

**GOVERNMENT OF KARNATAKA
Department Of Sericulture**

**INVITING TENDER FOR FIXING OF RATES BASED ON THE LOWEST RATES AND
EMPANELLING OF MANUFACTURERS AND THEIR SOLE DISTRIBUTORS FOR
EQUIPMENTS USED IN MULBERRY CULTIVATION, SILKWORM REARING AND
GRAINAGES THROUGH E-PROCUREMENT,**

Website: <https://eproc.karnataka.gov.in>

HP Helpdesk: 080-25501216/227

Tender reference: Dos: eproc :req: etender:09:2019-20

Tender publishing date : 04-05-2020
Last date and time for receipt of tender : 06-06-2020 up to 17.00hrs
Time and Date of opening of technical bid: 08-06-2020 at 11.30hrs
Time and Date of opening of financial bid: 15-06-2020 at 11.30hrs
**Place of Opening of tender : Directorate of Sericulture
5th floor, M.S. Building,
Bangalore-1**

**Address for communication
DEPARTMENT OF SERICULTURE
M.S.BUILDING, 5TH FLOOR,
DR.AMBEDKAR VEEDHI
BANGALORE- 560001
PHONE: 22252611, Fax No.: 22353881
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GOVERNMENT OF KARNATAKA
Department Of Sericulture

Terms of Reference for empanelling of firms

1.0 Scheme Description

1.1 Background

The Department of Sericulture implement various beneficiary oriented subsidy schemes under various Central sponsored & State own schemes, of which, Assistance for Supply of Rearing Equipments is one of the popular scheme. The scheme envisages to provide subsidy for procurement of essential Rearing and Grain age equipments to the Seri culturists in order to increase quality and productivity .The Department intending to fixing of rates, based on the lowest rates and empanelling of manufacturers and their authorized sole distributor as the case may be for supply of equipments used in mulberry cultivation, silkworm rearing and grainage activities (silkworm egg production) under separate schedules. The Scheme will be implemented throughout the State during financial year 2018-19.

1.2 Scheme Objective

The proposed scheme Development Objectives are to increase the area under mulberry cultivation and production of gradable silk.

1.3 Components (Annexure-1)

Schedule- I
Mechanization Equipments

Sl. No	Item Name	Item Code	EMD Amount (Rs.)	Performance Security deposit(Rs)
1	2 Kva Portable generator set(Silent) Reputed Make	ME_1	1,00,000	1,00,000
2	5 Kva Portable generator set (Silent) Reputed Make single phase	ME_2	1,00,000	1,00,000
3	5 Kva Portable generator set (Silent) Reputed Make Three phase	ME_3	1,00,000	1,00,000
4	Engine operated mulberry pruner (brush cutter)	ME_4	50,000	1,00,000
5	2 X Gear Looping Shear Reputed Make	ME_5	25,000	50,000
6	Secateurs Reputed Make	ME_6	25,000	50,000
7	Backpack battery operated Electric Seacature	ME_7	50,000	1,00,000
8	Power weeder / Rotary tiller (only Diesel) Reputed Make	ME_8	1,00,000	1,00,000
9	Multi Purpose Inter Cultivator	ME_9	1,00,000	1,00,000
10	Mulberry Leaf Chopping Machine Reputed Make (ISI Electric Motor)	ME_10	1,00,000	1,00,000

**Schedule- II
Rearing Equipments**

Sl. No.	Item Name	Item Code	EMD Amount (Rs.)	Performance Security deposit (Rs)
1	Chawki rearing Plastic trays/ crates	RE_1	50,000	1,00,000
2	Cocoon/ pupae preservation plastic trays/ crates	RE_2	50,000	50,000
3	Air coolers Reputed Make	RE_3	50,000	50,000
4	Plastic mountages	RE_4	1,00,000	2,00,000
5	Riped worms collecting HDPE Spinning net 20 mm	RE_5	50,000	1,00,000
6	Bed net for shoot rearing	RE_6	50,000	1,00,000
7	Rotary mountages	RE_8	50,000	1,00,000
8	Shade net	RE_9	50,000	1,00,000
9	Pvc pipe chawki rearing stand	RE_10	50,000	1,00,000
10	Pvc Pipe Shoot Rearing Stand For 25x4=100sqft(2.25sqm)	RE_11	50,000	1,00,000
11	Paraffin paper	RE_12	50,000	1,00,000
12	Nylon net	RE_13	50,000	1,00,000
13	Bed cleaning nets	RE_14	50,000	1,00,000
14	Flame Gun	RE_15	25,000	50,000
15	Humidifiers	RE_16	25,000	50,000

**Schedule- III
Disinfection based Equipments**

Sl. No.	Item Name with ISI mark	Item Code	EMD Amount (Rs.)	Performance Security deposit (Rs)
1	Electrical operated hi-pressure portable power sprayer	DE_1	50,000	1,00,000
2	Petrol start, kerosene and diesel run hi-pressure portable power sprayer	DE_2	50,000	1,00,000
3	Knapsack sprayer	DE_3	50,000	1,00,000
4	Knapsack sprayer battery operated	DE_4	50,000	1,00,000
5	Rocking sprayer ISI MARK	DE_5	50,000	1,00,000
6	Engine operated Knapsack sprayer	DE_6	50,000	1,00,000
7	Full Face Mask	DE_7	25,000	50,000

**Schedule- IV
Solar lights**

Sl. No.	Item Name	Item Code	EMD Amount (Rs.)	Performance Security deposit (Rs)
1	Solar bright led home lighting system 3 lights	SL_1	1,00,000	2,00,000
2	Solar bright led home lighting system 5 lights	SL_2	1,00,000	2,00,000
3	Solar bright led lantern	SL_3	50,000	1,00,000

Schedule- V
Post Cocoon Items

Sl. No.	Item Name	Item Code	EMD Amount (Rs.)	Performance Security deposit (Rs)
1	Solar Water Heater (Fpc) 100liters	PC_3	1,00,000	2,00,000
2	Solar Water Heater (Fpc) 200liters	PC_4	1,00,000	2,00,000
3	Solar Water Heater (Fpc) 500liters	PC_5	1,00,000	4,00,000
4	Solar Water Heater (Fpc) 1000liters	PC_6	1,00,000	4,00,000

1.4 Scheme Stake Holders

Sericulturists of the State

1.5 Scheme Implementing Agency

All the Zilla Panchayath Deputy Directors of Sericulture, based on the availability of funds, under the supervision of Commissioner for Sericulture Development and Director of Sericulture Department of Sericulture, Karnataka.

1.6 Short Listing Criteria

1. For schedule I, II, III, IV & V the manufacturers and their authorized sole distributor of the manufacturers as the case may be, should have minimum two years experience in providing Rearing equipments to the sericulturists on subsidy basis. (Related documents to be uploaded)
2. **The bidder can quote for any scheduled items. If any technical or administrative problem arises in any of the scheduled item, the particular schedule is liable for rejection and the rest will continue.**
3. The firms should have sufficient man power to attend the complaints and repairs. etc.
4. The firms should have total turnover of at least INR 50.00 lakhs for the preceding year. However the Progressive turnover should not be in a declining trend in comparison with that of the previous year. The tenderers should submit proof in this regard by way of
 - 1 Audited Balance sheet
 2. Profit and Loss Account
6. The firms should have good track of record and should be free from litigations.
7. The firms should have paid all statutory taxes like GST timely payment of TDS deducted to IT department etc.

2.0 Uploading of Documents

1. The technical bid for each equipment shown in Annexure-1 shall be submitted separately for each equipment as per Annexure-1A provided.
2. Authorization letter/document binding the manufacture and their sole distributor as the case may be from the principal manufacturer towards the items quoted.
3. In case authorized distributors, who participate in the tender should submit a signed copy from the manufacturer with duly indicating the authorization for the supply of specific brand of item and for the area of operation. The rates quoted in the tender should be for the item specified in Annexure-I and inclusive of all taxes including GST, duties, cess, insurance, loading and unloading and installation charges, etc., during the contract period.

4. GST Registration Certificate & Returns filed for the last year shall be uploaded.
5. Annual Turnover Statement for the year 2018-19 certified by Chartered Accountant.
6. The tenderer should provide the details such as place of manufacture, registration certificate, production capacity, quality enforcement facilities in the technical bid.
7. The tender document must be signed only by the proprietor, if it is a proprietary concern. If it is a partnership firm, a person duly authorized on behalf the partners should sign the tender. Attested copy of the partnership deed and authorization letter for signing of the tender documents, with necessary seal and signature should be submitted.
8. Market Standing Certificate (Sales Details) issued by authorized Chartered Accountant for the year 2018-19 shall be uploaded.
9. In respect of importers, they must produce import licence certificate and a self declared business transaction statement in respect of materials dealing with imported items.
10. "Undertaking by the tenderer on Rs.100.00 stamp paper duly notarized stating that the tenderer was not disqualified by any Government Department / Agencies in the past under any Act and Rules.
11. The tenderer shall submit attested copy of valid authorized license / evaluation certificate issued by BIS and ISI certificates for their products and certificates issued by any recognized similar institutes if any.
12. ISI or BSI Certification copies, if any, or a certificate issued by any authorized research institutes as the case may be.
13. Declarations form the Tenderer to abide the tender conditions.
14. Mandatory certificates -PAN no and previous year income tax returns shall be uploaded

3.0 General Terms And Conditions

1. The technical and financial bid and other relevant documents should be uploaded to e-procurement website <https://eproc.karnataka.gov.in> .
2. Every correction, if any, in the tender document shall be attested by the tenderer, failing which the tender will be rejected.
3. The tenderer should supply the equipment, Install with Demo & provide One year warranty for each and every item from the date of supply or installation to the tendered items.
4. In addition, it may be noted that incomplete technical bid in any form will be rejected summarily. All Care must be taken to fill the form and details must be provided as asked for.
5. The tenderer should supply a kit consisting of adequate number of tools namely screw drivers, spanners and cutting plier to attend regular maintenance of the tendered item wherever necessary.
6. The authoursid Departmental officers wherever necessary will inspect the manufacturing premises of various manufacturing units of all tenderers, who participate in the tender, to ascertain the manufacturing and production capabilities, quality checking facilities as well as R&D establishments if necessary.
7. Every supply made should accompany original delivery note or invoices as per relevantly prescribed rules.
8. The sales bills must be issued by the empanelled tenderer.

9. **The tenderer who are qualified in the technical bid should provide the samples of the equipment wherever necessary before the technical verification committee in case where the equipments cannot be brought will be inspected by the technical committee at its discretion at the time of technical evaluation.**
10. The decision of Commissioner for Sericultural Development and Director of Sericulture, Bangalore in all matters covering the terms & conditions etc., shall be final.
11. While considering the final bid price preference will be made applicable as per the current rates, as per Government notifications to the SSI units of the State.

4.0 Internal Scrutiny & Technical Evaluation Committee

Following is the composition of internal scrutiny committee for verifying and evaluation of the documents uploaded through E-portal.

- | | | |
|--|---|-----------------|
| 1. Additional Director of sericulture(Tech) | : | Chairman |
| 2. Joint Director of sericulture (Plan) | : | Member |
| 3. Joint Director of sericulture (CMS&PCT) | : | Member |
| 4. Chief Accounts Officer | : | Member |
| 5. Joint Director of sericulture (SP&SF) | : | Member |
| 6. Deputy Director of sericulture(CMS & E-Pro) | : | Member Convener |

6.0 Award of Tenders

- a. After the scrutiny and finalization of financial bids, the Department of Sericulture, if satisfied about the quoted rates and the capacity of the Tenderer for supply of quality items as per the specifications, will issue Notification duly empanelling the qualified bidders.
- b. The items supplied to the Sericulturists & reelers by the tenderers shall strictly be in conformity with the specifications as given in the respective schedules of the tender.
- c. The supplier will not be entitled to claim any sort of concession, whatever on account of rise in the prices of the item in the market due to whatever reason during the period of contract. The rates quoted are fixed & inclusive of all taxes, cesses etc.,

6.0. Accepting Authority

The Committee Headed by The Commissioner for Sericultural Development and Director of Sericulture, Bangalore, Karnataka

7.0 Appeal Authority

The Principal Secretary to Govt. Department of Horticulture and Sericulture, 3th floor, MS building, IInd gate, Bangalore, Karnataka is the Appellate Authority.

8.0 Duration of The Contract

The Duration of the contract is upto 31-03-2021. However it may be further extended one time up to three months with mutual consent of the Firm and The Commissioner for Sericultural Development and Director of Sericulture. However, the contract can be terminated by either party on 3 months written notice during the period of contract without consequences of the contract period.

9.0 General Information

1. The Additional Director of Sericulture (Tech), 5th floor, MS building, 1st gate, Dr. Ambedkar Veedhi, Bangalore-560 001 Department of Sericulture is the tender inviting authority. **The Committee Headed by Commissioner for Sericultural**

Development and Director of Sericulture, Bangalore is the tender accepting authority.

2. All the tenders shall be prepared and submitted in accordance with the instructions provided through E-portal.
3. All the tenders should be uploaded within the prescribed time limits on the respective dates.
4. The Tenderers shall be deemed to have carefully examined the terms and conditions before tendering.
5. Two cover system, both technical and financial bid to be uploaded
6. The Commissioner for Sericultural Development and Director of Sericulture, Bangalore reserves the right to accept/reject any application or cancel the tender process without assigning any reason what so ever.
7. Tenders not submitted in the prescribed form will be rejected. Tenders, which propose any alterations in the service specified or containing other conditions of any sort, will be rejected.
8. Both the Technical & Financial Bidding is through e-tendering only. The bidders shall upload all the documents, specified documents, duly filled technical bid along with the financial bids for financial evaluation through online. Financial bids will be opened for only for those bidders who qualify in the technical bid (Pre-qualification criteria).
9. The successful tenderer shall attend the office on a date to be fixed and intimated to him for executing agreement etc. failure on the part of the successful tenderer to execute the contract agreement within 7 days from the receipt of written communication of letter of acceptance to this effect, would entail rejection of tender.
10. Final acceptance of the tender rests with The Commissioner for Sericultural Development and Director of Sericulture, Bangalore who reserves the right to accept or reject any or all tenders without assigning any reason thereof
11. Details in the bid document should be duly filled and all the relevant documents should be uploaded.
12. No complaints will be entertained by the department for incomplete uploading of the documents subsequently.
13. After e-portal publication any changes in the schedule will not be published through Newspapers and further changes will be updated only on e-portal.
14. The Tender shall be submitted only if the Tenderer is agreeable to all the Terms and Conditions of this Tender notification, which includes the Description and Specifications of the Items mentioned therein.

10.0 Earnest money deposit:

- 10.1 Earnest Money Deposit drawn in favour of e-procurement, Government of Karnataka as per Annexure 1.
- 10.2 The EMD and tender processing fee shall be submitted through e-procurement in any one of the following four modes; a) Debit Card, b) Credit Card, c) OTC (Over the Counter), d) NEFT (national Electronic Fund Transfer).
- 10.3 The technical bid for each equipment shown in Annexure-1 shall be submitted separately for each equipment as per Annexure-1A provided

11.0 Who Can Participate

The manufacturers of the equipments mentioned above and their authorized distributors as the case may be, for empanelment.

12.0 How To Participate

Participation is through e-procurement portal of Government of Karnataka, at <https://www.eproc.karnataka.gov.in>.

13.0 Method Of Quote

1. The tenderer must quote the rates in the e-portal only against the tendered Code Item in INR, per item, for the specified specifications as per **Annexure –III**. The rate quoted per unit for landed price should be inclusive of all taxes, duties transportation, packing, loading, unloading, installation, commissioning charges, wherever necessary.
3. The Tenderer is strictly prohibited to change any specification or unit size given in the **Annexure III** if any contrary to this rate offered will not be considered.
5. The Tenderer must, sign **Annexure III**. The name of the person should be indicated in Block Letters (Capital) with date and the official seal of the firm or the company

14.0 Performance Security Deposit

1. The empanelled suppliers should execute a Contract Agreement on Karnataka Government Non- judicial Stamp Paper in duplicate of the face value of Rs.200.00 (Rupees Two Hundred Only – cost to be borne by the Tenderer) as provided by Article 5 of the schedule of Karnataka Stamp Act. A copy of the contract agreement will be given to the Tenderer. The Specimen form of agreement will be available with the CSD &DOS.
2. The empanelled suppliers shall be required to pay Security deposit as mentioned against each of the item as per Annexure-1 in the form of irrevocable Bank Guarantee in favor of the Commissioner for Sericultural Development and Director of Sericulture, Bangalore 560001, payable at Bangalore, by any of the Nationalized banks. For Solar Water Heaters Security Deposit Period must be 06 years.
3. The agreement along with the specified “Security Deposit” should be submitted within Seven days from the date of receipt of the intimation of the Acceptance of Offer.
4. Agreement not accompanied by Security Deposit or any partial agreement deleting certain clauses / items, will not be accepted, and will be deemed as non-submission of agreement and violation of the Tender Condition. The Earnest Money Deposit of such Tenderers will be forfeited to Government and such tender will be rejected and the company will be **blacklisted**. The firm/company will also be liable for all damages caused including the liabilities to pay any difference between the prices accepted by the firm/company and those ultimately paid for the procurement of approved item from other authorized sources by the Commissioner for Sericultural Development and Director of Sericulture, Bangalore. Such damages shall be assessed by a committee which will be appointed by the purchaser and whose report shall be final on the issue. In case of any violation of natural justice, an appeal shall be laid with the Commissioner for Sericultural Development and Director of Sericulture, Bangalore whose decision will be final in this matter.
5. The original agreement shall be with the CSD & DOS. The Tenderer shall collect the signed copy of the agreement on his own. The purchaser will not be responsible for the loss of the copy not collected by the successful Tenderer.
6. Violation of any of the Clauses of the Agreement shall also be deemed as violation of Terms and Conditions of this Tender.

7. The Contractor is permitted to claim back the Security Deposit on completion of the contract period or after executing all the supplies satisfactorily, whichever is later. The refund of the Security Deposit shall be subject to satisfactory performance of the contract as per the terms and conditions of the contract. The Security Deposit not claimed within three years from the date of expiry of the contract shall be forfeited to Government without notice.

15.0 Supply Procedures

The supplies shall be affected by the empanelled tenderer as per the guidelines issued and to be issued time and again by the Procurement Entity.

16.0 Modifications If Any

Terms and Conditions of may be modified on mutual consent as per the requirement of various components / activities as and when the need arises.

17.0 Validity of the tender rates:

- a. If the tenderer sells the tendered items in the open market or through any other arrangement at rates lower than the accepted in this tender during the period of validity of tender, It will be treated as violation of the terms of the tender. If any tenderer is found in such situation, such tenderer will be black listed and will be disqualified to participate in any tender for the next 2 years in Departmental tenders and also shall make good the loss to the beneficiaries. Further the security Deposit will be forfeited for any violation of tender conditions.
- b. There should not be any upward revision of the rates for the purchaser during the period of validity of contract.

18.0 Penalties For Non-Compliances, Non-Performance Or Violations:

1. In case of delay in supply of ordered quantity, the contractor will be liable to pay penalties depending upon the no. of days the supply is delayed. This penalty will be up to a maximum of 5% of the value of quantity delayed. The quantum of penalty will be decided by the Tender Accepting Authority. In any case of the ordered quantity not supplied to the designated officers within a maximum of 45 days, the supply order shall be treated as lapsed.
2. In respect of the quantities not supplied within 45 days from the date of receipt of supply order, the contractor will be liable for penalty up to 5% of the value of quantity not supplied.
3. In respect of supplies made but which are rejected due to inferior quality or violation of any terms and conditions also the contractor will be liable for penalty up to 5% of the value of the quantity rejected.
4. Apart from the above the Tender Accepting Authority reserves the right to impose the following penalties on the contractors.
Forfeiture of Bank Guarantee furnished by the contractor at the time of signing agreement and Black listing of the firm.
5. The Department reserves the right to reject delayed supplies.
6. If any information provided by the tenderer is found to be factually false or misleading such tender will summarily be rejected, any time during the validity period of the tender and tenderer will be liable for penalties as applicable.
7. The Tenderer should ensure supply of materials as per the bill, duly in conformity with the Rate Contract Orders. Levying of lower/higher rates, than the accepted rates, shall attract penal actions.
8. The indented materials should be supplied at the sites specified by the indenting officer.

19.0 Legal terms and Compliances:

1. In respect of any dispute arising out of implementation of this tender, the decision of the Tender Accepting Authority (The Commissioner for Sericultural Development & Director of Sericulture) shall be final and binding.
2. For any legal remedies, the courts at Bangalore shall only have the jurisdiction.

20.0. Rights Reserved.

1. The decision of the Tender Accepting Authority (The Commissioner for Sericultural Development & Director of Sericulture) shall be final in considering or rejecting of any equipment.
2. The Department of Sericulture reserves the right to accept or reject tenders even after opening of technical bid or commercial bid without assigning any reasons whatsoever and does not bind it to accept the lowest tender or to accept any specific model or brand.

Additional Director of Sericulture (Tech)
& Tender Inviting Authority

HOW TO PARTICIPATE IN THE BIDDING THROUGH E-PROCUREMENT PORTAL

1. e-Portal Registration

- a) Tenderers who have not registered in e-procurement portal should register and get digital signature before participating through the website <https://www.eproc.karnataka.gov.in>.
- b) The details of the process of registration and obtaining the digital signature are available on the website: <https://www.eproc.karnataka.gov.in>. Necessary hands on training could be obtained from the center for E- Governance and could also be obtained over telephone at **91-080- 2550126/ 25501227 or mail to helpdesk hphelpdesk.blr@intarvo.com .**

2. Applications

- a) Applications may be downloaded from Government of Karnataka e-Procurement Website <https://www.eproc.karnataka.gov.in> from _____ under login for Applicants / Participants.
- b) Applicants / Participants can access the application on the website, fill them with all relevant information, and submit the completed application and supporting documents online on the web site <https://www.eproc.karnataka.gov.in>

3. Period of Validity

Tenders shall remain valid for minimum of 90 days after the date of opening of financial bid.

Bid reference	No.: Dos:eproc:req:etender:08:2019-20
Tender publishing date	04-05-2020
Last date and time for receipt of tender	06-06-2020 up to 17.00hrs
Time and Date of opening of technical bid	08-06-2020 at 11.30hrs
Time and Date of opening of financial bid	15-06-2020 at 11.30hrs
Place of Opening of technical bid	Meeting hall O/o The Commissioner for Sericulture Development & Director of sericulture 5 th Floor, M.S.Building,Dr.Ambedkar veedhi, Bangalore - 1
Address for any clarification	Deputy Director of sericulture (CMS & E-pro) O/o The Commissioner for Sericultural Development & Director of sericulture 5 th Floor, M.S.Building, Dr. Ambedkar veedhi, Bangalore - 1

TECHNICAL BID FORMAT

Annexure – 1 A

Equipment Name :

Code No:

Sl.N	Details	Particulars
1	Name of the firm & address	
	If tenderer is Manufacturer 1.1 Registration particulars of the manufacturing concern a. If Proprietorship concern -Registration under Shop & Establishment Act. b. If Partnership Firm – Partnership Deed along with certificate of Registrar of Firms. c. If Company - Memorandum & articles of Association along with incorporation certificate. d. If others – Certificate issued by competent statutory body. (relevant documents to be uploaded)	
2	In case authorized distributors, who participate in the tender should submit a signed copy from the manufacturer with duly indicating the authorization for the supply of specific brand of item and for the area of operation	
3	Authorization letter/document binding the manufacture and their sole distributor as the case may be from the principal manufacturer towards the items quoted.	
4	The tenderer should provide the details such as place of manufacture, registration certificate, production capacity, quality enforcement facilities in the technical bid.	
5	Mandatory certificates -PAN no and previous year income tax returns shall be uploaded	
6	GST registration details (copy to be uploaded) Sales Tax Clearance Certificate for the previous year.	
7	Annual Turnover Statement for the year 2019-20. The firms should have total turnover of at least INR 50.00 lakhs for the preceding year. Audited Balance sheet, Profit and Loss Account	
8	Supply / sales details for the year 2019-20 district wise shall be to be uploaded	
9	Market Standing Certificate issued by authorized Chartered Accountant for the year 2019-20 to be submitted. Refer Annexure-IV (certificate should have been issued on or after 1-4-2020). In respect of importers, they must produce certified import licence certificate and a self declared business transaction statement in respect of materials dealing with imported items.	
10	“Undertaking by the tenderer on Rs.100.00 stamp paper duly notarized stating that the tenderer was not disqualified by any Government Departments / Agencies in the past under any Act and Rules	
11	The tenderer shall submit attested copy of valid authorized licence / evaluation certificate issued by BIS and ISI certificates for their products and certificates issued by any recognized similar institutes if any.	
12	Declaration form from the Tenderer in the format	
13	EMD details	
14	The tender document must be signed only by the proprietor, if it is a proprietary concern. If it is a partnership firm, a person duly authorized on behalf the partners should sign the tender. Attested copy of the partnership deed and authorization letter for signing of the tender documents, with necessary seal and signature should be submitted.	
15	The tenderer should provide the details such as places of manufacture, registration certificate, production capacity, quality enforcement facilities in the technical bid.	

I/we here by certify the information provided herein is true and correct to the best of our knowledge and that no fact/s is/are hidden or disguised, in giving this information. We have no objection with the Department of Sericulture in cross checking these details with the Sales Tax, Income Tax Departments.

Signature of the Authorized Signatory:

Firm

TENDER OFFER LETTER

To,

The Commissioner for Sericultural Devt.,
& Director of Sericulture,
5th Floor, MS Building,
Dr.Ambedkar Veedhi
Bangalore – 560 001
Karnataka State

Affix the Photograph of the person signing the document attested by a Gazetted Officer/ Notary

Sir,

Having examined the tender documents in connection with the supply o Scheduled SERICULTURE EQUIPMENT CODE NO..... to your department under Rate Contract for 2020-21 called by you, I / We, the undersigned offer to supply and deliver the SERICULTURE EQUIPMENT CODE NO..... in conformity with the terms and conditions of the tender at the rates quoted in the Annexure if the contract is awarded in my / our favour.

I / We understand that the quotation offered shall be valid for one time purchase from the date of opening of the tenders.

I / We undertake if our quotation is accepted, I / We will enter into contract to deliver the goods in accordance with the delivery schedule.

I / We agree to abide by this tender for the entire tender period

I / We undertake to deposit Security Deposit amount in accordance with the terms and conditions of the tender if our offer is accepted.

I / We understand that you are not bound to accept the lowest or any quotations you may receive.

Signature :

Name and Address

Capacity of the person signing the tender]

Seal of the firm :

Residential : Phone No :

Fax No.:

Note : Please indicate the designation and enclose the authority of the person signing the document.

Specifications

Schedule- I

Mechanization Equipments

SI no	Equipment name	Specifications										
1	Portable Generator Set 2kw (Silent) Reputed Make	Frequency Hz - 50 – 60 Hz Rated AC voltage- 220 – 240 Volts Max output - 1.5 Kva / 2 HP Operating noise level - (7M) DB (A) – 60 -61 Recoil type starting.										
2	Portable Generator Set 5kw (Silent) Reputed Make Single Phase /Three Phase	Frequency Hz -50 – 60 Hz Rated AC voltage-220 – 240 Volts Max output -5 Kva / 8 HP Engine (Engine Test certificate issued by any Govt Testing Center shall be uploaded) Operating noise level - As per CPCB. (Related certificate from Central Pollution Control Board(CPCB) shall be uploaded) Easy starting.										
3	Engine Operated Mulberry Pruner (Brush Cutter)	2 stroke, 1.5 to 1.75 kw, forced air cooled petrol engine, recoiled type starting, anti vibration design, 80 teeth carbide tip blade, nylon head, ordinary circular blade.										
4	2 X Gear Looping Shear	2 X Gear looping shear type 550 mm size, in length with auto gear action having handle made from high impact engineering plastic, hardened, tempered stainless steel blades cuts up to 25 mm										
5	Secateurs	Secateurs – Shearing type, Type of cutting : Clean and accurate, Size : 220 – 230 mm, Cutting of stem up to 15 mm, Hardened and tempered steel blades with rust preventing coating, Stainless steel with spring, Solid steel handles with soft PVC grip, Safety lock										
6	Backpack battery operated Electric Seacature	Cutting diameter: 40 mm. Working Voltage: 43.2 V. Maximum Power: 1080 W. Input Voltage: 240V, 60Hz. Charging Time: 2 hours. Working Time: 6-8 hours. Shear Weight: 0.850 kg. Battery Weight: 1.385 kg. Total Weight: 2.235 kg. With Italian technology										
7	Power weeder / Rotary Tiller (Only Diesel) Reputed Make	Engine : 4 Stroke Diesel engine, single cylinder, Air cooled vertical type Fuel tank capacity: not more than 03 liters Starting type : Recoil type, Power :4.5 - 5.5 HP Gear Box : 2 forward & 1 Reverse speed Rotor : 3+3 blades – 80 cm discs Weight : 80-90kg										
8	Mulberry Leaf Chopping Machine	<table border="1" style="width: 100%;"> <tr> <td>Motor capacity</td> <td>2.0 to 3.00hp single phase,220V</td> </tr> <tr> <td>Size of leaf cutting</td> <td>5mm to 25mm in various sizes</td> </tr> <tr> <td>Capacity</td> <td>150 to 250kg/hr depending on size of cutting</td> </tr> <tr> <td>Leaf tray capacity</td> <td>Minimum 5kg</td> </tr> <tr> <td>Leaf feeding</td> <td>Through belt conveyer</td> </tr> </table>	Motor capacity	2.0 to 3.00hp single phase,220V	Size of leaf cutting	5mm to 25mm in various sizes	Capacity	150 to 250kg/hr depending on size of cutting	Leaf tray capacity	Minimum 5kg	Leaf feeding	Through belt conveyer
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		Body	Metallic
		Cutting blade	High speed carbon steel
10	Multi Purpose Inter Cultivator	Engine Power	4 HP, 3000RPM, Diesel Engine, 4 Stroke, 211cc
		Tank Capacity	2.5ltrs
		Engine cooling system	Air Cool
		Engine ignition	Self Start / recoil
		Machine Dimension	Length-150cm width-1.75 to 3feet, Height-3feet
		Ground Clearance	1.25ft
		Wheel base adjustments	1.75 to 3 ft adjustable according to crop row spacing for intercultivation
		Speed	Simple, easy
		Handle Adjustment	Precise adjustable
		Machine weight	75kg
		Power Transmission	Gear, chine and dog clutch
		Turning radius	1.5ft
		Position Control	Left and right clutch
		Draw bar control	Screw and hand control
		PTO shaft	1200RPM
Extra Attachment	Spraying, water lifting pump, winnower, chaff cutter, power generator, Single MB plough different size, ridger, bund farmer, single/double row cultivator, leveler, blade harrow, sed drill, kunte, kurge		

**Schedule- II
Rearing Equipments**

Sl no	Equipment name	Specifications
1	Chawki rearing Plastic Trays/crates	Single piece injection molded HDPE trays with double walls to avoid twisting Outer dimension: 900mm L x 600mm B x 80mm H Sides and bottom perforated. Perforations with even distribution all around the sides of the tray .Edges of the tray should be folded outside in order to prevent the breakage of the trays should be stackable, light weight, easy to handle and should withstand bleaching powder disinfection and hot climate. The bottom should be perforated with diamond shape with criss-cross ridges for easy handling while kept on rearing stands Colors like green, blue may be used
2	Cocoon/ Pupa Preservation Plastic Trays/crates	Material: HDPE which can withstand extreme temperature from 30 ⁰ to 75 ⁰ c. Body:- Size(inner dimensions) : Closed body with closed bottom L B H 900mm x 600mm x 80m Color: Blue , yellow and Green in equal Nos.
3	Air coolers Reputed Make	The body should be made of fiber/metal Cooling area :at least 60 sqm Air delivery : at least 3000 m3 /h Speed control facility : required Cooling medium : wood wool / Steel wool Louver movement : motorized The unit should be portable Water level indicator Castor wheels/ trolley

4	Plastic Mountages	<p>Width (m) – 0.90 Length: 0.60 Mts with folds, after stretching – 1.73 Mts. Form - Corrugated Aperture shape – Diamond No. of folds – 11 one side and 10 other side Fold Height (mm) – 70 Weight (gm/piece) – 350 (minimum) Aperture size (mm x mm) – 18 x 20 Pleasing colors like Green may be used Material virgin HDPE plastic with UV protection (certIFICATE shall be uploaded)</p>																																								
5	Riped worms collecting HDPE Spinning Net	<p>Made up of Specialized HDPE knitted fabrics for final stage silkworm. Mesh size : 20 Sq.mm Width : 1.5 Mts Twin size : 0.5 mm Length : 3 Mts. Weight : 250grams per piece 4 sides of the net must be knitted with over lock stitch with 3 to 4 threads of 5 mm thickness along with additional binding thread of 3.0 to 3.5 ft. in length.</p>																																								
6	Bed Net for shoot rearing	<p>Make - HDPE Knitted fabric (Suitable for silkworm) Mesh size : 100 to 125 Sq.mm Width : 1.7 Mts Twin thickness : 1.5 mm Length : 100 ft. each roll Weight : 60grams per sq.mtr both sides and center of the net must be knitted with over lock stitch with 3 to 4 threads of 5 mm thickness.</p>																																								
7	Rotary Mountages	<p>Card Board frame</p> <table border="1" data-bbox="610 1077 1521 1759"> <thead> <tr> <th>Items</th> <th>Specification</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>Silk worm mounting cells</td> <td>12x13= 156 cells numbers</td> <td>Cell:4.5x.3.00 (cm)</td> </tr> <tr> <td>Card board material :</td> <td>400gsm (grams per square meter)</td> <td></td> </tr> <tr> <td>Card board thickness</td> <td>1.25 mm(inner) 2.50mm (outer)</td> <td>Papers combine</td> </tr> <tr> <td>Card board strength</td> <td>Ca.140N (Newton)</td> <td></td> </tr> <tr> <td>Size of card board (stretched)</td> <td>Length = 54 cm (4.5cm X 12) Width = 39 cm (3cm x 13) Height = 3 cm</td> <td></td> </tr> <tr> <td>Size of card board (folded)</td> <td>Length = 92 cm Width = 3 cm Thickness = 3.8 cm</td> <td></td> </tr> <tr> <td>Outer card board (length)</td> <td>4 papers combine</td> <td>2.50 m.m</td> </tr> <tr> <td>Outer card board (width)</td> <td>4 papers combine</td> <td>2.50 m.m</td> </tr> <tr> <td>Inner card board (length)</td> <td>2 papers combine</td> <td>1.25 m.m</td> </tr> <tr> <td>Inner card board (width)</td> <td>2 papers combine</td> <td>1.25 m.m</td> </tr> <tr> <td>Using duration (Service life)</td> <td>More than 50 crops</td> <td></td> </tr> </tbody> </table> <p>Wooden frame</p> <table border="1" data-bbox="610 1797 1521 1925"> <thead> <tr> <th>Items</th> <th>Specification</th> </tr> </thead> <tbody> <tr> <td>Size of wooden frame (big)</td> <td>Length = out. 117 cm, in. 144 cm Width = out. 58 cm, in. 55 cm Thickness = 1.5 cm</td> </tr> </tbody> </table>	Items	Specification	Remarks	Silk worm mounting cells	12x13= 156 cells numbers	Cell:4.5x.3.00 (cm)	Card board material :	400gsm (grams per square meter)		Card board thickness	1.25 mm(inner) 2.50mm (outer)	Papers combine	Card board strength	Ca.140N (Newton)		Size of card board (stretched)	Length = 54 cm (4.5cm X 12) Width = 39 cm (3cm x 13) Height = 3 cm		Size of card board (folded)	Length = 92 cm Width = 3 cm Thickness = 3.8 cm		Outer card board (length)	4 papers combine	2.50 m.m	Outer card board (width)	4 papers combine	2.50 m.m	Inner card board (length)	2 papers combine	1.25 m.m	Inner card board (width)	2 papers combine	1.25 m.m	Using duration (Service life)	More than 50 crops		Items	Specification	Size of wooden frame (big)	Length = out. 117 cm, in. 144 cm Width = out. 58 cm, in. 55 cm Thickness = 1.5 cm
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			Height (thickness)=2.2 cm 20 hooks & 4 plastic connections					
		Size of wooden frame (small)	Length = out. 113 cm, in. 110 cm Width = out. 43 cm, in. 40 cm Thickness = 1.5 cm Height (thickness)=2.2 cm 20 hooks & 4 plastic connections Plastic stopper & band 2 parts / set		Detachal			
		Rotary shaft (connection)	2 parts					
		Steel hanger	73 cm x 2 parts / set					
		Others - Tolerance \pm 5%						
8	Shade Net	Material: HDPE Width: 3mt.(10ft) length-30mtr Light penetration: 10% shading:90% UV stabilized, Colour: Green						
9	PVC pipe Chawki rearing stand (The drawing is attached to the document) Design as & Assembling & Dismantling	1	Sleeve (Made Out Of Ppcp)	20 Nos	FLANGE(MADE OUT OF PPCP)	10 Nos		
		2	Cap (Made Out Of Ppcp)	10Nos	32DIA PIPE (4KG /CM2) (MADE OUT OF PVC)	22 Nos		
		3	Adapter (Made Out Of Ppcp)	52 Nos	90DIA PIPE(6KG/CM2) (MADE OUT OF PVC)	10 Nos		
		4	Propfile Pipe (Made Out Of PVC)	16 Nos	PROFFILE PIPE (DIA32HOLES) (MADE OUT OF PVC)	10 Nos		
		FABRICATION CAN BE CONNECTED ANY NUMBER TO SUIT FORMERS REQUIRMENT.						
10	Pvc Pipe Shoot Rearing Stand For 25x4=100sqft(2.25sq m) (The Drawing is Attached to this Tender Document) Design as & Assembling & Dismantling	1	Sleeve (Made Out Of Ppcp)	16 Nos	FLANGE(MADE OUT OF PPCP)	04 Nos		
		2	Cap (Made Out Of Ppcp)	04 Nos	32DIA PIPE (4KG /CM2) (MADE OUT OF PVC)	10 Nos		
		3	Adapter (Made Out Of Ppcp)	32 Nos	90DIA PIPE(6KG/CM2) (MADE OUT OF PVC)	04 Nos		
		4	Propfile Pipe (Made Out Of PVC)	08 Nos	PROFFILE PIPE (DIA32HOLES) (MADE OUT OF PVC)	08 Nos		
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11	Paraffin paper	i. 80 GSM brown paper with ribs ii. wax coated, iii. melting point of wax: 50°C, iv. width: 1mt. length-30mtr						
12	Nylon net	Poly-filament woven nylon net, i. Mesh size: 12x12=144 holes per sq. inch., ii. width of 5 ft., iii. single folded, length 25 mts.						
13	Bed Cleaning Nets	Material	Nylon, knitted, poly filament, acid and chlorine resistant					
		Mesh size	1" x 1"					
		Width	5 ft					
		Bundle size	25 mts					
14	Flame gun	Gas burner : Dia 4.5 cm x 7.5 cm long with front open gap and bend pipe of 1 cm diameter with LPG gas regulator made of brass Steel Tube : Diameter 1.5 cm, length 1 m including had grip						

		Reinforced flexible PVC pipe : Diameter 12.5 mm nylon braided x 5 m length with hose clamps LPG gas regulator (ISI) adaptable to domestic gas cylinder of IOC, BPL and HP company 1.5 V Cell / battery operated Electronic gas lighter easy to hold with continuous spark
15	Humidifier:	Evaporation Capacity : 7.5 lit/hr. Air Circulation : 800m ³ /hr. Water supply connection : 7mm Water evaporation per H.P : 30 lit /hr Water displacement per HP (MM): -4000 Maximum water pressure : 0.3-6 Bar. Motor speed : 2800 RPM Motor : 0.2 HP Fitted with humidistat assembly for regulating humidity from ambient to 100% RH with auto cutoff and switch on facility. Provided with movable stand for mounting. Entire unit made of sturdy M.S.Metal frame with castor wheels.

Schedule- III
Disinfection based Equipments

Sl no	Equipment name	Specifications
1	Electrical Operated Hi-Pressure Portable Power Sprayer	HDP (2 piston) pump powered by 1 HP Single phase ISI mark electric motor, 1440 rpm, 220 volts, 50Hz, mounted on MS Tubular frame. 2 ½ meters suction hose, 2½ meters bypass, 50 meters hose (BP-150Kg / cm ²). 3 Feet Stainless steel spray gun, working pressure 12 to 15 Kg / cm ²
2	Petrol start, kerosene and diesel run hi-pressure portable power sprayer	HTP (3 piston) pump powered by 1.5 to 2.0 HP reputed ISI mark engine, petrol start, kerosene/ diesel run, mounted on MS Tubular frame. 2½ meters suction hose, 2½ meters bypass, 50 meters hose (BP-150Kg / cm ²). 3 Feet Stainless steel spray gun, working pressure 12 to 15 Kg / cm ²
3	Knapsack Sprayer With ISI mark	High capacity HDP tank with 15-20 Ltrs capacity, adjustable shoulder strips with cushion. 100-120 cms long, high pressure delivery hose with appropriate lance and nozzles for chemical spray for insect and weed control.
4	Knapsack Sprayer Battery Operated	Capacity 14-16 Ltrs, HDP Tank with diaphragm pump with sealed and rechargeable batteries. 100-120 cms hose with lance and trigger cutoff. Test reports from the Indian Research Institute & State Agriculture Universities
5	Rocking Sprayer With ISI Mark	25 mtrs delivery hose Pump fitted on a wooden platform, mtrs suction hose, 2.5ft spray lance, Tripplle action nozzle, Trigger cut – of, and with all std. Acc.,
6	Engine operated Knapsack sprayer	High capacity HDP tank with 20-23 Ltrs capacity with adjustable spray gun and shoulder strips with cushion with 2 stroke petrol engine of 21cc
7	Mask (Full face piece respirator)	Primary Material – Silicone/Thermoplastic Elastomer Size- Medium Face piece Type- Full Face piece Reusable Harness Type- 4Point Features- Lightweight, well balanced with soft silicone nose cup ensures comfort during long periods of work, wide field vision with a scratch and chemical resistant polycarbonate lens Assigned Protection Factor(APF)-50

	<p>Face piece weight-400grams</p> <p>Approval- NIOSH</p> <p>Cartridge Specification</p> <ol style="list-style-type: none"> 1. Approved for NIOSH protection against certain organic vapours or acid gases 2. Swept-back design allows an enhanced field of view and comfort 3. Bayonet compatibility allows use with many 3M half and full facepiece designs. 4. Wide range of applications reduces inventory needs
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Schedule- IV
Solar lights

1. 3W Solar Lantern

Application	INDOOR
Luminous flux	>200 Lumens
Lamp Wattage	3 Watts
Fixture Make	ABS
Working Temperature	-5 °c+ 50 °c
Working Humidity	10% to 90% RH
Led Type	High Power Led
Lumen Efficacy	100-120 lumens/Watt
Dispersion Angle	100-120 degree
Color Temperature	5000K-6000K
CRI	>70

Electrical Data

Input Voltage	6V DC Operated
Input Current	0.5A
Input Power Consumption	3W(+10%)
Electronic Efficiency	>85%

Integrated charge controller

Battery Low cut off voltage (LVD)	5.7V(+0.1 v)
Battery Reconnect Voltage (LVR)	6.0V(+.1V)
Over Charging cut off voltage (HVR)	6.5 V(+01)
Low Battery Indication	RED LED
Charging Indication	Green Led
Battery Size	Lithium, Li-on 7.2V 2200mAh
SPV	3W Panel
Charger	9 volt 500 ma AC Adopter Module
Charging	Dual

2. 3 Luminary Home Light System

Application	INDOOR
System Wattage	15 Watt
Lamp Wattage	5 Watts
Led Type	High Bright Led
Lumen Efficiency	100-120 lumens/Watt
Dispersion Angle	100-120 degree
Luminaries	3 Nos 5 watt
Battery	12 v 20AH Tubuler (CPRI Approved)
Solar Panel	20 W Module with panel structure
Working Temperature	-5C To +50C
Working Humidity	10 %- 90 % RH

Back up	6 hours
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Electrical Data- Charge Controller

Current Rating	5A
Battery Low cut off voltage (LVD)	10.7 V
Battery re connect Voltage (LVR)	12.0 V
Over Charging cut off voltage (HVD)	14.2 V
Charging Reconnect Voltage (HVR)	11.5 V
Low Battery Indication	Red Light
Charging Complete	Green Led Blinks
Charging Indication	Green Led

Luminary Specification

Luminous Flex (Lumens)	350
Input Voltage	12 V
Input Current	0.4A
Input Power Consumption	4.8W
Out put Voltage	18.6 V
Out put Current	0.20A
Out put Power	3.72W
Electronic Efficiency	>80%
Fixture make	Tilttable
Charging	Dual

Load wire length-20 mtrs(1.5sq mm 2 core), Panel length- 6mtres (2 sq mm 2 core)
 Charge Controller to Battery-3 meter(1.5sq mm 2 core)

3. 5 Luminary Home Light System

Application	INDOOR
System Wattage	25 Watt
Lamp Wattage	5 Watts
Led Type	High Bright Led
Lumen Efficiency	100-120 lumens/Watt
Dispersion Angle	100-120 degree
Luminaries	5 Nos 5 watt
Battery	12 v 40AH Tubuler (CPRI Approved)
Solar Panel	40 W Module with panel structure
Working Temperature	-5C To +50C
Working Humidity	10 %- 90 % RH
Back up	6 hours

Electrical Data- Charge Controller

Current Rating	5A
Battery Low cut off voltage (LVD)	10.7 V
Battery re connect Voltage (LVR)	12.0 V
Over Charging cut off voltage (HVD)	14.2 V
Charging Reconnect Voltage (HVR)	11.5 V
Low Battery Indication	Red Light
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Out put Voltage	18.6 V
Out put Current	0.20A

Out put Power	3.72W
Electronic Efficiency	>80%
Fixture make	Tilttable
Charging	Dual

Load wire length-30 mtrs(1.5sq mm 2 core),Panel length- 6mtres (2 sq mm 2 core)
Charge Controller to Battery-3 meter(1.5sq mm 2 core)

Schedule- V

Post Cocoon Items

1. TECHNICAL SPECIFICATIONS & TERMS AND CONDITIONS FOR SOLAR WATER HEATER (FPC) TERMS AND CONDITIONS

1. The manufacturer shall supply all technical literature and drawing considered necessary for the installation, operation and maintenance of the equipment and its fittings. These shall essentially include:-
 - a) Drawing showing over all dimensions and all other details including sectional view of the equipments.
 - b) List of parts with reference to nos.
 - c) Manual of instructions for the operation, maintenance and repairs/equipment and special fittings, if any.
 - d) Checking methods and schedule for cleaning the system.
 - e) Any other relevant technical data which would be of assistance for efficient operation and maintenance of the system including energy savings etc.
2. The tender should be selected on the basis of average annual financial turn over which should be at least 50% of estimated cost during last three consecutive financial years and also on the basis of minimum one work done of the 80% or two works of each 60% value put to tender
3. The supplier shall train purchaser's personnel for the operation and maintenance of the equipment for a particular period, mutually agreed between the supplier and the customer.
4. The suppliers will have to undertake repair of the system installed by them, in case of any defect arising out of any point of time. Supplier will attend the minor complaints within 48 hours of receiving the complaint otherwise penalty to be recovered per day as decided by the Engineer-in-charge.
5. The system and the solar collectors should be guaranteed for six year after the day of handing over. This includes first three year with spare parts and next three year without spare parts. He / She shall submit list for recommended spars to be required in maintenance with price along with their offer. Manufacturer or their authority/accredited dealer shall be consider for eligibility to participate in tenders
6. The supplier shall guarantee the performance of the system for the rated output of 60 degree C in terms of quantity of hot water and the temperature in peak winter for which the system is designed. If it is not achieved, the necessary additions/modifications including installation of extra collectors shall be done by the supplier without charging any extra price. However, the purchaser reserves the right to have this job completed for achieving the rated output by other manufacturers/after serving 15days notice to the original manufacturers/contracts at his cost & risk.
7. All the elements of the system which fail due to manufacturing defect within the period of guarantee shall be replaced by the tenderer free of cost.
8. An amount of 10% of the total cost of the system will have to be deposited by contractor, as security which will be reimbursable after 6 years i.e. completion of warranty period.

Note: - These terms & conditions will be in addition to already exiting terms & conditions of the concerned Department.

TECHNICAL SPECIFICATIONS FOR SOLAR WATER HEATER (FPC)

1. Solar flat plate collector components	Solar flat plate collector cover plate made of toughened glass. Sheet for absorber made of copper. Absorber made of copper sheet and copper tube.
2. Solar flat plate collector specifications	<p>1. Solar flat plate collector shall conform to IS 12933 (part 1) with amdt no.1 & 2. and IS : 12933 (part 2)/2003 and various components shall be as under:-</p> <p>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 transmittances of the cover plate shall be minimum 82 percent at near normal incidence.</p> <p>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:</p> <ol style="list-style-type: none"> 1. Channel section for sides 1.6 mm 2. Sheet for bottom 0.7 mm 3. Support for glass retaining 1.2 mm 4. Sheet for entire body 1.0 mm
a) Absorber	<p>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 + /-0.5 mm 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.</p> <p>1. Riser and header assembly designed for working pressure up 24.5 k pa (2.5 kg/ cm square) shall be tested for leakage at a minimum hydraulic pressure of 490 k pa (5 kg/ cm square).</p> <p>(a) Sheet for absorber: sheet for absorber shall be made of copper only. Type Grade, size, workmanship and finis of the material used shall be per Section -3 of IS: 12933 (pt -2) /2003. A sample piece of the absorber for Having minimum area of 400 square cm. shall be heated in an oven at Temperature of 175 degree c for 2 hours. After heating, the sample Shall be taken out from the oven and cooled at room temperature. The Cooled sample shall be inspected visually for damages, if any.</p> <p>There Shall not be any appearance of blistering / rupture /peeling off of the Coated /painted surface and of weakening of the bonding between.</p>
b) Absorber sheet and risers/ headers	<p>(a) Collector box 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.</p> <p>(b) Gaskets and grommets: gaskets and grommets shall conform to Sec. 5 of IS 12933 (pt-2)/ 2003.</p>
3. ASSEMBLY OF COLLECTORS	<p>The load of the absorber should not be on the insulation. It should be taken by the collector box.</p> <p>The air gap between the glazing and the absorber should be 25mm (+5mm). Insulation should not be allowed to slide.</p> <p>Glazing shall be fixed on the collector box by using EPDM/Neoprene/Synthetic rubber channels.</p> <p>The glass should be firmly held, without strain taking into account the expansions of glass.</p> <p>A typical example is by retaining the glazing with the help of self tapping screws</p>

	and aluminum angle retainer of dimensions 25 mx25mmx1.5mm fixed on the top of the box it shall be ensured that the screws are not touching the glass edge. Top surface along the edge between the glass and the aluminum angle shall be caulked with suitable sealants such as zinc oxide based/rubber based/silicon rubber based or poly sulphide rubber sealants.
4. GASKET FOR FLANGES	3 mm thick gasket of Neoprene/synthetic rubber gasket shall be used for sealing the joints between flanges.
5.COLLECTOR SUPPORT FRAME	The structure should be in a position of withstand a wind velocity of 100 kms/hr. shall be made with angle iron of 35mmx35mmx4mm; will have vertical support at top and bottom edge of the inclined plane of the collector at a distance of 1.5 M or less. The vertical support shall be firmly grouted with the roof.
6. PAINTING OF 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 Colour as per NIT.
7. STORAGE TANK (HOT WATER)	a) Material - Stainless Steel (SS 316/ IS 1730 grade
b) Thickness	<p>Minimum thickness Tank capacity</p> <p>20 gauge (0.91mm)for 100 lpd 20 gauge (0.91mm)for 200 lpd 20 gauge (0.91mm)for 500 lpd 18 gauge (1.2mm) for 1000 lpd 18 gauge (1.2mm) for 1500 lpd 18 gauge (1.6mm) for 2000 lpd 16 gauge (1.6mm) for 3000 lpd 16 gauge (2.0mm) for 4000 lpd 16 gauge (2.0mm) for 5000 lpd</p>
c).Insulation and installation	<p>All sockets and internal fittings of the tanks should be of stainless steel.100 mm thick insulation of 48 kg/cu.m. density having approx. k value_0.03 W/mk and R value 3.34 sq.m deg.C/W to withstand a temp. of 250deg.c.Thin polythene sheet shall be used as covering between the glass wool and the cladding sheet besides the retaining material such as chicken mesh etc. Aluminum sheet of thickness 24 SWG shall be used for cladding the tank insulation.</p> <p>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. External of the tank should be properly insulated so that hot water temperature does not decrease by more than 5 deg.C in about 16 hrs. Times.</p>
8. PIPING	<p>a) Material Medium class (B class) GI as per IS 1239/CPVC shall be used for piping.</p> <p>b) Insulation 25mm thick insulation of 48kg/cu.m. density and K value+0.03 W/MK R value+1.67 sq.m. C/W to withstand and temp. of 250 deg. C be used. Thin plastic sheet shall be used as covering between glass wool and aluminum cladding besides other 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</p>

	system.
9. VALVES/NIPPLE/TESS/BENDS	Gun metal/ CPVC valve 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
10.INSTRUMENTATION	Temperature gauge: 1 No. (for Hot Water Storage Tank/Outlet) Gun metal strainer: 1 No. (at Cold Water inlet) Water meter -1 at the inlet of cold water tank. Maximum 2 nos. Of chrome plated brass taps for systems up to 200 LPD thereafter 1 tap per 200 LPD superior qualities for distribution line.
11.COLDWATER TANK	HDPE/LDPE material with Gun metal float valve (ISI marked) equal to the capacity of Hot water storage tank
12.STANDS&PEDESTALS FOR THE TANKS	The tanks will be mounted on stands made out of angle iron frame of 35x35x4mm up to 2000 liters 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 tank.
13. SYSTEM LAYOUT & DESIGN	Maximum number of collectors in series should not be more than ten. Maximum number of collectors in parallel in one row without the use of any piping connections should not be more than six. Air venting at appropriate places without hindrance of a spring leaded valve to prevent air locking in the system should be provided. For this purpose, the system shall have, at a suitable point, atmospheric pressure conditions preferably in the high temperature zone. System shall have a suitable expansion/make up tank at a high point in the system to ensure that collectors run full all the times. Capacity of this expansion/make up tank should be 1.5% of the system capacity for all systems.
14.HEAT EXCHANGER	(a) Shell-in-Tube Type (i) Material Copper for forced systems only. Shell in tube type heat exchanger may be used if U-type construction is not employed and if V-type construction is employed, then inimum 4 Nos. of heat exchangers will be used in series. Shell shall be designed for 1.5 times of the designed operating pressure and shall be tested for two times the operating pressure. In case of mild steel shell, corrosion allowance of 1.6 mm shall be provided. Shell shall be designed as per the BIS-2825. All the elements of heat exchanger shall be as per relevant Indian Standard or as per TEMA Class C construction. (ii) Tube Thickness Minimum 22 SWG, but may be higher depending upon the designed pressure requirements. (b) Coil-type Heat Exchanger For thermosyphen systems only. May be used by incorporating Cu/SS coils/retender inside the storage tank. (i) Material Copper/SS tube of ¾" dia. (ii) Thickness Minimum 22 SWG. May be higher depending upon the pressure requirements. (iii) No. of coils and flow Pattern. 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 an per sq.m of the absorber area of the system (for 100 LPD z system the copper tube length of 7 meter is required).
15. ELECTRICAL BACK UP (only upto	For 100 lpd - 2 KW For 200 lpd - 2 KW

1000 lpd)	<p>For 300 lpd - 2x2 KW For 400 lpd - 2x2 KW For 500 lpd - 2x2 KW Electrical wiring of 2:5 mm sq. 2 core unarmored cable, thermostat of Siemens/Danfoss/Honeywell Make with MCB of 16 Amp. For 600 lpd -6 KW For 800 lpd -9 KW For 1000 lpd -9 KW</p>
16. Electrical back up control panel For 6 KW	<ol style="list-style-type: none"> 1. DP switches 20 Amp. Anchor make or equivalent 2. MCCB 4 pole 16 Amp For Legarand, Schneider, L&T, 6KW and 32 Amp for 9 KW Siemens, ABB make. 3. Contactor 25-32 Amp. L&T/Schneider/Siemens make 4. Amp. Meter 1x30Amps. Rishabh,AE,L&T 5. Volt meter 0-500V -do- 6. Amp. Selector Switch AE/Rishabh/ KAAYCEE, L&T BCH,GE 7. Voltage Selector Switch -do8. <p>Thermostat for auto cut (6KW) Danfoss/Sieman/Honeywell</p>
17. Electrical back-up control panel for 9 KW	<ol style="list-style-type: none"> 1. DP switches 1x32 Amp. Anchor make or equivalent 2. Amp.mtr. 1x30 Amps. Rishabh, AE,L&T 3. Volt mtr. 0-500 volts -do- 4.Amp.Selector switch AE/KAAYCEE/L&T/BCH,GE 5. Voltage Selector switch -do- 6. MCCB 4 pole 20 Amp. -do- 7.Thermostat for auto cut (9KW) Danfoss/Sieman/Honeywell 8. Contactor 25-32 Amp. L&T/Schneider,Seimens make Wire should not be less than 4mm 3 cores, Cu, armored/ unarmored Cabels Plaza/Havels/National/Paragon/NICCO/Bonto n/Finolex type.

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