

**KERALA STATE HOUSING BOARD,
KOZHIKODE HOUSING UNIT, KOZHIKODE -673006**

E-

mail:kshbkkdhu@gmail.com Phone

No: 0495-2369545

No.**DB/471/2015**

Dated **17.12.2021**

**Procurement (e-GP) NOTICE INVITING TENDER
(TENDER NO **.KSHB/RE/KKD/01R/2021-22**)**

The Regional Engineer KSHB .Kozhikode Housing Unit at Kozhikode for and on behalf of KSHB invites online bids from the registered bidders of KSHB/PWD/KWA/KSEB/CPWD/MES/RAILWAY

1	Name of work	KSHB-KASARAGOD Dvn-Internal Electrification Works Including 25 kva Diesel Generator and 5 Kwp On grid Roof Top Solar Power Plant-at Working Womens Hostel-Madur-Kasargod
2	Estimate Amount(PAC)	Rs.28,05,949/- + GST
3	Earnest Money Deposit (EMD)	Rs. 50000/- (No exemption as per GO(P) No.1/2021/FIN Dated 03/01/2021
4	Tender Submission Fee	Rs.2500/-+18% GST(Rs 2950/-)
5	Period of completion	2 months
6	Classification of Bidder	'A' Class
7	Tender documents	Can be downloaded from the web site www.etenders.kerala.gov.in
8	Last date and time of Receipt of Tender/ Bids	24.12.2021 up to 5.00 PM
9	Last date and time of receipt of relevant document as mentioned in NIT by speed post	28.12.2021 up to 11.00 AM
10	Date and Time of Opening of Tender	28.12.2021 at 11.30AM

Tender documents and tender schedule (Bill of Quantities , BOQ) may be downloaded free of cost from the e-GP Website www.etenders.kerala.gov.in. A bid submission fee of **Rs.2500/-+GST** shall be remitted as online payment during the time of bid submission.

All bid/ tender documents are to be submitted online only and in the designated cover(s)/envelope(s) on the e-GP website. Tenders/ bids shall be accepted only through online mode on the e-GP website and no manual submission of the same shall be entertained. Late tenders will not be accepted

Additional documents to be submitted through online/speed post.

Sl. No.	Scanned copy (through online cover)	Through speed post (Superscribing name of work & tender no.)
1	Copy of Registration Certificate attested by Gazetted Officer of Government department with validity & class of registration	Copy of Registration Certificate attested by Gazetted Officer of Government department with validity & class of registration
2	Copy of EMD exemption certificate/concession certificate attested by Gazetted Officer of Government Department, if any	Copy of EMD exemption certificate/concession certificate attested by Gazetted Officer of Government Department, if any
3	Preliminary agreement, in Kerala stamp paper worth Rs. 200/- duly filled and signed by bidder. (Annexure – II)	Original preliminary agreement in Kerala stamp paper worth Rs. 200/- duly filled & signed by bidder. (Annexure – II)
4	Copy of Government orders & proof eligibility in participation intendering, etc in case of Labour Contract co-operative society	Copy of Government orders & proof eligibility in participation intendering, etc in case of Labour Contract co-operative society
5	Duly filled E-payment requisition (Annexure – IV)	Duly filled E-payment requisition (Annexure – IV)
6	a) Signed copy of NIT conditions with all necessary details b) Post Qualification Documents with all necessary details (if applicable)	a) Signed copy of NIT conditions with all necessary details b) Post Qualification Documents with all necessary details (if applicable)
7	Duly filled and signed copy of certificate for correctness of the Bid Documents (Annexure – III)	Duly filled and signed copy of certificate for correctness of the Bid Documents (Annexure – III)
8	Bid submission letter (Annexure – I)	Bid submission letter (Annexure – I)
9	Any other certificate required for tender acceptance	Any other certificate required for tender Acceptance

Price Bid shall only be submitted through online.

The bids shall be opened online at the office of **The Regional Engineer, KSHB, Kozhikode Housing Unit at Kozhikode** on the above mentioned date & time by **Regional Engineer** in the presence of the Bidders / their authorized representatives who are present at the time in the venue. If the tender opening date happens to be on a holiday or non-working day due to any other valid reason, the tender opening process will be done on the next working day at same time and place. Without necessary documents as mentioned above the tenders will not be considered and shall be summarily rejected.

Further details can be had from the NIT or Office of **The Regional Engineer, KSHB, Kozhikode Housing Unit at Chakkorathkulam, Kozhikode** during working hours. The undersigned reserves the right to reject any tender without assigning any reason.

The bidders are advised to submit the bids well before the stipulated date & time to avoid any kind of network issues, traffic congestion etc. The firm period of the tender shall be **SIX months** from the due date of **opening of bids**.

All the existing conditions related to inviting tenders of KSHB will be applicable in this tender also. The KSHB will not be responsible for any error like missing of schedule data while downloading or uploading the documents by the Bidder during the e-procurement process and for any kind of issues faced by the bidder.

REGIONAL ENGINEER

KSHB.

Kozhikode Housing Unit

Kozhikode

(For and on behalf of KSHB)

TenderNo.**KSHB/RE/KKD/01R/2021-22**

Dated: **17.12.2021**

FACING SHEET

KERALA STATE HOUSING BOARD

Office of the Regional Engineer
Kozhikode Housing Unit, Kozhikode

1	Name of Work	KSHB-KASARAGOD Dvn-Internal Electrification Works Including 25 kva Diesel Generator and 5 Kwp On grid Roof Top Solar Power Plant-at Working Womens Hostel-Madur-Kasaragod
2	Probable Amount of Contract (PAC)	Rs.28,05,949/- + GST
3	Earnest Money Deposit (EMD)	Rs. 50000/- (No exemption as per GO(P) No.1/2021/FIN Dated 03/01/2021
4	Division	Kasaragod Division
5	Sub Division	-
6	Last date and time of submission of Tender/ bid	24.12.2021 up to 5.00 PM
7	Date & Time of opening tender	28.12.2021 at 11.30AM
8	Class of Bidder's registration	'A'Class
9	Name and Address of Bidder	
10	Mobile No and e-mail Id of the Bidder	
11	Classification and office of Registration	
12	Download of Tender Documents	From www.etenders.kerala.gov.in
13	Bid submission fee	Rs.2500/-+18% GST (Rs 2950/-)

DECLARATION and BIDDERS CERTIFICATE

I do hereby distinctly and expressly declare and acknowledge that I have read the conditions as stipulated in the standard forms No. 83 and 84 with the relevant modifications effected under clause 9-13-24 of form. No. 83 and Clause 14 of Form. No. 84 and I do hereby admit that these conditions are binding on me and I shall abide by the terms and conditions as stipulated therein in respect of the work.

I do hereby declare also that, I have read the Revised PWD Manual 2012 and that I am familiar with various clauses contained in it. I am fully aware that the condition contained in the Revised PWD Manual are to be taken part of the Agreement.

I am enclosing preliminary agreement form in Kerala stamp paper Rs. 200/-

Name of Bidder:

Place:

Date:

TENDER AND BIDDERS CERTIFICATE

I hereby declare that I have perused in detail and examined closely in the Madras Detailed Standard Specification, CPWD specification, IRC specification, MoRTH specification, all Clauses of the standard preliminary specification before I submit the tender/bid and agree to be bound by and comply with all such specifications except clause 73 and other clauses relating to arbitrations contained therein. The guarantee period of 36 months as per G.O. (MS) No. 98/02/PWD dated 21/11/1992 is noted by me for this work,

Name of Bidder:

Address:

Place:

Date:

SPECIAL CONDITIONS FOR EARNEST MONEY DEPOSIT (EMD).

1. Cash, if enclosed, with the physical envelope containing the Preliminary Agreement, such tender will be rejected. The EMD amount shall be paid online through the e tendering website www.etenders.kerala.gov.in.

**I. AMENDMENT OF CLAUSE 7 OF CONDITIONS OF CONTRACT
ATTACHED TO G.W.D. FORM. NO.132 ASPER G.O.(M.S) NO. 2/ 2005 PWD.DATED
7.1.2005**

- I Bill shall be submitted by the Bidder for part payment while the work is in progress or final bill on completion of the work as per the specification, terms and conditions of the contract and the Divisional officer shall take the requisite measures for having the same checked and the claim as far as admissible settled according to the availability of budget provision and allotment of funds made with the Divisional Officer under the respective heads of account under which the work is sanctioned and arranged and also subject to the seniority of such bills. The Bidder shall not make any claim for interest or for damages for any delay in settling the bills. No such claims shall be admitted by the Board. If the Bidder be unable to prepare the bill for himself, the Divisional officer shall depute a subordinate to measure the work performed in the presence of the Bidder, whose counter signature to the measurement list will be a sufficient warrant to the Divisional officer to prepare the bill for him that list.

REGIONAL ENGINEER

KERALA STATE HOUSING BOARD

FORM No- 83

**e-Government Procurement (e-GP) Notice inviting
Tenders for Works**

Name of work: KSHB-KASARAGOD Dvn-Internal Electrification Works Including 25 kva Diesel Generator and 5 Kwp On grid Roof Top Solar Power Plant-at Working Womens Hostel-Madur-Kasargod

Locality:-Indiranagar, Kasaragod.

Last date of tender: 24.12.2021 up to 5.00 PM

REGIONAL ENGINEER

1. GENERAL

On line tenders are invited for and on behalf of Kerala State Housing Board from registered **A class** of KSHB/PWD/KWA/KSEB/CPWD/MES/RAILWAY for the work of: **KSHB-KASARAGOD Dvn-Internal Electrification Works Including 25 kva Diesel Generator and 5 Kwp On grid Roof Top Solar Power Plant-at Working Womens Hostel-Madur-Kasargod**

, Tender forms and general specifications can be downloaded free of cost from the e-GP website. Tenders not submitted in such prescribed online format or submitted incomplete in any respect whatever such as unattested errors and corrections in rates, quantities, units or amounts (figures not expressed in words), totals of contract not entered, etc, shall be summarily rejected.

- a) All bids shall be submitted online on the e-GP website only in the relevant envelope(s)/ cover(s), as per the type of tender. No manual submission of bids shall be entertained for the tenders published through e-GP system under any circumstances.
- b) Mention of price details at any place other than the designated place, shall disqualify the bidder and the bid shall be summarily rejected.
- c) The contractor shall submit mandatorily an attested copy of his / her valid and active Registration Certificate and original preliminary agreement; on or before the date specified in the NIT. The Board shall not be responsible for any postal / courier service delay or any other delay. The non receipt of the documents in time or the failure to enclose any of the documents as specified will result in the rejection of the tender.
- d) Every bidder is expected before quoting his rate to inspect the site of the proposed work. He should also inspect the quarries and satisfy himself about the quality and availability of materials. The best class of materials to be obtained from the quarries or other source defined shall be used on the work. In every case the materials must comply with the relevant standard specification. Samples of materials as called for in the standard specification or in this tender notice, or as required by the Executive Engineer in any case, shall be submitted for the Executive Engineer's approval before the supply to site of work is begun. The Kerala State Housing Board will not, however after acceptance of contract rate pay any extra charges for lead or for any other reasons, in case the bidder is found later on to have misjudged the materials available.

Note: The Board does not undertake to construct or make available any approach road or other means of approach to the proposed work site and the bidder shall get acquainted with the available means of approaches to the proposed site and quote for the various items. The Board shall not be liable for any claim raised later on the plea of non availability or non-access to the site.

- e) The bid invited shall be of **Item rate contract**.

2. Eligible Bidders

- a) Only those bidders having a valid and active registration of **'A' Class** of KSHB/PWD/KWA/KSEB/CPWD/MES/ Railway on the date of bid submission, shall eligible to submit bids online on the e-GP website.

- b) The bidders, who submit their bids for this tender after digitally signing using their Digital Signature Certificate (DSC), accept that they have clearly understood and agreed the terms and conditions including all the Forms/Annexure of this tender.
- c) Ineligible bidders or bidders who do not possess valid & active registration, on the date of bid submission, are strictly advised to refrain themselves from participating in this tender. If such instances are noticed, the same shall be treated as "fake bidding" by the respective bidder and such bidder shall be blacklisted as per departmental rules in force.

3. Cost of Bidding

The tender document(s), may be downloaded free of cost from the e- Government Procurement (e-GP) website (www.etenders.kerala.gov.in). No payment is required for downloading the tender documents from the above website. However a bid submission fee, as mentioned in clause 6 below of this document, is required to be submitted/to be remitted online along with the online bid.

4. Bid Prices

- a) In case of **schedule / item rate contract**, bidders must quote their own rates specifically for each item without reference to the departmental estimates or the current schedule of rates. For **item rate tenders**, the Bidder shall fill in rates in figures and should not leave any cell blank. The line item total in words and the total amount shall be calculated by the system and shall be visible to the Bidder.
- b) In case of **schedule / item rate contract**, if different rates are quoted for the same specification of work under identical working condition at the same site / in different appendices of the lowest quoted rates will be accepted for the items in all the appendices
- c) For **percentage rate contract** only a single rate as an overall percentage above or below or at the rate given in the schedule by a single entry at the space provided in the schedule under, the head quoted rate may be made.
- d) In the case of the **percentage rate contract**, the overall percentage rate quoted by the bidder shall not be varied on any account whatever and it shall hold good for all items done prospective of variations in quantities.
- e) The rates quoted shall be inclusive ones; covering all the operations contemplated in the specifications and tender schedules and all incidental work necessary for such operations such as shoring, bailing out work, scaffolding, etc.
- f) The rates quoted shall be inclusive of all taxes applicable.
- g) The rates and prices quoted by the bidder shall remain firm during the entire period of contract. The overall percentage rates accepted and specified in the agreement shall not be varied on any account whatsoever
- h) No material will be issued departmentally for executing the building works under this contract.

5. Bidder's alternate designs

When tenders are submitted based on bidder's alternate designs such tenders should be accompanied by a schedule of quantities of materials to be used for each item of work with complete detailed specifications and data as a separate attachment at the

designated place while submitting the bids online. In such cases the benefit of any savings in the quantities of materials actually used up under each item of work during execution will accrue to the Board.

6. **Tender (Bid) submissionFee**

- a) The Tender (Bid) submission Fee is to be remitted at the followingrates

Cost of work	Tender Fee
Upto Rs.50,000/-	Rs. 300/-
Above Rs.50000/- to Rs 10 Lakhs	0.20% of cost of work (Subject to a minimum of Rs.500 and maximum of Rs.2000)
Above Rs. 10 Lakhs to Rs.1.00 Crore	Rs.2500/-
Above Rs. 1.00 Crore to Rs.2.00 Crore	Rs. 5000/-
Above Rs. 2.00 Crore to Rs. 5.00 Crore	Rs.7500/-
Above Rs. 5.00 Crore to Rs.10.00 Crore	Rs.10,000/-
Above Rs. 10.00 Crore	Rs.15,000/-

- b) The Bidder shall pay, a tender document fees of **Rs.2500/-+18%GST**
c) The bid submission fee is not refundable on any circumstances.

7. **EMD (BidSecurity)**

- a) The EMD is to be remitted at the followingrates

Cost of work	Amount of EMD
i) UptoRs. 2 crore	i) 2.5% of the project cost, subject to a maximum of Rs.50,000/-
ii) Above Rs.2 croreupto 5 crore	ii) Rs. 1 Lakh
iii) Above Rs.5 croreupto 10 crore	iii) Rs. 2 Lakh
iv) Above Rs.10 crore	iv) Rs. 5 Lakh

- b) The Bidder shall pay, Earnest Money Deposit or Bid Security of Rs.**50000/-**
c) Any Bid not accompanied by an acceptable Bid Security/ EMD shall be rejected as non-responsive.
d) The Bid Security of the unsuccessful Bidders shall become refundable as promptly as possible after opening of Price Bid or finalization of thetender.
e) The Bid Security of the unsuccessful bidders will be refunded in the next working day (as far as possible) after the technical evaluation, keeping only that of the first 2 lowest tenders. The Bid Security of the remaining unsuccessful bidders will also be refunded on the next day after acceptance of the contract via electronic media.
f) The Bid Security of the successful Bidder will be discharged when the Bidder has signed the Agreement and furnished the required Performance Guarantee (Security Deposit).
g) No interest , in any circumstances shall be payable by the Board to the bidder for the EMD / Performance Guarantee (Security Deposit) / Additional performance guarantee.
h) Bidders shall remit the bid submission fee and EMD using the online payment options of e-procurement system only

- i) The Bid security is required to protect the purchaser against risk of Bidder's conduct, which would warrant the forfeiture of **performance guarantee (Security deposit)**.

8. EMD Exemption

As per GO (P). No.1/2021/FIN dated 03/01/2021 Government have revoked the exemption regarding EMD/Security Deposit/Performance Guarantee granted to MSMEs for Civil/Electrical/Infrastructure Contracts.

9. Deadline for Tendersubmission

- a) Tender duly signed using bidder's valid Digital Signature Certificate shall be submitted online on e-GP website www.etenders.kerala.gov.in on or before **24.12.2021 up to 5.00 PM**
- b) The Tender Inviting Authority, in exceptional circumstances and at its own discretion, may extend the last date for submission of bids, in which case all rights and obligations of the Tender Inviting Authority and the bidders previously subject to the original date will then be subject to the new date of submission.
- c) The Bidder will not be able to submit his bid after expiry of the date and time of submission of bid (server time). The e-GP system shall not allow submission of bids online after the stipulated date & time. The bidder is advised to submit the bids well before the stipulated date & time to avoid any kind of network issues, traffic congestion, etc. In this regard, the Board shall not be responsible for any kind of such issues faced by bidder.

10. Bid opening date and Acceptance of Tender

- a) The bids will be opened online at the office of the tender inviting authority on **29.12.2021 at 11.30AM** by the **Regional Engineer**, KSHB in the presence of those bidders or their authorized agents who wish to be present.
- b) In case it is not possible to open the tenders on the specified date due to any valid reason the revised time and date of opening of tenders will be published on e-GP website. The bidders shall check the e-GP website regularly for such updates.
- c) The total amount of each tender will be read out. There is no provision for correction of bids once submitted online. However, multiple bids can be submitted by the bidder, in case of corrections, till the last date & time of bid submission and the most recent/ latest bid submitted before the stipulated date & time of bid submission shall only be considered by e-GP for further processing.
- d) Details of individual rates will be treated as confidential and will not be read out.
- e) Acceptance of the tender rests with the Tender Inviting Authority who does not undertake to accept the lowest or any particular tender

11. Negotiation on Bids:

The Tender Inviting Authority shall not resort to any negotiation on the Bids submitted by the responsive bidders. The rates quoted by the bidders are final and shall not be changed at any stage during evaluation and award of work.

12. Post – Qualification (applicable for works above TS powers of RE)

The Post – Qualification Document attached below shall be a part of the Tender Document and duly filled up Post – Qualification Documents shall be submitted with all the necessary details by the bidder along with the bid documents through e-tender portal. Scanned copies of necessary documents / certificates can be enclosed / uploaded wherever necessary. The Tender Inviting Authority, if desires necessary, will invite the lowest eligible bidder to attend his Office for any clarification / additional information / documents before taking final decision on the award of contract. Contract work shall be awarded to the successful Bidder only on the basis of a careful scrutiny of all the Post Qualification information furnished by the applicant.

13. Award of Contract:

- 1) The Tender Inviting Authority will award the Contract to the Bidder whose bid has been determined to be substantially responsive and who has offered the lowest evaluated bid price.
- 2) In the eventuality of failure on the part of the lowest successful bidder to produce the original documents, or submit the performance guarantee, or enter into agreement with the Agreement Authority within the specified time limit, the Bidder shall be debarred in future from participating in all Bids of KSHB for three years.
- 3) If the quoted amount by a bidder is less than 75% (seventy-five percent) of the estimated PAC, then such bid shall be rejected and the tender shall be finalized based on the merits of rest of the bids. If two or more bidders quote the same lowest amount, the Tender Inviting Authority will finalize the tender through a transparent draw of lots. The Tender Inviting Authority along with his subordinate officers and the contractors who have quoted the lowest and equal amounts in their bids (or contractor's authorised representatives) shall be present during the draw of lots.
- 4) Single qualified bid in response to the first tender call will be rejected.
- 5) If the quoted PAC differ estimated PAC by more than 25%, the bid will be rejected.
- 6) The Tender Inviting Authority reserves the right to accept or reject any Bid and to cancel the Bidding process and reject all Bids at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Tender Inviting Authority's action.

14. The Bid Security may be forfeited:

- a) if the Bidder withdraws the Bid after Bid opening during the period of Bid validity including extended period of validity; or
- b) if any modification is effected to the tender documents.
- c) In the case of a successful Bidder, if the Bidder fails within the specified time limit to:
 - i. sign the Agreement; or

- ii. Furnish the required Performance Guarantee
- iii. If the bidder fails to convince about the reasonability of his bid prices in the case of an unbalanced bid.

15. Clarification of Bid

To assist in the examination, evaluation, and comparison of bids, the Tender Inviting Authority may ask the bidder for required clarification on the information submitted with the bid. The request for clarification and the response shall be in writing or by e-mail, but no change in the price or substance of the Bid shall be sought, offered, or permitted.

16. Bid Validity (Firm Period)

- a) In consideration of the bidder being allowed to quote for the work, he should keep the tender firm for a period of **Three months** from the date of opening the tender during which period or till the tenders are decided whichever is earlier, he will not be free to withdraw the tender. Any such withdrawal will entail forfeiture of the earnest money deposited for the work.
- b) Due to departmental or administrative reasons if it is found necessary to keep the tender open for a further period, prior consent of the bidder shall be obtained in writing for every further period of one month.

17. Performance Guarantee and Performance Security Deposit

The bidder whose tender is accepted shall be required to furnish the following:

Performance Guarantee to be submitted before executing agreement and Performance Security Deposit to be recovered from running bills.

- I Performance Guarantee to be submitted at the award of contract should be 3% of contract amount and should be submitted within 21 (Twenty one) days receipt of LOA (Letter of Acceptance) by the Successful bidder in the following forms.

* As Per GO (P) No 7/2021/Fin Dated 07.01.2021 due to covid 19 pandemic performance guarantee to be submitted at the time of executing the agreement is reduced from the existing rate of 5% to 3%

- 1. At least Fifty percent (50%) of Performance Guarantee shall be in the form of Fixed Deposit from any nationalized or scheduled bank in the name of Agreement Authority which shall remain valid till 28 (twenty-eight) days from the completion of defect liability period and
- 2. The balance performance guarantee will be in the form of Bank guarantee or Fixed Deposit to be submitted before executing agreement and shall be valid till 28 (twenty-eight) days after the completion of defect liability of the Work

After the submission of Performance Guarantee and its acceptance the EMD or Bid Security will be refunded to the successful bidder.

Performance Security Deposit (Retention) to be recovered from running / final bills.

Performance Security Deposit shall be deducted at 2.5% from running / final claims till the expiry of defect liability period. **Total of performance Guarantee and Performance Security Deposit shall not exceed 7.5% of contract amount.**

Performance Security deposit can be released against bank guarantee on its accumulation to minimum amount of Rs. 5 lakhs. The minimum amount of Bank

guarantee shall not be less than Rs. 5 lakhs at a time

If he fails to execute the agreement as stipulated or in the case of maintaining a rate of progress as mentioned in the programme chart the EMD, performance guarantee and Security Deposit shall be forfeited to Board and fresh tenders shall be called for or otherwise disposed off. If as a result of such measures due to the

default, of the bidder to pay the requisite deposit, sign contract or take position of the work, any loss to the Board results, the same will be recovered from him as arrears of revenue. Recoveries on this or any other account will be made from the sum that may be due to the bidder on this or any other subsisting contract or under the Revenue Recovery Act, otherwise the Board may decide.

18. Additional Performance Guarantee:

Additional performance Guarantee will be required to be deposited, if the quoted amount by the bidder is between 10 to 25% below the estimated rate.

- i) Additional performance guarantee will be required in all cases where quoted rate falls below 10% of the estimate cost but the maximum permissible lower limit is 25% below the estimated cost.
- ii) The 10% standard exemption will be applicable to all estimates quoted below estimate cost up to 25%.
- iii) If the rate quoted by the contractor is "x%" below estimate cost (where x lies above 10% and up to 25%) the performance guarantee for an amount equal to (x-10)% of the estimate amount shall be deposited by the contractor as additional performance guarantee. This will be released only after satisfactory completion of the work without any interest

19. Execution of Agreement

Executing agreement for the works will be made within the time limit prescribed as follows:

- i. Time allowed for executing agreement without fine will be 14 days from the date of registration of the communication (selection notice) in the postoffice.
- ii. Further time of 10 days shall be allowed to execute agreement by realizing a fine of 1% of the PAC subject to a minimum of Rs. 1000/- and maximum of Rs. 25,000/-
- iii. In case of failure to execute the agreement within the above period (24 days), the offer of contract shall be cancelled, forfeiting the EMD and taking such other actions as mentioned in the bidding document. After canceling, the offer of contract, the tendering authority will negotiate with the next lowest bidder and award the work to him if he expresses his willingness in writing to execute the work at the accepted rate of the defaulted bidder . Otherwise the work will be re-tendered.
- iv. Solicitors fee, if any, to be paid to the Law Officers of Board/Government for scrutinizing or drawing up of agreements will be paid and the same recovered from the successful bidder

20. Hand Over / Take Over of Site:

The Contractor shall take over charge of the site within 10 days after execution of agreement and commenced the work. If the contractor does not turn up, the acknowledgement form for handing over the site duly signed by the site officers shall be sent to the contractor through registered post, it shall be deemed that the contractor has taken over the site from the date of posting

a. Time of Completion

The work should be completed in all respects in 2 months either from the date of handing over the site or from the 10th day of agreement whichever is earlier.

b. Extension of Time of Completion

- i. GRACE PERIOD

The tendering authority will consider genuine request for extension of time of completion of work at the time of executing agreement taking into account the climate conditions or other local problems at the site and grant extension of time up to three months. (from the original time of completion) . The tendering authority shall record the reason in such action with facts and figures.

The grace period will not be granted if the extension is necessitated due to the default on the part of the bidder.

- ii. For extension of time of completion beyond the grace period time will be increased at the following rates.

<u>Period of Extension</u>	<u>Rate of fine</u>
First extension	1% of PAC subject to a minimum of Rs.1000/- and maximum of Rs.50000/-.
Beyond First Extension	2% of the PAC subject to minimum Rs.2000/- and Maximum Rs.1,00,000/-.

- iii. Extension of time of completion that can be granted at a time will not exceed 25% of the original time or six months whichever is less. Maximum extension of time of completion will be limited to half of the original time of completion.

c. Termination of Contract

- a) Time is the essence of the contract. The contractor shall submit the chronological programme for execution of each stage of work before executing agreement, which shall be examined by the agreement authority and approve programme form part of the agreement. Undue and avoidable delay in the execution of the work will render the contractor liable to penalty.
- b) The Chief Engineer/ Chief Project Engineer /Regional Engineer/ Executive Engineer reserves the right to terminate the contract at risk and cost of the contractor at any time in case of bad work, slow progress (failure to maintain the progress as mentioned in the Programme chart) or violation of rules in other ways
- c) An amount equal to 30% of the cost of the remaining works at agreed rates of the terminated contract shall be recovered from the defaulted contractor towards the risk & cost. The contractor shall be directed to remit the risk and cost amount within 3 months. There is no need to wait till the work is **alternatively arranged through** another contractor and the loss sustainable due to the default of the original contractor is assessed. Such loss, if any, shall be realized after completion of the work. If he fails to remit the amount within this period following steps can be adopted for realization of loss. The amount can be realized from the following.
- (i) EMD/Security Deposit & Retention
 - (ii) Bill amount/ if any dues to this contract or any other existing contract of the contractor with the KSHB.
 - (iii) Any dues from Board to the contractor.
 - (iv) Bank guarantee/Performance guarantee, Revenue Recovery Act or by filing civil suits against the contractor
- d) The Chief Engineer/ Chief Project Engineer / Regional Engineer reserves the right to abandon the work at any stage if he finds such a course necessary and the contractor will be paid only for the finished items of works.

d. Variations

- a) The right to carry out the work in conformity with or in a manner entirely different from the terms of this invitation that may be considered most suitable before or subsequent to the receipt of tenders due to exigencies of work, is reserved with the Board.
- b) The successful bidder will have to carry out 25 percent more of the estimated quantity of every item at his agreed rates.
- c) The Contractor is bound to carry out sinking of wells increase up to 10 meter (ten meter) extra depth beyond the estimated design depth and rate for which shall be paid as per schedule of rate and extra item conditions. In case of pile foundation, precast or cast in situ, in the same conditions as above shall apply

e. Release of Performance Guarantee:

- i. The Performance Bank Guarantee submitted in the form of Bank Guarantee will be returned to the Contractor without any interest after 28 days after the satisfactory completion of defect liability period.
- ii. The balance half of Performance Guarantee in the form of fixed deposit will be released after 28 days after the satisfactory completion of Defects Liability Period.
- iii. No interest, in any circumstances, shall be payable by the Board to the bidder for the EMD/security deposit (performance guarantee), performance security deposit (Retention) and additional performance guarantee furnished.

f. Release of Performance Security Deposit:

The security amount (Retention) will be released by the Officer competent at his discretion after successful completion of the work to the satisfaction of the Chief Engineer / Chief Project Engineer / Regional Engineer / Executive Engineer after passing final bill and finally taken over by the Board retaining an amount as he may consider necessary to cover the liabilities, if any of the contractor. The maximum period of retaining the security deposit is **36 (thirtysix) months** from the date of completion of the work as certified by the agreement authority.

g. Release of Additional Performance Guarantee

Additional Performance Guarantee will be released without any interest only after satisfactory completion of work.

h. Defect liability Period

- i. The Defect Liability Period is as given below:

Type of works	Defects Liability Period
Original works	36 months
Ordinary repairs and maintenance	6 months
Special repairs of roads and buildings	18 months

- ii. **For this work Defect liability Period is fixed as 36 months**
- iii. **Maintenance by contractor during defects liability period:** All defective items of work and defects noticed and brought to the attention of the Contractor during the Defects Liability Period shall be promptly and expeditiously attended to and replaced and/or rectified and made good by the Contractor at his own cost, to the complete satisfaction of the Engineer-in-Charge.

i. Specifications / Drawings etc.:

- i. The bidder shall examine closely the Madras Detailed Standard Specifications, CPWD specification, IRC specification, MoRTH specification, and also the standard preliminary specifications contained therein which is available for viewing on the e-GP website and PWD Website before submitting his tender unit rates which shall be for finished work in site. He shall also carefully study the drawings and additional specifications and all the documents which form part of the agreement to be entered in to by the accepted bidder. The documents connected with the contract such as specifications, plans descriptive specification sheet regarding materials etc., can also be seen during the office days & hours in the Office of the **Regional Engineer KSHB Kozhikode Housing Unit, Kozhikode**
- ii. The bidder's particular attention is drawn to the sections and clauses in the standard 'Preliminary Specification" dealing with
 - 1. Test, inspection and rejection of defective material andwork
 - 2. Carriage
 - 3. Constructionplant
 - 4. Water andLighting
 - 5. Cleaning up during progress and fordelivery
 - 6. Accidents
 - 7. Delays
 - 8. Particulars ofpayment
- iii. The bidder should closely peruse all the specification clauses which govern the rates which he istendering
- iv. The bidder's attention is directed to the requirements for materials under the clause "Materials and workmanship' in the Preliminary Specification. Materials confirm to the Indian Standard Specification shall be used on the work, and the bidder shall quote his rateaccordingly.

j. Payment on lump sum basis or by final measurement at unitprices:

- i. Final measurements need not be taken unless either the bidder or the Executive Engineer claims extras to or deductions from the quantities of Schedule.
- ii. In case final measurements are claimed, they shall be taken only for those items for which either the bidder or the Executive Engineer claims final measurements and the quantities of the remaining items in Schedule shall be accepted as correct. The lump sum amount mentioned in the agreement will then be varied by addition there to or deducting there from as the case may be the difference (if any), between the amounts mentioned in Schedule for such items and the amounts arrived at by calculation at Contract rates based on the revised quantities for the same obtained by the final measurementaforesaid.

Amendment. When payment on earth work exceeding 300 Cum are made based on the tape measurements, the bidder shall give a declaration in writing to the effect that he agrees for the recovery of the over payment, if any, from the next bill.

- iii. It shall be accepted as a condition of the contract that the payment of the final bill to the bidder less the withheld amount and his acceptance there of shall constitute a full and absolute release of Board from all further claims by the bidder under thecontract.

iv. Payment for additions and deductions foromissions.

No authorized variation shall vitiate the contract but additions and omissions

shall be measured and dealt with in accordance with clause 30(b).

- v. It shall be accepted as a condition of the contract that the payment of the final bill to the bidder less the withheld amount and his acceptance there of shall constitute a full and absolute release of Board from all further claims by the bidder under the contract.

k. Extra items:

Items of work not expressly or impliedly described in the schedule, plans or specifications will be treated as 'extras'. They will include only items of works which highly necessary for the proper execution of the work and for its completion, were not provided for in the original contract

The execution of an extra item of work and payment-therefore will be based on the following conditions:-

- i. There shall be an order in writing to execute the extra item of work duly signed by an Engineer not below the rank of an Assistant Engineer before its commencement.
- ii. If the bidder finds, after examining the specifications and plans that extras are involved, he should give notice to the Engineer to this effect and shall proceed with the execution of the extra item only after receiving instructions in writing from Engineer.
- iii. Extra items may be classified as additional substituted or altered items, depending, on their relation or otherwise to the original item or items of work.

iv. The rates extra shall be worked out as below

- 1. In the case of all extra items whether additional altered or substituted, if accepted rates for identical items provided for in the contract such rates shall be applicable.
- 2. In the case of extra items whether altered or substituted, for which similar items exists in the contract, the rates shall be derived from the original item by appropriate adjustment of cost of affected components. The percentage excess or deduction of the contract rate the original item with reference to the departmental estimated rate shall be applied in deriving the rates for such items.
- 3. In the case of extra items whether altered or substituted and for which similar items do not exist in the contract and rates exists in the schedule of rates, the rates shall be arrived at on the basis of the departmental data rate current at on the time of ordering the extra item, after applying the tender deduction except on cost of departmental material. Tender excess, if any, will not be applied.
- 4. In the case additional items, the rates shall be arrived at on the basis of the departmental data rates current at the time of ordering the extra item or the date of commencement of the extra item, whichever is earlier, after applying the tender deduction except, on the cost of departmental material. Tender excess, if any, will not be applied.
- 5. In the case of extra items whether additional altered or substituted, for which the rates cannot be derived from similar items in the contract, and only partly from the departmental schedule of rates the rates for such part

or parts of items as are not covered in the schedule of rates shall be determined by the Engineer on the basis of the prevailing market rates giving due consideration to the analysis of the rate furnished by the bidder with supporting documents, including bidder's profit. This shall be added on to the departmental rate (including bidder's profit) current at the time of ordering or executing the extra item, whichever is earlier for the other part the item for which rates can be derived from the schedule of rates.

6. In the case of extra item whether additional, altered or substituted, for which the rates cannot be derived either from- similar item of work in the contract or from the departmental schedule of rates, the bidder shall within 14 days of the receipt of the order to carry out the said extra item of work. Communicate to the Engineer the rate which he proposes to claim for the item, supported by analysis of the rate claimed and the department shall within one month thereafter determine the rate on the basis of the market rate giving consideration to the rate claimed by the bidder.
7. In the case of percentage rate contract, the rate for extra item shall be arrived at by applying the percentage excess or deduction to the departmental data rate as per the original schedule on which the tenders were invited.
8. Wherever the term "Departmental data rate" appears, it shall mean the rate derived from the Departmental schedule of rate and shall include conveyance charges and bidder's profit.
9. In cases in which the bidder has extra items not contemplated in the agreement but the rates of which require sanctioned of higher authorities the Division Officer may in such case, sanction advance up to an amount not exceeding 75 per cent of the amount for the items at the rate worked out and certified by the Sub Division Officer The Assistant Engineer shall in all such cases promptly record all authorized extra items executed by the bidder including detailed measurements and quantities thereof in the Measurement Book. He shall neither enter any rate for the same in the Measurement Book nor include such extra items in the body of the bill. When the bill is received in the Sub Division, the sub Division Officer shall prepare a separate statement for those extra items showing the items executed, quantity of each items rate for each item worked out by him based on agreement, conditions and amount for each item in the basis of the rate worked out by him, He shall also furnish a certificate to the effect that he has personally examined all the extra items and they are bonafide the amount payable for these items will not be less than Rs(amount to be specified) and that there is no objection in paying 75 per cent of this amount as a secured advance On receipt of the bill with the above statement and certificate the Division Officer may make payment not exceeding the amount recommended by the sub Division Officer as a lump sum secured for works done but not billed for.

I. Quality testings:

- i. In normal case no departmental materials shall be supplied to the contractor by the Board.
- ii. Primary responsibility for maintaining quality of all items of work as per specifications and standards vests with the Contractor. They will also establish laboratory facilities for testing the quality of the materials at their cost. The test results of the samples will be submitted to the agreement authority.

- iii. The quality of materials used by the bidders should be ensured by the Board officers and testing of the materials wherever necessary will be done by the bidder at his cost.

m. Departmental materials & Machineries

- i. If cement and steel required for the work are supplied by Board and their value recovered at Rs. _____ Per tonne of cement and Rs. _____ per quintal of Tor steel / M.S rods. Cement and steel as well as other materials so issued shall remain the property of Board though in contractors custody and shall not be removed from the stores at work site except written authorization by a competent authority not less than the rank of Assistant Engineer.
- ii. Any other materials available in Departmental stores if issued to the bidder will be recovered at book value or issue rate plus 20 per cent supervision charge or market value or data rate whichever is higher. The fixing of market rate will be governed as per clause 33(d).
- iii. Board does not undertake to issue power roller for any work. The bidder will arrange the power roller from Public Works Department or other Department and pay the hire charges demanded by them.
- iv. Value of quantities of the departmental materials issued for the work either allowed to deteriorate or unaccounted for amounting as it does to an excess supply over the sanctioned requirements shall be recovered at book value or issue rate plus 20 per cent supervision charges or market rates whichever is higher with sales tax and in addition specific penalty rate stipulated by the Board Market value will be the retail selling price of materials in the locality of the work or the nearest market town current on the day of issue, or recovery which is more. The Executive Engineer shall obtain the information and record within 7 days of such issue, sending a copy to the bidder. The decision of the Chief Engineer regarding current market rates shall be binding on the bidder. Unused balance if any at the time of completion or termination of the contract will not be accepted by the Board. The cost of such materials amounting as it does an excess over sanctioned requirements shall be recovered at book value +20 per cent or current market rate whichever is higher and in addition to specific penalty rates as may be fixed by Chief Engineer in the form of Board's Circular order from time to time shall also be recovered at the direction of Executive Engineer.
- v. Cost of small excess quantity of cement say less than one full bag will be recovered from the bidders without penalty and that if the excess is more than this, it will be transferred to other works as early as possible subject to condition that the quality of cement is ensured by a responsible officer not below the rank of Assistant Engineer, before utilizing it in one of the work for which it is transferred.
- vi. In the case of excess steel rods, recovery of cost will be effected at agreement rates, if the excess is 3% (three per cent) of the total quantity of steel materials and the recovery of the cost of steel materials in excess of the above 3% limit will be effected at penal rate if the excess is not due to any change in design or abandoning a part of the work.
- vii. The materials will be issued to the bidder only for meeting the actual requirement so that large excess do not occur at the time of completion of work.

- viii. Empty bags of cement used on the work need not be returned to the departmental stores. Value of empty cement bags will be recovered at rates fixed by the department from time to time.
- ix. The bidder will provide his own tool and plant, store sheds to store his own materials as well as those supplied by the department and will be entirely responsible for the proper use and safe custody of the latter and also for any loss damage, theft, mishandling or any cause, whatsoever.
- x. If the department undertakes to supply particular materials, the claim for extra payment on account of delay in the supply of materials will not be entertained.

n. Power of Attorney:

The bidder shall not without the previous sanction in writing of the authority accepting the tender execute any power of attorney in respect of any matter, touching this contract, and any such power of attorney executed without such sanction shall not be recognized by or be binding upon Board or their officers. It shall be entirely within the discretion of the authority accepting the tender either to grant such sanction or to refuse it or to revoke a sanction once given.

o. Sublet:

No part of the contract shall be sublet without written permission of the Executive Engineer nor shall transfer be made by power of attorney authorize other to receive payment on the bidders behalf.

p. All disputes and differences arising out of the contract:

Arbitration shall not be a means of settlement of any dispute or claim out of this contract. All disputes and differences arising out of the contract may be executed in pursuance of the contract shall be settled only by the Civil Court in whose jurisdiction the work covered by the contract is situated, for in whose jurisdiction the contract was entered into in case the work extended to the jurisdiction of more than one court.

q. Relationship with Board's Servant:

Bidders should declare that they are not related to any Board servant, who is in charge of or having control of the work. Relationship in this will be restricted to father, mother, son, daughter brother-in-law mother-in law/ and first cousin of the officer concerned. If the above condition is found to have been contravened, when they tender the earnest money/ security deposit of the bidder / tender will be forfeited and the contract entered into will stand cancelled.

r. Engineering personnel at Site:

The bidder shall employ engineering personnel as detailed below for a period of one to two years according to the tenure of the contract paying Rs. pm. and Rs. p m to the Engineering Graduates and Engineering Diploma Holders respectively.

Cost of work executed	No of personnel to be employed
For works costing from Rs. 2 lakhs up to Rs 20 lakhs	One Engineering Diploma Holder
For work costing over 20 lakhs	One Engineering Degree Holder
For Pre-Qualification work.	One Engineering Degree Holder and One Diploma holder

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s. Safe custody of materials, Safety of the labour, Handling of explosives:

- i. The responsibility for safe custody of materials at work site and during transit will be vested with the bidder. The concerned Overseer in charge of the work will verify the stock and initiate action of shortage in stock in notice. Other inspecting officers will also verify the stock during inspection.
- ii. The bidder shall be responsible for the safety of the labour employed by him and he shall be liable to pay the necessary compensation in case of accidents, as per the Workmen's Compensation Act.
- iii. The bidder should take a license under the current explosive rules to enable him to manufacture and possess the quantity of gun powder required by him for blasting, if necessary.

t. Site visit :

- i. The bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for construction of the Works. He shall examine the site condition and satisfy himself of the availability of materials at nearby places, difficulties which may arise during execution before submitting the bids. The costs of visiting the Site shall be at the bidder's own expense.
- ii. The tenderers shall ensure the lead and quality and quantity of materials available before tendering. Any plea put forward later on for enhancement rate or grounds of adequacy of the materials available on for other reasons in the lead etc. will not be considered.

u. Other instructions:

- i. In the case of any delay in shifting the Telephone posts, Electric posts, Electric overhead line and cables, water lines etc. by the concerned Department, the Agreement Authority shall not in any way be liable for damages on account of this delay, provided a proportionate extension of time for completion of work will be granted in deserving cases on application by the Contractor.
- ii. The access to the Site will be shown immediately on award of the Contract to the Contractor and the Site shall be shared with other Contractors and Sub-Contractors as applicable.
- iii. Selected bidder will be required to produce income-tax and sales tax clearance certificates before final payment is made for the work, and before security deposits released.
- iv. Schedule of quantities, specifications of work to be done and conditions of contract to be entered into can be seen on the e-GP web site. It shall be definitely understood that the Board does not accept any responsibility for the correctness or completeness of the schedule that the schedule is liable to alteration by omissions, deductions or additions at the discretion of the competent departmental officer or as set forth in the conditions of contract. The bidder will however base this tender amount in the case of lump sum tender on the basis of those quantities, etc.
- v. In case of any additional remarks the bidders must attach/upload a pdf file along with on line bid. If they are prepared to

carry out at their tendered rates such portion or portions of the work as may finally be allotted to them by the Officer deciding tenders.

Note: The Board reserves the right to allot such portion of the work included in the tender at the rates quoted by the bidder in the absence of specific noting by the bidder. Such allotment shall not vitiate the acceptance and the bidder shall indemnify Board against any loss to Board, due to failure on the part of the bidder to carry out such portion of the work allotted to him at the rates quoted byhim.

- vi. The tender inviting authority or other sanctioning authority reserves the right to reject any tender or all the tenders without assigning any reasonthereof.
- vii. The bidder will also be liable to abide by the fair wage clause condition attached separately.
- viii. In the case of construction of steining to wells, excessive tilts if any occurring to the extent which is more than the percentage allowed as per rules will have to be rectified by the bidder at his own cost and if the bidder fails to attend to the same it will be got rectified by other agency and cost there of recovered from the originalbidder.
- ix. Tenders which are not in conformity with this tender notice are liable torejection.
- x. This tender notice with the conditions stated herein will form part of the contract documents.
- xi. In the case of schedule contracts when the rates quoted for a particular item in figures and words disagree, the rates quoted in words will be taken for the purpose, of the settlement of the contract. The bidder is bound to accept these rates if the contract is awarded to him. Similarly in the case of percentage rate contract when the prevail percentage rates quoted in figures and words disagree, the rates noted in words will be taken for the purpose of the settlement of the Contract. The bidder is bound to accept these rates if the contract is awarded to him.
- xii. If any correction is made by the bidder in the tender schedule the tenders are likelytoberejected. Anycorrections/suggestions/remarksetc.tobegivenbythe bidder has to be made only in the "Remarks" page/ section of the onlinebid.
- xiii. The quantities provided in the schedule may vary and the bidder should be prepared to do excess up to 25% (twenty five per cent) over the schedule quantities of a quoted rate for thework.

The G.O.(P)No.13/2012/PWD dated 01.02.2012 and specification issued by the Chief Engineer, General in circular No. O&M(1) 240/89 dated 11-2-1988 shall also be referred to for the road works. In case of any conflict between the provisions of MDSS, the above circular order and Government Order the latter shallprevail.

- xiv. It shall be accepted as a condition of contract that the landed property or bank deposit based on which the solvency certificate was issued by the Revenue Department and produced during the time of Registration will not be alienated during the period of contract without the permission of Government vide G.O.(P)No. 136/74/PW., dated 8th August1974.
- xv. The items and sub-heads of works to be done are enumerated in the subjoined schedule. Unless otherwise specified, the tender must be for the whole or any individual work and part tenders are liable to

rejection. A bidder may tender for more than one work with the earnest money deposit specified in each case, but shall not tender for any part of a work , unless specifically sorequired.

- xvi. All works shall be done in conformity with the specifications and conditions of contract in force in the P. W. D. andKSHB.

v. Amendment/ Corrigendum publication on e-GPwebsite

All amendment(s)/ corrigendum(s) shall be published on the e-GP website and bidders are advised to check the website regularly for the same upto the last date for the submission of bid. The Board shall not be responsible for bidder's negligence in checking the website regularly for any updates on this tender.

- w. Any further information necessary can be obtained at the office of the tender inviting authority on all working days during officehours.

SPECIAL CONDITIONS

1. All works shall be done in conformity with the **specification and condition in the contract** in force in the P.W D. The bidder shall quote only single rate as an overall percentage above or below or at the rates given in the schedule by a single entry at the bottom of the schedule under the head "quoted rate of the bidder" by scoring out the irrelevant portion. The rates quoted shall be inclusive once covering all the operation contemplated in the specification and tender schedule and all incidental work necessary for such operations such as shoring, bailing, form work, scaffolding, etc The rates quoted all be inclusive of all applicabetaxes.
2. The **rates quoted by the bidder** for the various items shall be inclusive of all tools and plants required for the proper execution work and all other incidental chargesand separate claim for these will not be entertained under anycircumstances.
3. **The quantities shown in the schedule** are only approximate and are subject to variations and the bidder is bound to do additional quantities of work if found necessary at his quotedrates.
4. All the **rates quoted** should be inclusive of sales taxalso.
5. The bidder has to quote for the specification and unit noted in the schedule. All suggestions, remarks, corrections and insertions are only to be made only in the "Remarks" page/ section of the online bid. Any revision / correction in price shall be made only by way of submitting another bid, complete in all aspects as stated in this tender, on or before the stipulated date & time of bids submission.
6. The contractor has to quote for the specification and unit noted in the schedule. No correction of specification unit or quantity is admissible and if they make any correction in the specification, etc., the same will berejected.
7. **The scanned copy of following documents** shall be submitted along with the online bid in coverspecified:
 - (a) Copy of Registration Certificate with PWD attested by a Gazetted Officer of GovernmentDepartment.
 - (b) Bid Capacity certificate of the bidder. (for pre-qualification workonly)
 - (c) Preliminary Agreement on Rs. 200/- Kerala stamp paper. Stamp paper charges to be borne by the bidderhimself.
 - (d) Scanned copy of the EMD exemption certificate, if any and proof of online payment of bid submission andEMD.
 - (e) Tenderdocuments.
 - (f) E-paymentrequisition.
 - (g) Affidavit stating whether work carried out by the bidder were terminated to his/their fault so far (pre-qualificationonly)

8. The bidder should submit the declaration in the form attached.
9. The bidder is bound to carry out items of works which are not expressly or impliedly described in the tender schedule plans, specifications and agreement but which are found necessary for the proper completion of the work during execution. Payment for such extra items will be made on the basis of extra item conditions vide clause 21 (e) of form No 83.
10. **For LS items** the bidder will be paid only for the actual quantity of work done or materials supplied and labour engaged at agreed rates for such items and as per condition No.10 above for extra item but such payment will be limited to the lumpsum quoted by the bidder. If he fails to quote definite LS rates for such items the L S amount provided in the schedule will be operative in his case.
11. Roofing tiles, hip tiles, wire cut bricks, surki. etc, required for the work should be purchased from suppliers approved by the Stores Purchase Committee.
12. For materials issued for the work but not used and not returned to the store sales tax at the prevailing rates will be recovered in addition to the departmental recovery plus 20 percent storage.
13. For cement and M.S. rods issued for the work but not used a penalty of Rs.per 50 kilograms of cement and Rs.per kilogram of MS. Rods will be recovered in addition to the value, 20 per cent storage and sales tax.
14. It will be the responsibility of the bidder to **obtain necessary land for stacking** the materials for arranging the work.
15. **Metal of the required sizes alone** should be brought to the site of the work. Breaking boulders or rubble into metal will not be allowed either on or the side of the road. Metal should be stacked on one side of the road only and in such a way as not to cause any hazards to traffic. The stacks should be formed as per the standards profile current in the department.
16. **Granite stone metal** supplied should be sound, hard tough and durable free from any decayed matter and of uniform colour and texture. Each piece should have sharp angular edges. The metal should not also contain any quarry dust or earth.
17. **Silicious gravel** shall consist of only hard nodules not more than 40mm. nor less than 6 mm. dia. in and direction scraped from the hill sides and free from admixture of earth or laterite chips.
18. **Sand supplied** should be clean, sharp and gritty to the touch, free from clay and other impurities and obtained from running water courses.
19. The bidder will have to make his **own arrangements to convey the materials supplied by the department and for stacking**, of materials and site shed, etc., which are found necessary for the proper, execution of the work. He will also be responsible for the safe custody of the materials till, they are used on works.
20. The bidder should take out **license for storing gun powder and explosives** required for rock blasting as per Explosive Act, 1940.
21. **Empty cement bags will not be taken back** but its cost at Rs. 1/- per bag will be recorded towards value with the usual sales tax.

22. **Recovery for M. S. rods** shall be effected at agreed rates for the quantity actually used plus wastage, if any. The percentage of wastage will be fixed by the Executive Engineer but at any rates it should not exceed. 3 percent of the actual usage.
23. If the Board undertake the supply of any materials, **no claim for extra payment** due to delay in supply of those materials will be entertained.
24. If materials other than those specified in the tender are issued by the department, **recovery will be effected** at data rate plus storage plus sales tax or at current market rates at the time, of issue whichever is higher.
25. Machinery like concrete mixer, pump set, etc, if available will be supplied by the department as per rules and **hire charges recovered from the bidder** at the prevailing departmental rates. The bidder has to take the machinery from the store and return to the same spot at his cost and responsibility.
26. If **part payment is claimed for metal supply** 20 percent of the supply will only be made in the part bill. The spreading and consolidation should be done within two months of supply.
27. The **payment of the earth work** items will be made as per level measurements or tape measurements as per rules prevailing.
28. All items should be **carried out as per the relevant specification** in the M.D.S.S, MoRTH, CPWD or IRC and all clauses of preliminary-specification should be complied with.
29. The moulds, shuttering etc., required for the work should be made by the bidder and got **approved by the departmental officers at site before use**.
30. **Tribes of the locality should be employed** to the extent possible. The bidder should **pay fair wages** to the labour engaged on the work which will be fixed by the Government as specified in G. O. 18-8597 / 55/LD..dated 7th March 1955 with amendments time to time and any dues to the labour will be recovered from his bill as fixed by the departmental officers.
31. The bidder alone is responsible for the **safety of his labourers and damages**, if any payable under "Workmen's Compensation Act" will be to his debit.
32. It shall be the contractor's responsibility to **protect the public / his employees against accident** from any cause during execution of the work and he shall indemnify the Government against any claims for injury to person or property resulting from any such, accident and he shall, were provisions of the Workmen's Compensation Act apply take steps to properly insure against any claim thereunder.
33. The bidder shall be **liable for any loss** caused to the Board on account of the above work including any that may arise due to non-fulfillment of the contract. He should comply with the rules laid down in the Central P. W. D. Contract regulations regarding fair wages.
34. The work shall be completed in all respects and also at the rate of progress within the time limit and stipulations in the Form No. 83 Notice inviting tender, failing which the bidder is **liable to be fined** as stipulated in special condition.
35. Defects, if any noticed within 18 months or defect liability period specified from the date of completion of the work **will be got rectified by the bidder**, in default of which this will be attended by the department and the cost made good from the bidder.
36. The bidder should **produce latest sales tax and agricultural income-tax clearance certificate and also income tax clearance certificate** for receiving final payment.

37. The bidder shall be responsible for the **payment of sales tax** as per rules in force from time to time and the rates quoted for various items remain unaffected by any changes that may be made from time to time in the rate at which such tax is levied. Sales tax agricultural income tax and income tax due to Government from the bidder will be recovered from his bill for the work as per the advice of the authorities concerned.
38. All sums due to the Board under or by virtue of this contract shall be **recoverable first from the Performance guarantee (security) furnished** by the bidder and if the same is found insufficient, such deficit amount shall be recoverable under the provisions of the Revenue Recovery Act for the time being in force as though the same were arrears of Land Revenue or in any other manner as the Board may deem fit.
39. The bidder agrees that before final payment shall be made on the contract, he will **sign and deliver to the Executive Engineer either in the measurement book** or otherwise as demanded, a valid release and discharge from any and all claims and demands whatsoever for all matters arising out or connected with the contract. Provided that nothing in this clause shall discharge or release the contractor from his liabilities under the contract. It is further expressly agreed that the Executive Engineer in supplying the final measurement certificate need not be bound by the preceding measurement and payments. The final measurements, if any, of the Executive Engineer shall be final conclusive and binding on the bidder.
40. The tender notice and Form No. 83 notice inviting tender shall form **part of the Agreement.**
41. If during execution, the proportion of usage of materials issued departmentally alone is varied for which the price has been fixed in the tender, the quoted rate of the item will be allowed **effecting short or excess of departmental materials actually used** as well as labour charges or handing the short or excess is any provided is in the same position.
42. **All other conditions and specifications of contract** are the same as those in the Board.
43. The **method of measurements** will be as per Indian standards
44. All concrete should be **machine mixed and vibrated.**
45. The contractor for this work shall be bound to remit an amount equal to 1% (one per cent) of the value of the work to be done on account of this contract, excluding cost of departmental materials, towards the employer's contribution to Kerala **Construction workers Welfare Fund** as provided in the Kerala Construction Workers Welfare Fund Act 1989. This amount shall be recovered proportionately from the part bills and the final bill for the work and the contractor shall abide by such recoveries.
46. Conditional tenders will be summarily rejected and EMD forfeited. Also **each tenderer shall furnish a certificate to the effect that no conditions are enclosed** along with the tender.
47. The contractor is bound to keep a machine numbered well bound **work spot order book**, initialed by the Assistant Engineer in charge and he should carry out works as ordered in the book. No oral orders said to have been given will be accepted as a claim for payment unless they are got recorded in the order book.
48. **A hindrance register** will be maintained in all site offices. The reason for the actual delay from time to time in completing the work will be assessed and recorded in the register by the site officers. The contractors should therefore satisfy themselves the correctness of recordings in the register and confirm the same by putting their signatures in the register at least once in a week. The entries containing the signature of the contractors will alone be considered for their claims.

49. All Iron and Aluminum fittings required for the door, window, shutters, locks, special fittings and sanitary fittings like wash basin, closet, taps, showers etc. and items required for water supply and electrification should be brought by the contractor to site prior to the commencement of such works and get the **written approval of the concerned Executive Engineer before using the same in respective works.** This does not apply to steel / Iron / Aluminum doors and windows.
50. **Indian Standard Specifications** shall be followed in case of all the materials used, workmanship and other conditions and requirements of the contract.
51. The Contractor shall before commencement of the work submit a **programme schedule** indicating the date of start, monthly progress expected to be achieved and the anticipated completion date of each major item of work to be done by him. In case it is subsequently found necessary to alternate the schedule incorporating necessary modifications the same shall be got approved by competent authority.
52. In case of departmental supply the Contractor shall, before starting the work, submit an **estimate of his total requirement of cement and steel** and shall place indents for his monthly requirements at least one month in the case of cement and two months in the case of steel in advance of the planned use. The contractor shall be responsible for all the consequences arising out of his failure to comply with these directions and any procedure that may be laid therefore.
53. **Cement supplied for the work** shall not ordinarily be stored for a period in excess of two months. When the storage period has exceeded two months the cement shall be used only after conducting special test at the contractor's cost. The board does not undertake to take back the cement damaged due to delay in using it on the work.
54. **Steel supplied for the work** shall be scraped and cleaned to be free from scales, rust, dirt etc. before they are used for RCC work.
55. Concrete made for a particular grade should yield the specified strength when tested; **the tests should be carried out** in accordance with the relevant Indian Standard specifications. The number of test specimens required and the frequency of sampling and the criteria for acceptance of the concrete as conforming to the specified grade shall be in accordance with the standard specifications and from the test results of compressive strength of line cubes :at 28 days after mixing. The contractor shall at his own cost, arrange for the moulding of the concrete cubes and testing of its compressive strength at 7 days and 28 days in the presence of an officer in charge of the work.
56. The Engineer in charge of the work has full powers to engage other workmen on the premises to execute fittings or carry out **works not included in the contract** and the contractor shall afford reasonable facilities for the same.
57. No claim will be entertained by the Board on account of any increase in **railway or road freight cost** of all building materials and other materials like petrol, diesels, lubricants etc. and for any increase in the wages of labour increase in rates of sale tax etc. during the course of construction.
58. Any **defects shrinkage or other faults** which may appear within **36** months from the completion of the work shall be made good by the contractor at his own cost unless the Engineer in-charge of the work for reasons to be recorded in writing, decides that they may be paid for.
59. **On completion of the work the contractor shall clear away and remove from the site** all construction plant surplus materials debris and temporary works of every kind and leave the whole of the site and working clear conditions to the satisfaction of the Engineer in charge and in the event of the failure of the contractor to comply with these directions within seven days after receipt by him of a notice to that effect

from the Engineer In charge such clearness may be made by the Engineer in charge at the expense of the contractor.

General Tender Terms & Conditions for e-Procurement

This tender is an e-Tender and is being published online for the **KSHB-KASARAGOD Dvn-Internal Electrification, 5 KWP SITC of on grid roof top solar plant & 25kVA DG of Working Women's Hostel - Madhur**The tender is invited in **1 covers** system from the registered and eligible firms through e- procurement portal of Government of Kerala (<https://www.etenders.kerala.gov.in>). Prospective bidders willing to participate in this tender shall necessarily register themselves with above mentioned e-procurement portal.

The tender timeline is available in the critical date section of this tender published in www.etenders.kerala.gov.in.

A). Online Bidder registration process:

Bidders should have a Class II or above Digital Signature Certificate (DSC) to be procured from any Registration Authorities (RA) under the Certifying Agency of India. Details of RAs will be available on www.cca.gov.in. Once, the DSC is obtained, bidders have to register on www.etenders.kerala.gov.in website for participating in this tender. Website registration is a one-time process without any registration fees. However, bidders have to procure DSC at their own cost.

Bidders may contact e-Procurement support desk of Kerala State IT Mission over telephone at 0471- 2577088, 2577188, 2577388 or 0484 – 2336006, 2332262 or 0497-2764788, 2764188 or 0483 – 273294 or through email: etendershelp@kerala.gov.in or helpetender@gmail.com for assistance in this regard.

B). Online Tender Process:

The tender process shall consist of the following stages:

- i. **Downloading of tender document:** Tender document will be available for free download on www.etenders.kerala.gov.in. However, tender document fees shall be payable at the time of bid submission as stipulated in this tender document.
- ii. **Publishing of Corrigendum:** All corrigenda shall be published on www.etenders.kerala.gov.in and shall not be available elsewhere.
- iii. **Bid submission:** Bidders have to submit their bids along with supporting documents to support their eligibility, as required in this tender document on www.etenders.kerala.gov.in. No manual submission of bid is allowed and manual bids shall not be accepted under any circumstances.
- iv. **Opening of Bids :** Bids shall be opened on the specified date.

Note: The blank price bid should be downloaded and saved on bidder's computer without changing file-name otherwise price bid will not get uploaded. The bidder should fill in the details in the same file and upload the same back to the website.

Fixed price: Prices quoted by the Bidder shall be fixed during the bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable/ variable price quotation will be treated as non - responsive and rejected.

C) Tender Document Fee and Earnest Money Deposit (EMD) :

The bidder shall remit the tender document fee and Earnest Money Deposit or bid security through online mode as specified in the NIT.

Online Payment modes: The tender document fees and EMD can be paid in the following manner through e-Payment facility provided by the e-Procurement system:

- ai. **State Bank of Travancore (SBT) Internet Banking:** If a bidder has a SBT internet banking account, then, during the online bid submission process, bidder shall select SBT option and then select Internet banking option. The e-Procurement system will re-direct the bidder to SBT's internet banking page where he can enter his internet banking credentials and transfer the tender document and EMD amount.
- ai. **National Electronic Fund Transfer (NEFT)** If a bidder holds bank account in a different bank, then, during the online bid submission process, bidder shall select NEFT option. An online remittance form would be generated, which the bidder can use for transferring amount through NEFT either by using internet banking of his bank or visiting nearest branch of his bank. After obtaining the successful transaction receipt no., the bidder has to update the same in e-Procurement system for completing the process of bid submission. Bidder should only use the details given in the Remittance form for making a NEFT payment otherwise payment would result in failure in e-Procurementsystem.

As NEFT payment status confirmation is not received by e-Procurement system on a real-time basis, bidders are advised to exercise NEFT mode of payment option at least 48 hours prior to the last date and time of bid submission to avoid any payment issues.

NEFT payment should done according to following guidelines:

- i. **Single transaction for remitting Tender document fee and EMD:** Bidder should ensure that tender document fees and EMD are remitted as one single transaction.
- ii. **Account number as per Remittance Form only:** Account no. entered during NEFT remittance at any bank counter or during adding beneficiary account in Internet banking site should be the same as it appears in the remittance form generated for that particular bid by the e-Procurement system. Bidder should ensure that tender document fees and EMD are remitted only to the account number given in the Remittance form provided by e-Procurement system for that particular tender.

Bidders must ensure that the banker inputs the Account Number (which is case sensitive) as displayed in the Remittance form. No additional information like bidder name, company name, etc. should be entered in the account no. column along with account no. for NEFT remittance.
- iii. **Only NEFT Remittance Allowed:** RTGS payments, Account to Account transfers, State Bank Group Transfers (GRPT), Payments from NRE Accounts, SWIFT Transfers or Cash payments are not allowed and are treated as invalid mode of payments. Bidder must ensure that the banker does NEFT transaction only irrespective of the amount and specially instruct the banks not to convert the payment type to RTGS or GRPT.
- iv. **Amount as per Remittance form:** Bidder should ensure that the amount being remitted is neither less nor higher than the amount shown in remittance form.
- v. **UTR Number:** Bidders should ensure that the remittance confirmation (UTR number) received after NEFT transfer should be updated as it is, in the e-Procurement system for tracking the payment.
- vi. **One Remittance Form per Bidder and per Bid:** The remittance form provided by e-Procurement system shall be valid for that particular bidder and bid and should not be re-used for any other tender or bid or by any other bidder.

Any transaction charges levied while using any of the above modes of online payment has be borne by the bidder. The supplier/contractor's bid will be evaluated only if payment status against bidder is showing "Success" during bid opening.

C). SUBMISSION PROCESS:

For submission of bids, all interested bidders have to register online as explained above in this document. After registration, bidders shall submit their Technical bid and Financial bid online on www.etenders.kerala.gov.in along with online payment of tender document fees and EMD.

For page by page instructions on bid submission process, please visit www.etenders.kerala.gov.in and click "Bidders Manual Kit" link on the home page.

It is necessary to click on "Freeze bid" link/ icon to complete the process of bid submission otherwise the bid will not get submitted online and the same shall not be available for viewing/ opening during bid opening process.

Special Conditions for water supply and Sanitary works

- 1 The work shall be executed only through licensed plumbers.
- 2 The cost of departmental connections for water supply and incidental charges if any shall first be borne by the selected contractor and he shall be paid the actuals based on vouchers produced by him. The account remittance in regard to Departmental connections for water supply and drainage shall be in the name of Secretary, Kerala State Housing Board, Thiruvananthapuram.

All the other conditions apart from the above mentioned will have to be considered as based on the Revised PWD manual 2012 with effect from 01.02.2012.

SPECIAL CONDITIONS FOR KVAT AS PER THE KERALA FINANCE ACT. 2008

In case of Civil works awarded by Government of Kerala deduct KVAT at percentage enforced at the time to of agreement or modified time to time of the gross amount of bill payable for the bidders every time.

The VAT amount will be retained by the concerned PWD officers when the bill for the work is passes for payment and the amount so retained shall be credited to the sales Tax Department.

FAIR WAGE CLAUSE

- (a) The bidders shall pay not less than fair wages to labourers engaged by him on the work. "Fair wages" means wage whether for time or piece work notified at the time of inviting tenders for the work and where such wages have not been so notified the wage prescribed by the Central P. W.D. for the District in which the work is done.
- (b) The bidders shall notwithstanding the provisions of any contract to the contrary cause to paid a fair wage to labourers indirectly engaged on the work including any labour engaged by his sub bidder in connection with the said work as if the labourers had been immediately employed by him.
- (c) In respect of all labour directly or indirectly employed in the works for the performance of the bidder's part of this agreement the bidder shall comply with or cause to be complied with (the Central P.W.D. bidder's labour regulations made by Government in regard to payment of wages, wage period deduction from wages recovery of wages not paid deduction unauthorisedly made maintenance of wages register other terms of employment inspection and submission of periodical returns and all wages cards, publication of scale of wages and returns and all other matters of a like nature.
- (d) The Executive Engineer or Subdivision Officer concerned shall have the right to deduct from the moneys due to the contractor and any sum required of estimated to be required for making good the loss suffered by 2 worker or workers by reasons of nonfulfilment of the conditions of the contract for the benefit of the works nonpayment of wages or deductions made from his or their wages which are not justified by their terms of the contract or non observance of the regulations,
- (e) Vis-a-vis the Central Government the bidder shall be primarily liable for all payment, to be made under and for the observance of the regulations aforesaid without prejudice to his right to claim from this subbidders.

- (f) The regulation aforesaid shall be deemed to be a part of this bidder and breach there of shall be a breach of this contract.

**CLAUSE-45 OF M.D.S.S.-ACCIDENTS-HOARDING-LIGHTING-OBSERVATIONS
— WATCH MEN-**

- (a) When excavations have been made or obstacles have been put in public through fares or in places where there is any likelihood of accidents, the bidder shall comply with any requirement of law on the subject and shall provide suitable boarding, lighting and watchmen as necessary.
- (b) It shall be the bidder's sole responsibility to protect the public and his employees against accident from any cause and he shall indemnify Government against any claims for damages for injury to person or property, resulting from any such accidents and he shall, where the provisions of the Workmen's Compensation Act apply take steps to properly ensure against any claims thereunder.
- (c) On the occurrence of an accident which results in the death of any of the workmen employed by the bidder or which is so serious as to be likely to result in the death of any such workmen, the bidder shall within 24 hours of the happening of such accidents, intimate in writing to the concerned Section Officer of the Public Works Department, the fact of such accident. The bidder shall indemnify Government against all loss or damage sustained by Government resulting directly or indirectly from his failure to give intimation in the manner aforesaid including the penalties Of fines if any payable by Government a consequence of Government's failure to give notice under the Workmen's Compensation Act or otherwise conform to the aid Act in regard to such accident.
- (d) In the event of an accident in respect of which compensation may become payable under the workmen's Compensation Act VIII of 1923 and its amendments time to time whether by the bidder or by the Government as principal it shall be lawful for the Executive Engineer to retain out of moneys due and payable to the bidder such sum or sums of money as may, in the opinion of the said Executive Engineer, be sufficient to meet such liability. The opinion of the Executive Engineer shall be final in regard or all matters arising under this clause.

REGIONAL ENGINEER

**SPECIAL CONDITION TOWARDS CONSTRUCTION OF KERALA CONSTRUCTION
WORKERS WELFARE FUND BOARD.**

1 percent (one percent) of the bill amount including cost of departmental materials and hire charges of departmental tools and plant will be recovered towards the construction of Kerala construction workers welfare fund be and as Kerala construction welfare fund scheme 1990. This amount shall be remitted to K.C.W.W.F. by the Executive Engineer within 15 days on the payment to the bidder.

REGIONAL ENGINEER

FORM OF DECLARATION

1. I, hereby declare that none of my relations as per the list given in section, 6 and Schedule I-A of the Companies Act, 1956 is in charge of the above work or are having control over it.
2. I, hereby distinctly and expressly declare and acknowledge that I have read the Madras detailed standard specifications, MoRTH specifications, IRC Specification, CPWD Specification and the preliminary specification therein.

Name of Contractor :

Note: If the bidder is found at any stage to have suppressed any information required, his earnest money for the work is liable to be forfeited and the bidder entered into, will stand cancelled.

KERALASTATE HOUSING BOARD

FORM OF TENDER

G.W.D. 84 (Form No.84)

Division:- KASARAGOD

Sub Division:-

Name of Work :KSHB-KASARAGOD Dvn-Internal Electrification, SITC of on grid roof top solar plant & 25kVA DG of Working Women's Hostel - Madhur

Name:

Address of Bidder:

KERALA STATE HOUSING BOARD

Specifications

(I) –GENERAL

The rates tendered by a Bidder for the work shall include the cost of:

1. a) All labour and supervision thereof, all materials, tools, implements and plant of every description, ladders, cordage tackle, etc. as well as the provision of safe and substantial scaffolding required for the proper execution of the work in conformity with the various items of work;
 - b) Supplying the requisite agency with necessary equipments, to set out the work as well as to afford facilities for such examination of the work as the Departmental Officers may at any time consider desirable, as also to count, weigh and assist in the measurement or check measurement of the work or materials;
 - c) Providing and maintaining all temporary fences, shelters, lights, watchmen and danger signals and such other precautions as are necessary for the protection of the work or materials, as well as to protect the public and those connected with the work from accidents at the site of, or on account of the work;
 - d) All sheds, mortar mills and mixing platform of every kind required for the proper execution of the work according to the specifications;
 - e) All fees and royalties of materials and
 - f) Finally clearing away of all rubbish, surplus materials, plant etc. on completion of the work and dressing and leveling of and restoring the site to a tidy condition, prior to handing over the work to the Division Officer or his authorized assistant and also its maintenance until so taken over.
2. In the case of supplies of materials such as rubble, broken stones, gravel, sand etc. which may have to be measured prior to being used on the work, the Bidder must always stack or arrange them neatly on level ground or on ground cleared and leveled by him for the purpose in such manner as may be ordered by the Officer-in-charge so that they may be easily susceptible of inspection and measurement, the cost of such clearing, leveling and stacking or arranging being included in the rates for work. Each stack must be straight and of uniform section throughout and of the dimensions specified by the Officer-in-charge. Materials not stacked or arranged in accordance with instructions issued will not be measured and paid for.
 3. The Bidder shall be bound to bear the expense of defense of any action or law proceedings that may be brought by person for any injury sustained owing to neglect of above precautions in connection with the execution of the work, and to pay any damages and cost which may be awarded in consequence.

4. The Bidder shall also help himself out of any difficulties of penalties arising from interference with private property in the execution of the contract.
5. The Bidder should state whether he has all the plant necessary for execution of the work. If the opinion of the Division Officer, Bidder's own plant is neither sufficient nor suitable for the proper execution of the work, the department may supply other available plant and recover reasonable hire for the same. The Division Officer's decision in the matter shall be final and binding on the Bidder.
6. The Bidder shall bear the running expenses inclusive of pay of the departmental staff attached to such plant and cost of repairs of all Government plant while in his possession on hire as also the cost of restoring the same in good condition at the time of return, due allowance being made for fair wear and tear.
7. All stores and plant that are to be made over to the Bidder by the Department shall be handed over to him at the Division Office or Store yards at division headquarters or the PWD General stores, Trivandrum and the charges for their handling, loading and unloading and conveyance to and from for the respective work as also for stacking the materials neatly and in regular heaps on the ground or sheds to which they are brought shall be deemed to be included in the rates for the work.
8. Unless otherwise specifically provide for in the contract, the Bidder shall at his own cost keep all portions of the work free from water whether due to springs, or inclement weather and neat and sanitary condition and shall also see that drainage and sewage are prevented from entering the site of work or accumulating therein.
9. The Bidder shall be responsible for the proper use and bear the cost of protection of materials made over to him by the Department for use on the work and bear any loss from deterioration of from faulty workmanship or any other cause. The cost of materials thus allowed to deteriorate amounting as it does to and excess issue over sanctioned quantities, will be recovered at rates 20 percent over the actual cost. The orders of the Division Officer in the matter shall be final binding on Bidder.
10. The Bidder shall be responsible to see that the level or the other pegs, profiles, bench, marks masonry pillars or other marks set up by the Department for guidance in the execution of the work are not disturbed, removed or destroyed, they will be replaced by the Department at the cost of Bidder.
11. Any materials brought to the site of work, or any work done by the Bidder but rejected by the Officer-in-charge as being not up to the specifications shall in the case of materials supplied be then and there removed from or broken up at the site of work, and in the case of work done, be dismantled or rectified at the expense of the Bidder, as may be ordered by the Officer-in-charge.
12. In all cases whether so specified in the contract or not, the work shall be executed in strict accordance with the Bidder's accepted tender and these specifications and with such further drawings and specifications and orders as may from time to time be issued by the Division Officer.
13. Whenever the Bidder is ordered by the Division officer or his authorized assistant or subordinate to execute any item of work which is not in the tender, it shall be the Bidder's duty to get a special price arranged for any item and to see that it is written in the work spot order book (which shall be provided by the division officer and kept in the work spot by the subordinate-in-charge) and that this order is initiated and dated by the Bidder and entered in the work spot order book and initialed both by the Bidder and the departmental officer ordering such extra item that Bidder shall have no claim for extra payment.

14. Arbitration shall not be a means of settlement of any disputes or claims arising out of the contract relating to the work.

Specification

- | | |
|--------------|------------------|
| (II) | Materials |
| (III) | Work |
- (As current in the Kerala State Housing Board)

NOTICE

The Contractor must produce the following Documents in the Office both physically and on line before the opening of the Tender.

- 1) EMD (Online remittance alone)
- 2) Cost of Tender schedule (Online remittance alone)
- 3) Attested copy of licence (Attested by a Gazetted Officer of Government Department)
- 4) Preliminary Agreement in Rs. 200/- Kerala stamp paper
- 5) Experience certificate of at least one work of similar nature completed within last 5 years costing more than 40% of the estimated cost of the work tendered.
- 6) The Tender of Contractors who do not quote their account in any of the Banks having core banking solutions in the requisition for e-payment form attached with the tender documents for making the e-payment would be rejected vide para 3 of GO(P) NO. 06/2012/PWD dated 10/01/12.
 - 7) Duly filled and signed copy of certificate for correctness of this bid document (Annexure –II)
 - 8) The Tender of Contractors who do not fill in the Technical bid documents would be rejected.

KERALA STATE HOUSING BOARD

FORM OF TENDER

(Bid submission letter)

Name of Work: KSHB-KASARAGOD Dvn-Internal Electrification, 10 KWP SITC of on grid roof top solar plant & 25kVA DG of Working Women's Hostel - Madhur

To

The Regional Engineer Kerala
State Housing Board
Kozhikode Housing
UnitKozhikode

Sir,

1. I/We do hereby tender to execute the works enumerated in the Schedule accompanying in accordance with the terms in your tender Notification No.and specifications and conditions of contract in force in Kerala P.W.D.
2. Copy of the electronically signed specifications signed is also enclosed.
3. I/We further agree to complete the whole work inmonths from date of receipt of order to start work, and / or in the case of piece-works, maintain the minimum rate or progress specified in the Tender Schedule.
4. I/We do/do not agree to accept and carry out such portion of the work included in my/our tender as may be allotted to me /us if the whole work be not given to me/us.
5. In consideration I/We being registered as a Bidder in the Kerala PWD/KSHB/KWA/KSEB/CPWD/MES/Railway and invited to tender, I/We agree to keep the tender open for acceptance days from the date of submission thereof and not to make any modifications in its terms and conditions which are not acceptable to Government.
6. I/We agree that Arbitration shall not be a means of settlement of any disputes or claims arising out of the contract relating to the work.
7. None of the Partners of our firm is relative of employee of Kerala State Housing Board who is involved with the arrangement and execution of this work.
8. All information furnished by us in respect of fulfilment of eligibility criteria and qualification information of this Tender is complete, correct and true.
9. All documents/credentials submitted along with this Tender are genuine, authentic, true and valid.

10. I/we undertake to deploy all plant and machinery, tools and tackles, man and materials etc. as required for execution of the work.
11. I/We hereby declare that I/We have perused in detail and examined closely the Central Public Works Department Specifications, Kerala PWD Manual, Kerala PWD Quality Manual and Laboratory Manual, before I/We submit the tender/ bid and I/We agree to be bound by and comply with all such specifications and requirements.
12. I / We agreed to meet all expenses towards compensation / rectification in the case of occurrence of any accident / damages at Site to the labourers /employees.
13. If any information and document submitted is found to be false/incorrect at any time, department may cancel my/our Tender and action as deemed fit may be taken against us, including termination of contract, forfeiture of all dues including Earnest Money, revoking of Bank Guarantees and banning/delisting of our firm and all partners of the firm etc.

A sum of Rs. is hereby Deposited online from Bank as Earnest Money. If I/We fail to keep the tender open as aforesaid or make any modifications in that terms and conditions of the tender which are not acceptable to Board.

OR

If after tender is accepted, I/We fail to execute the agreement as provided in tender notifications or to commence the execution of the work as provided in the conditions, I/We agree that the Board shall, without prejudice to any other right or remedy be at liberty to forfeit the said earnest money absolutely and also recover from me/us the entire loss that may be caused to the Board by the retender or rearrangement of the work or otherwise under the provision of the Revenue Recovery Act or otherwise.

- Acc: i. Tender Schedule (submitted with Financial Bid):
ii. Earnest Money
iii. Signed copy of specification:
iv. Signed copy of plan:

v. Nationality:

Full Name of Bidder:

Place of Residence:

PRELIMINARY AGREEMENT TO ACCOMPANY IN KERALA STAMP PAPER WORTH Rs. 200/- ALONG WITH THE BID

Article of Agreement executed on this the day of(month) two thousand nineteen between the Kerala State Housing Board acting through the....., Kerala State Housing Board (hereinafter referred to as "the Board") of the one part

And

Shri.....(name address of the tenderer) (hereinafter referred to as " the bounden " of the other part.).....

Whereas in response to the invitation for tenders, contained-in Notifications No dated.....inviting tenders the bounden has submitted to the Board a tender for the specified therein subject to the terms and conditions contained in the said tender.

WHEREAS the bounden has also deposited with the Board a sum of Rs.-----/- (Rupees.....) as a earnest money for execution of an agreement under taking the due fulfillment of the contract in case his tender is accepted by the Board.

NOW THESE PRESENTS WITNESS AND IT IS HEREBY MUTUALLY AGREED AS FOLLOWS.

1. In case the tenders submitted by the bounden is accepted by the Board and the contract for the is awarded to the bounden, the bounden shall within 14 days of acceptance of his tender execute an agreement with the Board incorporating all the terms and conditions under which the Board accept his tender.
2. In case the bounden fails to execute the agreement as aforesaid incorporating the terms and conditions governing the contract, the Board shall have power and authority to recover from the bounden any loss or damages caused to the Board, by such breach as may be determined by the inadequate the deficit amount may be recovered from the bounden and his properties movable and immovable and also in the manner herein after contained
3. All sums found due to the Board under by virtue of this agreement shall be recoverable from the bounden and his properties, movable and immovable under the provisions of the Revenue Recovery Act for the time being in force as though such sums are arrears of land Revenue and also in such other manner as the Board may deem fit.

In witnesses where of Shri(Name and designation) for and on behalf of the Board and Shri.....the bounden have here unto set their names that day and year shown against their respective signatures.

Signed by Shri.....
(date)

In the presence witnesses :

- 1.
- 2.

Signed by Shri.....
(date)

In the presence witnesses

- 1.
- 2.

CERTIFICATE FOR CORRECTNESS OF THE BIDDOCUMENTS

(Certificate to be furnished by the Bidder with the tender document downloaded from e-GP Web-site)

I/Weundertake that the tender submitted by us isdown-loaded from e-GP Website (www.etenders.kereala.gov.in) and is same in content and form (verbatim), and any deviation, of detected, at any stage, would entitle the Employer to reject our bidding/ offer without assigning any reason or recourse to any penal action and would be legally binding on us.

Signature(ofBidder)

Seal.....

Requisition fore-Payment

[To be attached with tender form as per G.O (P) No.06/2012/PWD dated 10/01/2012]

Certified that I am having a Savings / Current Account in

<Name of Bank>

at<Name of Branch> with IFSCCode_____

The Account Numberis:_____

I wish to receive all payments in this account through NEFT and RTGS systems, as the case may be, for all payments relating to this work.

Name of Bidder

Place:

Date:

Special Conditions For Electrification Works

TECHNICAL SPECIFICATIONS

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Section I	:	General Requirements
Section II	:	Medium Voltage Distribution System
Section III	:	McbDb, McbAndRccb
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Section V	:	Lt (1.1 Kv Grade Cables)
Section VI	:	Medium Voltage Distribution Board /Panel

SECTION I

GENERAL REQUIREMENTS

1. Scope of Work:

1 General:

The scope of work shall be generally as given in the Tender Schedule and in the drawings for the electrification work. The intention of the specification, Tender Schedule and the drawings is to give finished work of approved and standard quality and all duly tested and commissioned. All minor items of details usually not shown or indicated but necessary for the completion of the system, including testing, commissioning and handing over shall deem to have been included in the work and in

2. The work is divided under following main groups:

- a. The entire internal electrification work shall be with Cu wires in concealed/in open PVC conduits with necessary accessories and switch boxes, light/fan points, power points, etc.
- b. The Supply and Erection of lighting luminaries, ceiling fans, exhaust fans etc.
- c. The complete earthing system including earthing stations, earth conductors, earth bus and their connections.
- d. Providing power supply from sub-station to the sub panels in different locations as indicated in the drawings. The complete installation, testing and commissioning of external lighting within the plot area including lighting poles, their earthing, cabling, control unit and DB, pole terminal boxes, lighting luminaries and lamps etc.

2 Liaison and Co-ordination work:

2.1All liaison and co-ordination work with KSEB, Electrical Inspector or any other statutory body and agency will be contractor's responsibility and statutory expenses towards the same will be met by the owner. This liaison work will include all activities in all stages starting from making application to KSEB and/ or other agencies and up to and including release of required permanent electric connections for this project. The owners will pay the official fees, deposits and such other payments, which are to be paid in the name of the owners.

2.2After connection of regular supply by KSEB, the installation shall be again checked by the contractor.

2.3 The contractor shall carry out all minor civil works connected with the electrical job. The contractor shall repair and make good the damages caused by him to the civil structure while executing the electrification work. The foundations for the panel board, and distribution pillars, grouting of frames in the wall, erection of D.B./switchboards on the wall etc. are all to be carried out by the contractor.

3. Abbreviations:

The following abbreviations have been used in the specifications, drawings and bill of quantities.

BIS : Bureau of Indian Standards.	SFU : Switch fuse unit.
ISS : Indian Standard Specifications.	E : Earth conductor.
HRC : High Rupturing Capacity.	Cu : Copper conductor.
GI : Galvanized Iron.	AL : Aluminium conductor.
MV : Medium Voltage.	MSB : Main Switch board.
LV : Low Voltage.	MS : Mild Steel
AMP : Amperes.	V : Volts.
KV : Kilo Volts.	KVA : Kilo Volt Ampere
CI : Cast Iron.	SDF : Switch disconnecter fuse
MCB : Miniature Circuit Breaker.	TPN : Triple pole and Neutral.
MCCB: Moulded case circuit breaker.	SP : Single Pole.
ACB : Air circuit breaker.	CT : Current transformer.
DB : Distribution board.	DG : Diesel generator.

4. Regulations and standards:

The installation shall conform in all respects to Indian Standard code of Practice for Electrical Wiring installation IS 732-1963 and IS 2214-1963. It shall also be in conformity with the current Indian Electricity Rules, Indian Electricity Act. National Electric Code and Regulations of the Local Electrical Supply Authority in so far as these become applicable to the installation. Wherever this specification calls for a higher standard of material and/or workmanship than those required by any of the above regulations then this specification shall take precedence over the said regulations and standard. In general, the materials equipment and workmanship not covered by the above shall conform to the relevant Indian Standards.

5. Approvals and tests:

The contractor shall get approval for the work from KSEB and Electrical Inspector. On completion of the work the contractor shall obtain and deliver to the Consultant certificates of final inspection and approval by the local electric supply authority and electrical inspector. The consultant/client have full powers to test the materials or work or arrange to be tested by an independent agency at the electrical contractor's expense in order to prove their soundness and adequacy.

6. Actual route of cables / Conduits etc:

The locations of the DB's, light/fan points, power points and routing of the conduits, wires and cables as shown on the drawings are only indicative. Therefore the actual route and locations may differ from the plans according to the working drawings for civil construction and site conditions.

7. Drilling and cutting:

The contractor shall supply and install at his expense all secondary materials and special fittings found necessary to overcome the interference and to supply the modifications on the route of mains and conduits that are found necessary during the work, to the complete satisfaction of the owner's representative.

Cutting of walls or other parts of the building for the complete and proper installation of the electrical equipments shall be the responsibility of the electrical contractor. However Beams, girders and other principal structural members shall not be cut or drilled. Any damage to finished surfaces shall be made good by repair or replacement at the contractor's expense. The contractor shall possess and make use of necessary tools and equipment for cutting grooves on walls.

8. Material and equipment:

All material and equipment shall conform to the relevant standards and shall be of the approved make and design. Unless otherwise called for, only the best quality materials and equipment shall be used. The materials and equipment shall conform to relevant Indian Standards. The Contractor shall be responsible for the safe custody of all the materials and shall insure them against theft, damage by fire, earthquake etc. A list of items of materials and equipment, together with sample of each shall be submitted to the consultant.

All materials of the same kind of service shall be identical and made by the same manufacturer. The Consultant shall approve any deviation to this rule.

9. Voltage:

Except for supplies to specialist equipment, the normal utilization voltages shall be 3 phase, 4 wire, 50 Hz, 415 volt between phases, 240 volt between any phase and neutral, with a solidly earthed neutral.

10. Manufacturers:

Where manufacturers have furnished specific instructions relating to the materials proposed to be used in this job, covering points not specifically mentioned in these documents, these instructions are to be followed.

Where manufacturer's names and/or catalogue numbers are given, this is an indication of the quality, standards and performance required.

11. Rating:

Rating of all items shall be appropriate for the conditions on the particular site on which the item will be used. All the equipment shall be fit for continuous work under the heaviest conditions of site and shall be rated for the following condition.

- Outdoor temperature 45⁰C
- Temperature under shade 40⁰ C

12. Inspection and testing:

The owner's representative reserves the right to request inspection and testing at manufacturer's works at all reasonable times during manufacture of items for this contract. Tests on site of complete works shall demonstrate, among other things.

1. That the equipment installed complies with specification in all particulars and is of the correct rating for the duty and site conditions.
2. That all item operate efficiently and quietly to meet the specified requirements.
3. That all circuits are correctly fused and protected and that protective devices are properly coordinated.
4. That all non-current carrying metal work is properly and safely grounded in accordance with the specifications.

The contractor shall provide all necessary instruments and labour for testing shall make adequate records of test procedures and readings, shall repeat any tests requested by the Consultant/client and shall provide test certificates signed by a properly authorized person. Such test certificates shall cover all works. If tests fail to demonstrate the satisfactory nature of the installation or any part thereof then no claims for the extra cost of modifications, replacements or retesting will be considered. The Consultant/client's decision as to what constitutes a satisfactory test shall be final. The above general requirements as to testing shall be read in conjunction with any particular requirements specified for testing and commissioning.

13. Allowance for future growth:

To allow for future increases in electric load it is desirable that all mains and DB shall be provided with spare capacity / ways. The no. of spare ways shall be discussed and finalized with the clients before placing order these materials.

14. Test certificates:

The contractor shall submit test certificates for all the electrical material/system. These shall be issued by a government recognized inspection office certifying that all equipment, materials, construction and functions are in agreement with the requirements of these specifications and accepted standards.

15. Samples and catalogues:

Before ordering the material necessary for these installations, the contractor shall submit to the Consultant/client for approval a sample of every kind of material such as cables, conductors, conduits, switches, socket outlets, boxes etc. along with the catalogues.

For big items such as switchboards the submission of shop drawings and catalogues shall be enough. After the selection by the Consultant/client the contractor shall arrange inspection and testing at the manufacturers factory or assembly shop for final approval. No material shall be procured prior to the approval of the Consultant.

16. Vendor and shop drawings:

The contractor shall prepare and submit to the consultant/client for his approval two sets of detailed drawings of all distribution boards, switch boards, outlet boxes, special pull boxes, and other like wise materials and equipments to be fabricated by the contractor or other vendor.

Before starting the work, the contractor shall submit to the Consultant for his approval in the prescribed manner, the shop/execution drawings for the entire installation, specially the main connection and junctions, the route of Conduits and cables, no and size of wires to be drawn through the conduits, location of all the outlet points and switch boards and distribution boards and any other information required by the Consultant/client. The Consultant/client reserves the right to alter or modify these drawings if they are found to be insufficient or not complying with the established technical standards or if they don not offer the most satisfactory performance or accessibility for maintenance.

17. As built drawings:

At the completion of work and before issuance of certificate of virtual completion the contractor shall submit to the consultant/client layout drawing drawn at appropriate scale indicating the complete system “as installed”. These drawings must provide.

1. Run, location and size of conduits and inspection, junction, and pull boxes, along with the location of sockets and switches containing the light and power outlets.
2. Location and details of DB's, main switches, switchgears and other particulars.
3. A complete wiring diagram as installed and scheduled drawings showing all connection in the complete electrical system.
4. Location of all earthing stations, route and size of all earthing conductors, Route and particulars of all cables, cable chambers, RCC pipes etc.

18. Safety of materials:

The contractor shall provide proper and adequate facilities to protect all the materials and equipment including those issued by the owner against damage from any cause whatsoever.

19. Completion certificate by Contractor.

On completion of the electrical installation (or extension to an installation) the contractor countersigned by the supervisor shall furnish a certificate, under whose direct supervision the installation was carried out. This certificate shall be in the prescribed form as required by the local supply authority. The contractor shall be responsible for getting the electrical installation inspected and approved by the local concerned authorities, including electrical inspector.

20. Staff:

The contractor shall employ a competent fully licensed, qualified full time electrical engineer to direct the work at site, to receive instructions from Consultant/client and to correlate the progress of work in conjunction with all relevant requirements of the supply authority.

SECTION - II

MEDIUM VOLTAGE DISTRIBUTION SYSTEM

1. Wiring for lighting and power:

This specification covers, system and method of wiring, definition of point wiring, and supply, installation, connection, testing and commissioning of point wiring for light points, fan points, convenience socket outlet points, power socket outlet points, bell outlet points, etc. Wiring shall be with copper conductor PVC insulated wires drawn in rigid PVC conduits on walls, ceiling, etc. Wiring shall be from meter rooms to distribution boards, from DB to switch boards and from switchboard to outlet points. The method of wiring for this particular work shall be as mentioned under tender schedule.

2. System of wiring:

Medium voltage distribution system shall be applicable for wiring three phase, 4 wire, 415V, 50Hz, AC supply and single phase, 2 wire, 230V, 50Hz, AC supply. Light circuits shall be limited in any one of the three phases.

3 Applicable standards:

- 1 IS: 732 Code of Practice for Electrical wiring installation
(system voltage not exceeding 650 V).
- 2 IS: 1646 Code of Practice for fire safety of buildings (General)
Electrical Installation.

- | | | |
|----|--------------------|--|
| 3 | IS: 9537 (Part II) | Rigid steel conduits for electrical wiring. |
| 4 | IS: 694 | PVC insulated cables |
| 5 | IS: 1293 | 3 pin plugs and sockets. |
| 6 | IS: 8130 | Conductors for insulated electric cables and flexible cord |
| 7 | IE: Rules | Indian Electricity Act and Rules |
| 8 | IS: 5133 | Boxes for enclosure of electrical accessories Part 1: Steel& CI boxes. |
| 9 | IS: 371 | Ceiling roses (Second revision) |
| 10 | IS: 4615 | Switch socket outlets (non interlocking type) |
| 11 | IS: 3854 | Switches for domestic and similar purposes. |

4. General Requirements:

- 1 Before the conduits are installed the exact route shall be marked at the site for approval and the actual work shall be undertaken only after approval.
- 2 Load balancing of circuits in three-phase installation shall be planned before the commencement of wiring and shall be strictly adhered to.
- 3 Definition of point wiring:

A point shall consist of the branch wiring from the switchboard together with a switch and point control boxes as required, as far as and including the wiring accessories such as ceiling fan box of socket outlet point or suitable termination. A point shall include, in addition, the earth continuity conductor/wire from the switchboard to the earth pin/stud of the outlet/switch box.

5. Scope of work:

The medium voltage distribution system wiring shall be carried out in the under mentioned manner:

- a) Supply, installation, fixing of conduits and necessary accessories, switch boxes, outlet boxes and pull / junction boxes.
- b) Supplying and drawing of wires of required size including earth continuity wire.
- c) Supply, installation and connection of switches, sockets, cover plates, switch plates, concealed fan hook

boxes / fan hooks as specified etc.

- d) The point shall be complete with the branch wiring from the switchboards to the outlet point, conduits and casing capping with accessories, control switch, socket outlet boxes, ceiling roses, batten/angle holder, connector etc.

6. Boxes:

6.1 Junction boxes:

All the boxes for junction boxes, pull boxes used in conduit wiring system shall be fabricated from 1.5 mm thick mild sheet steel with two coats of enamel paint of approved shade or powder coated as specified. The boxes shall have smooth external and internal finished surface. Separate screwed earth terminal shall be provided in the box for earthing purpose. All boxes shall have adequate no of knock out holes of required diameter for conduit entry. All PVC junction boxes shall be deep boxes.

The boxes shall be provided with a minimum of four fixing lugs located at the corners for fixing the covers. All fixing lugs shall have tapped holes to take machined brass screws. The boxes shall be sufficiently strong to resist mechanical damage under normal service conditions. Wherever different phase conductors are brought into the same enclosure, phase barriers shall be provided. The boxes shall have removable covers at top and bottom if specified.

6.2 Switch boxes and Outlet boxes:

Switch boxes to receive switches, socket outlets, power outlets, Telephone outlets and fan regulators etc. shall be 16 SWG cadmium plated GI/MS boxes as manufactured by the switch manufacturer for erection of plate of modular type switches.

The depth of the switchboard boxes shall be 50 mm and the size shall be selected so as to accommodate required number of switches, sockets and fan regulators without overcrowding the box.

6.3 Fan Regulator:

Fan regulators shall be incorporated in the front plate of switchboard and shall form a single unit under one front plate for switches erected on GI boxes.

7 Cables

- 7.1 All cables / wires used for internal wiring shall be PVC insulated single core stranded conductor (FRLS) as specified and of 1100 volts grade and with copper conductors.

- 7.2 The conductors shall be plain annealed circular copper conductors. The minimum number and diameter of wires for circular stranded conductor shall be as per relevant IS specifications. The insulation shall be PVC compound complying with the requirements of IS specifications and the thickness of PVC insulation shall be as set out in the relevant standards.

7.3 All wires shall be colour coded as follows.

Single phase	:	Red
Three phase	:	Red, Yellow and Blue
Neutral	:	Black
Earth	:	Green on Green/Yellow (insulated)
Control (if any)	:	Grey

7.4 The wires shall be supplied in sealed coils of 100 Mts length and bear the manufacturers name, trademark, ISI mark, voltage grade etc.

7.5 Bunching of cables:

- a Wires carrying current shall be so bunched in the conduit that the outgoing and return wires are drawn into the same conduit. Wires originating from two different phases shall not be run in the same conduit.
- b. The number of insulated wires/cables that may be drawn into the conduits shall be as per the following table. In any case conduits having less than 20 mm dia shall not be used.
- c. Bunching of cables in conduits:

Max permissible no. of 1 core cables that may be drawn through different conduits:

Cable size (sq.mm)		Size of conduits (in mm)			
		20	25	32	40
1.5 (stranding)(22/. 3)		7	15	24	-
2.5 (36/. 3)		5	11	17	-
4.0 (56/. 3)		4	8	13	-
6.0 (2	4	6	7
16.0		-	3	4	6

8. Drawing of conductors:

- 8.1 No wire shall be drawn into any conduit, until all work of any nature that may cause injury to wire is completed. Care shall be taken in pulling the wires so that no damage occurs to the insulation of the wire. Before the wires are drawn into the conduits the conduits shall be thoroughly cleaned of

moisture dust and dirt or any other obstruction by forcing compressed air through the conduits. The drawing and joining of copper conductor or wires shall be executed with due regard to the following precautions.

- 8.2 While drawing insulated wires into the conduits, care shall be taken to avoid scratches and kinks, which may cause breakage of conductors. There shall be no sharp bends in the conduit system.
- 8.3 Insulation shall be shaved off for a length of 15 mm at the end of wire like sharpening of a pencil and it shall not be removed by cutting it square or ringing.
- 8.4 Strands of wires shall not be cut for connecting to the terminals. The terminals shall have adequate cross section to take all the strands.
- 8.5 All looped joints shall be soldered and connected through terminal block/connectors. The pressure applied to tighten terminal screws shall be just adequate, neither too much nor too less.
- 8.6 Conductors having nominal cross-section area exceeding 2.5sq. mm shall be provided with crimping type cable sockets.
- 8.7 At all bolted terminals, brass flat washer of large area and approved steel spring washers shall be used. Brass Nuts & Bolts shall be used for all connections.
- 8.8 Only certified wiremen and cable jointers shall be employed to do jointing work.
- 8.9 For all internal wiring PVC insulated wires of 1100 volts grade shall be used. The sub-circuit wiring for point shall be carried out in looping system and no joint shall be allowed in the length of the conductors.
- 8.10 General wiring installation shall be as under.
 - a. Sub-main wiring
Wiring from meter room or main panel board to the distribution boards.
 - b. Circuit wiring
Wiring from DB's to point control boxes for lighting fan 6A sockets call bells etc. and from DB to the power sockets in the case of power wiring.
- 8.11 The sub-main wiring shall be either three phase, four wire or single phase, tow-wire system. Each sub-main wiring circuit shall also have its own earth continuity wire. The no and size of earth continuity wire shall be as per detailed drawings or as specified.
- 8.12 The circuit wiring shall generally be in single-phase system. However a maximum of 3 to 4 single-phase circuits belonging to the same pole/phase could be installed in the same conduit or raceway Each circuit wiring shall be provided with suitable earth continuity conductor as per standard specifications.

- 8.13 Not more than 10 light points/fan points shall be grouped on the one lighting circuit. The load per circuit shall not exceed 800 watts. The minimum size of conductor for wiring of lighting circuit shall not be less than 1.0 Sq.mm. Power circuit wiring shall not have more than two sockets connected to one circuit.

9. Joints in wiring:

The wiring shall be by looping system, and hence all joints shall be made at main switches, distribution boards, socket outlets, lighting outlets and switch boxes only. No joints shall be made inside conduits and junction boxes. Conductors shall be continuous from outlet. For unavoidable joints due to any reason prior permission shall be obtained before making such connection. Joints by twisting conductors are prohibited.

10. Switches, sockets and accessories:

10.1 Switches(Modular):

- a. Switches shall conform to IS 3854, IS 1293, IS 6538 and IS 4615. Switches shall be single pole, single or two-way as shown on the drawings.
- b. The switches shall be rocker operated with a quiet operating mechanism with bounce free snap action mechanism enclosed in an arc resistant chamber. .
- c. Switches at the same location shall be ganged to form a single unit under one cover plate. Where fan regulators are to be provided with the switchboards the same shall be incorporated.

10.2 Sockets(Modular):

- a. The sockets shall conform to IS 1293. Each socket shall be provided with control switch of appropriate rating. The sockets shall be molded type, rated for 250 volts, and either of full 6 Amp or 16 Amp, capacity, as mentioned.
- b. Sockets shall be of three-pin type, the third pin being connected to earth continuity conductor. The socket shall be flush type. The sockets installed in machine room plant room or wet/damp area shall be metal clad weatherproof type. The socket shall have fully sprung socket contacts and solid brass shrouded terminals to ensure positive electrical connections.
- c. If specified, the sockets shall be provided with automatic shutters, which open only when earth pin of the plug inserts in the socket and provided with three pin plug top suitable to the socket and of the same make as socket.
- d. All 6A sockets, 16A switched sockets, DP switches, connector boxes etc. shall be as specified and with the finishing and make same as lighting switches. These shall be erected on the boxes as specified in drawings.

10.3 Lamp holders, Ceiling roses etc.:

Accessories for light outlets such as lamp holders, ceiling roses, etc. shall be white in colour and in conformity with requirements of relevant IS specification. Ceiling roses shall be 3-plate type wherever specified. Angle and batten holder shall be erected on the junction boxes erected on wall/ceiling.

10.4 Installation of switch, socket and accessories:

- a. Connection to be made only after testing the wires for continuity /cross phase etc with the help of a megger.
- b. The switch controlling the light point or fan shall be connected on to the phase wire of the circuit and neutral shall be continuous, having no fuse or switch installed in the line except at the D.B. the third pin of the socket shall be connected to the earth continuity conductor of the circuit.
- c. Outlets shall be terminated into ceiling rose for ceiling mounted points. For other wall light points the outlets shall be connected into an angle holder. For wall plug sockets the conductors may be terminated directly into the switches and sockets.

11. **Earthing:**

All earthing systems shall be in accordance with IS 3043 code of practice for earthing the type and size of earthing wire shall be as specified separately and in BOQ and drawings.

12. **Testing and commissioning of installation:**

Before a completed installation is put into service, the testing of the installation shall be done as per IS 732.

12.1 Insulation Resistance:

- a. The insulation resistance shall be measured by applying 500 volt. megger with all fuses in places, circuit breaker and all switches closed.
- b. The insulation resistance of an installation shall be required to have a value greater than one-mega ohms.
- c. The insulation resistance shall be measured between.
 - 1 Earth to phase
 - 2 Earth to Neutral
 - 3 Phase to Neutral

12.2 Earth continuity conductors shall be tested for electrical continuity and the electrical resistance of the same along with the earthing lead but excluding any added resistance or earth leakage circuit-breaker, measured from the connection, with the earth electrode to any point in the earth continuity conductor in the completed installation and shall not exceed one ohm.

12.3 Polarity or single pole switches:

- a. A test shall be made to verify that every non-linked, single pole switch is connected to one of the phase of the supply system.
- b. In, a two-wire installation a test shall be made to verify that all non-linked single pole switches have been fitted in the same conductor throughout and such conductor shall be labeled or marked for connection to an outer or phase conductor or to the non-earthed conductor of the supply.
- c. In a three wire or four wire installation a test shall be made to verify that every non-linked single pole switch is fitted in a conductor and which shall be labeled or marked for connection to one of the outer or phase conductor of the supply.

SECTION -III

MCBDB, MCB and RCCB

1. Miniature Circuit Breaker Distribution boards:

- 1.1 Miniature circuit breaker distribution boards shall conform to IS 2675, IS 8623 and shall be suitable for operation on three phase, 4 wire, 415 V, 50 Hz, AC supply or single phase 2 wire 230 V 50 Hz, AC supply.
- 1.2 The MCB distribution board shall be in sheet steel enclosures with removable type cover with additional door for protecting accidental operation.
- 1.3 Enclosure and door shall be made out of CRCA sheet steel and powder coated and of approved shade. The interior shall be off white finish. The DB shall be totally enclosed with dust and vermin proof construction and shall be of domestic pattern. The DB boxes shall be as supplied by the original manufacturer.
- 1.4 Where distribution boards are specified to be complete with an isolator as incomer, the isolator shall be double pole for SP and N distribution boards and 4 pole for TP and N distribution boards.
- 1.5 Where distribution boards are specified to be complete with MCB + ELCB as incomer, the MCB + ELCB shall be double pole for SP and N distribution boards and 4 pole for TP and N distribution boards.
- 1.6 Bus bars shall be tinned copper. The internal connections in the DB shall be by using stranded copper conductor, PVC insulated wire with copper lugs crimped at both ends. Neutral busbar and earth busbars shall also be provided in the enclosure. Neutral busbar shall have equal rating of phase busbars.

1.7 Distribution boards shall be provided with circuit identification by means of directory on the front cover. Upon completion of the works, the contractor shall provide and fix accurate framed circuit lists for all distribution boards. These shall consist of Perspex envelopes, fixed securely by an approved method on the inside face of each distribution board front cover into which shall be inserted a neatly typed list of circuits, indicating the number of circuits, phase, cable, size, number of points connected, circuit rating and the loading.

The contractor, shall also provide and fix by means of brass screws tapped into the D.B. cover, labels, with black letter on a white background for all distribution boards, MCB + ELCB, Isolator etc. The engraving on the labels and the inscription on the circuit lists shall be approved by the Consultants before the work is carried out.

1.8 All incoming terminals shall be fully shrouded.

1.9 The conduit entry plates shall be removable type and shall be provided at top and bottom. All the conduits shall be properly terminated using glands, grips, check nuts, female adapters with bush etc.

1.10 Wiring shall be terminated properly using crimping type copper plugs/sockets. Identification ferrules shall be provided on all wires.

1.11 Two No. earth terminals shall be provided on each Distribution Board.

Recessed mounted DB shall be erected in the chase/cut portion of the wall. The cutting or the walls shall be done while constructing the wall and shall be of adequate size to comfortably accommodate the DB. The cut portion shall be smoothed and made plain and shall be fine finished. The DB shall be fixed in this chased portion with suitable clamps and bolts. The top cover of the DB cabinet shall be projecting out of the wall surface and free from any obstruction so as to open the same smoothly.

2. Miniature Circuit Breakers:

2.1 MCBs shall be manufactured in accordance with IS 8828 having a short circuit breaking capacity category 10000 Amps at both 240 volts 50Hz. and 240/415 V, 50 Hz and complying with the test requirements for both reference calibration temperatures of 20 degree C and 40 degree C. (10kA as per IS/IEC 60898-1-2002(0.5-63A))

2.2 All miniature circuit breakers shall be rated to withstand the fault currents of the circuits they protect without causing any interference in any other protective device associated with the distribution system. At the same time the design of the circuit breakers shall be such that, it will protect the circuit for which it is intended and not cause or allow other protective devices to operate when fault conditions apply.

2.3 Miniature circuit breakers shall be capable of carrying its full rated current continuously without tripping out.

2.4 All the miniature circuit breakers shall be fitted with a magnetic undelayed tripping mechanism.

3. Residual Current Operated Circuit Breakers (RCCB)

- 3.1 RCCBs shall be manufactured in accordance with IS 12640 and IS 8828 having a short circuit breaking and earth fault protection up to 10 KA at both 240 Volts 50 Hz and 240/415 V, 50 Hz and complying with the test requirements as per IS 2640.
- 3.2 All RCCB shall be high sensitive and calibrated rating. This means that a 30 mA sensitivity RCCB should trip when the residual current is in the range of 15 to 30 mA and a 300 mA RCCB should trip when the residual current is in the range of 150 to 300mA.
- 3.3 The RCCBs shall be truly current operated, which means that it shall be totally independent of the main voltage for tripping. RCCB must operate for nominal voltage well below the maximum safe value of 10 volts. RCCB shall interrupt the circuit within 30 millisecond at a leakage current of 30 mA.
- 3.4 RCCB shall be provided with a neutral advance mechanism. RCCB shall be functioning even in the event of failure of neutral and/or any one or two of phase supply conductor. RCCB shall be provided with trip free mechanism ensuring that the device cannot be reclosed / resent if the fault persists. RCCB shall be functioning even in the case of interchange of load and supply side connections.
- 3.5 Test button shall be provided to check the correct operation of the unit.
- 3.6 RCCB shall be designed for a very long life of a minimum of 20,000 operations and shall be capable of withstanding inrush current of 4 to 8 times the rated current. For the proper functioning the RCCB should not require any connection of earthing on the device.
- 3.7 The device should have high tripping accuracy of less than 5% of rated tripping current. The RCCB shall be provided with clear indication to show whether the tripping is due current leakage or overload/short circuit.

SECTION - IV

EARTHING

1. Scope:

This specification covers supply of necessary materials, and erection at site, of complete earthing system including earth pits at the locations indicated, earth conductors from earth pit to the respective equipments, switchgears, pillars etc. and making connections, testing at site, commissioning and handing over.

2. Applicable Standards:

The entire work of earthing system, shall conform to IS 3043, Indian Electricity Act and Rules and relevant regulations.

3. General requirements:

- 3.1 The earthing shall generally be carried out in accordance with the requirements of Indian Electricity Rules 1956 as amended from time to time and relevant regulations. Following IE rules are particularly applicable. IE Rule Nos. 32, 51, 61, 62, 67, 69, 88(2) & 90.
- 3.2 All earth connections shall be carefully made, visible for inspection, and the testing of individual earth electrode shall be possible.
- 3.3 All materials, fittings etc. used in earthing shall conform to IS specifications and in the absence of which the approval of competent authority shall be obtained.
- 3.4 The earthing electrode shall be at a minimum distance of 1.5 metres away from the outer face of the building wall. A minimum clearance of twice the depth of the electrode shall be maintained between two earthing stations.
- 3.5 A brick masonry chamber to facilitate easy identification and for carrying out periodical tests and inspection shall be constructed on top of the earth pit.
- 3.6 All metal conduits, trunkings, cable sheaths, HT and MV switchgears, Transformers, distribution boards, meters, light fixtures, fans, and all other metal parts forming part of the work shall be bonded together and connected to earthing network as specified.
- 3.7 Earthing system shall be mechanically robust and the joints shall be capable of retaining low resistance even after passage of fault currents.
- 3.8 Joints shall be soldered, tinned and double rivet. All the joints shall be mechanically, electrically continuous and effective. Joints shall be provided against corrosion.

4. Earth Electrodes:

- 4.1 The materials of earth electrode and earth conductors shall be galvanized iron unless specified otherwise in Bill of Quantities, specifications or drawings.
- 4.2 The earth electrodes shall be free from paint, enamel, grease etc.
- 4.3 The earth electrode shall be embedded as far as practicable in a moist soil and below permanent moist level.
- 4.4 The earth electrode shall not be installed in the proximity of a metal fence.

5. Types of earth electrodes:

The earth electrodes shall be either a pipe electrode or plate electrode, the details of which are as given in the following sections of specifications, drawings and BOQ.

6. Pipe electrode:

- 6.1 Pipe electrode shall consist of 2.5 meter long single piece G.I. pipe of min. 40 mm dia, as specified and shall be cut tapered at the bottom. 12mm dia. holes shall be drilled with 75 mm spacing between the holes and in a staggered manner as indicated in IS 3043.
- 6.2 The electrode shall be buried vertically in a specially prepared earth pit of size 35 cm x 35 cm and the earth pit shall be filled with alternate layers of charcoal, salt and fine washed sand for a minimum thickness of 150 mm. A funnel with wire mesh inside shall be fixed to the top of the GI pipe for watering purpose.

- 6.3 A masonry chamber with a cast iron cover hinged to the cast iron frame embedded in the top portion of the masonry shall be constructed on top of the GI pipe to house the funnel and the earth connection. The approximate size of the chamber shall be 300 mm x 300 mm and 300 mm deep.
- 6.4 The earth conductor from electrode shall be taken out of the masonry chamber through a protecting pipe embedded in the masonry.
- 6.5 The top of the masonry chamber shall be 50 mm above the finished ground level.

6.a Plate electrode:

- 6.a1 Plate electrode shall consist of GI or CI Plate of size 1200X1200X12mm as specified.
- 6.a2 The electrode shall be buried vertically in a specially prepared earth pit of size 1500x1500x600mm, earth pit shall be filled with alternate layers of charcoal, and fine washed sand for a minimum thickness of 150 mm upto 150mm above the plate. A funnel with wire mesh inside shall be fixed to the top of the GI pipe for watering purpose.
- 6.a3 A masonry chamber with a cast iron cover hinged to the cast iron frame embedded in the top portion of the masonry shall be constructed on top of the GI pipe to house the funnel and the earth connection. The approximate size of the chamber shall be 450mm x 450 mm and 450 mm deep.
- 6.a4 A test joint shall be provided mounted on the watering pipe below the funnel(the size of strip as per standards in IS 3043) with drilled holes for connecting earth leads, earth interconnection and lead from electrode.
- 6.a5 The earth lead and interconnection shall be based on the fault level calculation and all electrodes shall be interconnected.

7. Earth conductor:

All earthing conductors shall be or high conductivity copper and or GI as specified and shall be protected against mechanical injury or corrosion. The connection of earth continuity conductors or earth bus and earth electrode shall be strong and sound and shall be rigidly fixed to the walls, cable trenches, cable trays or conduits and cables by using suitable clamps made of non-ferrous metals.

8. Testing:

On completion of the entire installation, the earthing network shall be tested for their resistance to earth in accordance with IS 3043. All meters, instruments & about required for the test shall be provided by the contractor. The test results shall be submitted in triplicate to the owners for approval. The following tests shall be conducted.

- a. Earth resistance of electrodes
- b. Impedance of earth continuity conductors.
- c. Effectiveness of earthing.

SECTION - V

HT & LT (1.1 KV GRADE) CABLES

1. Scope:

This specification covers supply, testing at works, supply at site, installation, termination, jointing, connection, testing at site, commissioning and handing over of 11KV and 1.1 KV grade Cables.

2. System:

The 1.1 KV grade cables are to be used in underground distribution system with normal system voltage of 415 V, 50 Hz, 3 phase, 4 wire system.

3. Applicable standards:

Cables to be supplied under this specifications shall be with Copper or Aluminium conductor as specified in drawing or Bill of Quantities, PVC insulated and PVC sheathed, armored and with an outer PVC protective sheath, heavy duty type and shall confirm to.

- IS 1554 (Part 1) 1976. PVC insulated electric cables.
- IS 1753: Aluminium conductors for insulated cables
- IS 3961: Recommended current ratings for cables.
- IS 7098(Part 2) 1985: 11kV XLPE cables

4. General requirements:

- 4.1 All cables shall be new without any kinks or visible damage. The manufacturers name, insulating material, conductor size and voltage class shall be marked on surface of the cable at distance not exceeding 1M.
- 4.2 Procurement of cables shall be on the basis of the actual site measurements and the quantities given shall be regarded as a guide. Before procurement of the cables, the contractor shall submit the cable lengths and after approval of the same place orders for the cables.
- 4.3 Cables shall be tested at factory as per IS requirement. The tests shall incorporate routine tests, type tests and acceptance test. The certificate for type test shall be produced by the Contractor.
- 4.4 The cables shall be one of the makes mentioned in the list of approved materials and with ISI mark.
- 4.5 The cables shall be supplied and delivered at site in original cable drums with manufacturer's name, cable size, type and length all clearly indicated on each drum.
- 4.6 The unit rate shall include loading, unloading, transport, storage, handling, unwinding the cable from cable drums and laying in the cable trench or erected on cable trays etc.
- 4.7 The cables shall be laid by skilled and experienced labor.
- 4.8 Where the cable route intersects roads, streets or pathways, RCC spun pipes shall be laid in the trenches to serve as cable ducts. The pipes shall be joined by RCC spun collars. The RCC pipes shall project at

least 150 mm on either side of road crossing.

- 4.9 The cable loops shall be kept at both ends of the cable length Minimum 3 metres long loop shall be provided.
- 4.10 The contractor shall take care to see that the cables received at site are apportioned to various locations to ensure maximum utilization and cable joints are avoided. This apportioning shall be got approved before the cables are cut to lengths. Straight joints are permitted only under exceptional circumstances.

5 Storage and loading, unloading of cables:

- 5.1 Cable drums shall not be stored one above the other. Sufficient space between cable drums shall be left for air circulation and the drums shall stand on battens placed directly under the flanges.
- 5.2 Cable drums shall be stored preferably on a plain ground without having any hard stones or any other sharp materials projecting above the ground surface. The drums shall be stored preferably in the shed or otherwise they shall be covered by tarpaulin.
- 5.3 Drums shall be stored and kept in such a way that bottom cable end does not get damaged.
- 5.4 Drums shall be rotated only in the direction marked on the drum.
- 5.5 Loading and unloading shall be done with material handling equipments only.

6 Cable trenches (excavated):

- 6.1 The cable trenches shall be excavated 75 cms below the finished ground level and shall have a minimum width of 350 mm for laying of single cable. When more than one cable are laid in the same trench, the width of the trench shall be increased such that the spacing between the cables is 200 mm and the end cables are at minimum 100 mm from the side of the trench. At the turning of the cable route the trench shall be dug with radius equal to 15 times the cable diameter. For 11kV cables, the trench depth is 1.2mtr.
- 6.2 The trenches shall be cut square with vertical side walls and with uniform depth. Suitable shoring and propping may be done to avoid caving in of trench walls. The floor of the trench shall be rammed and leveled. The bottom of the cable trench shall be prepared with 100 mm sand bed for laying the cables.
- 6.3 The cables shall be laid in trenches over the rollers. After the cable is laid and straightened it shall be covered with sand, and bricks shall be placed on top and at the side of the cable.
- 6.4 Wherever specified, half round RCC pipes shall be placed above the cables.
- 6.5 The cable trench then shall be refilled with excavated materials after removing the stones and other sharp materials and the refilled materials shall be compacted with light ramming.
- 6.6 Approved Cable markers made of Aluminium or CI with 15 cms crown shall be provided along the route of cables at a spacing of 25 - 30 meters and also at both ends of crossings or at the cable turning point. The class, type, No. of cables shall be indicated on markers.
- 6.7 Cable shall be laid in Hume pipes at all road crossings and in GI pipes at the wall entries or at the crossing of the drains/gutters.

7 Cable Termination. :

- 7.1 All cable terminations shall have tinned copper/aluminium compression lugs.

- 7.2 Cable termination shall be done in cable end box or in terminal box or in pillars etc. The end terminations shall be insulated with a minimum of six half lapped layers of PVC tape.
- 7.3 Cable terminations are to be made with flange type brass cable glands so as to grip inner and outer PVC sheaths and also the cable armour. Cable gland shall be bonded to the earth.
- 7.4 The cable conductor ends are to be connected by crimping tinned heavy duty copper lugs. Hydraulic crimping tool shall be used.
- 7.5 Every connection at a cable termination shall be mechanically and electrically sound and protected against mechanical damage and any vibration liable to occur shall not impose any harmful mechanical damage to the cable conductor.

SECTION - VI

MEDIUM VOLTAGE DISTRIBUTION PANEL BOARDS

1 Scope:

This section shall cover supply, assembly, installation, connection, testing and commissioning of medium voltage distribution panel boards as described in this specifications, drawings and schedule of quantities.

2 System:

All the medium voltage distribution panel boards shall be suitable for operation on three phase, 4 wire or single phase, 2 wire with normal system voltage of 415.240 volts, 50 Hz, A.C. supply with solidly grounded neutral system.

3 Weather condition at site:

The panel boards shall be suitable for continuous operation and designed to withstand heaviest conditions at site, which is a coastal area.

- a) Temperature range: 40 to 45° C
- b) Relative humidity : 50 to 100%
- c) Weather: Dusty

4 Applicable IS Standards:

The panel boards to be supplied under this specification shall conform to latest editions of relevant Indian Standards and Indian Electricity rules and regulations. The following Indian Standards shall be complied with.

IS 4237 : General requirements for switch gear and control gear for voltage not exceeding 1000 V.

IS 2208 : HRC cartridge fuse links upto 610 V.

IS 2705 : Current transformers

IS 1248 : Electrical Indicating Instruments.

IS 375 : Switch gear bus-bars, main connection and auxiliary wiring, marking and arrangement for.

IS 2147 : Degree of protection provided by enclosures for low voltage switch gear and control gear.

IS 2675 : Enclosed distribution fuse boards and cutouts.

IS 2557 : Danger notice plates.

5 General

5.1 Shop drawing:

Prior to fabrication of the panel boards, the contractor shall submit for the approval of the Engineer in charge the shop /vendor drawing and design calculations indicating type, size, short circuit rating of all the electrical components used, busbar size, internal wiring size, panel board dimension, colour, mounting detail etc. The contractor shall submit manufacturer's catalogues of the electrical components installed in the panel boards.

5.2 Inspection:

At all reasonable times during production and prior to transport of the panel boards to site, the contractor shall arrange and provide all the facilities at manufacturer's plant for inspection and testing and any state inspection agreed upon.

5.3 Test certificates:

Testing of panel boards shall be carried out at factory or at site as specified in Indian Standards in the presence of Engineer in charge. The test results shall be recorded on prescribed forms. The test certificates for the test carried out at factory or at site shall be submitted in duplicate to the Engineer in charge for approval.

6 Cubicle type panel boards:

6.1 Construction:

6.1.1 Structure:

The panel boards shall be metal enclosed sheet cubical, compartmentalized suitable for indoor or outdoor installation having dead front, floor mounting type. All M.S. sheets used in the construction of panel boards shall be 14 SWG thick for main panel and 16SWG for other panels unless specified otherwise in the item and shall be folded and braced as necessary to provide a rigid support for all components. Joints of any kind in sheet steel shall be seam welded, all welding slag ground off and welding pits wiped smooth with plumber metal.

The panel boards shall be totally enclosed, completely dust and warm proof Gaskets between all adjacent units and beneath all covers shall be provided to render the joints dust proof. All doors and covers shall be lockable and fully gasketed with foam rubber or neoprene rubber strips.

All panel and covers shall be properly fitted and secured with the frame, and holes in the panel correctly positioned. Fixing screws shall enter into holes tapped into an adequate thickness of metal or provided with bolt and nuts. Self-threading screws shall not be used in the construction of panel boards. Suitable base channels (min size 75 mm x 75 mm x 5 mm thick) shall be provided at the bottom. A Clearance of 300 mm between the floor of the panel board and the bottom of the lower most units shall be

provided. Panel boards, if necessary shall be preferable arranged in multitier formation. The panel boards shall be of adequate size with a provision of spare space (as jointly decided with EIC) to accommodate possible future additional switchgear. The size of the panel boards shall be designed in such a way that the internal space is sufficient for hot air movement, and the electrical component does not attain temperature more than 40 degree Celsius. Opening for natural ventilation shall be provided and shall have screens or grills made of brass or stainless steel wire mesh. Silica gel bags shall be placed at the bottom of every compartment. This requirement is in addition to space heater.

The panel boards shall be provided with removable sheet steel plates at top and bottom with knockout holes of appropriate size and number in conformity with the number, and size of incoming and outgoing conduits /cables.

The panel boards shall be designed to ensure maximum safety during operation, inspection, connection of cables, maintenance and repairs etc. with busbar system energised. Means shall be provided to prevent shorting of power and /or control terminals due to accidental drop of maintenance tools etc. inside the panel board. Partitions between feeder compartments, busbar chamber, cable alleys, vertical panels etc. shall be provided to take care of this aspect. The panel boards shall be sufficiently rigid to support the equipment without distortion under normal and short circuit condition; they shall be suitably braced for short circuit duty.

For buses and cables, access shall be limited from front and top only. All other equipment shall be mounted on the front side, (unless specified otherwise for any specific panel) and shall be accessible from the front. All joints and connections shall be made by cadmium plated high tensile steel bolts nuts and washers secured against loosening. The erection switchboards shall be in conformity with IE 51 (1) c

It shall be possible to insert any new cable and to connect all load side wiring with the busbarenergised, without any special precautions. Opening of the busbar chamber shall be possible with special tools only. Indication lamps and meters shall not be fitted on the door of the switches or busbar chamber cover.

6.1.2 Protection class:

All the outdoor panel boards shall have protection class of IP 55 The complete board shall be double jacketed with insulation material to withstand outdoor temperature. All the indoor panel boards shall have protection class IP 52

6.1.3 Circuit compartments:

Each switch fuse units and meters shall be housed in a separate compartment and shall be enclosed on all sides. Sheet steel hinged lockable door shall be duly inter locked with breaker/switch fuse units in "ON" and "OFF" position. However it shall be possible to bypass this interlock for inspection purpose.

6.1.4 Instrument compartment:

Separate and adequate compartment shall be provided for accommodating instruments, indicating lamps, control contactors /relays, and control fuses etc. These components shall be accessible for testing and maintenance without any danger of accidental contact with live parts of the circuit breaker/switch fuse units, busbar and connections.

6.1.5 Busbar:

The busbars shall be of three-phase four wire system with separate neutral and earth bar. The busbar and interconnection between busbars and various components shall be with high conductivity, hard drawn, electrolytic copper strips.

The busbars shall be of rectangular cross section designed to withstand full load current for phase busbars and half rated current for neutral busbars and shall be extensible on either side. The busbar shall have uniform cross-section through out the length. The rating of the busbars shall be as specified in BOQ and/or drawings.

The busbars and interconnections shall be insulated with color-coded insulation tapes/covers. The busbars shall be supported on unbreakable, non-hygroscopic insulated supports at sufficiently close intervals to prevent sagging and shall effectively withstand electromagnetic stresses in the event of short circuit. The busbars shall be housed in a separate compartment. The busbar shall be isolated with 3 mm thick hylam sheet to avoid any accidental contact. All bus bar connection shall be done by drilling holes in busbars& connecting by chromium plated brass bolt and nuts. Additional cross section of bus bars shall be provided in all distribution boards to cover up the holes drilled in the busbars. Spring and flat washers shall be used for tightening the bolts. All interconnections between busbars and circuit breakers/switches and between circuit breakers/switches and cable terminals shall be through solid copper strips of proper size to carry full rated current. These strips shall be insulated with insulating tapes/covers.

6.1.6 Terminals:

The outgoing terminals and neutral link shall be brought out to a cable alley suitably located and accessible from the panel front. The current transformers for instruments metering shall be mounted on the terminal blocks. No direct connection of incoming or outgoing cables to internal components of the panel board is permitted. Only one conductor may be connected in one terminal. Adequate no of spare terminals of required size shall be left in each compartment.

6.1.7 Wireways:

A horizontal wire way with screwed covers shall be provided at the top to take interconnecting control wiring between different vertical sections.

6.1.8 Cable compartments:

Cable compartments of adequate size shall be provided for easy termination of all incoming and outgoing cables entering from bottom or top. Adequate proper supports shall be provided in the cable compartments to support cables. All outgoing and incoming feeder terminals shall be brought out to terminal blocks in the cable compartment.

6.1.9 Earthing:

Copper earth bars shall be provided for the entire length of the panel. Size of the earth busbars, unless specified otherwise in BOQ, shall be 25mm x 3mm horizontally and 25 mm x 3mm vertically in cable alleys etc. Provision shall be made for connection from this horizontal earth bar to the earth pit on both side of panel board. The earth continuity conductor of each incoming and outgoing feeder shall be connected to the vertical earth bar.

All non-current carrying parts and the framework of panel board shall be connected to this earth bar. All doors and movable parts shall be connected to earth bus with flexible copper connections. Armour of the cable shall be properly connected with earthing clamp, and the clamp shall be bonded with the earth bar.

6.1.10 Danger notice plates:

Danger notice plates with symbol as per IS shall be provided on panel boards.

6.1.11 Fuse puller etc:

One set of fuse puller (for various amps of fuses), panel keys and special tools etc. shall be supplied with each panel board.

6.2 Indicating lamps

Panel mounting type low power consumption solid state lamps suitable for specified voltage shall be used. Lamps shall be provided with suitable current limiting resistors. Lamps shall be provided with translucent lamp covers to diffuse light. Lamps shall be provided with bayonet cap bulbs.

6.3 Measuring instruments:

All measuring instruments shall be square pattern moving from 90 deg. scale, 96mm x 96mm, flush mounting type. Instrument shall be of accuracy class 1 as per IS 1248. Ammeters for motor and other feeders shall be graduated for full load current of motor with a compressed scale at the end for at least 6 times full load current. The KW meter and PF meter shall be suitable to measure unbalance loads on 3-phase 4 wire system. PF meter shall be in 0.5-1-0.5 range.

6.4 Installation:

The panel boards shall be installed at the location as indicated in the drawings. The contractor shall submit for approval a shop drawing indicating room size, panel size and method of installation prior to installation.

The cubicle type panel board shall be installed on suitable foundation. Foundation shall be as per the dimensions supplied by the panel manufacturer. The foundation shall be flat and level. Suitable grouting holes shall be provided in the foundation. Suitable MS base channel shall be embedded in foundation on which the panel can be directly installed. If the panel is provided with an angle iron pedestal or base plate the same shall be grouted firmly in the floor. The panel boards shall be properly aligned and erected in plumb and bolted to the foundation by bolt parallel to the walls.

After installation of the panel boards, various components of the boards shall be checked and be put in working order. The cables laid through cable trench or on cable trays/racks etc shall be terminated on the bottom plate or top plate as the case may be by using Siemens type brass compression glands. The individual cables shall then be led through the panels to the required feeder compartments for necessary terminations. The cables shall be clamped to the supporting arrangement. The switchboard earth bus shall be connected to the local earth grid. Connection of cables shall be by crimping type Cu /Al lugs using hand operated or hydraulic crimping tool as per cable sizes.

6.5 Testing:

1) Testing at factory:

Panel boards shall be inspected at factory at pre-assembly stage and any modifications or changes as suggested shall be incorporated. The panel boards shall be again inspected and tested at the factory after assembly of all components and completion of all inter-connections and wiring. The tests shall include all routine and type tests as per relevant ISS.

2) Testing and pre-commissioning checks at site:

Panels shall be commissioned only after the successful completion of the following tests. The tests shall be carried out in the presence of Engineer in charge.

6.6 Precommissioning checks

- 1) Check all panels are aligned in line and property erected in plumb.
- 2) All withdrawable portions shall be capable of smooth extraction and isolation
- 3) All main and auxiliary bus bar connections shall be checked and tightened.
- 4) All wiring terminations and bus bar joints shall be checked and tightened.
- 5) Wiring shall be checked to ensure that it is according to the drawing.
- 6) Before fitting the covers, all chambers, compartments, cable alleys etc. shall be checked for complete cleanliness and removal of foreign matter if any, particularly the tools used for erection, cut pieces of cable armour etc. Covers shall be properly fixed with all fixing screws in places.
- 7) All mechanical interlocks shall be checked and all fuses and links shall be inserted.
- 8) Earthing connections shall be checked.
- 9) Operational checks on all circuit breakers or switchgear shall be carried out, both mechanically and electrically to check that correct indications are provided for closed and open positions.
- 10) The panel boards will be, if required, subjected to Inspectorate inspection, checking and testing at the site and the contractor shall arrange to provide Inspectorate seals wherever required.
- 11) The panels shall be checked to ensure that moisture ingress has not taken place during transit and storage.

TERMS & CONDITIONS FOR THE ELECTRIFICATION WORK AS PER SCHEDULE ACCOMPANYING THE TENDER / WORK ORDER

1. Rate for individual items shall be quoted and total for each item and grand total of all the items shall be shown in the tender. Income tax, KVAT and other statutory recoveries will be made in the bill as per rules.
2. Only approved make of materials accepted as per list appended shall be used for the work. All other materials not mentioned in the list specifically shall conform to relevant IS standards.
3. M.V. installation shall conform IS. 732.
4. Earthing shall conform IS 3043 / 1988.
5. Lightning protection as per IS 2309.
6. All wires shall be colour coded as below:
 - a) Single phase - Red.
 - b) Three phase - Red, Yellow, Blue.
 - c) Neutral - Black.

d) Earth - Green.

7. The final rates for the various items of work and materials if any coming under your scope of supply will be as detailed in the schedule.

8. The work shall be commenced immediately and carried out strictly in accordance with a time schedule prepared by you and approved by our consultants.

9. It shall be the responsibility of the contractor to prepare detailed drawings as per the design and guidelines given by the consultant and to submit the scheme for necessary approval under Rule 63 of IER 1956 from the Electrical Inspectorate. The contractor shall keep close liaison with the Electrical inspectorate and KSEB to expedite formalities like, scheme approval, power allocation and sanction for energisation.

10. The schedule in general contains almost all the work and the material required for the work. In case any additional work / modification is found necessary during the actual execution of work it shall be carried out only with prior approval of the Consultant / Client and on mutually agreed terms.

11. The client shall bare all expenses towards statutory fees and charges leviable by the Electrical inspectorate and KSEB. Such fees shall be paid by the contractor and the amount spent by the contractor shall be reimbursed by the client on production of vouchers / receipts.

12. Terms of payment:

As decided by CAPE.

13. It shall be the responsibility of the contractor to carry out to the satisfaction of the client and consultant all necessary pre-commissioning tests before preparing the completion certificate for submission to the KSEB.

14. The contractor shall comply with the provisions of IER 1956 and Licensing Board Rules in regard to the execution and completion of the work.

15. The work shall be completed in all respects in accordance with the schedule within a period of two months from the date of finalizing the tender

16. The contractor shall furnish a guarantee for a period of one year from the date of commissioning of the installation, for all the works carried out as per this tender and shall undertake to replace/repair any equipment or materials supplied by them during this period of guarantee free of cost. The contractor shall furnish a Bank guarantee equivalent to 5% of the total value of the contract.

17. Any alteration or rectification of works of the existing installations suggested by

Electrical Inspectorate shall be treated as extra items.

18. A copy of this shall be signed and returned to the Client as a token of acceptance.

19. The contractor should sign on all pages of tender documents

20. The successful bidder to whom the work is awarded should furnish 5% of the quoted value or Rs One lakh which ever is less towards security deposit in the form of DD from a nationalized bank.

21. Retentions of of the gross amount of each running bill will be deducted as retention. of retention amount along with security deposit will be released on commissioning of work. The balance retention amount will be released after completion of the guarantee period of one year.

22. The amount towards Earnest Money Deposit, Security Deposit and retention will not carry any interest.

Contractor