

E - TENDER DOCUMENT
FOR
INTERNAL ELECTRIFICATION OF
16 nos MODEL KHIRADHARA KENDRA
OF
OMFED
AT DIFFERENT DISTRICTS OF ODISHA



ESTIMATED TENDER VALUE : Rs.3,31,525/- (for each location)

PROJECT DIVISION
THE ORISSA STATE CO-OPERATIVE MILK PRODUCERS' FEDERATION LTD.
D-2, SAHID NAGAR.BHUBANESWAR
Email: project@omfed.com
TELEPHONES :(0674)-2546121,2544576,2540417,2546030,2540273

AUGUST - 2025

**THE ORISSA STATE CO-OPERATIVE MILK PRODUCERS' FEDERATION LTD.,
D-2, SAHEED NAGAR, BHUBANESWAR, ORISSA.**

TELEPHONES : (0674)-2546121, 2544576, 2540417, 2546030, 2540273

FAX: 0674-506974 Email: project@omfed.com / web site: www.omfed.com

TENDER FOR

Internal electrification of 16nos model Khiradhara Kendra of OMFED at different districts of Odisha.

NAME OF WORK : Internal electrification of 16 nos model Khiradhara Kendra of OMFED at different districts of Odisha

LOCATION OF 1st SITE : Buguda, dist.-Ganjam

TENDER REFERENCE : Proj/271/Elect/KDK/25

START DATE & TIME FOR ONLINE BIDDING : 25.07.2025 AT 1000 Hrs

END DATE & TIME FOR ONLINE BIDDING : 16.08.2025 UPTO 1700 Hrs

DATE AND TIME FOR PRE-BID MEETING : 04.08.2025 AT 1500 Hrs

DATE AND TIME OF OPENING OF BIDS : 19.08.2025 AT 1600 Hrs

PLACE OF OPENING OF BIDS : THE ORISSA STATE CO-OP.MILK PRODUCERS FED. LTD. D-2, SAHEED NAGAR, BHUBANESWAR, ORISSA.

ADDRESS FOR COMMUNICATION: THE ORISSA STATE CO- OP. MILK PRODUCERS' FEDERATION LTD.,
D-2, SAHEEDNAGAR,
BHUBANESWAR-751007
ORISSA, INDIA.

CONTACT PERSON : Manager (Projects & DO)
OMFED, D-2, SAHID NAGAR,
BHUBANESWAR-751 007.
[email- mritunjay@omfed.com](mailto:mritunjay@omfed.com)
PH- 88630 09999

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www.omfed.com

The Orissa State Cooperative Milk Producers' Federation Ltd.
D-2, SAHID NAGAR, BHUBANESWAR-751 007.
Ph No- (0674) 2546030/2540273/2540417,
Fax No (0674) 2540974

TENDER NOTICE

OMFED invites techno-commercial offer from eligible licensed Electrical Contractor for “Internal electrification of model Khiradhara Kendra of OMFED at different districts of Odisha”.

Interested bidders may download the tender document from the OMFED website www.omfed.com only for reference. **Bid document will be available in the <https://tendersodisha.gov.in> from 10.00 AM of dt.25.07.2025 to 5.00 PM of dt.16.08.2025 for bidding. Tender cost of Rs.2,000/-+18%-GST (i.e. Rs.2,360/-) along with E.M.D of Rs.7,000/- shall be deposited through online portal at <https://tendersodisha.gov.in>. The technical Bid shall be opened at 04:00 PM on dt.19.08.2025 at the OMFED Corporate Office in the presence of the interested bidders at Omfed Corporate Office, D/2, Sahid Nagar, Bhubaneswar – 751007 in presence of interested bidders. Bids without requisite EMD shall not be considered.**

Tenderers are requested to visit OMFED website regularly as any corrigendum / addendum may be published in OMFED website and not in any other media/ newspapers.

OMFED reserves the right to accept or reject any or all the tenders or part thereof without assigning any reason.

MANAGING DIRECTOR

SECTION I

INSTRUCTION TO BIDDERS

1. BACKGROUND INFORMATION

OMFED intends to establish 16 nos Model Khiradhara Kendra at different districts of Odisha under Mukhyamantri Kamadhenu Yojana of Govt. of Odisha.

1.1 SCOPE OF WORK

- Internal electrification of 16 nos model Khiradhara Kendra of OMFED at different districts of Odisha.
- First work order shall be placed for internal electrification of the Khiradhara Kendra at Buguda, dist.- Ganjam.
- Work order for balance location shall be placed in phased manner.

1.2 LOCATION & ADDRESS

Sl. NO	Milk Union	Name of Society	Address	Estimated cost (Rs.)	EMD (Rs.)	Paper Cost (Rs.)	Time Period
1	Cuttack	Yasobantapur	Jagatsinghpur	3,31,525/-	7,000/-	2,360/-	6 Month
2	Cuttack	Marshaghai	Kendrapada	3,31,525/-	7,000/-	2,360/-	6 Month
3	Cuttack	Maa Mangala	Belarnuagaon, Teragaon, Mahakalapada, Kendrapada	3,31,525/-	7,000/-	2,360/-	6 Month
4	Puri	Billipada	Binayakpur, Laxminarayanpur, Pipili, Puri	3,31,525/-	7,000/-	2,360/-	6 Month
5	Puri	Nimapada	Puri	3,31,525/-	7,000/-	2,360/-	6 Month
6	Samalawari	Gaiselet	Bhangamunda, Jabalpat, Gaisilet, Bargarh	3,31,525/-	7,000/-	2,360/-	6 Month
7	Samalawari	Tarbha	Subarnapur	3,31,525/-	7,000/-	2,360/-	6 Month
8	Samalawari	Dhusarbahal	Sohela, Bargarh	3,31,525/-	7,000/-	2,360/-	6 Month
9	BKN	Pataaneswari	Kuthurla, Bolangir	3,31,525/-	7,000/-	2,360/-	6 Month
10	BKN	Koksara	Kalahandi	3,31,525/-	7,000/-	2,360/-	6 Month
11	GGGMU	Buguda	Buguda, Ganjam	3,31,525/-	7,000/-	2,360/-	6 Month
12	GGGMU	Rambha	Ganjam	3,31,525/-	7,000/-	2,360/-	6 Month
13	Keonjhar	Pratapposi	Champua, Keonjhar	3,31,525/-	7,000/-	2,360/-	6 Month
14	Keonjhar	Sijukala	Champua, Keonjhar	3,31,525/-	7,000/-	2,360/-	6 Month
15	Dhenkanal	Neulapoi	Gondia, Dhenkanal	3,31,525/-	7,000/-	2,360/-	6 Month
16	Mayurbhanj	Chhancha	Station Bazar, Munispati, Baripada, Mayurbhanj	3,31,525/-	7,000/-	2,360/-	6 Month

Note: The location mentioned above may change as per decision taken by OMFED management in case of any unavoidable circumstances and shall be intimated to the contractors in advance.

2. COMPLETION PERIOD:

Six months from the date of issuance of the work order.

TERMS AND CONDITION:

- a. The work is time bound hence time extension may not be provided.
- b. The bidders are advised to visit the site and its surroundings at their own cost to obtain all information that may be required for submitting the offer.
- c. The validity of the bid is 120 days from the opening of commercial bid.

3.0 Eligibility and Qualification requirements:

3.1 This tender notice is open to all bidders. Annual Sales turn over should not to be less than 2 lakhs during the financial year 2021-22, 2022-23 & 2023-24.

3.2 The bidder should have minimum one year experience in the relevant field.

3.3 To be eligible for the award of contract, shall provide evidence satisfactory to the ORISSA STATE CO-OPERATIVE MILK PRODUCERS FEDERATION LTD. of their eligibility under sub-clause 3.1 above, and of their capacity and adequacy of resources to carry out the contract effectively. To this end, all bids submitted shall include the following information: -

- (A) Copies of original documents defining the constitution or legal Status, place of registration and principal place of business of the Company or firm or partnership or if a joint venture, of each party there to constituting the bidder;
- (B) Power of attorney or a true copy there of duly attested by a Gazetted Officer in case an authorized representative has signed the bid
- (C) Income tax clearance certificate / IT return for last 3 years i.e. 2021-22, 2022-23 & 2023-24. GST return for six months ending 31st December 2024.
- (D) Details of the experience and past performance of the bidder (or of each party to a joint venture) on works of similar nature within the past two years,
- (E) Major items of constructional plant proposed for use in carrying out the contract in the format prescribed in schedule I and the Qualification and experiences of key personal proposed for the administration and the execution of the contract, both on and of Site in the format prescribed in schedule II of section VII of this bidding document.
- (F) Proposals for sub-contracting elements of the works amounting to More than 10% of the bid price for each element and shall be as Listed in schedule III of section VII of this bidding document.
- (G) Reports on the financial standing of the bidder (or of each part to Joint venture) such as profit and loss statements, balance sheets and auditor's reports for the past three years,

(H)Statement of arbitration/disputes in which the bidder is involved as prescribed in the schedule VI of section VII of this bidding document.

3.6 For the purpose of this particular contract, bidders shall meet the following qualifying criteria as minimum:

- (a)The bidder should be in business as electrical works contractor for a minimum period of three years at the time of bid opening in the same name and style. The bidder shall also have LICENSE to work as ELECTRICAL contractor, issued by the state government where the project site is located. This license shall be valid as on date of submission of the bid and shall be submitted along with the bid.
- (b) The bidder in the same name and style shall have completed at least one project of similar nature.

3.7 Bid submitted by a joint venture of two or more firm's partners shall comply with the following requirements:

- (a) The bid, and in the case of a successful bid the form agreement, shall be signed so as to be legally binding on all the partners;
- (b) One of the partners shall be nominated as being in charge and this authorisation shall be evidenced by submitting a power of attorney signed by legally authorised signatories of all the partners;
- (c) The partner in-charge shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the joint venture and the entire execution of the contract including payment shall be done exclusively with the partner in-charge;
- (d) All the partners of the joint venture shall be liable jointly and severally for the execution of the contract in accordance with the contract terms and a relevant statement to this effect shall be included in the authorization mentioned under (b) above as well as in the form of bid and the form of agreement (in case of the successful bid);
- (e) A copy of the agreement entered into by the joint venture partners Shall be submitted with the bid.
- (f) Experience, resources, men and machinery of each part to the joint. Venture, will be taken into only to the extent of their participation for performing tasks under the joint venture agreement.

4.0 Cost of Bidding

The bidder shall bear all costs associated with the preparation and submission of his bid and ORISSA STATE CO-OPERATIVE MILK PRODUCERS FEDERATION LTD., here in after referred to as “OMFED” will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

5.0 Site visit:-

5.1 The bidder is advised to visit and examine the site of works and its surrounding and obtain for himself on his own responsibility all information that may be necessary for preparing the bid and entering into a contract. the costs of visiting the site shall be at bidder's own expense.

5.2 The bidder and any of his personnel or agent (s) will be granted permission by the OMFED to enter upon the premises and lands for the purpose of such inspection but only upon the express condition that the bidder his personnel or agent (s), will release and identify the OMFED and his personnel and agent (s) from and against all liabilities in respect there of and will be responsible for personnel injury (whether fatal or otherwise), loss of or damage to property and any other loss or damage costs and expenses however caused which but for the exercise of such permission would not have arisen.

B. BIDDING DOCUMENTS

6.0 Contents of Bidding Documents

6.1 The set bidding documents issued for the purpose of bidding includes the number of copies as stated below together with any addenda there to issue in accordance with clause -8 and any minutes of the pre-bid meetings issued in accordance clause -16.

Number of Copies	Section	Description
1	0	Tender notice
	I	Instruction to bidders
	II	General Condition of Contract
	III	Special condition of Contract
	IV	Commercial bid
	V	Form of bid
	VI	Financial & Business capability
	VII	Form of agreement
	VIII	Acceptable forms of bank Guarantees

6.2 The bidder is expected to examine carefully all instruction, condition, forms, terms, specification and drawings in the bidding documents. Failure to comply with the requirements of bid submission will be at the bidders own risk. Pursuant to clause-25, bids which are not substantially responsive to the requirements of the bidding document will be rejected.

7.0 Clarification of bidding documents

A prospective bidder requiring a clarification of the bidding documents may notify the OMFED in writing or by telegram at the address of communication indicated in the tender notice. The OMFED will respond in writing or by telegram to any request for the clarification, which is required earlier than 10 days prior to the dead line for the submission of the bids. Written copies of the response of the OMFED (including a description of the enquiry without identifying its source) will be sent to all prospective bidders who purchased the bidding documents.

8.0 Amendment of bidding documents

- 8.1** At any time prior to the deadline for the sub mission of bids, the OMFED may for any reason whether at its own initiative or in response to a clarification requested by a prospective bidder modify the bidding document by the issuance of amendment.
- 8.2** The amendment will be sent in writing or by telegram /telex to all prospective bidders who have purchased the bidding documents and will be binding upon them. Prospective bidders shall promptly acknowledge receipt of the amendments by the prospective bidder due to postal delays shall not bind the OMFED to extend the deadline for the submission of the bids. The amendment will be attached to the bidding document sold subsequently.
- 8.3** In order to afford prospective bidders reasonable time in which to take amendment into account in preparing their bids, the OMFED may at its discretion extend the deadline for the submission of bids in accordance with clause -19.

C. PREPARATION OF BIDS

9.0 Language of bid

The bid prepared by the bidder and all correspondence & documents relating to the bid exchanged to the bid exchange by the bidder and the OMFED shall be written in the English language.

10.0 Documents comprising the bid

The bid to be prepared by the bidder shall comprise the following;

- (a) The form of bid appendix there to;
- (b) The bid security;
- (c) The schedule of quantities;
- (d) The schedule of supplementary information on eligibility and qualification;
- (e) Alternative offers where invites and offer materials required to be completed and submitted in accordance with the instruction to bidders embodied in these bidding documents.

The forms, schedule of quantities and schedule provide in this volume of the bidding document shall be used without exception (subject to the extension of the schedules in the same format and to the provisions of sub-clause 14.2 regarding the alternative forms of bid security.)

11.0 Bid prices

11.1 Unless stated otherwise in the bidding documents, the contract shall be for the whole works as described in the tender notice based on the schedule of unit rates and prices submitted by the bidder.

11.2 The bidder shall fill in rates and prices for all items of works described in the schedule of quantities, whether quantities are stated or not. Items against which no rate is entered by the bidder shall not be paid for by the OMFED when executed and shall be deemed to have covered by the other rates in the schedule of quantities.

11.3 All duties, taxes and other levies shall be payable by the bidder under the contract or for other cause, shall be included in the rates and the prices and the comparison of bids by the OMFED shall be made accordingly.

11.4 Fixed prices

The rates and prices quoted by the bidder shall be fixed for the duration of the contract and shall not be subjected to adjustment on any account. A bid submitted with any price adjustment condition shall be treated as non-responsive and rejected, pursuant to clause 25 of this section.

11.5 Price adjustment

The rates and prices quoted by the bidder are subject to adjustment during the performance of the contract, if the duration of the contract, as stated in the tender notice is more than 15 months and value of contract is more than Rs.20.0 lakhs. The price adjustment provision shall not be taken into consideration in bid evaluation, pursuant to clause 28 of this section.

12.0 Bid Validity:

12.1 Bid submitted shall remain valid for acceptance for a period of 120 days from the date of bid opening.

12.2 In exceptional circumstances, prior to expiry of the original bid validity period, the OMFED may request the bidder for a specified extension in the period of validity. The request and the response there to shall be made in writing or by telegram/telex. A bidder may refuse request without forfeiting his bid security. A bidder agreeing to the request to extend the validity of this bid security shall not be permitted to modify his bid.

13.0 Bid Security:

- 13.1** The bidder shall furnish, as part of the bid, a bid security for an amount of **Rs.7,000/-** through online portal at **<https://tendersodisha.gov.in>**.
- 13.2** The EMD of the technically disqualified Bidders shall be returned after declaration of the list of such technically qualified Bidders in the portal. The EMD of other unsuccessful Bidders shall be refunded after signing of the Agreement with the Successful Bidder. The return of the EMD shall be in the form of bank transfer to the account of the Bidder through the e-procurement portal of the Government of Odisha.
- 13.3** The bid security is required to protect the purchaser against the risk of bidder's conduct, which would warrant the security's forfeiture.
- 13.3** Any bid not accompanied by an acceptable bid security shall be rejected by OMFED as non-responsive.
- 13.4** The bid securities of the unsuccessful bidders shall be refunded as promptly as possible, but not later than 30 days after the expiry of the period of bid validity as prescribed in these documents.
- 13.5** The bid security of the successful bidders shall be refunded when the bidder has signed the agreement and furnished the required performance security.
- 13.6** No interest shall be paid by the OMFED on the Bid security furnished by the bidder.
- 13.7 The bid security may be forfeited:**
- (a) If a bidder withdraws his bid during the period of bid validity; or
 - (b) In the case of a successful bidder, if he fails within the time limit to:
 - (i) Sign the agreements, or.
 - (ii) Furnish the required performance security

14.0 Variations in bidding conditions

- 14.1** The bidder shall submit offer, which comply fully with the requirements of the bidding documents, including the basic technical design as indicated in the drawing and specifications. Conditions bids are liable to be considered as non-responsive in accordance with clause-25.

15.0 Format and signing of bids

- 15.1** The bidder shall prepare and submit the scanned copy of the documents comprising the bidding documents downloaded by him through online portal at <https://tendersodisha.gov.in..>
- 15.2** All pages of the bidding document shall be signed by persons, duly authorised, to bind the bidder to the contract. Proof of authorization shall be in the form of a written power of attorney, which shall accompany the bid. All pages of the bid documents, where entries and amendments had been made, shall additionally be initialed by the persons signing the bids.
- 15.3** The complete bid shall be in accordance with instructions issued by the OMFED, or as necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the persons signing the bid. No over writing shall be permitted.
- 15.4** Only one bid may be submitted by each bidder. No bidder may participate in the bid of another for the same contract in any relation whatsoever.
- 15.5** The bidder shall quote the rate of each item.

D. SUBMISSION OF BIDS

- 16.0** The bid document shall be deposited through online portal at <https://tendersodisha.gov.in>

The tender paper cost / EMD and Photo Copy of **GST, PAN, Registration Certificate, Turnover Certificate, IT return & other documents as per DTCN** shall have to be attached on Portal: <https://tendersodisha.gov.in> within **10.00 AM of dt. 25.07.2025 to 05.00 PM of dt.16.08.2025**.

Bids shall be received only “online” on or before **05.00 PM of dt.16.08.2025**.

17.0 Deadline for Submission of bids

- 17.1** The bid document shall be deposited up to **05.00 PM of dt.16.08.2025** through online portal at <https://tendersodisha.gov.in>.

18.0 Late Bids

No late bids can be submitted through online portal at <https://tendersodisha.gov.in>.

19.0 Modification and Withdrawal of Bids

- 19.1** The bidder may modify or withdraws his bid after bid submission provided that the modification or notice of withdrawal is received in writing by the OMFED prior to the prescribed deadline for the submission of bids.
- 19.2** The bidder's modification or withdrawal shall be prepared, sealed, marked and submitted in accordance with the provisions of clause 18 for the submission of bids.
- 19.3** Subject to clause 24, no bid shall be modified subsequent to the deadline for the submission of bids.
- 19.4** Withdrawal of the bid during the interval between the deadline for the submission of bids and the expiry of the period of bid validity may result in the forfeiture of the bid security pursuant to clause 14.

E. BID OPENING AND EVALUATION

20.0 Bid opening

- 20.1** **Technical Bids received online shall be opened on 19.08.2025 at 04:00 P.M.** in OMFED Corporate office in the presence of the bidders. Bidders who participated in the bid can witness the opening of bids after logging on to the site through their DSC. If the office happens to be closed on the last date of opening of the bids as specified, the bids will be opened on the next working day at the same time and venue.
- 20.2** The OMFED will examine the bids to determine whether they are complete, whether the requisite bid security have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.
- 20.3** The OMFED shall prepare, for its own records, the minutes of the bid opening, including the information disclosed to those present in accordance with sub-clause 22.3.
- 20.4** The commercial bid opening date of qualifying bidders shall be intimated well in advance.

21.0 Process to be Confidential

- 21.1** After the public opening of bids, information relating to the examination, clarification, evaluation and comparison of bids and recommendations concerning the award of contract shall not be disclosed to bidders or other persons not officially concerned with such process until the award of the contract to the successful bidder has been announced.

21.2 Any effort by a bidder to influence the OMFED in the process of examination, clarification, evaluation and comparison of bids and in the decision concerning the award of contract may result in the rejection of the bidder's bid.

22.0 Clarification of Bids

22.1 To assist in the examination, evaluation and comparison of bids, the OMFED may ask the bidders individually for clarification of their bids, including break down of unit rates. The request for clarification and the response shall be in writing or by telegram/telex but no change in the price or substance of the bid shall be sought, offered or permitted except as require to confirm the correction of arithmetic errors discovered by the OMFED during the evaluation of the bids in accordance with clause 26.

23.0 Determination of Responsiveness

23.1 Prior to the detailed evaluation of the bids, the OMFED will determine whether each bid is substantially responsive to the requirements of the bidding documents.

23.2 For the purpose of this clause, a substantially responsive bid is one which conforms to all terms, condition and specification of the bidding documents without material deviation on reservation. A material deviation or reservation is one which affects in any substantial way the, quality or one performance of the works on which limits in any substantial way, inconsistent with the bidding documents, the OMFED'S rights or the bidder's obligations under the contract, and the rectification of which deviation or reservation would affect unfairly the co position of other bidders presenting substantially responsive bids.

23.3 If a bid is not substantially responsive to the requirements of the bidding documents, it will be rejected by the OMFED and may not be subsequently made responsive by the bidder having corrected or withdrawn the non-conforming deviation or reservation.

24.0 Correction of Errors

24.1 Bids determined to be substantially responsive will be changed by the OMFED for arithmetic errors in computation and summation. Errors will be corrected as follows:

- a) Where there is a discrepancy between rates or amounts in figures and in words, the rate or amount in words shall govern and
- b) Where there is a discrepancy between the unit rate and the total amount derived from the multiplication of the unit rate and the quantity the unit rate as quoted shall govern.

24.2 The amount stated in the form of bid will be adjusted by the OMFED in accordance with the above procedures for the correction of errors and, with the concurrence of the bidder shall be considered as binding upon the bidder. If the bidder does not accept the corrected amount of bid, his bid shall be rejected and the bid security shall be forfeited.

25.0 Evaluation and comparison of the Bids

25.1 The OMFED shall evaluate and compare only bids determined to be substantially responsive to the requirements of the bidding documents in accordance with clause 25.

25.2 Evaluating bids, the OMFED will determine for each bid the evaluated price by adjusting the bid price making any correction for errors pursuant to clause 26.0

25.3 The OMFED reserves the right to accept or reject any variation, deviation or alternative offers. Variations, deviations and alternative offers and other factors which are in excess of the requirement of the bidding documents or otherwise result in the accrual of unsolicited benefits to the OMFED shall not be taken in to account in bid evaluation.

25.4 Price adjustment provisions applying to the period of execution of the contract shall not be taken in to account in bid evaluation.

25.5 If the bid of the successful bidder is seriously unbalanced in relation to the OMFED'S estimate of the real cost of the work to be performed under the contract, the OMFED may require that the amount of the performance security deposit set forth in the clause 30.0 be increased at the expense of the successful bidder to a level sufficient to protect the OMFED against financial loss in the event of subsequent default of the successful bidder under the contract.

F. AWARD OF CONTRACT

26.0 Award Criteria

26.1 Subject to clause 30, the OMFED shall award the contract to the bidder whose bid has been determined to be substantially responsive to the bidding documents and who has offered the lowest, evaluated bid price pursuant to clause 28, provided further that the bidder has the capability and the resources to carry out the contract effectively.

27.0 OMFED'S right to accept any bid and to reject any or all bids.

27.1 Notwithstanding clause 29 or any other clauses stated above, the OMFED reserves the right to accept or reject any bid and to annul the bidding process and reject all bids, at any time prior to the award of the affected bidder(s) or any obligation to inform the affected bidder(s) of the grounds for the OMFED'S action.

28.0 Notification of Award

28.1 Prior to the expiry of the period of bid validity prescribed in the bid documents, the OMFED will notify the successful bidder by email or in writing that his bid has been accepted. This letter (herein after and in the conditions of contract referred to as "Letter of Acceptance") shall name the sum which the OMFED will pay to the contractor in consideration of the execution, completion and the maintenance of the works by the contractor as prescribed by the contract (hereinafter and in the conditions of the contract referred to as the "contract price").

28.2 The notification of the award will constitute the formation of the contract.

28.3 Upon furnishing by the successful bidder a performance security in accordance with the clause 30, the OMFED will notify the unsuccessful bidders that their bids have been unsuccessful.

29.0 Signing of Agreement

29.1 Within 15 days of receipt of the notification of award, the successful bidder shall prepare and execute the agreement, strictly in accordance to the sample form provides in the bidding document.

30.0 Performance Security

30.1 Within one month of issuance of the notification of award from the OMFED, the successful bidder shall furnish to the OMFED a performance security for an amount of 05% of the contract value pursuant to clause 10.0 of general conditions of contract.

31.0 Failure of the successful bidder to comply with the requirements of the clause 29 and 30 shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security.

SECTION II

GENERAL CONDITIONS OF CONTRACT

1. Definitions

1.1 In this contract, the following terms shall be interpreted as indicated.

- (a) "The contract" means the agreement entered into between the OMFED and the contractor, as recorded in the contract form signed by the parties, including the notification of award, all attachments and appendices thereto and all documents incorporated by reference therein;
- (b) "The contract price" means the price payable to the contractor under the contract for the full and proper performance of its contractual obligations;
- (c) "The goods" means all of the equipment, machinery, and/or other materials which the contractor is required to supply to the OMFED under the contract;
- (d) "Services" means services ancillary to the supply of the goods, such as transportation and insurance, and any other incidental services, such as installation, testing, commissioning, performance trial run for 30 days, provision of technical assistance, training and other such obligations of the contractor covered under the contract;
- (e) The OMFED" means the organization purchasing the goods and services under the contract i.e. ORISSA STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.
- (f) "The contractor" means the individual(s) or firm(s) supplying the goods under this contract i.e., with which an agreement has been signed by the OMFED for supply of goods & services required elsewhere in this document.

2. APPLICATION

These general conditions shall apply to the extent that they are not superseded by provisions in other parts of the contract.

3. STANDARDS

The goods supplied under this contract shall conform to the standards mentioned in the technical specifications, and, when no applicable standard is mentioned, to the Indian standards.

Wherever reference is made in the contract to the respective standards and codes in accordance with which goods and materials are to be furnished, and work is to be performed or tested, the provisions of the latest current edition or revision of the relevant standards and codes in effect on the date of signing of agreement shall apply, unless otherwise expressly set forth in the contract.

4. Use of Contract and Information

- 4.1 The contractor shall not, without the OMFED'S prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing, pattern, sample or information furnished by or on behalf of the OMFED in connection therewith, to any person other than a person employed by the contractor in the performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.
- 4.2 The contractor shall not, without the OMFED'S prior written consent, make use of any document or information enumerated in para.4.1 except for purposes of performing the contract.
- 4.3 Any document, other than the contract itself, enumerated in Para. 4.1 shall remain the property of the OMFED and shall be returned (in all copies) to the OMFED on completion of the contractor's performance under the contract if so required by the OMFED.

5. PATENT RIGHTS

The contractor shall indemnify the OMFED against all third-party claims of infringement of patent, trademark or industrial design rights arising from use of the goods/services or any part thereof in India.

6.0 PERFORMANCE SECURITY

- 6.1 Within 15 days of the contractor's receipt of notification of award of the contract, the contractor shall furnish **performance security to the OMFED in the amount of 05% of the contract value, in accordance to clause 31 of the instruction to bidders.**
- 6.2 The proceeds of the performance security shall be payable to the OMFED as compensation for any loss resulting from the contractor's failure to complete its obligations under the contract.
- 6.3 The performance security shall be denominated in Indian rupees and shall be in the following form:

- a) A Bank guarantee, issued by a Nationalised Bank in India, and in the form provided in the bidding documents.
- b) Demand draft in favour of "Orissa State Co-operative Milk Producers' Federation Limited" payable at Bhubaneswar.
Such Bank guarantee shall be valid up to three months after the expiry of the warranty / guarantee period.
- 6.4 The performance security will be discharged by the OMFED and returned to the contractor not later than 90 days following the date of completion of the contractor's performance obligations, including any warranty / guarantee obligations, under the contract.
- 6.5 No interest shall be paid on the performance security deposit by the OMFED.

7. Inspection and Tests

- 7.1 The OMFED or its representative shall have the right to inspect and/or test the goods to confirm their conformity to the contract. The Technical Specifications shall specify what inspections and tests the OMFED shall notify the contractor in writing of the identity of any representatives, if retained for these purposes.
- 7.2 The inspection of the goods shall be carried out to check whether the goods are in conformity with the technical specifications and shall be in line with the inspection/test procedures laid down in the schedule of specifications and the contract conditions.
- 7.3 The inspections and tests may be conducted on the premises of the contractor or its subcontractor(s) / at point of delivery and/or at the good's final destination. Where conducted on the premises of the contractor or its subcontractor(s) / all reasonable facilities and assistance including access to drawings and production data, shall be furnished to the inspectors at no charge to the OMFED. In case of any defects or deficiency notified by the OMFED'S inspection authority, the contractor will rectify and make good the same without delay and not proceed further processing of such items(s) of goods without obtaining approval from the inspection authority.
- 7.4 Should any inspected or tested goods fail to conform to the specifications/ the OMFED may reject them and the contractor shall either replace the rejected goods or make all alterations necessary to meet specification requirements free of cost to the OMFED.
- 7.5 The OMFED'S right to inspect, test and, where necessary, reject the goods after the goods' arrival at destination shall in no way be limited or waived by reason of the goods having previously been inspected, tested and passed by the OMFED or its representative.
- 7.6 Nothing in clause 7 shall in any way release the contractor from any warranty or other obligations under this contract.

8. Packing and Marking

- 8.1 The contractor shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to temperature, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit & destination.
- 8.2 The packing, marking and documents within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the contract, required by law, and, subject to clause 18, in any subsequent instructions ordered by the OMFED.
- 8.3 Each package shall be marked to indicate:
 - a) Name of the contractor
 - b) Details of items in the package
 - c) Name of the consignee
 - d) Order number
 - e) Gross/net and tare weights of the item
 - f) Destination

9. Delivery and documents

- 9.1 Delivery of the goods shall be made by the contractor for destination, by road.
- 9.2 The following documents shall be provided by the contractor / contractor:
Original and three copies of:
 - (l) The contractor's invoice showing order no. Goods description, quantity, unit price, total amount;

- (ii) Delivery note/packing list/lorry receipt;
- (iii) Manufacturer's/contractor's guarantee certificate;
- (iv) Inspection certificate issued by the nominated inspection agency, and the contractor's factory inspection report;
- (v) Insurance policy;
- (vi) Excise gate pass/octroi receipts, wherever applicable, duly sealed indicating payments made; and
- (vii) Any other document evidencing payment of statutory levies.

Note: The nomenclature used for the item description in the invoice/s, packing list/s and delivery note/s etc. should be identical to that used in the order. The dispatch particulars including name of transporter, LR no. and date should also be mentioned in the invoice/s.-

10. Insurance:

10.1 For supply of equipments:

The manufacturer shall have to arrange **all transit risk insurance warehouse to warehouse basis**, including strike clauses, for an amount equal to 110 % of the FOR destination value of the Goods, valid for a period of not less than 3 months after the expected date of arrival of Goods at destination.

In the event of any damage to/loss of consignment in transit, it will be your responsibility to lodge necessary claims with the carriers/ underwriters and pursue them till settlement. Since the insurance policy will be in our name, if required, we shall give you necessary authorisation letter authorizing you to lodge and pursue claims on our behalf with the carriers/ underwriters. Also you shall have to make good the losses/ damages occurred in transit by making replacement /payment to us in the first instance and if claims are settled by the underwriters and any amounts are realized by us, the amounts thus realized in settlement of claims shall be reimbursed to you. In other words, the prima facie responsibility rests on you for getting compensation of the damage/losses incurred if any, due to all transit hazards.

10.2 During storage at site:

The contractor shall arrange for insurance of all items stored/ received at the site including the items of supply covered under this contract & the contractor shall furnish necessary details of such insurance to the OMFED, on demand. Any default on the part of the contractor due to which any item does not get covered under insurance; the consequential losses shall be charged to the contractor.

The contractor shall arrange for insurance of all the items brought by him to the site for use during the execution of the contract, till handing over of the complete job.

11. Transportation

THE CONTRACTOR IS REQUIRED TO DELIVER THE GOODS FOR DESTINATION, BY ROAD. TRANSPORT OF THE GOODS TO THE DESTINATION SHALL BE ARRANGED THROUGH A REPUTED AND BANK APPROVED TRANSPORTER HAVING LOCAL OFFICES AT DESTINATION AND BHUBANESWAR, AND SHALL BE PAID FOR BY THE CONTRACTOR.

12. Incidental services

12.1 The contractor is required to provide the following services:

- a) Performance of on-site assembly, installation, hooking-up to existing system, Start-up, testing, commissioning, performance trial run for a period of 30 days and handing over of the supplied goods;
- b) Furnishing of tools & tackles required for assembly and maintenance of the supplied goods;
- c) Furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied goods;
- d) Operation, maintenance and repair of the supplied goods for a period of 30 days, provided that this service shall not relieve the contractor of any warranty obligations under this contract and
- e) Conduct of training of the OMFED'S personnel, on-site, in assembly, start-up operation, maintenance and repair of the supplied goods, if required.

12.2 Prices charged by the contractor for the preceding incidental services are to be included in the price of the contract.

13. Spare parts

- 13.1 The contractor may be required to provide any or all of the following materials and notifications pertaining to spare parts manufactured or distributed by the contractor:
- a) Such spare parts as the OMFED may elect to purchase from the contractor, provided that this election shall not relieve the contractor of any warranty obligations under the contract; and
 - b) In the event of termination of production of the spare parts:
 - (i) Advance notification to the OMFED of the pending termination, in sufficient time to permit the OMFED to procure its needed requirements; and
 - (ii) Following such termination, furnishing at no cost to the OMFED, the blueprints, drawings and specifications of the spare parts, if and when requested.

13.2 CONTRACTORS SHALL CARRY SUFFICIENT INVENTORIES TO ASSURE EX-STOCK SUPPLY OF CONSUMABLE SPARES SUCH AS GASKETS, PLUGS, WASHERS, BELTS, ETC. OTHER SPARE PARTS AND COMPONENTS SHALL BE SUPPLIED AS PROMPTLY AS POSSIBLE BUT IN ANY CASE WITHIN SIX MONTHS OF PLACEMENT OF ORDER.

- 13.3 The obligation of contractor stated in Para 13.1 shall continue even after expiry of the contract.

14. Warranty / guarantee

- 14.1 The contractor warrants that the goods supplied under the contract are new, unused, of the most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the contract. The contractor further warrants that the goods supplied under this contract shall have no defect arising from design, material or workmanship or from any act or omission of the contractor that may develop under normal use of the supplied goods in the conditions. The contractor also guarantees that the goods supplied shall perform satisfactorily as per the designed/rated/ installed capacity as provided for in the contract.
- 14.2 This warranty / guarantee shall remain valid for 12 months after the goods, or any portion thereof as the case may be, have been delivered, commissioned & handed over to the OMFED after the performance of 30 days trial run period.
- 14.3 The OMFED shall promptly notify the contractor in writing of any claims arising under this warranty.
- 14.4 Upon receipt of such notice, the contractor shall, with all reasonable speed, repair or replace the defective goods or parts thereof, without costs to the OMFED.
- 14.5 If the contractor, having been notified, fails to remedy the defects(s) within a period of 30 days, the OMFED may proceed to take such remedial action as may be necessary, at the contractor's risk and expense and without prejudice to any other rights which the OMFED may have against the contractor under the contract.
- 14.6 This warranty/ guarantee shall not cover any damage/s resulting from normal wear and tear or improper handling by the OMFED or his authorised representatives.

15. Terms of payment

- Full payment shall be released after completion of the work.
 - The contractor shall submit 05% Performance Security deposit within one month of the acceptance of the work order. The same shall be refunded after six months from the date of completion subject to satisfactory performance of work.
 - Penalty @ 0.5% per week maximum 10% of the order value shall be deducted subject to delay in execution beyond the stipulated period.
 - No interest shall be paid by OMFED on the bid security furnished by the bidder.
 - All payments are subject to deduction of statutory dues as applicable during the time of execution.
- 15.3 The contractor's request(s) for payment shall be made to the OMFED in writing, accompanied by an invoice describing, as appropriate, the goods delivered and services performed, and by shipping documents, submitted pursuant to clause 10, and upon fulfillment of other obligations stipulated in the contract.

16. Fixed prices

Prices charged by the contractor for goods delivered and services performed under the contract shall not, vary from the prices quoted by the contractor in its bid.

17. Change orders

17.1 The OMFED may, at any time, by a written order given to the contractor, pursuant to clause 31, make changes within the general scope of the contract in any one or more of the following:

- (a) Drawings, designs or specifications, where goods to be furnished under the contract are to be specifically manufactured for the OMFED;
- (b) The method of shipment or packing;
- (c) The place of delivery; or
- (d) The services to be provided by the contractor.

17.2 If any such change causes an increase or decrease in the cost of, or the time required for, the contractor's performance of any part of the work under the contract, whether changed or not changed by the order, an equitable adjustment shall be made in the contract price or delivery schedule, provided that such claims by contractor are reasonable & to the satisfaction of the OMFED. Any claims by the contractor for adjustment under this clause must be asserted within thirty (30) days from the date of the contractor's receipt of the OMFED's change order.

18. Contract Amendment

Subject to clause 17, no variation in or modification of the terms of the contract shall be made except by written amendment signed by the OMFED.

19. Assignment

The contractor shall not assign, in whole or in part, its obligations to perform under the contract, except with the OMFED'S prior written consent.

20. Subcontracts

The contractor shall notify the OMFED in writing of all subcontracts awarded under the contract if not already specified in his bid, such notification, in his original bid or later, shall not relived the contractor from any liability or obligation under the contract.

21.0 Delays in the contractor's performance

21.1 Deliveries in the goods and performance of services shall be made by the contractor in accordance with the time schedule specified by the OMFED, in Section –I of the bidding documents.

21.2 An unexcused delay by the contractor in the performance of its delivery obligations shall render the contractor liable to any or all of the following sanctions: - forfeiture of its performance security, imposition of liquidated damages, and/ or termination of the contract for default.

21.3 If at any time during performance of the contract, the contractor or its subcontractor(s) should encounter conditions impeding timely delivery of the goods and performance of services. The contractor shall promptly notify the OMFED in writing of the fact of the delay, its likely duration and its cause (s). As soon as practicable after receipt of the contractor's notice, the OMFED shall evaluate the situation and may at its discretion extend the contractor's time for performance, in which case the extension shall be notified to the contractor by amendment of the contract.

22.0 Time for completion

Subject to any requirement in the contract as to completion of any section of the works before completion of the whole, the whole of the works shall be completed, within the time stated in section–I of the bidding documents or such extended time as may be allowed under clause 23 hereof.

23.0 Extension of Time of Completion

Should the amount of extra or additional work of any kind or any cause of delay referred to in these conditions, or exceptional adverse climatic conditions, or other special circumstances of any kind whatsoever which may occur, other than through a default of the contractor, be such as fairly to entitle the contractor to an extension of time for the completion of the works. OMFED shall determine the amount of such extension and shall notify the contractor accordingly. Provided that the OMFED is not bound to take in account any extra or additional works or other special circumstances unless the contractor has within thirty days after such work has been commenced, or such circumstances have arisen, or as soon thereafter as is practicable, submitted to the engineer full and detailed particulars of any extension of time to which he may consider himself entitled in order that submission may be investigated at the time.

24.0 Penalty for Delay

- 24.1 If the contractor shall fail to achieve completion of the works within the specified time, then the contractor shall pay to the OMFED the sum at the rate of 0.5 % (half percent) of the total value of work done under the contract, as a penalty, for every week or part of the week which shall elapse, between the time prescribed & the date of certified completion of the work. The OMFED may without prejudice to any other method of recovery, deduct the amount of such penalty from any payment in its hands, due or which may become due to the contractor. The payment or deduction of such penalty shall not relieve the contractor from obligations to complete the works, or from any other of his obligations and liabilities under the contract.
- 24.2 The aggregate maximum of the penalty for delay payable to the OMFED under this clause shall be subject to a maximum of 10 % of the total value of work.
- 24.3 The criteria for deriving the penalty for delay shall be the actual value of works executed and the amended time of completion.
- 24.4 Any incremental taxes and levies due to the delay in the performance of the contract by the contractor shall be to the contractor's account.

25. Termination for default

- 25.1 The OMFED may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the contractor, terminate the contract in whole or in part,
- (a) If the contractor fails to delivery an or all the goods within the time period (s) specified in the contract, or any extension thereof granted by the OMFED pursuant to clause 17, 21, & 22;
- Or**
- (b) If the contractor fails to perform any other obligation(s) under the contract.
- 25.2 In the event the OMFED terminates the contract in whole or in part, pursuant to Para. 25.1, the OMFED may procure, upon such terms and in such manner, as it deems appropriate, goods similar to those undelivered, and the contractor shall be liable to the OMFED for any excess costs for such similar goods. However, the contractor shall continue performance of the contract to the extent not terminated.
- 25.3 Consequent to such termination of contract, the OMFED shall recover the advance paid, if any, to the contractor along with interest @ 18 % per annum compounded quarterly on the last day of March, June, September and December on the advance paid for the entire period for which the advance was retained by the contractor.

26. Force Majeure

- 26.1 Notwithstanding the provisions of clauses hereof, the contractor shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extend that, its delay in performance or other failure to perform its obligations under the contract is the result of an event of force majeure.
- 26.2 For purposes of this clause, "force majeure" means an event beyond the control of the contractor and not involving the contractor's fault or negligence and not foreseeable. Such events may include, but are not restricted to, acts of the OMFED either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.
- 26.3 If a force majeure situation arises, the contractor shall notify the OMFED in writing of such condition and the cause thereof, within 7 days. Unless otherwise directed by the OMFED in writing, the contractor shall continue to perform its obligations under the contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the force majeure event.

26.0 Termination for Insolvency

- The OMFED may at any time terminate the contract by giving written notice to the contractor, without compensation to the contractor, if:
- (a) The contractor becomes bankrupt or otherwise insolvent,
- (b) The contractor being a company is wound up voluntarily by the order of a court receiver, liquidator or manager appointed on behalf of the debenture holders or circumstances shall have arisen which entitle the court or debenture holders to appoint a receiver, liquidator or a manager, Provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the OMFED.

28.0 Termination for Convenience

- 28.1 The OMFED, may by written notice sent to the contractor, terminate the contractor, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is of the OMFED'S convenience, the extent to which performance of work under the contract is terminated, and the date upon which such termination becomes effective.
- 28.2 The goods that are complete and ready for shipment within 30 days after the contractor's receipt of notice of termination shall be purchased by the OMFED at the contract terms and prices. For the remaining goods, the OMFED may elect:
- (a) To have any portion completed and delivered at the contract terms and prices; and /or
 - (b) To cancel the remainder and pay to the contractor an agreed amount for partially completed goods and for material and parts previously procured by the contractor.

29.0 Settlements of Disputes

- 29.1 If the contractor considers any work demanded of him to be outside the requirements of the contract, or considers any drawings, record or ruling of the engineer on any matter in connection with or arising out of the contract or the carrying out of the work to be unacceptable, he shall promptly ask the engineer in written instructions or decision. There upon the engineer shall give his written instructions or decision within a period of fifteen days of such request.
- 29.2 Upon the receipt of the written instructions or decisions the contractor shall promptly proceed without delay to comply with such instructions or decisions.
- 29.3 If the engineer fails to give his instructions or decisions in writing within a period of fifteen days after being requested, or if the contractor is dissatisfied with the instructions and decisions, he shall appeal to the OMFED, which shall afford an opportunity to the contractor to be heard and to offer an evidence in support of his appeal. The OMFED shall give a decision within a period of thirty days after the contractor has given the said evidence in support of his appeal.
- 29.4 If the contractor is dissatisfied with this decision, the contractor within a period of thirty days from the receipt of the decisions shall indicate his intension to refer the dispute to arbitration, failing which the said decision shall be final and conclusive.

30.0 Arbitration

All disputes or differences in respect of which the decision is not final and conclusive shall, on the initiative of either party, be referred for adjudication as per the Arbitration And Conciliation Act 1996

31.0 Applicable law

The contract shall be interpreted in accordance with the laws of the union of India.

32. Notices

- 32.1 Any notice given by one party to the other pursuant to the contract shall be sent in writing or by telegram/ fax/ cable and confirmed in writing to the address specified for that purpose in the special conditions of contract.
- 32.2 A notice shall be effective when delivered or on the notice's effective date, which ever is later.

33. 0 Taxes and Duties

The contractor shall be entirely responsible for all taxes, duties, license fees etc. incurred until handing over of the contractor goods and services to the OMFED. All Government fees paid for inspections and approvals by statutory authorities shall be reimbursed by the OMFED on production of copy of treasury Challan for same. Service charges for depositing the govt. fees or submission of requisite forms with the statutory authorities shall be not being admissible.

34.0 Right of use defective equipment

If after handing over of the equipments and within the guarantee and warranty period, the operation or use of the equipment(s) proves to be unsatisfactory, the OMFED shall have the right to continue to operate or use such equipment

Until rectifications of defects errors or omissions by repair or partial or complete replacement is made, without interfering with the OMFED'S operation.

35.0 Jurisdiction

For the settlement of any dispute arising out of the contract against this bid, only the courts at Bhubaneswar shall have jurisdiction.

SECTION - III
SPECIAL CONDITIONS OF CONTACT
(FOR ELECTRICAL INSTALLATION)

1.0 SCOPE

The intent of this specification is to define the requirements for the installation, testing and commissioning of the electrical system like high tension switch yard with accessories and equipments, transformers, HT panels, oil circuit breakers, LT panels and power control centers, Distribution boards, capacitors and banks panels, power and control cables, remote push button stations, motors, earthing network, etc. Requirement of a particular project shall be as specified in schedule of quantities / approved drawing of the OMFED or as per the battery limits fixed by the OMFED.

2.0 STANDARDS

- 2.1 The work shall be carried out in the best workman like manner in conformity with this specification, the relevant specification / codes of practice of the Indian Standards Institution, approved drawings and the instructions issued by the Engineer-in-charge or his authorised representatives, from time to time. Some of the relevant Indian Standards are listed in Annexure-IV.
- 2.2 In addition to the standards as mentioned in 2.1, all works shall also confirm to the requirements of the following:
- a) Indian electricity act and rules framed there under.
 - b) Fire Insurance Regulations.
 - c) Regulations laid down by the chief electrical inspector of the state / Electricity board.
 - d) Regulations laid down by the factory Inspector of the state.
 - e) Any other regulations laid down by the local authorities.
 - f) Installation & operating manuals of original manufacturers of equipments.

3.0 EQUIPMENT AND ACCESSORIES –SPECIFICATIONS

This defines specifications and requirements mainly for the equipment and accessories which are generally supplied by the erection agencies and do not cover the specification of main electrical equipment such as Transformers, HT. and LT. panels, switchboards and motors etc. which may be supplied by the OMFED.

All materials, fittings and appliances to be supplied by the contractor shall be of best quality and shall confirm to the specification given here under. The equipment shall be manufactured in accordance with current Indian Standard Specifications wherever they exist or with the BS or NMA specifications, if no such ISS are available. In the absence of any specification, the materials shall be as approved by the OMFED or his authorized representatives.

All similar materials and removable parts shall be uniform and interchangeable with one another.

Makes of bought out items selected by the Contractor must be furnished by him as per the Proforma given in Annexure-V.

3.0 Power Cables (HT)

Three core, aluminum conductor, screened, XLPE insulated, armored shielded and PVC sheathed cables suitable for 11/12.7/22/33 KV, earthed system, conforming to IS 7098 (Part II) amended up to date.

3.2 Power Cables (LT)

Power cables for use on 415 V system shall be of 1100 volt grade, aluminum conductor, PVC insulated, PVC sheathed, armored and overall PVC sheathed, strictly as per IS: 1554 (Part I) – 1976. Unarmored cable to be used only if specifically mentioned in schedule of quantities.

The size of these cables shall be as specified in schedule of quantities or as per erection drawings. If neither of these drawings are available, the size of cable shall be as specified in cable selection chart enclosed at Annexure – VI. NO CABLE OF SIZE LESS THAN 4 SQ.MM. SHALL BE USED.

3.3 Control Cables

Control cables for use on 415 V system shall be of 1100 volts grade, copper conductor, PVC insulated, PVC sheathed, armored and overall PVC sheathed, strictly as per IS: 1554 (Part I) – 1976. Unarmored cable to be used only if specifically mentioned in schedule of quantities.

The size of these cables shall be as specified in schedule of quantities or as per erection drawing. THE MINIMUM CONDUCTOR DIAMETER SHALL BE 2.5 SQMM.

3.1 Cable Trays

These shall be channel type, fabricated from slotted MS. Sheets (14 gauge minimum), hot dip galvanized, complete with all accessories such as bends, tees and reducers. Only aluminum flat clamps with GI / chrome plated bolts-nuts/screws to be used for clamping cables. Sizes of these trays shall be as specified in schedule of quantities or approved by Engineer-in-Charge.

3.5 Cable Glands

Cable glands shall be of heavy-duty compression type of brass, chrome plated. These shall have a screwed nipple with conduit electrical thread and check nut. These shall be suitable for armored/unarmored cables, which is being used.

3.6 Cable connectors

Cable connectors, lugs/sockets, shall be of copper/aluminum alloy, suitably tinned, solder less, crimping type. These shall be suitable for the cable being connected and type of function (such as power, control or connection to instruments, etc.)

3.7 Cable Route Markers

These shall be galvanised Cast Iron plate with marking (LT/HT) diameter 150 mm with 600 mm long 25x25 mm MS. Angle riveted/bolted with this plate.

3.8 Cable Indicators

These shall be self-sticking type and of 2 mm thick lead strap for overall cable. PVC identification numbers, ferrule shall be used for each wire.

3.9 G.I. Pipes for Cables

For laying of cables under floor, G.I. class 'A class' pipes shall be used. MS. Conduits are not acceptable for this purpose. All accessories of pipes shall be threaded type. Size of pipe shall depend upon the overall outer diameter of cable to be drawn through pipe. NO G.I. PIPE LESS THAN 40 MM DIA SHALL BE USED FOR THIS PURPOSE. To determine the size of pipe, assume that 40% area of pipe shall be free after drawing of cable.

3.9.1 Motor Isolators

These shall be in Aluminum cast housing, completely dust, vermin and weather proof, suitable for 25A, 415 volts, 50 Hz with rotary type switch and reroll type metallic plug, complete with cable gland for incoming and outgoing cables. Operating hand to be of metal and final finish of housing to be buffer mirror. Sample to be got approved before supply.

3.11 Motor Junction Box

These shall be in Aluminum cast housing, completely dust, vermin and weather proof, suitable for 25 A. 415 Volts, 50 Hz, with heavy duty bakelite connector, complete with cable/conduit gland. Refer detailed drawing. Sample to be got approved before use.

3.12 Remote Push Button stations (For Dairies)

These shall be floor / wall-mounted type as specified in schedule of quantities. These shall be fabricated from 1.6 mm thick stainless steel sheets (S.S: 304). In case of floor-mounted stations, these shall be supported on 51 mm 'A' class MS, pipe clad with S.S. pipe. Front cover shall be removable type with suitable rubber gaskets to make them dust, vermin and moisture proof. All outer S.S. surfaces shall be polished to 150 grit finishes.

Each push button station shall be provided with one lockable (key operated) push button to control supply to station. Each feeder of station shall be provided with name plate (white bakelite), indication lamp, one "ON" (Green) push button and one "Off" (Red) push button with latch to prevent accidental starting when required, Green and Red push button shall have contact elements having 1 NO + 1 NO. Number of feeders shall be specified in schedule of quantities. The indication lamp can be combined with 'ON' push button.

4.0 ERECTION OF EQUIPMENT

The cases containing the equipment (being supplied by the OMFED) shall be handed over to the Contractor. The Contractor shall make his own arrangements for safe transportation of all the items to the erection site and also carry out complete loading unloading during transportation. Equipment shall not be removed from packing cases unless the floor has been made ready for installing them. The cases shall be opened in presence of the Engineer-in-charge or his authorised representative. These empty packing cases shall be returned to the stores and any document if found with the equipment shall be handed over to the Engineer-In-Charge. Any damage or shortage noticed shall be reported to the Engineer-In-Charge in writing immediately after opening of packing cases.

4.1 Power control centers, distribution boards, control panels & bus ducts

4.1.1. Erection

Electrical panels and bus duct shall be delivered in convenient shipping section by the manufacturers. The Contractor shall be responsible for final assembly and inter-connection of bus bars / wiring. Foundation channel shall be grounded in the flooring by the contractor. Switchgear shall be aligned and leveled on their base channels and bolted or tack welded to them as per the instructions of the Engineer-In-Charge. The earth bus shall be made continuous throughout the length. Loosely supplied relays and instruments shall be mounted and connected on the switchgear. The contacts or the draw-out circuit breakers shall be checked for proper alignment and inter-changeability.

After erection the switchboard shall be inspected for dust and verminproofness. Any hole, which might allow dust or vermin etc, to enter the panel, shall be plugged suitably without any extra cost.

If the instrument transformers are supplied separately they shall be erected as per the direction of the Engineer-In-Charge. The Contractor shall fix the cable glands after drilling the bottom top plates of all switchboards with suitable holes without any extra cost.

Range of overload relays/timers etc, shall be checked with requirement of motor actually to be connected at site and if the same is under-sized/over-sized, it shall be brought to the notice of Engineer-in-charge, who shall arrange procurement of correct rated components. However, the Contractor shall not charge anything extra for labour for such replacements.

The bus duct shall be suitably supported between switchgear and transformer. The opening in the wall where the duct enters the switchgear room shall be sealed to avoid rainwater entry. The foundation of the switchgear shall be raised suitably for minor adjustment to ensure proper alignment and connection of the bus duct at no extra cost. Expansion joints, flexible connection, etc. supplied by the manufacturer of the bus duct shall be properly connected.

4.1.2 Testing

Before electrical panel is energised, the insulation resistance of each bus shall be measured from phase to ground. Measurement shall be repeated with circuit breakers in operating positions and contact open.

Before switchgear is energized, the insulation resistance of all DC control circuits shall be measured from line to ground.

The following tests shall be performed on all circuit breakers during erection:

- i. Contact alignment and wipe shall be checked and adjusted where necessary in accordance with the breakers manufacturer's instructions.
- ii. Each circuit breaker shall be drawn out of its cubicle, closed manually and its insulation resistance measured from phase to phase and phase to ground.
- iii) All adjustable direct acting trip devices shall be set using values given by the Engineer-In-Charge / manufacturer.
- iv) The dielectric strength of insulating oil wherever applicable shall be checked.

Before switchgear is energised the following tests shall be performed on each circuit breaker in its test position.

- i. Close and trip the circuit breaker from its local control switch, push button or operating handle. Switchgear control bus may be energised to permit test operation of circuit breaker with AC closing with prior permission of the Engineer-In-Charge.
- ii. Test tripping of the electrically operated circuit breaker by operating mechanical trip device.
- iii. Test operation of circuit breakers latch, check carriage limit switch if provided.

- iv. Test proper operation of lock out device in the closing circuit, wherever provided by simulating conditions which would causes a lockout to occur.
- v. Trip breaker either manually or by applying current or voltage to each of its associated protective relays.

Before switchgear is energized, the test covered above shall be repeated with each breaker in its normal operating position:

Capacitor banks in capacitor control panel shall be tested as per manufacturer's instructions. In addition, test for output and / or capacitance, insulation resistance test and test for efficiency of discharge device shall be carried out.

All electrical equipment alarms shall be tested for proper operation by causing alarms to sound under simulated abnormal conditions.

The Contractor shall arrange testing and calibrations of relays. The testing equipment including primary and secondary injection sets (if required) etc. shall also have to be arranged by the Contractor, payment for above work shall be deemed to have been included in the erection of switch boards/control panels.

4.1.3 Proforma for PCC, DB, Motor control centers test

1. Circuit (breaker or Contractor module designation/bus no.)
 2. Insulation Resistance Test (Contacts open, breaker racked in position).
 - a) Between each phase of bus : Mega Ohm
 - b) Between each phase and earth : Mega Ohm
 - c) DC and AC control and auxiliary Circuits : Mega Ohm
 - d) Between each phase of CT/PT and between CT and PT circuit if any: : Mega Ohm
 3. **CT checks:**
 - a) CT ratio
 - b) CT secondary resistance
 - c) CT polarity check
 4. Check for contact alignment and wipe
 5. Check / test all releases / relays
 6. Check mechanical interlocks
 7. Check electrical interlocks
 8. Check switchgear /control panel wiring
 9. Checking o breaker/ Supplier circuits for
 - a) Closing-local and remote wherever applicable
 - b) Tripping-local and remote wherever applicable
 10. Opening time of Breaker/contactors
 11. Closing time of Breaker/contactors
- (This Proforma shall be jointly signed by the Engineer-in-Charge and the Contractor)

4.2 Battery and battery charger

Batteries shall be erected on wooden stands and insulators supplied by the manufacturer of the batteries. Electrolyte shall be filled as per the manufacturer's instructions. Interconnections shall be made with leads supplied by the manufacturer. Filling of electrolyte (supplied by the manufacturer), charging, discharging, recharging shall be carried out under the supervision of the Engineer-in-Charge. or his authorised representative. Lamp bank (loads) for discharging shall be provided by the Contractor under this contract. Erection of battery charger and DC board will be carried out by the Contractor under the supervision of the Engineer-In-Charge or his authorised representative. The Contractor shall also offer such facilities as may be required for carrying out the tests on the complete battery charger and DC board / AC board.

Battery charger shall be tested for proper operation and to verify the charger delivers its maximum rated output. The contractor shall supply skilled/unskilled labour for carrying out the test by the engineer-in-charge. Batteries shall be given a boost charge in accordance with the manufacturer's instructions and adjusted for float operation before being placed regular service.

4.3 **Motors**

4.3.1 **Erection and testing**

Erection and coupling of motors with machines will be done under the mechanical erection. However, earthing, cable termination, testing and commissioning are covered under this section, before starting the alignment and coupling of motors with machines the insulation resistance of the motors will be measured and recorded by the Contractor. The direction of the rotation of the motor shall also be checked before the driven equipment is finally coupled. Motor bearings are to be checked and rectified including supply and changing of grease, checking of fans coupling with bodies etc. The Contractor shall take adequate precaution and care while executing the work. For all damage due to negligence etc. the Contractor shall be responsible to replace / repair at his own cost.

Before connecting power cables to motors the insulation resistance of all motor windings shall be measured. Measurement shall be repeated after power cable terminations are completed and before first charging.

Motor shall be operationally tested together with the starting gear and auxiliary apparatus such as push button stations, the contractors, level and pressure controls, signal and alarm apparatus, power and control circuits etc.

Check the anti-condensation heater and its circuit (if installed).

Check the setting of the thermal overload protection/single phase prevention. Testing of these devices is to be done wherever required as per the instructions of the Engineer-In-Charge.

All motors shall run uncoupled for a maximum period off 4 hours before the driven equipment is placed in regular service.

4.3.2 **Proforma for motor testing**

1. Name plate details: Voltage_____ HP_____ KW_____
- Mounting_____ Current_____ RPM_____
- Frame size_____ Make_____ S no._____
- Others_____
2. **Insulation Test (Before cable connection)**
- a) Between phase and earth _____ Mega ohms
- b) Between each phase _____ Mega ohms
3. **Insulation Test (After cable connection)**
- a) Between phase and earth _____ Mega ohms
- b) Between each phase _____ Mega ohms
4. No load current : R phase Amps
- Y phase Amps
- B phase Amps
5. Full load current : R phase Amps
- Y phase Amps
- B phase Amps
6. **Temperature rise after 4 hours run:**
- On no load O °c.
- On full load O °c.
- Ambient temperature during test O °c.
7. **Operation of thermal overload relay:**
- i) At normal FL current of motor
- ii) At twice FL current of motor trip in seconds.
- (The Engineer-In-Charge and the Contractor shall jointly sign this Performa.)

4.4 **Installation of cable network**

Cable network shall include, power, control, lighting cables which shall be laid in underground trenches, Hume pipes, open trenches, cable trays GI pipes, or on building structure surfaces as detailed in the relevant drawings. Cable schedules or as per the Engineer-In-Charge's instructions, supply and installation of cable trays, GI pipes, conduits cable glands sockets at both

ends, isolators, junction boxes, remote push buttons stations, etc. shall be under the scope of the Contractor.

4.4.1 General requirements for handling of cables

- 4.4.1.1 Before laying cables, these shall be tested for physical damage, continuity absence of cross phasing, insulation resistance to earth and between conductors. Insulation resistance tests shall be carried out with 500 / 1000 volt Megger.
- 4.4.1.2. The cables shall be supplied at site, wound on wooden drum as far as possible. For smaller length and sizes, cables in properly coiled form can be accepted. The cable shall laid by mounting the drum of the cable on drum carriage. Where the carriage is not available, the drum shall be mounted on a properly supported axle, and the cable laid out from the top of the drum. In no case the cable will be rolled on, as it produces kinks, which may damage the conductor.
- 4.4.1.3. Sharp bending and kinking of cables shall be avoided. The bending radius for PVC insulated and sheath armored cable shall not be less than 10 D where 'D' is overall diameter of the cables.
- 4.4.1.4. While drawing cables through GI pipes, conduits, RCC pipe, ensure that size of pipe is such that, after drawing cables, 40% area is free. After drawing cable, the end of pipe shall be sealed with cotton/bituminous compound.
- 4.4.1.5. High Voltage (11KV and above), medium voltage (230V and above) and other control cables shall be separated from each other by adequate spacing or running through independent pipes/trays.
- 4.4.1.6. Armour cables shall never be concealed in walls/floors/roads without GI pipes, conduits RCC pipes.
- 4.4.1.7. Joints in the cable throughout its length of laying shall be avoided as far as possible and if unavoidable, prior approval of site engineer shall be taken. If allowed, proper straight through epoxy resin type joint shall be made, without any additional cost.
- 4.4.1.8. A minimum loop of 3 M shall be provided on both ends of the cable, or after every 50 M of un-jointed length of cable and on both ends of straight through cable joint. This additional length shall be used for fresh termination in future. Cable for this loop shall be paid for supply and laying.
- 4.4.1.9. Cable shall be neatly arranged in the trenches/trays in such a manner so that criss-crossing is avoided and final take off to the motor/switchgear is facilitated. Arrangement of cables within the trenches/trays shall be the responsibility of the Contractor.
- 4.4.1.10 All cable routes shall be carefully measured and cable cut to the required lengths and under wastage of Cables to be avoided. The route indicated in the drawings is indicative only and the same may be rechecked with the Engineer-in-charge before cutting of cables. While selecting cables routes, interference with structures, foundations, pipeline, future expansion of buildings, etc. should be avoided.
- 4.4.1.11 All temporary ends of cables must be protected against dirt and moisture to prevent damage to the insulation. For this purpose, ends of all PVC insulated cables shall be taped with an approved PVC or rubber insulating tape. Use of friction type or other fabric type tape is not permitted. Lead sheathed cables shall be plumbed with lead alloy.
- 4.4.1.12 Wherever cable rises from underground/concrete trenches to motors/switchgears/push buttons, these shall be taken in G.I. pipes of suitable size, for mechanical protection upto 300 mm distance of concerned cable gland or as instructed by the Engineer-In-charge.
- 4.4.1.13 Where cables pass through foundation/walls of other under ground structures, the necessary ducts or opening will be provided in advance for the same. However, should it become necessary to cut holes in existing foundations or structures the electrical Contractor shall determine their location and obtain approval of the engineer-in-charge before cutting is done.

4.4.2 Laying of Cables (underground system)

- 4.4.2.1. Cables shall be so laid in ground that these will not interfere with other underground structures. All water pipes, sewage lines or other structures, which become exposed by excavation, shall be properly supported and protection from injury until the filling has been rammed solidly in places under and around them. Any telephone or other cables coming in the way are to be properly shielded diverted as directed by the OMFED.

- 4.4.2.2. Cables shall be laid at minimum depth of 750 mm in case of LT & 1200 mm in case of HT, from ground level. Excavation will be generally in ordinary alluvial soil. The width of the trench shall be sufficient for laying of required number of cables.
- 4.4.2.3 Sand bedding 75mm tick shall be made below and above the cables. A layer of bricks (full size) shall be laid on the edge, above sand bedding on the sides of cables and a flat brick to cover cable completely. More than one cable can be laid in the same trench by providing a brick on edge between two cables. However the relating location of cables in trench shall be maintained till termination. The surface of the ground after back filling the earth shall be made good so as to conform in all respects to the surrounded ground and to the entire satisfaction to the Engineer-in-charge.
- 4.4.2.4 For all underground cables, route markers should be used.
- Separate cable route markers should be used for LT, HT and telephone cables.
 - Route markers should be grounded in ground with 1:2:4 cement concrete pedestal size 250x250x300 mm.
 - Cable markers should be installed at an interval not exceeding 50 M along the straight routes of cables at a distance of 0.5 M away from centre of cable with the arrow marked on the cable markers plate indicating the location of cable. Cable markers should also be used to identify change in direction of cable route and for location of every joint in underground cable.
- 4.4.2.5 RCC Hume pipe for crossing road in cable laying shall be provided by OMFED. No deduction shall be made for cable laying in Hume pipe for not providing bricks, sand and excavation. RCC Hume pipe at the ends shall be sealed by bituminous compound after laying and testing of cable by electrical contractor without any extra charge.
- 4.4.3 Laying of Cables Under Floors**
- 4.4.3.1 **GI CLASS A PIPE SHALL BE USED FOR LAYING OF OUTGOING CABLES FROM DISTRIBUTION BOARDS TO MOTORS, ISOLATORS/JUNCTION BOXES OF MOTORS, STARTER OF MOTORS AND PUSH BUTTON STATIONS. PREFERABLY ONE CABLE SHALL BE DRAWN THROUGH ONE PIPE. SIZE OF PIPE SHALL BE SUCH THAT AFTER DRAWING OF CABLE 40% AREA IS FREE. IF LENGTH OF PIPE IS MORE THAN 30 M, FREE AREA MAY BE INCREASED TO 50%.**
- 4.4.3.2 Use of elbows are not allowed at all and number of bends shall be kept minimum. Instead of using bends with sockets, pipe-bending machine shall be used for making long smooth bends at site.
- 4.4.3.3. Ends of pipe shall be sealed temporarily while laying with cotton/jute/rubber stopper etc. to avoid entry of building material.
- 4.4.3.4 Exact location of equipment motor/isolator/push buttons etc. shall be ascertain prior to laying of pipe.
- 4.4.4 Laying of cable in Masonry Trenches**
- 4.4.4.1 Masonry/concrete trenches of laying of cable shall be provided by OMFED. However steel members such as MS angles/flats etc. shall be provided & grouted by electrical Contractor to support the cables without any extra charge. Cables shall be clamped to these supports with aluminum saddles/damps. More than one tier of cables can be provided in the same trench if the numbers of cables are more.
- 4.4.4.2 Entry of cables in trenches shall be sealed with bituminous MASTIC compound to stop entry of water in trenches.
- 4.4.5 Laying Of Cables In Cable Trays**
- 4.4.5.1 Cable trays and supporting steel members such as MS angle/channel/ flats etc. shall be provided and fixed by the Contractor.
- 4.4.5.2 Cable shall be fixed in cable trays in single tier formation and cables shall be clamped with aluminum flat clamps and galvanized bolts/unit.
- 4.4.5.3 Earthing flat/wire can also be laid in cable tray along with cables.
- 4.4.5.4 After laying of cables minimum 20% area shall be spare.
- 4.4.6 Laying of cables on Building Surface/Structure**
- 4.4.6.1 Such type of cable laying shall be avoided as per as possible and will be allowed only for individual cables or small group of cables, which run along structure.
- 4.4.6.2 Cables shall be rigidly supported on structure steel /masonry using individual cast/malleable iron galvanized saddles and these supports shall be approximately 400 to 500mm for cables

upto 25mm overall diameter and maximum 1000mm for cables larger than 25mm. Unsightly sagging of cables shall be prevented. Only aluminum /GI clamps with GI bolts/nuts shall be used.

- 4.4.6.3 If drilling of steel structure must be resorted to, approval must be secured from the Engineer-in-Charge and steel must be drilled where the minimum weakening of the structure will result.

4.4.7 Termination and Jointing Of Cables

4.4.7.1 Use of Glands

All PVC cable upto 1.1 KV grade, armored or unarmored shall be terminated at the equipment/junction box isolators/push buttons/control accessories, etc. by means of suitable size compression type cable glands armor of cable shall be connected to earth point. The Contractor shall drill holes for fixing glands wherever necessary. Wherever threaded gland cable is to be screwed into threaded opening of different size, suitable galvanized threaded reducing bushing shall be used for approval type.

In case of termination of cables at the bottom of the panel over a cable trench having no access from the bottom, a close fit holes should be drilled in the bottom plate for all the cables in one line, then bottom plate should be split in two parts along the center line of holes. After installation of bottom plate and cables with glands, it shall be sealed with sold sealing compounds.

4.4.7.2 Use OF Lugs/sockets

All cable leads shall be terminated at the equipment terminals, by means of crimped type solder less connectors unless the terminals at the equipment ends are suitable for direct joining without lugs/sockets.

The following is the recommended procedure for crimped joints and the same shall be followed:

- a) Strip of the insulation of the cable end with every precaution, not to severe or damage any stand. All insulations to be removed from the stripped portion of the conductor and ends of the insulation should be clean and square.
- b) The cable should be kept clean as far as possible before assembling it with the terminal/socket. For preventing the ingress of moisture and possibility of re-oxidation after crimping of the aluminum conductors, the socket should be fitted with corrosion inhibiting compound. This compound should also be applied over the stripped portion of the conductor and the palm surface of socket.
- c) Correct size and type of socket/ferrule/lug should be selected depending on size of conductor and type of connection to be made.
- d) Make the crimped joint by suitable crimped joint.
- e) If after crimping the conductor in socket/lug, same portion of the conductor remains without insulation the same should be covered sufficiently with PVC tape.

4.4.7.3 Dressing of Cable inside the Equipment

After fixing the cable glands, the individual cores of cable shall be dressed and taken along the cable ways (if provided) or shall be fixed to the panels with polyethylene straps. Cable shall be dressed in such a manner that small loop of each core is available inside the panel.

For motors of 20 HP and above, terminal box if found not suitable for proper dressing of aluminum cables, the Contractor shall modify the same without any additional cost.

Cables inside the equipment shall be measured and paid for.

4.4.7.4 Identification of Cables/Wires/Cores

Power cables shall be identified with RED, YELLOW, and BLUE PVC tapes for trip circuit identification, additional red ferrules shall be used only in the particular cores of control cable at the termination points in the switch gear/control panels and switches.

In case of control cables all cores shall be identified at both ends by their wire nos. by means of PVC ferrules or self-sticking cable markers, wire nos. shall be as per schematic/connection drawing. For power circuit also wire nos. shall be provided if required as per the drawings of switchgear manufacturer.

4.4.8 Testing Of Cables

4.4.8.1 Before energizing, the insulation resistance of every circuit shall be measured from phase to phase and from phase to ground. This requires 3 measurements if one side is grounded and 6 measurements for three phase circuits.

4.4.8.2 Where splices or termination are required in circuits rated above 650 volts, measure insulation resistance of each length of cable before splicing and/or terminating. Report measurements after splices and/or termination are complete.

4.4.8.3 DC high voltage test shall be made after installation on the following:

a) All 1100 volts grade cables in which straight through joints are made.

B) ALL CABLES ABOVE 1100 VOLTS GRADE.

For record purposes test data shall include the measured values of leakage current versus time.

The DC high voltage test shall be performed as detailed below:

Cables shall be installed in final position with all the straight through joints complete. Terminations shall be kept unfinished so that motors, switchgears, transformer etc. are not subjected to test voltage.

The test voltage and duration shall be as per relevant codes and practices of Indian standards Institution.

4.4.9 Proforma For Testing Cables

DATE OF TEST

a) Drum no. from which cable taken

b) Cable from _____ to _____

c) Length of run of this Cable _____ meters

d) Insulation resistance test:
Voltage of megger _____ volts

i) Between core-1 to earth _____ mega ohm

ii) Between core-2 to earth _____ mega ohm

iii) Between core-3 to earth _____ mega ohm

iv) Between core-1 to core-2 _____ mega ohm

v) Between core-2 to core-3 _____ mega ohm

vi) Between core-3 to core-1 _____ mega ohm

e) High voltage test _____ Voltage duration _____

i) Between core and earth

ii) Between individual cores

(The Engineer-In-Charge and the Contractor shall jointly sign this Proforma)

4.5 Earthing Network

The entire network installation shall be done in accordance with the earthing drawings, specifications and instructions of the engineer-in-Charge. The entire earthing system shall fully comply with the Indian Electricity act and Rules framed there under. The Contractor shall carry out any changes desired by the Electrical Inspector or OMFED in order to make the installation conform to the Indian Electricity Rules, at no extra cost. The exact location of the earth pits, earth electrodes and conductors and earthing points of the equipments shall be determined at site, in consultation with Engineer-in-Charge. Any change in the methods, routing, size of conductor etc. shall be subject to approval of the OMFED or Engineer-in-Charge before execution.

4.5.9 Earth Fault Relay

Earth fault relay of suitable capacity, as required under the IER is to be supplied & installed by the Contractor. This shall be wall or floor mounted, in separate box suitable size, with necessary cable connection to main power supply.

4.5.9 Earth Pit with Electrode

- 4.5.2 Plate or pipe type earth electrode with earth pit shall be provided for this work unless otherwise advised by the Engineer-in-charge due to typical site conditions. Earthing electrode and pit shall be as per IS: 3043-1966 (code of practices for earthing). For ready reference, sketches for pipes and plate type earth electrode earthing have been shown in Annexure-V. All earth electrodes shall preferably be driven to a sufficient depth to reach permanent moist soil.

PRIOR APPROVAL OF THE ENGINEER-IN-CHARGE SHALL BE TAKEN FOR SELECTING TYPE OF EARTH ELECTRODE (PIPE OR PLATE)

- 4.5.2 Earth pit center shall be at a minimum distance of 2m from nearest building, unless otherwise advised. The minimum 3m distances shall be maintained between centers of 2 earth pits.

4.5.3 Earth bus, Earthing Lead and Earth Wire/Strip

- 4.5.3.1 All electrical equipment is to be doubly earthed by connecting two earth strip/wire conductors from the frame of the equipment to a earthing pit/main earthing ring. The earthing ring will be connected via links to several earth electrodes. The cable armored will be earthed through the cable glands. Conductor size for connection to various equipment shall be as specified in the drawing as instructed by the Engineer-in-charge. However, the length of the branch leads from equipment to earthing grid/ring shall not be more than 10 to 15 Meter.

- 4.5.3.2 All hardware for earthing installation shall be hot deep galvanised. Spring washers shall be used for all earthing connections of equipments having vibrations.

- 4.5.3.3 Size of earthing lead/wire shall be as specified below/or as given in schedule of quantities.

Control switches	-G.I. wire 14
Motor upto 10HP	-G.I. wire 8 SWG
Motor above 10HP upto 25 HP	-G.I. strip 25 X 3mm
Motor above 25 HP	-G.I. strip 25 X 6mm
Switch Board	-G.I. strip 25 X 6mm
Power control center/ LT panel of sub-station	-G.I. strip 40 X 6mm

When earthing wire is to be drawn under floor/in underground, aluminum wire 10mm dia. With PVC insulation shall be used.

However, while deciding type & size of earth lead, the resistance between the earthing system and the general mass of the earth shall be as per IS code of practice. The earth loop impedance to any point in the Electrical system shall not be in excess of 1.0 ohm in order to ensure satisfactory operation of protective devices.

- 4.5.3.4 G.I. wire/aluminum wire shall be connected to the equipment by providing crimping type socket/lug.
- 4.5.3.5 Wherever earthing strip to be provided in cable tray, it shall be suitably clamped on cable tray and electrically bonded to the cable tray at regular interval.
- 4.5.3.6 Excavating & refilling of earth, necessary for laying underground earth bus loops shall be responsibility of the Contractor.
- 4.5.3.7 Wherever earth leads/strips/wires are laid in cable trenches; these shall be firmly and suitably cleated to the walls/supporting steel structures on which cable is clamped.

4.6 Statutory approvals:

The contractor shall arrange, at his own cost, for inspection of the works and approval of cable layout & schematic drawings from the concerned electrical inspector with necessary test certificates & completion certificates. Contractor without any extra cost shall carry out any modification suggested by the electrical inspector. Omfed shall reimburse statutory fees if any. The approved drawings shall be submitted by the contractor to Omfed, before final payment is released.

4.6 INSURANCE:

The contractor shall arrange for insurance etc. of his people employed for erection and installation work as per ESIC act workman compensation and any other provision to meet statutory requirement of various labour Act / Rules. In case of accident to any of the workers during the period of installation, OMFED shall not bear any liability what so ever the entire responsibility primary and final in this respect will be that of the successful bidder and may ask end customer's view about implementation and overall effectiveness of complete system.

INDIAN STANDARDS TO BE FOLLOWED FOR ELECTRICAL ERECTION

- | | | |
|-----|--|---------------------------|
| 1. | PVC insulated cables (light duty) for working Voltage upto 1100 volts | - 694-1977
Part I & II |
| 2. | PVC insulated cables (heavy duty) for Voltage upto 1100 volts | - 1554-1976
Part I |
| 3. | -Do- for voltage 3.3Kv to 11KV | - 1554-1976
Part-II |
| 4. | Specification for polyethylene insulated PVC Sheathed heavy-duty electric cables, voltage Not exceeding 11000V | - 5959-1970
Part-I |
| 5. | -Do- for voltage 3.3 KV to 11KV | - 5959-1970
Part-II |
| 6. | Guide for marking insulated conductors | - 5578-1970 |
| 7. | Code of practice and installation and Maintenance of paper insulated power Cables | - 1255-1967 |
| 8. | Code of practice for earthing | - 3043-1966 |
| 9. | Guide for safety procedures and practices in electrical works | - 5216-1969 |
| 10. | Code of practice for installation and maintenance of AC induction motor starters | - 5214-1969 |
| 11. | Code of practice for installation and maintenance of induction motors | - 900-1965 |
| 12. | Code of practice for installation and maintenance of switchgears | - 372-1975 |
| 13. | Code of practice for installation and maintenance of transformers | - 1886-1967 |
| 14. | Code of practice for electrical wiring installation, voltage not exceeding 650 V | - 732-1963 |
| 15. | Code of practice for electrical wiring installation(system voltage exceeding 650 V) | - 2274-1963 |
| 16. | Guide for testing three-phase induction motor | - 4029-1967 |

RECOMMENDED CABLES SIZES FOR INDUSTRIAL WIRING**Aluminum conductor cable size -mm.sq.****Rotor resistance starter****Star-Delta starter**

3phase,415V motor HP	Supply Side	Motor Side (2- cables)	Supply Side	Motor Side (2- cables)
Upto 7.5	4	4	4	4
10	6	6	6	4
15	10	10	10	4
20	16	16	16	6
25	25	25	25	10
30	25	25	25	10
40	35	35	35	16
50	50	50	50	25
60	70	70	70	35
75	95	95	95	50
100	120	120	120	70
125	150	150	150	95
150	225	225	225	120
180	300	300	300	150
215	300	300	300	185

SECTION – IV

COMMERCIAL BID (for reference only)

SCHEDULE OF QUANTITY FOR INTERNAL ELECTRIFICATION OF One MODEL KHIRADHARA KENDRA

SL. NO.	DESCRIPTION	QTY.	UNIT	UNIT RATE in (Rs)	TOTAL AMOUNT
1	A Light Point wiring with 1.5 sq.mm. PVC insulated Copper conductor 650V grade wires in 25 mm dia 16 SWG concealed conduit system including providing and fixing one no. 6 Amp. Single pole semi modular switch in G.I. box with 3mm thick hylem sheet cover complete with 1.5 sq.mm. Circuit for one light point controlled by one switch.				
	GROUND FLOOR	20	NOS		
2	16 Amp. Power point with 4.0 sq.mm. PVC insulated Copper conductor 650V grade wires and 1.0 sq.mm. Green PVC insulated copper earth wire in 25 mm dia 16 SWG surface/concealed conduit system including providing and fixing on no. 16Amp. 3 pin /universal 6 pin, 250V socket out let and 16 Amp. 250 Vsemi modular type switch in G.I. box with 3mm thick Hylem sheet cover one point on one circuit.				
	GROUND FLOOR	5	NOS		
3	32 Amp. Power point with 4.0 sq.mm. PVC insulated Copper conductor 650V grade wires and 1.0 sq.mm. Green PVC insulated copper earth wire in 25 mm dia 16 SWG surface/concealed conduit system including providing and fixing on no. 16Amp. 3 pin /universal 6 pin, 250V socket out let and 16 Amp. 250 Vsemi modular type switch in G.I. box with 3mm thick Hylem sheet cover one point on one circuit.				
	GROUND FLOOR	3	NOS		
4	Ceiling fan point wiring with 1.5 sq.mm. PVC insulated Copper conductor 650V grade wires in 25 mm dia, 16 SWG surface/concealed conduit system including providing and fixing one no. 6 Amp. Single pole semi modular type switch in MS box with 3mm thick Hylem sheet cover with space in MS box for fan regulator (Electronics type) and G.I. box for fan suspension complete in all respect.				
	GROUND FLOOR	10	NOS		
5	6 Amp power point wiring with 1.5 sq.mm. PVC insulated Copper conductor 650V grade wires and 1.0 sq.mm. Green PVC insulated copper earth wire in 25 mm dia 16 SWG surface/ concealed conduit system including providing and fixing one no. 6 A. 250 V semi modular type switch, lighting switch board itself.				
	GROUND FLOOR	10	NOS		
6	Circuit wiring with PVC insulated 650V grade, Copper conductor wire for power and green PVC insulated copper conductor for earthing in 16 SWG surface/concealed conduit system, complete with MS draw out boxes and cover, wires and conduit sizes as given below:				
a	2 x 1.5 sq.mm. for power and 1x1.0sq.mm. for earthing in 25mm dia conduit (from BDB to individual switch board)				
	GROUND FLOOR	250	RMT		
b	2 x 2.5 sq.mm. for power and 1x1.0sq.mm. for earthing in 25mm dia conduit (from BDB to individual switch board)				
	GROUND FLOOR	250	RMT		

c	2x4 sq.mm for power and 1x1.0 sq.mm. for earthing in 25mm dia conduit (from BDB to individual 16 A power socket)		
d	GROUND FLOOR	200	RMT
	2x6 sq.mm for power and 1x1.0 sq.mm. for earthing in 25mm dia conduit (from BDB to individual 16 A power socket)		
	GROUND FLOOR	100	RMT
7	Supply, installation, testing and commissioning of company made distribution board of approved make and making good to all damages caused and inter connection with 2.5 sq.mm. Copper wire and complete with all respect fixing in the wall.		
	Light distribution board (4 way 3 phase DB)		
	Incoming: 63A TPN DP MCB: 01 Nos. Outgoing: 32A SP MCB : 06nos.	1	NOS
8	Providing and laying earth continuity conductor in ground/on surface of building with necessary clamps as required.		
a	G.I. bare of wire size- 8 SWG	10	RMT
b	G.I. strip 25 x 5 mm	25	RMT
9	Providing earth pit with G.I pipe electrode including all accessories complete as per IS 3043 - 1966	1	NOS
10	Supply of standard LED tube light 20 watt each with all accessories make Philips/Bazaz/HPL.	20	NOS
11	Supply of 1200mm sweep AC ceiling fan complete with fan blades, down rods of suitable length, canopies, capacitor etc. including connector to ceiling rod complete in all respect. Make-Bajaj/Usha/Crompton	8	NOS
12	Electronics Regulator for ceiling fan.	8	NOS
13	Providing and fixing of Fiber Digital advertising board	1	NO
14	Supply, fixing, testing, commissioning of Main LT panel with required size Aluminium bus bar arrangement. digital type voltmeter, Ammeter & indicating lamp etc as required	1	NO
	Incoming: 200 Amp 4 pole MCCB - 1 no		
	Outgoing: 63 Amp 4 pole MCCB - 2 nos		

Sub- TOTAL

GST @18%

NET VALUE (for one Khiradhara Kendra)

(N:B: Make of conductor shall be Polycab / Finolex / Gloster)

(Rupees in words.....)

Seal:
Signature:
Date:

SECTION -V **FORM OF BID**

Bidders are required to fill up all the blank spaces in this Form of Bid.

Name and address of OMFED : ORISSA STATE CO-OP. MILK
PRODUCERS' FEDERATION LTD,
D-2, Saheed Nagar,
Bhubaneswar-751007,
ORISSA.

Description of Works : **Internal electrification of model Khiradhara
Kendra of OMFED different districts of
Odisha.**

Dear Sir,

- 1.0 Having examined the bidding documents including Drawings, Conditions of Contract, specifications and Schedule of Quantities for the execution of above mentioned work, we, the undersigned offer to execute, complete and maintain the whole of the said works in conformity with the said Conditions of Contract, Specifications and Schedule of quantities for the sum of Rs. _____
(Rupees _____)
or such other sum as may be ascertained in accordance with the said conditions.
- 2.0 We undertake, if our bid is accepted to commence the Works within 15 days of receipt of the Notification of Award, and to complete and deliver the whole of the above said works comprised in the Contract within _____* days calculated from the day of the receipt of the Notification of Award.
- 3.0 We our bid is accepted we will furnish a security in the form of a bank guarantee (to be approved by you) to with us in amount of the above named sum in accordance with the 10% Conditions of Contract.
- 4.0 We agree to abide by this bid for the period of 90 days from the date of bid opening, and it shall remain binding upon us and may be accepted at any time before the expiry of that period.

SECTION VI

Financial and Business capability.

1. Audited annual accounts / account audited under section 44AB of Income tax Act of past 3 years :
2. Where accounts are not required to be audited following information shall be given for last three years duly attested by a Chartered Accountant / Manager of a nationalised bank :
 - a. Share Capital :
Free reserves :
Other reserves :
 - b. Term loans from financial institution and Banks :
 - c. Current Liabilities :
Bank cash credit :
Others(Including sundry creditors) :
 - d. Provision :
 - e. Contingent Liabilities including claims not acknowledged :
 - f. Fixed Assets :
Gross :
Net :
 - g. Cash and bank balances :
 - h. Inventories :
 - i. Debtors & Advances considered good more than 6 months :
less than 6 months :
 - j. Profit before tax :
 - k. Loss, if any :
3. Other information :
Name of the Bankers :
Bank facilities including credit limits :
4. Projected turn over for the next two years
Year 1 :
Year 2 :

SECTION VII
FORM OF AGREEMENT FOR INTERNAL ELECTRIFICATION WORK
on Non-judicial stamp paper of Rs. 100/-

This agreement made and executed on this day of _____ between the Orissa state co-operative milk producers federation ltd, a body corporate under the Orissa coop. societies act , and having its registered office at Bhubaneswar, (herein after referred to as Omfed which expression shall, unless repugnant to the context or meaning thereof, include the successors and ASSIGNEES of the OMFED of the ONE PAR)and _____

_____ (herein after referred to as the contractor, which expression, shall, unless repugnant to the context or meaning thereof, include it's heirs successors, assignees, executors and administrator of the OTHER PART.

WHEREAS the OMFED is desirous that certain work should be executed ,viz _____

_____ and has by letter of Acceptance dated _____, accepted a bid by the Contractor for the execution completion & maintenance of such works, **NOW THIS AGREEMENT WITNESSTH AS FOLLOWS:**

- 1.0 In this agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
- 2.0 The following documents shall be deemed to form and be read and construed as a part of this agreement, viz
 - i) This Farm of Agreement
 - ii) The Letter of Acceptance
 - iii) The said bid and Appendix
 - iv) The Technical Specifications
 - v) The Schedule of Quantities
 - vi) The Drawings
 - vii) The Schedule of Supplementary information
 - viii) Special Conditions of Contract
 - ix) General Conditions of Contract
 - x) Scheduled Materials to be issued by Owner/OMFED
 - xi) Form of bank Guarantees
- 3.0 The aforesaid documents shall be taken as complementary and mutually explanatory of one another, but in the case of ambiguities and discrepancies shall take precedence order set out above.
- 4.0 In the consideration of the payment to be made by the OMFED to the Contractor as hereinafter mentioned, the contractor hereby covenants with the OMFED to execute, compete and maintain the works in conformity in all respects with the provisions of the contract.
- * The bidder shall not fill up this form.**
- 5.0 The OMFED hereby covenants to pay the contractor in consideration of the execution, completion and maintenance of the works the Contract price at the times and in the manner prescribed by the Contract.

IN WITNESS WHERE OF the parties he to have caused, their respective Common Seals to be hereunto fixed the day, month and year first above written.

Signed, sealed & delivered for and on
behalf of the within named OMFED
by the hands of its Authorized Signatory.

Authorized Signatory

ORISSA STATE CO.OP.MILK
PRODUCERS FEDERATION

In the presence of :

WITNESS:

1) Signature
Name
Address

2) Signature
Name
Address

Signed, sealed and delivered for and on behalf of the within named Contractor, the other part.

In the presence of:

WITNESS:

1) Signature
Name
Address

2) Signature
Name
Address

SECTION VIII
Acceptable Forms of Bank Guarantees

Performance of bank Guarantee for performance Security On Non-Judicial
Stamp Paper of Rs 100/-.

BANK GUARANTEE NO.

DATE:

This deed of guarantee made this _____ day of _____ by (Name and the address of the Bank), hereinafter referred to as the bank, which shall unless repugnant to the context or the meaning thereof includes its legal representatives, successors and assigns and the ORISSA STATE CO-OPERATIVE MILK PRODUCERS FEDERATION LTD. (hereinafter referred to as OMFED) which expression shall unless repugnant to the context or meaning thereof includes its legal representative, successor or assigns. Where as the ORISSA STATE CO-OPERATIVE MILK PRODUCERS FEDERATION LTD./its clients has awarded a contract-bearing no. _____ on M/S _____

_____ me and address of the party), hereinafter referred to as the contractor, for the execution, completion and the maintenance of _____

_____ And whereas, the contractor has agreed to submit a performance security in the form of a bank guarantee to the OMFED as per the terms and conditions of the bidding documents and the Contract which will be kept valid up to _____ calendar months from the date of bank guarantee (the period should be till end of period of Maintenance). And whereas, the bank and its duly constituted agent and officer has already read and understood the Contract made between the OMFED and the Contractor.

In consideration of the OMFED having agreed to award the Contract on the Contractor, we _____ (the bank), do hereby guarantee, undertake, promise and agree with the OMFED, its legal representatives, successors and assigns that the within named (the name of the contractor) their legal representatives, successors and assigns will faithfully perform and fulfill everything within the bidding document and Contract order on their part to be performed or fulfilled, at the time of (time being the essence of the contract) and in the manner therein provided, do all obligations there under and we further undertake and guarantee to make payment to the OMFED a sum of Rs.

(Rupees _____ only)

being 5% of the Contract value, in case the contractor, Their legal representatives and assignees do not faithfully perform and fulfill everything within the bidding document and the contract order on their part to be performed or fulfilled, at the time and in the manner therein provided and do not willfully and promptly do all obligations there under.

In case, the contractor fails to perform or fulfill the contract as per the terms and conditions agreed upon, the OMFED is entitled to demand an amount equivalent to 5% of the Contract value from the contractor and the demand made by the OMFED itself will be conclusive evidence and proof that the contractor has failed to perform or to fulfill his obligations under the contract and neither the contractor nor the Bank shall be entitled to raise any dispute regarding the reasons for the failure of performance or fulfillment on any ground whatsoever

We, (the name of the Bank), do hereby undertake to pay an amount equivalent to 5% of the contract value, being the amount due and payable under this guarantee, without any demur, merely on a demand

from the OMFED stating that the amount claimed is due by way of non-performance of the contractual obligations as aforesaid by the contractor or by the reason of the contractor's failure to perform the said contractual commitments, any such demand made on the bank shall be conclusive as regard the amount due and payable by the bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____ (Rupees Only) being the amount equal to 5% of the contract value.

We (the Bank) ,further agree that the performance security herein contained shall remain in full force and effect for a period of _____ calendar months from the date of the bank guarantee (the period shall be till the end of period of maintenance) whichever is later or till the OMFED certifies that the terms and conditions of the said contract have been fully and properly carried out by the said contractor and accordingly discharge the guarantee , unless a demand or a claim under this guarantee is made on us in writing by the OMFED on or before _____ we shall be discharged from all liabilities under this performance security hereafter.

We(the Bank), further agree with the OMFED that the OMFED shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the bidding document and the Contract or to extend the time of performance by the said contractor from time to time or postpone for any time or from time to time and any of the power exercisable by the OMFED against the contractor and to forbear or enforce any of the terms and conditions relating to the said bidding document and the contract and we shall not be relieved from our liability by reason of any such variation , or extension being granted to the said contractor , or for any forbearance , act or omission on the part of the OMFED to the said contractor by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

This guarantee shall be in addition to and without prejudice to any other securities or remedies which the OMFED may have or hereafter posses in respect of the works executed or intended to be executed and the OMFED shall be under no obligation to marshal in favour of the bank any such securities or funds or assets that the OMFED may be entitled to receive or have a claim upon and the OMFED at its absolute discretion may vary, exchange, renew, modify or refuse to complete to enforce or assign any security or instrument .

The bank agrees that the amount hereby guaranteed shall be due and payable to the OMFED on serving us with a notice, requiring the payment of the amount and such notice shall be deemed to have been served on the bank either by the actual delivery thereof to the bank or by dispatch thereof to the bank by registered post at the address of the bank.

Any notice sent to the bank at its address by registered post shall be deemed to have been duly served on the bank notwithstanding that the notice may not in fact has been delivered to the bank.

In order to give full effects to the provisions of this guarantee the bank hereby waives all rights inconsistent with the above Rs. _____(Rupees _____ only). The guarantee shall remain in force until _____ and unless the guarantee is renewed or a claim is preferred against the bank within three months from the said date(The date of the expiry) all rights of the OMFED under the guarantee shall cease and the bank shall be

released and discharged from all liabilities hereunder.

PLACE:

Signature

DATE:

Seal

Code no.

NOTE : 1) The Contractor should ensure that the seal and the code no. of the signatory is put by the bankers, before submission of the bank guarantees.