



**Chhattisgarh State Renewable Energy
Development Agency (CREDA)**
(Dept. of Energy, Govt. of Chhattisgarh)

Near Energy Education Park, Village Fundhar
VIP (Air Port Road) Raipur 492015 (C.G.) Ph.: +91-7415803963
E-mail: sdp.credaho@gmail.com, Website: creda.co.in
RFX No.-8100017789

BID DOCUMENT No. 2064/CREDA/HOR/RE-III/SDP/2020-21 DT. 09-06-2020

**TENDER FOR STANDARDISATION OF RATES FOR SUPPLY AND
INSTALLATION OF SOLAR DRINKING WATER PUMPING SYSTEMS
(SPV DUAL PUMPS) OF 900Wp/6M HEIGHT STAGING/5KL,10KL WATER
TANK, WITH FIVE YEARS ON SITE AND UNCONDITIONAL
WARRANTEE ANYWHERE IN STATE OF CHHATTISGARH.**

Particulars	From Date & Time	To Date & Time	Place
Date of issue of notice inviting bid	09-06-2020 05:00 pm	----	-----
Period of availability of bidding document at website	09-06-2020 05:00 pm	01-07-2020 01:00 pm	http://www.creda.co.in
Pre Bid queries submission of queries in writing	18-06-2020 11:00 am	18-06-2020 05:00 pm	At H.O. CREDA, RE-III, Section
Submission of Sample and inspection	23-06-2020 11:00 am	23-06-2020 05:00 pm	at Parking, Near Energy Park, VIP Road, Raipur
Submission of Technical Bid	02-07-2020 11:00 am	02-07-2020 02:00 pm	At H.O. CREDA, RE-III, Section.
Submission of e-Price Bid	18-06-2020 05:00 pm	02-07-2020 02:00 pm	http://www.cspc.co.in
Opening of Technical Bid	02-07-2020 03:00 pm	02-07-2020 05:00 pm	At H.O. CREDA, RE-III, Section
Declaration of Eligible Bidder	03-07-2020 12:30 pm	----	At H.O. CREDA, RE-III, Section
Opening of e- Price Bid	03-07-2020 03:00 pm	03-07-2020 05:00 pm	At H.O. CREDA, RE-III, Section

***Bid Document Cost– Rs.10,000.00 + 18% GST = Rs.11,800.00
(in words Rupees Eleven Thousand Eight Hundred Only)***

Document can also be downloaded from our website www.creda.co.in with the cost of Bid as mentioned in NIT, which shall have to be deposited along with the Bid document.

CHATTISGARH STATE RENEWABLE ENERGY DEVELOPMENT AGENCY

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NOTICE INVITING BID

CREDA invites sealed Bids for Survey, design, supply, installation, and commissioning of Solar Photovoltaic Drinking Water pumps (Solar Dual pumps) with five years COMC, onsite warrantee, Insurance for anywhere in the State of Chhattisgarh from registered System integrators of CREDA for SPV with 3 years track record in Solar Dual Pumps, as per following details –

Sl.No.	Item Description	Approximate Quantity	Cost of Bid Document	EMD	Essentials
1.	SPV Dual Pumps 900 Wp/1.0 HP DC Submersible with 6 Meters staging and 5000 Litres Storage Tank	3000	Rs 10,000.00 +18% GST = Rs.11,800.00	Rs.10,00,000.00	As per clause no. 1A to 1F of Eligibility Criteria (Page no.8-9)
2.	SPV Dual Pumps 900 Wp/1.0 HP DC Submersible with 6 Meters staging and 10000 Litres Storage Tank	2000			
TOTAL -		5000 Numbers	11,800.00	10,00,000.00	----

The quantity of pumps mentioned in above table may vary as per actual site conditions and demand.

Important Events and time schedule for this Bid are as follows –

Particulars	From Date & Time	To Date & Time	Place
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Price Bid shall be submitted online only at <http://www.cspc.co.in>, however Technical bid will have to be submitted in hard copy at Chief Engineer (RE – III) Section, Near Energy Education Park VIP Road, Raipur. Bidders are advised to follow the instructions provided for Registration and e-Submission Process accordingly. (for any query about e-bidding please visit user manual at <http://www.cspc.co.in>.)

Details of this Bid are mentioned at Bid Documents which can be downloaded from our website www.creda.co.in. The Bidder should have to deposit Bid document cost along with EMD as mentioned above through demand draft payable to CREDA Raipur while submitting Bid.

Bidders are requested to submit their queries with their suggestions/objections if any with details so as to avoid any confusion and to ensure clarity and transparency regarding the Bid.

CREDA reserves all rights to accept/reject any or all Bids in full/part without assigning any reasons.

**Chief Engineer
RE-II, H.O. CREDA
Raipur (CG)**

Details of bank account for RTGS/ NEFT :

Name	CREDA
Bank & Branch Name	ICICI Bank, Pachpedi Naka, Raipur
Bank Account Number	134601000400
Branch IFSC Code	ICIC0001346

CHECK LIST

To ensure that your Bid submitted to CREDA is complete in all respects, please go through the following checklist & tick mark for the enclosures attached with your Bid –

Sl. No.	Description	Complied	Page No. / Flag
1.	Earnest Money Deposit		
2.	Bid Document Fee (proof of submission)		
3.	The original document duly signed & with stamp on each page, as a confirmation of acceptance of Terms & Conditions (T&C).		
4.	Copy of Registration: Certificate as System Integrator of CREDA in SPV Programme valid for FY 2020-21.		
5.	Copy of Approved Test Reports of SPV Pump in the name of Bidder.		
6.	Original Net Worth Certificate duly signed by Chartered Accountant		
7.	Completion and Performance Certificates of SPV Dual Pumps installed by the Bidder in Govt Scheme of any state.		
8.	Proof of being Eligible Manufacturer of pumps/controller/ SPV Pump/Structure of SPV dual Pump.		
9.	Copy of certificate for last three years turnover of works done regarding SPV Dual Pumps.		
10.	Declaration of conflict of interest - by bidder about any relatives working with CREDA.		
11.	Manufacture Authorization certificates of major components of solar Dual pumping system.		
12.	Forwarding Letter & Undertaking by the Bidder		
13.	PAN, GSTIN , Copy of ITRs for last three FY of the Bidder		
14.	Self-certificate from Bidder on not being a debarred from Government contract or a blacklisted company.		
15.	Original copy of agreement in case of consortium bidders		

Details of EMD and Bid Fee

Sl. No.	Description
1.	Earnest Money Deposit - Earnest Money Deposit of Rs., submitted in the form of Demand Draft / Banker's Cheque/RTGS/NEFT from any scheduled bank drawn on _____ Bank _____ Branch, bearing DD/BC No. _____ dated _____ is attached herewith.
2.	Bid Document Fee - Bid Document Fee of Rs., submitted in the form of Demand Draft / Banker's Cheque/RTGS/NEFT from any scheduled bank drawn on _____ Bank _____ Branch, bearing DD/BC No. _____ dated _____ is attached herewith.

Note:-All documents must be indexed and flagged. In case of RTGS/NEFT, it is mandatory to confirm the remittance of respective amount in the account of CREDA from finance section of CREDA.

Contact Person Name:-

Mr. G. D. Choukhande

C.F.A.

CREDA HO ,Raipur, Mob No:-8370008630

UNDERTAKING OF THE BIDDER

I/We have read carefully and examined the notice inviting Bid, schedule, General Rules and terms and conditions of the contract, special conditions, Schedule of Rates and other documents and Rules referred to in the Bid document for the supply.

I/We hereby Bid my rates for the execution of the work for CREDA as specified within the time stipulated in the schedule in accordance with all aspects with the specifications, designs, drawings and instructions with such conditions so far as applicable.

I/We agree to keep the Bid valid for **One Hundred Eighty (180) days** from the due date of submission thereof and not to make any modifications in its terms and conditions.

A sum of **Rs.....** is hereby forwarded as **Earnest Money** in the form of crossed demand draft / RTGS / NEFT payable to CREDA at Raipur (C.G.). If I/We, fail to commence or complete the Work Ordered in specified time or fail to fulfil the any condition of Bid document, I/We agree that the CREDA shall, without prejudice to any other right or remedy, be at liberty to forfeit the said Earnest Money absolutely. The said Earnest Money shall be retained by CREDA towards security deposit to execute all the works referred to in the Bid documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be required by CREDA.

I/We hereby declare that I/We shall treat the Bid documents, specifications and other records connected with the work as secret/confidential and shall not communicate information derived there from to any person other than a person to whom I/We have authorized to communicate the same or use the information in any manner prejudicial to the safety of CREDA/Government.

I/We shall abide to all the laws and shall be responsible for making payments of all the taxes, duties, levies and other Govt. dues etc. to the appropriate Govt. departments.

Our GST Registration No. The PAN No. under the Income Tax Act is

I/We shall be responsible for the payment of the respective taxes to the appropriate authorities and should I/we fail to do so, I/we hereby authorize CREDA to recover the taxes due from us and deposit the same with the appropriate authorities on their demand.

Dated:

Signature

Place:

Name of Bidder with seal

Witness :

Signature:

Name:

Postal Address:

.....

SECTION - 1

INSTRUCTIONS FOR BIDDERS

1. ELIGIBILITY CRITERIA :

A. TEST REPORTS OF SPV PUMPS

- Tenderer must have valid test report of SPV Pumps for 900 Wp/1.0 HP (integrated systems) as per guidelines issued for SPV Drinking Water Pumps, at 90 meters duty head and 120 meters shut off head in their names. They will have to provide copy of such test report of the integrated systems from Solar Energy Test Centre or any other test centre approved by Ministry of New & Renewable Energy (MNRE)/ NABL. Tenderer must also have to submit test reports of offered SPV Pumping System and manufacturer's test report / data sheet of major components such as SPV Module, Pump, Controller and detailed FEA report for structures (covering all elements and sections) issued by a qualified structural engineer.

Financial bid of those Tenderers will not be opened who have not submitted valid test reports.

B. MINIMUM EXPERIENCE

Bidders must have minimum experience under Government or Market Mode Schemes for at least three consecutive financial years i.e. 2017-18, 2018-19, 2019-20 and 2020-21 till 31-05-2020 as per the details mentioned below –

S.No.	Capacity of SDP	for Bidders of Chhattisgarh state	for Bidders of Other States	For Start Ups and New Entrepreneurs
1	SPV Dual Pumps 900 Wp /1.0 HP DC Submersible with 6 Meters staging and 5000 Litres Storage Tank	Minimum 25 numbers of SPV Dual Pumps of capacity minimum 600 Wp -0.5 HP with 5000 Litres Tank at minimum 4.5 Meters Staging	Minimum 50 numbers of SPV Dual Pumps of capacity minimum 600 Wp -0.5 HP with 5000 Litres Tank at minimum 4.5 Meters Staging	Minimum 05 numbers of SPV Dual Pumps of capacity minimum 600 Wp -0.5 HP with 5000 Litres Tank at minimum 4.5 Meters Staging
2	SPV Dual Pumps 900 Wp /1.0 HP DC Submersible with 6 Meters staging and 10000 Litres Storage Tank	Minimum 50 numbers of SPV Dual Pumps of capacity minimum 900 Wp -1.0 HP with 5000 Litres Tank at minimum 6 Meters Staging	Minimum 100 numbers of SPV Dual Pumps of capacity minimum 900 Wp -1.0 HP with 5000 Litres Tank at minimum 6 Meters Staging	Minimum 05 numbers of SPV Dual Pumps of capacity minimum 900 Wp -1.0 HP with 5000 Litres Tank at minimum 6 Meters Staging

Bidders will have to submit satisfactory commissioning/functioning report containing complete system details from the concerned state/central agencies /department along with bid document. All these SPV Dual Pumps should be in successful operation as on date. **Bidder registered as a Pvt. Ltd. / Ltd. / Partnership / Proprietorship firm incorporated / registered in the State of Chhattisgarh shall be treated as Bidder of Chhattisgarh.**

- C.** Experience Certificates submitted should be in attached format (as per annexure-**XII,XIII**) or Other Format containing similar information as in attached shall be considered only in-case of submitted in Hindi / English Language only. Work order, L.O.I. / L.O.A etc., will not be acceptable.

- D.** Bidders must have a Positive Net worth of **Rs.01 Crore** (**Positive Net Worth means “Net value of the Assets minus(-) Net value of liabilities”**) as on 31st March 2019 or 31-03-2020 (only if the bidder has audited reports of their accounts for FY 2019-20). They shall have to submit a **Certificate** duly signed by a qualified and registered Chartered Accountant having UDI number as a proof. Produced certificate must tally with the audited balance sheet.
- E.** Bidders should have an aggregate turnover of minimum **5 Crores** in last three consecutive financial years i.e. 2016-17/ 2017-18, 2018-19 & 2019-20 (only if the bidder has audited reports of their accounts for FY 2019-20). in SPV Projects. Certified copies of the annual returns and audited balance sheet submitted to the Registrar of Companies/ Income Tax Authorities should be enclosed. For the preceding years a **Summarised Sheet** of turnover certified by registered CA must be enclosed.
- F.** Bidder who are debarred from business by Govt. /Govt. Agency in any state would not be eligible to participate in this bid. A self-declaration should be submitted by the bidder to this effect, failing which bid shall be rejected.

2. CONSORTIUM - Consortium will be allowed in this Bid up to 2 partners subject to fulfilling following criteria -

- (i)** Both the partners should jointly fulfil eligibility criteria as per clause 1B, 1C and 1E.
- (ii)** The lead partner should fulfil criteria as per clause 1D individually and other partner should have Positive Net worth as on 31st March 2019. For Positive Net worth of other partner Audited balance sheet must be enclosed.
- (iii)** Both the partners should individually fulfil criteria of 1F.
- (iv)** If either partner submits any alternate / individual bid then both bids (individual & consortium) shall be rejected.
- (v)** The Consortium agreement notarized in Non Judicial stamp paper of Rs. 100 as per draft given in annexure-"XIV" must be submitted along with the bid documents.
- (vi)** In Consortium if one or both the partners are from Chhattisgarh then they should have minimum experience of 100 pumps and if both the partners are from outside the state then they should have minimum experience of 200 pumps.

3. START-UP AND NEW ENTREPRENEUR -

- A.** CREDA may consider awarding work of installation up to **5 Solar Dual pumps** on **L-1** price to Start-up & New Entrepreneur.
- B.** **START-UP-** CREDA may consider Start-up Company registered only in area of Solar PV modules/Motor-pump Sets/Solar Motor Pump Controller/Solar Pump inverters and PV System integrator, if it produces certificate of being a Start-up entities as issued by Government of India.
- C.** **NEW ENTREPRENEUR-** (New Entrepreneur means System Integrator who doesn't fulfil the eligibility criteria as per clause 1A to 1E). CREDA shall consider Companies/Proprietorship firm/Partnership firm which are registered in CREDA as **NEW ENTREPRENEUR**.
- D.** EMD for Start Ups and New Entrepreneurs shall be of **Rs. 2 Lacs** in form of D.D.
- E.** Start -up & New Entrepreneur Bidder must have valid test report for offered Solar Pumping Systems in their names. They will have to provide copy of such Test reports of their SPV Pumps from Solar Energy Test Centre or any other test centre approved by Ministry of New and Renewable Energy (MNRE) or NABL.
- F.** Start -up & New Entrepreneur are not allowed to Quote Prices.
- G.** Maximum **10%** of the total work may be reserved for MSME, start-up and new entrepreneur.
- H.** MSME (registered in Chhattisgarh State) working for manufacturing or services of Solar Pumps shall only be considered subjected to submission of valid production competency certificate. They shall have to fulfil all technical criteria for eligibility for the tender.
- I.** CREDA shall have discretionary rights to change the quantities as and when required.

4. BIDDING PROCESS -

For ease of accessing the e-bidding website and registration the following is to be done by bidder -

- A. Visit <http://www.cspc.co.in>
- B. Click on e-bidding button on right hand side of the page.
- C. The user will be directed to e-bidding page where all information regarding registration is available along with helpline details.
- D. Price Bid shall be submitted online only at <http://www.cspc.co.in> however technical bid will have to be submitted in hard copy. Bid Documents (including Technical Bid and other documents) must reach at Chief Engineer (RE-III) Section, Near Energy Education Park VIP Road, Raipur latest by **11.00 AM to 02.00 PM on 02-07-2020**. Bids submitted after scheduled time and date shall not be considered.

5. EMD, TECHNICAL BID SUBMISSION -

Document Fee, EMD, Technical Bid, should be submitted for examination before **02:00 PM** on **02-07-2020** at Ground near CREDA Head office Raipur. These will be examined by Technical Committee of CREDA on **02-07-2020** and Bidders will be shortlisted on the basis of approval of the Technical bids along with Test Report for agreement.

6. SUBMISSION OF DOCUMENTS -

Documents should be submitted in prescribed manner in separate envelopes as follows-

- A. Main Envelope: Main Envelope must enclosed all A, B, C & D envelopes. Bidder Name, Address and status of firms should be clearly written on main envelope. In case the bidder is participating as “CONSORTIUM” Name and address of both Partners with Title as “CONSORTIUM” must be mention on main envelope. Start-up or New Entrepreneur must mention title as “Start-up” or “New Entrepreneur” as applicable on this envelope.
- B. Envelope-(A): Bid Fees and EMD.
- C. Envelope-(B): Financial Eligibility Documents: Net worth & Turnover certificate as per clause 1C & 1D & 1E.
- D. Envelope-(C): Technical Eligibility Documents: Experience certificates, Test Reports & Summary of Test Reports and Manufacturer Authorization Form as per clause 1A, 1B & 1C.
- E. Envelope-(D): Complete Bid document in original duly seal & signed by authorized signatory on each & every page of the Bid document.

Bid Document which doesn't follow the above format shall be disqualified.

7. SPECIFICATION AMENDMENTS -

The Specifications of SPV Modules, Pumps, Tanks, Structures, Stand Posts, Special Chamber, Taps etc should be as per as Specified in the Bid. If any amendments are issued by CREDA in due course of time, in this context, then those shall be applicable under this Bid.

8. GST & PAN -

Bidder shall have to submit copies of GST registration number and PAN numbers issued by the appropriate authority.

9. THE BID -

Technical Bid must be deposited in the Bid box only kept in the Chief Engineer RE-III Section, CREDA, H.O., Raipur **from 11:00 AM to 02:00 PM on 02-07-2020** nobody is authorized to receive or grant receipt for Bid delivered on behalf of CREDA. Bid received through any other means shall not be considered.

10. ANALYSIS OF RATE -

- A. Bidder should quote their rates considering variation of site conditions and all other factors in price of different components and keeping the quantum and quality of work in mind. Every care has been taken in preparing the cost estimation i.e. Benchmark Cost (Annexure – XVI) however, these are for guidance purpose only.
- B. The benchmark cost of CREDA is Exclusive of GST and the bidder has to quote the price without GST. The rates will be compared without GST.

C. If the successful bid is unbalanced in relation to the benchmark cost of CREDA as stated in Annexure-XVI by more than 10%, the successful bidder shall have to provide Additional Performance Security (APS) to the extent of difference of 90% of benchmark cost and rates quoted by the successful bidder for total allocable quantity in such categories in which he has submitted unbalanced bid, in the form of Demand Draft/RTGS issued by approved scheduled bank in favour of CREDA, before signing the agreement. The same shall be released along with the normal S.D. after 05 Years of warranty period.

In case the bidder refuse to deposit Additional Performance Security (APS) then his bid will be rejected by the sanctioning authority and earnest money shall be forfeited and shall be blacklisted /debarred to participate in any tender/ activity of CREDA till further orders. In such case CREDA shall have discretionary rights to decide reasonable rates in comparison to benchmark costs which may be rates quoted by L2 if found reasonable.

If the bidder fails to complete the work or left the work incomplete, this Additional Performance Security (APS), S.D. and EMD shall be forfeited by the CREDA and the agreement shall be terminated and bidder shall be blacklisted /debarred to participate in any tender/ activity of CREDA till further orders.

D. Those Bidders who have accepted the L1 rate also required to submit additional performance security for allocated work.

11. REGISTRATION OF BIDDER –

Bidders should have a valid registration certificate of System Integrator in CREDA in SPV programme for FY 2020-21. Bidders who are not registered with CREDA, upon allocation of work shall register himself as system integrator of CREDA within 30 days of such allocation failing which work allocation shall stand cancelled without any further notice in this regard and allocation work shall be re-allocated to other parties as per Bid condition. In case of Consortium both the partners will have to get registered as SI in CREDA.

12. VALIDITY -

Full descriptive particulars and complete specifications should accompany the offer. Offers should be kept open for acceptance for at least **180 days** from the date of opening. After finalization of this Bid the approved rates shall be valid till one year from the date of award; however CREDA shall have liberty to increase or decrease this validity if needed.

13. TERMS & CONDITIONS -

- A.** The terms, conditions and specifications mentioned in Bid document shall be binding on the Bidders and no condition or stipulation contrary to the conditions shall be acceptable. It may please be noted that the Bidders who do not accept terms and conditions stipulated in this Bid documents, their offers shall be liable to be rejected out-rightly without assigning any reason whatsoever.
- B.** Each page of Bid document & enclosures shall be signed by the Bidder and seal affixed. All the pages of the documents issued must be submitted along with the technical offer. In case of any corrections / alterations in the Bid, the Bidder should attest the same; otherwise Bids may not be considered. In case of Consortium both the partners shall sign & seal.
- C.** Bidders are also instructed to submit their Bids in properly arranged manner (with index, proper paging and with flags on important documents). Incomplete, lose, conditional or improper arranged Bids will not be accepted.

14. CREDA RESERVES THE RIGHT -

- (i)** To reject or accept any or all Bids fully or partly without assigning any reason on the grounds considered advantageous to CREDA, whether it is the lowest Bid or not.
- (ii)** To split the quantities against the Bid further for the same items/work. No reason will be assigned by CREDA for this and will be binding on the Bidders.
- (iii)** To increase or decrease of aggregate quantities up to 100 % as per discretion or circumstances.
- (iv)** Due to large quantum of work & limitation of the time period for completion of the work CREDA may take consent from other Bidders if they agree to work on rates standardized by

CREDA.

- (v) CREDA may undergo agreement with those eligible Bidders who give consent to work on rates standardized by CREDA and may allocate work to them. Rates approved through this Bid may be standardized for all eligible Bids to work in **year 2020-21 & 2021-22** and shall be valid till **31-03-2022**. However CREDA reserves right to curtail or extend this period.

15. COMMUNICATIONS -

- A.** All the communication between Bidder and CREDA shall be in writing. Notice sent by Fax or other Electronic means shall be effective on confirmation of the transmission. Notice sent by registered post or speed post shall be effective of delivery or at expiry of normal delivery period as under taken by Postal Service.
- B.** Offers through Telegraph/Fax/Emails/Post/Courier or open offers etc. received shall be summarily rejected.

16. BID DOCUMENT FEE AND EARNEST MONEY-

- A.** Each Bidder should submit Bid Document Fee and earnest money in the form of Demand Draft/Pay Order or RTGS/NEFT as mentioned in the NIT vide **2064/CREDA/HOR/RE-III/SDP/2020 DT. 09-06-2020**, in a separate envelope as prescribed at **point no.06** (submission of documents), else they will summarily be rejected and returned. Bid Document Fee & EMD submitted in any other form e.g. **Cash/Bank Guarantee/FDR /TDR etc. shall not be accepted.**
- B.** MSME unit registered for manufacturing or service of solar pumps or components in Chhattisgarh state and public sectors of government are exempted from EMD subjected to submission of valid competency document.

17. SUBMISSION / DISPLAY OF SAMPLES -

Bidders will have to provide samples individually of their Module, Pump, Controller, Tanks, assembled Structures, Stand Posts, Special Chamber, Taps, LA & Chemical Earthing Kit, B.O.S. and etc. All components should be submitted for examination on the date, shall be communicated separately at Ground near H.O. CREDA, VIP Airport Road, Raipur. These samples shall be examined by Technical Committee of CREDA.

18. PRE-BID QUERIES SUBMISSION IN WRITING -

- A.** All suggestions, doubts, confusion, request, queries etc., shall have to be presented to CREDA in writing on or before **05:00 PM on 18-06-2020**. After that any representation in this regard shall not be considered.
- B.** The purpose of pre-bid queries is to clarify issues and questions related to this tender that can be raised at that stage. Any amendments in the bid documents which may become necessary as a result of pre-bid queries received shall be part of original Bid document and communicated through corrigendum.

19. TECHNICAL CRITERIA -

- Tenderer must have valid test report of SPV Pumps for 900 Wp/1.0 HP (integrated systems) as per guidelines issued for SPV Drinking Water Pumps, at 90 meters duty head and 120 meters shut off head in their names They will have to provide copy of such test report of the integrated systems from Solar Energy Test Centre or any other test centre approved by Ministry of New & Renewable Energy (MNRE)/ NABL. Tenderer must also have to submit test reports of offered SPV Pumping System and manufacturer's test report / data sheet of major components such as SPV Module, Pump, Controller and detailed FEA report for structures (covering all elements and sections) issued by a qualified structural engineer.
- a. Financial bid of those Tenderers will not be opened who have not submitted valid test reports.**
- b.** The Bidder should have sufficient technically qualified and well-experienced manpower for execution of the project and after sales service of the systems. These details may be called by CREDA and in case there is any deficiency found the Bidder may be debarred.

20. FORFEITURE OF EARNEST MONEY DEPOSIT -

It should be clearly understood that in the event of Bidder failing to enter into the agreement in the prescribed format on their quoted rates and also fails to execute assigned works under any Scheme of CREDA, within stipulated time, if he is so communicated within the validity period of the offer, the full amount of earnest money will be forfeited and Bidder shall be debarred from future business with CREDA. CREDA's decision in this regard will be final and binding on the Bidders.

21. PRICE OF SUPPLY OF SOLAR DUAL PUMPING SYSTEMS WITH INSTALLATION, COMMISSIONING AND TESTING OF SOLAR PUMP SET -

I. The Price quoted for all models of each category solar dual pumping system with installation, commissioning and testing, of SPV Modules, DC Submersible pumps, Structure, Tanks, HDPE Pipe, Suction Pipe, Rope wire, Clamp, Special Chamber, Stand post, Bore cap, Lightning arrester, 02-numbers earthing, Civil works and all other required BOS like Cables, Suitable Nut Bolts etc. with 5 years system warranty, insurance and COMC. The GST shall be paid extra as per prevailing rate (the GST regulation notification no. 24/2018-Central tax (Rate) dated 31-12-2018). The prices shall be filled exactly as per **e-Price Bid enclosed.**

II. Any change in GST shall be become applicable during the period of contract.

III. In this regard if there is any change in the composition ratio of goods and services by any Authority/ Courts, same shall be applicable.

22. ENGINEERING DOCUMENT -

Bidders will have to submit Engineering Documents with technical details, drawings, Specifications of components and make etc. to CREDA for approval, as and when asked by CREDA. Works may only be started out only after approval of the Engineering Document and their samples.

23. CoMC OF SOLAR DUAL PUMP SYSTEM –

The Comprehensive Operation & Maintenance work may be entrusted to the concerned bidders on the approved lowest rate of the bid. During CoMC the bidders should have spares of every component ready in their service centre or CREDA District Office so that no system should be kept non-functional for more than 07 days, failing which CREDA will rectify/replace the components/system at the risk and cost of the Bidder. Awarding the work of CoMC to bidders is totally at the discretion of CREDA. Also if the bidder is awarded with CoMC work, then they must have to submit quarterly monitoring report of the system working satisfactorily duly authenticated by SE of concerned Zonal Office of CREDA.

24. SAMPLES -

Samples of the components shall have to be submitted to the CREDA in prescribed manner after receipt of notification of CREDA

25. INSPECTIONS -

CREDA reserves right to inspect the material at Godowns / Temporary Stores before dispatch and also at works sites.

26. TAX OBLIGATIONS -

CREDA shall deduct TDS for Income Tax, applicable cess on Civil Work etc. under various acts and deposited with the appropriate authority. Costs and taxes before execution of agreement with CREDA so as to ensure tax deposition as per Government Rules accordingly.

27. JURISDICTION OF THE COURT -

Any dispute arising out of the contract shall be subject to the jurisdiction of Hon'ble High Court of Chhattisgarh.

SECTION - 2

GENERAL CONDITIONS OF CONTRACT

1. DEFINITIONS -

In writing General Conditions of Contract, the specifications and bill of quantity, the following words shall have the meanings hereby indicated, unless there is something in the subject matter or content inconsistent with the subject.

- CREDA shall mean the Chhattisgarh State Renewable Energy Development Agency represented through the Chief Engineer.
- Work shall mean any work entrusted to the Bidder as mentioned in the scope of work and Work Order.
- The "Engineer in charge" shall mean the Engineer or Engineers authorized by CREDA for the purpose of this contract. Inspecting Authority shall mean any Engineering person or personnel authorized by CREDA to supervise and inspect the erection of the SPV dual Pump.
- "The Eligible SI/Bidder" shall mean the Bidder awarded with the contract or their successors and permitted assigns. Contract Price shall mean the sum named in or calculated in accordance with the provisions of the contract as the contract price. General Conditions shall mean the General conditions of Contract.
- "Specifications" shall mean the specifications annexed to these General Conditions of contract and shall include the schedules and drawings attached thereto or issued to the eligible SI from time to time, as well as all samples and pattern, if any,
- "Month" shall mean calendar month. "Writing" shall include any manuscript, typewritten, printed or other statement reproduced in any visible form whether under seal or written by hand.

2. PROOF OF MANUFACTURER -

Those bidders who are also manufacturers of an important component of SPV dual Pump such as SPV Modules, Submersible Pump, controllers or Structures of SPV dual Pumps shall have to submit proof of their factory, SSI Registration and list of Machineries and Equipment's.

3. CONTRACT DOCUMENT -

The term "Contract" shall mean and include the General conditions, specifications, schedules, drawings and Work Orders etc., issued against the contract schedule of price or their final general conditions, any special conditions applying to the particular contract specification and drawings and agreement to be entered into. Terms and conditions not herein defined shall have the same meaning as are assigned to them in the Indian contract Act or any other Act in vogue or by any person of common knowledge and prudence.

4. MANNER OF EXECUTION -

4.A. Execution of work shall be carried out under Government Mode Scheme of CREDA in an approved manner as outlined in the technical specifications or where not outlined, in accordance with desired Specifications laid down by CREDA, to the reasonable satisfaction of the Engineer.

4.B. Successful Bidder / Bidder here-in-after called the **SI** (System Integrator).

- i)** After receipt of LOI from CREDA the eligible SI shall conduct a detailed survey of site and submit site details and feasibility report in prescribed format after due verification with signatures of Sarpanch or Sachiv / CMO of concerned Local body and signatures of AE/EE/Officer In Charge of Concerned Department. All necessary documents and survey details shall have to be submitted in concerned District Office of CREDA in prescribed manner. SI shall also have to submit yield report of bore well / water source to be used for the system, NOC for its use and a layout plan duly consented and signed jointly by Sarpanch/Sachiv/CMO of concerned Local body and signatures of AE/EE/Officer In Charge of Concerned Department.

- ii) Engineer-in-Charge of District Office of CREDA shall examine these applications. After his satisfaction will forward details with his recommendations to EE of Concerned Regional Office of CREDA. Engineer-in-charge may visit the site if he/she is not satisfied with survey report.
 - iii) In case Engineer-in-Charge of District Office of CREDA finds the site not suitable for installation of SDP he/she will inform concerned beneficiary organisation / department accordingly and request for alternative site /necessary action.
 - iv) Executive Engineer of concerned Regional Office CREDA will decide the technical feasibility and layout plan of site. Executive Engineer may visit the site if he/she is not satisfied with survey report.
 - v) After satisfaction Executive Engineer will forward the site clearance report with technical feasibility to Head Office CREDA for issuance of work orders.
 - vi) HO CREDA will be final authority to approve or reject site finalisation recommended by Regional Offices.
 - vii) Concerned Chief Engineer of CREDA after his satisfaction shall issue the work order to eligible SI for installation of SPV dual Pump.
 - viii) Work order will be given to the chosen System Integrator only after execution of the agreement with CREDA.
 - ix) After issuance of Work Orders Executive Engineer of concerned Regional Office CREDA will finally approve site layout in writing in prescribed format.
 - x) The SI shall start work within **15 days** after the date of approval of site layout.
- 4.C.** All the materials required for the installation of SPV Dual Pumps as per Work Order issued shall be kept at site in the custody of the SI. CREDA shall not be responsible for any loss or damage of any material during the installation.
- 4.D.** All the electrical works should be done as per various provisions of Indian Electricity Act. The persons engaged for carrying out electrical works should have a valid B-class license or above issued by licensing board of Chhattisgarh.
- 4.E.** After work is started CREDA will carry out inspections at various stages and Engineer-in-Charge of District Office of CREDA shall record the measurements in the Measurement Book issued for the said site.
- 4.F.** After installation joint inspection will be done in presence of beneficiary, SI and CREDA and after successful commissioning of SPV Dual Pumps and its approval from CREDA a JCC will be signed and the subsidy claim will be forwarded for payments as per guidelines and procedures of CREDA.

5. VARIATIONS, ADDITIONS & OMISSIONS -

CREDA shall have the right to alter, amend, omit, split or otherwise vary the quantum of work, by notice in writing to the SI. The eligible SI shall carry out such variation in accordance with the rates specified in the contract so far as they may apply and where such rates are not available; those will be mutually agreed between CREDA and the eligible SI.

6. INSPECTION -

- A.** The Engineer-in-Charge or his authorized representative(s) shall be entitled at all reasonable times to inspect and supervise and test during installation and commissioning. Such inspection will not relieve the eligible SI from their obligations under this contract.
- B.** Material can be inspected before dispatch or in transit by the authorized representatives of CREDA at the factory / godown at the cost of the eligible SI, if desired by CREDA.
- C.** CREDA will undertake real time performance and quality test of randomly selected solar pumping system and components during the course of execution as per the specifications and guidelines laid by CREDA to ensure quality and performance of pump and components.

7. COMPLETION OF WORK -

Time being the essence of contract, the installation of the SPV Dual Pumps shall be completed within the time schedule prescribed in the Work Order.

8. ELIGIBLE SYSTEM INTEGRATOR'S DEFAULT LIABILITY -

CREDA may by written notice of default to the eligible SI, terminate the contract in circumstances detailed hereunder -

- (a) If in the opinion of the CREDA, the eligible SI fails to complete the work within the time specified in the Work Order or within the period for which extension has been granted by CREDA to the eligible SI.
- (b) If in the opinion of CREDA, the eligible SI fails to comply with any of the provisions of this contract.
- (c) In the event of CREDA terminating the contract in whole or in part as provided in paragraph (a) above, CREDA reserves the right to engage another eligible SI or agency upon such terms and in such a manner as it may deem appropriate and the eligible SI shall be liable to CREDA for any additional costs or any losses caused to CREDA as may be required for the completion of erection of the SPV dual Pumps and or for penalty as defined under this Bid document until such reasonable time as may be required for the final completion of the work.
- (d) In the event CREDA does not terminate the contract as provided in paragraph (a) the eligible SI shall continue performance of the contract, in which case he shall be liable to CREDA for penalty for delay as set out in this Bid document until the work is completed.

9. FORCE MAJEURE -

The eligible SI shall not be liable for any penalty for delay or for failure to perform the contract for reasons of FORCE MAJEURE such as of God, acts of public, enemy, LWE problems, acts of government, cyclone, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes provided that if SI shall submit delay notice with appropriate cause of delay to the CREDA in writing within **15 days** of force majeure. CREDA shall verify the facts and may grant such extension as facts justify. Delay in supply of any accessories of Solar Pumps etc. by the related vendors, to whom the Bidder has placed order, shall also not be treated as force majeure.

10. REJECTION OF WORKS -

In the event of any of the material supplied/work done by the eligible SI is found defective in material or workman ship or otherwise not in conformity with the requirements of this contract specifications, CREDA shall either reject the material and/or work and advise the eligible SI to rectify the same. **CREDA may impose penalty for such rejection up to the 200% cost of the entire system. Habitual/repeated offenders shall be black listed/debarred to participate in the any Bid/ Activity of CREDA till further orders.** The eligible SI on receipt of such notices shall rectify or replace the defective material and rectify the work free of cost. If the eligible SI fails to do so CREDA may -

- a) At its option replace or rectify such defective materials and/or work and recover the extra cost so involved from the eligible SI plus **15%** service charges of the cost of such rectification, from the eligible SI and/ or terminate the contract for balance work/ supplies with enforcement of penalty **as stated above.**
- b) Defective materials/workmanship will not be accepted under any conditions and shall be rejected outright without compensation. The eligible SI shall be liable for any loss/damage sustained by CREDA due to defective work **with enforcement of penalty as stated above.**

11. EXTENSION OF THE TIME -

If the completion of installation is delayed due to any reason beyond the control of the eligible SI, the eligible SI shall without delay give notice to the CREDA in writing of his claim for an extension of time. CREDA on receipt of such notice may or may not agree to extend the contract/delivery date of the Solar System as may be reasonable but without prejudice to other terms and conditions of the contract.

12. MAKES OF EQUIPMENTS TO BE USED IN THE WORK –

- (I) The Solar Modules, Solar Pumps, Controller & Other BOS should be as per BIS/IEC/CE standards
- (II) The eligible SI has to ensure that equipment's as per Technical Requirements of guidelines of CREDA as complied with. The eligible SI has also to ensure that he will use only components of approved vendors of CREDA. The material/works for which CREDA/MNRE or BSI or ISI specification is not available, engineer-in-charge of the works will examine and approve the material/works, preferably of all makes on which CREDA has report of

satisfactory performance. Test certificates for all major equipment's should be submitted to the engineer-in-charge of the works before installation of the same.

- (III) Successful SI upon issue of LOI must submit Manufacture Authorization Form (MAF) From manufacture of Solar pump/ Controller/ Module/Tanks/Structures/ which it is intending to use during installation guarantee at least five year warrantee of pump and controller and at least 10 year warrantee on module, before installation of pump, **no payment shall be made if he fails to do so.**
- (IV) SI Should submit warrantee Agreement of **at least 5 years** for major components i.e. SPV pumps, VFD/ Controller, Tank, Structures, Stand Post and Special Chamber with manufacturer or distributors certified by the manufacturer before installation of Pumps,for any manufacturing defects or bad workmanship.

13. **WARRANTEE PERIOD AND POST INSTALLATION SERVICES -**

- A. The work done/material supplied by the eligible SI should be warranted for satisfactory operation and against any defect in material and workmanship including Pumps, Controllers, Tank and Structures and other balance of equipment's, at least for a period of **5 (five) years**, from the date of commissioning of the SPV dual Pumps including other works as per scope of work.
- B. Warrantee on SPV Modules shall be for **10 (ten) years** from the date of commissioning of the SPV dual Pumps must be warranted for their output peak watt capacity, which should not be less than **90%** at the end of **10 years** and not less than **80%** at the end of **25 years**.
- C. The above warrantee certificates shall be furnished to the CREDA for approval. Any defect noticed during this period should be rectified by the supplier free of cost upon written notice from CREDA provided such defects may be due to bad workmanship or bad materials used.
- D. The warrantee period shall be extended by the period during which the plant remains non-operative due to reasons within control of the eligible SIs.
- E. This warrantee must be an unconditional onsite warrantee and the eligible SI will have to replace the defective material within **7 days** positively from the date of information given to him.
- F. Care should necessarily be taken to make the SPV dual Pumps operational, once the reporting of the fault/non-operational status is done, within a week. If the SPV dual Pumps is not made operational within **7 days** CREDA may rectify the same at the risk and cost of SI and the warrantee period shall be extended accordingly for delayed period.
- G. System Integrators shall have to establish their service stations in the allocated area and shall have to keep sufficient quantity of spares and man power to ensure proper service network for taking care of smooth functioning of SPV dual Pumps installed by them. SI shall have to give a toll free number to register complaints.

14. **TERMS OF PAYMENT -**

The following terms of payment shall apply for the Bid -

- A. **95%** of the eligible payment as per the Work Order after satisfactory supply, installation, commissioning & performance test of the SPV Dual Pumps at site with proper handing over.
- B. Balance **5%** of the eligible payment (Except GST) shall be retained by CREDA as Performance Security for a period of **60 months**.

15. **PENALTY FOR DELAY IN COMPLETION OF CONTRACT -**

If the eligible SI fails to complete the assigned work within the schedule time specified in the Work Order or any extension granted there to, CREDA will recover from the SI as penalty a sum of **One per cent (1%)** of the system price excluding GST/Tax for every delayed system per month. For this purpose, the date of taking over shall be reckoned as the date of completion. The total penalty shall not exceed **5% (Five Per cent)** of the cost.

Review of the progress of installation of dual pump allocated to SIs shall be done time to time by CREDA and if the progress of installation is found unsatisfactory, the allocation of entire remaining uninstalled pumps or their part of can be re-allocated to other SI as per discretion of CREDA.

16. SECURITY DEPOSIT (SD) -

- A.** The Earnest Money shall be retained by CREDA up to the duration of validity of tender after agreement is done to execute all the works referred to in the Bid documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be required by CREDA.
- B.** Beside this **5%** of the cost shall also be retained as SD during the five years of warrantee period. No interest shall be payable on the Security Deposit.
- C.** Period for which EMD and SD are to be retained may be extended in case the warrantee period is extended due to non performance of the system.

17. INSURANCE -

The eligible SI shall arrange insurance coverage for the materials and SPV Dual Pumping system at his/ beneficiary's custody for the work under execution and successful commissioning and subsequent handover to the beneficiary. The eligible SI shall take up insurance or such other measures for the manpower so as to cover the claim for damage / accident under workmen's compensation Act and other applicable State/Central laws. CREDA shall not bear any responsibility on this account.

18. PENALTY DUE FROM THE ELIGIBLE SI -

All costs of damages and delays for which the eligible SI is liable to the CREDA will be deducted from any money due to the eligible SI including the security deposit of any project under CREDA.

19. RESPONSIBILITY OF ELIGIBLE SI -

Notwithstanding anything mentioned in the specifications of subsequent approval or acceptance of the SPV Dual Pump by CREDA, if any, the ultimate responsibility for satisfactory performance of the entrusted work shall rest with the eligible SI. If in any case the eligible SI does not complete the work as per the Work Orders issued to them then CREDA may take over the task & complete the project at the risk and cost of eligible SI.

20. RESPONSIBILITY TO RECTIFY THE LOSS AND DAMAGE -

If any loss or damage occurs to the work or any part thereof or materials/plant/equipment's for incorporation therein the period for which the eligible SI is responsible for the cause thereof or from any cause whatsoever, the eligible SI shall at his own cost rectify/replace such loss or damage, so that the permanent work confirms in every respect with the provision of the contract to the satisfaction of the Engineer. The eligible SI shall also be liable for any loss or damage to the work/equipment's occasioned by him in course of any operation carried out to him during performing the contract.

21. RESPONSIBILITY TOWARDS THE WORKMAN OR OUTSIDERS –

- A.** **The eligible SI shall have to take insurance coverage from any authorized Insurance Company against Workmen compensation due under Workmen Compensation Act and submit copy of the insurance document before issuance of Work Order.**
- B.** The eligible SI shall ensure all safety measures during execution and repairs of the work. CREDA, will, in no case be responsible for any accident fatal or non-fatal, caused to any workman or outsider in course of transport or execution or repairs of work.
- C.** All the expenditure including treatment or compensation will be entirely borne by the eligible SIs. The eligible SI shall also be responsible for any claims of the workers including, labour payments PF, Accidental Insurance, Gratuity, ESI & other legal obligations.
- D.** CREDA shall have all rights to deduct such claims of payments from SI in case of complaints of such violations.

22. SUBLETS -

- A.** The eligible bidder may sublet / sub contract part of the work with approval of CREDA in writing up to 25% of the allocated work. It is expressly agreed that original bidder shall be responsible and liable for all his obligations under this agreement notwithstanding anything contained in the agreements with his sub contractor and no default under any such agreement shall exempt the original bidder from his obligation or all liabilities here under.

- B.** After approval of the proposal of the sub contract CREDA shall issue a permission letter for the same.
- C.** The original bidder shall not be allowed to sub contract the work assigned to him to more than one sub contractor. In special condition CREDA may permit more than one sub contractor.
- D.** The original bidder should satisfy himself before recommending CREDA whether the sub contractor so proposed is fit for the work, process, experience, qualifications, man power and component necessary for the job proposed be entrusted to him.
- E.** Whatever warranty mentioned in the Bid document shall be honoured by the original bidder. Original Bidder shall be held responsible for any defect / non functionality of any work / system or any components.
- F.** CREDA will not ask to sub contractor for any rectification / replacement of work / system or any component. All liabilities regarding warranty shall be on part of original bidder.
- G.** The original bidder shall be responsible of submission of JCCs to concerned district officers of CREDA with his and sub contractor signatures and seal on every document comprising JCCs. The seal of sub contractor should clearly the name of sub contractor with phrase "on behalf of original bidder". All liabilities like warranty, insurance, specification, compliance of bid conditions and government rules and regulations etc., shall be on the part of original bidder.
- H.** Sub contractor will have to be registered as SI in CREDA immediate after approval.
- I.** CREDA will pay to the original bidder after successful commissioning of the system.
- J.** The original bidder shall have to make payments to the sub contractor within 15 days of receipt of payment from CREDA. CREDA may pay directly to the sub contractor on-behalf of original contractor after receipt of written consent / recommendation for payment from original bidder.
- K.** If original bidder fails to pay any amount to sub contractor within 45 days then on receipt of information from sub contractor CREDA shall have right to deduct the same from bill or any due amount of original bidders and pay the same to sub contractor.
- L.** The allocated work to sub contractor shall be part of the experience of sub contractor.
- M.** Details of the Subletting are mentioned in manual on policy and procedure for sub contract in CREDA.

23. CERTIFICATES NOT TO AFFECT RIGHTS OF CREDA -

The issuance of any certificate by CREDA or any extension of time granted by CREDA shall not prejudice the rights of CREDA in terms of the contract nor shall they relieve the eligible SI of his obligations for due performance of the contract.

24. SETTLEMENT OF DISPUTES THROUGH ARBITRATION -

- A.** Except as otherwise specifically provided in the contract, all disputes concerning questions of fact arising under the contract shall be decided by the Chief Executive Officer (CEO), CREDA provided a written appeal by the eligible SI is made to CREDA. The decision of the CEO, CREDA shall be final and binding to the all concerns.
- B.** Any dispute or difference including those considered as such by only of the parties arising out of or in connection with the contract shall be to the extent possible be settled amicably between the parties. If amicable settlement cannot be reached then all disputed issues shall be settled by arbitration.

25. LAWS GOVERNING CONTRACT -

The contract shall be constituted according to and subject to the Laws of India and jurisdiction of the High Court of Bilaspur, Chhattisgarh.

26. LANGUAGE AND MEASURES -

All documents pertaining to the Contract including specifications, schedules, notice correspondences, operating and maintenance instructions, drawings or any other writings shall be written in English / Hindi language. The metric system of measurement shall be used in this contract.

27. CORRESPONDENCE -

- A.** Any notice to the eligible SI under the terms of the contract shall be served by registered mail to the registered office of the eligible SI or by hand to the authorized local

representative of the eligible SI and copy by post to the eligible SI's principal place of business.

- B.** Any notice to CREDA shall be served to the Chief Engineer, CREDA Raipur in the same manner.

28. SECRECY -

The eligible SI shall treat the details of the specifications and other documents as private and confidential and they shall not be reproduced without written authorization from CREDA.

29. AGREEMENT -

The successful eligible SI shall have to enter into an agreement with the CREDA in the approved contract agreement form within **10 days** of the receipt of call from CREDA.

- 30. DECLARATION OF CONFLICT OF INTEREST -** The contractor hereby declares that nobody connected with or in the employment of **CREDA** is not/shall not ever be admitted as partner in the contract.

31. CAPACITY ASSESMENT OF THE BIDDER -

The SI's maximum capacity for installation of SPV Dual Pumps (in numbers.) under this bid shall be assessed as –

- | | | | |
|----|--|-------|----------|
| 1. | Numbers of SPV Dual Pumps (with 5000 Litres Storage)
Installed in year 2017-18, 2018-19, 2019-20 and 2020-21 (till 31-05-2020) | ----- | a |
| 2. | Numbers of SPV Dual Pumps (with 10000 Litres Storage)
Installed in year 2017-18, 2018-19, 2019-20 and 2020-21 (till 31-05-2020) | ----- | b |

Assessed maximum capacity for installation of pumps in this bid— **5(a+ 2b)**

- (a) For installation carried out in Chhattisgarh the above determined assessed capacity can be further increased.
- (b) System Integrator having pending work of installation of pumps as on **31-05-2020** against the work awarded to them for which scheduled time limit is over without any justification. The above capacity may be reduced by sole discretion of CREDA. (Pending works means the works which are not completed in scheduled time and for which unconditional extension is not permitted by competent authority)

32. BID EVALUATION CRITERIA -

- A.** Offers of only those parties, who are found qualified based on Eligibility Criteria and Techno-commercial Bid, will be taken into further consideration and financial bid of only those parties who are qualifying the criteria of Techno-commercial Bid will be opened.
- B.** Other things being equal, the lowest rates shall normally be preferred, but CREDA shall have rights and liberty to amend/lower the rates.
- C. Conditional Bids shall not be accepted.**
- D.** CREDA shall have rights and liberty to call any /other parties to work on approved rates as and when required in accordance with quantum of work and scheduled time limits for completion of targets.

33. EVALUATION OF PRICE BID -

Price bid shall be evaluated on the basis of Quoted rates. Lowest rates of each category of pump shall be considered however CREDA shall have discretionary power to amend/lower the rates.

34. Allocations of Quantities -

- i.** Minimum 50 or maximum 200 pumps will be allotted to L1 Bidder in any or all categories. However these quantities can be further changed as per discretion of CREDA.
- ii.** Maximum 10 % of the total target shall be distributed among MSME, Start Ups , New Enterprenures and Public Sectors. However the quantity may be changed as per discretion of CREDA.

- iii. Balance unallocated quantity shall be distributed among eligible bidders according to their percentile assessed capacity and performance.
- iv. L1 Bidders will also have to work in LWE districts.
- v. **L1 Bidder shall be given allocations for such pumps in the category he stands L1 upto target limit / access capacity whichever is lower. If his allocation exceeds the target limit, the rest pumps may be allocated in other categories at the discretion of CREDA.**
- vi. **However the increase or decrease of these allocations shall be decided at sole discretion of CREDA, which shall be final, binding and conclusive on the bidders.**
- vii. Allocation can be further extended or curtailed as per discretion of CREDA, in interest of expeditious work completion.
- viii. CREDA reserves all rights for allocation of works and the decision of CEO CREDA shall be final and binding.
- ix. **Review of the progress of installation of dual pump allocated to SIs shall be done time to time by CREDA and if the progress of installation is found unsatisfactory, the allocation of entire remaining uninstalled pumps or their part of can be re-allocated to other SI as per discretion of CREDA.**

35. **BID REJECTION -**

If financial bid of a bidder has been opened on the basis of technical bid of a bidder which has been determined to be substantially responsive to the bidding document and in latter stage it is found that bidder does not meet the eligibility criteria or the technical bid is found substantially non-responsive, CREDA reserves rights to reject such bid of a bidder any time.

We (on behalf of Eligible SI/Bidder) have read all the above stated details & accept to comply with it in total

(Name, Signature & Seal of the SI)

SECTION-3 SCOPE OF WORK

The scope of work in brief will be as follows-

1. Survey of Sites, design, supply, installation & commissioning of SPV Dual Pumps as per design and specifications approved by CREDA and MNRE, on turnkey basis. Bidder shall have to take approval of the engineering documents, Bill of Materials and samples from CREDA prior to commencement of the work. Five years unconditional onsite warrantee for manufacturing defects shall be required for each of the system after successful commissioning and proper handing over.
2. The scope of work shall also include the following:
 - 2.1 Survey of Sites, estimation of yield of bore well, Submission of site clearance certificate and yield report where the SPV Dual Pump is to be installed. A layout plan of the site should also be submitted clearly indicating the identified location for installation of SPV Dual Pump.
 - 2.2 Work order shall be issued only after receipt of satisfactory site clearance reports suitable for system installation.
 - 2.3 SI shall furnish all necessary information to beneficiary for SPV Dual Pump Warrantee, DOs & Don'ts etc. so as to avoid further misunderstandings and disputes.
 - 2.4 Detailed planning of time bound smooth execution of project.
 - 2.5 Design, supply, installation & commissioning of SPV Dual Pumps of required capacity as per design and specifications approved by CREDA, on turnkey basis.
 - 2.6 To ensure safe deposit of hand pump in the designated stores of PHED in case of using new hand pump with the system. Acknowledgement should have to be submitted for the same with JCC.
 - 2.7 The work includes supply and installation of a special chamber as per drawing for installation of existing hand pump with new submersible pump but excludes supply and installation of new hand pump. In case a new hand pump is required at site where hand pump was not installed earlier the same may be ordered separately as per approved rates of PHED.
 - 2.8 Providing User Manuals and Warrantee Cards to beneficiary / CREDA.
 - 2.9 SI shall have to submit JCCs within 60 days of Installation and Commissioning of SPV Dual Pumps in District Office of CREDA.
 - 2.10 Unconditional onsite warrantee for manufacturing defects for Five years faultless operation, assure inventory for maintenance.
 - 2.11 Providing Prompt Service Facilities to customers/ beneficiaries.
 - 2.12 SI must ensure safety and insurance against risk liability of all personnel associated during installation and repairs of the system.
 - 2.13 Training of at least two persons nominated by user, on the various aspects of operation and maintenance of the offered system after commissioning of the system.
 - 2.14 The eligible SI shall maintain sufficient inventory of the spares to ensure that the system can be made functional within 7 days from the communication of breakdown of the system during the warrantee period.
 - 2.15 The eligible SI shall run the system on trial basis and shall closely monitor the performance of the system before handing over the system, so that the assured water discharge can be estimated for monitoring of the performance of the system. CREDA shall examine the water discharge and ascertain if the discharge is adequate with reference to the capacity of the SPV Dual Pump.
 - 2.16 The eligible SI shall have to monitor the performance of the system before its handing over to the beneficiary, so that the desired water output can be assured.
 - 2.17 Performance Guarantee Test: Successful performance guarantee test to demonstrate the rated capacity of SPV Dual Pump as per CREDA's norms shall have to be conducted by SI in presence of representatives of CREDA, if required.
 - 2.18 System Integrators shall have to establish their service stations in the allocated area and shall have to keep sufficient quantity of spares and man power to ensure proper service network for taking care of smooth functioning of SPV Dual Pump installed by them. SI shall have to give a toll free number to register complaints.
 - 2.19 Bidder should have to install only those pumps that can be installed even in the bore well of 4 inch (100MM) Dia.
 - 2.20 Provision for RMS / Data Logger is compulsory.
 - 2.21 For the installation of Solar Dual Pumps Bidder should have to follow Quality Assurance and

- Quality Control (QAQC) as per the attached Enclosure.
- 2.22 For Quality Assurance of Civil structure work in Solar Dual Pump Systems, it is mandatory to submit Cube Test report from Govt. Approved test centre.
 - 2.23 During 5 years COM of the system, if water level of bore well falls near the Shut Off Head and the pump fails to operate as per designed parameters then it is the responsibility of the SI to replace the pump which can ensure the output as per designed parameters. In case the SI fails to do so, CREDA shall have the right to replace the pump at the cost of SI.
 - 2.24 The system integrator must ensure the cleaning of water tank at the time of commissioning of the system thoroughly from inside and must lock the cover properly to keep the water tank secure from external agents.
 - 2.25 Bidder shall also have to construct hand pump platform and soakage Pit as per UNICEF design and drawing (Annex-VIII,IX) for drainage of water and recharging of ground water. Proper drainage arrangement must be provided from stand post platform & hand pump platform to soakage pit to ensure cleanliness around solar dual pump.
 - 2.26 The system shall have to be installed by trained manpower/contractor from a recognised training centre as per guidelines of CREDA. The training certificate can be checked by the officials of CREDA at the time of visit/inspection.
 - 2.27 A separate sign board must be affixed with proper clamping in the structure railing in a separate GI sheet of thickness 1.2mm. The matter for sign board must be approved by CREDA HO before installation.
3. LOI/Work Orders shall be issued only after ensuring following conditions-
 - 3.1 Bidder has submitted valid test report of the pump, tensile test report of the steel used in structure & ISI test report for Water tank.
 - 3.2 During installation at the site bidder must make provision for Mixture machine & vibrator..
 4. Successful Bidder / Bidder here-in-after called the **SI** (System Integrator):-
 - 4.1 After receipt of LOI from CREDA the eligible SI shall conduct a detailed survey of site and submit site details in prescribed format after due verification and signatures of Sarpanch or Sachiv / CMO of concerned Local body and signatures of AE/EE/Officer In Charge of Concerned Department. All necessary documents and survey details shall have to be submitted in concerned District Office of CREDA in prescribed manner. SI shall also have to submit yield report of bore well / water source to be used for the system , NOC for its use and a layout plan duly consented and signed jointly by Sarpanch/Sachiv/CMO of concerned Local body and signatures of AE/EE/Officer In Charge of Concerned Department.
 - 4.2 Engineer-in-Charge of District Office of CREDA shall examine these applications. After his satisfaction will forward details with his recommendations to EE of Concerned Regional Office of CREDA. Engineer-in-charge may visit the site if he/she is not satisfied with survey report.
 - 4.3 In case Engineer-in-Charge of District Office of CREDA finds the site not suitable for installation of SDP he/she will inform concerned beneficiary organisation / department accordingly and request for alternative site /necessary action.
 - 4.4 Executive Engineer of concerned Regional Office CREDA will decide the technical feasibility and layout plan of site. Executive Engineer may visit the site if he/she is not satisfied with survey report.
 - 4.5 After satisfaction Executive Engineer will forward the site clearance report with technical feasibility to Head Office CREDA for issuance of work orders.
 - 4.6 HO CREDA will be final authority to approve or reject site finalisation recommended by Regional Offices.
 - 4.7 Concerned Chief Engineer of CREDA after his satisfaction shall issue the work order to eligible SI for installation of SPV Dual Pump.
 - 4.8 Work order will be given to the chosen System Integrator only after execution of the agreement with CREDA.
 - 4.9 After issuance of Work Orders Executive Engineer of concerned Regional Office CREDA will finally approve site layout in writing.
 - 4.10 The SI shall start work within **15 days** after the date of approval of site layout.

- 4.11** All the materials required for the installation of SPV Dual Pumps as per Work Order issued shall be kept at site in the custody of the SI. CREDA shall not be responsible for any loss or damage of any material during the installation.
- 4.12** All the electrical works should be done as per various provisions of Indian Electricity Act. The persons engaged for carrying out electrical works should have a valid **B-class** license or above issued by licensing board of Chhattisgarh.
- 4.13** After work is started CREDA will carry out inspections at various stages and Engineer-in-Charge of District Office of CREDA shall record the measurements in the Measurement Book issued for the said site.
- 4.14** After installation joint inspection will be done in presence of beneficiary, SI and CREDA and after successful commissioning of SPV Dual Pumps and its approval from CREDA a JCC will be signed and the subsidy claim will be forwarded for payments as per guidelines and procedures of CREDA.

SECTION - 4

SPECIFICATION FOR SOLAR PHOTOVOLTAIC DUAL PUMPING SYSTEMS

1. SCOPE -

This specification covers design qualifications and performance specifications for Solar Photo Voltaic (SPV) Water Pumping Systems to be installed on a suitable bore-well.

2. TERMINOLOGY -

In addition to the terminology specified in 3 of IS 5120 and IEC 62253, the following shall also apply.

- a) **Static Water Depth** — It is the depth of water level below the ground level when the pump is not in operation.
- b) **Draw-Down**—It is the elevation difference between the depth of static water level and the consistent standing water level in tube well during operation of pump set.
- c) **Submergence** — It is the minimum height of water level after drawdown above the pump suction casing.
- d) **Manometric Suction Lift** — Manometric suction lift is the vacuum gauge/suction manometer reading in meter of water column when pump operates at suction lift.
- e) **Static Suction Lift** — Static suction lift/head is the vertical distance between sump water level and centre of pump inlet.
- f) **Daily Water Output** — It is the total water output on a clear sunny day with three times tracking SPV panel, under the “Average Daily Solar Radiation” condition of 7.15 KWh / m² on the surface of SPV array (i.e. coplanar with the SPV Modules).
- g) **Wire to Water Efficiency** — It is the combined system efficiency of SPV Converter/ Controller with Inbuilt MPPT mechanism, Pump set and piping.
- h) **SPV Controller** — Pump Controller converts the DC voltage of the SPV array into a suitable DC power and may also include equipment for MPPT, remote monitoring, and protection devices. They may be built in or external type.
- i) **Maximum Power Point Tracker (MPPT)** — MPPT is an algorithm that is included in the pump controller used for extracting maximum available power from SPV array under a given condition. The voltage at which SPV array can produce maximum power is called 'maximum power point' voltage (or peak power voltage).

3. CONSTRUCTIONAL FEATURES -

A. General -

SPV Water Pumping System set uses the irradiance available through SPV array. The SPV array produces DC power, which can be utilized to drive a DC pump/ controller. A SPV Water Pumping system typically consists of *Pump Set* Pump set may be of submersible type.

B. Motor & controller -

The motor & controller of the pump set may be of the following types -.

- i) **DC Motor [PMDC/BLDC (with brush or brushless)].**
 - The motor to be used shall be operated in DC voltage range of 30 to 300 VDC.
 - Overall Efficiency of Submersible pump set be minimum 50 %
- ii) Provision for remote monitoring (RMS/ Data Logger) for the pumps is mandatory. It must be assigned with a unique serial number and its live status must be observed remotely on online portal through login credentials.
 - Live status must indicate whether controller is ON/OFF.

- The parameter i.e. the water output, water flow rate, in fault condition, array input voltage/current, power and motor frequency should be logged at an interval of 10 minutes
- RMS must have a back up to store the data locally (at least for 1year)

C. SOLAR MODULE/ PHOTO VOLTAIC (SPV) ARRAY -

1. **SPV** arrays contain specified number of same capacity, type and specification modules connected in series to obtain the required voltage or current output. The SPV water pumping system should be operated with a PV array minimum capacity should be **900 Watts peak**, measured under Standard Test Conditions (STC). Sufficient number of modules in series could be used to obtain the required voltage or current output. The power output of individual PV modules used in the PV array, under STC, should be a minimum of 300 Watts peak, with adequate provision for measurement tolerances. Use of PV modules with higher power output is preferred.
2. Modules supplied with the SPV water pumping systems shall have certificate as per IS14286/IEC 61215 specifications or equivalent National or International/Standards. STC performance data supplied with the modules shall not be more than one year old.
3. Modules must qualify to IS/IEC 61730 Part I and II for safety qualification testing.
4. The minimum module efficiency should be minimum 15 percent and fill factor shall be more than 70 percent.
5. Modules must qualify to IEC TS 62804-1:2015 for the detection of potential-induced e-gradation - Part 1: Crystalline silicon (Mandatory in case the SPV array voltage is more than 600 VDC)
6. The name plate shall conform the IS 14286/IEC61215 must have clear and indelible marking laminated inside the glass as per IS/IEC61730-I, Clause 11
 Name, monogram or symbol of manufacturer
 Model Number
 Unique Serial Number
 Nominal wattage +_2%
 Year and country of origin
 Brand name if applicable
7. Module to Module wattage mismatch in the SPV array mismatch shall be within (±) 3 percent.
8. Variation in overall SPV array wattage from the specified wattages shall be within zero percent to +10 percent.
9. The PV Modules must be warranted for output wattage, which should not be less than 90% of the rated wattage at the end of 10 years and 80% of the rated wattage at the end of 25 years.
10. The panel should be supplied with CREDA Logo in the form of sticker on the back of SPV panel or duly laminated inside the glass of solar module with the remark "Manufactured for CREDA". Inter connections of solar modules should be through good quality male female joint.
11. **IDENTIFICATION AND TRACEABILITY –**
 Each PV module must use a RF identification tag (RFID), which must contain the following information:
 - (i) Name of the manufacturer of PV Module
 - (ii) Name of the Manufacturer of Solar cells
 - (iii) Month and year of the manufacture (separately for solar cell and module)
 - (iv) Country of origin (separately for solar cells and module)
 - (v) I-V curve for the module

- (vi) Peak Wattage, Im, Vm and FF for the module
- (vii) Unique Serial No and Model No of the module
- (viii) Date and year of obtaining IEC PV module qualification certificate
- (ix) Name of the test lab issuing IEC certificate
- (x) Other relevant information on traceability of solar cells and module as per ISO 9000 series.

The RFID must be inside of module lamination. The module laminate, but must be able to withstand harsh environmental conditions.

- 12. All SPV modules must be indigenously built and made in India.

D. MOTOR-PUMP SET

- 1. Solar pump must be as per BIS/IEC/CE standards.
- 2. The SPV water pumping systems consists of DC Submersible pump set.
- 3. The “Motor-Pump Set” should have a capacity in the range of 0.5 HP to 1HP. and should have the following features -
 - a) The DC pump set should ensure zero leakage.
 - b) The motor of the capacity ranging from 0.5 HP to 1 HP should be DC. The suction and delivery head will depend on the site specific condition of the field.
 - c) The pump should be **BLDC/PMDC** and all parts of pump should be made of Stainless Steel. It should be suitable for bore well of minimum diameter of 4 inches. The pump should be operable for a voltage range of 30V – 300V. The dynamic head of the ump should be 90 metres and the maximum shut off head should be 120 metres. The minimum discharge should be as per Annexure-II
- 4. The pump and its external parts of motor used in submersible pump which are in contact with water, should be of stainless steel of grade 304 or higher durability as required. The motor- pump set should have a 5 years warranty and therefore, it is essential that the construction of the motor and pump should be made using parts which have a much higher durability and do not need replacement or corrode for at least 5 years of operation after installation.
- 5. The suction/ delivery pipe shall be of HDPE or UPVC/GI column pipes of appropriate size, electric cables, floating assembly, civil work and other fittings required to install the Pump set. In case of HDPE pipes the minimum pressure rating of 8 kg/sqcm-PE100 grade for pumps.

E. MECHANICAL COMPONENTS MODULE AND TANK MOUNTING STRUCTURE

- 1. The Structure as per drawings (**which is given as annexure "III-X"**) should be installed along with the hot dipped galvanized (minimum **80 microns**) structure at site. The structure should be capable of withstanding a minimum wind load of **150 Km** per hour, after grouting and installation. MTS should be sturdy & designed to assist SPV Modules to render maximum discharge. The hardware (fasteners) used for installation of SPV Modules & structure should be of suitable Stainless Steel (**SS 304**). Structure should be grouted on pedestals & Foundation as per drawings. Each module should be fastener by four theft proof nut bolt.
- 2. Module Mounting Structures should have theft proof arrangements with the use of GI Steel C-channel along with the array support structure for locking arrangement of SPV modules for protecting them from theft. Its size should be with reference to the specifications of the SPV modules such that modules can comfortably slide in the channel while installation. It should not hide any portion of the photovoltaic circuit

encapsulated in the lamination of the SPV module, there by un-affecting the efficiency & rating of the SPV modules. Anti-Theft Nut Bolts of SS (with washers) should also be used for better theft proofing along with “C” Channel MMS.

3. The general hardware for structure fitment should be either SS 304 or 8.8 grade. Modules should be locked with antitheft bolts of SS 304 Grade. Foundation should be as per drawing attached.
4. The minimum gross weight of the MTMS should be

S NO	SPECIFICATION OF STRUCTURE	MINIMUM WEIGHT
1	STRUCTURE OF HEGHT 6 MTR, 6 POLE FOR 10 KL TANK	1800 KG
2	STRUCTURE OF HEIGHT 6MTR ,4 POLE FOR 5 KL TANK	1190 KG

5. Modules must be compulsorily fitted with SS anti-theft bolts (with SS washers of 20mm diameter and 2.5mm thickness).
6. Only one GI sheets of thickness 1.2mm as per drawing Annex-III,IV,V shall be permitted for placing of water tank on structure.
7. There must be sufficient passage between railing and water tank for free movement of technician around the water tank.
8. The inlet and delivery pipe line must be welded in the structure to avoid damaged of pipe line or dislocation of pipe line.
9. The ladder must be provided with suitable cage for easy movement technician up to tank tower base to avoid any fatal accidents.
10. There must be a sufficient distance of 3-4 feet between the tank cap to solar module C-channel for the easy movement of technician for cleaning of water tank.

F. SOLAR DUAL PUMP CONTROLLER

1. Controller must be as per BIS/IEC/CE standards.
2. Controller may be built in or external.
3. Maximum Power Point Tracker (MPPT) shall be included to optimally use the power available from the SPV array and maximize the water discharge.
4. The external Controller box must have IP (65) protection or shall be housed in a cabinet having at least IP (65) protection.
5. Adequate protections shall be provided in the Controller box to protect the solar powered pump set against the following:
 - a) Dry running;
 - b) Open circuit;
 - c) Accidental output short circuit;
 - d) Under voltage;
 - e) Reverse polarity;
 - f) SPD to arrest high current surge; and
 - g) Lightening arrestor.
6. A good reliable DC Circuit Breaker as per IS/IEC 60947-2 suitable for switching DC power ON and OFF shall be provided in the Controller.
7. All cables used shall be as per IS694. Suitable size of cable shall be used in sufficient length for inter-connection between the SPV array to Controller and the Controller to DC pump set. Selection of the cable shall be as per IS14536.
8. Controller shall have provision for GSM/GPRS Gateway with Geo tagging. GSM/ GPRS Charges to be included in the Costing till the end of Warranty period of the Pump set.
9. The external controller box must be installed at a height of 8 feet the ground level to keep the controller out of reach from village people to ensure its safety.

G. EARTHING ARRANGEMENT

1. Earthing of the pump/controller shall be done as per IS 9283 in accordance with the relevant provisions of IS 3043. Separate earthing shall be provided for Controller,

pump and SPV array. Marconite earthing shall be preferred instead of conventional earthing.

2. For safety purpose, it shall be ensured during installation that the earthing is capable of taking care of leakage current.
3. In case of UPVC/HDPE pipes used as discharge pipe, a separate non-corrosive, low resistance.
4. Conductor from motor earth terminal to control panel earth terminal shall be provided for earthing.
5. A lightning arrestor shall be provided with every SPV Water Pumping System.

H. SURGE PROTECTION MECHANISM:

Internal surge protection shall consist of three MOV type arrestors connected from +ve and -ve terminals to earth (via Y arrangement) for higher withstand of the continuous PV-DC voltage during earth fault condition. SPD shall have safe disconnection and short circuit interruption arrangements through integrated DC in built bypass fuse(parallel) which should get tripped during failure mode of MOV, extinguishing DC arc safely in order to protect the installation against fire hazards. Nominal discharge current (In) at 8/20 micro seconds shall be minimum 10 KA with maximum discharge (Imax) at 8/20 micro seconds minimum 20 KA with visual indication (through mechanical flag) in modules to monitor the life of SPD. Internal surge protection should be connected to the earthing.

I. CABLES/WIRE:

All cables should be of copper as per IS and should be of suitable grade as per requirement. All connections should be properly made through suitable lug/terminal crimped with use of suitable proper cable glands. The size of cables/wires should be designed considering the line losses, maximum load on line, keeping voltage drop within permissible limit and other related factors. The cable/wire should be of ISI/ISO mark for overhead distribution, with prior approval of CREDA. Please refer the below mentioned recommended cables sizes for the Solar Dual Pump:-

Sl.	Location	Size(SQMM)	Cable Type
1	Pump - Controller	2.5 Sq mm 3 core Flat	Submersible Cable
2	Module- Controller	2.5 Sq mm,Single Core	Multi Cable
3	Tank - Controller	0.5 Sq mm,Single Core	Liquid Level Controller

J. SWITCHING DEVICE & FLUID LEVEL CONTROLLER:

Switching Device and Fluid Level Controller should be of the approved make and it should be in accordance with the electrical parameters of the Motor / Pump. Controllers should be fixed in suitable IP 65 Box. System must have Remote Monitoring.

- a. Controller must be as per BIS/IEC/CE standards.
- b. Solar Pump & Controller must have 5 years warranty.

K. Arrangement for cleaning of modules through a valve and flexible pipe from the inlet pipe of the tank at a suitable and safe point.

The same make of Solar Panels, pumps, inverter / controller shall be permitted for which the test report is submitted in the bid document should be supplied by the bidder.

L. PERFORMANCE REQUIREMENTS

Under the “Average Daily Solar Radiation” condition of 7.15 KWh / sq.m. on the surface of PV array (i.e. coplanar with the PV Modules), the minimum water output from a Solar PV Water Pumping System at different “Total Dynamic Heads” should be as specified below –

REFERENCE:-MNRE MICRO PUMPING GUIDELINES (2016-17),JNNISM SOLAR PHOTOVOLTAIC WATER PUMPING GUIDELINES FOR DRINKING WATER APPLICATION (2014-15) FOR b&c

a) For D.C. Motor Pump Set for drinking water applications(900watt)-

1. Minimum 20000 litres of water per day from a total Dynamic Head of 30 meter and with the shut off head being at least 45 meter.
2. Minimum 10000 litres of water per day from a total Dynamic Head of 60 meter and with the shut off head being at least 90 meter.
3. Minimum **5000** litres of water per day from a total Dynamic Head of 90 meter and with the shut off head being at least 120 meter.

The actual duration of pumping of water on a particular day and the quantity of water pumped could vary depending on the solar intensity, location, season etc.

4. TESTS FOR HYDRAULIC AND ELECTRICAL PERFORMANCE OF PUMPSET -

- i. The motor-pump set shall be tested independently for hydraulic and electrical performance as per the relevant IS specification including following test -
 - a) Constructional requirements /features
 - b) General requirements
 - c) Design features
 - d) Insulation resistance test
 - e) High voltage test
 - f) Leakage current test
- ii. Testing of SPV Water Pumping Systems shall be done as per procedure specified by the MNRE.

5. GUARANTEE OF PERFORMANCE -

- a) The SPV Water Pumping Systems shall be guaranteed for their performance of the nominal volume rate of flow and the nominal head at the guaranteed duty point as specified in 3(L) under the “Average Daily Solar Radiation” condition of 7.15 KWh/m² on the surface of SPV array (i.e. coplanar with the Photo Voltaic (PV) Modules). The actual duration of pumping of water on a particular day and the quantity of water pumped could vary depending on the solar intensity, location, season, etc.
- b) Solar Photo Voltaic Water Pumping Systems shall be guaranteed by the manufacturer against the defects in material and workmanship under normal use and service for a period of at least 60 months from the date of commissioning.
- c) Sufficient spares for trouble free operation during the Warrantee period should be made available as and when required.

6. MARKING AND PARAMETERS TO BE DECLARED BY THE MANUFACTURER -

The motor pump-set and Controller used in SPV Water Pumping Systems shall be securely marked with the following parameters declared by the manufacturer:

i. Motor Pump-set -

- a) Manufacturer's name, logo or trade-mark;
- b) Model, size and SI No of pump-set;
- c) Motor Rating (kW /HP);
- d) Maximum Current (A);
- j) Voltage Range (V)and;
- k) Type - AC or DC Pump set

ii. Controller – (if not inbuilt)

- a) Manufacturer's name, logo or trade-mark;
- b) Model Number;
- c) Serial Number;

- d) Voltage Range;
- e) Power Range in kW for Controller ;and
- f) Current rating(A)

7. OPERATION AND MAINTENANCE MANUAL -

An Operation and Maintenance Manual in Hindi, should be provided with the solar PV pumping system. The Manual should have information about solar energy, photovoltaic, modules, DC/AC motor pump set, mounting structures, electronics and switches. It should also have clear instructions about mounting of PV module, DO's and DONT's and on regular maintenance and Trouble Shooting of the pumping system. Helpline number and Name and address of the Service Centre and contact number of authorized representative to be contacted in case of failure or complaint should also be provided. A warranty card for the modules and the motor pump set should also be provided to the beneficiary.

Raw material test certificates (MTC) of all types of raw material used in dual pump structure as per appropriate IS code should be submitted along with dispatch documents.

8. OVERHEAD WATER STORAGE TANK SPECIFICATION

Rotational Moulded Polyethylene Water Storage Tanks Specification: ISI marked Rotational Moulded Polyethylene Water Storage Tank conforming to IS:12701-1996 with amendent. no 1 . The water storage tank should be as per the IS 12701: 1996 standards and must be able to withstand the stormy weather conditions. The tank material should be in such a way that it should not change the quality of water with increase of temperature. A hole of suitable internal diameter must be provided at the top of the tank for the purpose of inspection and entry into the tank.

1. Bidder shall be required to furnish satisfactory type test certificate from government laboratory, as per IS:12701/96(Reaffirmed-2006)Edition2.2 for double layer tanks, for one size (5KL)at the time of first inspection.
2. Bidder is required to produce documents/invoices/manufacturers test certificate from O.E.Ms representing the material used in moulding, to the concerned inspectorate at the time of inspection for the lot.
3. Bidder/Manufacturer Shall be registered with NSIC or DGS&D to IS:12701:96 (Reaffirmed 2006) Edition 2.2 specifically indicating the sizes for double layer tanks on or before tender opening.
4. Bidder/manufacture Shall submit valid BIS licence specifically indicating the sizes for double layer tanks along with their tender.

The complete Indian standards for overhead water storage tank are stated as under.

9. INDIAN STANDARDS FOR WATER STORAGE TANK

IS 12701 : 1996

Indian Standard
**ROTATIONAL MOULDED POLYETHYLENE
 WATER STORAGE TANKS — SPECIFICATION**

IS 12701 : 1996

4.2.2 The melt flow rate (MFR) of the resin when tested under the test condition D (temperature 190°C and nominal load of 2.16 kg) and in accordance with IS 2530 : 1963 shall be within 2.0 to 6.0 g/10 minutes.

4.2.3 The water tanks meant for out door use shall be manufactured from carbon black compounded polyethylene. The carbon black content and carbon dispersion test shall be carried out in accordance with the procedure described in IS 2530 : 1963 and shall meet the following requirements:

- a) The percentage of carbon black content in the material shall be within 2.0 and 3.0, and

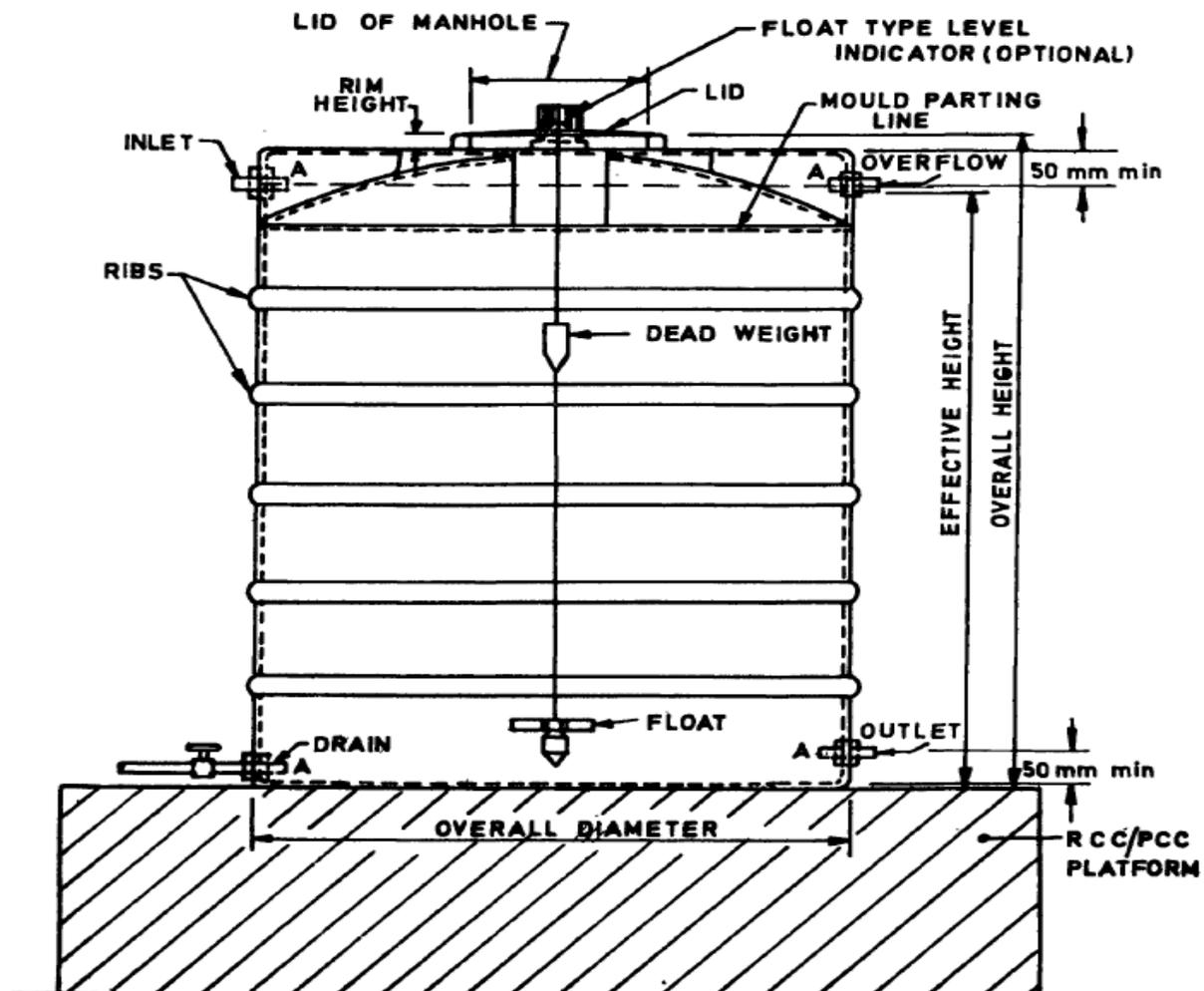
- b) The dispersion of carbon black shall be satisfactory.

4.3 The addition of not more than 10 percent of the manufacturers own reworked material resulting from the manufacture of tanks only according to this standard is permissible. No other reworked or recycled waste material from any other source or filler shall be used in the manufacture of tanks.

5 TYPES AND FEATURES

5.1 Cylindrical Vertical Tank (Fig. 1)

The dimensions, net and gross capacities and weight of the tank shall be as given in Table 1.



NOTE — A 25 mm wide band shall be painted around the tank at the inlet/overflow level and outlet level. Centre line of the band shall be 50 mm minimum from top/inner bottom of the tank.

A — Male threaded G.I. brass or PVC connections.

FIG. 1 TYPICAL DETAILS OF CYLINDRICAL VERTICAL TANK

IS 12701 : 1996

Table 1 Dimensions of Cylindrical Vertical Tank
(Clause 5.1)

SI No.	Minimum Net Capacity Up to Effective Height	Overall Dimeter Range	Overall Height Range	Minimum Internal Dia of Man-Hole/ Hand-Hole	Minimum Wall and Bottom Thickness	Minimum Weight of tank (Without Lid)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	200	650 - 850	490 - 690	265	3.0	7.8
ii)	300	650 - 850	700 - 900	265	3.0	9.0
iii)	400	700 - 980	700 - 950	265	3.5	15.0
iv)	500	800 - 1 140	625 - 1 025	370	4.0	18.0
v)	700	900 - 1 140	800 - 1 100	370	4.4	23.0
vi)	1 000	1 000 - 1 200	1 050 - 1 350	370	4.5	33.0
vii)	1 500	1 080 - 1 450	1 150 - 1 590	370	4.5	47.0
viii)	1 700	1 300 - 1 500	1 260 - 1 650	370	4.5	54.0
ix)	2 000	1 365 - 1 500	1 400 - 1 700	450	5.4	64.0
x)	2 500	1 380 - 1 610	1 400 - 1 810	450	7.7	81.0
xi)	3 000	1 410 - 1 800	1 640 - 2 150	450	8.1	96.0
xii)	4 000	1 450 - 1 920	1 750 - 2 400	450	10.4	147.0
xiii)	5 000	1 800 - 2 110	1 800 - 2 100	450	10.7	180.0
xiv)	6 000	1 800 - 2 200	2 065 - 2 800	450	10.7	205.0
xv)	7 500	1 890 - 2 250	2 100 - 2 930	450	10.7	239.0
xvi)	10 000	1 900 - 2 680	2 400 - 3 740	450	11.5	319.0
xvii)	15 000	2 100 - 2 680	3 100 - 4 000	450	11.5	408.0
xviii)	20 000	2 100 - 3 150	3 190 - 5 000	450	13.2	566.0

NOTE — The gross capacity of the tanks shall be at least 5 percent in excess of the minimum net capacity.

5.2 Rectangular Loft Tank (Fig. 2)

The dimensions, net and gross capacities and weight of the tank shall be as given in Table 2.

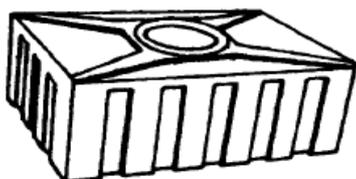


FIG. 2 RECTANGULAR LOFT TANK

5.3 A flat area may be provided on the top of the cylindrical vertical tanks for workers to stand before entering the tank.

5.4 Wall Thickness

Owing to limitations of rotational moulding process, the wall thickness of the water storage tank at bottom, top and cylindrical sides at the bottom and top edges where the shape of tank changes is usually found to be much greater than the wall thickness at other surfaces. For cylindrical vertical tanks the wall thickness upto the effective height of the tank shall not be less than the values given in Table 1 and the wall thickness above the effective height of the tank shall be not less than 75 per cent of the values given

Table 2 Dimensions of Rectangular Loft Tanks
(Clause 5.2)

SI No.	Minimum Net Capacity	Overall Length	Overall Width	Overall Height	Minimum Internal Dia of Hand Hole	Minimum Wall Thickness (Measured on) Rectangular Vertical Port and Bottom Thickness	Minimum Weight of Tank (Without Lid)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	150	620 - 820	620 - 820	285 - 485	300	2.75	6.6
ii)	200	930 - 1 130	620 - 820	285 - 485	300	2.75	7.7
iii)	300	995 - 1 200	620 - 820	285 - 485	300	2.75	11.0
iv)	400	1 150 - 1 350	855 - 1150	335 - 535	300	2.75	13.0
v)	500	1 150 - 1 500	900 - 1250	335 - 535	300	2.75	17.5

NOTE — The gross capacity of the tanks shall be at least 5 percent in excess of the minimum net capacity.

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in Table 1. For rectangular loft tanks the wall thickness shall be in accordance with the values given in Table 2. The wall thickness shall be measured at least at 20 points well distributed on the sides, top and bottom. Thickness measurement on lid shall be made at least in four well distributed locations.

5.5 The dimensions as given in 5.1 and 5.2 refer to finished empty tanks. Measurement shall be made after 48 hours of moulding. The wall thickness may be measured with a dial gauge micrometer fitted with spherical anvils. The overall diameter, height and other dimensions may be measured with steel rule or steel tape of desired accuracy by placing the empty tank on a flat surface.

6 FINISH

6.1 The internal and external surface of the water storage tank shall be smooth, clean and free from other hidden internal defects, such as air bubbles, pits and metallic or other foreign material inclusions. The mould parting line and excess material near the top rim of the tank shall be cut and finished to the required level. Defects like air bubbles and pits at mould parting line and at top rim of the main-man-hole shall be repaired by hot-air filler rod welding method.

7 PERFORMANCE REQUIREMENTS

7.1 Resistance to Deformation

7.1.1 When cylindrical vertical water storage tanks is tested in accordance with the Method 1 described at Annex B, the difference between the circumferential measurement shall not be greater than 2 percent of the original measurements.

7.1.2 When rectangular loft tank is tested in accordance with the Method 2 described at Annex B the difference between the longitudinal measurements shall not be greater than 3 percent of the original measurements.

NOTE — The tank shall not crack at the observed deflection.

7.2 Resistance to Impact

When polyethylene water tank is tested in accordance with the method as described in Annex C the impact shall neither result into cracking nor puncture of the tank.

7.3 Test for Top Load Resistance

7.3.1 The tank shall be filled to 98 percent of its net capacity and shall be subjected for not less than 4 hours at outdoor temperature to compression by means of 100 kg load applied on the horizontal surface provided for a man to stand before entering the tank. After removal of the load the test specimen shall be inspected for deformation or crack on the surface and after 4 hours of the removal of the load the flat surface shall return to normal position.

This test shall be applied to tanks with capacity 1 500 litres and more.

7.4 Tensile Strength

7.4.1 Tensile strength at yield shall be determined in accordance with IS 8543(Part 4/Sec 1) : 1984. The tensile strength of the wall of water tanks shall not be less than 12 N/mm².

7.4.2 The test specimens shall be cut from the flat portion of the top of the water tank at a temperature not exceeding 50°C and then machined.

7.5 Flexural Modulus

7.5.1 The flexural modulus shall be determined in accordance with IS 13360 (Part 5/Sec 7) : 1995. The flexural modulus of the wall of the water tank shall not be less than 300 N/mm². The sample shall be taken as given in 7.4.2.

7.6 Overall Migration

The material of construction (compounded resin) shall meet the specified limits of overall migration of constituents as specified in IS 10146 : 1982 when tested according to 5 of IS 9845 : 1986.

8 SAMPLING AND TESTING

8.1 Routine Tests

The scale of sampling and criteria for conformity of a lot for routine tests specified in Table 3 shall be as given in Annex D.

Table 3 Routine Tests

SI No.	Test	Ref to Clause and Annex (3)
(1)	(2)	(3)
i)	Band width/location	Fig. 1
ii)	Outer dimensions and Weight	Table 1 and Table 2
iii)	Net capacity	Table 1 and Table 2
iv)	Gross capacity	Table 1 and Table 2
v)	Thicknesses	Table 1 and Table 2
vi)	Resistance to deformation	7.1 and Annex B
vii)	Resistance to impact	7.2 and Annex C
viii)	Test for top load resistance	7.3
ix)	Tensile strength	7.4
x)	Flexural modulus	7.5

8.2 Type Tests

Type tests are intended to prove the suitability and performance of water tank of a new composition, a new technique, new shape or modified wall thickness. Such tests need necessarily be done, before undertaking mass production when a change is made in polymer composition or method of manufacture or when a

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new size and shape of water tank is introduced. However, if no change is envisaged, at least one sample of any size shall be put to 'Type Tests' once in a year. Tests for suitability of tank material as specified in 4 and overall migration as specified in 7.6 shall be taken as type tests.

9 MAN-HOLE HAND-HOLE LIDS

9.1 Materials

Man-hole hand-hole lids shall be moulded from polyolefins of minimum thickness 3mm and shall have sufficient ribs to provide adequate stiffness. It shall be stabilized with 2 to 3 percent of carbon black having satisfactory dispersions. The carbon black content and carbon dispersion test shall be carried out in accordance with IS 2530:1963

9.2 The lid shall fit securely over the top rim of the tank and it shall rest evenly on it in order to prevent the ingress of foreign matter such as insects, mosquitoes or dust through the top of the tank. The lid shall also be provided with suitable locking arrangement.

9.2.1 To test the lid being fit securely to the manhole, no clearance in it should permit a 1.6 mm diameter wire to pass through.

10 MARKING

10.1 All the water storage tanks shall be marked with the following information:

- a) Manufacturer's name, initials or recognised trade mark;
- b) Net capacity in litres;
- c) Lot or Batch number, and year of manufacture; and
- d) 'For indoor use only', for tanks meant for indoor use.

10.2 In additions to the marking by painting, the manufacturers name or trade mark and net capacity of the tank shall be moulded on the external surface of the tank during manufacture.

10.3 BIS Certifications Marking

The tanks may also be marked with Standard Mark.

10.3.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made there under. Details of conditions under which a licence for the use of the standard mark may be granted to the manufactures or producers may be obtained from the Bureau of Indian Standards.

ANNEX A

(Clause 2.1)

IS No.	Title	IS No.	Title
554 : 1985	Dimensions for pipe threads where pressure-tight joints are required on threads (<i>third revision</i>)	9845 : 1986	Methods of analysis for the determination of specific and/ or overall migration of constituents of plastic materials and articles intended to come into contact with foodstuffs (<i>first revision</i>)
1879 : 1987	Malleable cast iron pipe fittings (<i>second revision</i>)	10141 : 1982	Positive list of constituents of polyethylene in contact with foodstuffs, pharmaceuticals and drinking water
2530 : 1963	Methods of test for polyethylene moulding materials and poly-ethylene compounds	10146 : 1982	Polyethylene for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
4905 : 1968	Methods for random sampling	13360 (Part 5/Sec 7) : 1995	Plastics — Methods of testing : Part 5 Mechanical properties, Section 7 Determination of flexural properties
7328 : 1992	High density polyethylene materials for moulding and extrusion		
8543 (Part 4/Sec 1) : 1984	Methods of testing plastics : Part 4 Short term mechanical properties, Section 1 Determination of tensile properties		

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ANNEX B

(Clauses 7.1.1 and 7.1.2)

METHOD OF DEFORMATION TEST

B-1 METHOD 1, FOR CYLINDRICAL VERTICAL TANKS

B-1.1 The water tank shall be placed on a flat level base. A circumferential measurement shall be made parallel to the base at a distance of one third the effective height. The tank shall be filled upto the effective height at a minimum rate of 23 l/min with water at temperature of not less than 15°C.

B-1.2 A continuous film of polythylene shall be floated over the whole of the surface of the water in the tank to prevent evaporation.

B-1.3 The tank and water shall be maintained at temperature not less than 15°C and after 3 days a circumferential measurement shall be made at the previously determined level.

The difference between the two circumferential measurement shall be expressed as a percentage of the original circumferential measurements.

B-2 METHOD 2, FOR RECTANGULAR LOFT TANK

B-2.1 The rectangular tanks shall be placed on a flat level base. The internal length and width of the tank shall be measured on the centre lines, as shown in Fig. 3 at the centre of effective height.

B-2.2 The tank shall be filled upto the effective height at a minimum rate of 23 litres/min with water at a temperature not less than 15°C. The lid shall be closed after filling the loft tank.

B-2.3 The tank and water shall be maintained at a temperature of not less than 15°C and after 7 days measurements of length and width shall be made at a previously determined centre lines.

B-2.4 The deformation in each direction shall be calculated as follows:

$$D_L = \frac{W_2 - W_1}{2L_1} \times 100$$

$$D_w = \frac{L_2 - L_1}{2W_1} \times 100$$

Where

D_L = deformation of the longer side,

D_w = deformation of the shorter side,

W_1 = width at the start of test,

W_2 = width at the end of the test,

L_1 = length at the start of test, and

L_2 = length at the end of test.

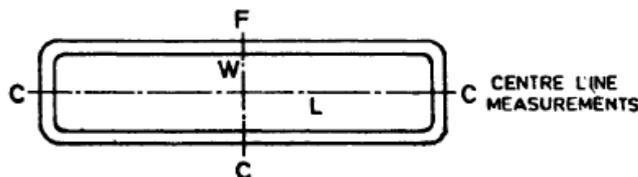


FIG. 3

ANNEX C

(Clause 7.2)

C-1 METHOD FOR IMPACT RESISTANCE TEST FOR WATER TANK

C-1.1 The water tank shall be inverted and the base of tank shall be struck with a 25 mm diameter hemispherically ended striker of mass 2.5 kg falling freely from a height of 3.0 metre.

C-1.2 The striker shall be so arranged as to hit the base at its mid-point. Three other impacts shall be made, which shall be as close to the edge or corners of the base as is practical. The shape of the striker shall be such that only the surface of the specified hemisphere comes into contact with the tank under the initial blow.

ANNEX D

(Clause 8.1)

SCALE OF SAMPLING AND CRITERIA FOR CONFORMITY FOR ROUTINE TESTS

D-1 SCALE OF SAMPLING

D-1.1 Lot

In any consignment, all the tanks of same size and type made from same raw materials and manufactured under similar conditions shall be grouped together to constitute a lot.

D-1.2 For ascertaining the conformity of the tanks to the requirements of the specification, samples shall be tested from each lot separately.

D-1.3 The number of water storage tanks to be selected from a lot shall depend on the size of the lot and shall be according to Table 4 for tanks with capacity up to 1 000 litres and Table 5 for tanks with capacity above 1 000 litres.

D-1.4 The tanks shall be selected at random from the lot. In order to ensure the randomness of selection procedures given in IS 4905:1968 may be followed.

D-2 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

D-2.1 Visual, Dimensional Requirements and Capacity

D-2.1.1 Tanks of Capacity up to 1 000 litres

Each of the tanks selected according to col 1 and 2 of the Table 4 shall be examined for the tests at SI No. 1, 2, 3 and 4 of Table 3. A tank failing to satisfy one or more of these requirements shall be considered as defective. The lot shall be deemed to have satisfied these requirements if the number of defectives found in the sample is less than or equal to the corresponding acceptance number given in col 3 of Table 4.

D-2.1.2 Tanks of capacity above 1 000 litres

Each of the tanks selected according to col 1 and 2 of Table 5 shall be examined for the tests given at SI No. 1, 2, 3 and 4 of the Table 3. A tank failing to satisfy one or more of these requirements shall be considered as defective. The lot shall be deemed to have satisfied these requirements if there is no defective in the sample.

D-2.2 The lot having been found satisfactory according to D-2.1 shall be further tested for tests at SI No. 5, 6, 7, 8, 9 and 10 of Table 3. For this purpose a sub-sample of the size given in col 4 of Table 4 or col 3 of Table 5, as the case may be, shall be selected from those already examined and found satisfactory according to D-2.1 and shall be tested for requirements, as specified. The lot shall be declared to have satisfied the requirements if no defective is found in the sub-sample.

**Table 4 Scale of Sampling and Criteria for Conformity
(For Tanks with Capacity up to 1 000 l)
(Clause D-1.3)**

SI No.	Lot Size	Sample Size	Acceptance Number	Sub-sample Size for Tests at SI No. (v), (vi), (vii), (viii), (ix) and (x) of Table 3
(1)	(2)	(3)	(4)	(5)
i)	Up to 50	2	0	1
ii)	51 to 100	3	0	1
iii)	101 to 300	5	0	2
iv)	301 to 500	8	0	3
v)	501 and above	13	1	5

**Table 5 Scale of Sampling
(For Tanks with Capacity Above 1 000 l)
(Clause D-1.3)**

SI No.	Lot Size	Sample Size	Sub-sample Size for Tests at SI No. (v), (vi), (vii), (viii), (ix) and (x) of Table 3
(1)	(2)	(3)	(4)
i)	Up to 25	2	1
ii)	26 to 50	3	1
iii)	51 to 100	4	1
iv)	101 and above	5	2

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ANNEX E
(Foreword)

RECOMMENDATIONS FOR INSTALLATION AND FITTING OF TANKS

E-1 Vent pipe/overflow pipe is provided near the top with mosquito and insect proof cap.

E-2 The flat base of cylindrical vertical or rectangular water storage tanks should be fully supported over its whole bottom area by a durable, rigid, flat and level platform sufficiently strong to withstand without deflection the weight of the tank when filled fully with the water. In case, the tank is placed on a suitable M. S. platform then it is essential that the latter is free from sharp edges, corners or surface projections and shall be corrosion resistant.

E-3 Where required the tanks shall be suitably anchored. The tanks may also be provided with clamping devices.

E-4 The pipelines, valves and other fittings should be supported in such a manner that it is aligned properly so as not to produce any distortion in the water tank where the fitting is fixed.

E-5 The checknuts of the threaded connection should be placed after placing rubber gaskets and should not be overtightened. Under no circumstances should jointing compounds or putty be employed in contact with the polyethylene water tanks. PTFE (poly-tetra-fluoroethylene) unsintered tape may be wrapped around the threaded portion of the valves and connections to act as a sealant.

E-6 Circular holes drilled for fixing threaded connections should have a clean edge free from notches. Holes can be drilled with a high speed steel hole saw cutter. Scratching or scoring the wall should not be done for setting out holes.

E-7 Where the section of water tank has a change in profile which is accomplished with a radius, it is essential that the outer extremities of the threaded connections are clear of this radius.

E-8 The water storage tank should not be installed in close proximity to heaters or other direct sources of heat.

E-9 FITTINGS

E-9.1 For providing inlet, outlet and other connections, usually full threaded G.I. brass connections are used which shall not produce any kind of harmful effect on potable water. A typical threaded connections is illustrated in Fig 4. Flat surface may preferably be provided to fix outlet pipes at appropriate locations. The design of threaded connections fixed with the water storage tank may be similar to that shown in Fig 4. The different sizes of threaded connections required to be fixed for different capacities of water storage tanks may be according to Table 6.

E-9.1.1 The overflow pipes should be provided with non-corrodible mosquito-proof device of maximum clearance not more than 1.6 mm.

Table 6 Sizes of Threaded Connections
(Clause E-9.1)

Sl No.	Capacity of Water Storage Tank	Nominal Bore Size of Threaded Connection (mm)
i)	Up to 750	12.5
ii)	Above 750 and up to 2 000	25
iii)	Above 2 000 and up to 4 000	40
iv)	Above 4 000 and up to 10 000	50
v)	Above 10 000	75

E-9.2 The dimensions of male and female threads of G.I. PVC/brass full threaded connections and other fittings like elbow, tee, bend, coupling, nipple, etc, shall be conforming to IS 554 : 1985. The sizes and other dimensions of the fittings, such as centre-to-face, face-to-face and centre-to-centre shall conform to IS 1879 : 1987. Manufacturers shall provide instructions for fittings.

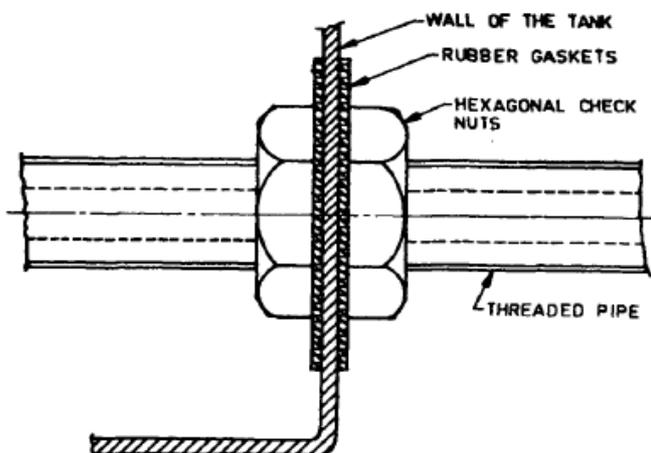


FIG. 4 THREADED CONNECTION

10. TESTS TO BE PERFORMED ON DUAL PUMP STRUCTURE FOR SOLAR WATER PUMPING SYSTEM -

1. For ascertaining proper welding of structure part following should be referred -
 - a. Weld wire grade should be of grade **(ER 70 S -6)**
 - b. D.P. Test (Pin Hole / Crack) **(IS822)**
2. For ascertaining hot dip galvanizing of fabricated structure following should be referred -
 - a. Min coating required should be as per IS4759.
 - b. Testing of galvanized material.
 - i. Preece Test (CuSO₄ Dip Test) **(IS2633)**
 - ii. Mass of Zinc **(IS 6745)**
 - iii. Adhesion Test **(IS2629)**

11. DESIGN AND SPECIFICATION OF HAND PUMP PLATEFORM

Bidder shall have to Construct cement concrete platform & drainage as per UNICEF type design (Annx-X) around the hand pump in M-15 cement concrete including excavation, centring, shuttering. Construction of platform & drainage includes filling in 30 cm depth sand/stone dust after removing soil including ramming, watering etc.

12. DESIGN AND SPECIFICATION OF SOAKPIT

Bidder shall have to construct a soakage pit of 70CM ID& 100CM OD dia. and 1.0 m deep including excavation, brick lining at top in 1:4 cement mortar, filling of broken bricks for water conservation & recharging of water near plate form as per the drawing in Annx-XI

13. WATER SUPPLY SYSTEM & WIRE ROPE

The depth of submersible Pump shall be max 120 Mtrs or as per the depth of the bore with independent riser pipe. HDPE pipe as per IS of 63 mm size shall be used from pump to hand pump special water chamber. Only GI pipe of 50/32/25 mm size shall be used for over ground connection such as inlet, outlet and over flow connection of over head tank and to distribution line connected to four/Two/One mouth hot dip galvanised Common stand post with stainless steel self closing (304 grades) taps at a height 800mm. After testing of the pipe distributions and stand posts the trenches to be filled up with excavated earth up to a depth of 30 cm watering and riming and making good to the damages of the road as per pre road condition (WBM/CC/Bituminous).

WIRE ROPE

The wire rope must be used to protect the pump from falling down and easy removal of pump in case of any faults. The wire rope must be made up of stainless steel ,8Sq mm dia with all wire rope fittings, Slings etc .Selection of wire rope should be made in such a way that it should hold the pump perfectly if in any case the pump falls down due to breaking of wire rope then it shall be responsibility of SI to provide the new pump.

14. CIVIL SUPPLY / INSTALLATION:-

1. Civil supply / installation essential for erection of Overhead Tank Structure as per local site conditions and soil formation and drawing specified in the tender .
2. Civil supply / installation essential for erection and skirting of Stand Post - 2mtr x2mtr with proper drainage.
- 3.Civil supply / installation essential for construction of new hand pump platform as per RWS&S specification as the case may be.
4. Civil construction of Soak pit of 1m dia X 1m depth

15. GALVANIZED TAP STAND :-

1. Tap Stand should be hot dip galvanized with having platform of 2 mtr x 2mtr with proper drainage up to 3 mtr as per the drawing specified in tender.
2. Stand should consist of 4 numbers of **25 mm** stainless steel lift-cock type taps at height min. 800 mm.

ANNEXURE – I

16. Indicative Technical Specifications of Solar Deep well (submersible) Pumping Systems with D.C. Motor Pump Set with Brushes or Brushless D.C. (B.L.D.C/PMDC)

Description	Model-I (CREDA Specific)	Model- II (CREDA Specific)	Model-III (CREDA Specific)	Model-IV (CREDA Specific)
PV array (Wp)	600W	900W	900W	900W
Motor Pump-set capacity (HP)	0.5	1	1	1
Shut Off Head (meters)	45	45	90	120
Water output * (Liters per day)	Min 6000 from a total Dynamic head of 30 meters)	Min 20000 (from a total Dynamic head of 30 meters)	Min 10000 (from a total Dynamic head of 60 meters)	Min 5000 (from a total Dynamic head of 90 meters)

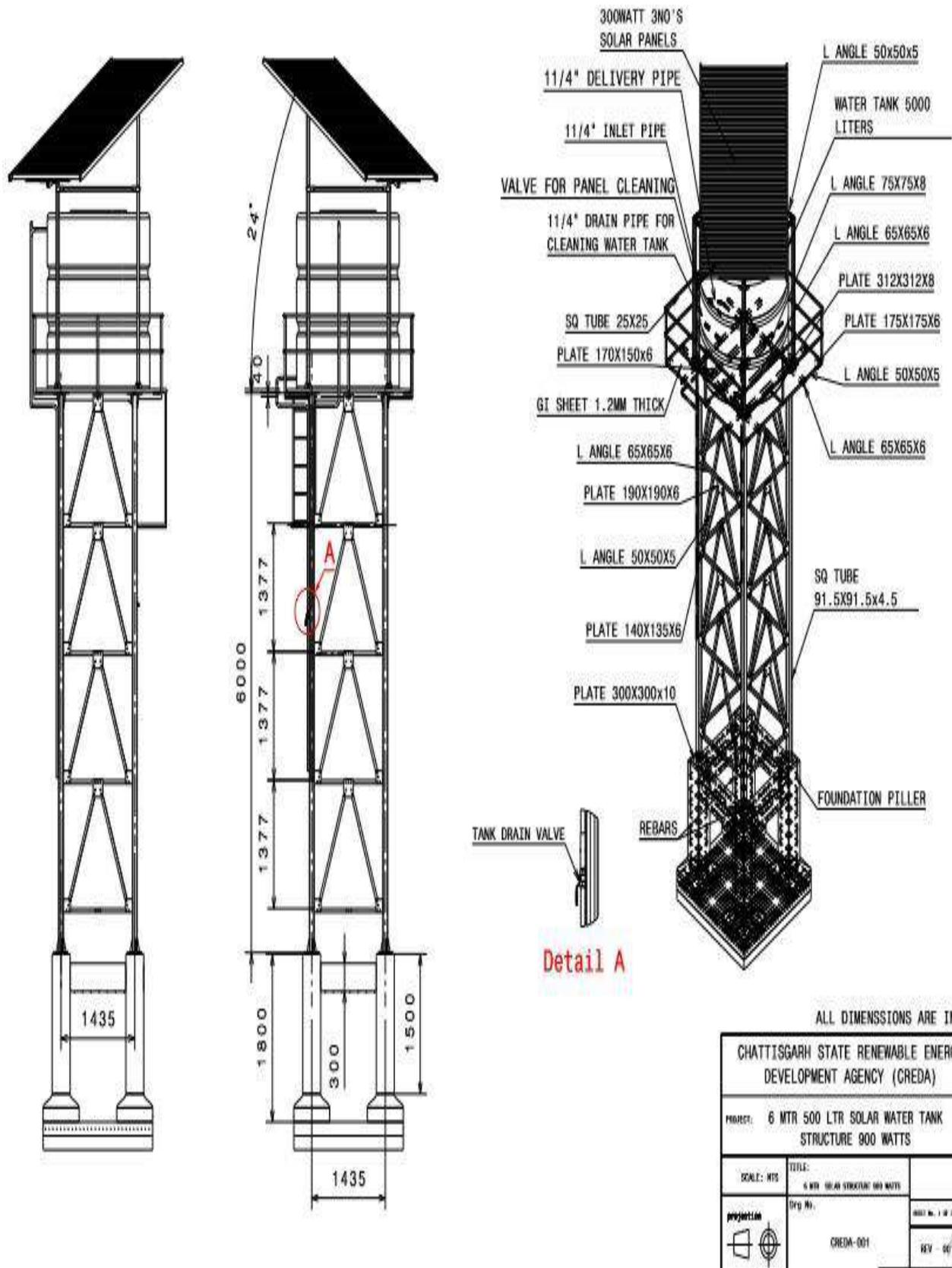
* Water output figures are on a clear sunny day with three times tracking of SPV panel, under the “Average Daily Solar Radiation” condition of 7.15 kWh/ sq.m. on the surface of PV array (i.e. coplanar with the PV Modules).

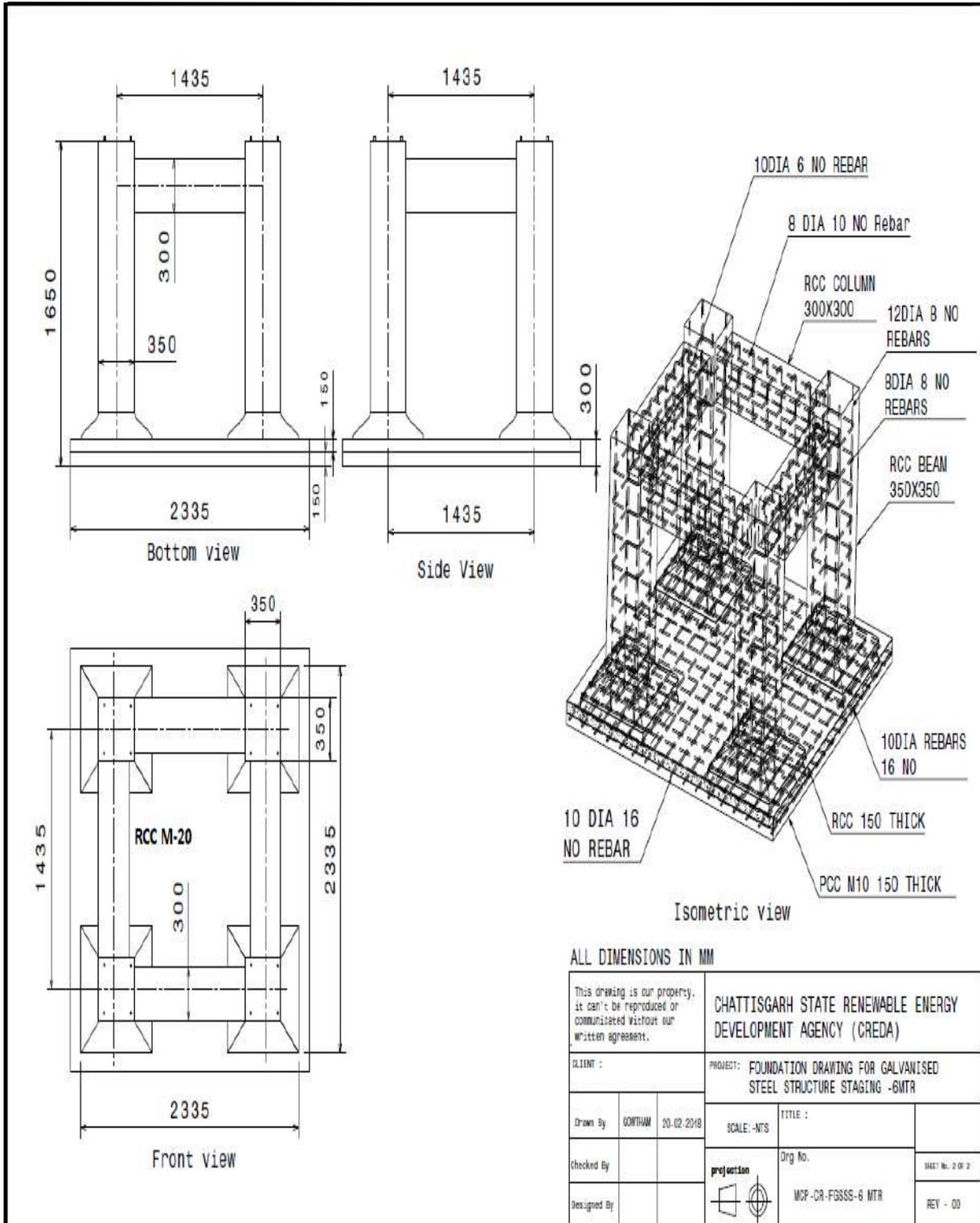
Notes -

1. For higher or lower head / PV capacity, or in between various models; water output could be decided as per the clause 4 (i.e. Performance Requirements) specified earlier.
2. If surface pumps are used in lieu of submersible pumps, the water output must match that of the submersible pumps as specified in this table.

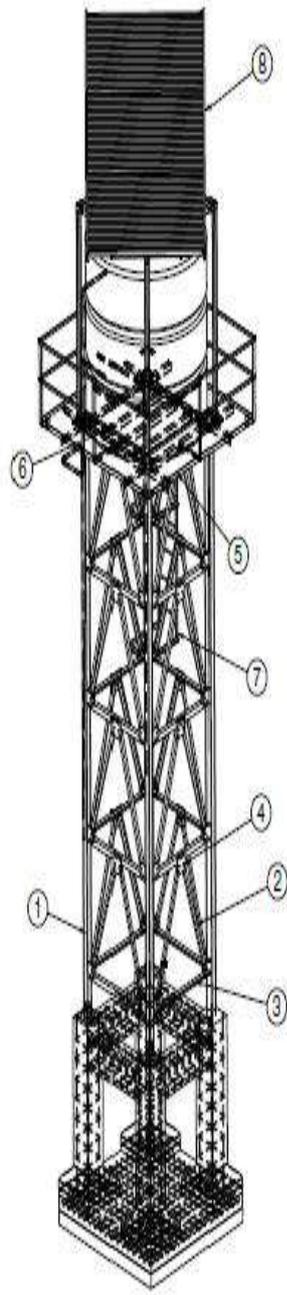
ANNEXURE –II

17.Complete drawing of 900W/1 HP,600W/0.5HP, 6Mtr Staging, 5KL Solar Dual Pump structure & Civil Works

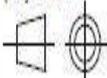


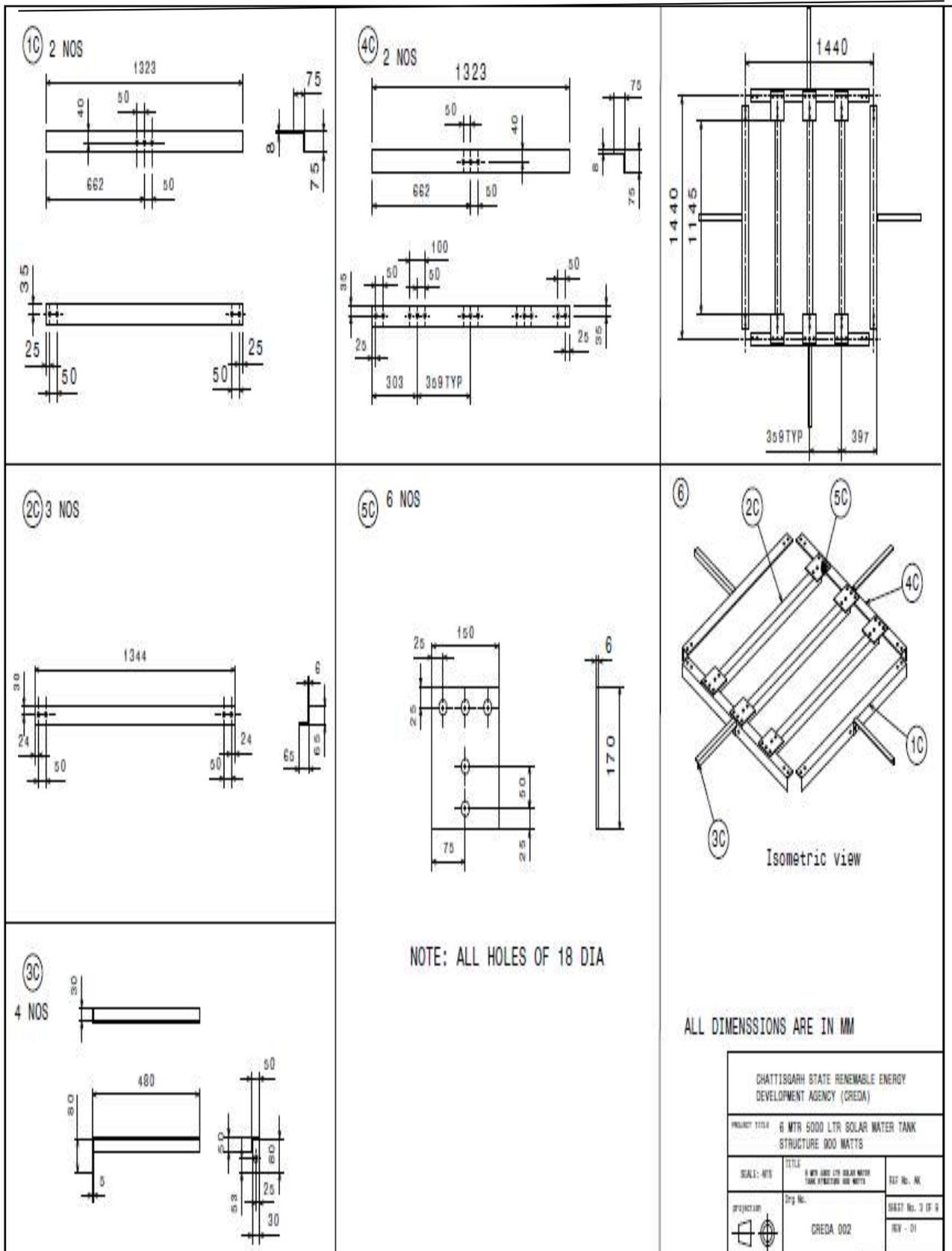


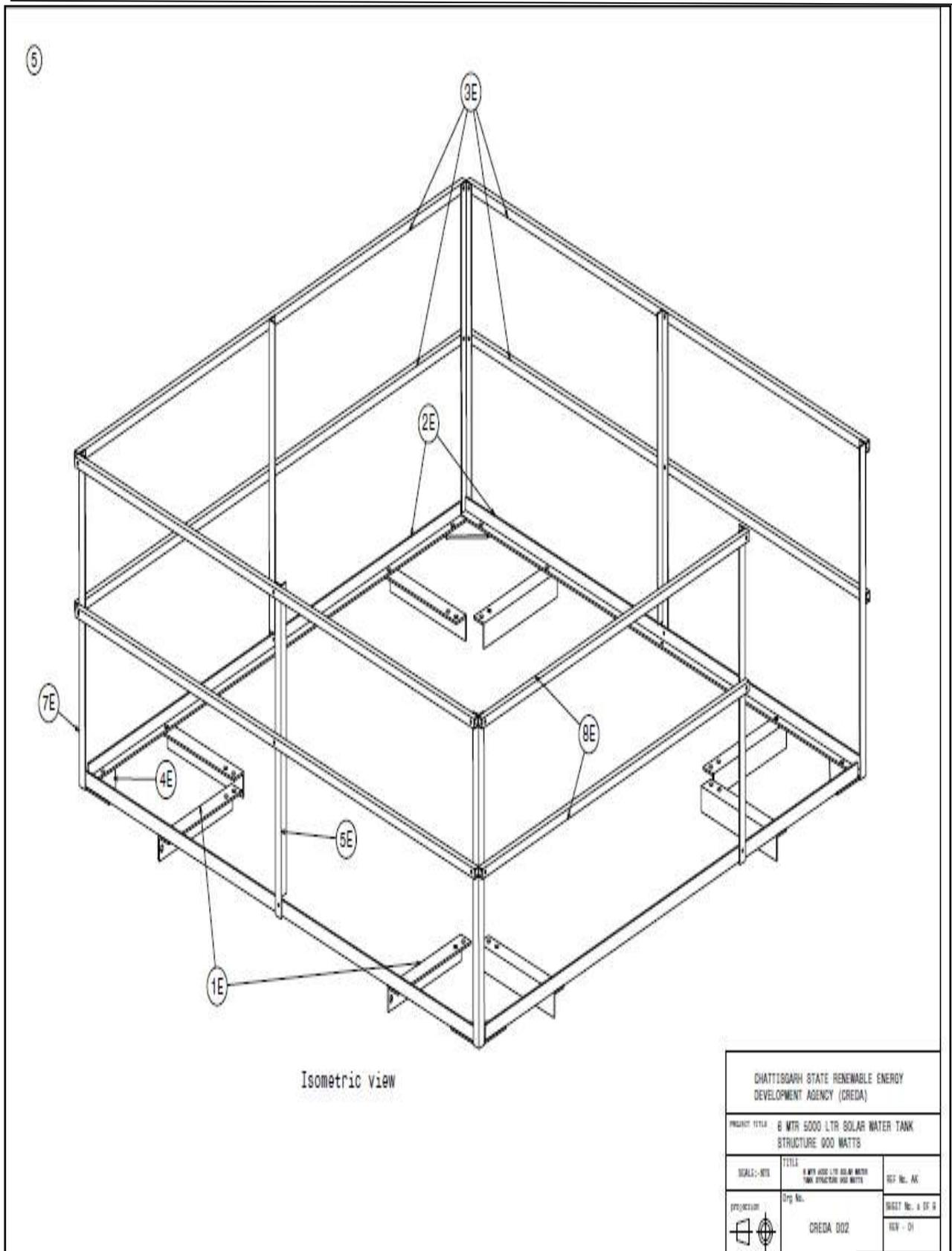
Structure Part Drawings (600/900WATT,6Mtr,0.5HP,5KL)

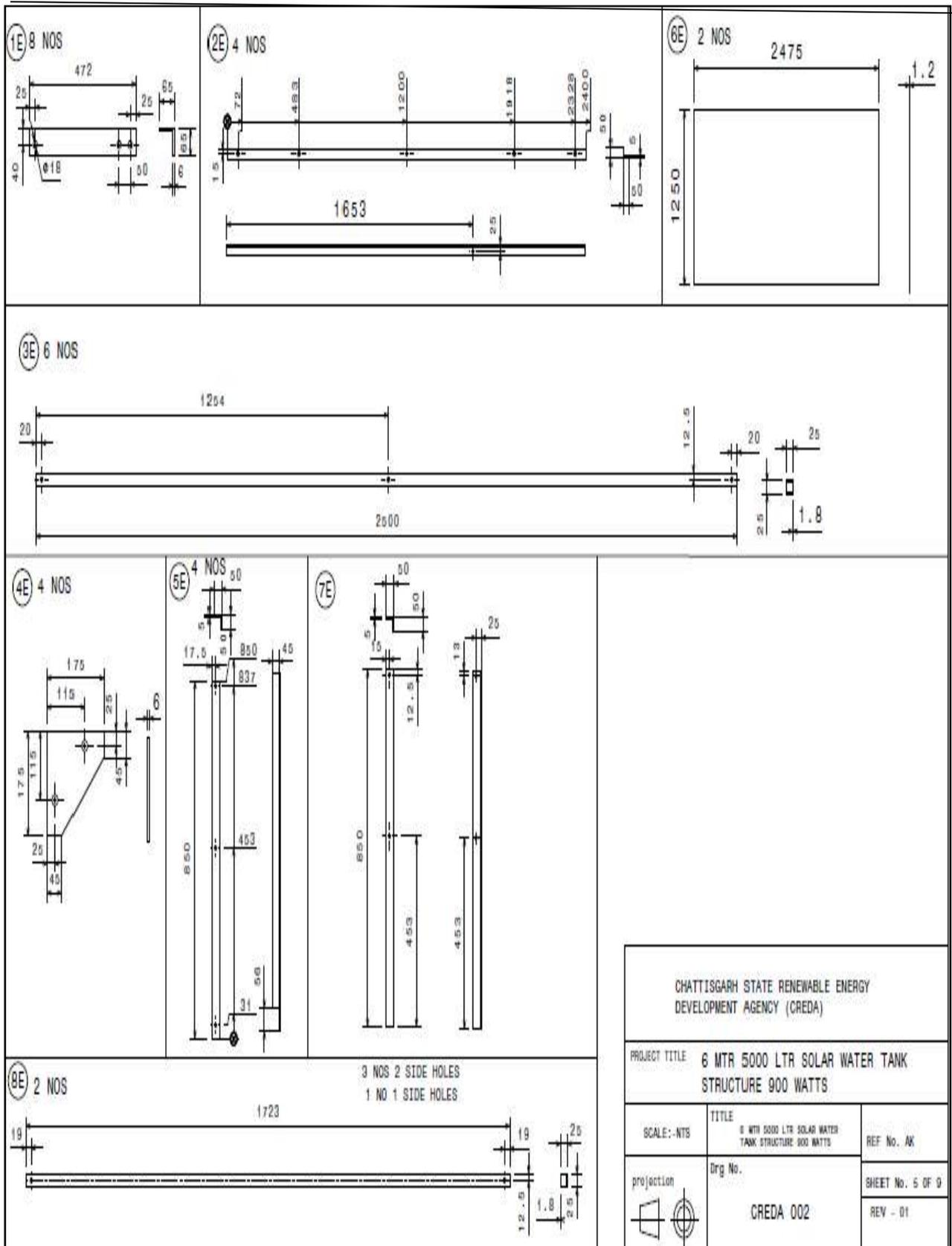


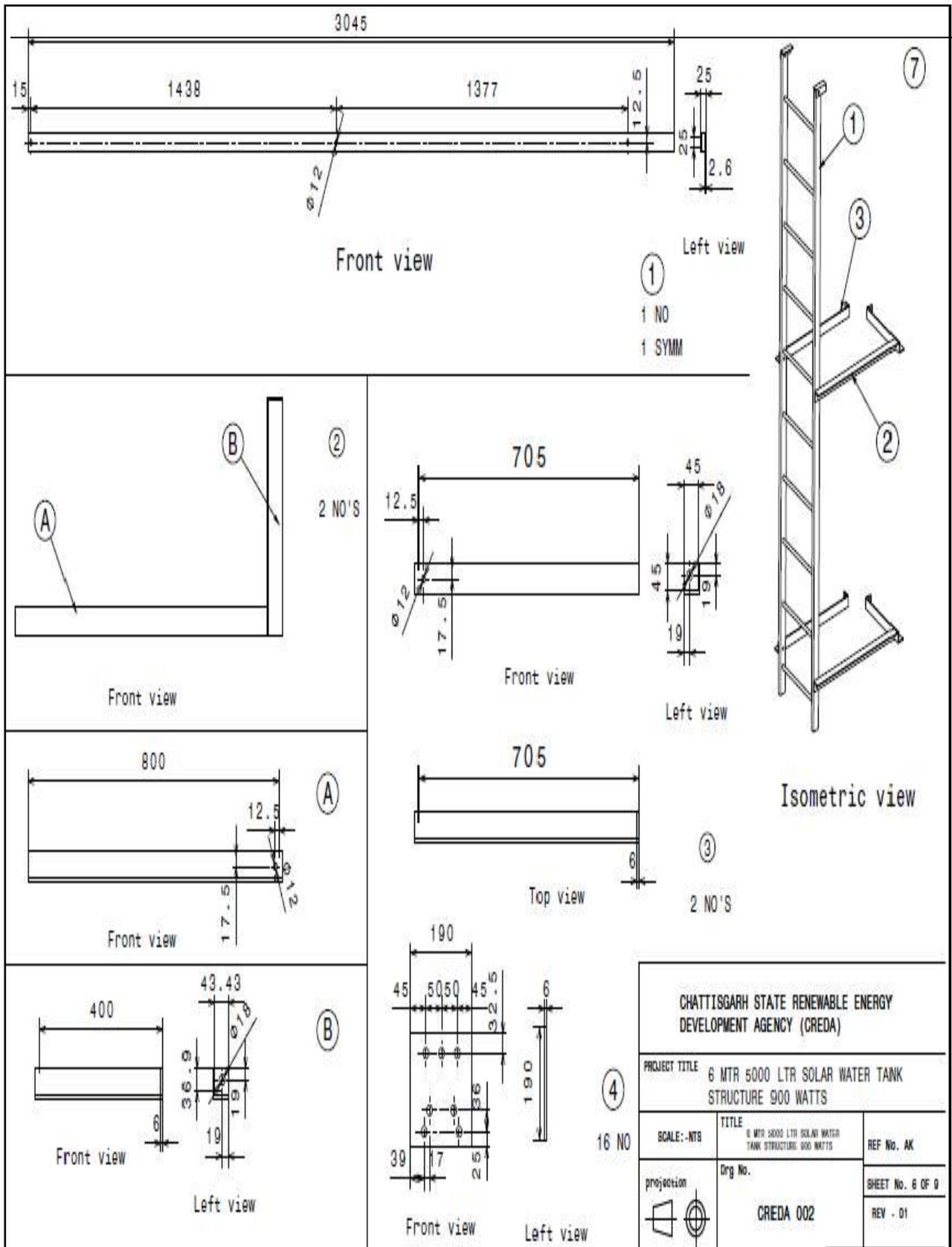
ISOMETRIC VIEW

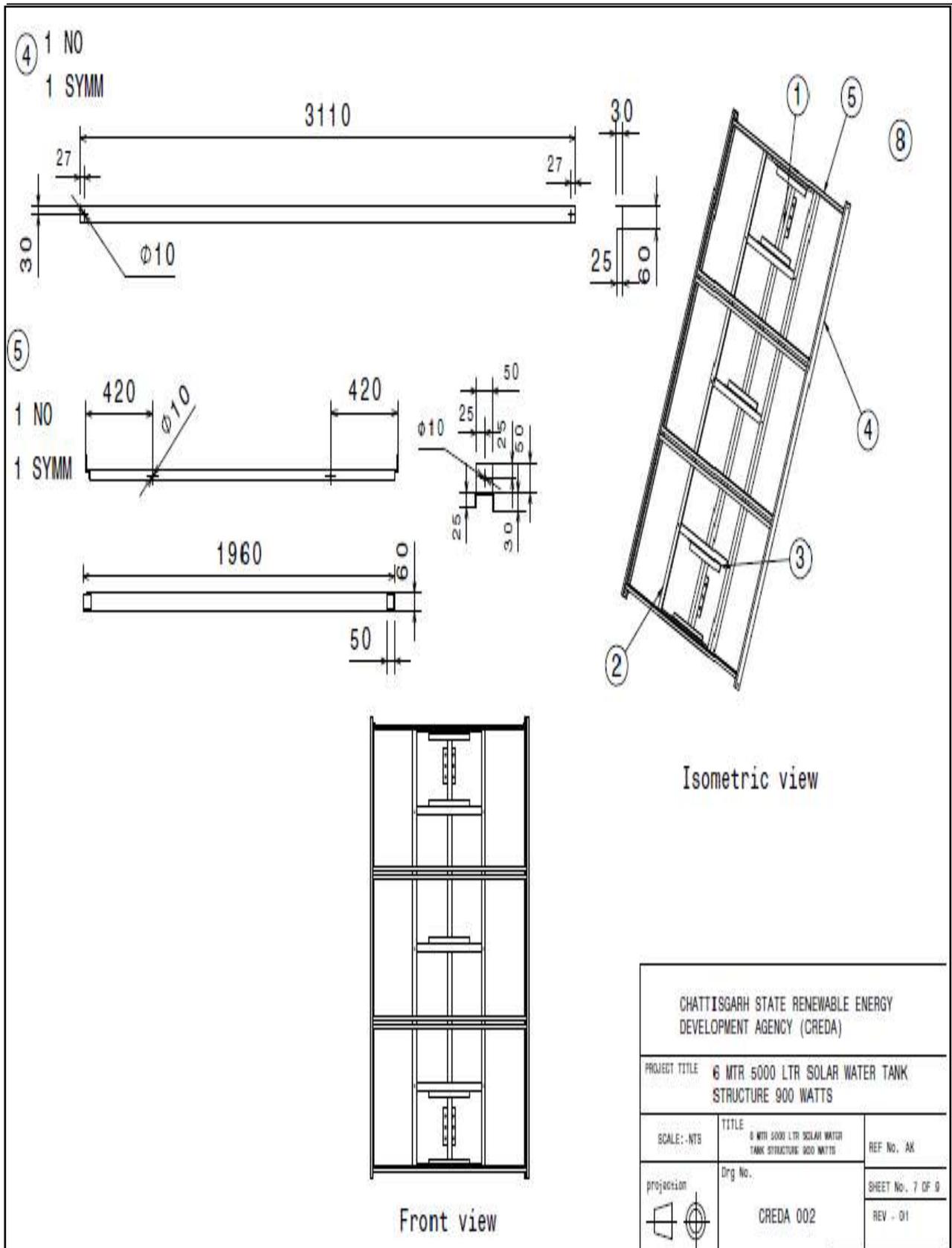
CHATTISGARH STATE RENEWABLE ENERGY DEVELOPMENT AGENCY (CREDA)		
PROJECT TITLE - 6 MTR 5000 LTR SOLAR WATER TANK STRUCTURE 900 WATTS		
SCALE:-NTS	TITLE 6 MTR 5000 LTR SOLAR WATER TANK STRUCTURE 900 WATTS	REF No. AK
projection 	Drg No. CREDA 002	SHEET No. 1 OF 9
		REV - 01

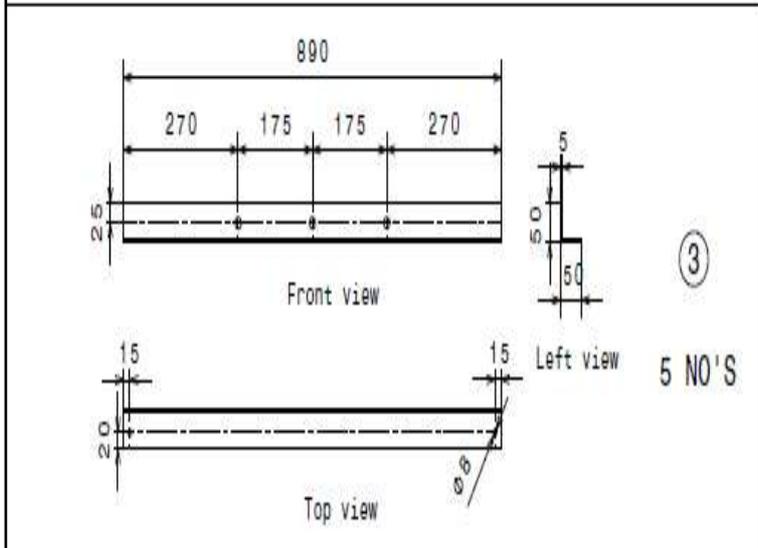
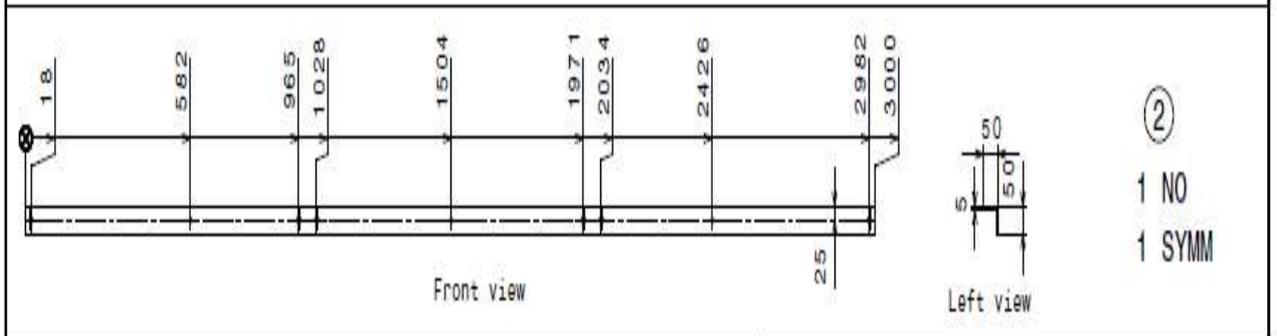
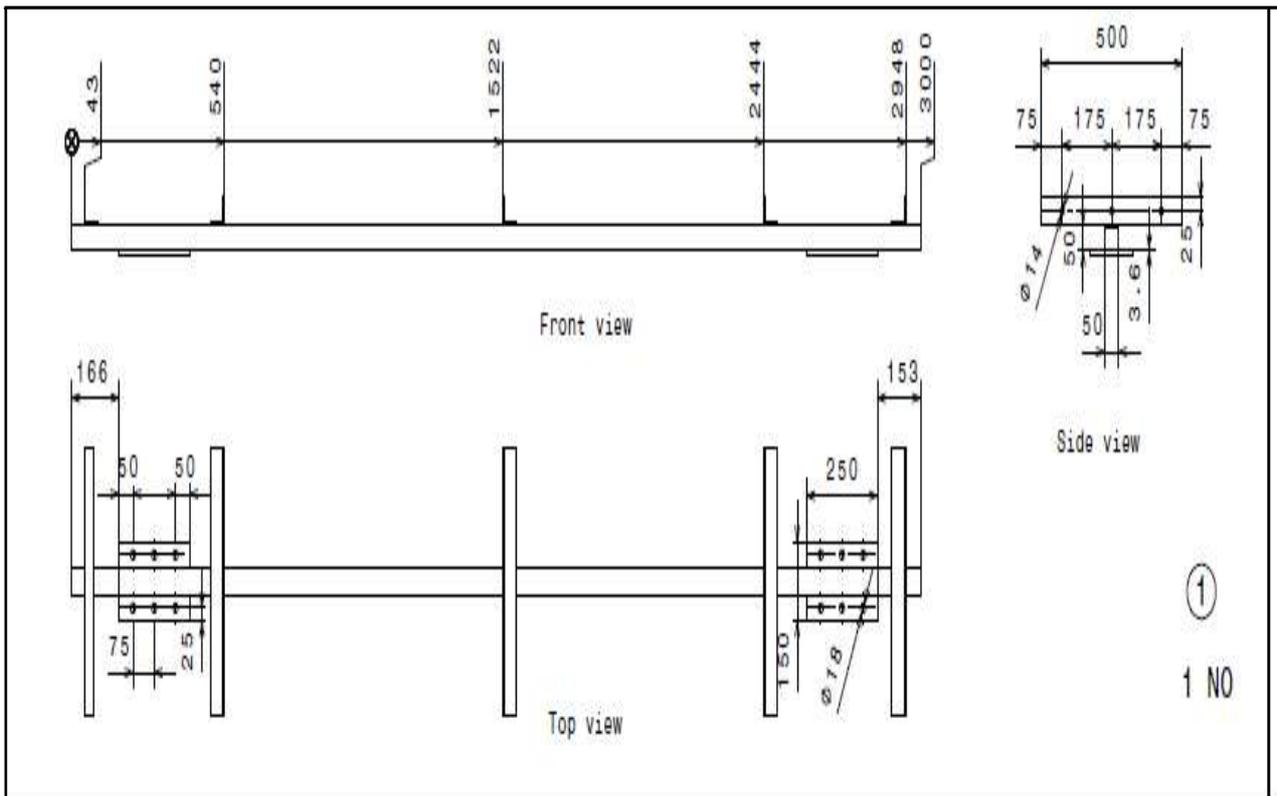




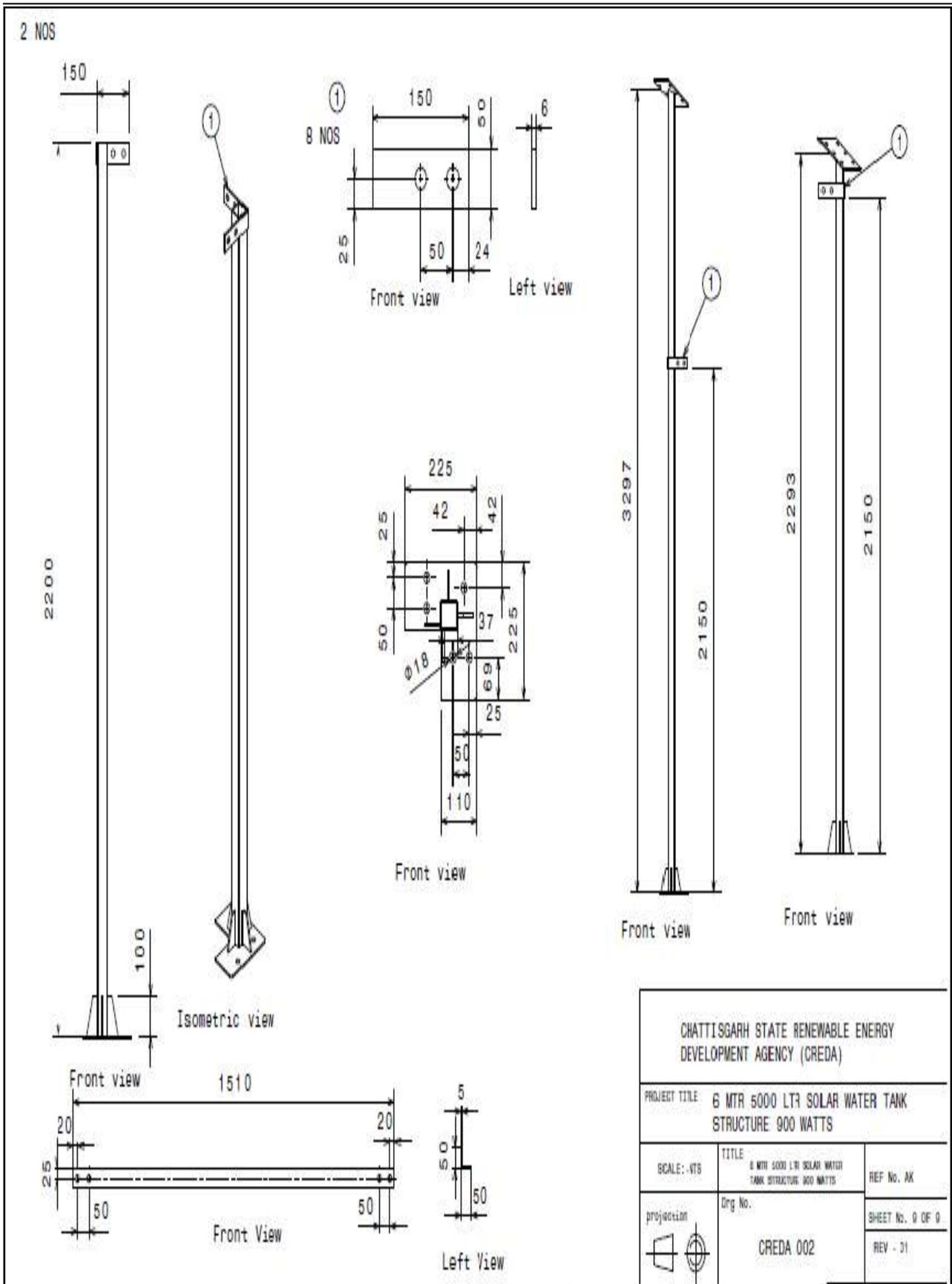




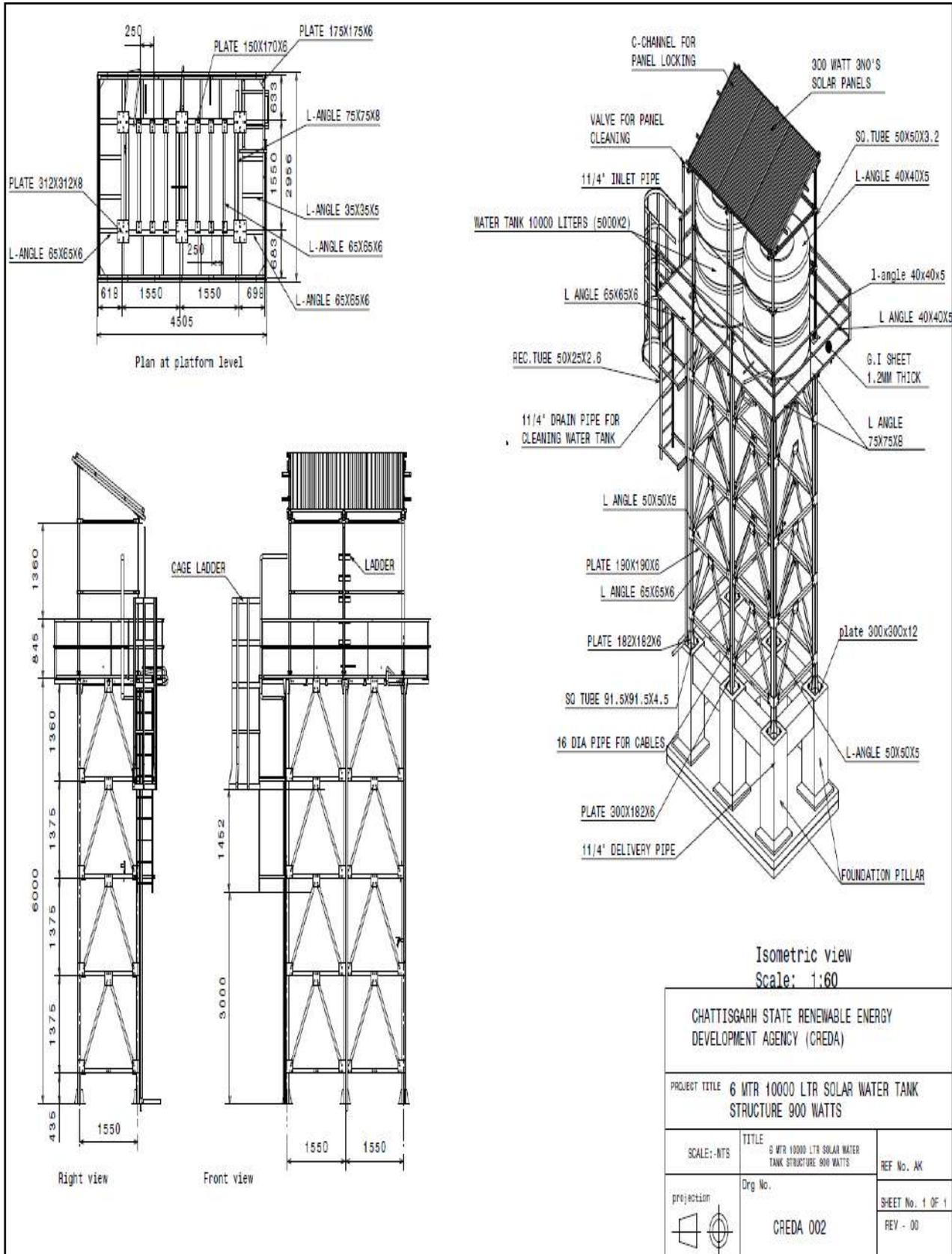


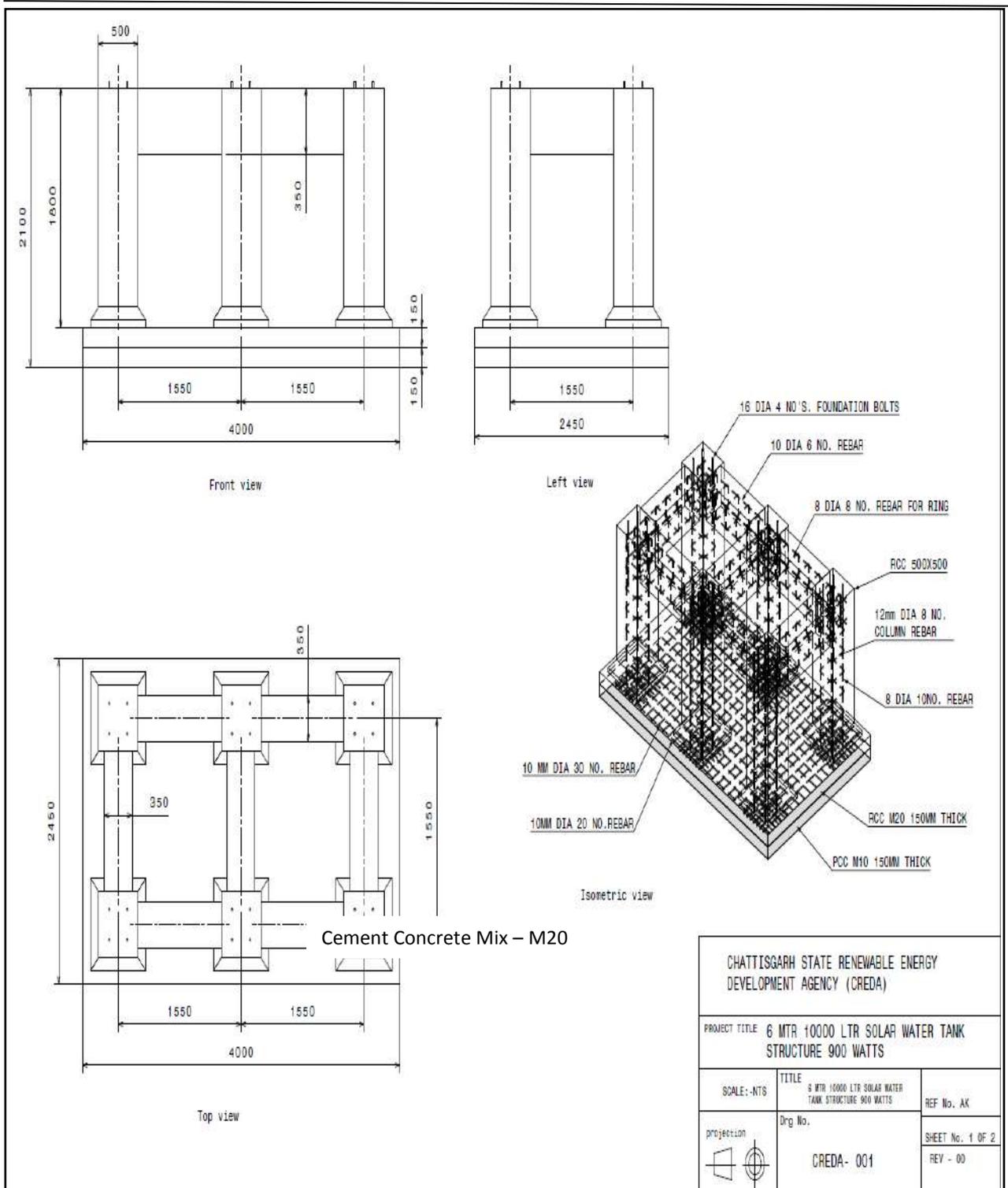


CHATTISGARH STATE RENEWABLE ENERGY DEVELOPMENT AGENCY (CREDA)		
PROJECT TITLE 6 MTR 5000 LTR SOLAR WATER TANK STRUCTURE 900 WATTS		
SCALE:-NTS	TITLE 6 MTR 5000 LTR SOLAR WATER TANK STRUCTURE 900 WATTS	REF No. AK
projection	Drwg No. CREDA 002	SHEET No. 8 OF 8 REV - 01

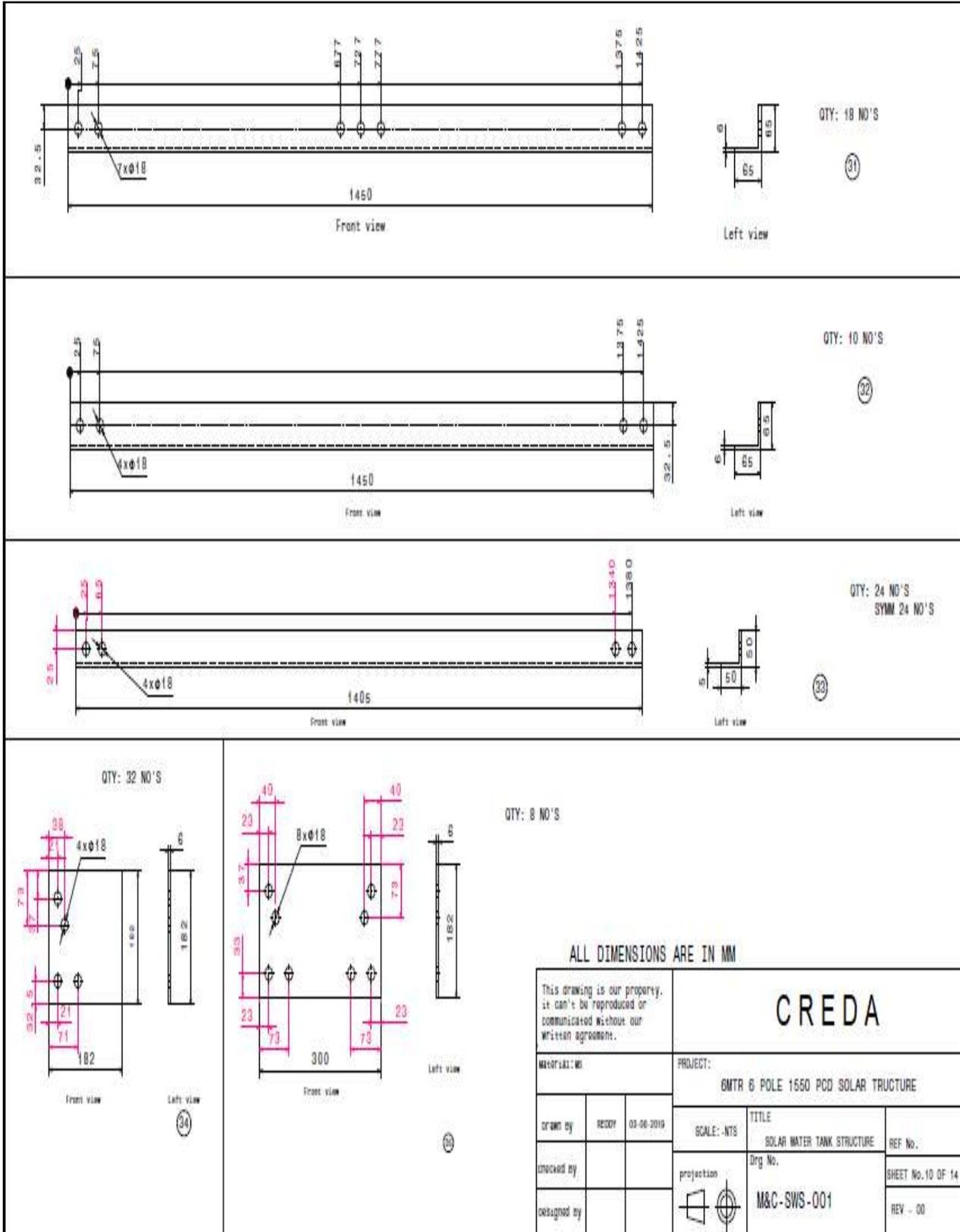


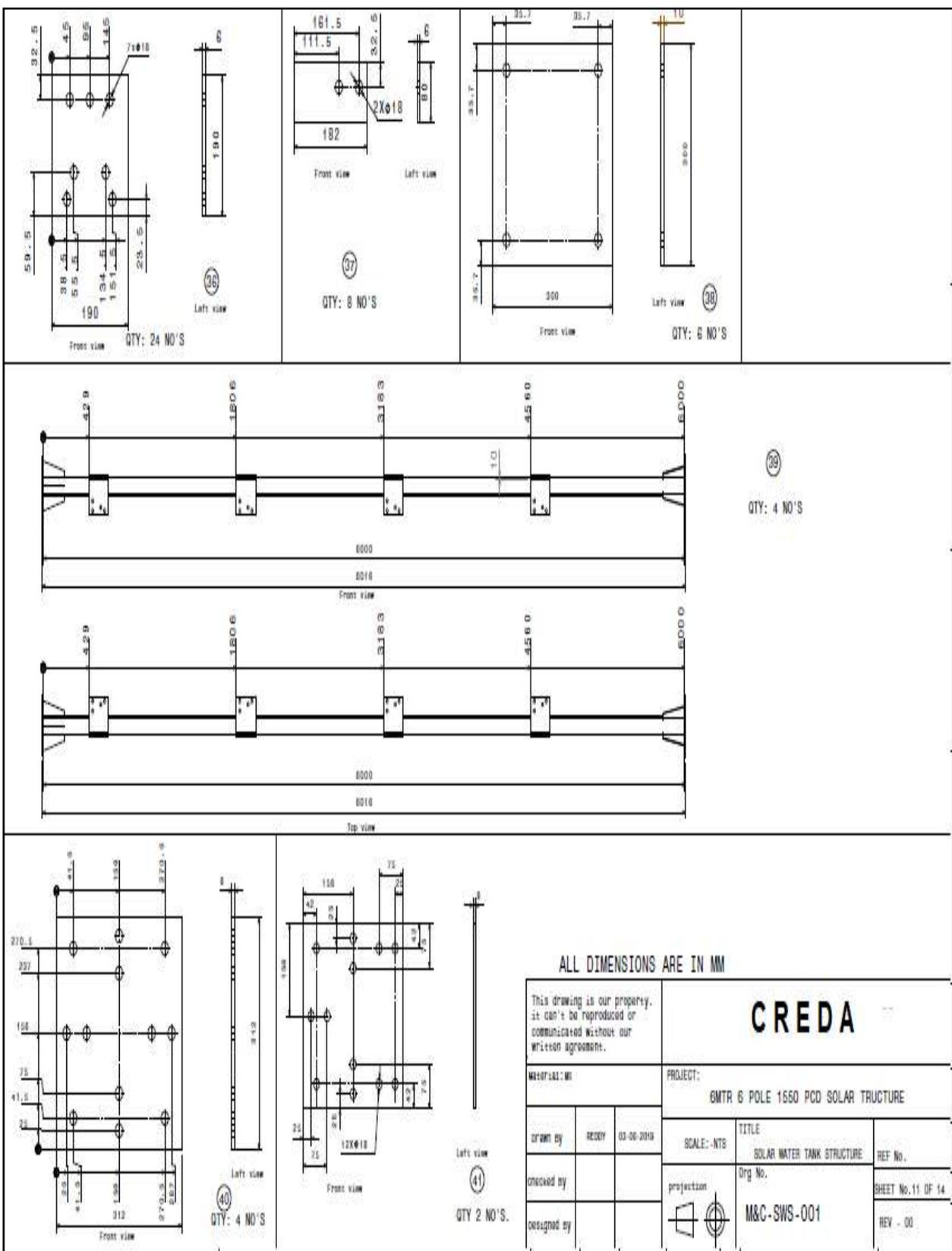
18.Complete drawing of 900W/1 HP, 6Mtr Staging, 10KL Solar Dual Pump structure & Civil Works

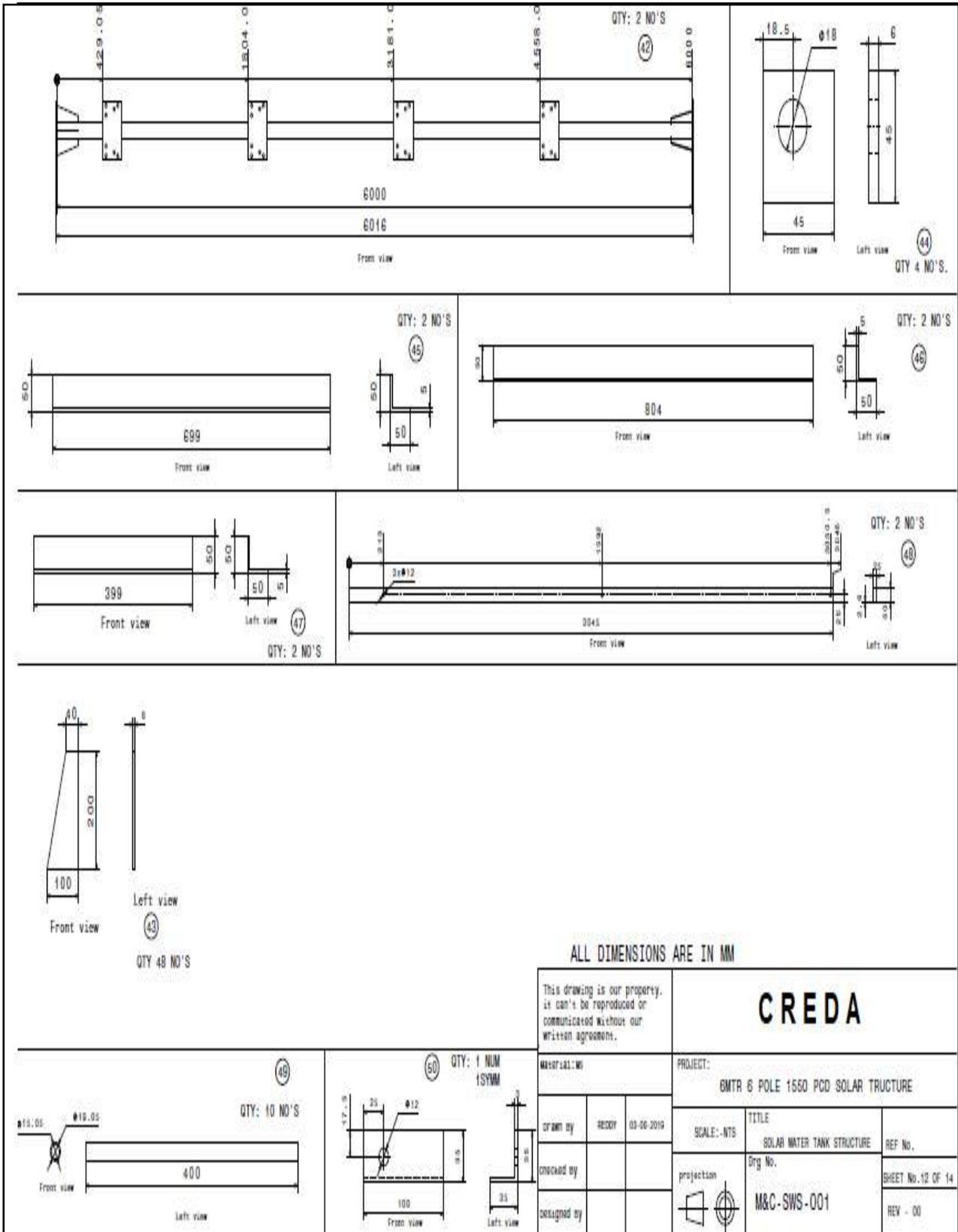


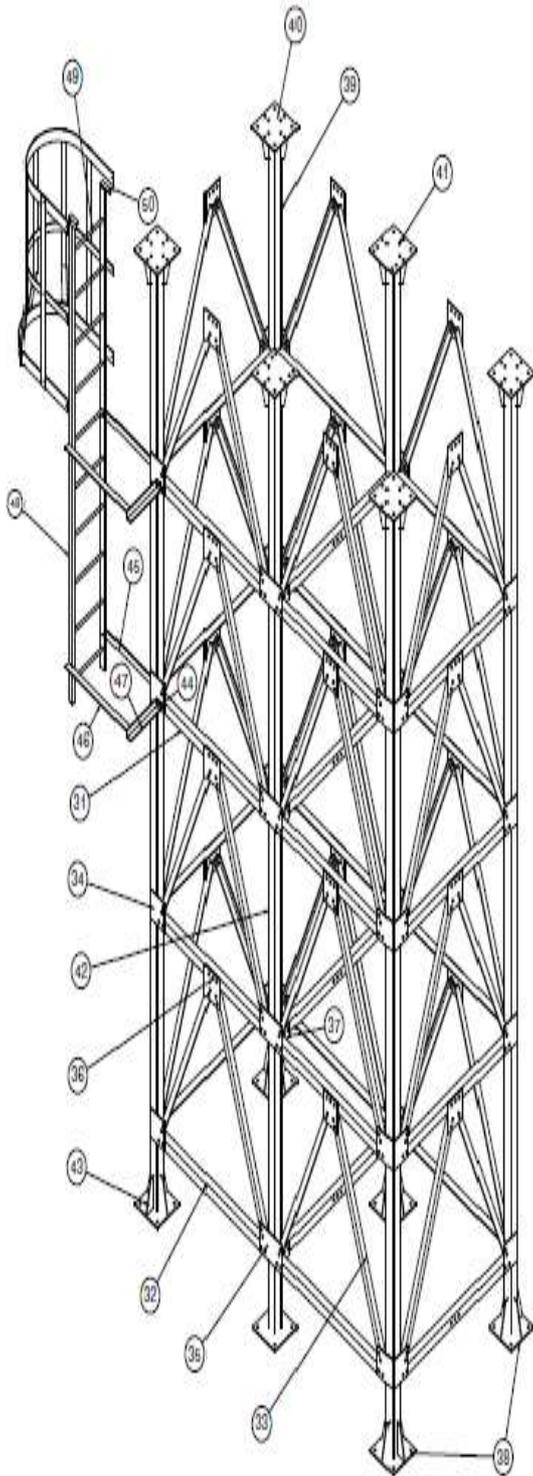


Structure Part Drawings(900WATT,6Mtr,1HP,10KL)





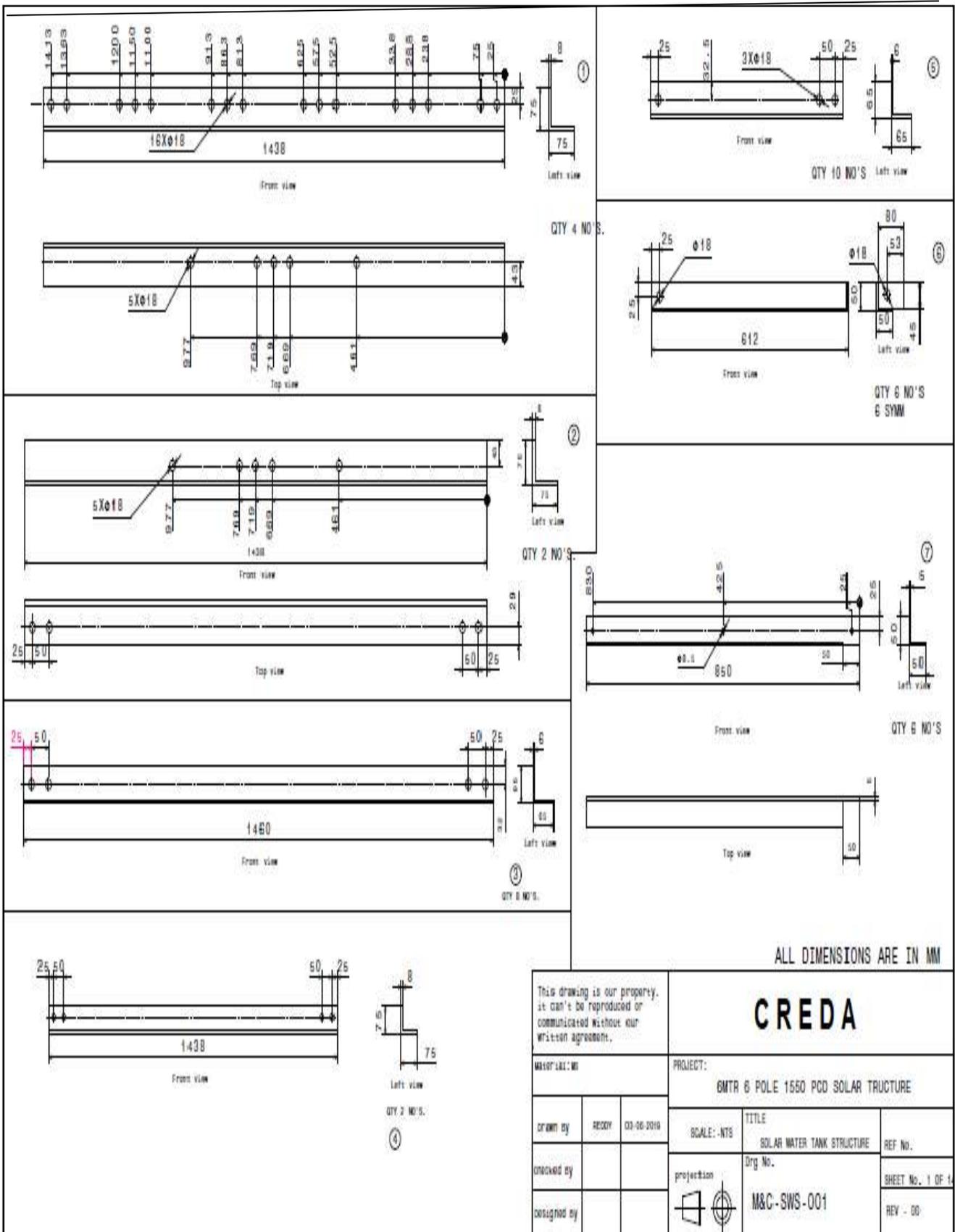


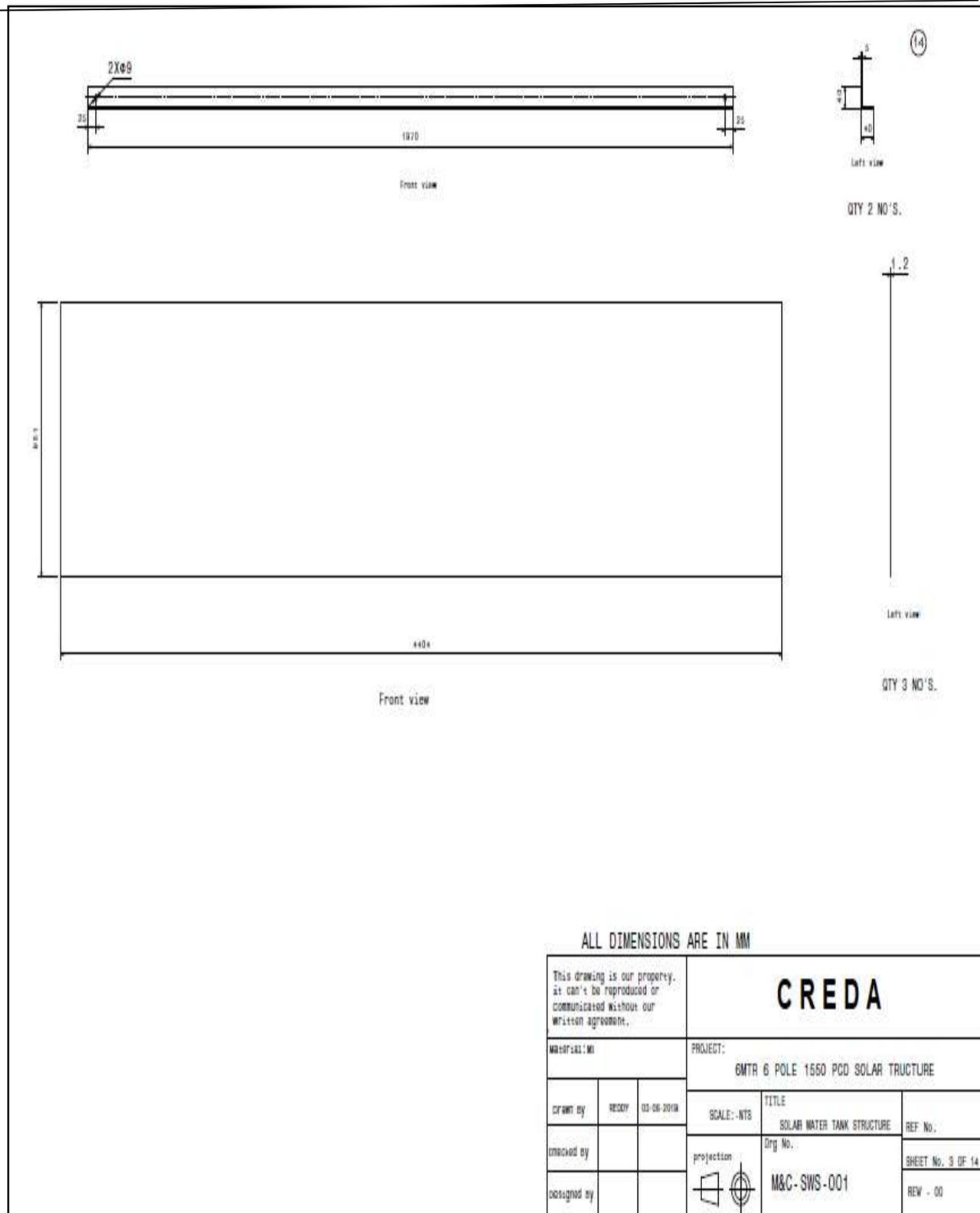


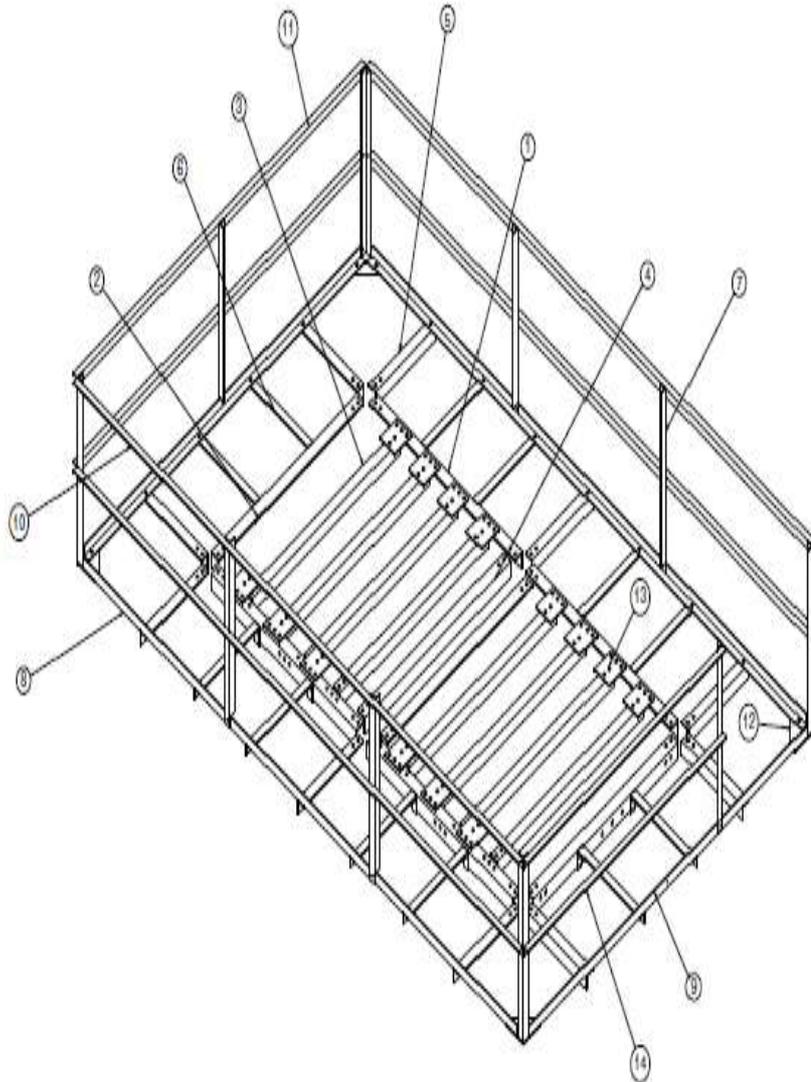
Isometric view

ALL DIMENSIONS ARE IN MM

This drawing is our property. It can't be reproduced or communicated without our written agreement.			CREDA	
Material: MI			PROJECT: 6MTR 6 POLE 1650 PCD SOLAR STRUCTURE	
drawn by	REDDY	03-06-2019	SCALE:- NTS	TITLE SOLAR WATER TANK STRUCTURE
checked by			projection	REF No.
designed by				Drwg No. M&C-SWS-001
				SHEET No. 13 OF 14 REV - 00



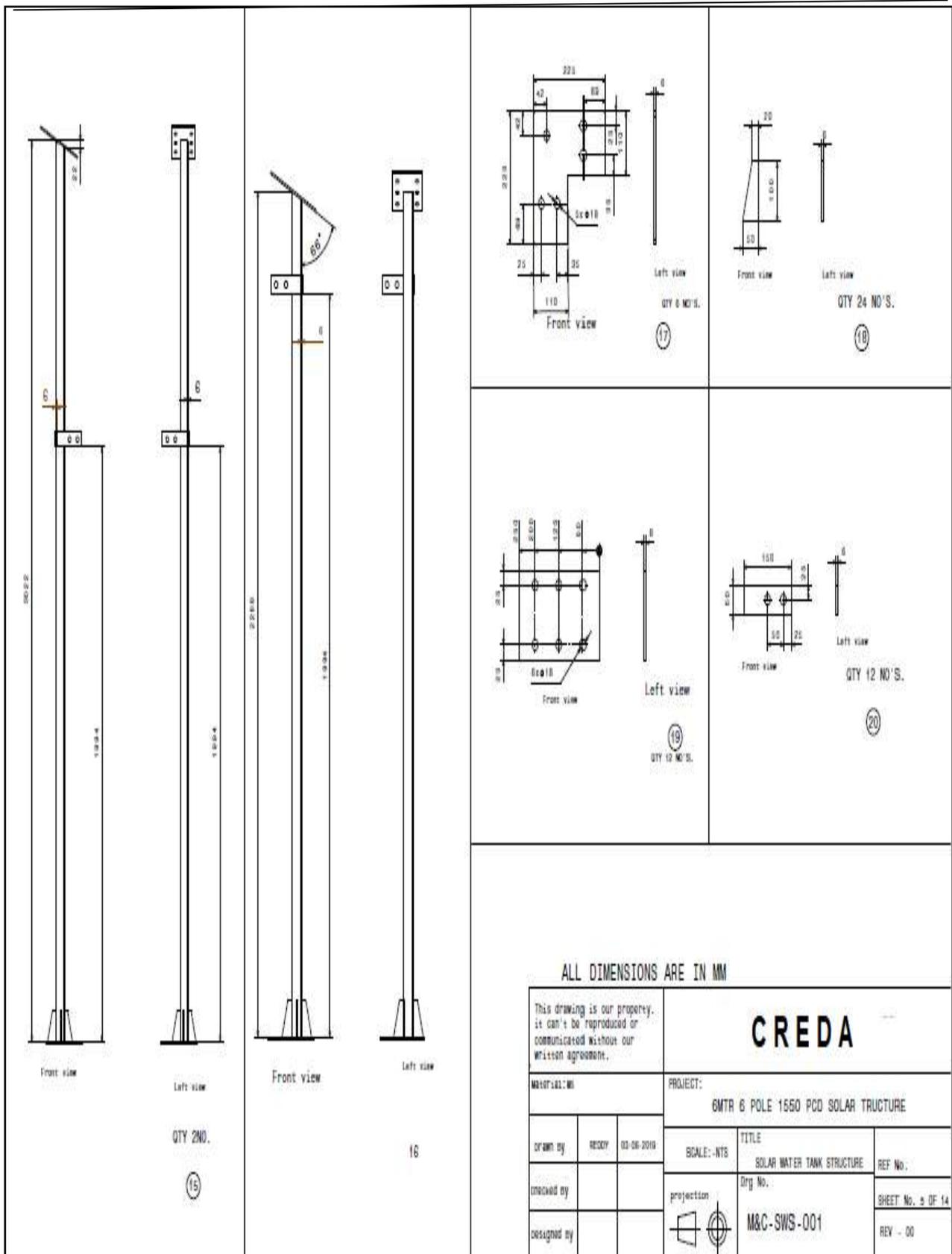


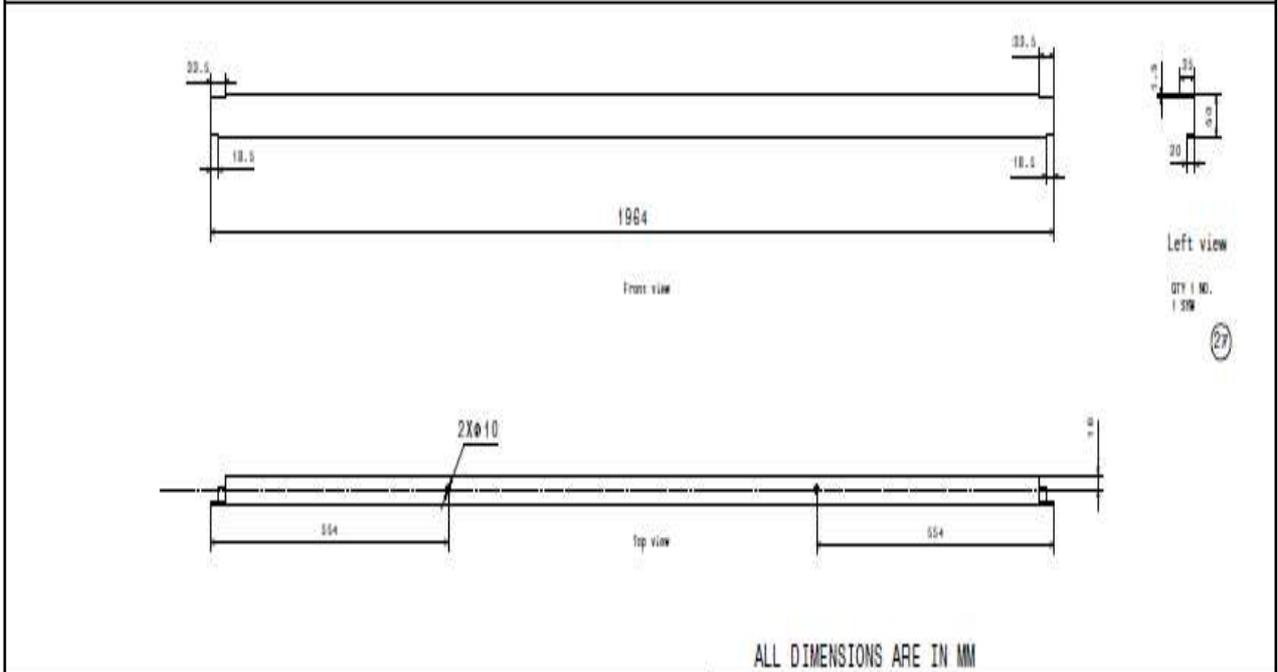
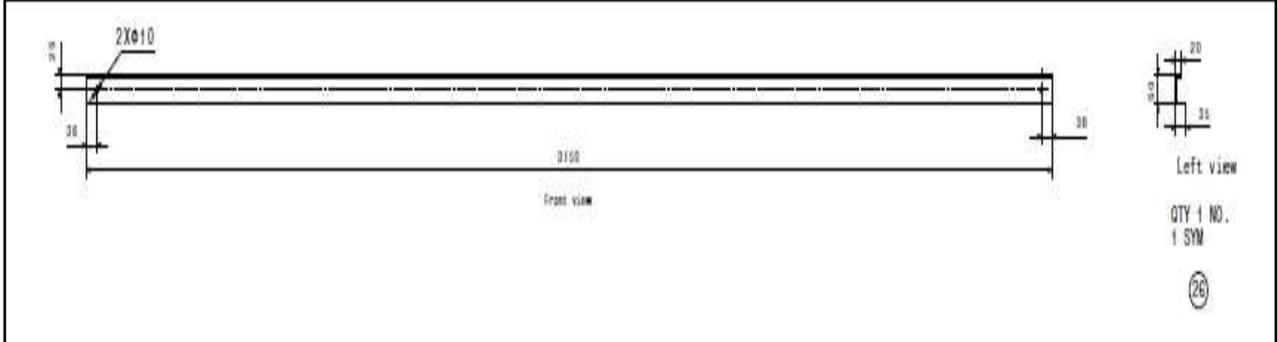
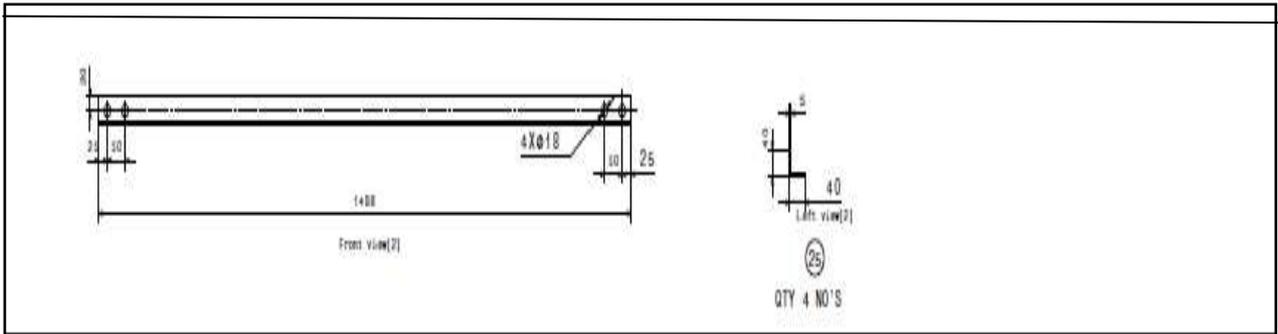


Isometric view
Scale: 1:15

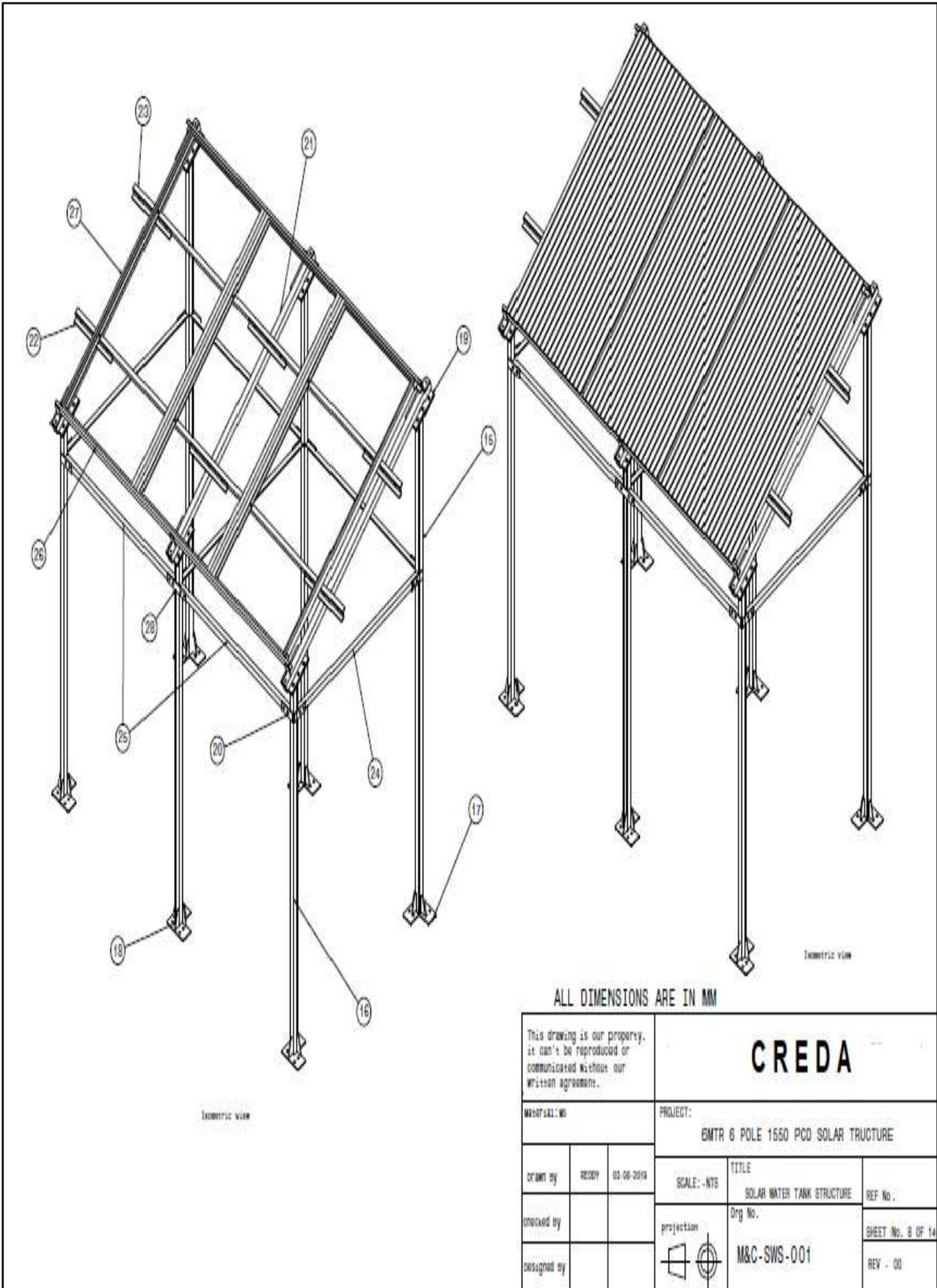
ALL DIMENSIONS ARE IN MM

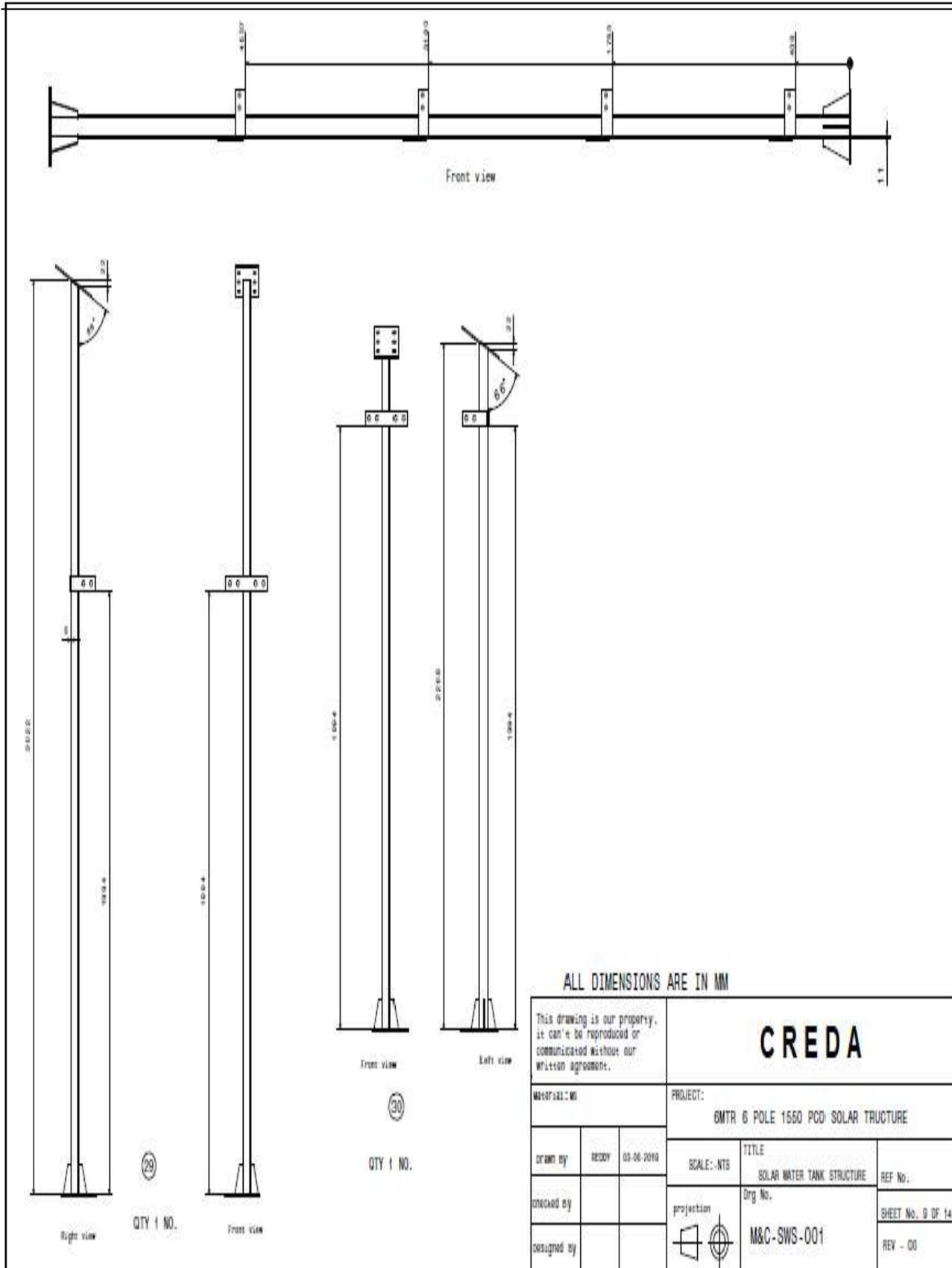
This drawing is our property. It can't be reproduced or communicated without our written agreement.			CREDA	
Material: MI			PROJECT: 6MTR 6 POLE 1550 PCD SOLAR STRUCTURE	
drawn by	REDDY	03-06-2019	SCALE:- NTS	TITLE SOLAR WATER TANK STRUCTURE
checked by			projection 	REF No.
designed by				Org. No. M&C-SWS-001
				REV - 00

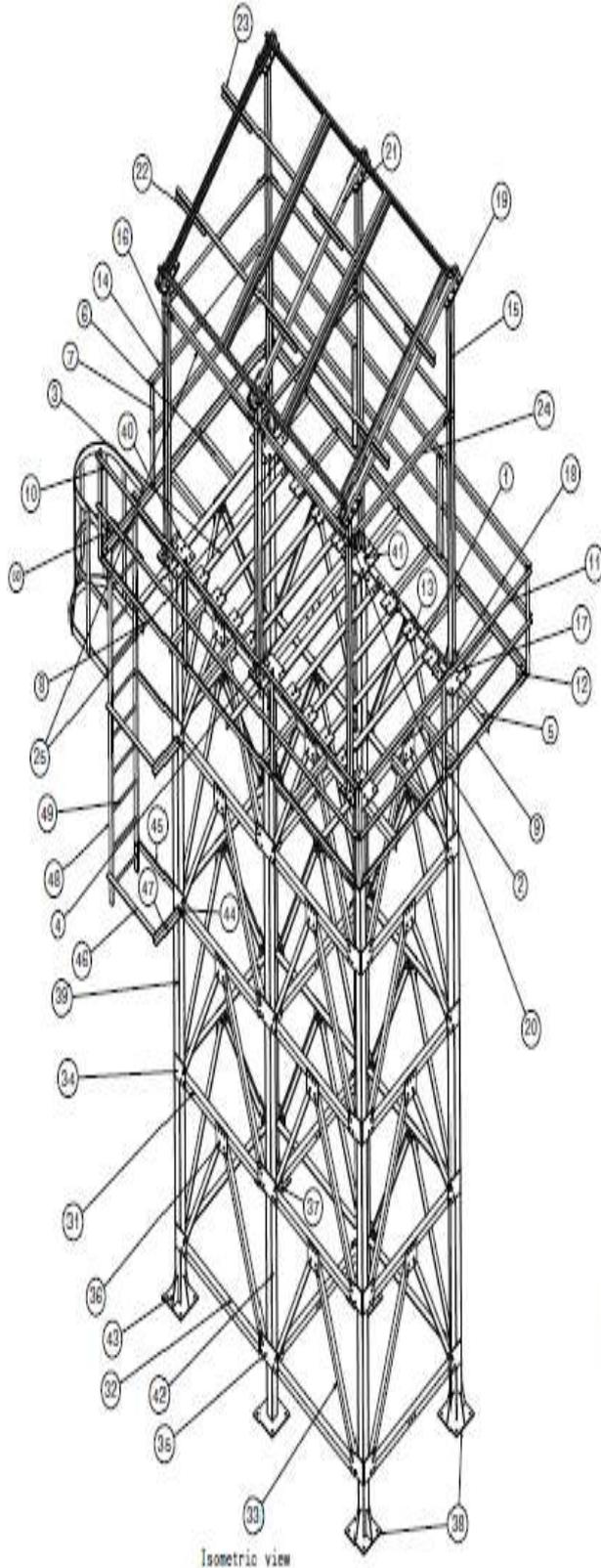




<p>Front view</p> <p>Left view</p> <p>QTY 2 NO'S.</p>	<p>This drawing is our property. it can't be reproduced or communicated without our written agreement.</p>	CREDA		
		<p>PROJECT: 6MTR 6 POLE 1650 PCD SOLAR STRUCTURE</p>		
		<p>SCALE: NTS</p>	<p>TITLE: SOLAR WATER TANK STRUCTURE</p>	<p>REF No.</p>
		<p>projection</p>	<p>Drq No. M&C-SWS-001</p>	<p>SHEET No. 7 OF 14</p> <p>REV - 03</p>
<p>created by</p>	<p>REDDY</p>	<p>03-06-2019</p>		
<p>checked by</p>				
<p>designed by</p>				





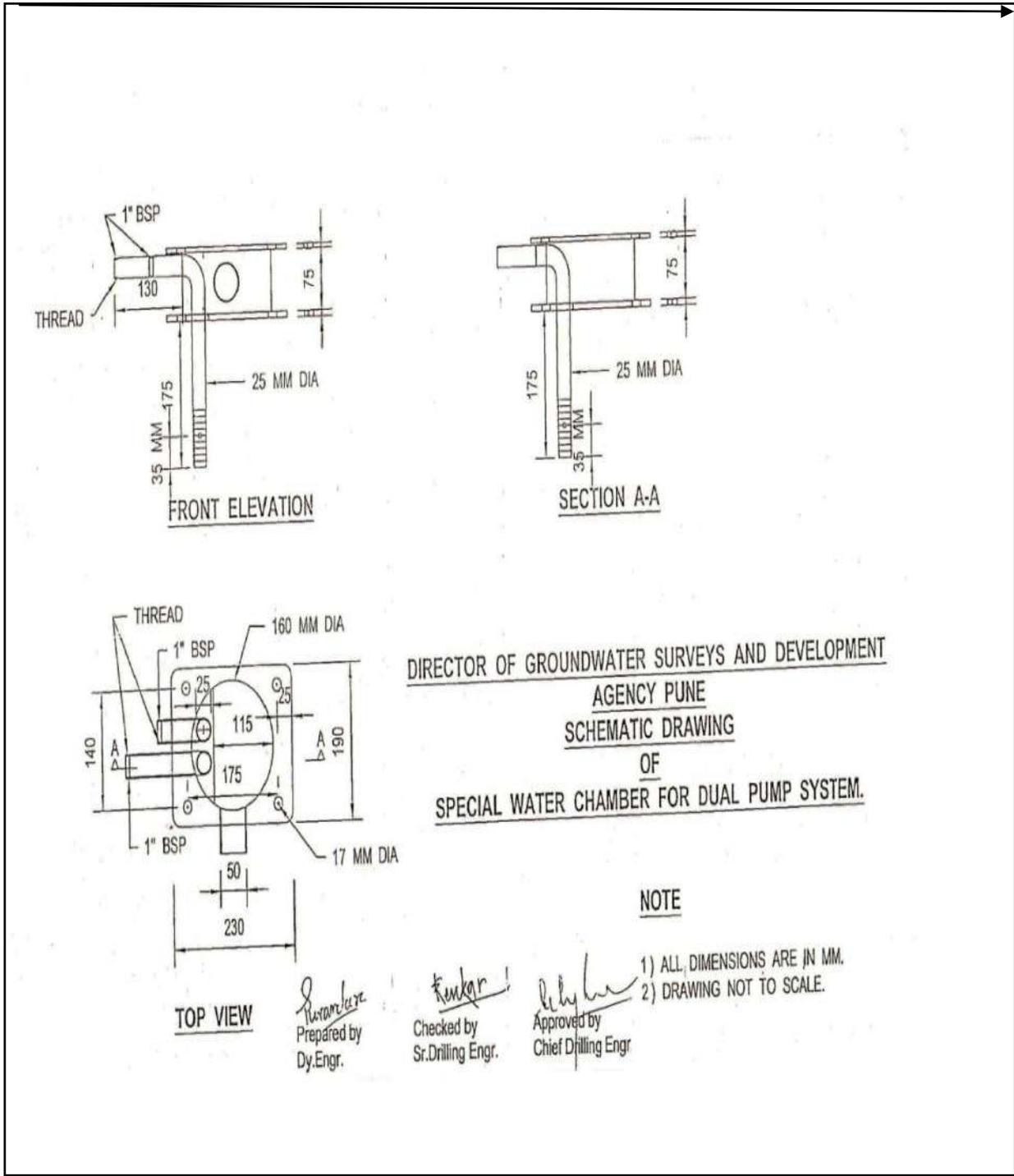


ALL DIMENSIONS ARE IN MM

This drawing is our property. it can't be reproduced or communicated without our written agreement.			CREDA		
			PROJECT: 6MTR 6 POLE 1550 PCD SOLAR STRUCTURE		
MATERIAL: MS			SCALE: NTS		TITLE SOLAR WATER TANK STRUCTURE
DRAWN BY REDDY	DATE 03-06-2019		projection 		REF No. SHEET No. 14 OF 14
CHECKED BY			Org No. M&C-SWS-001		REV - 00
DESIGNED BY					

ANNEXURE-IV

19. Complete drawing Special Water Chamber for installation of Solar Dual pump in existing hand pump



Special Water Chamber

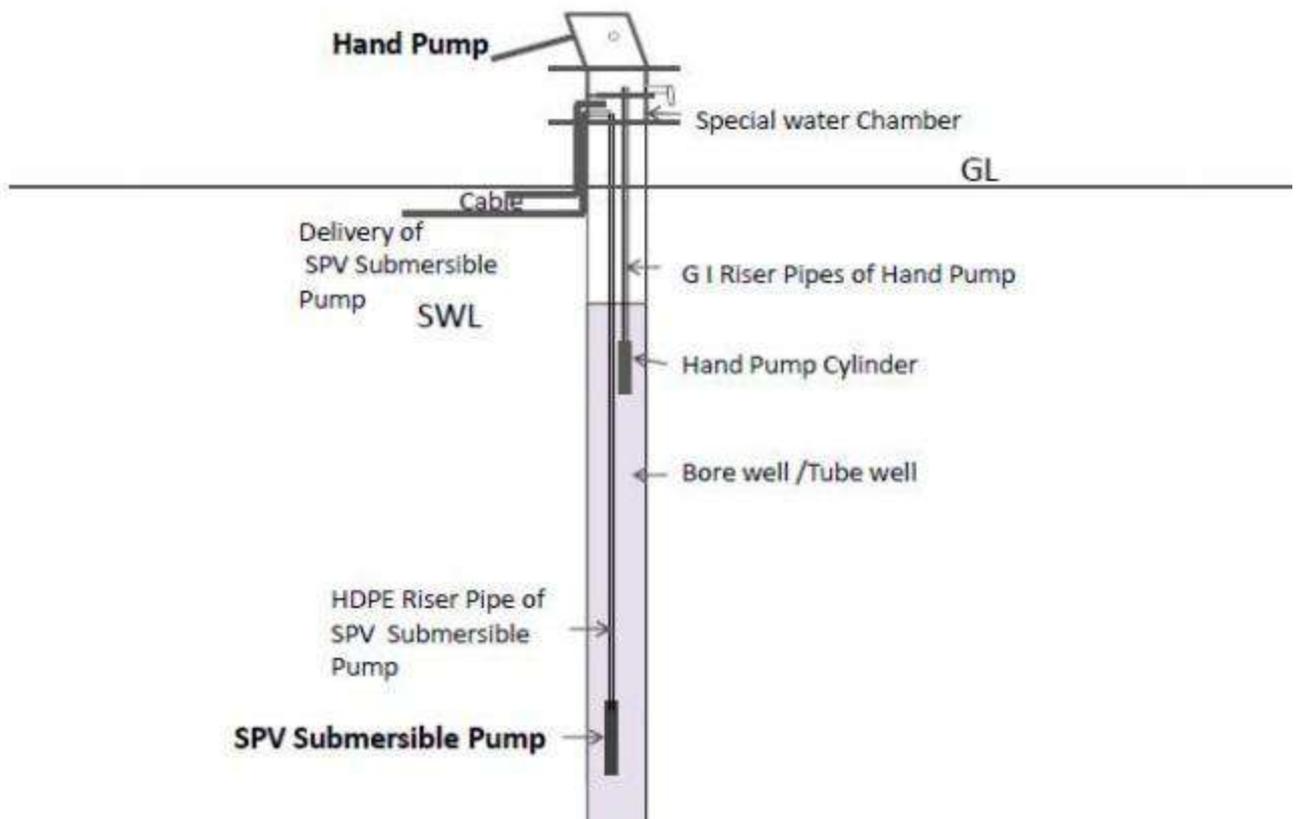


Inlet for rooftop rainwater harvesting



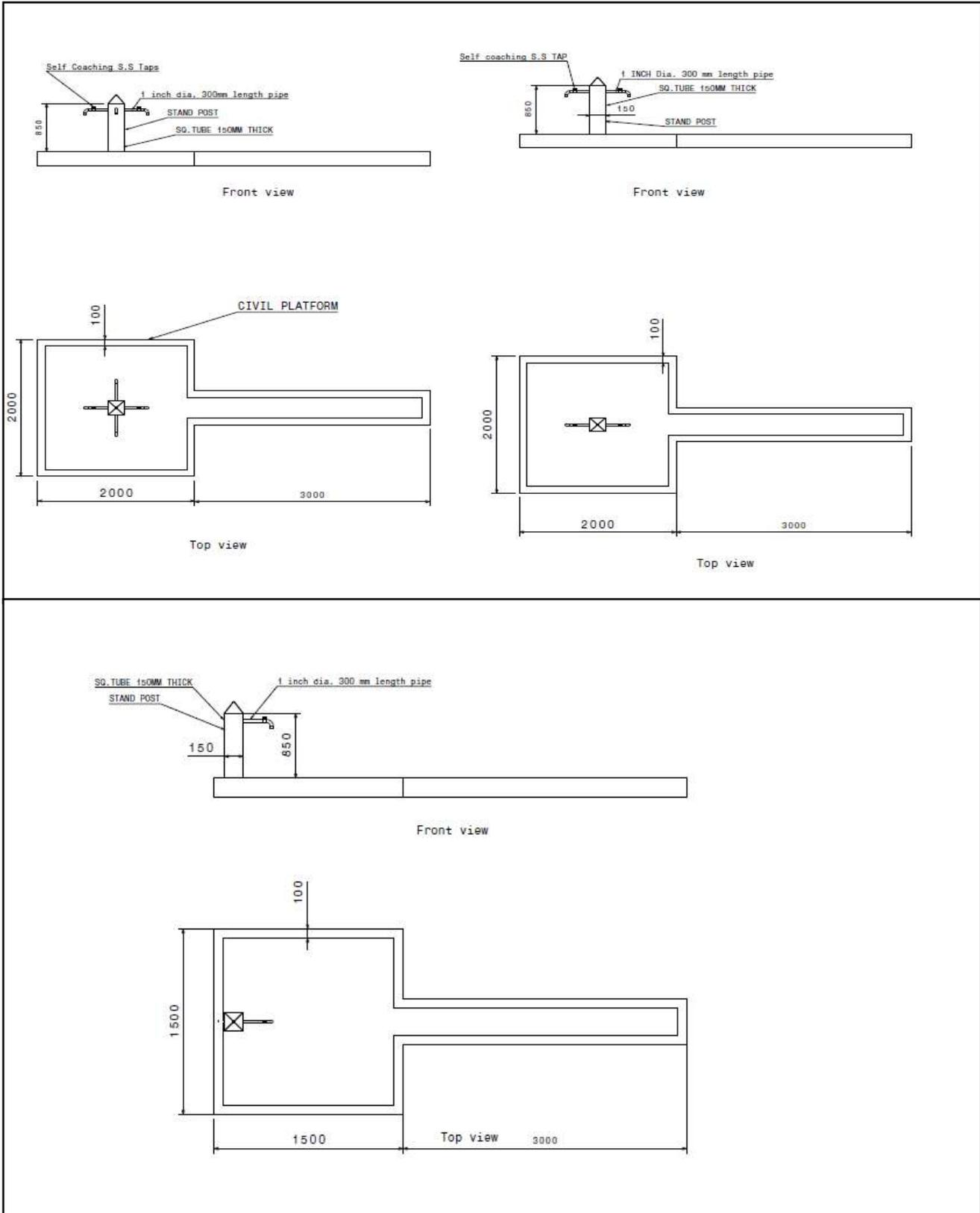
Bend Nipple

Schematic Drawing of Solar Energy based Dual Pump System. Arrangement of two pumps in one Bore well



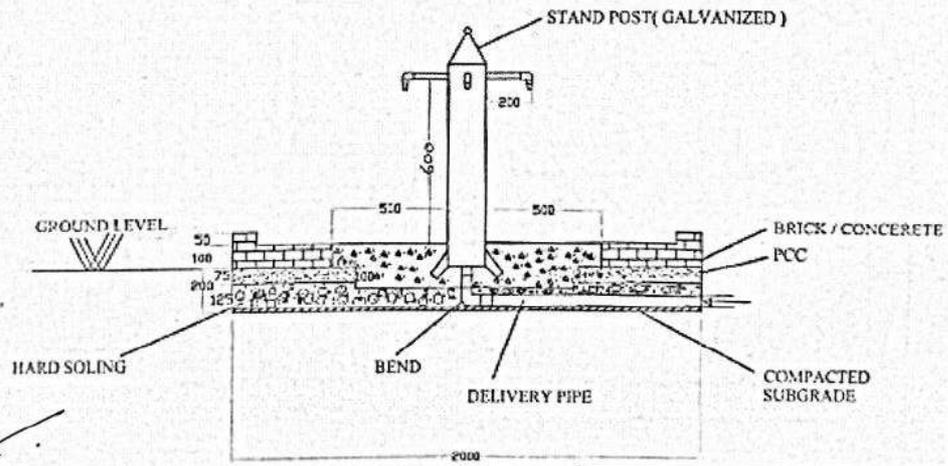
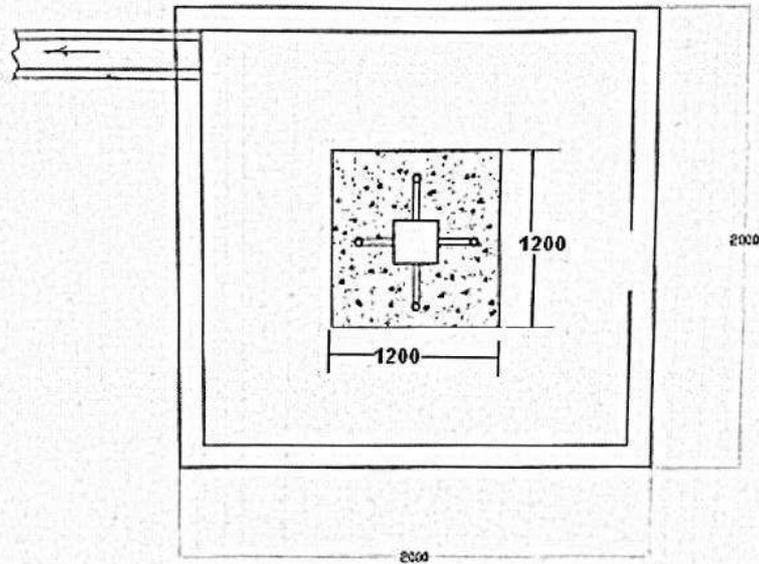
20. Complete drawing of Stand Post with all civil works

ANNEXURE-VI



WATER STAND POST FOUNDATION

TOP VIEW



FRONT VIEW

R. Khare
RAJIV KHARE
Superintending Engineer
C.G. State Renewable Energy
Development Agency (CREDA)
H. O. RAIPUR

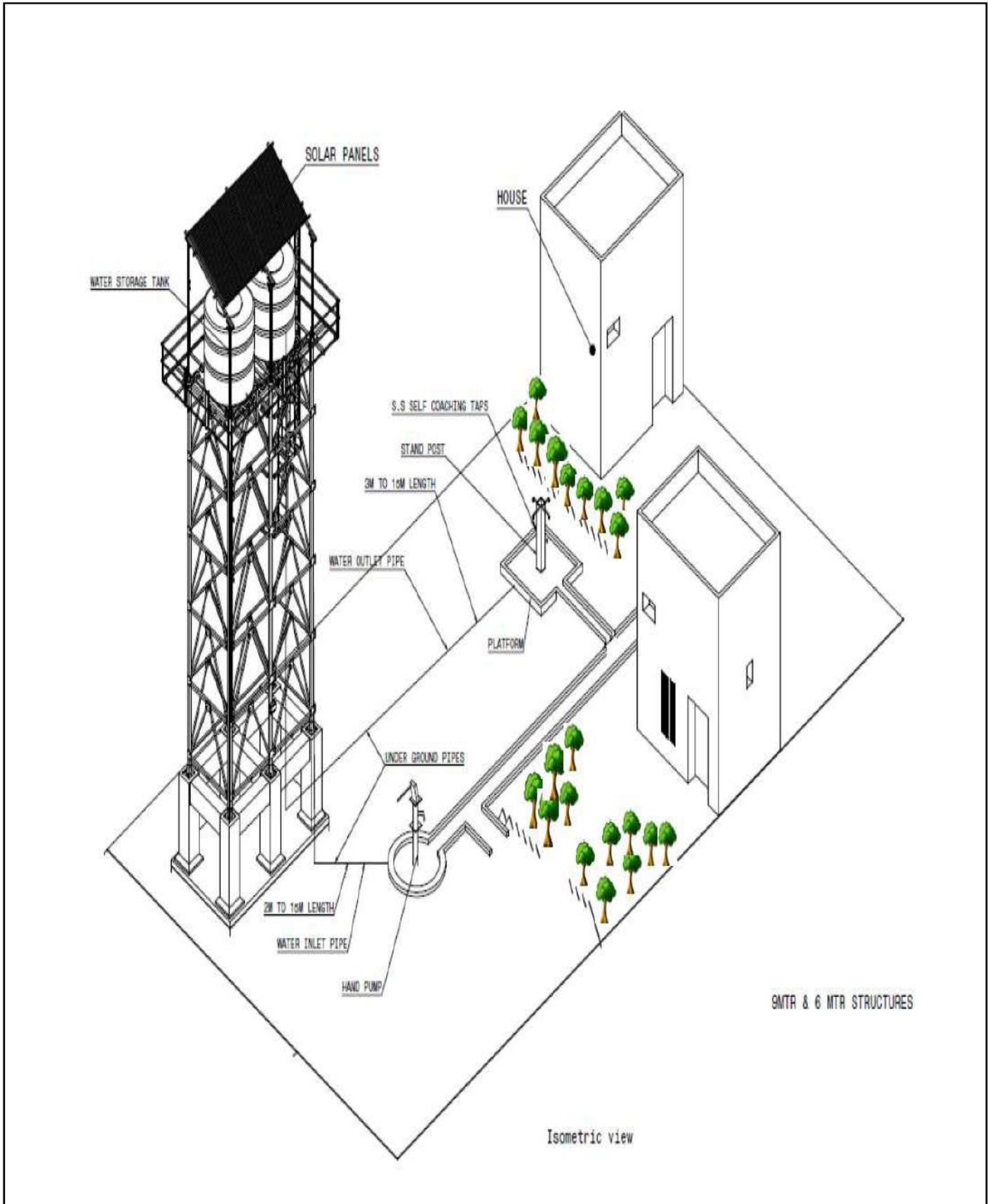
Approved Drawing of
Standpost and its Foundation

CREDA HO RAIPUR

1) ALL DIMENSIONS ARE IN MM
2) CONCRETE FOUNDATION COMPOSITION AS 1 PART CEMENT : 2 PART SAND : 4 PART METAL
3) FOUNDATION PLAN WILL VARY AS PER CONDITION OF GROUND FORMATION

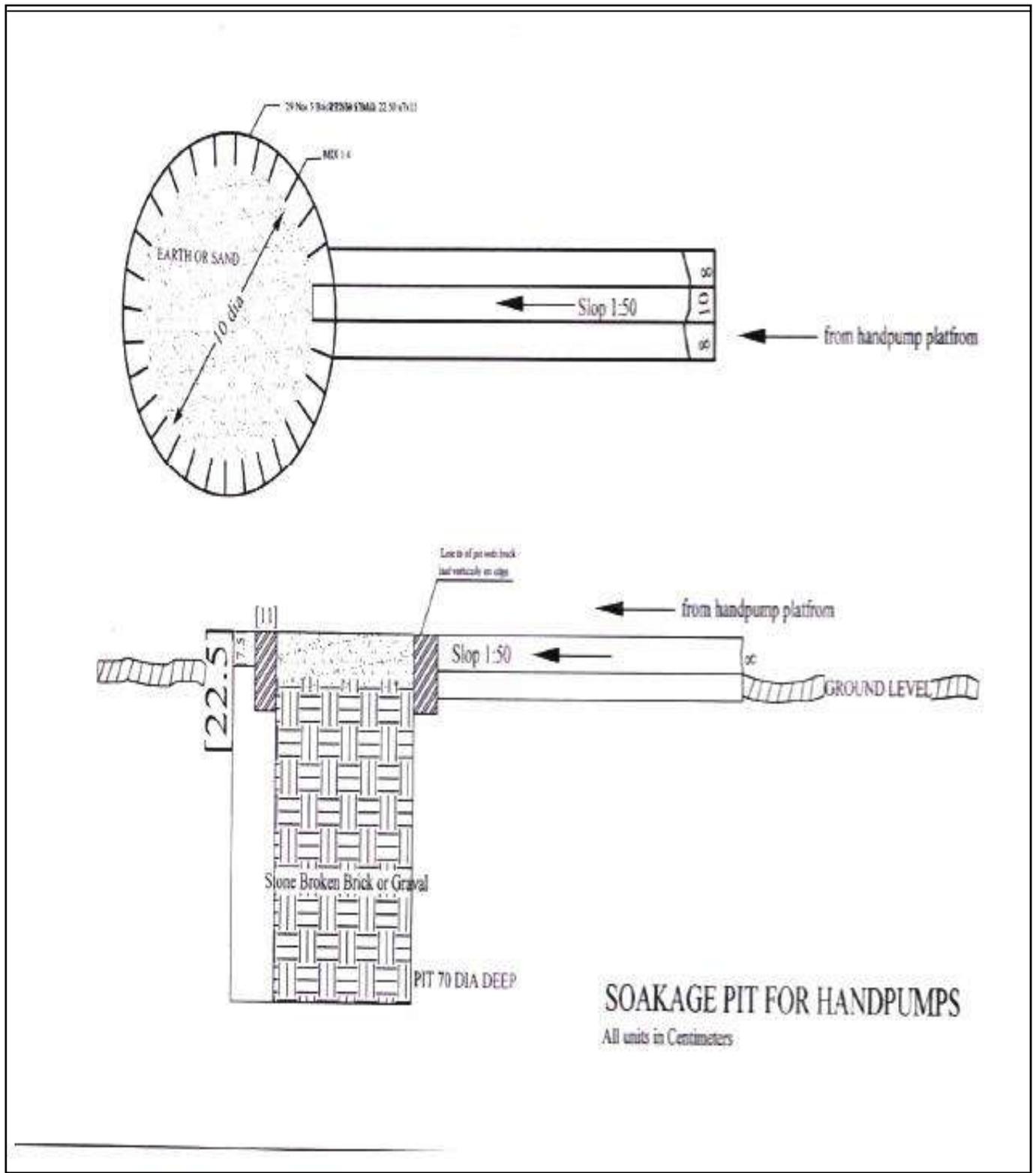
21. Typical Layout of solar Dual Pump Installation

ANNEXURE-VI



ANNEXURE-VII

22.DRAWING OF SOAKAGE PIT



For specification details please read page no 43

24. I&C PROCEDURES FOR SOLAR WATER PUMPING

Purpose

This document describes the Quality Assurance/Quality Control (QA/QC) procedures that should be used for the entire duration of the construction of a Photovoltaic (PV) pumping systems. These procedures are to be completed by the appropriate site personnel (project quality team) – District Officer, Service Providers, Contractors, subcontractors, and third party test & inspection representatives deployed for the project.

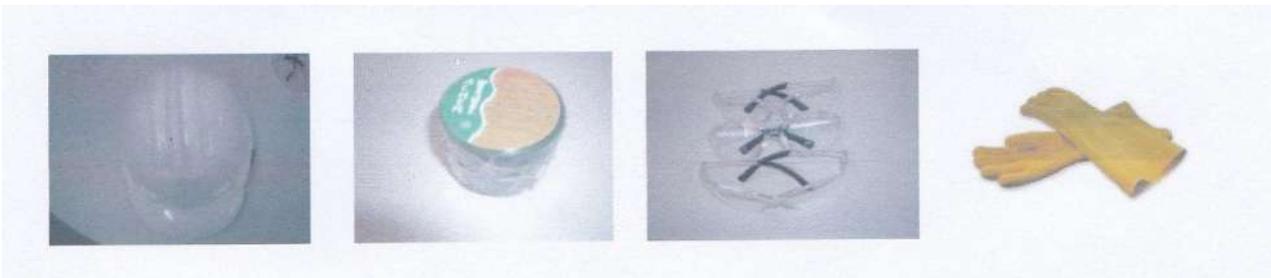
These procedures enable the project team to deliver a quality project that meets the CREDA design and construction standards, plus prevents defects that could affect quality, reliability, and performance of the Photovoltaic (PV) pumping system benchmarking performance and, thereby increasing useful life of the system.

Pumping System Project Operating Procedures

Safety

ELECTRICITY IS DANGEROUS- HANDLE WITH CARE. WHEN SEVERAL PANELS ARE CONNECTED TOGETHER THERE CAN BE HIGH VOLTAGES PRODUCED.

- Do not short circuit solar modules without any reason, a short circuit can lead to spark and even cable damages. All open ends of cables are insulated
- Ensure personal safety during excavation, erection and material handling.



Survey Works

- For excavation, the marking of the block needs to be done as per the approved block drawing. Visual/Physical inspection is to be undertaken as per drawings
- Foundation marking needs to be undertaken as per approved construction drawings. The position of the foundation with respect to the module mounting needs to be ascertained by physical measurement

Excavation works

- Nature and type of soil needs to be ascertained visually before excavation
- Initial ground level needs to be marked before start of the excavation as per the approved construction drawings
- Final Shape and dimension of the excavation along with final excavation level needs to be measured as per the technical specification in the construction drawing.



Compaction of filled soil

- Soil quality and water level needs to be visually inspected for each site before PCC bedding. Soil compactness needs to be visually checked for each site.

Construction Materials

- Cement needs to be procured from ISI certified brand with minimum grade of cement of **OPC 43 Grade**. Cement storage needs to be done in weather tight covered storage platform and stacking of cement bags needs to be proper. Random inspection to be undertaken.

Cement used*	Mix Designation	Aggregate Max. size (mm)	Cement Content (Kg/cu.m) #	Free Water Cement ratio (max)	Suggested Mix Proportions C:FA:CA**	Dosage of Admixture per Cubic of cement concrete (Kg) †	Slump Obtained (mm)	Compressive strength (N/sq.mm)	
								7 days	28 days
BIRLA A1, 53 grade, OPC	M 25	20	325	0.50	1 : 2.49 : 3.81	2.60	110	24.1	TYC

* This has to be verified at site. ** Cement: Fine Aggregate: Coarse Aggregate TYC Test Yet to be Conducted
Minimum Cement Content as specified by the customer.
† Admixture used is Complast SP 430 KRM6 of M/s Fosroc Chemicals (India) Pvt. Ltd

REMARKS: (1) Coarse aggregate shall satisfy the grading requirements as per IS: 383-2016.
(2) Correction for water absorption of sand and coarse aggregate to be applied at site.
(3) Coarse aggregate of 20mm & 12.5mm shall be used in the ratio of 60:40 respectively
(4) Performance of admixture shall be checked and verified periodically at site.
(5) The mix proportions recommended above should be tried in the field using the proposed materials and finalized by observing the actual performance of the concrete mix. Suitable modifications may be necessary to suit field conditions in the light of experience as well as for the particular materials used at the site in each case.

- Coarse aggregate particle size needs to be **less than 20mm**
- Fine aggregate/MS sand particle size needs to be around 5 mm with mix of foreign materials.
- **One Cube test by every contractor** needs to be tested for compression strength and basis results, compaction ratio and grade of material will be established, which will be followed throughout the project. If required, basis site requirements, separate cube test can be undertaken to establish site specific compaction ration/material mix.

Reinforcement Steel and Placement

- Reinforcement steel needs to be free of cracks, surface flaws and lamination as per technical specification under IS: 1786, IS:432 and IS:1852
- Bending of Bars and tolerance levels needs to be established as per IS:2502
- Spacing of bars, reinforcement cage placement is to be visually inspected as per IS:2502 and approved construction drawings
- Reinforcement bar centre line alignment, depth and verticality needs to be reviewed as per approved foundation drawings.



Concrete

- Concrete trial mix and design mix is to be tested in lab as per IS:456, SP:23, IS:10256. One cube test per contractor is to be tested for crushing strength as per IS:456
- Dimension and visual examination for finished concrete with minimum curing time of 7 days is to be undertaken. The cured concrete block should be free from foreign and oversized aggregates.

Raw Materials Inspection

- Raw material are to be procured from reputed manufacturer with ISI branded, CM/L branded with material test certificate to be submitted for inspection and clearance.



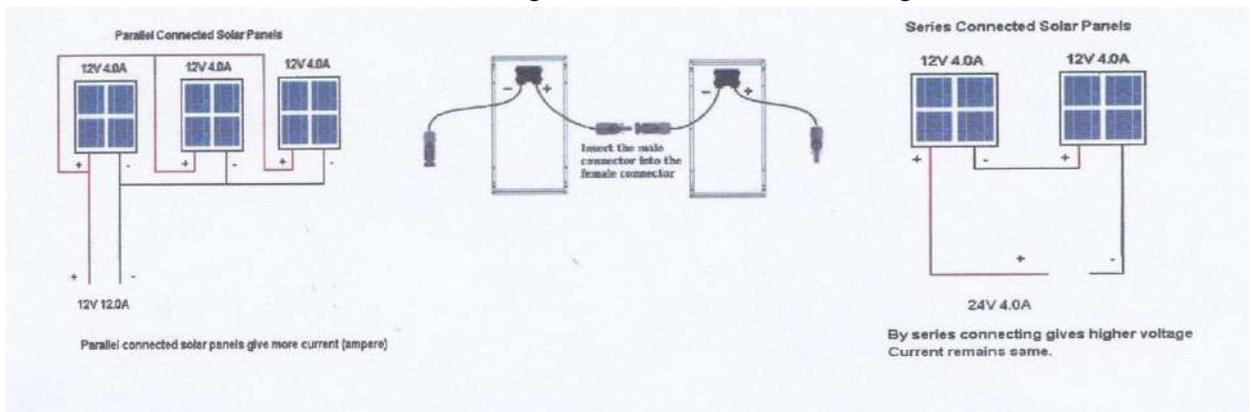
Item : HDPE –pipe.
**Type : For AC 3HP/ 5HP, DC 3 HP – PE 80/PN6,
 ——— DC 5 HP – PE100/ PN 8**
 Ref. standard : IS 4984/ Drawing. Application-
 Irrigation ASTM D for drinking water.
 Quality check: ISI mark, Grade, thickness, diameter,
 visual check on crack/ ovality, lumps, colour change,
 thickness variation, RTC

MMS and Module Assembly

- Structure parts needs to be numbered along with SS hardware. Assembly is to be undertaken as per steps illustrated by Manufacturer. First system per contractor will be treated as a demo system to establish key work practices for each contractor.
- Module mounting on tilt angle and orientation needs to be carefully done with hardware tightening as per standard operation procedures. Torque wrench is required for tightening all module hardware. MMS assembly to be done in line with the installation drawing and ensure proper alignment and tightness with torque wrench. Ensure antitheft hardware locking with torque for each bolt to be ensured as per below mentioned table. After tightening the nut, permanent marking to be done to ensure that proper tightening done.

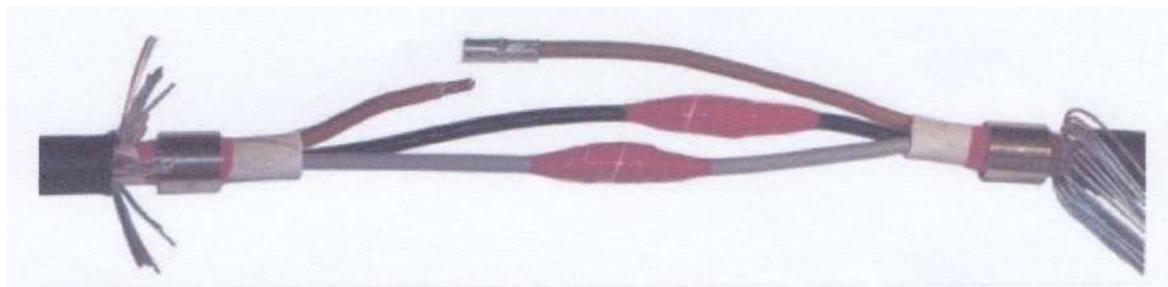


- **Square washer** used for Module fixing to structures as square washers have a larger surface area than round washers. This type of washer is also specified for handling vibrations especially in high speed wind zones.
- Module wiring as per wiring diagram to be undertaken taking care thatn no physical damage to insulation is to be accepted.
- String and array testing for designed Voc needs to be checked.
- Ground clearance with degree of tilt and rotation is to be clearly identified to avoid damage to modules. Each modules frame is to be grounded with structure earthing.



Pump Assembly and Testing

- Borewells needs to be checked for quality of water and cleanliness. Inclination angle needs to be confirmed as per manufacturer's manual.
- To test the pump in, you can test it dry by watching the pump shaft and running it for only a few seconds. The metal label on the pump has an arrow to indicate the proper direction of rotation. It can be run dry safely for about 5 seconds. This gives more than enough time to observe the direction of the shaft.
- Splicing of wires needs to be undertaken as per manufacturer's recommendation. Adequate length of insulation is to be removed so that multi-core cable joints can be visually separated with crimped connectors. Rubber sleeve needs to cover the crimped connector for additional protection with electrical protective tape on it.



- Each individual should be tested as per details in manufacturer’s manual.

Final Inspection and Testing

- Voc check across each module string for each installation is to be verified for each installation
- Earthing check for insulation resistance to be check with calibrated instrument. Approved drawing to be consulted with earthing resistance less than 5 Ohms.

List of equipment required for Installation & Commissioning of Pumps

Equipment for Solar Pumping System						
S. No.	Instrument required	How it looks like	Purpose	Range	Quantity (min)	Remarks
1	Cube mould		For making cubes	150x150x150	36 no.s	One mould can be kept.
2	Measuring Tape		For measurement	0-5mtr 0-10mtr	01	
3	Spirit level		For level checking	Sensitivity 2 mm for a tilt of 0.005 degree	02	
4	Inclinometer		Incline measurement	Measurement range 0- 360 ⁰ (4 x 90 ⁰)	01	
5	Torque Wrench	Reputed Make i.e Taparia 	For tightening module hardware	Measurement range 0-100 N -m	01	
6	Earth resistance tester	Reputed Make	Waco make or equivalent	< 0-1-10 -50 ohms	01	
7	Tong tester	Reputed Make	Mico	0-20 A, 0-1000 V	01	
8	Flow tester	Reputed Make as per requirements.			01	
9	Digital Multimeter	Reputed Make	Mico	0-20 A, 0-1000 V	01	
10	Tools	Spaner, rachet, cutting piler, wire stripper, insulation tape, crimping tool, hammer.	Reputed make	As per requirements	1 set/ contractor	General tool

25.e-Price Bid

e-Price Bid (For supply, installation, Commissioning & Testing of Pump)

Schedule of Rates for SPV Dual Pump- Submersible Pumps

(e-bidding as per Specifications & Scope of Work of No.2064/CREDA/HOR/RE-III/2019-20 Dated : 09.06.2020)

Rates for design, Supply, Survey, Installation and Commissioning of **Solar Photovoltaic Dual Pumps (SDP)** anywhere in the State of Chhattisgarh as per tender specifications.

Sl. No.	Particulars	Rates for supply of Solar Dual Pumping System with Solar Module, Controller, MTMS Structure, L.A, Earthing-02 Numbers., Rope wire, Cable, PVC & GI Pipes and other required BOS and with five years warrantee, System insurance testing Excluding GST	Rates for Installation and commissioning of solar dual pump system including Civil work (Structure, Standpost, Hand pump plate form, soakage pit), Excluding GST	Rates of 05 years CoMC excluding GST	TOTAL AMOUNT IN RS. (Ex.GST)
		A	B	C	D=A+B+C
A	SPV Dual Pumps 900 Wp/1.0 HP DC Submersible with 6 Meters staging and 5000 Litres Storage Tank				
B	SPV Dual Pumps 900 Wp/1.0 HP DC Submersible with 6 Meters staging and 10000 Litres Storage Tank				

Certified that rates quoted above are as per the requirement, specifications, and terms & condition mentioned in the bid document.

Above rates are FOR anywhere in the State of Chhattisgarh inclusive of roadworthy packing, loading, unloading, all types of incidental expenses, insurance, duties and any other job required to properly execute the work with 5 years warrantee as mentioned in the bid document(Above rates applicable for pump models for each category as per MNRE and CREDA Specifications stated in Bid document (Page 25-97)) . The GST payable on the bill produced for payment to CREDA shall be paid in addition to above quoted price as per rate of GST applicable at the time of billing.

(No other cost will be claimed above the price quoted & the applicable GST).

Signature of the Authorized Signatory :

Seal of Company :

.....

Date :

.....

26.DRAFT AGREEMENT

CONTRACT AGREEMENT BETWEEN Chief Engineer Chhattisgarh State Renewable Energy Development Agency (CREDA) Raipur AND M/s..... Represented by THIS CONTRACT AGREEMENT against Bid No.2064/CREDA/HOR/SDP/2020-21 Dated : 09.06.2020 (also referred to as "Service Contract") is made on the XXth day of ----- 2020.

BETWEEN

(1) Chief Engineer Chhattisgarh State Renewable Energy Development Agency (CREDA) Raipur a society incorporated under the laws Society Registration Act 1973 , (1973 , Sr. No. 44) (with amendment from time to time) and having its Registered Office at VIP Road Near Energy Education Park, Village- Fundhar, Raipur and (hereinafter called "The Employer" and also referred to as "CREDA")

And

(2) Represented bya company incorporated under the laws of Companies Act 1956/2013/ Partnership firm/ Proprietorship firm/Consortium (as applicable, with amendment from time to time) and having its Principal place of business at and Registered Office at.....hereinafter called "The Contractor" and also referred to as "....."

Whereas the contractor has offered to enter into contract with the said CREDA for the Supply of Solar dual Pumps and for installation, commissioning and comprehensive operation & maintenance of Solar Dual Pumps with 5 years Warranty for the capacities of 900W/1HP/6Mtr/5000Litres,900W/1HP/6Mtr/10000Litres.

Wide Bid No.2064/CREDA/HOR/RE-III/SDP/2020-21 Dated : 09.06.2020 on the terms and conditions herein contained and the rates approved by the CREDA (Letter No. dated annexed here to) have been duly accepted and where as the necessary security deposit shall be furnished in accordance with the provisions of the Bid document and whereas no interest will be claimed on the security deposits.

Now these presents witness and it is hereby agreed and declared by and between parties to these presents as follows -

- 1) The Contractor shall, during the period of this contract, that is to say from to or completion thereof, until this Contract shall be determined by such notice as is hereinafter mentioned, safely carryout, by means of labours employed at his own expenses and by means of tools, implements and equipment etc. to be supplied by him to his labour at his own expenses, for installation of "Solar Dual Pumping systems" as described in Bid documents. (annexed to the agreement).
- 2) The NIT (Notice Inviting Bid), Corrigendum to NIT, Notices, Bid documents (Qualifying, Technical and Financial), approved rates annexed hereto and such other additional particulars, undertaking, instructions, general conditions of contract, Scope of work, Technical specifications of Solar Pumping Systems and Annexure therein, engineering documents, detailed specifications of BOS & drawings, so far they relate to the Bid No.2064/CREDA/HOR/SDP/2019-20 Dated : 09.06.2020 as may be found requisite to be given during execution of the work shall be deemed and taken to be an integral part of the contract and shall also be deemed to be included in the expression "The Agreement or "The Contract "wherever herein used.
- 3) The contractor shall also supply the requisite number of workmen with means & materials as well as tools, appliances, machines, implements, vehicles for transportation, cartage etc. required for the proper execution of work within the time prescribed in the work orders and /or as per the Bid conditions.

- 4) The Engineer in Charge or his authorized representative (s) shall be entitled at all reasonable times to inspect and supervise and test during installation and commissioning. Such inspection will not relieve the eligible SI from their obligations under this contract.
- 5) Material can be inspected before dispatch or in transit by the authorized representatives of CREDA at the factory at the cost of the eligible SI, if desired by CREDA. CREDA reserves right to inspect the material at Godowns / Temporary Stores before dispatch and also at works sites.
- 6) CREDA shall deduct TDS for Income Tax, applicable cess on Civil Work etc. under various acts and deposited with the appropriate authority. Costs and taxes before execution of agreement with CREDA so as to ensure tax deposition as per Government Rules accordingly.

7) ELIGIBLE SYSTEM INTEGRATOR'S DEFAULT LIABILITY -

CREDA may by written notice of default to the eligible SI, terminate the contract in circumstances detailed hereunder -

- (a) If in the opinion of the CREDA, the eligible SI fails to complete the work within the time specified in the Work Order or within the period for which extension has been granted by CREDA to the eligible SI.
- (b) If in the opinion of CREDA, the eligible SI fails to comply with any of the provisions of this contract.
- (c) In the event of CREDA terminating the contract in whole or in part as provided in paragraph (a) above, CREDA reserves the right to engage another eligible SI or agency upon such terms and in such a manner as it may deem appropriate and the eligible SI shall be liable to CREDA for any additional costs or any losses caused to CREDA as may be required for the completion of erection of the SPV Pumps and or for penalty as defined under this Bid document until such reasonable time as may be required for the final completion of the work.
- (d) In the event CREDA does not terminate the contract as provided in paragraph (a) the eligible SI shall continue performance of the contract, in which case he shall be liable to CREDA for penalty for delay as set out in this Bid document until the work is completed.

8) FORCE MAJEURE -

The eligible SI shall not be liable for any penalty for delay or for failure to perform the contract for reasons of FORCE MAJEURE such as of God, acts of public, enemy, LWE problems, acts of government, cyclone, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes provided that if SI shall submit delay notice with appropriate cause of delay to the CREDA in writing within **15 days** of force majeure. CREDA shall verify the facts and may grant such extension as facts justify. Delay in supply of any accessories of Solar Pumps etc. by the related vendors, to whom the Bidder has placed order, shall also not be treated as force majeure.

9) REJECTION OF WORKS -

In the event of any of the material supplied/work done by the eligible SI is found defective in material or workman ship or otherwise not in conformity with the requirements of this contract specifications, CREDA shall either reject the material and/or work and advise the eligible SI to rectify the same. CREDA may impose penalty for such rejection up to the 200% cost of the entire system. Habitual/repeated offenders shall be black listed/debarred to participate in the any Bid/ Activity of CREDA till further orders. The eligible SI on receipt of such notices shall rectify or replace the defective material and rectify the work free of cost. If the eligible SI fails to do so CREDA may -

- a) At its option replace or rectify such defective materials and/or work and recover the extra cost so involved from the eligible SI plus **15%** service charges of the cost of such rectification, from the eligible SI and/ or terminate the contract for balance work/ supplies with enforcement of penalty as stated above.
- b) Defective materials/workmanship will not be accepted under any conditions and shall be rejected outright without compensation. The eligible SI shall be liable for any loss/damage sustained by CREDA due to defective work **with enforcement of penalty as stated above.**

10) EXTENSION OF THE TIME -

If the completion of installation is delayed due to any reason beyond the control of the eligible SI, the eligible SI shall without delay give notice to the CREDA in writing of his claim for an extension of time. CREDA on receipt of such notice may or may not agree to extend the contract/delivery date of the solar dual pump as may be reasonable but without prejudice to other terms and conditions of the contract.

11) PENALTY FOR DELAY IN COMPLETION OF CONTRACT -

If the eligible SI fails to complete the assigned work within the schedule time specified in the Work Order or any extension granted there to, CREDA will recover from the SI as penalty a sum of **One per cent (1%)** of the system price for every delayed system per month. For this purpose, the date of taking over shall be reckoned as the date of completion. The total penalty shall not exceed **5% (Five Per cent)** of the cost.

Review of the progress of installation of pump allocated to SIs shall be done time to time by CREDA and if the progress of installation is found unsatisfactory, the allocation of entire remaining uninstalled pumps or their part of can be re-allocated to other SI as per discretion of CREDA.

12) PENALTY DUE FROM THE ELIGIBLE SI -

All costs of damages and delays for which the eligible SI is liable to the CREDA will be deducted from any money due to the eligible SI including the security deposit of any project under CREDA.

13) ELIGIBLE SI'S RESPONSIBILITY -

Notwithstanding anything mentioned in the specifications of subsequent approval or acceptance of the SPV dual Pump by CREDA, if any, the ultimate responsibility for satisfactory performance of the entrusted work shall rest with the eligible SI. If in any case the eligible SI does not complete the work as per the Work Orders issued to them then CREDA may take over the task & complete the project at the risk and cost of eligible SI.

14) RESPONSIBILITY TO RECTIFY THE LOSS AND DAMAGE -

If any loss or damage occurs to the work or any part thereof or materials/plant/equipment's for incorporation therein the period for which the eligible SI is responsible for the cause thereof or from any cause whatsoever, the eligible SI shall at his own cost rectify/replace such loss or damage, so that the permanent work confirms in every respect with the provision of the contract to the satisfaction of the Engineer. The eligible SI shall also be liable for any loss or damage to the work/equipment's occasioned by him in course of any operation carried out to him during performing the contract.

15) RESPONSIBILITY TOWARDS THE WORKMAN OR OUTSIDERS -

- The eligible SI shall have to take insurance coverage from any authorized Insurance Company against Workmen compensation due under Workmen Compensation Act and submit copy of the insurance document before issuance of Work Order.
- The eligible SI shall ensure all safety measures during execution and repairs of the work. CREDA, will, in no case be responsible for any accident fatal or non-fatal, caused to any workman or outsider in course of transport or execution or repairs of work.
- All the expenditure including treatment or compensation will be entirely borne by the eligible SIs. The eligible SI shall also be responsible for any claims of the workers including PF, Gratuity, ESI & other legal obligations.
- SI shall have to submit JCCs within **60 days** after Installation and Commissioning of SPV dual Pumps in District Office of CREDA.

16) Contractor shall provide 05 years warranty in installed solar pump from the date of commissioning as per the terms & conditions prescribed in the Bid No.2064/CREDA/HOR/SDP/RE-III/2019-20 dated : 09.06.2020.

- 17) **DECLARATION OF CONFLICT OF INTEREST** - The contractor hereby declares that nobody connected with or in the employment of **CREDA** is not/shall not ever be admitted as partner in the contract.
- 18) (a) The contractor shall arrange insurance coverage for the materials and SPV Dual Pumps at his/beneficiary's custody for the work under execution and successful commissioning and subsequent handover to the beneficiary. The contractor shall take up insurance or such other measures for the manpower so as to cover the claim for damage arising under workmen's compensation Act and other applicable State/ Central laws. CREDA shall not bear any responsibility on this account.
- 19) The contractor shall abide by the terms and conditions, rules, guidelines, construction practices, safety precautions etc. stipulated in the Bid document including any correspondence between the contractor and the **CREDA** having bearing on execution of work and payments of work to be done under the contract.
- 20) The contractor shall be responsible to follow all the laws including Workmen Compensation Act and all other laws in force & shall be responsible for all the obligations towards labour including EPF, ESI, etc.
- 21) All the taxes deductible at source as per Acts in vogue shall be recovered by **CREDA** and deposited with the appropriate authorities
- 22) Contractor agrees to abide by any decision/instruction passed by the appropriate authority under Anti-profiteering rules notified by the state/central government under GST act.
- 23) Any dispute arising out of the contract shall be subject to the jurisdiction of Hon'ble High Court of Chhattisgarh.

"Herewith everything and anything contained in Bid document no.2064/CREDA/HOR/RE-III/2019-20 dated : 09.06.2020 is part of this agreement which has been dully signed by both bidder and authorised signatory of CREDA".

In witness whereof the parties present today has hereby entered into agreement.

Signed & sealed on behalf of the above

Named contractor

Name :

Designation :

Signed on behalf of CREDA

Name: **Rajiv Khare**

Designation: **Chief Engineer**

Witness:

1. Name:-.....

2.Name:-

.....

Address:-.....

Address:-

.....

.....

.....

27.SCHEDULE - I

PART 'A': GENERAL INFORMATION

(Strike off whichever is not applicable. Separate sheets should be used, wherever necessary)

- 01. Name & Address of the Bidder :
- 02. Name & Address of the firm/Company etc. :
 - a) Registered office :
 - b) Factory/works address :
 - c) Fax Numbers. :
 - d) Telephone / Mobile Numbers. :
 - e) Email id :
- 03. Confirm whether Bidder is Manufacturer : Yes/No
- 04. Only manufacturer to give following particulars
 - a) Address of factory :
 - b) Year of starting manufacture :
 - c) Whether same/similar materials :
Manufactured earlier
(if yes, give reference)
 - d) Yearly/monthly production capacity :
 - e) Maximum yearly production :
Achieved so far
- 05. Whether the firm is SSI Unit of Chhattisgarh State: : Yes/No
 - a) If yes, write registration No. :
 - b) Whether documentary evidence :
Regarding registration enclosed
 - c) Items for registration :
 - d) Period of registration :
 - d) Whether latest copy Competency/ :
Certificate furnished : Yes/No
- 06. Whether the firm is 100% owned by
 - a) State Government : Yes/No
 - b) Central Government : Yes/No
 - If yes, Notification/certificate issued from : Yes/No
The competent authority to this effect is
Enclosed
- 07. a) Whether the bidder is old participant : Yes/No
with CREDA
b) If yes, whether documentary : Yes/No
Evidence is enclosed.
- 08. Any other information that bidder may like : If yes, give details
to give in order to highlight his bid

PLACE :

SIGNATURE OF BIDDER

NAME IN FULL

DATE :

DESIGNATION/STATUS

FIRM/COMPANY SEAL

28.SCHEDULE - II

PART 'B' : COMMERCIAL INFORMATION

(Strike off, whichever is not applicable. Separate sheets should be used. Wherever necessary)

- 01. i) Earnest Money Details : Bank draft/Bankers cheque payable to "CREDA", Raipur
- ii) Amount of E.M.D. & full details : `
- iii) If exempted, state whether the bidder i / Fully Owned State/Central Govt. Unit : SSI Unit of C.G.
- iv) Reference of documentary evidence regarding exemption enclosed. : Yes/No
- 02. Whether the offer is valid for 6 months from the date of opening of commercial/technical bid. : Yes/No
- 03. Rate of Sales Tax on the date of bid (exclusive in the rate quoted) :
- 04. **DISCOUNT:**
 - a) Whether any rebate/discount is offered. : Yes/No
 - b) If yes, whether the rebate is unconditional/conditional Rate/amount of rebate/discount : Yes/No
 - c) If conditional State condition : Yes/No
- 05. **PAYMENT TERMS:** Whether CREDA's terms of payment is acceptable to Bidder : Yes/No
- 06. **COMPLETION PERIOD OF WORK:** Whether Bidder is agreeing for completion period of work as Specified in the Bid : Yes/No
- 07. **PENALTY CLAUSE:** Whether agreeable to CREDA's Penalty Clause : Yes/No
- 08. Whether agreeable to CREDA's clause of warrantee period : Yes/No
- 09. **SECURITY DEPOSIT:** Whether Security Deposit clause is understood : Yes/No
- 10. Indicate State, Central Sales Tax Registration Number State : Yes/No
Central:
(Please Note that in case of non-registration with Commercial Tax, Department Purchase Tax as admissible shall be deducted by the Purchaser from the Bills of the supplier)
- 11. Please mention whether rates offered are applicable for part quantities. : Yes/No

PLACE:

SIGNATURE OF BIDDER

DATE:

NAME IN FULL
DESIGNATION/STATUS
FIRM/COMPANY SEAL

29.SCHEDULE - III

PART 'C' : TECHNICAL INFORMATION

(Strike off whichever is not applicable. Separate sheets should be used. Wherever necessary)

- 01. Whether material offered is exactly as per technical specification : Yes/No
- 02. Whether the copies of completion certificate received during last 3 years : Yes/No
from other State Nodal Agency or from other Organization for Solar pumping systems (if yes, give details) enclosed.
- 03. Whether pamphlets/technical details literatures along with drawing etc. : Yes/No
furnished with the offer (if yes, give details)
- 04. Whether the Bidder agrees to furnish material test certificates in : Yes/No
respect of chemical composition and physical properties from Govt./ Govt. approved lab with each batch of supplies.
- 05. Whether the Bidder has furnished details of manufacturing : Yes/No
equipments and short history of plant (if yes, give details)
- 06. Whether details of manufacturing process furnished with offer. : Yes/No
(if yes, give details)
- 07. a) Whether all testing facilities are available. : Yes/No
If so, give details and in case of non-availability of facilities indicate approved lab available in surrounding areas where tests are proposed to be conducted.

PLACE

SIGNATURE OF BIDDER

DATE

NAME IN FULL

DESIGNATION/STATUS

FIRM/COMPANY

SEAL

30.SCHEDULE - IV
TECHNICAL DEVIATIONS

From,
Bidder Name & Address -

To,
The CE,
CREDA, HO,
Raipur

Sub – Technical Deviations.

Dear Sir,

The technical deviations & variations to the specifications stipulated in the Bid, for the item quoted are as under -

Sl.No.	Condition	Clause No. of Bid document document	Page No. of Bid document	Statement of deviations and variations
---------------	------------------	--	---	---

-

-

2. Except aforesaid deviations, the entire order, if placed, on us shall be executed in accordance with your specifications and other conditions. Variation/deviations etc. if found, elsewhere in our offer should not be given any considerations while finalizing the Bid.

PLACE

SIGNATURE OF BIDDER

DATE

NAME IN FULL

DESIGNATION/STATUS

FIRM/COMPANY SEAL

NOTE - Continuation sheet of like size & format may be used as per bidder's requirements and shall be annexed to this schedule.

31.SCHEDULE - V

PAST EXPERIENCE

From :

Bidder's Name & Address -

To,

The CE,

CREDA, HO,

Raipur

Sub – Performance/Past Experience.

Dear Sir,

We furnish herewith the record of our performance and experience as follows -

 -

Sl.No.	Purchaser's Name & Address	Order No. Date	Ordered Quantity	Qty. supplied (Numbers.)	Value of Order

 -

PLACE

SIGNATURE OF BIDDER

DATE

NAME IN FULL

DESIGNATION/STATUS

FIRM/COMPANY SEAL

NOTE - Photocopy of the completion certificate received from other State Agencies/Govt. Undertakings etc. should be enclosed.

32. ANNEXURE – XI

(EXPERIENCE CERTIFICATE ON THE OFFICIAL LETTER HEAD OF CONCERNED GOVERNMENT DEPARTMENT WITH SEAL AND SIGN BY AUTHORIZED SIGNATORY)

Ref. No.....

Date.....

CERTIFICATE OF COMPLETION - OFF GRID SPV DUAL PUMPS

This is to certify that **Name of Bidder, Address of Registered Office** has successfully completed the work of design supply, installation & commissioned of**Numbers**. Off grid SPV Dual Pumps (.....Scheme) against various Sanction of Name of Agency at various locations in.....State, as per following details –

Capacity of water tank(Litre)	Capacity & Type of SPV Pumps (HP / AC / DC / Submersible)	Year & Scheme	Total no. of Pumps	Remarks
5000 Litre				
10000 litre				
	Total -			

This workmanship and performance of the above installed systems are found satisfactory and are in successful operation.

**Seal & Sign
(Authorised Signatory)**

33.CONSORTIUM AGREEMENT

This Consortium Agreement executed on this Day of 2020

BETWEEN

M/S, a Company/Proprietorship Firm/Partnership Firm incorporate under the Law of companies Act 1956/2013 and and having its registered/principal office at (GST No.....) through its proprietor S/o (herein after called the “Partner-I”/ “Lead Partner” which expression shall include its successors, executors and permitted assigns)

AND

M/s a Company/Proprietorship Firm/ Partnership Firm under Firm (GST No.) and having its registered/principal office at Through its Partner Mr. S/o (herein after called the “Partner-II”/“Second Partner” which expression shall include its successors, executors and permitted assigns)

For the purposes of submission a pre-qualification bid (hereinafter called “PQ Bid”) and submitting the final bid in case of being pre-qualified in response to Owner’s Pre-qualification document (hereinafter called PQ document) no. **TENDER DOCUMENT NO.....** and entering into a contract in case of award for the work of Survey, Design, Supply, Installation & Commissioning of Solar Photo Voltaic dual Pumps of various capacities with five years onsite warrantee, COMC & insurance anywhere in the state of Chhattisgarh for **DRINKING WATER SCHEME of CHHATTISGARH STATE RENEWABLE ENERGY DEVELOPMENT AGENCY (CREDA)**

AND WHEREAS as per PQ document, Consortium bids will also be considered by the Owner provided they meet the specific requirements in that regard.

NOW THIS INDENTURE WITNESSETH AS UNDER -

In consideration of the above premises and agreements all the partners to this Consortium do hereby now agree as follows:

1. We the partners in the Consortium hereby confirm that the name and style of the Consortium shall be “..... /” “Consortium.”
2. **FORMATION AND PRINCIPLE PLACE OF BUSINESS**

FORMATION -

The partner of the consortium do hereby form a Consortium pursuant to the laws of state of Chhattisgarh in order for the consortium to carry on the purposes for which provision is made herein

PRINCIPAL PLACE OF BUSINESS -

The Consortium Partner shall maintain principal place of business at The partners of the consortium may re-locate its office from time to time or have additional offices as the partners may determine

3. PURPOSE OF THE CONSORTIUM -

The object of the consortium to bid and perform Tender Nofrom CHHATTISGARH STATE RENEWABLE ENERGY DEVELOPMENT AGENCY (CREDA) For Survey, Design, Supply, Installation & Commissioning of Solar Photo Voltaic Dual Pumps of Various Capacities with Five Years on Site warrantee ,COMC & Insurance anywhere in the state of Chhattisgarh for Drinking Water Scheme and to deal with the same in any manner what so ever.

4. TERM -

The term of the consortium shall commence as of the date hereof and shall be terminated and dissolved upon the earliest to occur of (i) on mutual understanding of partners by executing separate agreement regarding dissolution of consortium (ii) the unanimous agreement of the partners (iii) the order of a court of competent jurisdiction (iv) Competition of the above mention tender

5. PERCENTAGE OF PARTICIPATION -

CONSORTIUM PARTNER	PARTNER	PERCENTAGE
1) M/S	Lead Partner (Partner 1)
2) M/s	Other Partner (Partner 2)
TOTAL -		

6. PARTICIPATION -

Both the partners have decided to perform the above mention work of CREDA in their above proportionate work.

7. The Lead Member is hereby authorized by the all Member of the Consortium to bind the Consortium and receive instructions for and on their behalf.
8. The Lead Member shall be liable and responsible for ensuring the individual and collective commitment of each of the Members of the Consortium in discharging all of their respective obligations. Each Member further undertakes to be individually liable for the performance of its part of the obligations without in any way limiting the scope of collective liability envisaged in this Agreement.
9. Subject to the terms of this Agreement, the all member shall be responsible for providing technical and financial support and responsible equally for execution of project as per agreement to be signed.
10. Both the Partners shall be jointly responsible for Project Management of works.
11. In case of any breach of the said Contract by any of the partners of the CONSORTIUM, we hereby agree to be fully responsible for the successful execution/performance of the Contract in accordance with the terms of the Contract.
12. Further, if the Owner suffered any loss or damage on account of any breach of the Contract or any shortfall in the completed equipment/ plant, meeting the guaranteed performance parameters as per the technical specifications/ contract documents, the Lead Partner and Second Partner of these presents

undertake to promptly make good such loss or damage caused to the Owner, on the Owner's demand without any demure.

- 13. The financial liability of the partners to this Consortium Agreement, to the Owner with respect to the any or all claims arising out of the performance or non-performance of the Contract shall, however be not limited in any way so as to restrict or limit the liabilities of either of the partner.
- 14. This Consortium Agreement shall be governed, construed and interpreted in accordance with Laws of India. Courts of Raipur (C.G.) shall have exclusive jurisdiction in all matters arising there under.
- 15. It is further agreed that this CONSORTIUM Agreement shall be irrevocable and shall form an integral part of the Contract and shall continue to be enforceable till the Owner discharges the same. It shall be effective on the date first above mentioned for all purposes and intents.

IN WITNESS WHEREOF, the partners to this Consortium agreement have, through their respective authorized representatives, have executed these presents and affixed their hands and common seal of their respective companies on the day, month and year first above mentioned.

FOR, M/s

FOR, M/s

(MR.)

(MR.)

Lead Partner/Partner-1

Other Partner/Partner-2

WITNESS -

1.....

2.....

WITNESS -

1.....

2.....

34. Benchmark cost of solar dual Pumps

S.no	Capacity of Solar dual pump	Benchmark price for supply of material for Solar Dual Pump (Excluding GST) (In Rs.)	Benchmark price for Installation and commissioning of Solar Dual Pump (Excluding GST) (In Rs.)	Total Cost of Solar Dual Pump Excluding GST	Rates for 5 Years COMC Excluding GST(In Rs.)	Total price Excluding GST(In rs.)
		A	B	C	D	E=A+B+C+D
1	SPV Dual Pumps 900 W/1.0 HP DC Submersible with 6 Meters staging and 5000 Litres Storage Tank	324122	123606	447728	30000	477728
2	SPV Dual Pumps 900 W/1.0 HP DC Submersible with 6 Meters staging and 10000 Litres Storage Tank	415666	158517	574182	40000	614182

Site Selection Form

FORM-A

Date : _____

Name of Village _____

Name of Block _____

Name of District _____

Location of Borewell _____

(eg. Distance from house owner, temple or any other landmark.) _____

Type of Existing Pump Hand Pump Submersible Pump None
 Diameter of Borewell 4 inch 6 inch other _____

Depth of Borewell as per record (eg. 30 mtrs.) _____ meters

Existing Depth of Borewell (eg. 30 mtrs.) _____ meters

Length of Casing Pipe (eg. 20 mtrs.) _____ meters

Yield of Borewell (Min, 2,500 lit/hr) _____ liters/hour

Static Water Level (eg. 10 mtrs.) _____ meters below ground level

Pumping Water Level (Max. 40mtrs. Where water Level is stable while pumping) _____ meters below ground level

Material Delivery Contact _____ Material Delivery _____

(person to approach when detiv- _____ $\frac{Name}{Mobile}$ Place (location to store erring equipment & material)

..... & its contractors are allowed to work for the installation of Solar Hand Pump System.

**Assistant Engineer/District Incharge
CREDA, District Office**

**Beneficiary Department
representative**

**Surveyor/Representative of
Company**

(Signature & Seal)

(Signature & Seal)

(Signature & Seal)

Name

Name

Name

Mobile number

Mobile number

Mobile number

Date : _____

FORM-B

Site Selection Criteria

Name of Village

Name of Block

Name of District

- Yield of the bore well should not be less than 2,500 liters/ hour
- Pumping Water Level should not be more than 40 meters.
- Identified bore well should not have any obstacles such as tree roots, stones, etc.
- Identified bore well diameter should not be less than 100mm. or 4 inches.
- Water from the identified bore well should not be muddy at the depth at which the pump is expected to be installed.
- Tank tower location should not have any tree in the 15 meter periphery.
- The tank tower location should not have any transmission lines in the vicinity.
- Building structures more than 3 meters tall should not be near the tank tower location so that no shadow of any tree or house falls on the tank tower throughout the day.
- Distance between the stand post and tank tower should not be more than 15 meters and the distance between bore well and tank tower should not be more than 15 meters.
- The stand post location should have natural slope for drainage of accumulated water.

**Assistant Engineer/District Incharge
of**

Beneficiary Department

Surveyor/Representative

CREDA, District Office

representative

Company

(Signature & Seal)

(Signature & Seal)

(Signature & Seal)

Name

Name

Name

Mobile number

Mobile number

Mobile number

END