

TENDER NO: 07/2011

PROJECT

Construction of
Indraprastha Institute of Information Technology (IIIT-Delhi) Campus, Okhla, New Delhi

TENDER DOCUMENT for Supply, Installation & Commissioning, Testing and Comprehensive Maintenance for five years of Solar Water Heating Systems- PACKAGE 11

Issued By:

Project cum Estate Officer
On behalf of
Director
Indraprastha Institute of Information Technology

NSIT Campus, 3rd Floor, Library Building, Sector-3, Dwarka, New Delhi - 110078

Issued to:

M/s

Architects, Engineers & Project Managers:

Studio for Habitat Futures Architects & Engineers Pvt. Ltd.
Plot No. 37, First Floor, Sector -14
Kaushambi, Ghaziabad-201010
Tel: +91 120 473200
Fax: +91 120 4310257

DATED: 30-09-2011

1.	Last Date & Time of issue of tender documents	7/10/2011	...up to 5.00 p.m.
2.	Last Date & Time of receipt of tender	17/10/2011	...up to 3.00 p.m.

Name of work: **Supply, Installation & Commissioning, Testing and Comprehensive Maintenance for five years of Solar Water Heating Systems**

Time of completion : **6 Months**

Earnest Money Deposit: **Rs. 0.60 Lacs (Rupees Sixty Thousand only)** is to be submitted with tender document as earnest money.

The above payment shall be made in the form of deposit by pay order / demand draft of a scheduled bank issued in favour of **Indraprastha Institute of Information Technology, Delhi** payable at New Delhi. The EMD given by all the tenderers except for the successful tenderer shall be refunded within a fortnight from date of acceptance and award of contract. This deposit shall not attract any interest whatsoever.

Tenders in form of hard copies duly signed on each page will be considered.

- 1) The tenders shall be placed in sealed envelopes with a name of work and due date of opening written on the envelope and addressed to the PCEO (IIIT-Delhi). Complete tender documents shall be submitted by the tenderers in **three envelopes**.
- 2) **1st envelope** shall contain the tender fees as above and the prequalification document, Power of Attorney / Board Resolution of the authorized signatory of the tenderer, Solvency certificate of minimum value of Rs. 1.40 Lac from scheduled bank.
- 3) The **2nd envelope** shall contain the technical bid, Tender Notice, Conditions of Tender, Proforma of Schedules, Special Conditions, Additional Conditions, Specifications, Drawings, and Data Sheet ,EMD in shape as above etc., all duly signed by the duly authorized signatory of the tenderers.
- 4) **The 3rd envelope** shall contain the financial bids including Priced Schedule of Quantities, all duly signed by the duly authorized signatory of the tenderers.

- 5) **All these envelopes are to be put in a single envelope** duly super-scribed with the name of the work, and addressed to PCEO (IIIT-Delhi) and with their address. In case the tenderer fails to deposit the earnest money in prescribed form, financial bid shall not be opened.

Tenderers shall seal the tender, affix their initials and put stamp on each and every page of tender document and drawings before submission. All bids and supporting documentation shall be submitted in English and should be clear, free from jargons and unambiguous words or phrases requiring interpretation.

The tender of the contractor, who submits incomplete tender document or submits more than one tender for one work, shall not be considered at all and summarily rejected.

Tenders will be received by the **PCEO, IIIT-Delhi Site Office at G.B. Pant Polytechnic campus at Okhla Phase III, New Delhi** up to 3.00 P.M. on 17/10/2011. The envelope containing the prequalification document shall be opened on same day at 3.30 P.M. **in presence of contractors or his authorized representative who intend to be present.**

Only after the prequalification is completed the technical and financial bids in respect of the prequalified contractors, who fulfill the criterion in prequalification documents, shall be opened at a later date which would be informed to such prequalified applicants.

No Xerox / certified copies of tenders shall be accepted, if submitted these tenders shall be rejected.

The information contained in this Tender Notice provided to the tenderers on behalf of IIIT-Delhi is being provided to all interested tenderers on the terms and conditions set out in this Tender Notice and other related documents.

This Tender Notice is not an agreement and is not an offer or invitation to any other party. The purpose of this Tender Notice is to provide tenderers with information to assist/help the formulation of their proposal submission. This Tender Notice does not purport to contain all / every information that tenderers may require. This Tender Notice may not be appropriate for all persons, and it is not possible for IIIT-Delhi to consider the investment objectives, financial situation and particular goals / needs of each tenderer. Each tenderer should conduct its own investigation and analysis, and should check the accuracy, reliability and completeness of the information in this Tender Notice and obtain independent advice from appropriate sources, as necessary. IIIT-Delhi and / or their advisors make no representation or warranty and shall incur no liability, financial or otherwise, under any law, statute, rules or regulations as to the accuracy, reliability or completeness of the Tender Notice and other documents provided by IIIT-Delhi.

IIIT-Delhi may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information / content in this Tender Notice and / or any related document(s). **IIIT-D reserves the right to accept or reject in part or whole any application for prequalification or tender bid without assigning any reasons whatsoever. Conditional tenders will be rejected.**

CONDITIONS OF TENDER

1. The time allowed for carrying out the work will be **6 months** from the date of start as defined in schedule “F” or from date of handing over the site whichever is later in accordance with phasing if any indicated in the tender documents.
2. The site for the work is available.
3. The successful tenderer / contractor apart from his liability or obligations under the contract shall be responsible for the acts, defaults and neglects of any sub-contractor, his agents or workmen as fully as if they were the acts, defaults or neglects of the contractor, his agents or workmen.
4. The Contractor whose tender is accepted will be required to deposit / furnish an amount as Performance Guarantee equal to 5% (Five Percent) of the tendered amount of the work in the form of an irrevocable bank guarantee bond of any scheduled bank or State Bank of India in accordance with the form prescribed or in the form of fixed deposit receipt within 8 days of the issue of letter of acceptance issued by IIIT-Delhi. The performance guarantee shall have the validity up to twelve month after the stipulated date of completion and including the comprehensive AMC period of five years as awarded, as mentioned in the Agreement and / or actual date of completion as recorded by competent authority whichever is later.
5. Tenderers are advised to inspect and examine the site and its surrounding and satisfy themselves before submitting their tenders as to the nature of site ,access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed. The tenderer shall be responsible for arranging and maintaining at own cost all materials, tools and plants, water, electricity, access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contact documents. Submission of a tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specification of the work to be done, and of conditions and other factors having a bearing on the execution of the work.
6. The Accepting Authority, Director (IIIT-Delhi), does not bind himself to accept the lowest or any other tender and reserves to itself the authority to reject any or all of the tenders received without the assignment of any reason. All tenders in which any of the prescribed conditions is not fulfilled or for any variance of conditions including that of conditional rebate is put forth by the tenderer shall be summarily rejected.
7. Canvassing, whether directly or indirectly, in connection with tenders is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.
8. The Accepting Authority, Director (IIIT-Delhi), reserves to himself the right of accepting the whole or any part of the tender without assigning any reasons thereof and the tenderer shall be bound to perform the same at the rates quoted.

9. Tender for the work shall remain open for acceptance for a period of 120 days from the date of opening of the tenders. If any tenderer withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier or makes any modification in the terms and condition of the tender which are not acceptable to the IIIT-Delhi, then IIIT-Delhi shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money absolutely as aforesaid besides black listing of the tenderer. Further the tenderer shall not be allowed to participate in re-tendering process of work and for any other tender of IIIT-Delhi forever.
10. The notice inviting tender shall form a part of the contract document. The successful tenderer/ contractor on acceptance of his tender by the accepting authority shall within fifteen days from stipulated date of start of work sign the contract consisting of:
 - a) The notice inviting tender, all the documents including additional conditions, special conditions, specifications and drawings, if any, forming the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.
 - b) Standard CPWD Form 8 as amended up to the date of opening of tender.
11. Agreement shall be drawn with the successful tenderer on prescribed Form No. CPWD 8, which is available as a Govt. of India Publication and prescribed proforma. Tenderer shall quote his rates as per various terms and conditions of the said Form and given in this document which will form part of the contract agreement to be executed.
12. Contract is liable to be terminated by the IIIT-Delhi without payment of any compensation, if subsequent to the acceptance of tender, the contractor is blacklisted by IIIT-Delhi and / or any other department (State or Central), Govt. or their Undertakings, or enters into any arrangement / partnership with or employs any such blacklisted contractor.
13. Cost of Bidding
 - 13.1 The tenderer shall bear all costs associated with the preparation and submission of his tender, and the IIIT-Delhi will in no case be responsible and liable for those costs.
14. Clarification of Bidding Documents
 - 14.1 A tenderer, requiring any clarification of the tender documents may notify the PCEO IIIT-Delhi in writing / mail at the address. The queries should reach at least 2 days in the advance of pre bid meeting. The queries will be addressed in the pre bid meeting to be held on 10/10/2011.

E-mail: sanjay@iiitd.ac.in and dks@sanjayprakash.co.in with copy to both the mails
 - 14.2 Pre-bid Meeting
 - 14.2.1 The tenderer and / or their authorized representatives are invited to attend a pre-bid conference at IIIT-Delhi Site office at GB Pant polytechnic campus Okhla Phase III, New Delhi, Contact No: Sh. D. K. Sharma, Project Management Consultant - 9910441015, Sanjay Roy, PCEO - 9810703281 on 10/10/2011 at 10.30 A.M. to clarify issues and answer questions on any matter that may be raised.
15. Currencies of Bid and Payment
 - 15.1 The unit rates and the prices shall be quoted by the Tenderer entirely in Indian Rupees. All payments will be made in Indian Currency (Indian Rupees.) only.

16. PROTECTION OF ENVIRONMENT AND OTHER LAWS:

The contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation.

During continuance of the contract, the contractor and his sub-contractors shall abide at all times by all existing enactments on environmental protection and other central / state / local Acts / Laws / rules made there under, regulations, notifications and bye-laws of central / state / local authorities or any other law, bye-laws, regulations that may be passed or notification or any other order(s) / directive(s) having the force of law that may be issued in this respect in future by the Central / State / Local government(s) / judicial bodies / authority(ies).

17. Indemnity

The Tenderer shall indemnify and hold IIIT-Delhi harmless from:

- (a) any losses on account of injury to or death of persons (including the employees of the Tenderer and / or IIIT-Delhi and/or Third Party) damage to or loss of property (including the property of the Tenderer and / or IIIT-Delhi and/or Third Party) arising directly or indirectly out of the acts or omissions of the Tenderer, its subsidiaries, affiliates, subcontractors and suppliers or any of their respective officers, directors, employees, servants or agents in the performance of Tenderer's obligations, including any expenses and attorney's fees incurred by IIIT-Delhi for legal action to enforce the indemnification obligations of the Tenderer, except injury to or death of persons or damage to or loss of property caused solely by the proven negligence or wilful misconduct of IIITD provided that tenderer shall be responsible for any claim arising in respect of or in consequence of any accident or injury to any of Tenderer's employees;
- (b) any losses arising by reason of claims by Statutory Authority or others for any actual or asserted failure by any of Tenderer, its subsidiaries, affiliates, subcontractors and suppliers of any of their respective officers, directors, employees, servants or agents to comply with any Applicable Law or with any rules and regulations, including failure by any of Tenderer, its subsidiaries, affiliates, subcontractors and suppliers or any of their respective officers, directors, employees, servants or agents to pay taxes, duties or fees properly applicable to it or them; and
- (c) any losses arising by reason of claims by any subcontractor, supplier or other person claiming by, through, under or against Tenderer for the actual or asserted failure by Tenderer to make payment for any labour, services, equipment, materials, tools, supplies or taxes out of funds provided to Tenderer by or on behalf of IIIT-Delhi for such payment.

For and on behalf of the
DIRECTOR
Indraprastha Institute of Information Technology
New Delhi

CPWD-8

INDRAPRASTHA INSTITUTE OF INFORMATION TECHNOLOGY

STATE: Delhi

Item Rate Tender & Contract for Works of: **Construction of Indraprastha Institute of Information Technology Campus, Okhla, New Delhi. Package XI– Supply& installation of solar hot water system**

- (i) To be submitted by 1500 hours on 17/10/2011
- (ii) To be opened in presence of tenderers who may be present at 1530 hours on 17/10/2011 in the office of **PCEO, IIIT-Delhi Site Office at G.B. Pant Polytechnic campus at Okhla Phase III, New Delhi**

Issued to: M/s-----
(Contractor)

Signature of officer issuing the documents -----

Designation-----

Date of issue:-----2011

TENDER

I / We have read, examined and understood the Tender Notice, Conditions of Tender, Proforma of Schedules, Special Conditions, Additional Conditions, Specifications, Drawings & Designs, General Conditions of Contract , Schedule of Rate & other documents and Rules referred to in the conditions of contract and all other contents in the tender document for the work.

I / We hereby tender for the execution of the work specified for IIIT-Delhi within the time specified in Schedule 'F', viz., schedule of quantities and in accordance in all respects with the specifications, designs, drawings and instructions in writing referred to in Clause 11 of the General Conditions of contract for Central PWD Works 2008 and with such materials as are provided for, by, and in respects in accordance with, such conditions so far as applicable.

We agree to keep the tender open for one hundred twenty (120) days from the due date of its opening and not to make any modifications in its terms and condition.

A sum of Rs..... (Rupees) is hereby forwarded in form of demand draft of a scheduled bank as earnest money. If I / we, fail to furnish the prescribed performance guarantee within prescribed period, I / we agree that the said Director, IIIT-Delhi, or his successors in office shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely. Further, if I / we fail to commence work as specified, I / we agree that Director, IIIT-Delhi, and / or his successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the performance guarantee absolutely, otherwise the said earnest money shall be retained by him towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be ordered, up to maximum of the percentage mentioned in Schedule ' F' and those in excess of that limit at the rates to be determined in accordance with the provision contained in relevant clauses of the tender form. Further, I / We agree that in case of forfeiture of earnest money or both Earnest Money & Performance Guarantee as aforesaid, I / We shall be debarred for participation in the re-tendering process of the work.

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

Dated:

Witness:

Signatures of Contractor

Address:

Postal Address:

Occupation:

ACCEPTANCE

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on behalf of DIRECTOR, IIIT-Delhi for a sum of

Rs. ----- (Rupees -----)

The letters and / or documents referred to below shall inter-alia form part of this contract:-

- NIT / CPWD Form 8
- Other clarifications / corrections / documents provided
- Additional conditions.
- Special conditions for contract for civil, electrical and plumbing works
- Schedule of Quantities
- Drawings
- General conditions of contract for CPWD Works-2008 with up to date correction slip issued by o/o DG CPWD as on date of receipt of tender.
- Decisions /Clarifications in Pre-bid conference.
- Letters written / exchanged by / with contractor (whose tender is accepted) before award of work including negotiation confirmation letter.
- CPWD specification and technical specifications for civil, electrical, plumbing works, including reference to any standards etc. such as IS codes / guidelines / specifications.
- Clarifications sought / provided by the contractor.
- Performance Guarantee/ Earnest money / Security deposit.
- Detailed agreement to be executed including inter-alia all of the above.

(Engineer-in-Charge)
For & On behalf of
DIRECTOR
IIIT, Delhi

Signature

Dated.....

Designation.....

PROFORMA OF SCHEDULES

SCHEDULE 'A'

Schedule of quantities (Enclosed) : Enclosed

SCHEDULE 'B'

Schedule of materials to be issued to the contractor : NIL

SCHEDULE 'C'

Tools and plants to be hired to the contractor : NIL

SCHEDULE 'D'

Extra schedule for specific requirements/documents for the work, if any : NIL

SCHEDULE 'E'

Schedule of component of cement, steel, other materials, labour etc. for price escalation. : NIL

CLAUSE 10 CC

Component of Cement - expressed as percent of total value of work : N / A

Component of Steel-expressed as percent of total value of work : N / A

Component of civil (except cement & steel) / electrical construction materials-expressed as percent of total value of work : N / A

Component of labour-expressed as percentage of total value of work : N / A

Component of P.O.L. - expressed as percentage of total value of work : N / A

SCHEDULE 'F'

Reference to General Conditions of contract for Central P.W.D. Works 2008 with

1. Correction slips/ amendments / changes in clauses in the General Condition of the contract for CPWD Works 2008 issued by DG (W) CPWD upto the date of receipt of tender.

1. Additional Conditions.
2. Special Conditions.
3. Guarantee Bonds.
4. List of makes

(A) Name of work: **Construction of Indraprastha Institute of Information Technology Campus, Okhla, New Delhi, Package X1-Supply & installation of solar hot water system**

- | | | | |
|-------|-------------------------|---|--|
| | Estimated cost of work | : | Rs. 30 lac (Rupees Thirty lac only) |
| (i) | Earnest money | : | Rs. 60,000/- (Rupees Sixty Thousand only) |
| (ii) | Performance Guarantee | : | 5% of the Tendered value. -The Contractor shall be required to deposit / furnish an amount equal to 5% of the tendered value of the work as Performance Guarantee in the form of an irrevocable Bank Guarantee bond of any Scheduled Bank or SBI in accordance with the form prescribed, fixed deposit receipt of Scheduled Bank in the prescribed form with in period specified in schedule 'F'. This shall be for the period of contract +defect liability+ comprehensive AMC period of 5 years as awarded |
| (iii) | Security Deposit | : | 5% of the Tendered value -5% of the gross amount of the running bill shall be deducted from each running bill of the contractor till such time, that the total money so deducted along with the money already previously deposited as earnest money with IIITD, amounts to 5% of the total tender value of the work. Bank Guarantee is not to be accepted as security deposit. |
| (iv) | Defect Liability period | : | 12 months after date of record of completion certificate by the PMC (Project Management Consultants) / Architects and accepted by the Competent Authority. |
| (vi) | Liquidated damages | : | @1.5% per month of the delay to be computed on day basis limited to maximum of 10% of the tendered value of the work for reasons attributable to the contractor |

General Rules & Direction:

- | | | | |
|-----|-------------------------|---|--|
| (i) | Officer inviting tender | : | PCEO IIIT-Delhi, NSIT Campus, 3 rd Floor, Library Building, Sector 3, Dwarka, New Delhi 110078. |
|-----|-------------------------|---|--|

Definitions:

- | | | | |
|-------|---|---|---|
| (i) | Engineer-in-Charge | : | Project cum Estate Officer, IIIT-Delhi |
| (ii) | Accepting Authority | : | Director, IIIT-Delhi |
| (iii) | Percentage on cost of materials and labour to cover all overheads and profits | : | 15% |
| (iv) | Standard Schedule of Rates | : | CPWD DSR / Electrical with correction slips issued as on date of receipt of tender. |
| (vi) | Department | : | IIIT-Delhi |

(vii) Standard CPWD Contract Form : CPWD Form 8 - 2008 with correction slips issued as on date of receipt of tender.

Clause 1

(i) Time allowed for submission of Performance Guarantee From the date of issue of letter of acceptance : 8 days

(ii) Maximum allowable extension beyond the period (Provided in (I) above) : 7 days

Clause 2

Authority for fixing compensation under clause 2 : Director, IIIT-Delhi

Clause 2A

Whether clause 2A shall applicable : Yes

Clause 5

Number of days from the date of issue of letter of acceptance for reckoning date of start : 15 days

Time allowed for execution of work : 6 months

Clause 6, 6A

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

Clause 7

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

Clause 10A

List of testing equipment to be provided by the contractor at site lab : As per CPWD Works Manual

Clause 10 B (i), 10 B (ii) & 10 B (iii)

Whether Clauses 10B (i) shall be applicable : Yes,

Whether Clauses 10B (ii) shall be applicable : Yes, Interest will be charged on mobilization advance against bank guarantee of 110% value of advance bearing simple interest @10% per annum from the date of payment to the date of recovery on the outstanding amount of the advance.

Whether Clauses 10B (iii) shall be applicable : No
Yes

Whether Clauses 10B (iv) shall be applicable

Whether Clauses 10C shall be applicable : Yes, after 18 months from Date of acceptance of tender.

Clause 10CA

Escalation : Not applicable .

Clause 10CC

Escalation : Not applicable .

Authority to decide

(i) Extension of time : Director IIIT, Delhi

(ii) Re Scheduling of milestone : Director IIIT, Delhi

Clause 12, 12.2, 12.3

Deviation limit beyond which clauses 12.2 : Not applicable
& 12.3 shall apply for building work

Clause 16

Competent Authority for deciding reduced : Director, IIIT -Delhi
rates

Clause 17

Contractor liable for Damages, defects : Yes, Applicable
during maintenance period

Clause 18

List of mandatory machinery, tools & plants : As per CPWD Norms
to be deployed by the contractor at site

Clause 36(i)

Requirement of Technical : As per CPWD Norms
Representative(s)

General Conditions

1. In the event of the tender being submitted by a firm, it must be signed by a person duly authorized through a power of attorney issued by all the partners and a certified copy of the power of attorney should be enclosed with the forwarding letter or separately by each member thereof, or in the event of the absence of any partner, it must be signed on his behalf by a person holding a power of attorney authorizing him to do so and such power of attorney shall be produced with the tender and it must disclose that the firm is registered under the Indian Partnership Act, 1932, together with registration particulars. Any / every power of attorney document shall be duly registered or notarized with the notary serial number written thereon and endorsement of the notary about signature / entry of the same in the register of the notary.

In the event of the tender being submitted by a Company, it must be signed by a person duly authorized by board resolution duly passed in the meeting of the Board of Directors of the Company and a certified copy of the board resolution should be enclosed with the forwarding letter and it must disclose that the company is registered under the Companies Act, 1956 along with the CIN of the company.

Each and every signature given shall be separately witnessed. A contractor or a contractor who himself / themselves has / have tendered or who may tender for the work shall not witness the tender of another person for the same work. Failure to observe this condition would render tenders of the contractors tendering as well as witnessing the tenders liable for summary rejection.

2. The conditions for item rate tender only will be applicable as given in general conditions of contract for Central PWD Works 2008. As mentioned therein also, in the event no rate has been quoted for any items leaving space both in figure(s), word(s) and amount blank, it will be presumed that the contractor has included the cost of this / these item(s) in other item(s) and rate for such item(s) will be considered as zero and work will be required to be executed accordingly. Rates quoted as percentage below / above in the tender will be summarily rejected.
3. The quantities in the bills of quantities are only estimated quantities and are liable to change. The contract is **not a lump sum contract**; payments will be made on the quantities of work actually done and measured at the accepted rates.
4. No additions / alterations are to be made by the tenderer in the drawings, specifications, conditions or quantities and any such additions or alterations made by the tenderer will make the tender, invalid and will be summarily rejected. Conditional tenders will also be rejected.
5. The tenderer shall also bear all expenses in connection with the preparation and submission of his tender and attendance for subsequent negotiations / clarifications.
 - (i) Omission, negligence or failure on the part of the tenderer to obtain requisite and reliable information on any matter affecting his tender, the contract and the construction, completion, maintenance, (dismantling and disposal) of the work shall not relieve the tenderer from any liability in respect of the contract.
 - (ii) The tenderer whose tender is accepted shall not be entitled to make any claim for increase in the rates quoted and accepted except as per specific provision in the contract.
6. The Contractor, upon award of work, shall furnish the following details for the approval of the Engineer in charge:
 - 6.1. The names of manufacturers of specialized items.

- 6.2. The makes and types of fittings, materials, subject to the makes and type stipulated in the specifications, which he proposes to use in the work.
- 6.3. The details of licenses granted to him and /or to professional qualified and / or licensed technical personnel on his staff who will be engaged on the work (and submit, if called for, the licenses for inspection by the Officer in charge in consultation with Engineer in charge). Only licensed electrical agencies will be allowed to execute the works.
- 6.4. Only approved agencies / skilled workers shall be deployed to carry out requisite specialized items of work. The decision of Engineer in Charge in this regard shall be final and binding to all the parties concerned.
- 6.5. All electrical, plumbing, fire fighting and allied works are to be coordinated and coherently carried out by the contractor to achieve the timely completion of works.
7. The tenderer must obtain for himself on his own responsibility and at his own expense all the information necessary, including risks, contingencies and other circumstances to enable him to make a proper tender and to enter into a contract with the IIIT-Delhi. He must examine the drawings, specifications, conditions and so on and must inspect the site of work, examine the nature of the ground and the subsoil (so far as is practicable) and acquaint himself with local condition, means of access to the work, storage facilities or areas for staff colony, the nature of the work, in fact all matters pertaining thereto before he submits his tender.
8. The rates quoted in the bills of quantities unless specified otherwise shall be for all heights, depths, shapes, sizes etc. for finished complete work in-situ / item including by working overtime / holidays / gazetted holidays. 24x7 and for all taxes, octroi, excise, VAT works in addition to service tax and para 6, page 10 of General Condition of Contract.
 - 8.1. The rates shall be firm and not be subject to any variations in exchange rates, in taxes, duties etc. in railway freight and the like including labour rates etc. The rates are not subject to change/increase/escalation for a period upto 18 months from the date of acceptance.
9. The IIITD further reserves the right to delete or reduce at any time, any section of the bills of quantities without assigning any reasons whatsoever there for and no claim will be entertained in this regard in addition to para 8.3, page 11 of General Condition of Contract.
10. The tenderer whose tender is accepted is bound to execute formal agreement with the IIIT-Delhi within one week of the date of intimation of award of work in accordance with the acceptance of the tender in the approved proforma, but his liability under the contract shall commence from the date of written order to commence work whether the formal agreement is drawn or not. The Contractor shall bear all expenses in connection with the execution of the said agreement including fees for stamping and registration of documents as required.
11. It will be the sole responsibility of the contractor to procure all equipments / materials and other materials required for the work:-
12. The Security Deposit will bear no interest what so ever until the date of release.
13.
 - (a) The contractor, upon award of work, shall submit a memorandum of procedure giving the outline of his general scheme, programme and time table, in the form of a chart. The programme shall be scrutinized and approved (with modifications as necessary), which shall become the approved programme for execution. The approved programme shall be the basis for assessment of comparative progress under the relevant conditions of contract.
 - (b) Over and above, the contractor has to supply monthly programme chalked out

showing important milestones to be achieved and the progress actually achieved compared with, the target of the same in the programme and shortfall, if any planned for being made up in the programme for next month.

14. (a) The work in general shall conform to the CPWD Specifications with up to date correction slips issued as on date of receipt the tenders and the "Specifications for works".
- (b) In case items not covered by the general specifications referred above, reference shall be made to the appropriate I.S. Code.
- (c) Should there be any difference in the particular specifications of individual item of work and the description of item as given in the Schedule of quantity, the latter shall prevail, which will be as per the relevant drawing.
- (d) In case of any work for which there is no specification in I.S. specifications or in the specifications forming part of tender documents or in case there is any variation, such work shall be carried out in all respects in accordance with the instructions to be issued by the Engineer in charge.
15. The Contractor, upon the award of contract, shall furnish all the particulars required and make the necessary applications, if any, to the local Municipal Authorities, Electrical Boards for obtaining water supply and under ground sewage connections ,electricity connections, transformer and obtain the same at his cost for temporary connection. .But for permanent connection, IIIT-Delhi will reimburse the amount after getting proper documents. All electricity bills for the works shall be borne by the Contractor.
16. The Contractor is required to comply with all Acts of Government relating to labour, safety, environment and other Rules and Regulations made there under from time to time and to submit at the proper times all particulars and statements required to be furnished to the appropriate Authorities.
17. **Contractor to provide everything necessary:** The Contractor shall provide everything necessary for the proper execution of the Work according to the intent and meaning of the Drawings, Schedule of Quantities and Specifications taken together whether the same may or may not be particularly shown or described therein provided that the same can reasonably be inferred there from, and if the Contractor finds any discrepancy in the Drawings or between the Drawings, Schedule of Quantities and Specification he shall immediately and in writing refer the same to the Architect who shall decide which is to be followed. He shall provide for works to be executed round the clock to achieve the milestones and 24x7 and no extra shall be payable for the same.
18. **Materials and Workmanship to conform to Descriptions:** All materials and workmanship shall so far as procurable be of the respective kinds described in the Schedule of Quantities and / or Specification and in accordance with the Architect's Instructions, The Contractor shall at his own cost arrange for and / or carry out any test of any materials which the Architect may require.
19. **Removal of improper work:** The Architect / PMC / PCEO shall, during the progress of the work, have the power to order the removal, from the site or works within such reasonable time or times as may be specified in the order, of any materials which in the opinion of the Architect are not in accordance with the Specification or the Instructions of the Architect, the substitution of proper materials, and the removal and proper re-execution of any works executed with materials or workmanship not in accordance with the drawings, specifications or instructions and the contractor shall forthwith carry out such order at his own cost. In case of default on the part of the contractor to carry out such order, IIIT-Delhi shall have the power to employ and pay other persons to carry out the same, and all expenses consumed thereon or incidental thereto as certified by the Architect shall be borne by the Contractor, or may be deducted by IIIT-Delhi from any moneys due or that may become due to the contractor.
20. The contractor shall make all necessary arrangements for water supply, electricity and

any other incidentals as required for the construction, at his own cost. No extra charges shall be payable for water from outside fit for construction purposes.

21. Procedure for Settlement of Disputes

21.1 Engineer's Decision

If a dispute of any kind whatsoever arises between IIIT-Delhi and the contractor in connection with, or arising out of, the contract or the execution of the works, whether during the execution of the works or after their completion and whether before or after any repudiation or other termination of the contract, including any dispute as to any opinion, instruction, determination, certificate or valuation of the engineer, the matter in dispute shall, in the first place, be referred in writing to the engineer, with a copy to all parties. Such reference shall be made within one (1) month of arising of any such dispute and state that it is made pursuant to this clause. No later than one (1) month after the day on which he received such reference the engineer shall give notice of his decision to IIIT-Delhi and the contractor. Such decision shall state that it is made pursuant to the reference under this clause.

Unless the contract has already been repudiated or terminated, the contractor shall in every case, continue to proceed with the works with all due diligence and the contractor and IIIT-Delhi shall give effect forthwith to any / every such decision of the engineer unless and until the same shall be revised, as hereinafter provided, in an amicable settlement or an arbitral award. If either IIIT-Delhi or the contractor be dissatisfied with any decision of the engineer, or if the engineer fails to give notice of his decision on or before one (1) month after the day on which he received the reference, then either IIIT-Delhi or the contractor may within a further period of one (1) month from the day on which it / they receive(s) the notice of such decision, or on the day on which the said period of notice of / for decision expired, as the case may be, give notice to the other party, with copy for information to the engineer, of its / their intention to commence arbitration. Such notice shall establish the entitlement of the party giving the same to commence arbitration, as hereinafter provided, as to such dispute and no arbitration in respect thereof may be commenced unless such notice is given. If the engineer has given notice of his decision as to a matter in dispute to IIIT-Delhi and the contractor and no notification of intention to commence arbitration as to such dispute has been given by either IIIT-Delhi or the contractor as herein provided, the said decision shall become final and binding upon IIIT-Delhi and the contractor.

21.2. Amicable Settlement

Where notice of intention to commence arbitration as to a dispute has been given in accordance with sub-clause 22.1, arbitration of such dispute shall not be commenced unless an attempt has first been made by the parties to settle such dispute amicably. Provided that, unless the parties otherwise agree, arbitration may be commenced on or after one (1) month from the day on which notice of intention to commence arbitration of such dispute was given, whether or not any attempt at amicable settlement thereof has been made or result achieved.

21.3. Arbitration

Any dispute in respect of which:

- a) the decision, if any, of the engineer has not become final and binding pursuant to the first sub-clause above,
- b) amicable settlement has not been reached within the period stated in the second sub-clause above,

shall be finally settled, unless otherwise specified in the contract, by arbitration to be held in New Delhi in English, under the provisions of the Arbitration and Conciliation Act 1996, including any statutory reenactment(s) / amendment(s) thereof and Rules made thereunder, by the arbitrator. The Director of the Institute shall appoint one person as the sole arbitrator. Either party shall be limited in the proceeding before such arbitrator to evidence or arguments put before the engineer for the purposes of obtaining the said decision pursuant to the first sub-clause herein. No such decision shall disqualify the engineer from being called as a witness and giving evidence before the arbitrator on any matter whatsoever relevant to the dispute. Arbitration proceedings shall not be commenced prior to the completion of the works, unless any major pre-requisite criticality is discerned by the arbitrator, and the obligations of IIIT-Delhi, the engineer and the contractor shall not be altered by reason of the arbitration. The works shall not be stopped on account of the said process of arbitration and the contractor shall not be relieved of his responsibilities for the completion of the work under any circumstances whatsoever

ADDITIONAL CONDITIONS

1. General conditions of contract for Central PWD Works 8 (with correction slips issued upto the date of receipt of tender) shall be part of the agreement.
2. The work in general shall confirm to the CPWD specifications for electrical works (Internal part 1)2009 & CPWD specifications for electrical works (External part 1)2009 up to date correction slips issued as on date of receipt of the tender and the "Specifications for works".
3. As built drawings for all services shall be submitted by the contractor within 30 days of completion else contractor shall be liable for paying compensation for the same as per CPWD provisions.
4. The Contractor shall have to clear the site for the work of all overlying rubbish / garbage / dumped refuse material prior to commencement of the work in case required at no extra cost. The contractor shall take approval from the Engineer / Officer in Charge in writing for collection and stacking of materials.
5. The contractor must follow CPWD Safety Code as provided in general conditions of contract for CPWD Works 2008.
6. The Contractor will be responsible for execution of the works to the satisfaction of IIIT-Delhi, in compliance to requirements of the work as per drawings, specifications, designs and instructions of Architects / PMC, Quality Assurance agency, Vigilance / CTE accordingly.
7. Any damage done by the contractor or his workmen to any existing work during the course of execution of the work shall be made good by him at his own cost.
8. Contractor shall clear the site thoroughly of all rubbish etc. left out of his materials immediately on completion of the work and properly keep the site clean around the building to the satisfaction of the Engineer- in-Charge.
9. The preference of the codes will be IS codes. Wherever there is a reference to any IS Code, Act, Rule / Law the latest amended version of the same shall be followed.
11. Unless specifically mentioned otherwise, quoted Rates shall be deemed to include work to be carried out at all curvatures, heights, depths, inclinations and locations, and in wet/foul locations, as and when they are encountered. The rates quoted for the various works as specified in the Priced Schedule of Quantities are work Nothing extra is payable on this account.
12. All security precautions shall be taken during construction work. The site shall be fenced / barricaded with suitable material during construction period. No payment shall be made for fencing / barricading work. Fencing / barricading shall be done immediately after possession of site and shall be removed after completion of construction period.
13. No space on site / otherwise for labour huts shall be provided by IIIT-Delhi.
14. For the settlement of any disputes and arbitration, only Indian Arbitration and Conciliation Act 1996 shall be applicable with any reenactments / amendments / Rules there-of / under. The Director IIIT-Delhi will appoint one person for settlement of disputes in case of need for arbitration, whose recommendations may then be accepted by the Director / Board of Governors (BOG) / Institute authorities as partial amendment to CPWD conditions for the said items.

15. In case any specific brand of material has been specified either the same brand or of approved make of same specifications shall be used. The contractor shall take approval in advance for all such materials.
17. The contractor shall prepare proper Shop/Fabrication drawings and shall seek prior approval for these from Architect / PMC / Project cum Estate Officer prior to construction of items. 18. As built drawings shall be prepared by the contractor for all services works in hard and soft copies. This shall be pre requisite before the submission of the Final bill.
19. A sample of the all finishing items/fixtures/fittings etc., would have to be got approved prior to execution in mass scale. Costs for all materials and labour for the preparation of samples, market research, etc. shall be borne by the Contractor within his quoted Rates and nothing extra shall be payable for this. The works shall not be proceeded with without approval of the sample. In case sample is rejected a fresh sample shall be prepared. Cost of such samples will not be paid extra.
20. The contractor should take utmost care to avoid any damage to the existing underground pipes, cables, telephone cables, water harvesting system, sprinkler system, etc. in place. In case of any damage, it would be the responsibility of the contractor to restore the same immediately.
23. In case of Non DSR items, though every care is taken to explain the intent of such items, however the rate quoted by tenderers for such items should cover the completeness of the item irrespective of inadequacy in explanation if any.
24. In case of delay in local body approvals holding the commencement of works, suitable extension of time and rescheduling of milestones shall be accorded without any financial implications and the contractors shall have no claim towards any extra payment on such account whatsoever.
25. In the list of recommended makes out of two / three makes mentioned only 1st make shall be quoted for and used. However due to non availability or any other technical reason, the alternative make if allowed by the Engineer in Charge it shall be subject to price adjustment as approved by IIIT-Delhi / PMC.
26. All unwired conduits shall be provide with pull wire and protected from clogging. No extra shall be payable for the same.
27. The contractor shall be responsible to obtain CEIG approval for entire installation. Further the contractor shall be responsible for all compliances statutory or otherwise for obtaining power supply from the utility company.
28. The contractor shall be responsible for coordination with other agencies deployed at site separately by the employer and provide all necessary support -water electricity scaffolding and infrastructure for smooth execution of the works on mutually agreed terms with the respective agencies. No extra shall be payable for the same
29. The tender evaluation will include rates quoted for comprehensive AMC (with material) period for 5 years after defect liability period.

CORRIGENDUM TO FORM 7/8 (CPWD) MUST BE READ ALONG WITH THE PAMPHLET

S.No.	FOR	READ
1	Government of India / Owner/Employer	Indraprastha Institute of Information Technology
2	C.P.W.D. or Government or Department	Indraprastha Institute of Information Technology
3	CPWD -7/8	CPWD 7/8
4	President / President of India	Chairman, BOG, IIIT-D
5	Chief-Engineer	Director, IIIT-D
6	Superintending Engineer	Project cum Estate Officer, IIIT-D
7	Engineer-in-charge / Divisional Engineer / Executive Engineer / Divisional Office / Engineer	PCEO, IIIT-D
8	Project Management Consultants / Architects	M/s Studio for Habitats Futures Architects & Engineers Pvt. Ltd. Plot no 37, First Floor, Sector - 14 Kashuambi, Ghaziabad
9	Administration Head	Director IIIT-D
10	Ministry of Works & Housing	IIIT-D / Department of Training and Technical Education, Government of NCT of Delhi.
11	CPWD Code, Paragraph '90	Shall be applicable to IIIT-D works
12	CPWD Works Manual 2007 with up to date correction slips as on date of receipt of tender	Shall be applicable to IIIT-D works
13	CPWD specifications 2009 for Electrical (Internal)& CPWD specifications 2009 for Electrical (External)	Shall be applicable to IIIT-D works
14	Provision of Section 12 Sub-Section (i) of the works man compensation	Shall be applicable to IIIT-D works
15	CPWD safety Code framed from time to time	Shall be applicable to IIIT-D works
16	CPWD maternity benefits to labour	Shall be applicable to IIIT-D works
17	Model Rules of the protection of health and sanitary appointment for workers employed by CPWD	Shall be applicable to IIIT-D works
18	CPWD contractor labour Regulations	Shall be applicable to IIIT-D works

A. GENERAL

Tenders invited from the Ministry of New & Renewable Energy, Govt. of India (GoI) approved manufactures/ suppliers for the Supply, installation & commissioning, testing and free maintenance [for five (05) years] of solar water heating systems for the following locations of the the new campus of IIITD at Okhla Phase III, New Delhi :-

S.No	Proposed Place(s) of installation	No. of systems with capacity
1.	Residential building with circulation pumps	4 (1000 lpd)
2.	Dining block without circulation pumps	4 (1000 lpd).
3.	Girls Hostel without circulation pumps	3 (1000 lpd)
4.	Boys Hostel with circulation pumps	9 (1000 lpd)
TOTAL		20 nos.

PRICE

23. The total price & rates of SWHS and five years free maintenance (warranty) in full and complete set including cold water tank with suitable pedestal stand, Glycol & Extra pipes as per site requirement etc. should be quoted as per the attached **BOQ**
24. The price shall be for the total scope as defined in this document for supply of items in full & good condition at FOR Site including transit insurance. The Price also includes all charges towards packing & forwarding, inspection, insurance, freight charges all central/ state/ local taxes & duties etc. as applicable for the supplies.
25. The price & unit rates includes and covers the cost of all royalty & fees for all articles & processes, protected by letters, patent or otherwise incorporated in or used in connection with the work, also all royalties, rents and other payments in connection with obtaining all the materials for the work and the Bidder shall indemnify and keep indemnified IIITD, which indemnity, the Bidder hereby gives against all actions, proceedings, claims, damages, costs and expenses arising from the incorporation in or use of work of any such articles, processes or supplies. All applicable charges for taking statutory clearances, wherever necessary, are included in the contract price.
26. During the period of the contract, IIITD may order addition/deletion in quantities which the Bidder shall comply. The adjustment in Contract Price shall be made at the same unit rate as per Price Schedule.

PLACE OF MANUFACTURE AND INSPECTION

27. The bidder shall state in his bid the place of manufacture and inspection of the equipment offered in the bid. The purchaser or his duly authorized representative/Agency (*preferably DGS&D, GoI*) shall have access to the supplier's work place at any time during working hours for the purpose of

inspecting the manufacture of the equipment and the supplier shall provide all necessary facilities for such inspection. **No supplies shall be dispatched without prior inspection and approval by the purchaser and the charges on account of inspection shall be borne by the supplier. Whenever the Agency feels it necessary a few systems shall be drawn for testing at the MNRE approved test labs for which the charges are to be borne by the supplier.**

WARRANTY

28. The Bidder must provide guarantee which include servicing & replacement guarantee for parts and components of SWHSs for 5 (five) years from the date of commissioning of the system at site & demonstration of performance to IIITD.
29. The bidders can also provide additional information about the system and condition of guarantee as necessary.
30. Bidder shall without prejudice to any other clauses of the order repair/replace the defective parts and restore the system to satisfactory working/performance within 7 days of intimation of fault without any additional cost to IIITD within the period of warranty.
31. The agreement will be valid for five years from the date of installation & commissioning of the supplies.
32. In case the supplier fails to rectify / replace the defective / damage equipment including transit damages, shortage within 7 days from the date of intimation of such shortage / damages, they shall have to pay penalty to IIITD as per clause .
33. The maintenance service provided shall ensure proper functioning of the system as a whole. All preventive/routine maintenance and breakdown/corrective maintenance required for ensuring maximum uptime shall have to be provided by the Bidder. Accordingly, this shall have two distinct components as described below.

Preventive/Routine Maintenance

34. This shall be done by the company at least once in every three months and shall include activities such as, cleaning and checking the health of the system, cleaning of collector surface, tightening of all connections and any other activity that may be required for proper functioning of the system as a whole.

Breakdown/Corrective Maintenance

35. Whenever a complaint is lodged by the user, the bidder shall attend to the same within a reasonable period of time (7 days) and in any case the breakdown shall be corrected within a period not exceeding ten days from the date of complaint. If more than 10 days are taken after registering of complaint, then Bidder has to pay Rs. 10000/- for each system for each day till the problem is rectified subject to a maximum of the cost of the System . This money shall be deposited to the account of IIITD.
36. For carrying out the maintenance effectively, before placing the firm supply order, the Bidder shall have to establish at least one Office cum Service Centre in the name of the firm in the state wherein at least one local employees is appointed by the firm. The office is to be run by the firm and not by the local dealers whose

services could be used for district wise service centres. In case of Public sector undertakings necessary arrangements are to be put in place for providing proper service network.

37. The bidder shall maintain the following facilities at the local Service Centre for ensuring highest level of services to the end user :
- i) Adequately trained manpower, specifically trained by the bidder for carrying out the service activities.
 - ii) Adequate provisions for record keeping, which shall inter-alia, include following :
 - i. Details of system supplied within the command area of the service station including full name and address of end user, system and sub-system serial numbers and records of routine maintenance carried out (duly signed by the end user).
 - b) History record sheets of maintenance done.
 - iii) Adequate spares for ensuring least down time of an individual system.
 - iv) The Service Centre shall send summary service reports to State Nodal Agency on quarterly basis. These reports shall include the following information:
 - (a) Number of systems covered by the Service Centre
 - (b) Number of systems working satisfactorily on the reporting date
 - (c) Number of complaints received during the period of reporting
 - (d) Number of complaints attended during the period of reporting
 - (e) Major cause of failure, as observed
 - (f) Major replacement made during the reporting period

Separate report shall be submitted for each type of systems manufacturer wise in case the service centre caters to the requirement of more than one manufacturer.

38. The records maintained at the Service Centre shall be available for scrutiny of authorized representatives of the IIITD.
39. The date of maintenance period shall begin on the date of actual commissioning of the Solar Water Heating System.
40. Bidder shall furnish details of infrastructure that are presently available for establishing of Service Centres.

TRAINING PROGRAM, AFTER SALES SERVICE AND AVAILABILITY OF SPARE PARTS

41. The responsibility of organizing training program will rest on the successful bidder. The training program will be organized in consultation with IIITD/Consignee. The training program will focus on operation and maintenance of SWHSs. Printed leaflet/literature should be made available in Hindi/ English (as required by IIITD) by the Bidder regarding the operation and maintenance of their SWHSs .
42. The Bidder shall depute authorized Service Engineer within 7 days from the date of the intimation of fault, and establish sufficient inventory of spares in the District/State in consultation with IIITD to provide satisfactory and uninterrupted services during the warranty period.

PAYMNET SCHEDULE

43. Subject to any deductions which IIITD may be authorized to make under the terms of the order, the payment shall be payable as given below:
- a) Payment to the extent of 60% shall be released on the supply of equipment at the site, subject to the condition that the material has been inspected by IIITD and after establishment of office of the firm**
 - b) Payment to the extent of 30% of the cost shall be released after the successful installation, testing & commissioning of the SWHS and submission of documentary evidence that the taxes as applicable are got deducted by the firm, otherwise the same shall be deducted by the Agency. This payment shall be released only after the firm opens its office in the Delhi state.**
 - c) The balance 10% shall be paid @2% annually of the 5 year maintenance (warranty/CMC) period after obtaining satisfactory performance certificate(s) of the installed Solar Water heating system from the concerned Technical Officers of IIITD/designated authority(ies), for the purpose.**

THIRD PARTY INSPECTION

44. The third party inspection shall be got conducted by IIITD. In case of default regarding functioning of SWHSs, the provision of clause shall apply. In case during the warranty period of five years it has ever been observed that the service centre set up by the vendor is not functioning properly PCEO IIITD without issuing any notice could encash the performance bank guarantee of the firm.

SOLAR WATER HEATING SYSTEMS.

B. TECHNICAL DETAILS:

1. Supply, installation & commissioning, testing and comprehensive maintenance for five years of Solar Water Heating System (**flat plate collector type with heat exchanger with gas Backup**).

2.a	Rated capacity in litres per day (LPD)	1000	1500	2000
2.b	Minimum aperture area of collector (sq mtrs)	20	30	40
2.c	PNG Backup included			

2. Solar water heating system comprising of solar flat plate collector, collectors stand assembly, stainless steel insulated hot water storage tank with heat exchanger and various other components.
Solar flat plate collector component shall have:
- a) Solar flat plate collector cover plate made of toughened glass
 - b) Sheet for absorber made of copper
 - c) Absorber made of copper sheet and copper tube.
 - d) Vendor to provide heavy duty temperature gauge at inlet and outlet points of each unit.

In addition to above Cold Storage Tank with suitable pedestal stand, and G.I pipe 100-500 running ft as per site requirement along with insulation shall be included with the system.

3. Solar Flat Plate Collector Specifications:

Solar Flat Plate Collector Specifications:

Solar flat plate collector shall conforming to IS: 12933 (part 1) with amdt.no.1 & 2 and IS: 12933 (Part 2)/2003 and various components shall be as under:

- a) Cover plate: Cover plate shall be toughened glass and thickness of 4.0 mm (min.) conforming to section-1 of IS: 12933(pt-2)/2003. The solar transmittance of the cover plate shall be minimum 82 percent at near normal incidence.
- b) Collector Box: Collector box shall be made of Aluminum sections only. Type, grade, size, workmanship and finish of the material used shall be as per section-2 of IS:12933 (pt-2)/2003. The minimum thickness of Aluminum shall be as under:
 - i) Channel section for sides 1.6 mm
 - ii) Sheet for bottom 0.7 mm
 - iii) Support for glass retaining 1.2 mm
 - iv) Sheet for entire body 1.0 mm

c) Absorber: Absorber shall consist of riser, header and sheet for absorber. The Diameter of header shall be 25.4 +/-0.5mm and thickness 0.71mm.. The Diameter of riser shall be 12.7 +/-0.5mm and thickness 0.56mm and made of copper only. The distance between the risers from center to center shall be 120mm. Type grade, size, workmanship and finish of the material used shall be as per section-3 of IS:12933 (pt-2)/2003. Riser and header assembly designed for working pressure up to 24.5 K Pa (2.5kg/cm square) shall be tested for leakage at a minimum hydraulic pressure of 490 k Pa (5 Kg/cm square).

d) Sheet for absorber: Sheet for absorber shall be made of copper only. Type, grade, size, workmanship and finis of the material used shall be as per sectiob-3 of IS:12933 (pt-2)/2003.

e) Collector box insulation: Insulation shall be provided at back and sides. Thermal Resistance (R) of insulation material shall be minimum 0.96 m square degree C/W for back insulation and minimum 0.48 m square degree C/W for side insulation. This shall be derived after determining thermal conductivity (K) value at 100 degree C mean temperature in accordance with IS:3346.Collector box insulation shall conform to sec.4 of IS: 12933(pt-2)/2003

f) Gaskets and Grommets: Gaskets and Grommets shall conform to sec.5 of IS: 12933 (pt-2)/2003.

Insulated hot water storage tank : The thickness of the water storage tank shall be uniform.

a) Material: Insulated hot water storage tank shall be non-pressure type and made of stainless steel grade (X04Cr19Ni9 or X07Cr18Ni9 of IS: 1570(part 5) /1985)(Reaffirmed 2004),TIG/MIG welded.

b) Insulation: Solar water heating system (SWHS) of 1000 LPD shall be insulated with 50mm thermal grade PUF insulation of 32 Kg/ meter cube or higher density. PUF insulation could be pre extruded type fitted

Tank insulation - 50 mm thick PUF with pre-coated steel coating(up to 1000 LPD) OR with FRP exterior cladding or alternatively injection moulded in a twin walled steel tank and PPE end cap. Other systems shall be insulated with 100mm thick Rock wool of 48Kg/m3 density with 22swg Aluminum cladding. Systems of 1000 LPD may also alternatively be installed with 100 mm thick Rock wool of same specifications with aluminium or G.I. powder coated cladding.

c) Tank stand assembly shall be made of MS angle of size (min) 38x38x4 mm duly pretreated and stove enameled with black Colour paint. Alternatively tubular structure with Powder coating could also be provided.

Heat exchanger shall be cage type and made of copper/stainless steel tubes of grade X04Cr19Ni9 or X07Cr18Ni9 of IS: 1570(part 5)/1985(Reaffirmed 2004). Heat exchangers shall have a minimum of 0.24 sq. meters heat transfer area per 100 LPD capacity.

System inter connecting piping :ISI marked G.I. pipes, medium class of IS: 1239 duly insulated with 50mm thick rock wool of 48 Kg/m3 density and 26swg Al cladding. EPDM hose pipes can also be used for systems up to and including 1000LPD.

Collector stand assembly shall be made of MS angle of size 38x38x4 mm duly pretreated and stove enameled with black Colour paint. Alternatively tubular structure with Powder coating could also be provided.

The capacity of 11 shall be 5 liters for 500 LPD and 10 liters for 1000 LPD and above.

PNG BACKUP - In the event of Sun light not enough to heat the water to the required temperature, the thermo sensor should gives a signal to the burner to start and heats the water. Here the solar water collection panels only pre heat the water which will be finally heated by the Burner. The Hot water generator will be in 1 the water temperature in the Hot water Generator reaches the set temperature. The above process should be fully automated and should not call for any manual intervention for regular operation.

Temperature Gauge: Dial type, duly calibr11ted and suitable for temperature range from 0 degree C to 120 degree C and shall be provided for capacity above 500 LPD.

Suppliers shall furnish **2 valves of superior quality**, one for inlet and one for outlet.

Suppliers shall supply two sets of instruction manual to the consignee without any extra cost. Instruction manual shall containing the following details:

- a) Schematic diagram of the solar collector and a domestic hot water system.
- b) Instructions for installation (including mounting details) and use and safety precautions.
- c) Instructions for repair and maintenance including causes for common failures, such as, dust ingress on glass cover, peeling of paint, scaling, damaged sealant, gasket and grommets and their remedies and
- d) **List of service outlets.**

DETAILED TECHNICAL SPECIFICATIONS OF VARIOUS COMPONENTS OF ETC SOLAR WATER HEATING SYSTEMS

SCOPE OF WORK
Design, Manufacture, Supply, Installation & Commissioning of Evacuated Tube Collector Based Solar Water Heaters with Cold Water Tanks and Insulated Piping
NOTE: -The Evacuated Tube Collectors should be as per MNRE/MNES approval.

1. EVACUATED TUBE COLLECTOR (Overall Dimensions)		
Option 1		
Outer Diameter		47 mm
Inner Diameter	36mm	
Length		1500mm
Numbers		Minimum 7 for each 50 LPD System
Option 2		
Outer Diameter	58mm	
Inner Diameter	47mm	
Length	1800mm	
Numbers	Minimum 5 for each 50 LPD System	
Selective coating material: SS-Al-N/Cu		
Absorbance Rate after Evacuating (AM 1.5)	$\alpha \geq 93.5 \%$	
Emission rate after Evacuating(80 + 50C)	$\epsilon \leq 6.5 \%$	
Impact Resistance: steel ball test.		
3. COLLECTOR SUPPORT STAND	Corrosion resistant aluminum alloy, Thickness: 1.5 to 3 mm./ MS STANDS shall be made with angle iron of 35 mmx35mmx4mm The structure should be in a position of withstand a wind velocity of 120 kms/hr. The vertical support shall be firmly grouted with the roof.	
4. PAINTING OF STANDS	For MS STANDS: Proper cleaning and degreasing of the surface should be done with the help of three in one solution before painting. Two coats of zinc chromate red oxide primer shall be applied followed by two coats of enamel paint of suitable color.	
5. STORAGE TANK(HOT WATER) a) Material	Stainless Steel (SS 304/ IS 1730 grade) TIG Welded with argon gas. MOC certificate for SS 304 to be produced.	

b) Thickness	Minimum thickness	Tank capacity
	1mm 1.6mm	500 LPD 1000 LPD
c) Insulation	Aluminum sheet of thickness 22 SWG shall be used for cladding the tank insulation. Solar water Heating System (SWHS) may be insulated with 50mm thermal grade PUF Insulation of 32kg/ meter cube or higher density. with pre-coated steel coating(up to 1000 LPD The storage tank shall be properly installed at site using enameled coated appropriate size angle iron stands, girder, cement concrete pedestals of 1:2:3 ratio or any other specific provision suitable to site to ensure the stability against heavy storm etc. but not less than 1'x1'x6" dimensions.	
6. PIPING Material Insulation	1" to 2" diameter Medium class (B class) GI as per IS 1239 shall be used for piping. 10 mm thick Rock Wool insulation or 12 MM nitrile rubber insulation should be used. Thin plastic sheet shall be used as covering between the insulation material and aluminium cladding. Besides other retaining material like chicken mesh etc. retaining material like chicken mesh etc. 26 SWG thick aluminum sheet shall be used for cladding the insulated pipe. The pipe line should be properly supported and fixed with clamp with the help of suitable size stand/civil structure (cement concrete ratio 1:4) ISI mark strainer of standard make should be fitted in the main cold water supply line before the system.	
7. VALVES/NIPPLE/TEES /BENDS	GI ISI marked shall be used. Nipple/tees and bends of ISI marked of medium class GI (B class) shall be used. Air vents in each row are to be provided.	
8. INSTRUMENTATION (above 500 LPD)	Temperature gauge: 1 No. dial type (for Hot Water Storage Tank/Outlet) Gun metal strainer: 1 No. (at Cold Water inlet)	
10. MAKE UP TANK	The capacity of make up tank should be 5 liters up to 500 lpd and 10 liters for 1000 lpd and above made of SS304 minimum 0.8 mm thick	
11. SYSTEM INTER CONNECTING PIPING:	ISI marked G.I. pipes, medium class of IS: 1239 duly insulated with 10mm thick rock wool of 48 Kg/m ³ density and 26swg Al cladding. EPDM/ Composite Pipe hose pipes can also be used for systems up to and including 500LPD.	
12. STANDS & PEDESTALS FOR THE TANKS (hot water tank/ cold water tank)	The tanks will be mounted on stands made out of MS angle iron frame of 35x35x4mm up to 500liters, 50x50x6 mm up to 2000lpd and 65x65x6mm for capacity above 2000 liters with each leg duly grouted with PCC 1:2:4 of 1'x1'x1' size. The cold water tanks will be placed over angle iron frame having 4 cross members in 4 legs with 5mm thick MS sheet for full bottom support fixed of 4 horizontal members based on the size of the cold water Tanks.	

HEAT EXCHANGER	Heat exchanger shall be cage type and made of copper/stainless steel tubes of grade X04Cr19Ni9 or X07Cr18Ni9 of IS: 1570(part 5)/1985(Reaffirmed 2004). Shall be so designed to ensure the pressure drop less than 0.3 kg/cm. The surface area of the heat exchanger should not be less than 0.24 m2 per sq.m of the absorber area of the system. All the elements of heat exchanger shall be as per relevant Indian Standard or as per TEMA Class C construction.
Ball valve -1” Non Return Valve 1”	
Primary and secondary recirculation pump two nos (both working) for circulation of hot water on hot water return line back to the hot water tank, sensed controllers with all accessories and controls in total as required.	
All items as required for a total functioning of the system is to be included if required other than the above items.	
PNG BACKUP - In the event of Sun light not enough to heat the water to the required temperature, the thermo sensor should gives a signal to the burner to start and heats the water. Here the solar water collection panels only pre heat the water which will be finally heated by the Burner. The Hot water generator will be in operation till the water temperature in the Hot water Generator reaches the set temperature. The above process should be fully automated and should not call for any manual intervention for regular operation.	

BOQ FOR SOLAR HOT WATER SYSTEM

S.No	Site	Capacity (lpd)	Cost of Supply, Installation & Commissioning, Testing (in Rs)	Comprehensive Maintenance period of 5 years (in Rs)
1	Residential block with circulation pumps	4x1000		
2	Dining block without circulation pumps	4x1000		
3	Girls hostel without circulation pumps	3x1000		
4	Boys hostel with circulation pumps	9x1000		
	Total	20x1000		

- Note :**
- 1. Above quoted price for SWHs are complete in all respect as per Technical Specifications inclusive of all Central/State/Local taxes & duties, packing, forwarding, transit insurance, loading & unloading, transportation & other charges etc. FOR destination at site and inclusive of installation & commissioning, Testing and performance testing
 - 2. Certified that rates quoted are as per specifications, terms & conditions mentioned in the bid document.
 - 3. The above rates are inclusive of all taxes applicable.
 - 4. The above rates include Cold storage tank, Glycol & Extra G.I pipes etc as per site requirement.
 - 5. Vendor to provide heavy duty temperature gauge at inlet and outlet points of each unit.
 - 6. Necessary approval required if any from IGL / any other authority for the works shall be taken by the vendor.

Check List

(TO BE COMPLETED / FILLED IN DULY SIGNED BY THE BIDDER AND ENCLOSED WITH THE OFFER)

I. COMMERCIAL

- | | | |
|-------|---|----------|
| 1. | Quantity offered by the bidder | (Nos.) |
| <hr/> | | |
| 2. | Amount of earnest money (Rs.) | |
| <hr/> | | |
| 3. | CDR/FDR (<i>with No. & Date and name of the bank</i>) | |
| <hr/> | | |
| 4. | Whether registered with MNRE | Yes / No |
| 5. | Permanent/Provisional registration certificate from Industrial Department, Delhi Govt./NSIC enclosed. | Yes / No |
| 6. | Turn over as desired at D-3 (enclosed) | Yes / No |
| 7. | Proforma 3,4, 6 & 7 (enclosed) | Yes / No |

II. TECHNICAL

- | | | |
|----|--|----------|
| 1. | Whether relevant drawings enclosed | Yes / No |
| 2. | Whether the material fully corresponds to the NIT specifications | Yes / No |
| 3. | If no, have the deviations been pointed out | Yes / No |
| 4. | Whether the list and photocopies giving status of past orders received and accomplished in last three years enclosed | Yes / No |
| 5. | Proforma 1, 2, (enclosed) | Yes / No |
| 6. | Test certificate issued by MNRE/IEC/BIS/IS etc. | Yes / No |

Signature of the bidder