , V_m and FF for the module
- vii) Unique Serial No. and Model No. of the module
- viii) Date and year of obtaining IEC PV module qualification certificate
- ix) Name of the test lab issuing IEC certificate
- x) Other relevant information on traceability of solar cells and module as per ISO 9000 series.

20- ACTIONS TO BE TAKEN BY THE SUCCESSFUL TENDERER AFTER AWARD OF WORK

Considering that time is the essence of the contract, the successful tenderer shall take the following actions immediately -

- i. He shall contact the LIC's Engineer of the work immediately after award of work and submit a non-judicial stamp paper of worth INR 100.00 (Rupees One Hundred only) for preparation of the agreement. Insurance policies also should be taken in the joint name of vendor and LIC.

- ii- The agreement shall be signed by the authorized signatory of the contractor immediately on receipt of intimation from LIC's Engineer that agreement is ready. All the required submittals must be completed within 15 days from the date of issue of detailed order.
- iii- A programme chart shall be prepared for execution of the work & the same shall be finalized in consultation with the LIC's Engineer. The work-schedule chart/ bar-chart indicating the time schedule for commencement of various activities of work like inspection & delivery of materials, commencement of work, completion of work etc. required for the execution & timely completion of work shall be submitted by the tenderer to the LIC's Engineer for approval within 7 (Seven) days of the date of award of work.
- iv- All activities for execution of work shall strictly follow the programme chart so finalized unless advised otherwise by the LIC's Engineer in writing. It shall be the responsibility of the contractor to adhere to this work-schedule and complete the work in the specified time. Any deviation from this schedule, for any reason, shall be brought to the notice of the LIC's Engineer immediately to enable him to take necessary corrective action(s). Failure to submit the work schedule chart within the specified time or meeting the various committed deadlines shall be treated as delay on the part of the tenderer.
- v- Drawings indicating the design of Solar Power Generation System and distribution proposed along with designs for structures / foundations for SPV array duly certified / vetted by a recognized Govt. Engg. College etc. shall be submitted to the LIC's Engineer, for approval, within thirty (30) days of the receipt of detailed order. The drawings shall indicate all relevant details about the component/equipment etc. The contractor shall submit all equipment information, which should include but not limited to the following and obtain approval:
 - a. General arrangement and dimensional layout.
 - b. Schematic Drawing showing the requirement of SPV Plant, Power conditioning Unit(s), Circuit breakers, Junction Boxes, AC and DC Distribution Boards, meters etc.
 - c. Structural drawing along with foundation details for the structure.
 - d. Itemised bill of material for complete SPV plant covering all the components and associated accessories.
- vi- Delivery of equipment is to be made to the site in accordance with the programme finalized in consultation with LIC's Engineer. The equipment shall be delivered only after pre-delivery inspection has been carried out by LIC's authorized representative. Pre-delivery inspection of equipment shall be carried at the factory premises of principals.
- vii- The Contractor shall at all times, during the period of execution of works keep in mind the specified completion time and other terms & conditions of contract as specified in the tender document which is, and shall remain the essence of the contract. On completion of the installation, the tenderer shall conduct a system acceptance test. The tenderer shall propose a detail system acceptance test plan, which shall be jointly reviewed by LIC and the tenderer.

viii- TESTING OF EQUIPMENTS

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

ix- TESTING OF INSTALLATION AFTER COMPLETION

- a. All units shall on their completion and before being placed in service, be subjected to a performance test followed by an acceptance inspection and tests to determine that all parts of the installation confirm to the requirement and that all equipments function as required and the work has been carried out as specified.
- b. Tests and inspections shall be made by the contractor in the presence of the LIC's Engineer. Contractor shall notify the LIC's Engineer in writing at least 10 days before the date of testing in order to facilitate arrangements for LIC's Engineer to be present.
- c. The contractor shall submit proposed testing procedure to the LIC Engineer not later than (one) 1 month before the date of testing.
- d. All test instruments and personnel to carry out the testing and commissioning shall be provided by the contractor. Adequate supervision of the tests shall also be maintained.
- e. Corrective measures, if necessary, shall be carried out at no cost to LIC.
- f. Performance Test.

After installation of the complete system, its operating capability shall be demonstrated. The contractor shall provide personnel, tools, etc. for testing. The performance test shall be conducted in the presence of LIC's Engineer or his authorized representative for a minimum of (10) ten hours for ten working days as per the following: -

Performance test parameter.

Measurement of peak DC & AC power generated shall be taken every day for 10 working days at available load condition. Any system not operating within five (5) per cent of the accepted design parameters shall be reworked to bring it to proper performance level.

Auto operation of the complete system Correction of unsatisfactory operation during test period if any deficiencies or variations in the design, fabrication or operation causing unsatisfactory performance is noticed then same shall be corrected to provide satisfactory performance. Manufacturer/Contractor shall have appropriate service personnel at site during the test period to service or adjust the systems equipments as required.

Acceptance after completion of the system performance tests a joint acceptance inspection shall be carried out by LIC's Engineer and the representative of the contractor. The purpose of this inspection shall be to determine that the system has been furnished and installed as specified. If the system is not acceptable for reasons of noncompliance to the drawings and specifications, the contractor shall make

immediate corrections within the construction schedule. A final acceptance inspection shall be done to determine all corrections have been made. Even though the equipment shall be inspected and accepted, the acceptance date shall not occur before all contractual obligations are completed including delivery of all “as built” drawings, maintenance, and operation & spare parts manuals etc

x- MISCELLANEOUS -

I- The parameter indicated in the Technical specification such as efficiency, power factor, Harmonic distortion, etc. are the minimum / maximum (as applicable) value acceptable to LIC.

II- The all components of Solar Power plant should be brand new.

21- PROJECT COST

The Project cost shall include all the costs related to above Scope of Work. Bidder shall quote for the entire facilities on a “single responsibility” basis such that the total Bid Price covers all the obligations mentioned in the tender Document in respect of Design, Supply, Erection, Testing and Commissioning including Warranty, Operation & Maintenance for a period of 5 years, goods and services including spares required if any during O&M period. The Bidder has to take all permits, approvals and licenses, Insurance etc., provide training and such other items and services required to complete the scope of work mentioned above.

The project cost shall remain firm and fixed and shall be binding on the Successful Bidder till completion of work. No escalation will be granted on any reason whatsoever. The bidder shall not be entitled to claim any additional charges, even though it may be necessary to extend the completion period for any reasons whatsoever.

The cost shall be inclusive of all duties and taxes, insurance etc. The prices quoted by the firm shall be complete in all respect and no price variation / adjustment shall be payable.

HOWEVER THE QUOTED AMOUNT IS EXCLUSIVE OF SERVICE TAX. As per service tax rules, under partial service charge mechanism will be reimbursed on submission of proof of payment to the authorities for the subject work.

22- PLANT PERFORMANCE EVALUATION:

The performance of the SPV Power Plants without battery back up is as under

The successful bidder shall be required to meet minimum guaranteed generation with Performance Ratio (PR) at the time of commissioning and related Capacity Utilization Factor (CUF) as per the DNI levels of the location during the O&M period. PR should be shown minimum of 75% at the time of inspection for initial commissioning. Minimum CUF of 15% should be maintained for a period of 5 years for release of performance guarantee.

The bidder should send the periodic plant output details to LIC for ensuring the CUF. The PR will be measured at Inverter output level during peak radiation conditions.

23- SYSTEM DESCRIPTION

The Photovoltaic (PV) ON-Grid system consists mainly of 3 components:

The PV array, Module Mounting Structure and the Power conditioning Unit (PCU). The PV array converts the light energy in to sunlight to direct current (DC) power. The Module mounting structure is used to hold the module in position. The DC power is converted to alternating current (AC) power by the PCU and utilized for requirement within the Building .

The multi crystalline solar modules used shall be grouped in an optimum number of strings with module-to module cable connections. The modules shall be held fixed on structures made of galvanized steel structures. Depending on the site location the modules shall be inclined at optimum horizontal tilt angle and direction to get maximum efficiency.

The DC output from the modules shall be fed to Array junction box and the strings are to be paralleled at Sub Main & Main Junction Boxes. The output of the main junction box shall be fed to DC distribution board (DCDB). The DC power output from the DCDB is fed to the Power Conditioning Unit (PCU). The Power-conditioning unit shall be installed in a control room converts DC energy produced by the solar array to AC energy. The AC power output of the inverter shall be fed to the AC Distribution Board (metering panel & isolation panel) which also houses energy meter. The 415V AC output of the isolation panel is fed to the local bus bar.

24- DOCUMENTATION

Two sets of installation manual / user manual shall be supplied along with the power plant. The manual shall include complete system details such as array lay out, schematic of the system, inverter details, working principle etc. Step by step maintenance and trouble shooting procedures shall be given in the manuals.

25- ACCEPTANCE TESTING

The Acceptance Testing of various components of the system and the Integrated system to be offered by the bidder shall be done at the factory of the successful bidder as per the relevant codes and standards. The successful bidder will submit detailed Test Certificates and Report for each equipment and the system.

26- Net-metering :

In Net-metering the solar energy exported to the grid is deducted from the energy imported from the grid subject to certain conditions. LIC pays for the net-energy imported from the grid. To enable net-metering Local electricity board approval, if required, shall be taken by replacing existing service connection meter with a bidirectional meter that displays the import and export energy separately. The Net-meter shall be provided in consultation with the local electricity board. Necessary test certificates or tests to be carried out as per the requirement of the local electricity board.

27- DATA MONITORING:

The plant parameters shall be measured by using SCADA system to maintain the plant and to study the plant performance. The plant monitoring shall also have,

- **PV array energy production:** Digital Energy Meters to log the actual value of AC/ DC Voltage, Current & Energy generated by the PV system shall have to be provided.
- **Solar Irradiance:** An integrating Pyranometer (Class II or better) shall be provided, with the sensor mounted in the plane of the array. Readout shall be integrated with data logging, system.
- Solar PV Modules Mounting Structure should withstand Wind velocity of 150 Km/hr.
- **Temperature:** Temperature probes for recording the Solar panel temperature and ambient temperature shall be provided.

A data logging system for plant control and monitoring shall be provided

28. Grid Islanding:

PV system software and control system shall be equipped with islanding protection. In addition to disconnection from the grid (islanding protection i.e. on no supply) , under and over voltage conditions shall also be provided. PV systems shall be provided with adequate rating fuses, fuses on inverter input side (DC) as well as output side (AC) for overload and short circuit protection and disconnecting switches to isolate the DC and AC system for maintenances as needed. Fuses of adequate rating shall also be provided in each solar array module to protect them against short circuit.

A manual disconnect 4 pole isolation switch beside automatic disconnection to grid would have to be provided at utility end to isolate the grid connection by the utility personal to carry out any maintenance. This switch shall be locked by the utility personal.

29. WARRANTY & COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT (CAMC FOR PERIOD FIVE YEARS AFTER THE EXPIRY OF WARRANTY OF 5 YEARS)

- a- Solar System supplied and installed will stand for minimum five (05) years on site all comprehensive warranty against all manufacturing defects including **replacement of Solar panels**.

The contractor shall be responsible for any defects in manufacturing , installation and performance and rectify the same at their cost to the entire satisfaction of LIC for a minimum period of Five (05) year from the date of commissioning and handing over of the system in satisfactory working condition. During guarantee period all the parts will be replaced free of cost as and when required.

During the guarantee period of **entire system /equipment** shall be checked periodically at least once in three month for satisfactory functioning of the equipments /system. Necessary servicing including repair/ replacement of defectives parts/ equipment **including mentioning all the technical parameters ensuring its proper functioning in the PM reports**, the cleaning of Solar panels minimum once in a three months shall be carried out free of cost to LIC. If contractor fails to provide free quarterly services in any quarter during DLP, 0.5 % of the total cost of the solar power plant will be charged every quarter & will be deducted from the pending dues payable to the contractor /SD.

Any break down during this period shall also be attended to by the contractor free of cost to LIC. If break down period is more than 48 hours contractor will provide stand by free of cost. Required parts will be replaced free of cost.

- b- The tenderers are advised to quote for comprehensive Maintenance Contract in the price schedule.
- c- Tenderer has to provide comprehensive AMC for minimum five years after the expiry of warranty period.
- d- **Comprehensive Annual Maintenance Contract Charges : AMC Charges should be minimum 2 % of the total price quoted for solar power plant. AMC charges will be considered for 5 years post warranty period of 5 year.**

Contractor

Dy.Chief Engineer(I/C)

**TERMS & CONDITIONS OF CONTRACT FOR COMPREHENSIVE ANNUAL MAINTENANCE
CONTRACT (CAMC) OF 40KWp SOLAR POWER PLANT**

1. GENERAL:

- 1.1. After completion of warranty of 5 years Solar Power Plant will automatically come under the AMC Contract. The Solar Plant will be serviced 4 times **(Quarterly basis)** in every year. One of these services will be rendered immediately after completion of warranty / DLP. From then the servicing is to be carried out once in three months i.e. on Quarterly basis. Security Deposit for CAMC Shall be Rs.115500.00 (Rs. one Lacs fifteen thousand five hundred only).
- 1.2. In addition to above Scheduled services, any nos. of breakdown complaints/ shutdown calls to be immediately attended to and rectified the fault condition within 24 hours during AMC period.
- 1.3. **In case complaint has been attended by the service engineer within 24 hrs. but the system is not made in working order within 48 hours, from the time of reporting the fault to the contractor , deduction (as penalty) as given below shall be made:**
 - a- Rs. 1000.00 (Rs. One Thousand only) per day up to 3 days from the date when the b/d have been reported.
 - b- Rs. 1500.00 (Rs. One Thousand five hundred only) per day beyond 3 days from the date when the b/d have been reported.
 - c- The maximum recovery shall not exceed to CAMC charges per Quarter per unit against each quarterly bills. **However if the vendor fails to repair maintain the system for more than 6 days LIC reserve the rights to get the faulty system rectified/replaced at their risk and cost of the contractor and entire expenditure shall be debited to CAMC bills or Security – deposit lying with LIC**
- 1.4. In case of Partial / Full damage or loss of the equipment due to reasons beyond the control of LIC, like Theft, Fire etc, the tenderer should be in a position to supply working standby equipment with same configuration or higher with all services restored, as if it is a normal breakdown.
- 1.5. **Contractor shall maintain logbook in support to checking, inspecting and taking preventive/remedial action for smooth operation and maintenance of the system. This shall be made available for inspection and verification as and when required.**
- 1.6. **Penalty @ 0.5 % of the total cost of the Solar power Plant or 50% of the quarterly AMC charges whichever is higher (not exceeding to CAMC charges per Quarter) will be charged every quarter, if the Preventive Maintenance is not done by tenderer. However, if the failure to carry out the Preventive Maintenance was because LIC could not make the systems available, this penalty will be waived. A certificate to this effect should be obtained from the Corporation's authorized Officials.**
- 1.7. No advance payment will be made for CAMC. The AMC charges will be paid at the end of every quarter after the expiry of the warranty period **on submission of a satisfactory PM service report / breakdown service report indicating that the Solar power Plant is in working condition duly signed by the location in charge /authorized official. CAMC rates are inclusive of all Taxes except** Service tax, which will be reimbursed on submission of documentary evidence
- 1.8.** At the expiry of the contract, the outgoing contractor shall have to make out the system in normal working conditions. Payment for the last quarter shall be released only after restoring the system to

its normal working condition and /or after recovering any dues payable to contractor who executes the work at the risk & cost of the original contractor. The parts and components etc. which are replaced during the contract shall be of good quality and of reputed make to the satisfaction of the deptt.

- 1.9.** Unless otherwise specifically agreed to, the contract service shall be available during normal working hours and days i.e., Monday to Friday from 9 AM to 5PM and on Saturdays 9 AM to 2 pm. The service provider should be prepared to provide services beyond above timings as per mutual understanding.

2. SCOPE OF WORK:

- 2.1. The AMC will be of all inclusive i.e comprehensive type and including conveyance and regular maintenance / cleaning of Solar panels/ repairing / replacement of defective electrical & electronics components provided in above solar system/ replacement of Solar Panels and mounting structure, wires & cable etc.. The AMC charges to be quoted accordingly. No extra will be payable other than the AMC charges.
- 2.2. The replacement of all parts if any, should be original, genuine make and old replaced should be shown or handed over to our Office.
- 2.3. Whenever any equipment is taken out of an LIC premises for repair the same equipment has to be returned after repair unless it is declared to be irreparably damaged. When any equipment / component is taken out of LIC Office for repair, such shifting should be done with our prior permission, and the tenderer shall make all arrangements for removal of the equipment, its transportation to the workshop and back to LIC's site and its reinstallation. Transit Insurance of such equipment also has to be arranged by the Tenderer and all expenses for the above shall be borne by the tenderer. The Tenderer shall hand over the systems in 100% working condition after repair/maintenance/rectification. Thereafter, the Tenderer shall reinstall the same equipment / component after repair unless it is declared to be irreparable.
- 2.4. In the event of replacement of any part of the system, it should be done with a part of equivalent or higher configuration which is compatible with the system.

3. OTHER TERMS AND CONDITIONS FOR CAMC:

- 3.1. The quoted AMC charges should be inclusive of all taxes except service tax. **Service tax will be reimbursed at actual on submission of documentary proof.** All statutory deductions will be made from your bills.
- 3.2. The Vendor / Service - provider should submit Service report for regular and complaint calls duly attended & acknowledged by the concern official. Original copy of Service / PM – Reports should be enclosed along with periodic bills as a proof of attending services failing which payment will not be considered.
- 3.3. Any injury to your servicemen while attending the servicing / breakdown calls will be the sole responsibility of service provider. No any compensation whatsoever would be given by L.I.C.I..
- 3.4. The service provider/vendor should be in a position to provided stand by unit in lieu of faulty unit which is necessary to take out the unit at workshop for repair.



Engineering Department, North Central Zonal Office, 16/275 Civil lines, Kanpur-208001

- 3.5. Payment will be made after completion of quarterly servicing for which the agency should submit invoice along with service reports for the services carried out during the quarterly period. The proportionate amount will be deducted if complete services are not provided.
- 3.6. No deviation to LIC conditions of contract is acceptable and if any such deviations observed, the tender is liable to be rejected.**
- 3.7. Log-sheets are to be maintained for each individual unit separately and copy of the log book of respective quarter shall be attached to the quarterly bills.
- 3.8. The manufacturer are requested to note that in the event of this enquiry being forwarded by you, any of your authorized servicing center, if those dealers/agency's performance is not found to the satisfaction of the LIC, it shall be responsibility of the said firm to rectify the defects / liabilities.
- 3.9. In the event of services being not satisfied during the C.A.M.C. period, LIC of India reserves the rights to terminate the contract by giving 30 days notice.

Signature of Contractor
With seal, address

Date:

Place:

Dy. Chief Engineer(I/C)

TECHNICAL SPECIFICATIONS

1. SOLAR PV MODULES AND ARRAY

- i. Only indigenous modules shall be used in the project. Solar module shall be Crystalline (Mono/Poly) PV modules type. The peak power output of the PV Module shall be min 250 Wp under STC. Module Voc shall be minimum 21V. The total array capacity shall not be less than 40 KWp and this shall be operating at the DC voltage of 150V -800V (to be selected based on the design of the plant). The power output of the PV module must be reported under standard test conditions (STC). I-V curve of the sample module should be submitted.
- ii. The mechanical structure shall withstand gusts of wind / cyclonic wind up to 150km/hr from back side of the panel.
- iii. The offered modules must conform to the latest edition of any of the following IEC/ equivalent BIS standard for PV Module design qualification and type approval:

Crystalline Silicon Terrestrial PV Modules : IEC 61215/IS14286
- iv. In addition, the modules must conform to IEC 61730 1- requirements for construction & Part 2 – requirements for testing, for safety qualification or Equivalent IS (Under Dev.)
- v. PV modules must also qualify Salt Mist Corrosion Testing as per IEC 61701/IS61701.
- vi. SPV modules shall be certified by NABL/IECQ accredited test centre. The bidder shall submit appropriate certificates.
- vii. Protective devices against surges at the PV module shall be provided. Low voltage drop bypass diodes shall be provided.
- viii. Module Junction box (weather proof), where the module terminals shall be interconnected and output taken, shall be designed for long life out door operation in harsh environment as per the relevant BIS specifications and protected against surges. It should have a provision for “Opening” for replacing the cable, if required.

- ix. PV modules used in solar power plants must be warranted for output wattage, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.

1.1 ORIENTATION AND TILT OF PV MODULES

Modules shall be North –South oriented at the Tilt Angle of 20° or as per site requirement.

2. MOUNTING STRUCTURES

The PV modules will be mounted on fixed metallic structures of adequate strength and appropriate design, which can withstand load of modules and high wind velocities up to 150 km per hour. The support structure used in the power plants will be hot dip Galvanized Iron (G.I). The “Mounting Structure” should have the following features:

- a. The modules support structure shall be Mild Steel /hot dipped Galvanized (at least 120 micron) Iron for holding the PV modules. The size of angle iron should not be less than 50x50x5 mm.
- b. Each panel frame structure shall be so fabricated as to be grouted on roof on its legs. The legs of the structure shall be fixed and grouted in the PCC foundation column made with 1:2:4 cement concrete. The foundation shall support SPV modules at a given orientation, absorb and transfer the mechanical loads to the ground properly and shall Withstand maximum wind speed of 150 km/hr.
- c. All nuts and bolts should be made of good quality Stainless Steel.
- d. The structure should be designed to allow easy replacement of any module.
- e. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels.
- f. The minimum clearance of the lowest part of the module structure and the developed ground level shall not be less than 500 mm.
- g. The minimum clearance required from the parapet wall of the roof & in between row of panels is min 2 feet for cleaning the panels & servicing.
- h. The bidder shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings. The work shall be carried out as per the designs approved by the procuring entity.



भारतीय जीवन बीमा निगम
LIFE INSURANCE CORPORATION OF INDIA

Engineering Department, North Central Zonal Office, 16/275 Civil lines, Kanpur-208001

3.0 JUNCTION BOXES

The junction boxes shall be dust proof, vermin and waterproof and made of FRP / Thermo Plastic. The terminals shall be connected to copper bus bar arrangement of proper sizes. The junction boxes shall have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and outgoing cables. Suitable markings shall be provided on the bus bar for easy identification and cable ferrules shall be fitted at the cable termination points for identification. Each main junction box shall be fitted with appropriate rating blocking diode. The junction boxes shall be of reputed make.

4.0 POWER CONDITIONING UNIT (PCU)

As SPV array produce direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage levels to match the grid voltage. 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 (PCU)". In addition, the PCU shall also house MPPT (Maximum Power Point Tracker), an interface between Solar PV array & the Inverter, to maximize Solar PV array energy input into the System. PCU including MPPT & protection conform to IEC 61683/IS 61683, IEC 60068-2(1,2,14,30)/Equivalent BIS Std.,

5.0 DC & AC Switches

a. DC SIDE

- (i) MCB of suitable rating shall be provided for connection and disconnection of array & PCU for maintenance purpose.
- (ii) Switches and Circuit Breakers on DC side shall be DC rated or they shall be sufficiently de-rated, if AC rated switches are used.

- b. AC SIDE MCB of suitable rating shall be provided for connection and disconnection of PCU & load

6. Cables and accessories

- 6.1 All the cables shall be supplied conforming to IEC 60227/IS 694 & IEC 60502 / IS1554 shall be of 1.1 kV grade as per requirement. Only PVC copper cables shall be used. The size of the cables between array interconnections, array to junction boxes, junction box to PCU, PCU to AC Distribution Box etc shall be so selected to keep the voltage drop and losses to

the minimum. Permissible Wire Drop on DC side shall be $\leq 1\%$ The bidder shall supply installation accessories, which are required to install and successfully commission the power plant.

- 6.2 For the DC cabling, XLPE or XLPO insulated and sheathed, UV stabilized single core flexible copper cables shall be used. Multi-core cables shall not be used.
- 6.3 For the AC cabling, PVC or XLPE insulated and PVC sheathed single or multi-core flexible copper cables shall be used. Outdoor AC cables shall have a UV-stabilized outer sheath.
- 6.4 The DC cables from the SPV module array shall run through a UV- stabilized PVC conduit pipe of adequate diameter with a minimum wall thickness of 1.5mm.
- 6.5 Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers.
- 6.6 All cables and conduit pipes shall be clamped to the rooftop, walls and ceilings with thermo-plastic clamps at intervals not exceeding 50cm. The minimum DC cable size shall be 4.0 sq. mm copper. The minimum AC cable Size shall be 4.0sq. mm copper. In three phase systems, the size of Neutral wire size shall be equal to the size of the phase wires. The following colour coding shall be used for cable wires:
 - DC positive: red (the outer PVC sheath can be black with a redline marking)
 - DC negative: black
 - AC three phase: Phases: red, yellow, blue; neutral:black
 - Earth wires: green

7. Earthing and Lightning Protection:

- 7.1 Earthing: The array structure of the PV yard shall be grounded properly using adequate number of earthing kits. All metal casing or shielding of the power plants shall be thoroughly grounded to ensure safety of the solar power plants. The PV module structure components shall be electrically Interconnected and shall be grounded.
- 7.2 Earthing shall be done in accordance with IS 3043-1986, provided that earthing conductors shall have a minimum size of 6.0mm² copper, 10 sq.mm aluminium or 70 sq.mm hot dip galvanised steel. Unprotected aluminium or copper-clad aluminium conductors shall not be used for final under ground connections to earth electrodes.

- 7.3 A minimum of two separate dedicated and interconnected earth electrodes must be used for the earthing of the solar PV system support structure with a total earth resistance not exceeding 50hm.
- 7.4 The earth electrodes shall have a precast concrete enclosure with a removable lid for inspection and maintenance. The entire earthing system shall comprise non-corrosive components.
8. **Lightning:** The SPV power plants shall be provided with lightning & over voltage 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.
- 8.1 Surge protection shall be provided on the DC side and the AC side of the solar system.
- 8.2 The DC surge protection devices (SPDs) shall be installed in the DC distribution box adjacent to the solar grid inverter.
- 8.3 The AC SPDs shall be installed in the AC distribution box adjacent to the solar grid inverter.
- 8.4 The SPDs earthing terminal shall be connected to earth through the above mentioned dedicated earthing system. The SPDs shall be of type2.
9. **Junction Boxes**
- 9.1 Junction boxes and solar panel terminal boxes shall be of the thermo plastic type with IP 54 protection for indoor use.
- 9.2 Cable terminations shall be taken through thermo-plastic cable glands. Cable ferrules shall be fitted at the cable termination points for identification.
- 10.0 **Caution Signs**
- In addition to the standard caution and danger boards or labels as per Indian Electricity Rules, the AC distribution box near the solar grid inverter, the building distribution board to which the AC output of the solar PV system is connected and the Solar Generation Meter shall be provided with anon-corrosive caution label with the following text:

WARNING – DUALPOWER SOURCE EB & SOLAR
--

11.0 **Metering**

- 11.1 An energy meter shall be installed in between the solar grid inverter and the building distribution board to measure gross solar AC energy
- 11.2 The existing service connection meter needs to be replaced with a bi-directional (import kWh and export kWh) service connection meter(the “Solar Service Connection Meter”) for the purpose of net-metering.
- 11.3 The Solar Generation Meter must be provided to avail of a generation-based incentive (GBI).

12.0 **Documentation**

- 12.1 The Installer shall supply the following documentation:
 - a) System description with working principles.
 - b) System single line diagram.
 - c) Solar PV array lay-out.
 - d) Routing diagram of cables and wires.
 - e) Data sheets and user manuals of the solar PV panels and the solar grid inverter.
 - f) A system operation and maintenance manual.
 - g) Name, address, mobile number and email address of the service centre to be contacted in case of failure or complaint.
 - h) Warranty cards.
 - i) Maintenance register.

13.0 **Connections to the Building Electrical System**

- 13.1 The AC output of the solar grid inverter shall be connected to the building's electrical system after the LIC service connection meter and main switch on the load side. The solar grid inverter out put shall be connected to a dedicated module in the Main Distribution Board(MDB)of the building floor.
- 13.2 For buildings or loads with diesel generator back up, the wiring of the solar grid inverter shall be such that the solar grid inverter cannot run in parallel with the diesel generator. This implies that the solar grid inverter must be connected to a distribution board on the grid side of the automatic or manual change-over.

14.0 **Cables**

- 14.1 All the cables shall be supplied conforming to IEC 60227/IS 694 & IEC 60502/IS 1554 shall be of 1.1 kV grade as per requirement. Only PVC copper cables shall be used.

- 14.2 The size of the cables between array interconnections, array to junction boxes, junction box to PCU, PCU to AC Distribution Box etc shall be so selected to keep the voltage drop and losses to the minimum. Permissible Wire Drop on DC side shall be $\leq 1\%$
- 14.3 The bidder shall supply installation accessories, which are required to install and successfully commission the power plant.
15. OPERATION AND MAINTENANCE MANUAL
- An Operation and Maintenance Manual, in English and Hindi, should be provided with the solar PV power plants. The following minimum details must be provided in the Manual:
- (a) About Photo Voltaic & PV Module
 - (b) Clear instructions about mounting of PV module.
 - (c) About electronics used in
 - (d) DO's and DONT's,
 - (e) Clear instructions on regular maintenance and Trouble Shooting of the power plants.
 - (f) Name & address of the person or Centre to be contacted in case of failure or complaint.

Contractor

Dy. Chief Engineer (I/C)

Detailed Specifications

1.	Nominal DC Array Input Voltage	40 Kva
2.	DC Array Input Operating Voltage	-20% to +15% of the DC Array input voltage in Sl.No. 1 above
3.	Type of Solar Charge Controller	MPPT Based Solar Charge Controller
4.	Switching device	MOSFET/IGBT based
5.	Continuous inverter Output Rating	Equal to capacity of PV plant (kva)
6.	Output Wave Form	Pure Sine Wave Output
7.	Total Harmonic Distortion	< 3% with resistive load
8.	Output Voltage	230 $\pm$ 3 % in case of 1phase PCU 400 $\pm$ 3 % in case of 3 phase PCU
9.	Output Frequency	50 Hz. $\pm$ 0.5 Hz.
10.	Power Factor	> 0.9
11.	PCU efficiency	> 90% at nominal voltage & power
12.	Idle Current	< 4% of rated capacity
13.	Regulation	Line regulation & Load regulation – 2 %
14.	Overload Features	150% for 1 minute
15.	Cooling	Forced Air cooling, with temperature controlled cooling fan
16.	Operating temperature	0 – 50°C
17.	Relative Humidity	0 – 95% Rh
18.	LED/LCD Display :Indications	Display shall indicate system functional parameters and protection functional indicator - Output power (W), cumulative energy (Wh), DC voltage (V), DC current (A), AC voltage (V), AC frequency (Hz), AC current (A), cumulative hours of Operation (h).
19.	Data monitor and display controls	RS485, Ethernet OR RS232 connectivity



भारतीय जीवन बीमा निगम
LIFE INSURANCE CORPORATION OF INDIA

Engineering Department, North Central Zonal Office, 16/275 Civil lines, Kanpur-208001

20.	Protections	1) Input over voltage 2) Low/high frequency 3) Short circuit 4) Under/over output voltage 5) Over Temperature voltage / over voltage with auto recovery. 6) Grid Input under 7) DC disconnect 8) DC reverse polarity device 9) Anti Islanding Protection as per the standard.
21.	Enclosure Protection	IP 21(for indoor) as per IEC 529
22.	Safety	1. IEC 62103 2. IEC 62109 Part 1 & 2 3. Galvanic Isolation at input & output through Transformer

>L.I.C. reserves the right for random checking of various parts of 40KWp solar power plant. All the testing equipments, arrangements for components of Solar power plant etc. required for proper checking & testing shall be provided by the contractor. The contractors' technical representative shall assist to perform the tests. No payment shall be made extra.

Seal & Signature of Contractor with date

Dy. Chief Engineer (I/C)

APPROVED LIST OF ELECTRICAL MATERIALS

Main switches beyond 63 Amps Rating should be provided with the HRC fuse units
Re-wirable switch fuse units beyond 63 Amps not be acceptable.

Make :

- a. All range switch fuses of all rating GE / Siemens / Larsen & Toubro / Crompton
- b. FRLS Copper wires of Rachna / Finolex / Flex-o-flex / Poly Cab / Q-flex / RR Cables.
- c. Distribution Boards, Busbar chambers etc., as specified in the Schedule of quantities and if not specified to be of LEGRAND/GE/SIEMENS only with colour indication of phase and neutral marked.
- d. (a) H.G. conduits and H.G. accessories such as pipe, couplings, bends, junction boxes, inspection bends etc. minimum gauge to be 16 SWG or GI pipes and accessories of 'C' class. Accessories for concealed portions shall be of inspection type.
(b) HG conduits to be of Gupta/Bharat/BEC/Supreme
(c) PVC conduits - 2mm thickness ESSORKE / AVONPLAST / Bajaj plast / Precision /Balco.
- e. Tinned brass clips, M.S. screws, Brass nails of proper size only to be used.
- f. a) 5 Amps and 15 Amps switches : To be of flush type of MK/ Siemens/Anchor Roma
b) Miniature circuit breakers L&T / Legrand / GE Siemens / ABB
c) ELCBs : L&T / Legrand / GE / Siemens / ABB
d) Porcelain fuse cutouts and carriers : Bosma / Standard / Havells / GEC

All equivalent alternate materials used on the job will have to be approved by the Chief Engineer, LIC of India, before it is actually used. If any item is installed without prior approval, the contractor will be asked to dismantle the installation and used materials as specified.

**Signature of the Contractor
with Seal & Date**

CHIEF ENGINEER

ANNEXURE - I

Particulars of Regional / Branch Offices/Service Centers

Number of Offices :

Within the state of UP/ Delhi NCR :

Total Number of Offices :

Please furnish information about Regional/ Branch Offices/ Service Centers in the following format
..... (Specify states to cover) states

City /State	Address	Name of Person In-charge and Phone No	No. Of Qualified Support Engineers & their qualifications	Whether adequate trained Manpower, knowledge base & stock of spares available for support

Date:

Signature of Authorized Official with Seal



भारतीय जीवन बीमा निगम
LIFE INSURANCE CORPORATION OF INDIA

Engineering Department, North Central Zonal Office, 16/275 Civil lines, Kanpur-208001

ANNEXURE – II

Particulars of Service Centers Managed by Third Parties / Franchisee

Number of Offices: Within the State of UP & Uttaranchal State

Rest of India Total Number of Offices

City / State	Name and Address of the service provider	Name of Person In-charge and Phone No	No. Of Trained Service Engineers	Whether adequate trained Manpower, knowledge base and stock of spares maintained

Date:

Signature of Authorized Official with Seal



भारतीय जीवन बीमा निगम
LIFE INSURANCE CORPORATION OF INDIA

Engineering Department, North Central Zonal Office, 16/275 Civil lines, Kanpur-208001

ANNEXURE – III

List of Major Clients and related references:– provide copies of major contracts executed/ copy of Purchase Orders)

Name of the clients & contact details	Details of equipment supplied (enclose documentary proof)	Year

Date:

Signature of Authorized Official with Seal

Specification of solar PV Modules

Solar PV modules shall be of the crystalline silicon type, manufactured in India. Detailed specifications of the solar PV modules are given below

Specification	Requirement	Information by the agency- To be filled by the firm
Type	Crystalline silicon	
Origin	Manufactured in India	
Efficiency	$\geq 13\%$	
Fill factor $\geq 70\%$	Fill factor $\geq 70\%$	
Degradation warranty	Panel output (Wp) capacity to be $\geq 90\%$ of design nominal power after 10 years and $\geq 80\%$ of design nominal power after 25 years	
Module frame	Non-corrosive and electrolytically compatible with the mounting structure material	
Termination box	Thermo-plastic, IP 65, UV resistant	
Blocking diodes	Schottky type	
Module minimum rated power	The nominal power of a single PV module shall not be less than 250Wp	
RF Identification tag for each solar module	Shall be provided inside the module and must be able to withstand environmental conditions and last the lifetime of the solar module.	
RF Identification tag data	a) Name of the manufacturer of PV Module b) Name of the Manufacturer of Solar cells c) Month and year of manufacture (separately for solar cells and module) d) Country of origin (separately for solar cells and module) e) I-V curve for the module f) W_m , I_m , V_m and FF for the module g) Unique Serial No and Model No of the module h) Date and year of obtaining IEC PV module qualification certificate i) Name of the test lab issuing IEC j) Other relevant information on traceability of solar cells and module as per ISO 9000 standard	
Power output rating	To be given for standard test conditions (STC). I-V curve of the sample module shall be submitted	
Compliance with standards and codes	IEC 61215 / IS 14286 IEC 61730 Part 1 and 2	
Salt Mist Corrosion Testing	As per IEC 61701	

Solar PV Modules Mounting Structure

The PV modules shall be mounted on fixed metallic structures having adequate strength and appropriate design, which can withstand the load of the modules and high wind velocities. The support structure shall be hot dip galvanized steel or aluminium with tilting arrangement..

Detailed specifications for the mounting structure are given below

Specification	Requirement	Information by the agency- To be filled by the firm
Wind velocity withstanding capacity	150 km / hour	
Structure material	Hot dip galvanised steel with a minimum galvanisation thickness of 120 microns or aluminium alloy.	
Bolts, nuts, fasteners, panel mounting clamps	Stainless steel SS 304	
Mounting arrangement for RCC-flat roofs	With removable concrete ballast made of pre-fabricated PCC (1:2:4), M15	
Minimum distance between roof edge and mounting structure	0.6 mm	
Access for panel cleaning and maintenance	All solar panels must be accessible from the top for cleaning and from the bottom for access to the module junction box.	



भारतीय जीवन बीमा निगम
LIFE INSURANCE CORPORATION OF INDIA

Engineering Department, North Central Zonal Office, 16/275 Civil lines, Kanpur-208001

Bi-Directional Solar Grid Inverter:

The solar grid inverter converts the DC power of the solar PV modules to grid-compatible AC power.

The detailed specifications of the solar grid inverter are given below.

Specification	Requirement	Information by the agency- To be filled by the firm
Total output power (AC)	To match solar PV plant capacity while achieving optimum system efficiency	
Input DC voltage range	As required for the solar grid inverter DC input	
Operation AC voltage	Three phase 415V	
Operating Frequency range	47.5 – 52.5 Hz	
Nominal frequency	50 Hz	
Power factor of the inverter	>0.98 at nominal power	
Total harmonic distortion	Less than 3%	
Built-in Protection	AC high / low voltage; AC high /low frequency	
Anti-islanding protection	As per VDE 0126-1-1, IEC 60255.5 / IEC 60255.27	
Operating ambient temperature range	-10 °C - + 50 °C	
Inverter efficiency Inverter weighted efficiency	> =94 % > =94 %	
Protection degree	IP 65 for indoor mounting	
Communication interface	RS 485 / RS 232 / RJ45	
Safety compliance	IEC 62109-1, IEC 62109-2	
Environmental Testing	IEC 60068-2 (1,2,14,30)	
Efficiency Measurement Procedure	IS/IEC 61683	
Cooling	Convection	
Display type	LCD for data display. LCD / LED for status display	
Display parameters to include	Output power (W), cumulative energy (Wh), DC voltage (V), DC current (A), AC voltage (V), AC frequency (Hz), AC current (A), cumulative hours of operation (h).	

ANNEXURE-V

FORMAT FOR UNDERTAKING PRODUCT & MAINTENANCE SUPPORT

NAME OF WORK: Tender for Design Supply Installation Testing & Commissioning of 40KWp
ON Grid Solar power Plant without battery backup in Jeevan Vikas
Building, 16/275 Civil Lines, Kanpur.

Pursuant to a contract awarded by LICl for the full scope of work as contained under the tender document for the above mentioned work or part thereof, we
(*full name of the firm with address*), hereby undertake the complete responsibility for providing full product support and also maintenance support for the entire period of the designed life of the equipments so supplied and installed by us, promptly and expeditiously.

Further, in case any of the component(s), materials or parts used in the system so provided goes out of production, then we will make available the blue prints, drawings of the spare parts and specifications of materials at no cost to the LICl, as and when required in connection with the equipment to enable the LICl to fabricate or procure spare parts from other sources.

Thanking You

Yours faithfully,

(Signature of the Contractor / Firm with Company's Seal)

ANNEXURE-VI

UNDERTAKING REGARDING THE MANUFACTURE'S OBLIGATION TO EXTEND UNINTERRUPTED AFTER SALES SERVICE TO LIC

NAME OF WORK: Tender for Design Supply Installation Testing & Commissioning of 40KWp ON Grid Solar power Plant without battery backup in Jeevan Vikas Building, 16/275 Civil Lines, Kanpur

We, the manufacturer of Solar Power System Component(s) undertake to provide continued after sales service including but not restricted to the following services.

1. To guarantee uninterrupted supply of spare parts throughout the designed life of SPV modules and PCU's. The designed life of SPV modules and PCU's shall be as indicated elsewhere in the technical bid.
2. To assist LIC in investigation of failure/malfunctioning of any part or system as and when called for by LIC during and after defects liability period.
3. We shall propose with cost estimate, any modification / up gradation of safety features, design modification / improvements to be incorporated in the SPV modules and PCU's subsequent to completion of the contract and suggest a time schedule to implement the same to enhance performance, reliability / life of SPV modules and PCU's.
4. We hereby undertake to provide the above services and respond to LIC's queries/requests in reasonable time notified by LIC during the design life of the SPV modules and PCU's.
5. Any breach of above undertaking will entail LIC to take any or all actions mentioned below as deemed fit by LIC.
 - a) To place on record the performance of firm either in the LIC Web Site or other publications.
 - b) Intimate the Regulatory Authorities / bodies or other Banks.
 - c) Restrict the firm's participation in further tendering in LIC.

Date: *(Name and address of the company with Company Seal)*

Note: This undertaking shall be furnished by the manufacturer of SPV Modules and PCUs. In case the manufacturers of these two items are different, separate undertakings must be furnished by the respective manufacturer.

SCOPE OF THE WORK

The broad scope of the work would include Design, Procurement, Supply, Installation and Commissioning, Testing of 40kWp Solar Photovoltaic Power Plant. This includes:

- i- Preparation of the design and drawings of above power plant. The design detailed of the power plant may be discussed with LIC after visiting the site.
- ii- Scope of the project include supply of all the PV modules, Inverters, Battery banks, array structures, DC Junction boxes, DC and AC distribution boxes, and monitoring system (SCADA), grounding systems, as per the applicable standards.
- iii- Erection and commissioning of the supplied systems at the sites is a part included in the scope.
- iv- Solar PV modules of approved technologies including mounting frames, mounting structures, bolts and nuts for holding structures and module inter connection.
- v- Distribution Boxes (as required) with current and voltage protection devices using the latest technology.
- vi- DC cables (Copper) for interconnection between equipments including end terminations and other required accessories for DC portion of plant.
- vii- PCU's of suitable rating and the type along with Data acquisition system with remote monitoring facilities.
- viii- AC cable (Copper) for interconnection between equipments including end terminations and other required accessories for AC portion of plant.
- ix- Low Tension (LT) AC distribution Board with Digital Voltage, Ammeter and Energy meters at generation side for monitoring parameters.
- x- Civil work which includes ramming methodology only for grouting the module mounting structure and ensure wind withstand ability of 150km/hr.
- xi- Regarding cabling work (external & internal) & construction of control room, the bidder is required to visit the site and as per actual site conditions quote (including drawing & design) accordingly.
- xii- Proper earthing and lightning arrestors to be provided.
- xiii- PVC pipes and accessories/trenches.
- xiv- Supply of manual for Operation and Maintenance of all the system in English and Hindi.
- xv- Training to the user for operation and maintenance of the system after Installation and commissioning.
- xvi- Transportation of equipments from Works to Site.
- xvii- Unloading, Loading and lifting of all supplied Equipments to LIC site at terrace .

- xviii- The scope of supply shall also include comprehensive insurance, storage & in-transit transportation.
- xix- Any additional works not covered above, but necessary for the functioning of the system and required as per specification incorporated. The terms of minor nature, which are not mentioned, shall be incorporated by the bidder.
- xx- The installation of the PV arrays, Inverters and other components should be as per the IEC 61173, IEC 62548, IEC 61140 and IEC 62109-1 & 2 standard. After completion of installation work, the 500kWp SPP shall be on trial runs for a 10 clear sunny days to test smooth functioning of power plant in every aspect. Only after satisfactory inspection by a committee, SPP shall be assumed as commissioned.
- xxi- Follow up with KESCO Authorities for making necessary metering arrangement for net metering and installation of Solar Generation Meter to avail of a generation-based incentive (GBI).
- xxii- Follow up with local authorities for obtaining any type of statutory approval which is required for installation of above power plant.

Seal & Signature of Contractor with date

Dy. Chief Engineer (I/C)

Check list of Annexure

(The following information/documents are to be annexed by the Bidders along with the BID)

Sl. No.	Particulars	Yes / No.
1.	Details of Earnest money (D.D./ Pay Order)	
2.	The bidder is a Manufacturing Company/Firm/ Corporation Registered in India of SPV Cells / Modules / Battery / PV System Electronics (conforming to relevant National / International Standards) OR a PV System Integrator/Channel partner	
3.	A copy of valid CST /State VAT/ TIN registration certificate	
4.	A copy of valid Service tax Registration certificate	
5.	A summarized sheet of cumulative experience in Solar power plants	
6.	MNRE accredited Grid - connected Channel Partner/ Program Administrator OR Credit Rating (from MNRE Accredited Rating Agency)	
7	Value of a “ Single Order ” of Power Plants executed by the Bidder (A copy of the order indicating its value and certificate indicating its successful execution) Minimum 40 KWp (Minimum -1 Job) OR Minimum 20 KWp (Minimum – 2 Jobs	
8	Average annual Turn Over during last 4 years. The firms should have average annual sales turnover of Rs.92.40 lacs or above during each of the last 4 financial years(2014-15, 2013-14, 2012-13 & 2011-12) (Financial Balance Sheets to be enclosed duly attested by Chartered Accountant)	
9	Minimum Banker's Solvency certificate not more than 3 months old. Rs.9.20 Lacs	
10	Qualifying value of single work completed during last 7 years Three Similar work completed costing not less than Rs.18.48 Lacs or 2 Similar completed works costing not less than Rs.27.72 lacs or one similar completed work not less than Rs.36.96 lacs. And One completed work of any nature (either part of above or a separate one) costing not less than Rs.18.48 lacs with some central Govt. department, Central Autonomous Body/ Central Public sector undertaking / state public sector undertaking/ City Development Authority/ Municipal Corporation of City Formed under any act by Central /State Government and published in Central Stare Gazette.	

Seal & Signature of Contractor with date

Dy. Chief Engineer (I/C)

ANNEXURE – 'A'

**LIFE INSURANCE CORPORATION OF INDIA
(Refer Clause No. 35 of Conditions of Contract)**

**FORM OF BANK GUARANTEE IN LIEU OF SECURITY DEPOSIT
IN INDIVIDUAL CONTRACTS**

To
THE LIFE INSURANCE CORPORATION OF INDIA

1. In consideration of the Life Insurance Corporation of India having its _____ Zonal Office at _____ in the State of _____ (hereinafter called '**the Corporation**' which expression shall unless repugnant to the subject or context include its successors and assignees) having agreed under terms and conditions of contract (vide its acceptance letter No. _____ dated _____) made between _____* (hereinafter called the said Contractor) and the Corporation in connection with _____ (hereinafter called '**the said contract**') to accept a Deed of Guarantee and Indemnity as herein provided for Rs. _____ from the _____** in lieu of the Security Deposit to be made by the contractor and/or in lieu of the deduction to be made from the Contractor's bills, for the due fulfillment by the said contractor of the terms and conditions contained in the said contract, we the _____ (hereinafter referred to as '**the said Bank**') and having our office at _____ do hereby undertake and agree to indemnify and keep indemnified the Corporation from time to time to the extent of Rs. _____ (Rupees _____ only) against any loss or damage, costs, charges and expenses caused to or suffered by or that may be caused to or suffered by the Corporation by reason of any breach or breaches by the said contractor in respect of the said contract or of any of the terms and conditions contained in the said contract, or in respect of all its claims for money and / or material found due and recoverable from the said contractor and to unconditionally pay the amount claimed as such by the Corporation on demand and without demur to the extent aforesaid.

2. We, the said Bank further agree that the Corporation shall be the sole judge of and as to whether the said contractor has committed any breach or breaches of any of the terms and conditions of the said contract and the extent of loss, damage, costs, charges and expenses caused to or suffered by or that may be caused to or suffered by the Corporation from time to time on account thereof and the decision of the Corporation in this respect shall be final and binding on us.
3. The Corporation shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee or Indemnity from time to time to vary any of the terms and conditions of the said contract or to extend time of performance by the said contractor, or to postpone for any time and from time to time any of the powers exercisable by it against the said contractor and either to enforce or forbear from enforcing any of the terms and conditions governing the said Contract or securities available to the Corporation and the said Bank shall not be released from its liability under these presents by any exercise by the Corporation of the liberty with reference to the matters aforesaid or by reason of time being given to the said contractor or any other forbearance, act or omission on the part of the Corporation or any indulgence by the Corporation to the said contractor or of any other matter or thing whatsoever, which under the law relating to sureties would but for this provision have the effect of so releasing the Bank from its liability.
4. It shall not be necessary for the Corporation to proceed against the contractor before proceeding against the Bank and the Guarantee and Indemnity herein contained shall be enforceable against the said Bank, notwithstanding any security which the corporation may have obtained or obtain from the contractor shall at the time when proceedings are taken against the Bank hereunder be outstanding or unrealized.
5. Notwithstanding anything contained in any of the foregoing clauses the liability of the Bank under this Guarantee shall not exceed Rs. _____ (Rupees _____ only). The guarantee shall remain in force till _____. If any extension of time be granted to the contractor, we undertake to extend the guarantee with the consent of the contractor. Unless a claim or demand under this guarantee is made or presented to the Bank within six months from the expiry date, all the rights of the Corporation under this Guarantee shall cease and the Bank shall be released and discharged from all liability hereunder.

6. We, the said bank lastly undertake not to revoke this guarantee and indemnity during its currency except with the previous consent of the Corporation in writing and agree that any change in the constitution of the said contractor or the said Bank shall not discharge our liability hereunder.

For and on behalf of the Bank
(Name and Designation)

The above Guarantee is accepted by the
LIFE INSURANCE CORPORATION OF INDIA.

For and on behalf of the LIC of India
(Name and Designation)
Dated:

Note No.1 * : FILL IN AS APPLICABLE

A) For Proprietary concerns:-

Shri _____ son of _____ resident of _____
_____ carrying on business under the name and style of _____
_____ at _____
(hereinafter called '**the said contractor**' which expression shall unless the context requires otherwise include his heirs, executors, administrators and legal representative).

OR

B) For Partnership concerns:-

1. Shri _____
son of _____
resident of _____
2. Shri _____
son of _____
resident of _____



भारतीय जीवन बीमा निगम
LIFE INSURANCE CORPORATION OF INDIA

Engineering Department, North Central Zonal Office, 16/275 Civil lines, Kanpur-208001

carrying on business in partnership under the name and style of _____ of _____ at _____ (hereinafter collectively called '**the contractor**' which expression shall unless the context requires otherwise include each of them and their respective heirs, executors, administrators and legal representatives)

OR

C) For Companies:-

M/s. / Shri _____ a company under the Companies Act 1956 and having its registered office at _____ in the state of _____ (hereinafter called '**the said contractor**' which expression shall unless the context requires otherwise include its successors and assignees).

Note No.2:

**** Please fill in the name and address of Bank.**

LIFE INSURANCE CORPORATION OF INDIA
(Refer Clause No. 35 of Conditions of Contract)

FORM OF BANK GUARANTEE FOR PERFORMANCE GUARANTEE
IN INDIVIDUAL CONTRACTS

To
THE LIFE INSURANCE CORPORATION OF INDIA

1. In consideration of the Life Insurance Corporation of India having its _____ Zonal Office at _____ in the State of _____ (hereinafter called '**the Corporation**' which expression shall unless repugnant to the subject or context include its successors and assignees) having agreed under terms and conditions of contract (vide its acceptance letter No. _____ dated _____) made between _____ * (hereinafter called the said Contractor) and the Corporation in connection with _____ (hereinafter called '**the said contract**') to accept a Deed of Guarantee and Indemnity as herein provided for Rs. _____ from the _____ ** for the due fulfillment by the said contractor of the terms and conditions contained in the said contract, we the _____ (hereinafter referred to as '**the said Bank**') and having our office at _____ do hereby undertake and agree to indemnify and keep indemnified the Corporation from time to time to the extent of Rs. _____ (Rupees _____ only) against any loss or damage, costs, charges and expenses caused to or suffered by or that may be caused to or suffered by the Corporation by reason of any breach or breaches by the said contractor in respect of the said contract or of any of the terms and conditions contained in the said contract, or in respect of all its claims for money and / or material found due and recoverable from the said contractor and to unconditionally pay the amount claimed as such by the Corporation on demand and without demur to the extent aforesaid.
2. We, the said Bank further agree that the Corporation shall be the sole judge of and as to whether the said contractor has committed any breach or breaches of any of the terms and conditions of the said contract and the extent of loss, damage, costs, charges and expenses caused to or suffered by or that may be caused to or suffered by the Corporation from time to time on account thereof and the decision of the Corporation in this respect shall be final and binding on us.

3. The Corporation shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee or Indemnity from time to time to vary any of the terms and conditions of the said contract or to extend time of performance by the said contractor, or to postpone for any time and from time to time any of the powers exercisable by it against the said contractor and either to enforce or forbear from enforcing any of the terms and conditions governing the said Contract or securities available to the Corporation and the said Bank shall not be released from its liability under these presents by any exercise by the Corporation of the liberty with reference to the matters aforesaid or by reason of time being given to the said contractor or any other forbearance, act or omission on the part of the Corporation or any indulgence by the Corporation to the said contractor or of any other matter or thing whatsoever, which under the law-relating to sureties would but for this provision have the effect of so releasing the Bank from its liability.
4. It shall not be necessary for the Corporation to proceed against the contractor before proceeding against the Bank and the Guarantee and Indemnity herein contained shall be enforceable against the said Bank, notwithstanding any security which the corporation may have obtained or obtain from the contractor shall at the time when proceedings are taken against the Bank hereunder be outstanding or unrealized.
5. Notwithstanding anything contained in any of the foregoing clauses the liability of the Bank under this Guarantee shall not exceed Rs. _____ (Rupees _____ only). The guarantee shall remain in force till _____. If any extension of time be granted to the contractor, we undertake to extend the guarantee with the consent of the contractor. Unless a claim or demand under this guarantee is made or presented to the Bank within six months from the expiry date, all the rights of the Corporation under this Guarantee shall cease and the Bank shall be released and discharged from all liability hereunder.
6. We, the said bank lastly undertake not to revoke this guarantee and indemnity during its currency except with the previous consent of the Corporation in writing and agree that any change in the constitution of the said contractor or the said Bank shall not discharge our liability hereunder.

For and on behalf of the Bank

(Name and Designation)

The above Guarantee is accepted by the
LIFE INSURANCE CORPORATION OF INDIA.

For and on behalf of the LIC of India
(Name and Designation) Dated:



LIFE INSURANCE CORPORATION OF INDIA

Engineering Department, North Central Zonal Office, 16/275 Civil lines, Kanpur-208001

Note No.1 * : FILL IN AS APPLICABLE

A) For Proprietary concerns:-

Shri _____ son of _____ resident of _____
_____ carrying on business under the name and style of _____
at _____

(hereinafter called '**the said contractor**' which expression shall unless the context requires otherwise include his heirs, executors, administrators and legal representative).

OR

B) For Partnership concerns:-

1. Shri _____
son of _____
resident of _____

2. Shri _____
son of _____
resident of _____

carrying on business in partnership under the name and style of _____
of _____ at _____

_____ (hereinafter collectively called '**the contractor**' which expression shall unless the context requires otherwise include each of them and their respective heirs, executors, administrators and legal representatives)

OR

C) For Companies:-

M/S / Shri _____ a company under the Companies Act 1956
and having its registered office at _____ in the state of _____
(hereinafter called '**the said contractor**' which expression shall unless the context requires otherwise include its successors and assignees).

Note No.2:

**** Please fill in the name and address of Bank.**

ARTICLES OF AGREEMENT

ARTICLES OF AGREEMENT made at..... this..... Day of20 between THE LIFE INSURANCE CORPORATION OF INDIA, a body corporate constituted and established by the Life Insurance Corporation Act. 1956 (Act 31 of 1956) having its Central Office at "Yogakshema", Jeevan Bima Marg, Mumbai and its Zonal Office at 16/275, M G Marg, Kanpur hereinafter called the Employer (which expression shall include its successors and assignees wherever the context or meaning shall so require or permit) of the one part and

M/s.....
..... (Hereinafter called "The Contractor") of the other part.

WHEREAS the Employer is desirous of constructing the

.....
and has prepared Drawings and Specifications and the Schedule of Quantities which have been signed by or on behalf of the parties hereto.

AND WHEREAS the Contractor has agreed to execute upon and subject to the conditions and instructions set forth (hereinafter referred to as "the said Conditions") the works shown upon the said drawings and /or described in the said specifications and included in the said Abstract Schedule of Quantities at the Item Rates therein set forth amounting to the Contract sum of Rupees-----.
.....Hereinafter referred to as "the said Contract Amount".

NOW IT IS HEREBY AGREED AS FOLLOWS

1. In consideration of the said Contract Amount to be paid at the times and in the manner set forth in the said conditions, the contractor shall upon and subject to the said conditions execute and complete the works shown upon the said drawings and described in the Specifications and/or the priced Schedule of Quantities.
2. The Employer shall pay the Contractor the said Contract Amount or such other sum as shall become payable at the times and in the manner hereinafter specified in the said conditions.
3. The said conditions and Appendices thereto shall be read and construed as forming part of this Agreement and the parties hereto shall respectively abide by and submit themselves to the conditions and perform the agreement on their part respectively in such conditions contained.
4. All disputes arising out of or in any way connected with this Agreement shall be deemed to have arisen in Kanpur (Zonal Head quarters) and only the Court in New Delhi (Zonal Head quarters) shall have jurisdiction to determine the same.
5. This contract comprises
 - i) Tender documents serial pages.....
 - ii) Subsequent Correspondences Serial pages.....
 - iii) Architectural Drawings serial pages.....
6. Only.....() alterations have been made in these documents and as evidence that these alterations were made before the execution of Contract Agreement, they have been initialled by the Contractor and Engineers, North Central Zone, Life Insurance Corporation of India, Kanpur. The said Officer is hereby authorised to sign and initial on behalf of the Employer, the documents forming part of this contract.



Engineering Department, North Central Zonal Office, 16/275 Civil lines, Kanpur-208001

IN WITNESS WHERE OF THE official seal of LIFE INSURANCE CORPORATION OF INDIA, North Central Zonal office, was thereto affixed and signed on its behalf by its Dy. Chief Engineer (I/C) and the Contractor/s has/have signed this Agreement on the dates respectively mentioned against their signature in the presence of the following witnesses:

In the presence of

**Signed by Dy. Chief Engineer (I/C) or
His Authorised Representative
FOR AND ON BEHALF OF THE
LIFE INSURANCE CORPORATION OF INDIA**

Date:

1. Signature :
Name :
Address :
2. Signature :
Name :
Address :

In the presence of

**Signed by M/s or
His Authorised Representative
FOR AND ON BEHALF OF THE CONTRACTOR**

Date:

1. Signature :
Name :
Address :
2. Signature :
Name :
Address :