

**HSCC(India) Ltd.**  
6(A), Block-E, Sector-1, Noida, U.P.-201301(India)

**TENDER FOR ESTABLISHMENT OF 1.5 KWP SOLAR  
PHOTOVOLTAIC (SPV) SYSTEM**

**VOLUME – II , III ,IV & V**

**a) ARTICLES OF AGREEMENT & GENERAL CONDITIONS  
OF CONTRACT**

**b) NOTICE INVITING TENDER & GENERAL INSTRUCTION  
TO BIDDERS**

**c) ADDITIONAL CONDITIONS**

**d) TECHNICAL SPECIFICATION**

DEC 2012



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**Tender No. – HSCC/HO/SPV/2012-(R-01)**

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**VOLUME – II**

**ARTICLES OF AGREEMENT**

**&**

**GENERAL CONDITIONS OF CONTRACT**

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**ESTABLISHMENT OF 1.5 KWP SOLAR PHOTOVOLTAIC  
(SPV) SYSTEM FOR HSCC CORPORATE OFFICE**

**VOLUME INDEX**

<b>VOLUME – I</b>	<b>PREQUALIFICATION DOCUMENT</b>
<b>VOLUME – II</b>	<b>A. ARTICLES OF AGREEMENT B. GENERAL CONDITIONS OF CONTRACT</b>
<b>VOLUME – III</b>	<b>A. NOTICE INVITING TENDER B. GENERAL INSTRUCTION TO BIDDERS</b>
<b>VOLUME – IV</b>	<b>A. ADDITIONAL CONDITIONS</b>
<b>VOLUME – V</b>	<b>TECHNICAL SPECIFICATION</b>
<b>VOLUME – VI</b>	<b>SCHEDULE OF QUANTITIES</b>

# SPV SYSTEM WORK AT HSCC CORPORATE OFFICE

## VOLUME – II

### CONTENTS

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SN	Name of Subhead	page no.
A.	Articles of agreement	05
B.	General conditions of contract	07
CLAUSES:		
1.	Interpretation	07
2.	Drawings & specifications	08
3.	Contractor to provide everything necessary	08
4.	Authorities, notices & patents	09
5.	Rates to include all taxes	09
6.	Materials	09
7.	Testing of materials	10
8.	Contractor's engineer/foreman & workman	10
9.	Access	10
10.	Variation & price for variation	11
11.	Faulty materials & work	12
12.	Works to be open for inspection	12
13.	Indemnifying against damages to persons property & statues	12

14.	Lien in respect of claims in other contracts	14
15.	Withholding & lien in respect of sums claimed	14
16.	Incase of death of contractor	15
17.	Sub-contractors	15
18.	Compliance to labor laws & Apprentice Act	15
19.	Compensation for delay	15
20.	Damages to works in consequence of Hostilities or war like operation	16
21.	Extension of time	16
22.	Suspension of work by contractor	17
23.	Certificates & payments	19
24.	Security deposit	20
25.	Arbitration	21

## A. ARTICLES OF AGREEMENT

ARTICLES OF AGREEMENT MADE AT \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, 2012 BETWEEN the HSCC(I) LTD., New Delhi, a Govt. of India Enterprises (Hereinafter referred to as the Employer, which expression shall include its successors and assignees and authorized officers of HSCC) of the one part and \_\_\_\_\_ trading in the name and style of— —(herein after referred to as the contractors) which expression shall include his/their respective heirs, executors, administrators and permitted assignees) of the other part.

WHEREAS the Employer is desirous of getting the work of \_\_\_\_\_ done and has caused drawings, Schedule of Quantities and Specifications describing the work to be prepared.

AND Whereas the said specifications and the schedule of quantities and other documents have been signed by on behalf of the parties.

NOW IT IS HEREBY AGREED AND DECLARED BY AND BETWEEN THE PARTIES HERETO AS FOLLOWS:

1. In consideration of the payments to be made to them as hereinafter provided the Contractor shall upon and subject to the conditions hereinafter contained execute and complete, the work at the rates specified in the attached schedule of quantities and with such materials as are provided for and in accordance in all respect with specifications, designs, drawings and instructions in writing. Time for carrying out the work will be **15 days** and the date of commencement shall be reckoned from the day of issue of award letter.
2. The Employer shall pay to the Contractors such sums as shall become payable hereunder at the times and in the manner specified in the said conditions.
3. This agreement contains the following documents in addition to pages of Articles of Agreement.
  - ( i ) Prequalification Document Page No \_\_\_ to \_\_\_
  - (ii) General Conditions of Contract Page No \_\_\_\_\_ to \_\_\_\_\_
  - (iii) Special Conditions Page No \_\_\_\_\_
  - (iv) Additional Conditions Page No \_\_\_\_\_

(v) Indenture for Secured Advance Page No \_\_\_\_\_ to \_\_\_\_\_

(vi) Original tender document alongwith the covering letter of the firm dated \_\_\_\_\_ Page No: 1 to \_\_\_\_

(vii) \_\_\_\_\_

(viii) \_\_\_\_\_

(ix) \_\_\_\_\_

In witness whereof the parties hereto have set their respective hands the day and year herein above written. Signed by, for and on behalf of Employer \_\_\_\_\_

In the presence of

(1) \_\_\_\_\_

(2) \_\_\_\_\_

Signed by the said contractor  
In the presence of

(1) \_\_\_\_\_

(2) \_\_\_\_\_

## **B. GENERAL CONDITIONS OF CONTRACT**

### **1. INTERPRETATION**

- (a) In construing these conditions, the Technical Specifications, the Schedule of Quantities, Tender, Special Conditions, Additional Conditions, Additional Technical Conditions and Agreement, the following words shall have the meanings herein assigned to them except where the subject or context otherwise requires.
- (b) This contract shall comprise of the Articles of Agreement, General Conditions of Contract, Special Conditions of contract, Additional conditions, the Schedule of Quantities, Specifications, Letter of acceptance of tender and other documents mentioned in the contents sheet attached hereto and including those to which only reference is made herein.

**WORK OR WORKS:** shall mean all work or works defined in schedule of quantities, specifications and such other work or works as the contractor may be entrusted with for carrying out under this contract.

**EMPLOYER:** shall mean the CGM(P & BD), HSCC or any office authorized by CGM(P& BD) for the purpose.

**ENGINEER:** shall mean the Engineer designated by the Employer to superintend and perform other duties as indicated in the contract.

**CONTRACTOR:** shall mean the individual or Firm or Company, whether incorporated or not, undertaking the work and shall include the legal personal representative or such individual or the persons composing such Firm or Company or the successors of such Firm or Company and the permitted assignees of such individual or Firm or Firms or Company.

**SITE:** shall mean the site of the contract works including any buildings and erections thereon and any other land adjoining thereto (inclusive) as aforesaid allotted by the Employer or the Engineer for the contractor's use.



**COMPENSATION:** Shall mean all sums payable by way of compensation under any of the conditions shall be considered as reasonable compensation without reference to the actual loss or damage sustained and whether or not any damage sustained, and whether or not any damage shall have been sustained.

Words imputing persons include firms and corporations; words imputing the singular only also include the plural and vice versa where the context so required.

The headings are given to the clauses for convenience and they will not limit the meaning or scope of the clauses in any way.

## **2. DRAWINGS AND SPECIFICATIONS**

The contractor shall execute whole and every part of the work in the most substantial and workmanlike manner both as regards material and otherwise in every respect in accordance with the specifications. The contractor shall also conform exactly and faithfully to the design, drawings and instructions given in the respect of the work by the Engineer. The contractor shall be furnished free of charge one copy of such specifications and all such designs, drawings and instructions as are not included in the printed publications.

## **3. CONTRACTOR TO PROVIDE EVERYTHING NECESSARY**

### **a. Sufficiency of Tender**

The contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of the tender for the works and rates and prices quoted in the schedule of items, which rates and the prices quoted in the schedule of items, which rates and the prices shall, except as otherwise provided, cover all his obligations under the contract and all matters and things necessary for the proper completion and maintenance of works.

- (b) The contractor shall provide at his own cost all materials, (except such materials, if any as may in accordance with the contract be supplied by the Employer) plants, tools, appliances, implements, ladders, scaffolding, temporary works, etc. requisite or proper for the execution of the work whether original, altered or substituted and whether included in the specifications or other documents forming part of the contract or which may be necessary for the purpose of satisfying or complying to the requirements of Engineer, as to any manner as to which under these conditions he is entitled to be satisfied together with carriage there for to and from the work. The contractor shall also supply without charge the

requisite number of persons with means and materials necessary for the purpose of setting out works and counting, weighing and assisting in the measurement or examination at any time and from time to time of the work or materials. Failing his so doing, the same may be provided by the Engineer at the expense of the contractor and the expenses may be deducted from any money due to the contractor under the contract and/or from his Security Deposit.

#### **4. AUTHORITIES, NOTICES & PATENTS**

- (a) The contractor shall conform to any regulations and bye-laws of any Corporation and of any Electricity Supply Company and authorities with whose systems the structure is proposed to be connected, and shall before making any variations from the drawing and specifications that may be necessitated for so conforming by giving written notice to the Engineer specifying the variations proposed to be made, the reasons for making it and apply for instructions thereon. If the compliance with this clause involves any extra work not included in this contract, he shall specify these items of work and the allowance of extra payment required on their account.

#### **5. RATES TO INCLUDE ALL TAXES**

- (a) Rates quoted by the contractor shall include Sales Tax, Service Tax, Duties, Octroi, Toll Tax, royalties and all other taxes in respect of this contract and the Employer shall not entertain any claim whatsoever in this respect. Tendered rates are inclusive of all taxes and levies payable under the respective statutes. However, pursuant to the Constitution (Forty Sixth Amendment) Act, 1982 if any further tax or levy is imposed by Statutes, after the date of receipt of tenders and the contractor thereupon necessarily and property pays such taxes/levies the contractor shall be reimbursed the amount as per the rules on producing proof of payment so made provided such payments, if any, is not in the opinion of the Employer (whose decision shall be final and binding) attributable to delay in executing of work within the control of the contractor.

#### **6. MATERIALS**

- (a) If the specifications of schedule of items provide for the use of any material to be supplied by the Employer's stores or if it is required that the contractor shall use certain stores to be provided by the Employer as shown in the schedule of materials hereto annexed, the contractor shall be bound to procure and shall be supplied such materials and stores as are from time to time required to be used by him for the purpose of the contract only and value of the materials so supplied at the rates specified

in the said schedule of materials and of the quantities incorporated in the work may be set off or deducted from any sums then due, or thereafter to become due to the contractor under the contract or otherwise or against or from the Security Deposit. All materials so supplied to the contractor by the Employer shall remain the absolute property of the Employer and the contractor shall be the trustee of the materials so supplied/procured and the said materials shall not be removed/disposed off from the site of the work on any account and shall be at all times open for inspection by the Engineer or Employer. The contractor shall bear all incidental charges for cartage, storage and safe custody of all materials and against damage due to dampness, rain, sun, fire and theft and be fully responsible for their storage and maintenance. Any such material unused and in perfectly good condition in the opinion of the Employer at the time of the completion of work or termination of the contract, or earlier shall be returned to the Employer at a place directed by the Engineer at contractor's cost and at rates stipulated in the said schedule but in case the Employer decides not to take back the materials the contractor shall have no claim for compensation on account of any such materials supplied to him as aforesaid being unused by him or for any wastage or damage to any such materials.

## **7. TESTING OF MATERIALS**

The contractor shall provide assistance, instruments, materials, labour and any other arrangement normally required for testing, checking of materials and workmanship as stipulated in the specifications and by statutory authority at his own cost.

## **8. CONTRACTOR'S ENGINEERS / FOREMAN & WORKMEN**

- (a) The contractor shall give all necessary personal superintendence during the execution of the work.

## **9. ACCESS**

- (a) The Engineer/HSCC, and the Employer or its representative shall at all reasonable time have free access to the works and/or workshops, factories or other places the 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 them for inspection. Except the representatives of statutory authorities and those mentioned above no other person shall be allowed on the works at any time without the permission of the Engineer/HSCC.

## 10. VARIATION & PRICE FOR VARIATION

- (a) The Engineer with the approval of the Employer shall have power to make any alterations/omissions/additions and/or substitutions from the original specifications, drawings, designs, and written instructions and such alterations, omissions, additions, substitutions shall not invalidate the contract and any altered, additional, or substituted work which the contractor may be directed to do in the manner specified above as part of the work shall be carried out by the contractor on the same conditions in all respects on which he agreed to do the main work. The rates for such altered, additional or substituted work under this clause shall be worked out in accordance with the following provisions in their respective order.
- (b) If the rates for the altered, additional, or substituted work are specified in the contract for the work, the contractor is bound to carry out the altered, additional, or substituted work at the same rates as are specified in the contract for the work.
- (c) If the rates for the altered, additional, or substituted work are not specifically provided in the contract for the work, the rates will be derived from the rates for a similar class of work as are specified in the contract for the work.
- (d) If the rates for the altered, additional, or substituted work cannot be determined in the manner specified in sub-clause (b) and (c) above, then the contractor shall, within 10 working days from the date of receipt of the order to carry out the work through notice in writing, inform the Engineer of the rate which it is his intention to charge for such class of work, supported by analysis of the rate claimed which shall be based on actual cost of work plus 15% as contractor's profit and over-heads except in case of departmental materials for which contractors profit and over-heads shall be 2.5%. When such notice has been given, the Engineer with the consent of the Employer may agree to such a rate but if the Engineer does not agree to the contractor's rate the Engineer may cancel his order to carry out such class of work and arrange to carry out in such a manner, as he may consider advisable.
- (e) Under no circumstances, the contractor shall suspend the work on the plea of non-settlement of rates of items falling under the clause.
- (f) Deviation Limits

Building work	30%
Maintenance / Emergency Works	50%
Foundation works	100%
Service works	30%

## **11. FAULTY MATERIALS, WORKMANSHIP & DEFECTS AFTER COMPLETION**

- (a) The Engineer shall have powers to require the removal from the site of all materials and work which in his opinion are not in accordance with specifications and in case of default, the Engineer shall be at liberty to employ other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials to be substituted thereof and in case of default the Engineer may cause the same to be supplied and all costs which may attend such removal and/or substitution are to be borne by the contractor.
- (b) If it shall appear to the Engineer or to the Employer based on audit / technical examination that any work has been executed with unsound, imperfect, or unskillful workmanship or with materials of any inferior description, or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted for or otherwise not in accordance with the contract, any defects, shrinkage or other faults which may appear within the defects liability period of twelve months from the date of completion arising in the opinion of the Engineer, the contractor shall on demand in writing which shall be made within twelve months of the completion of the work from the Engineer specifying the work, materials, articles defects or other faults complained of notwithstanding that the same may have been passed, certified and paid for, forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own cost. In case of any such failure, the Engineer may rectify or remove or re-execute the work or remove and replace with others, the material or articles complained of as the case may be at the risk and cost in all respects of the contractor.

## **12. WORKS TO BE OPEN FOR INSPECTION**

- (a) After installation employer will inspect and test the material as per BOQ supplied by the vendor. Any faulty installation or implementation obtained during checking, no payment shall be made for such work or the material. Material to be inspected by the HSCC.

## **13. INDEMNIFYING AGAINST DAMAGES TO PERSONS, PROPERTY & STATUTES**

The contractor shall take all precautions to avoid all accidents by exhibiting necessary caution boards day and night, speed limit boards, red

flags, red lights and providing barriers. He shall be responsible for all damages and accidents caused due to negligence on his part. No hindrance shall be caused to traffic during the execution of work.

- (a) The contractor shall be responsible for all injury to persons, animals or things, and for all damage, whether such injury or damage arises from carelessness or accident in any way connected therewith. This clause shall be held to include interalia any damage due to causes as aforesaid to work, building (whether immediately adjacent or otherwise) and to roads, streets, foot paths, bridges or ways as well as all damage caused to the buildings and works forming the subject of this contract by inclemency of weather. The contractor indemnifies the Employer and holds him harmless in respect of all expenses arising from such injury or damages as aforesaid and also: in respect of any award of compensation or damage consequent upon such claim including legal costs.
- (b) The contractor shall reinstate all damage of every sort mentioned in this clause, so as to deliver the whole of the contracted works complete and perfect in every respect and so as to make good and otherwise satisfy all claims for damage as aforesaid of the property of third parties.
- (c) The contractor also indemnifies the Employer against all claim which may be made upon the Employer for acts during the currency of this contract by any employee or representative of an employee of the contractor or any sub-contractors, employed by him, for any injury to or loss of life, of such employees, or for compensation payable under any law for the time being in force to any workmen or to the representative of any deceased or incapacitated workmen.
- (d). The contractor also indemnifies the Employer against all claims which may be made upon the Employer for acts during the currency of this contract by the Central/State Government or local Municipal authorities for the noncompliance of any laws, regulations, rules pertaining to wages act, safety act in force and any amendments thereof in respect of all labour and apprentices directly or indirectly employed in the work under this contract.
- (e) The Employer shall be at liberty and is hereby empowered to deduct the amount of any damages, compensation costs, charges and/or expenses arising or accruing from or in respect of any such claim and/or damages as aforesaid from any sum or sums due or to become due to the contractor or security deposit.
- (f) The contractor shall indemnify the Employer against any action, claim or proceedings relating to infringement or use of any patent or design or any

alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claims made under or action brought against the Employer in respect of any such matters as aforesaid the contractor shall be immediately notified thereof and the contractor shall be at liberty, at his own expense, to settle any dispute or to conduct any litigation that may arise there from. Provided that the contractor shall not be liable to indemnify the Employer if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the said Employer or his authorized representative.

**14. LIEN IN RESPECT OF CLAIM IN OTHER CONTRACTS**

- (a) Any sum of money due and payable to the contractor including the security deposit under the contract may be withheld or retained by way of lien by the Employer or Government or any other contracting person or persons against any claim of the Employer or Government or such other persons in respect of payment of a sum of money arising out of or under any other contract made by the contractor with the Employer or Government or with such other persons.

**15. WITHHOLDING & LIEN IN RESPECT OF SUMS CLAIMED**

- (a) Whenever any claim or claims for payment of a sum of money arises out of or under the contract against the contractor, the Employer shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the security deposit, if any deposited by the contractor and for the purpose aforesaid, the Employer shall be entitled to withhold the security deposit, if any, furnished as the case may be and also have a lien over the same pending finalization or adjudication of any such claim.
- (b) The Employer shall have the right to cause an audit and technical examination of the works and the final bills of the contractor including all supporting vouchers, abstract etc., to be made after payment of the final bill and if as a result of such audit and technical examination any sum is found to have been over paid in respect of any work done by the contractor under the contract or any work claimed-by him to have been done by him under the contract and found not to have been executed the contractor shall be liable to refund the amount of over-payment and it shall be lawful for the Employer to recover the same from him in the manner prescribed in sub-clause (a) of this clause or in any other manner legally permissible; and if it is found that the contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under-payment shall be duly paid by the Employer to the contractor. Provided that the Employer shall not be entitled to recover any sum over-paid, nor the contractor shall be entitled

to payment of any sum paid short where such payment has been agreed upon between the Employer on the one hand and the contractor on the other hand, under any term of contract permitting payment for work after assessment by the Employer.

#### **16. IN-CASE OF DEATH OF CONTRACTOR**

Without prejudice to any of the rights or remedies under this contract, if the contractor dies, the Employer shall have the option of terminating the contract without compensation to the contractor.

#### **17. SUB-CONTRACTORS**

The Employer reserves the right to use the premises and any portion of the site for the execution of any work not included in the contract. The contractor is to afford all reasonable facilities to all sub-contractors, specialists, merchants, tradesmen and others who may at any time be appointed by the Employer for executing any work or supplying any goods relating to the constructions, servicing, equipping or furnishing of the work under this contract.

#### **18. COMPLIANCE TO LABOUR LAWS & APPRENTICE ACT**

The contractor shall comply with all the provisions of the Minimum Wages Act, 1948, Contract Labour (Regulation and Abolition) Act, 1970, and rules and orders framed there under and other-labour laws affecting contract labour and Apprentice Act, 1961 and the rules and orders framed there under that may be in force or brought into force from time to time. The contractor shall obtain a valid license under Contract Labor (R&A) Act 1970 and contract Labor (R&A) Central Rules 1971 before commencing work and which should be valid till completion.

#### **19. COMPENSATION FOR DELAY**

- (a) The time for carrying out the work as entered in the tender shall be strictly observed by the contractor and shall be deemed to be the essence of the contract on the part of the contractor. The work shall throughout the stipulated period of the contract be proceeded with all due diligence and the contractor shall pay as compensation an amount equal to one per cent or such smaller amount as the Employer (whose decision in writing shall be final) may decide on the amount of the whole work as shown in the agreement, for every week that the work remains un-commenced or unfinished after the proper dates.



**20. DAMAGE TO WORKS IN CONSEQUENCE OF HOSTILITIES OR WAR-LIKE OPERATIONS**

- (a) The work (whether fully constructed or not) and all materials, machines, tools and plants, scaffolding, temporary buildings and other things connected therewith shall bear the risk of the contractor until the work has been delivered to the Employer and a certificate from him to that effect obtained. In the event of the work or any materials properly brought to the site for incorporation in the work being damaged or destroyed in consequence of hostilities or war-like operations, the contractor shall, when ordered in writing by the Employer, remove any debris from the site, collect and properly stack or remove in store all serviceable materials salvaged from the damaged work and shall be paid at the contract rates in accordance with the provision of this agreement for the work of clearing the site of debris, stacking, removal of serviceable materials and for the reconstruction of all works ordered by the Employer such payment being in addition to compensation upto the value of the work originally executed before being damaged or destroyed and not paid for. In case of works damaged or destroyed but not already measured and paid for the compensation shall be assessed by the Employer. The contractor shall be paid for the damage/destruction suffered and for restoring the material at the rates based on the analysis of rates tendered for in accordance with the provision of this agreement. The certificate of the Employer regarding the quality and quantity of materials and the purpose for which they were collected shall be final and binding on the contractor.
- (b) Provided always that no compensation shall be payable for any loss in consequence of hostilities or war-like operations (i) unless the contractor had taken all such precautions against Air Raid as are deemed necessary by the A.R.P. Officers or the Employer, (ii) for any materials etc., not on the site of the work or for any tools and plant, machinery, scaffolding, temporary buildings and other things not intended for the work.
- (c) In the event of the contractor having to carry out reconstruction as aforesaid, he shall be allowed such extension of time for its completion as is considered reasonable by the Employer.

**21. EXTENSION OF TIME**

- (a) If the contractor shall desire an extension of time for the completion of the work on the grounds of his having been unavoidably hindered in its execution or any other ground, he shall apply in writing to the Employer within thirty days of the date of hindrance on account of which he desires extension as aforesaid, and the Employer shall, if in his opinion (which shall be final) reasonable grounds shown therefore, authorize such

extension of time if any, which may, in his opinion, be necessary or proper.

- (b) In the event, the value of work exceeds the value of the Bill of Quantities owing to variations the contractor shall be entitled to ask for extension of time in proportion to the increased value of work.

## **22. SUSPENSION OF WORK BY CONTRACTOR**

- (a) The Employer may without prejudice to his right against the contractor in respect of any delay or inferior workmanship or otherwise or to any claims for damages in respect of any breaches of the contract and without prejudice to any rights or remedies under any of the provisions of this contract or otherwise and whether the date for completion has or has not elapsed by notice absolutely determine the contract in any of the following cases:

- (i) If the contractor having been given by the Engineer a notice to rectify, reconstruct or replace any defective work or that the work is being performed in any inefficient or otherwise improper or un-workman-like manner shall omit to comply with the requirements of such notice for a period of seven days thereafter or if the contractor shall delay or suspend the execution of the work so that in the judgment of the Employer (which shall be final and binding) he will be unable to ensure completion of the work by the date for completion or he has already failed to complete the work by that date.
  - (ii) If the contractor being a company shall pass a resolution or the court shall make an order that the company shall be wound up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall arise which entitle the court of creditor to appoint a receiver or a manager or which entitle the court to make a winding up order.
  - (iii) if the contractor commits breach of any of the terms and conditions of this contract.
  - (iv) if the contractor commits any acts mentioned in Clause-13 hereof.
- (b) When the contractor has made himself liable for action under any of the cases aforesaid, the Employer shall have the following powers:
  - (i) To determine or rescind the contract as aforesaid (of which termination or rescission notice in writing to the contractor under the hand of the Employer shall be conclusive evidence). Upon such

determination or rescission the security deposit of the contractor shall be liable to be forfeited and shall be absolutely at the disposal of the Employer.

- (ii) The Engineer may employ labour paid by the Employer and to supply materials to carry out the work or any part of the work debiting the contractor with the cost of the labour and the price of the materials (of the amount of which cost and price certified by the Engineer shall be final and conclusive against the contractor) and crediting him with the value of the work done in all respects in the same manner and at the same rates as if it had been earned out by the contractor under the terms of his contract. The certificate of the Engineer as to the value of the work done shall be final and conclusive against the contractor, provided always that action under the sub-clause shall only be taken after giving notice in writing to the contractor. Provided also that if the expenses incurred by the Employer are less than the amount payable to the contractor at his agreement rates, the difference should not be paid to the contractor.
- (iii) After giving notice to the contractor to measure up the work of the contractor and to take such part thereof as shall be unexecuted out of his hands and to give it to another contractor to complete in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor if the whole work had been executed by him (of the amount of which exceed the certificate in writing of the Engineer shall be final and conclusive) shall be borne and paid by the original contractor and may be deducted from any money due to him by the Employer under this contract or any other account whatsoever or from his security deposit.
- (iv) In the event any one or more of the above courses being adopted by the Employer the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken under any of the provisions aforesaid, the contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contract unless and until the Engineer has certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.

## **23. CERTIFICATES & PAYMENTS**

- (a) There will be no running bill. No payments shall be made for a work estimated to cost Rupees ten thousand or less till the whole of the work shall have been completed and certificate of completion given. But in the case of a work estimated to cost more than Rupees ten thousand, the contractor shall, on submitting the bill be entitled to receive a monthly payment proportionate to the part of the work executed, and to the satisfaction of the Engineer, whose certificate of the sum so payable shall be final, and conclusive against the contractor, provided the amount of work done is as per the value of intermediate certificate or for a lesser amount at the discretion of the Engineer as mentioned in the NIT. All such intermediate payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed and shall not preclude the requiring of bad, unsound, imperfect or unskilled work to be removed and taken away and reconstructed, or re-erected or be considered as an admission of the due performance of the contract, of any part thereof in any respect or the accruing of any claim nor shall it conclude, determine, or affect in any way the powers of the Employer under these conditions or any of them as to the final settlement and adjustment of the accounts or in any other way vary or affect the contract. The final bill shall be submitted by the contractor within two months of the date fixed for the completion of work or of the date of the certificate of completion furnished by the Employer and payment shall be made within three months if the value of the completed works is upto Rs. two lakhs and in six months if the same exceeds Rs. two lakhs of the submission of such bill. If there shall be any dispute about any item or items of the work then the undisputed item or items only shall be paid within the said period of three months or six months as the case may be.
- (b) Whenever there is likely to be delay in recording detailed measurements for making a running payment, advance payment without detailed measurements for work done worked out at 75 per cent of the tendered rates for assessed quantities may be made in running account bills by the Employer on the basis of a certificate from the Engineer. The advance payments so allowed shall be adjusted in the subsequent running bills by taking detailed measurements thereof. Final payments shall be made only on the basis of detailed measurements.
- (c) A bill shall be submitted by the contractor each month on or before the date fixed by the Engineer on printed forms obtainable from the Engineer's office. The Engineer shall take or cause to be taken the requisite measurements, for the purpose of having the same verified and the claim,

as far as admissible, adjusted as far as possible, before the expiry of ten days from the presentation of the bill. If the contractor does not submit the bill within the time fixed as aforesaid the Engineer may cause action within seven days of the date fixed as aforesaid, an authorised representative to measure up the said work in the presence of the contractor whose signature to the measurement will be sufficient warrant and the Engineer may prepare the bill from such measurements.

- (d) Before taking any measurement of any work the Engineer or his authorized representative deputed by him shall give reasonable notice to the contractor. If the contractor fails to attend after such notice or fails to sign or to record the difference within a week from the date of measurement in the manner required by the Engineer then in any such event the measurements taken by the Engineer or by the authorized representative deputed by him as the case may be, shall be final and binding on the contractor and the contractor shall have no right to dispute the same.
- (e) The charges in the bills shall always be entered at the rates specified in the agreement or in the case of any extra work ordered in pursuance of these conditions and not mentioned or provided for in the agreement at the rate determined as per clause-10. However in case of partially executed items of work, the Employer at his discretion allows proportionate rates for such items of work as determined by the Engineer whose certificate of the sum so payable shall be final and conclusive against the contractor.

## **24. SECURITY DEPOSIT**

- (a) **A sum of 10% of the gross amount of the bill shall be deducted from each running bill of the contractor till the sum will amount to security deposit of 5% of the tendered value of the work.**
- (b) In case a fixed deposit receipt of any scheduled bank is furnished by the contractor to the Employer as part of the security deposit and the bank goes into liquidation or for any reason is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Employer to make good the deficit of such sum from the running bill as mentioned above. Such deductions will be held by the Employer by way of security deposit, provided always that the Employer for this purpose shall be entitled to recover the said percentage of the amount from each running bill till the balance of the amount of security deposit is realized. All compensation or the other sums of money payable

by the contractor under the terms of this contract may be deducted from the security deposit or from the interest arising there from or from any sums which maybe due to or may become due to the contractor by the Employer on any account whatsoever and in the event of his security deposit being reduced by reason of any such deductions aforesaid, the contractor shall within ten days make good in cash or further fixed deposit receipt pledged in favour of the Employer. The security deposit shall be collected from the running bills of the contractor at the rates mentioned above.

- (c) No partial refund of security deposit shall be made during the defect liability period. In case the final bill is not settled within stipulated period for reasons beyond control and the Employer is satisfied that the security deposit is not required for adjustment of Employers dues or whatsoever dues either in this or any other contract then this security deposit either in full or in part could be refunded at the sole discretion of the Employer. However, release of security deposit would be only after written clearance of Labor Officer regarding no dues or claim is received.
- (d) In case of termination of contract, this security deposit shall be forfeited and amount necessary to make up this amount shall be recovered from money due to the contractor under this contract, or any other contract with the Employer.

## **25. ARBITRATION**

- a. Except where otherwise provided in the contract all questions and disputes relating to the interpretation of the specifications, designs, drawings and instructions herein before mentioned and as to the quality or workmanship or materials used on the work or as to any other question, claim, right matter or thing whatsoever in any way arising out of or relating to the contract, designs, specifications, estimates, instructions, orders on these conditions or otherwise concerning the works, or the execution or failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the sole arbitration of the person appointed by the Director General, Council of Scientific and Industrial Research. The arbitrator shall be appointed within 30 days from the receipt of a request by any party. The arbitrator to whom the matter is originally referred being unwilling or unable, to act for any reason, the Director General shall appoint another person to act as of arbitrator in accordance with the terms of the contract. Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor. The arbitrator shall give a speaking award. The award of the arbitrator shall be final and binding on the parties. The cost of the Arbitrator shall be borne equally by both the parties.

- b. It is also a term of the contract that the party invoking arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such dispute.
- c. It is also a term of the contract that if the contractor does not make any demand for arbitration in respect of any claim in writing within 90 days of receiving the intimation from the Employer that the final bill is ready for payment, the claim of the contractor will be deemed to have been waived and absolutely barred and the Employer shall be discharged and released of all liabilities under the contract in respect of these claims.
- d. Subject as aforesaid the provisions of the Arbitration and Conciliation Act 1996, or any statutory modification or re-enactment thereof and the rules made there under and the time being in- force shall apply to the arbitration reference under this clause.

**HSCC(I)LTD.**  
(A Govt. of India Enterprises)  
E-6(A), Sector-1, Noida-201301, U.P.

**TENDER FOR ESTABLISHMENT OF 1.5 KWP SOLAR  
PHOTOVOLTAIC (SPV) SYSTEM  
FOR  
HSCC CORPORATE OFFICE  
PLOT NO.-E-6(A), SECTOR-1, NOIDA-201301, U.P.**

**VOLUME – III**

**NOTICE INVITING TENDER  
&  
GENERAL INSTRUCTION TO BIDDERS**

**DECEMBER 2012**



**HSCC (India) Ltd**  
6 (A), Block-E, Sector – I, Noida, U.P – 201301 (India)  
Phone: 0120 – 2542436 – 40 Fax: 0120 – 2542447  
E-mail: [hsccltd@hsccltd.co.in](mailto:hsccltd@hsccltd.co.in)

**Tender No. – HSCC/HO/SPV/2012-(R-01)-Second Call**



## **VOLUME INDEX**

<b>VOLUME – I</b>	<b>PREQUALIFICATION DOCUMENTS</b>
<b>VOLUME – II</b>	<b>A. ARTICLES OF AGREEMENT B. GENERAL CONDITIONS OF CONTRACT</b>
<b>VOLUME – III</b>	<b>A. NOTICE INVITING TENDER B. GENERAL INSTRUCTION TO BIDDERS</b>
<b>VOLUME – IV</b>	<b>A. ADDITIONAL CONDITIONS</b>
<b>VOLUME – V</b>	<b>TECHNICAL SPECIFICATION</b>
<b>VOLUME – VI</b>	<b>SCHEDULE OF QUANTITIES</b>

# ESTABLISHMENT OF SPV SYSTEM

## VOLUME – III

### CONTENTS

SL. NO	NAME OF SUBHEAD	PAGE NO
<b>A.</b>	<b>NOTICE INVITING TENDER</b>	<b>4</b>
<b>B.</b>	<b>GENERAL INSTRUCTION TO BIDDERS</b>	<b>7</b>
1.1	Description of Works	
1.2	Employer	
1.3	Time of completion	
2.0	Cost of Tendering	
3.0	Site Visit	
	<b>Tender Documents</b>	<b>10</b>
4.0	Content of Tender Documents	
5.0	Clarification on Tender Documents	
6.0	Amendment of Tender Documents	
	<b>Preparation of Tenders</b>	<b>11</b>
7.0	Language of Tender	
8.0	Documents Comprising the Tender	
9.0	Tender Rates	
10.0	Tender Validity	
11.0	Earnest Money Deposit / Tender Security	
12.0	Formats and Signing of Tender	

**Submission of Tender** **14**

- 13.0 Sealing, Marking & Submission
- 14.0 Deadline for Submission of Tenders
- 15.0 Late Tenders
- 16.0 Modification and Withdrawal of Tender

**Tender Opening and Evaluation** **16**

- 17.0 Tender Opening
- 18.0 Process to be Confidential
- 19.0 Clarification of Tenders
- 20.0 Determination of Eligibility & Responsiveness
- 21.0 Correction of Errors
- 22.0 Evaluation and Comparison of Tenders

**Award of Contract** **18**

- 23.0 Award Criteria
- 24.0 Engineer's Right to accept any Tender, to reject any or all Tenders
- 25.0 Award of Work
- 26.0 Signing of Agreement

## ESTABLISHMENT OF SPV SYSTEM

### A. NOTICE INVITING TENDERS

- 1.1 Tenders are hereby invited for the establishment of **SPV System for HSCC Corporate Office at E-6(A), Sector-1, Noida from eligible firms** for which advertisement published on HSCC website and CPP Portal
- 1.2 Estimated Cost is **Rs.2.00 Lakhs (Rupees Two Lakhs only)** based on specification as well as current market rate.
- 1.3 Time for carrying out the total work will be **15 days** from the date of commencement and the date of commencement shall be reckoned from the day of issue of award letter.
- 1.4 Complete contract documents to be complied with by the tenderer whose tender may be accepted can be seen at the office of the Chief General Manager (Projects & BD), HSCC (I) Ltd, E6 (A), Block-E, Sector-I, Noida (UP)- 201301.
- 1.5 Tenders should be on the specified form (Non transferable).
- 1.6 Tenders should be submitted with the documents as per NIT along with the Earnest Money in three separate sealed covers superscribed with the name of the work, date and time of opening written on all the four inner and outer envelopes. They will be **received up to 3.00 P.M. on 27-12-12 & will be opened at 3.30 PM on the same day in the office of the** Chief General Manager (Projects & BD) , HSCC (I) Ltd, E6 (A), Block-E, Sector-I, Noida (UP) 201301. Tender should be dropped in the tender box **at Reception of HSCC** before the closing date and time indicated. In case these are sent by post these should be sent by Registered Post / Speed post addressed to the Chief General Manager (Projects & BD), HSCC (I) Ltd, E6 (A), Block-E, Sector-I, Noida (UP) 201301. Tenderers are to ensure that they post the tender well in advance so as to reach before the closing time and date indicated.
- 1.7 The Earnest Money amounting to **Rs. 10000/- (Rupees Ten Thousand only)** as per clause 11.0 of General Instructions to Bidders, Volume-III should accompany the tender. Tenders received without earnest money will be invalid.

**The earnest money deposit, Prequalification document, Tender documents, Schedule of Quantities shall be placed in three separate sealed envelopes each marked “Prequalification document & Earnest Money” (Envelope-No.1), Tender documents Vol II, III, IV, V, (Envelope No.2) and Schedule of Quantities Vol – VI (Envelope No. 3) respectively. All the envelopes shall be submitted together in another sealed envelope. The envelopes marked “Envelope No.2, “of only those tenderers shall be opened, whose earnest money deposit placed in Envelope No.1 is found to be in order and who are pre-qualified. Envelope no. 3 Price bids shall be opened only those Agency who are prequalified and technically responsive.**

- 1.8 The **HSCC** does not bind it to accept the lowest or any tender and reserves to himself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rates quoted.
- 1.9 Canvassing in connection with the tenders is prohibited and the tenders submitted by the contractor who resort to canvassing are liable for rejection.
- 1.10 Tender submitted shall remain valid for 60 days from the date of opening for the purpose of acceptance and award of work, validity beyond 60 days from the date of opening shall be by mutual consent.
- 1.11 The tenderer shall quote rates both in figures and words. He shall also workout the amount for each item of work and writes in both figures and words. On check if there are differences between the rates quoted by the tenderer in words and in figures or in the amount worked out by him, the following procedure shall be followed:
- (i) When there is a difference between the rates in figures and in words, the rates, which correspond to the amounts worked out by the tenderer, shall be taken as correct.
  - (ii) When the amount of an item is not worked out by the tenderer or it does not correspond with the rate written either in figures or in words, the rate quoted by the tenderer in words shall be taken as correct.
  - (iii) When the rate quoted by the tenderer in figures and in words tallies but the amount is not worked out correctly the rate quoted by the tenderer shall be taken as correct and not the amount.
- 1.12 Before tendering, the tenderer shall inspect the site to fully acquaint himself about the condition in regard to accessibility of site, nature and extent of ground, working condition of site and locality including stacking of materials, installations of tools and plants (T&P) etc., conditions affecting accommodations and movement of labour etc. required for the satisfactory execution of the work contract. No claim whatsoever on such account shall be entertained by the **HSCC** in any circumstances.
- 1.13 Earnest money will be forfeited if the contractor fails to commence the work as per letter of award. If any tenderer withdraws this tender within the validity period or makes any modification in terms and conditions of the tender which are not acceptable to the Department, then HSCC shall without prejudice to any right or remedy, be a liberty to forfeit 100 % (hundred percent) of the Earnest Money absolutely.
- 1.14 Except writing rates and amount, the tenderer should not write any conditions or make any changes, additions, alterations and modifications in the printed form of tenders. **Tenderers who are desirous to offer rebate the same should be brought out separately in the covering letter and submitted along with the tender.**

- 1.15 Some of the provisions of General Conditions of Contract are given below. Interpretation however shall be as given in the General Conditions of Contract.
- a) **DEFECTS LIABILITY PERIOD: Twelve months from the date of completion as certified by the HSCC.**
  - c) **SECURITY DEPOSIT:** A sum @ 10 % of the gross amount of the bill shall be deducted from each running bill of the contractor till the sum will amount to security deposit of 5 % of the tendered value of the work. In addition, the contractor shall be requested to deposit an amount equal to 5 % of the tendered value of the contract as Performance Security. The EMD shall be kept as a performance security and shall be returned after defect liability period.
  - d) **COMPENSATION:** Contractor shall pay as compensation an amount equal to one percent or such smaller amount as the **HSCC** (whose decision in writing shall be final) may decide on the cost of the whole work as shown in the agreement for every week that the work remains uncompleted or unfinished or due quantity of work remains incomplete after the proper dates. Compensation to be paid shall not exceed ten percent of the estimated cost of the work as shown in the agreement.
- 1.16 Clauses No. 26 of conditions of contract i.e. "**ESCALATION**" will not be applicable in this contract since the duration of contract is 15 days.

## **B. GENERAL INSTRUCTIONS TO BIDDERS**

### **1.1 Description of Works**

The site HSCC Corporate Office is located at E-6(A),Sector-1, Noida. The Scope of work include Supply, Installation, Testing and Commissioning of SPV system.

#### **Establishment of SPV system at HSCC Corporate Office**

##### **Introduction**

At its existing building, HSCC campus , Noida wishes to setup a high performance, SPV System products and latest, open standards based technology, high quality services and workmanship.

The system to be fixed on the terrace of the HSCC existing Office building.

##### **Scope of Work**

Supply, installation, testing and commissioning of SPV system as per Schedule of Quantity and specification.

#### **1.1.1 Payment Terms:**

- a) 75% of supply order value minus capital subsidy will be paid against delivery of materials and inspection at site. The Agency will apply for capital subsidy on behalf of HSCC. The subsidized value amount will be paid to Agency after receiving of capital subsidy from UPNEDA or relevant Govt. department. Remaining 25% of supply order value will be paid against project completion and issue of FAT (Final Acceptance Certificate). 100% payment of services will be paid against completion of job.**
- b) The Net tender value of the work (i.e. SPV quoted rate minus Capital subsidy) will be considered for finalization of lowest bidder.**
- c) In case the capital subsidy quoted by the bidder is more than the actual capital subsidy obtained from the UPNEDA/concerned authority, and the difference of these two will be deducted from the Agency.**
- d) In case the capital subsidy quoted by the bidder is less than the actual capital subsidy obtained from the UPNEDA/concerned authority. The quoted capital subsidy will be considered for finalization of Agency bill payment.**

### **1.1.2 Final Acceptance Test (FAT) :**

After successfully commissioning of the system, final acceptance tests shall be undertaken for a period of one week for integrated operation of the SPV system with overall uptime efficiency of 85% OR MORE. The Vendor in the presence of the purchaser shall carry out the final acceptance test.

### **1.1.3 Completeness**

**Any equipment, materials or supplies which may not be specifically mentioned, but are necessary for carrying out the contract work shall be in the scope of the Vendor and the systems must be complete in all respects.**

### **1.1.4 Force Majeure**

The vendor shall not be liable for forfeiture of its bid security, performance security, liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the contract is the result of an event of Force Majeure. Force Majeure means an event beyond the control of the supplier and not involving the vendor's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the vendor either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes. If a Force Majeure situation arises the Vendor shall forthwith notify HSCC in writing of such conditions and cause thereof.

Unless otherwise directed by HSCC in writing, the vendor shall continue to perform its obligations under the contract as far as is reasonably practical, and shall seek all alternative means for performance not prevented by the Force Majeure event.

### **1.1.5 Warrantee:**

One year warranty shall be included till the passing of successful acceptance test.

### **1.16 The contractor shall provide complete documentation covering the installation and maintenance of the SPV system including cabling etc.**

### **1.17 Tools and tackles**

The Vendor shall bring all special installation/maintenance tools, tackles and testing equipment required to install, commission and maintain the system.

All documents, instruction manuals etc. shall be in English language.

### **1.1.8 The successful Vendor shall submit the following documents.**



- Bill of Material and item wise compliance
- Equipment specification supported with manufacture's catalogue
- Schematic drawings and detailed plan of execution with in one weeks from placement of order

**1.1.9 The following manuals shall be furnished both in CD and hardcopies by successful Vendor.**

- Reference manuals for individual equipment.
- Training documents

**1.1.10 As built drawings in three copies.**

**Additional specific terms of the contract for establishment SPV System at HSCC,**

- a) Inspection – The inspection shall be carried out by authorized representative.

HSCC/Purchaser have the right to inspect and/or to test the material to confirm their conformity with the contract and in case any inspected/tested goods fail to perform to the specifications, the client may reject them and the supplier shall either replace the rejected goods or make alteration necessary to meet the specifications free of cost to the HSCC/purchaser.

**1.2 Employer**

Employer shall mean the **CGM(P&BD), HSCC** or any office authorized by CGM(P&BD) for the purpose.

**1.3 Time for Completion**

The successful Bidder shall complete whole Works within **15 days (Two weeks)** from order to commence the Work.

**2.0 Cost of Tendering**

- 2.1 The tenderer shall bear all costs associated with the preparation and submission of his Bids and "The HSCC" will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the Bidding process.

**3.0 Site Visit**

- 3.1 The tenderer is advised to acquaint himself with the job involved, visit the site and examine conditions, climatic conditions, labour, power, water, material availability, transport and communication facilities, environmental, regulations, laws and bye-laws of statutory bodies of Noida/ Government of U.P. and the Government of India and collect

all information that will be necessary for preparing the tenders and entering into a Contract.

The cost of visiting the Site and collecting information for the purpose of submission of the tender shall be to the tenderer's account.

- 3.2 The tenderer and any of his personnel or agents will be granted permission by the HSCC to enter upon the site for the purpose of such inspection, but only upon the express condition that the tenderer, his personnel or agents will release and indemnify the HSCC Personnel and agents from and against all liability in respect thereof and will be responsible for personnel injury (Whether fatal or otherwise), loss of or damage to property and any other loss, damage, costs and expense however caused, which, but for the exercise of such permission would not have arisen.

## **Tender Documents**

### **4.0 Content of Tender Documents**

- 4.1 The Tender Documents comprise the following:

VOLUME – I	PREQUALIFICATION DOCUMENT
VOLUME – II	A. ARTICLES OF AGREEMENT B. GENERAL CONDITIONS OF CONTRACT
VOLUME – III	A. NOTICE INVITING TENDER B. GENERAL INSTRUCTION TO BIDDERS
VOLUME – IV	A. ADDITIONAL CONDITIONS
VOLUME –V	TECHNICAL SPECIFICATION
VOLUME – VI	SCHEDULE OF QUANTITIES

- 4.2 The tenderer is expected to examine carefully all instructions, conditions, forms, terms, technical specifications and tender drawings in the tender documents. Failure to comply with the requirements of the tender documents will be at the tenderer's own risk.

Tenders, which are not substantially responsive to the requirements of the tender documents, will be rejected. Tenderers are requested to clear their queries before submission of tenders and submit tenders without conditions.

### **5.0 Clarification on Tender Documents**

5.1 A prospective tenderer requiring any clarifications on the tender documents may notify the Engineer in writing or by telex or cable at the Engineer's mailing address indicated in the tender documents. Written copies of the Engineer's response (including an explanation of the query but without identifying the source of the inquiry) will be sent to all prospective Bidders who have received the Tender documents.

## **6.0 Amendment of Tender Documents**

6.1 At any time prior to the dead line for submission of tender, the Engineer may for any reason, whether at his own initiative or in response to a clarification requested by the prospective tenderers, modify the Tender documents by amendment.

6.2 The amendment will be sent to all prospective tenderers who have received the tender documents, to arrive not later than 2 days prior to the original or extended deadline for submission of Bids, in writing or by telex or cable and will be binding upon them. Prospective Bidders should promptly acknowledge receipt thereof by telex or cable to the Engineer.

6.3 In order to afford prospective Bidders reasonable time in which to take an amendment into account in preparing their Bids, the Engineer may, at his discretion, extend the deadline for the submission of Bids.

## **Preparation of Tenders**

### **7.0 Language of Tender**

7.1 The Tender prepared by the Tenderers and all correspondence and documents relating to the Tender exchanged by the Tenderer and the Engineer shall be written in the English Language.

### **8.0 Documents comprising the Tender**

8.1 The tender to be prepared by the tenderer shall comprise of the following: the Tender, the Earnest Money , the Schedule of Quantities; the Schedules of Supplementary information, and any other materials required to be completed and submitted in accordance with the instructions to Tenderers embodied in these Tender documents. The Forms, Schedule of Quantities and Schedules provided in these Tender documents shall be used without exception.

8.2 All documents issued for the purpose of Tendering as described in Clause 5.1 and amendments issued in accordance with Clause 7, shall be deemed incorporated in the Tender. Tender Documents prepared and submitted in accordance with Clause 14 and 15 shall be returned by Bidders to the Employer along with the submission of the Bid.

## **9.0 Tender Rates**

9.1 **The tenderer shall fill the rates against each item of Schedule of Quantities both in words and figures in the blank spaces provided in the respective columns. Item for which no rate or price is entered by the bidder will not be paid for by the employer when executed and shall be deemed covered by the others rates and prices in the bill of quantities. Correction, if any, shall be made by crossing out, initialling, dating, stamping and rewriting.**

**Please note that Rate and Amount shall be quoted in Indian Rupees only in the Schedule of Quantity.**

9.2 All duties, taxes, service tax, including works contract tax and other levies payable by the Contractor under the Contract including Contractors profit and over heads etc. or for any other cost shall be included in the rates and prices and the total amount of tender submitted by the tenderer. The evaluation and comparison of tenders by the Engineer shall be made accordingly.

9.3 The rates and prices quoted by the tenderer shall be fixed for items complete in all respect for the duration of the Contract and not subject to adjustment on any account except as otherwise provided in the conditions of Contract.

9.4 The tenderer shall fill his most competitive rates in the first instance, as no negotiations shall be made after opening of the Tenders except if required with the lowest Bidder.

## **10.0 Tender Validity**

10.1 The tender shall remain valid and open for acceptance for a period of **60 days** from the last date fixed for receiving the same.

10.2 In exceptional circumstances prior to expiry of the original tender validity period, the HSCC may request the tenderer for a specified extension in the period of validity. The request and the responses thereto shall be made in writing or by cable or telex. A Bidder may refuse the request without forfeiting his Bid Security. A Bidder agreeing to the request will neither be required nor permitted to modify his tender, but will be required to extend the validity of his tender Security correspondingly.

## **11.0 Earnest Money Deposit**

11.1 The tenderer shall furnish, as part of his tender, an Earnest Money of the amount of **Rs.10000/- (Rupees Ten Thousand Only)**. No deviation shall be permitted from this.

11.2 The earnest money have to be deposited in shape of Banker's cheque /Demand draft of **Rs.10,000/- (Rupees Ten Thousand Only)** in favour of the **HSCC(D)Ltd. Payable at Noida/ Delhi from any Nationalised bank/ Scheduled bank**. In case of lowest bidder,

after award of work same amount (EMD) shall be kept as a performance security and shall be returned after defect liability period.

- 11.3 Deleted
- 11.4 Any tender not accompanied by an acceptable Earnest Money Deposit will be straightaway Rejected.
- 11.5 The Earnest Money Deposit of unsuccessful tenderers will be returned as promptly as possible but not later than 30 days after the expiration of the period of tender validity prescribed by the Employer.
- 11.6 The Earnest Money Deposit may be forfeited
- a) If a tenderer withdraws his tender during the period of tender validity.
  - b) In the case of successful tenderer, if he does not :
    - i) enter into the Contract, or
    - ii) agree to arithmetic corrections made as per terms of tender documents.
    - iii) Submitted any misleading information during prequalification and or tendering process.
- 11.7 No interest will be payable by the HSCC on the Earnest Money Deposit amount cited above.

## **12.0 Format and Signing of Tender**

- 12.1 The Tender shall be filled & signed only by the Firm/ Corporation in whose name the Tenders have been issued. The tender shall be typed or written in indelible ink and duly signed by a person or persons duly authorised to sign the tender. Proof of authorization shall be furnished in the form of written Power of Attorney, which shall accompany the tender.
- 12.2 All pages of tender shall be initialled and stamped by the person signing the tenderer where entries or amendments have been made.
- 12.3 The complete tender shall be without alterations interlining and erasures except those to accord with instruction issued by the HSCC or as necessary to correct errors made by the tenderer in which case such correction shall be initialled by person signing the tender.

## Submission of Tender

### 13.0 Sealing, Marking & Submission

13.1 The tender shall be submitted in accordance with the procedure detailed herein. Specified documents shall be enclosed in envelope of appropriate size each of which shall be sealed.

- (i) **Envelope No. 1:** Shall contain Prequalification document (Volume-I) and Earnest Money Deposit as indicated in Clause 12 of these Instructions to tenderers.
- (ii) **Envelope No. 2 :** Shall contain covering letter and the other tender documents (Vol –II, III, IV, V) duly signed including the following :
  - (a) Power of attorney of person authorised to sign the tender.
  - (b) Original tender documents (all pages) ( Vol –II, III, IV, V ) duly signed and stamped.
  - (c) Documents regarding constitution of tenderer as indicated in Clause 2.1 of these Instructions to Bidders.
  - (d) All the information as stipulated in clause 2.0 under information to be submitted
  - (e) Construction Schedule and Schedule for manpower to be deployed at Site.
- (iii) **Envelope No. 3:** Shall contain only the Schedule of Quantities (Vol – VI ) and rates/prices duly filled in and signed and stamped without any conditions whatsoever. Bids containing any conditions in Envelope No. 3 are liable to be summarily rejected.

**The Contractor must fill up price against each item of Schedule of Quantities both in words and figures in the blank spaces provided in the respective columns.**

Please note that the price should not be indicated in any of the documents enclosed in Envelope no. 1& 2. Non-compliance shall entail rejection of the tender.

13.2 The tenderer shall seal the tender.

13.3 All the above three envelopes shall be sealed in a fourth envelope and addressed to

Chief General Manager(Projects & BD),  
HSCC (India) Ltd.,  
Plot No. 6 (A), Block - E, Sector - I,  
Noida (UP) - 201 301.

13.4 All the above envelope shall bear the following identification:

Name of work: **Establishment of SPV system for HSCC Office building**

13.5 All the envelopes shall indicate the name and address of the tenders to enable the tender to be returned unopened, if required.

13.6 All recipients for the purpose of submitting a tender shall treat the contents of the documents as private and confidential.

#### **14.0 Deadline for Submission of Tenders**

14.1 Tenders must be submitted to The Chief General Manager(Projects & BD), HSCC (India) Ltd., not later than **3.00 PM of the designated date**.

14.2 The HSCC may, at his discretion, extend the deadline for submission of Bids through the issuance of an amendment .

#### **15.0 Late Tenders**

15.1 Any tender received by the HSCC after the prescribed deadline for submission will liable to be rejected and will be returned unopened to the tenderer.

#### **16.0 Modification and Withdrawal of Tender**

16.1 The tenderer may modify or withdraw his tender after tender submission, provided that modification or notice of withdrawal is received in writing by the Engineer prior to the prescribed deadline for submission of tenders.

16.2 The tenderer's modification or notice of withdrawal shall be prepared, sealed, marked and despatched in accordance with the provisions for the submission of tenders. Notice of withdrawal may also be sent by telex or cable but shall be followed by a signed confirmation copy, postmarked not later than the deadline for submission of tenders.

16.3 No tender may be modified subsequent to the dead line for submission of tenders.

16.4 No tender may be withdrawn in the interval between the deadline for submission of tenders and the expiration of the period of validity of the tender specified. Withdrawal of a Bid during this interval may result in the forfeiture of the Earnest Money Deposit.

- 16.5 Subsequent to the expiration of the period of validity of tenders prescribed in the tender documents, a successful tenderer who has not been notified by the HSCC of the Award of the Contract may withdraw his tender without penalty.

## **Tender Opening and Evaluation**

### **17.0 Tender Opening**

- 17.1 Tender shall then be opened in the office of HSCC (I) Ltd., at Plot - 6 (A), Block - E, Sector - I, Noida, Uttar Pradesh - 201 301, half an hour after the prescribed time for tender submission in presence of the tenderer's representatives who may wish to be present.

Envelope No. 1: Shall be opened first. If the Earnest Money Deposit is not found as prescribed, the tender shall be summarily rejected.

#### **The Bidders who are not pre-qualified, their tenders shall not be opened further**

Envelope No. 2: Shall be opened of those tenderers who are pre-qualified at a subsequent date to be intimated in advance to such tenderers.

Tenders of parties who do not accept the conditions laid above in the tender documents are also liable to be rejected.

- 17.2. The HSCC will examine the tenders to determine whether they are complete, whether the requisite bid securities have been furnished, whether the tenders have been properly signed and stamped and whether the tenders are generally in order.

- 17.3 Telegraphic/ Fax offer will be treated as defective, invalid and rejected. Only detailed complete tenders received prior to the closing time and date of the tenders will be taken as valid.

- 17.4 The tenderer's names, general technical details, the presence of the requisite Earnest Money Deposit and such other details as the Engineer, at his discretion may consider appropriate will be announced at the tender opening.

Envelope No. 3 : Shall contain the sealed price Bid. Whose tender is found to be generally in order and substantially responsive shall be opened either at the tender opening or at a subsequent date to be intimated in advance to such eligible tenderers.

- 17.5 Only summary of rates quoted by the tenderers will be read out.

- 17.6 The tender of any tenderer who has not complied with any of the instructions contained herein may not be considered.



17.7 The Net tender value of the work (i.e. SPV quoted rate minus Capital subsidy) will be considered for finalization of lowest bidder.

#### 18.0 **Process to be Confidential**

18.1 After the public opening of tenders, information relating to the examination, clarification, evaluation and comparisons of tenders and recommendations concerning the Award of Contract shall not be disclosed to tenderers or other persons not officially concerned with such process.

18.2 Any effort by the tenderer to influence the Employer/ Engineer in the process of examination, clarification, evaluation and comparison of Bids and decision concerning Award of Contract may result in the rejection of the tender.

#### 19.0 **Clarification of Tenders**

19.1 To assist in the examination, evaluation and comparison of tenders, the Engineer may ask tenderers individually for clarification of their tenders, including breakdowns of unit prices. The request for clarification and the response shall be in writing or cable or telex, but no change in the quoted rates or substance of the tender shall be sought, offered or permitted except as required to confirm the correction or arithmetical errors discovered by the Engineer during the evaluation of the tenders in accordance with Clause 23 hereof.

#### 20.0 **Determination of Eligibility & Responsiveness**

20.1 The Engineer will determine whether the tender is substantially responsive to the requirements of the tender documents.

For the purpose of this Clause, a substantially responsive tender is one which conforms to all the terms, conditions and specifications of the tender documents without any deviation or reservation.

20.2 A tender, which in relation to the cost estimates of the Engineer is unrealistically priced and which cannot be substantiated satisfactorily by the tenderer may be rejected as non responsive.

#### 21.0 **Correction of Errors**

21.1 Tenders, determined to be substantially responsive will be checked by the Engineer for any arithmetical errors in computation and summation. Errors will be dealt by the Engineer as per following:

a) When there is a difference between the rates in figures and in words, the rates, which correspond to the amounts worked out by the tenderer, shall be taken as correct.

b) When the amount of an item is not worked out by the tenderer or it does not correspond with the rate written either in figures or in words, the rate quoted by the tenderer in words shall be taken as correct.

c) When the rate quoted by the tenderer in figures and in words tallies but the amount is not worked out correctly the rate quoted by the tenderer shall be taken as correct and not the amount.

21.2 If a tenderer does not accept the correction of errors as outlined above, his tender will be rejected.

## **22.0 Evaluation and Comparison of Tenders**

22.1 Only such of the tenders as have been determined to be substantially responsive to the requirements of the tender documents, in accordance with Clause 22 will be evaluated. Other non-responsive tenders will be rejected.

22.2 Tenderers shall note that no preference of any nature will be given to any tenderer notwithstanding any custom, usage or instructions to the contrary.

22.3 Evaluation of the tenders will take into account, in addition to the tender amounts, the following factors:

a) Arithmetical errors corrected in accordance with Clause 22.

b) Such other factors as the Engineer considers may have a potentially significant impact on Contract execution price and payments.

22.4 Offers, deviations and other factors, which are in excess of the requirements of the tender documents or otherwise result in the accrual of unsolicited benefits to the Employer shall not be taken into account in tender evaluation.

22.5 Price adjustment provisions applying to the period of execution of the Contract shall not be taken into account in tender evaluation except to the extent specifically stated in the Contract.

## **Award of Contract**

### **23.0 Award Criteria**

23.1 Subject to Clause 24, With HSCC will Award the Contract, who has offered the lowest evaluated tender of the Schedule of Quantities, provided further that the tenderer has the capability and resources effectively to carry out the Contract Works.

### **24.0 Engineer's Right to Accept any Tender, to Reject any or all Tenders**

24.1 Notwithstanding Clause 23, the Employer reserves the right to accept or reject any tender including the lowest and to annul the tendering process and reject all tenders, at any time prior to Award of Contract, without thereby incurring any liability to the affected tenderer or tenderers .

**25.0 Letter of Award**

25.1 The letter of award will constitute the formation of the Contract.

**26.0 Signing of Agreement**

26.1 The Contract Agreement shall be executed between the HSCC and the Contractor .

26.2 The contract agreement shall be signed by (HSCC). After signing of Contract Agreement (in two originals) by contractor .

26.3 Upon the receipt of the letter of Award by the successful tenderer, the successful tenderer shall fill the Agreement in accordance with form of Agreement included in the tender documents and submit the same to the HSCC within ONE weeks of the date of receipt of letter of Award. The HSCC shall return the draft duly approved within one day from the date of receipt of the draft and the successful tenderer shall get the same engrossed, have the correct amount to stamp duly adjudicated by Superintendent of Stamps and thereafter return the same duly signed and executed on behalf of the successful tenderer, all at his own cost within 3 days from the receipt of the approved draft.

**HSCC(India) Ltd.**  
**BLOCK-E(6)A, SECTOR-1, NOIDA, U.P.-201301(India)**

**TENDER FOR ESTABLISHMENT OF 1.5 KWP SOLAR  
PHOTOVOLTAIC (SPV) System**

**VOLUME – IV  
ADDITIONAL CONDITIONS**

**DECEMBER 2012**



**HSCC (India) Ltd**  
**6 (A), Block-E, Sector – I, Noida, U.P – 201301 (India)**  
**Phone: 0120 – 2542436 – 40 Fax: 0120 – 2542447**  
**E-mail: hsccltd@hsccltd.co.in**

**Tender No. – HSCC/HO/SPV/2012-(R-01)-Second Call**

# **TENDER FOR ESTABLISHMENT OF 1.5 KWP SOLAR PHOTOVOLTAIC (SPV) System**

## **VOLUME INDEX**

<b>VOLUME – I</b>	<b>PREQUALIFICATION DOCUMENTS</b>
<b>VOLUME – II</b>	<b>A. ARTICLES OF AGREEMENT B. GENERAL CONDITIONS OF CONTRACT</b>
<b>VOLUME – III</b>	<b>A. NOTICE INVITING TENDER B. GENERAL INSTRUCTION TO BIDDERS</b>
<b>VOLUME – IV</b>	<b>A. ADDITIONAL CONDITIONS</b>
<b>VOLUME – V</b>	<b>TECHNICAL SPECIFICATION</b>
<b>VOLUME – VI</b>	<b>SCHEDULE OF QUANTITIES</b>

**TENDER FOR ESTABLISHMENT OF 1.5 KWP SOLAR  
PHOTOVOLTAIC (SPV) System  
INDEX**

**A. ADDITIONAL CONDITIONS**

<b>Clause No.</b>	<b>Descriptions</b>	<b>Page Nos.</b>
1.0 to 4.0	General	06
5.1	Damage to Persons and Property	07
5.2	Exceptions	08
5.3	Indemnity by Employer	08
6.0	Cross Liabilities	08
7.0	Accident or Injury to Workmen	08
7.1	Insurance Against Accident to Workmen	09
8.0	Compliance with Statutes Regulations	09

# TENDER FOR ESTABLISHMENT OF 1.5 KWP SOLAR PHOTOVOLTAIC (SPV) System

## INDEX

### B. SPECIAL CONDITIONS

Clause No.	Descriptions	Page Nos.
1.0	General	10
2.0	Engagement of Labour	10
3.0	Supply of Drinking water	10
4.0	Alcoholic liquor or Drugs	10
5.0	Arms and ammunition	11
6.0	Festivals and Religious Customs	11
7.0	Epidemics	11
8.0	Disorderly Conduct, etc.	11
9.0	Observance of legislations etc.	11
10.0	Fair Wages	12
	Notices	12
	Wage Records	12
	Representation of Parties	12
11.0	Safety Provision	12
12.0	Co-ordination Meeting	12
13.0	Statutory requirements	12

14.0	Procurement of Various Materials	12
15.0	Approval of Samples Prior to Use	13
16.0	Un- priced Bids	13
17.0	Details required along submission of Running/ Final Bills	13



## **A. ADDITIONAL CONDITIONS**

1. In case of any discrepancy in the item given in the schedule of quantity appended with the tender and drawings relating to the relevant item the former shall prevail unless and otherwise given in writing by the Engineer.
2. No payment shall be made to the contractor for any damage caused by the rain, snowfall, floods or any other natural cause whatsoever during the execution of the work. The damage to the work will be made good by the contractor at his own cost, and no payment on this account shall be entertained.
3. All materials used shall be as per specification and ISI marked wherever applicable. ISI marking referred relate to latest BIS code as published by Bureau of Indian Standards up to 30 days before the date of opening of the tender.
4. The following clauses (5.1 to 9.0) to may be read in conjunction with clause 14 of GCC Vol-II.
5. The contractor will submit the document on behalf of HSCC for capital subsidy to local authority, the capital subsidy value amount will be paid to the contractor after record of the same by hSCC.

### **5.1 Damage to Persons and Property**

The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the Employer against all losses and claims in respect of:

- (a) death of or injury to any person, or
- (b) loss or damage to any property (other than the Works) :

Which may arise out of or in consequence of the execution and completion of the Works and the remedying of any defects therein, and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, subject to the exceptions defined in Sub-Clause-5.2.

## **5.2 Exceptions**

The "exceptions" referred to in Sub-Clause 5.1 are:

- (a) the permanent use or occupation of land by the Works, or any part thereof,
- (b) the right of the Employer to execute the Works, or any part thereof, on, over, under, in or through any land,
- (c) damage to property which is the unavoidable result of the execution and completion of the Works, or the remedying of any defects therein, in accordance with the Contract.
- (d) death of or injury to persons or loss of or damage to property resulting from any action or neglect of the Employer, his agents, servants or other contractors, not being employed by the Contractor, or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or, where the injury or damage was contributed to by the Contractor, his servants or agents, such part of the said injury or damage as may be just and equitable having regard to the extent of the responsibility of the Employer, his servants or agents or other contractors for the injury or damage.

## **5.3 Indemnity by Employer**

The Employer shall indemnify the Contractor against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the exceptions defined in Sub-Clause 5.2.

## **6.0 Cross Liabilities**

The insurance policy shall include a cross liability clause such that the insurance shall apply to the Contractor and to the Employer as separate insured.

## **7.0 Accident or Injury to Workmen**

The Employer shall not be liable for or in respect of any damages or compensation payable to any workman other than for death or injury resulting from any act or default of the Employer, his agents or servants. The Contractor shall indemnify and keep indemnified the Employer against all such damages and compensation, other than those for which the Employer is liable as aforesaid, and against all claims, proceedings, damages, costs, charges, and expenses whatsoever in respect thereof or in relation thereto.

## **7.1 Insurance Against Accident to Workmen**

The Contractor shall insure against such liability and shall continue such insurance during the whole of the time that any persons are employed by him on the Works. Provided that, in respect of any persons employed by any Subcontractor, the Contractor's obligations to insure as aforesaid under this Sub-Clause shall be satisfied if the Subcontractor shall have insured against the liability in respect of such persons in such manner that the Employer is indemnified under the policy, but the Contractor shall require such Subcontractor to produce to the Consultant, when required, such policy of insurance and the receipt for the payment for current premium.

## **8.0 Compliance with Statutes Regulations**

The Contractor shall conform in all respects, including by the giving of all notices and the paying of all fees, with the provision of :

- (a) any National or State Statute, Ordinance, or other Law, or any regulation, or bye-law of any local or other duly constituted authority in relation to the execution and completion of the Works and the remedying of any defects therein, and
- (b) the rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the Works, and the Contractor shall keep the Employer indemnified against all penalties and liability of every kind for breach of any such provision.

Provided always that the Employer shall be responsible for obtaining any planning, zoning or other similar permission required for the Works to proceed and shall indemnify the Contractor in accordance with Sub-Clause 5.3.

## **B. SPECIAL CONDITIONS**

### **1.0 General**

1.1 These special conditions are meant to amplify the General specifications and General Conditions of Contract. In case of any discrepancy in General Conditions of Contract will prevail over the Special Conditions.

1.2 Work shall be done as per CPWD Specifications. In case of any discrepancy the order of precedence in interpretation shall be as under:

- i. Schedule of Quantities
- ii. Drawings
- iii. Additional Conditions
- iv. General Condition of Contract
- v. Special Condition
- vi. Additional Technical Specification
- vii. CPWD Latest Civil & Electrical Specification
- viii. IS Codes
- ix. International Codes
- x. Best Engineering Practices

### **2 Engagement of Labour**

The contractor shall make his own arrangement for engagement of all labour, local or otherwise, and, save insofar as the contract otherwise provides, for the transport, housing, feeding and payment thereof.

### **3. Supply of Drinking water**

The contractor shall provide at his own cost adequate quantity of drinking water on the site to the satisfaction of the Engineer's Representative for the use of contractor's and the Engineer's staff and work people, sub contractor and site visitors.

### **4. Alcoholic Liquor or Drugs**

The Contractor shall not import, sell, give, barter or otherwise dispose of any alcoholic liquor, or drugs, or permit or suffer any such importation, sale, gift, barter or disposal by his sub-contractor, agents or employees.

5. **Arms and Ammunition**

The Contractor shall not give, barter or otherwise dispose off to any person or persons, any arms or ammunition of any kind or permit or suffer the same as aforesaid.

6. **Festivals and religious Customs**

The Contractor shall in all dealing with labour in his employment have due regard to all recognised festivals, days of rest and religious or other customs.

7. **Epidemics**

In the event of any outbreak of illness of an epidemic nature, the contractor shall comply with and carry out such regulation, orders and requirements as may be made by the government, or the local medical or sanitary authorities for the purpose of dealing with and overcoming the same.

8. **Disorderly Conduct, etc**

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his employees and for the preservation of peace and protection of persons and property in the neighbourhood of the works against the same.

9. **Observation of Legislation etc.**

The Contractor shall at all times during the continuance of the contract comply fully with all existing Acts, regulation and by laws including all statutory amendments and re-enactments and acts that may be passed in future either by state or the central Government or local authority, including, Indian Workmen's compensation act, contract labour (Regulation and Abolition) Act 1970 and equal remuneration Act 1976. Factories Act, Minimum wages Act provident fund regulations employees provident fund Act and Schemes made under same act, Health and sanitary arrangements for workmen, Insurance and other benefits and shall keep the employer indemnified in case any action is commenced for contravention by the contractor. If the Employer is caused to pay or reimburse any amount for non-observance of the provision of this clause on the part of the contractor the engineer shall have the right to deduct from any moneys due to the contractor or recover from the contractor personally any sum required or estimated to be required for making good the loss or damage suffered by the Employer. all registration and station inspection fees if any in respect of his work pursuant to the contract shall be to the account of the contractor.

10. **Fair Wages**

The contractor shall pay the labours engaged by him on the work not less than a fair wages, which expression shall mean, whether or time or piecework, the respective rates of wages as fixed by the public works department as fair wages for the area payable to the different categories of Labourers or those notified under the minimum wages act for corresponding employees of the employer whichever may be higher.

The contractor shall notwithstanding the provisions of any contract to the contrary, cause to be paid a fair wage to the labourers indirectly engaged on the works including any labour engaged by subcontractor in connection with the said works as if the labourers has been immediately employed by him.

11. **Safety Provision**

The contractor shall comply with all the precautions as required for the safety of the workman by I.L.O convention (NO.62) as far as they are applicable to the contract. The contractor shall provide all necessary safety applications, gears etc. The contractor shall deliver to the Engineer's representative at his office on the site a return in detail in such form and a interval as the Employer/Engineer may prescribe showing the supervisory staff and the number of the several classes of labour from time to time employed on the site.

12. **Co-ordination Meeting**

The Contractor shall be required to attend co-ordination meetings with the Engineer, and the other Contractors during the period of Contract as instructed by the Engineer. All costs incidental to such interaction shall be to the Contractor's account and no claim will be entertained by the Employer / Engineer on this account.

13. **Statutory Requirements**

All the statutory expenditure incurred towards payment to the local body for getting local Electric inspector, sewer line and water supply connection for Employer will be reimbursed on the production of proof of payment. The contractor will be promptly extended all assistance in this connection.

14. **Procurement of Various Materials**

The Employer will not supply any construction materials required for the Works under this Contract. The Contractor must, therefore, make his own arrangements

for timely procurement of various materials including steel and cement. Prior approval of each and every material including steel cement, aggregate, bricks etc or any other fittings & fixtures are to be taken from engineer before its procurement to site.

**15. Approval of Samples prior to use**

The Contractor shall submit the samples of all materials,(Whether in list of approved make or not in list of approved make) he proposes to use in the Works for prior approval of the Engineer. Any materials not conforming to the approved samples shall be rejected.

**16. Unpriced Bids**

The un-priced copies of the purchase orders of major items/equipments and of subcontracts placed by the Contractor shall be furnished to the Engineer.

**17. Details required along with submission of running/final bills**

Contractor is required to submit following details/documents along with every running/final bill without which bills will not be processed.

- i. Bills of every section of work as provided in BOQ to be prepared separately and submitted all together. In case there is no billable amount of any section of work, the same should be clearly indicated zero value during the period of bill.
- ii. Complete measurement details along with location of each measurement should be clearly indicated.
- iii. Authorised representative of contractor with name & seal to sign on each page of bill submitted.
- iv. Carryover and brought forward for each & every quantity to be indicated in the bill.
- v. The running bill should contain the measurement of items executed during the period of bill. Full measurement may be given in pre final/ final bill. The measurement of all concealed items should be made before covering them.
- vi. All the copy of challan of materials, bills and test certificates specially of the items on which secured advance has been claimed Solar Panel material etc. should be submitted along with the every bill. Actual measurement of secured advance to be submitted for verification of Engineer. Rate of secured advance material to be verified by Engineer independently. Secured advance on approved make material will only be payable.

- vii. Manufacturer Catalogue for Solar Panel and other items for verification of standard unit weight and checking that material is as per specification should be submitted.
- viii. The computerised soft copy of the entire bill shall be submitted along with the bill.
- ix. Correction as made by Engineer Representative should be incorporated by the contractor and corrected copy in three copies should be submitted for payment. Date of submission of bill will be reckoned from the date of submission of corrected bill.
- x. Material consumption statement should be submitted along with every bill.
- xi. Bill should be indexed properly and each page and correction if any should be signed and stamped by the authorised representative of the contractor and acceptance should be given.
- xii. Contractor shall maintain a checklist at site duly marked on drawing for the items/works already measured till previous bill should be submitted along with the bill.
- xiii. Copy of duly certified bank guarantee from bank, performance BG, as required in terms of contract to be enclosed with first RA bill.
- xiv. All overwriting, alterations have been countersigned by the authorized person with date.
- xv.** In addition to above any other document and details as required for checking, verification and timely processing of bill.



**HSCC(India) Ltd.**

**BLOCK-E(6)A, SECTOR-1, NOIDA, U.P.-201301(India)**

**TENDER FOR ESTABLISHMENT OF 1.5 KWP SOLAR  
PHOTOVOLTAIC (SPV) System**

**VOLUME –V**

**TECHNICAL SPECIFICATION**

**DECEMBER 2012**



**HSCC (India) Ltd**

**6 (A), Block-E, Sector – I, Noida, U.P – 201301 (India)**

**Phone: 0120 – 2542436 – 40 Fax: 0120 – 2542447**

**E-mail: hsccltd@hsccltd.co.in**

**Tender No. – HSCC/HO/SPV/2012-(R-01)-Second Call**

# **TENDER FOR ESTABLISHMENT OF 1.5 KWP SOLAR PHOTOVOLTAIC (SPV) System**

## **VOLUME INDEX**

<b>VOLUME – I</b>	<b>PREQUALIFICATION DOCUMENTS</b>
<b>VOLUME – II</b>	<b>A. ARTICLES OF AGREEMENT B. GENERAL CONDITIONS OF CONTRACT</b>
<b>VOLUME – III</b>	<b>A. NOTICE INVITING TENDER B. GENERAL INSTRUCTION TO BIDDERS</b>
<b>VOLUME – IV</b>	<b>A. ADDITIONAL CONDITIONS</b>
<b>VOLUME – V</b>	<b>TECHNICAL SPECIFICATION</b>
<b>VOLUME – VI</b>	<b>SCHEDULE OF QUANTITIES</b>

**TENDER FOR ESTABLISHMENT OF 1.5 KWP SOLAR  
PHOTOVOLTAIC (SPV) System**

**VOLUME-V**

**INDEX**

**A. TECHNICAL SPECIFICATION**

<b>Clause No.</b>	<b>Descriptions</b>	<b>Page Nos.</b>
I.	Technical Specification	4
II.	List of approved make	6

# **I. Technical Specification**

## **1. General Description & Configuration:**

The Solar Photovoltaic Power Plant shall have capacity of 1.5 kWp to cater the electricity demand of 4-5 hours duration/day for the RO Pump installed at HSCC Noida. It should be designed such that during sunny hours the loads are fed from SPV Power and frequency levels to suit the grid voltage and frequency.

**2. Location Details** Plant in addition to battery charging. If the power produced from the Power Plant is not sufficient to feed the loads then the balanced power will be taken from the grid and battery simultaneously according to the available source. The Power Plant shall provide a reliable and independent power supply at a voltage  
As per the site situation, location details for SPV Power Plant at HSCC Noida.

## **3. Load Details**

Load details and duration as per BOQ

## **4. Brief Specifications of SPV Power Plant**

- (a) Minimum capacity: 1.5 kWp
- (b) Array should be mounted on galvanized MS/GI structures with an optimum tilt angle for maximum exposure to solar radiation.
- (c) Power Conditioning Unit consisting of
  - (i) PWM Charge Controller 24V/48VDC, 30A: 1 Nos.
  - (ii) Inverter 2 kVA, 48 VDC: 1 Nos.
- (d) Battery Bank 24V/48V, 75 AH : 1 Set
- (e) Wires and Cables & other items: As required

## **5. Solar Modules Specification**

- Solar panel comprising of 250 Wp Solar PV modules of crystalline cell efficiency minimum 16%, module efficiency minimum 15%, short circuit current(Isc) about 7.634A, open circuit voltage (Voc) 45.2 V, maximum power current about 7.076 A, maximum power voltage 35.7 V and module area less than 1.7 sq.m. Manufacturer should possess the following Certification NSIC, ISO 9001:2008, & for Solar Module IEC 61215, EN61730-I, EN61730-II, IEC 61710 and MNRE Certification for the required module or any of the Solar Module Specification.
- Structures shall be supplied complete with all members to be compatible for allowing easy installation at the rooftop/garage top site.
- The structures shall be designed to allow easy replacement of any module.
- The structures shall be designed for simple mechanical and electrical installation. There shall be no requirement of welding or complex machinery at the installation site. If prior

civil work or support platform is absolutely essential to install the structures, the supplier shall clearly and unambiguously communicate such requirements along with their specifications in the bid.

## **6. Battery Bank**

Battery bank comprising of batteries conforming to IS 13369/1992 and following specification should be supplied, installed, and commissioned:

- Battery Type: Low maintenance lead acid tubular acid battery(LMLA tubular)
- Individual Battery Voltage: 12 V rated at 27°C
- Battery Bank Voltage: 24V/48V
- Battery Capacity @ C/10: 75 AH (minimum)
- Mounting: Wooden rack
- No. of battery bank: 1 set

The following additional information on the batteries to be supplied:

- Overcharge Voltage
- Load disconnect voltage
- Modules reconnect voltage
- Float voltage
- Temperature compensation required for a proper operation
- Ampere hour efficiency / Watt hour efficiency

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

Power Conditioning Unit (PCU) provides AC power. Array Junction Box output will be fed to PCU which mainly consists of MPPT (Max. Power Point Tracker), Charge Controller, Inverter, Voltage Stabilizer and distribution panel along with necessary Displays, Indicators and Alarms. The power conditioning unit (2kVA) shall convert DC Power reduced by SPV modules and store in battery bank into grid quality AC Power.

Common Technical Specification:

- Type: Self commuted, current regulated, high frequency, IGBT based.
- Output Voltage: 230VAC
- Wave form: Pure sine wave
- Nominal DC input: 24V/48 V DC
- Total harmonic distortion: < 3%
- Operating temperature range: 50 to 550 C
- Housing cabinet: IP 20
- Inverter efficiency: >= 85%

Important Features / Protections in the PCU:

- MPPT /PWM.
- LCD keypad operator interface menu driven.
- Automatic fault conditions reset for all parameters like voltage, frequency and/or black out.

- PCU operations from 50 to 550 C, provision for air conditioning be included.
- All parameters shall be accessible through an industry standard communication link.
- Over load capacity (for 8 seconds) shall be 200% of continuous rating.

## II. LIST OF APPROVED MAKES: SPV system

Sl.No.	MATERIALS	MANUFACTURERS
1.	Solar panel	: Elecssol, HHV Solar, Alpex, BHEL/TATA BP /EMMVEE, Androgneda PCU
2.	Power Conditioning unit	: Su-Kam, Optimal Power
3.	Battery bank	: Southern, Base, Amaron, Exide
4.	Cables & wires	: Havells, Finolex, National, R.R. Kabel, Skytone, Polycab

**Note :**        **Wherever makes have not been specified for certain items, the same shall be as per BIS and as per approval of Engineer**