GOVERNMENT OF ODISHA
DEPARTMENT OF WATER RESOURCES

BID DOCUMENT/
DETAILED TENDER CALL NOTICE (DTCN)
NO.08/2025-26 dt 16.10.2026
(Package no. 1 to 38)
(Technical Bid and Financial Bid)

FOR

INSTALLATION, ELECTRIFICATION AND ENERGISATION OF OF 46 NOS. MEDIUM DEEP TUBEWELL PROJECTS UNDER ANANDPUR, GHASIPURA AND HATADIHI BLOCK IN KENDUJHAR DISTRICT

ODISHA LIFT IRRIGATION CORPORATION LTD
(A GOVERNMENT OF ODISHA UNDERTAKING)
OFFICE OF THE EXECUTIVE ENGINEER, LIFT IRRIGATION DIVISION, KENDUJHAR
AT/PO- DHRUPADA, DIST- KENDUJHAR, PIN-758013

ODISHA LIFT IRRIGATION CORPORATIION LIMITED
(A GOVERNMENT OF ODISHA UNDERTAKING)
SECTION – I
DETAILED TENDER CALL NOTICE (DTCN)

No .- 2465 / OLIC, Dated 16.10.2026

The Executive Engineer, Lift Irrigation Division, Kendujhar invites online percentage rate tender in double cover system through e-procurement for the work " Installation, Electrification, energisation and Commissioning of Medium Deep Tubewells " in the district of Kendujhar. Bidders are advised to note the minimum qualification criteria specified in Clause 1 (1.2.1 to 1.2.5.13). Instructions to Bidders to qualify for the award of the contract. Bidding is open to all bidders registered with the Government of Odisha / other State Government/ Government of India / Central Government undertakings as per detail given below.

A) The registered Bidders with valid HT license issued by ELBO and in possession on ownership contract basis having

i. Set of equipments with Yield test machinery, equipments with all required accessories etc,
ii. Truck mounted Rotary Rig /Combination Rig with Valid Registration .

Or

B) **'C/B' Class or equivalent (as per NIT)** Registered with the State Govt. of Odisha or Contractors of equivalent grade/ class registered with other state Govt./Central Govt./ M.E.S./ Railways or other Govt. under takings having valid agreements partnerships /Joint venture with an ELBO HT License Holder (Joint Venture should be limited between two parties only) and in possession on ownership basis having

i. Set of equipments with Yield test machinery, equipments with all required accessories etc,
ii. Truck mounted Mud Rotary Rig /Combination Rig.

All the Bidders should be registered in the state portal and must possess compatible digital signature certificate for online bidding. The Class of contractors should be as per details mentioned against each package. The bids should be submitted only online in the website **www.tendersodisha.gov.in**

Details of Bids are as follows:

Sl. No.	Name of the Block	Name of L.I.P.	Head of Account	Approx. Value of work (in Rs.)	Cost of Tender paper (in Rs.)	Class of Contractor	Bid Security (EMD) (in Rs.)	Period of Completion
1	2	3	4	5	6	7	8	9
1	Anandpur	Dudugaon-IV	RIDF	2285506	7080	"C" / "B" with HT License	22855	90 days
2	Anandpur	Balakati-II	RIDF	2532214	7080	"C" / "B" with HT License	25322	90 days
3	Anandpur	Nayagarh-IV & V	RIDF	4764476	7080	"B" with HT License	47644	90 days
4	Anandpur	Bhatisira-II & III	RIDF	4610599	7080	"B" with HT License	46105	90 days
5	Anandpur	Puskar-V	RIDF	2284552	7080	"C" / "B" with HT License	22845	90 days
6	Anandpur	Chamarda	RIDF	2311903	7080	"C" / "B" with HT License	23119	90 days
7	Hatadihi	Nuarampas-I	RIDF	2250499	7080	"C" / "B" with HT License	22504	90 days
8	Hatadihi	Nuarampas-II	RIDF	2344021	7080	"C" / "B" with HT License	23440	90 days
9	Hatadihi	Nasirpur-V	RIDF	2249101	7080	"C" / "B" with HT License	22491	90 days
10	Hatadihi	Nasirpur-VI	RIDF	2171260	7080	"C" / "B" with HT License	21712	90 days
11	Hatadihi	Janmhara-VII	RIDF	2329937	7080	"C" / "B" with HT License	23299	90 days
12	Hatadihi	Jambhara-VIII	RIDF	2375108	7080	"C" / "B" with HT License	23751	90 days
13	Hatadihi	Jambhara-IX	RIDF	2473694	7080	"C" / "B" with HT License	24736	90 days
14	Hatadihi	Bancho-X	RIDF	2563277	7080	"C" / "B" with HT License	25632	90 days
15	Hatadihi	Bahirpur-IV	RIDF	2558251	7080	"C" / "B" with HT License	25582	90 days
16	Hatadihi	Bahirpur-V	RIDF	2656812	7080	"C" / "B" with HT License	26568	90 days
17	Hatadihi	Bahirpur-VI	RIDF	2337916	7080	"C" / "B" with HT License	23379	90 days

18	Hatadihi	Agiria-X	RIDF	2609287	7080	"C" / "B" with HT License	26092	90 days
19	Hatadihi	Karanjapadi-II	RIDF	2539146	7080	"C" / "B" with HT License	25391	90 days
20	Hatadihi	Karanjapadi-III	RIDF	2263342	7080	"C" / "B" with HT License	22633	90 days
21	Hatadihi	Samana-IV	RIDF	2563905	7080	"C" / "B" with HT License	25639	90 days
22	Hatadihi	Akarua-VII	RIDF	2398180	7080	"C" / "B" with HT License	23981	90 days
23	Hatadihi	Orali-IV	RIDF	2224264	7080	"C" / "B" with HT License	22242	90 days
24	Hatadihi	Orali-V	RIDF	2204504	7080	"C" / "B" with HT License	22045	90 days
25	Hatadihi	Orali-VI	RIDF	2200410	7080	"C" / "B" with HT License	22004	90 days
26	Hatadihi	Orali-VII	RIDF	2201665	7080	"C" / "B" with HT License	22016	90 days
27	Hatadihi	Orali-VIII	RIDF	2465319	7080	"C" / "B" with HT License	24653	90 days
28	Hatadihi	Orali-XI	RIDF	2380102	7080	"C" / "B" with HT License	23801	90 days
29	Hatadihi	Orali-XII	RIDF	2474735	7080	"C" / "B" with HT License	24747	90 days
30	Hatadihi	Orali-XIV	RIDF	2521846	7080	"C" / "B" with HT License	25218	90 days
31	Hatadihi	Ambo-IV, V & Beguniapadi	RIDF	6595373	11800	"B" with HT License	65953	120 days
32	Hatadihi	Ambo-III,VI & VII	RIDF	6905848	11800	"B" with HT License	69058	120 days
33	Hatadihi	Ambo-IX	RIDF	2517448	7080	"C" / "B" with HT License	25174	90 days
34	Hatadihi	Anara-II	RIDF	2521846	7080	"C" / "B" with HT License	25218	90 days
35	Hatadihi	Anara (Madhurgadia)-II	RIDF	2379668	7080	"C" / "B" with HT License	23796	90 days
36	Hatadihi	Danar-I, III & IV	RIDF	7094258	11800	"B" with HT License	70942	120 days
37	Hatadihi	Danara-II	RIDF	2386520	7080	"C" / "B" with HT License	23865	90 days
38	Ghasipura	Belda-II	RIDF	2502101	7080	"C" / "B" with HT License	25021	90 days

1. Date and time of availability of bid documents in the portal for on line biding **from 10.00 hrs dated 30.10.2026 to 17.00hrs dated 09.11.2026.**
2. Last date and time of receipt of bids in the portal up to **17.00hrs. Dated- 09.11.2026.**
3. Last date and time of clarification upto **17.00 hrs Dated- 05.11.2026.**
4. Date of opening of Technical Bid at **10.00 hrs. Dated- 10.11.2026.**
5. Further details can be seen from the e-procurement portal of Govt. of Odisha i.e. **www.tendersodisha.gov.in.**
6. Subsequent corrigendum / addendum if required shall be available in the above portal.

Authority reserves the right to reject any or all the tenders, increase or decrease the quantities without assigning any reasons thereof.

Sd/-
Executive Engineer,
L.I. Division, Kendujhar

Memo No. 2466 / OLIC KJR Dated – 16.10.2026

Copy along with soft copy submitted to the Dy. Director (Adv.) cum-Dy. Secretary, I & PR. Department, Govt. of Odisha, Bhubaneswar, At: I & PR Building, Near State Guest House, Bhubaneswar for information and necessary action. The notice may kindly be published in newspaper on or before dt. 29.10.2026 within a size 10cmx8cm as per prevailing Govt Rule for wide circulation. A copy forwarding the tender notice to the newspaper may kindly be sent to the undersigned for reference of this office. The bill of publication may be submitted to the Executive Engineer, L.I. Division, Kendujhar, At/Po- Dhrupada, Via- Raisuan, Dist- Kendujhar-758013 for payment.

Sd/-
EXECUTIVE ENGINEER

Memo No. 2467 / OLIC KJR Dated – 16.10.2026

Copy submitted to the Managing Director, OLIC Ltd., Bhubaneswar, for favour of kind information and necessary action with a request to display this notice for wide circulation.

EXECUTIVE ENGINEER

Memo No. 2468 / OLIC KJR Dated – 16.10.2026

Copy submitted to the Superintending Engineer, L.I. Circle, Anugola for favour of kind information and necessary action with a request to display this notice for wide circulation.

EXECUTIVE ENGINEER

Memo No. 2469 / OLIC KJR Dated – 16.10.2026

Copy to the Executive Engineer, L.I. Division, Anugola/ Sambalpur / Dhenkanal / Sundrargarh/ Rourkela/ R.W.S.S, Kendujhar/ M.I. Division, Kendujhar / Executive Engineer, AED, TPNODL, Anandpur for information and necessary action with a request to display this notice for wide circulation.

EXECUTIVE ENGINEER

Memo No. 2470 / OLIC KJR Dated – 16.10.2026

Copy submitted to the Collector & District Magistrate, Kendujhar for favour of information with a request to kindly display this notice for wide circulation.

EXECUTIVE ENGINEER

Memo No. 2471 / OLIC KJR Dated – 16.10.2026

Copy to all Asst. Executive Engineer/ Asst. Engineer under L.I. Division, Kendujhar for information and necessary action with a request to display this notice for wide circulation.

EXECUTIVE ENGINEER

Memo No. 2472 / OLIC KJR Dated – 16.10.2026

Copy to Division Notice Board /Guard file for general information of all.

EXECUTIVE ENGINEER

INSTRUCTION TO BIDDERS FOR DETAILS OF THE DOCUMENTS TO BE FURNISHED FOR ONLINE BIDDING

Minimum Eligibility Criteria:

1. Scanned copies of the following documents to be up-loaded in PDF format in the Website www.tendersorissa.nic.in

1.2.1 Copy of Registration Certificate in CDMS portal.
1.2.2 GSTIN Registration Certificate & up to date GSTR-3B.
1.2.3 PAN Card.
1.2.4 Copy of ELBO License (HT License).
1.2.5 Valid Joint Venture agreement **(From First Class Magistrate / Executive Magistrate)** should be made between Civil and Electrical License in case of separate license, where Civil License holder will be treated as prime contractor as because of the evaluation to be done under the capacity of PWD Contractor. Under no circumstances One Electrical License holder is allowed to make joint venture with more than one Civil Contractor on the same package, otherwise those bids shall be cancelled. The Electrical contractor is fully responsible towards electrification work of concerned packages as per guideline of TPNODL and comply if any as & when required. The consent letter of Electrical Contractor also required.

1.2.5.1 Affidavit, No Relation Certificate, and other documents in the enclosed format should be uploaded satisfying to the DTCN.

1.2.5.2 In case of Tube well projects the bidders/contractors who don't own a DTH/ Mud rotary Rig have to submit a joint venture agreement with a Rig owners/Contractors having ownership to be executed in the court of First class Magistrate/ Executive Magistrate along with the Civil and Electrical contractor willing to participate in the Tender. **(Letter No. 486 Dated.30.01.2026 by Managing Director OLIC)**

1.2.5.3 The ownership documents of the Rig owner including the copy of the ownership certificate as per RC book, GST registration, PAN, fitness certificate of Rig, permit, insurance, pollution certificates etc are to be uploaded along with the tender document. for verification. (Referred to OPWD Code Vol-II, Amendment 2017, Page 254 to 258) **(Letter No. 486 Dated.30.01.2026 by Managing Director OLIC)**

1.2.5.4 The original documents are to be produced before the Tender Inviting Authority whenever required in any subsequent date during processing of Tender. **(Letter No. 486 Dated.30.01.2026 by Managing Director OLIC)**

1.2.5.5 **In case of Joint Venture, no Price preference / other financial benefits will be allowed to SC/ST contractor/ Engineer Contractor/ Physical Handicapped Contractor.**

1.2.5.6 **The bidder must have to provide the documents for the Truck mounted Mud Rotary Rig/ Combination Rig with Valid Registration.**

1.2.5.7 In case of Medium/ Deep Tube well projects the rig owner/ contractor having ownership of mud rotary rig/DTH rig and experience of minimum 03 years on successful drilling work can be eligible to participate in Joint Venture Agreement with the appropriate class and similar experience of Civil contractor and Electrical contractors. **(Letter No. 486 Dated.30.01.2026 and Letter No.8054 Dated.27.10.2026 by Managing Director OLIC)**

1.2.5.8 The Experience Certificate of Drilling Contractors should have been issued by the competent authority not below the rank of Divisional Officer which to be attached along with bidder documents. **(Letter No. 486 Dated.30.01.2026 by Managing Director OLIC)**

1.2.5.9 **Similarly, if the owner of Rig (bearing same Registration Number of Vehicle) and electrical contractors makes Joint Venture/ Lease Agreement more than one civil contractor in a single Package, then all bids related to this will not be considered and rejected for the same package. (Letter No. 486 Dated.30.01.2026 by Managing Director OLIC)**

1.2.5.10 No other person on behalf of the bidder is allowed to sign the contract/agreement and other financial document.

1.2.5.11 The final bill will be paid after completion of the work in complete shape and trial run of the Project for minimum five days with handover the Project to the concerned Pani Panchayat.

1.2.5.12 **Financial Stability**: For smooth operation of tender works financial status has been required in case of any bidder participating more packages (10 nos.) as per decision of tender committee, they have to uploaded Income Tax Return for last three years and Turn over certificate of last financial year duly signed by the Chattered Accountant along with Experience Certificate.

1.2.5.13 The interim payment/ running account bills may be paid to the prime Civil contractor at intervals to ascertain whether the work is in progress or not and submission of Project Readiness Reports (PRRs) of ongoing projects for approval of by High Power Committee on RIDF having expenditure of minimum 5% of project cost.

1.2.5.14 The payment to the prime Civil contractor shall be considered in subsequent running account bills after successful payment to the joint venture Drilling/ Electrical contractor (s) on production of No Due Certificate against the portion of works completed by them under the previous Running Account Bills.

1.2.5.15 The payments of 1st running, 2nd running etc of measured works to be made through Running Account Bill in OPWD prescribed Form only.

1. 1.2.5.7 Performance report in shape of Form-G duly signed by Executive Engineer of OLIC must be uploaded failing which the bidding will be out rightly rejected.

FORM-G

Sl. No.	Name of work for which tender paper allowed to be purchased.	Cost of works (In Rs.)	Date of Purchase of Tender documents	Signature of E.E., or his representative	Date of Receipt of Tender	Valid or not.	Ref. of work order & Agrmt. If approved	If any legal / paralegal case initiated by court/ Deptt.	Remarks by E.E. on performance (Work comeplete & Satisfaction)
1	2	3	4	5	6	7	8	9	10

Executive Engineer

2. Uploaded documents of valid successful bidders will be verified with the original before signing the agreement. The valid successful bidder has to provide the originals to the concerned authority on receipt of such letter, which will be sent though concerned e-mail.

3. DTCN is not to be uploaded by the bidder. The bidder has to only agree/disagree on the conditions in the DTCN. The bidders who disagree on the conditions of DTCN, cannot participate in the bidder.

4. Bidders must submit the documents such as Affidavit, No Relation Certificate, Joint Venture Agreement etc. in the format enclosed in the DTCN otherwise the bid will be rejected.

N.B.: The defaulter Contractor are not allowed to participate in this tender. Defaulter Means: those contractors whose performance is not satisfactory and who has not completed/grounded the awarded Projects, where no problem from OLIC part as well as other site dispute etc., but the work delayed, as per the decision of the tender committee his bids shall be disqualified.

Tender schedule will be available for online bidding in State Govt. portal www.tendersodisha.gov.in . The tender documents can be downloaded from **dt. 30.10.2026 (10.00 Hrs) to dt 09.11.2026 (17.00 Hrs)**. The Bid will be received through e-procurement portal from **dt. 30.10.2026 (10.00 Hrs) to dt. 10.11.2025 (17.00 Hrs)**. The e-procurement portal shall reject the submission of any bid after closure after **17:00 hrs on dt. 09.11.2026** . For all purposes, the portal time displayed in the system shall be the time to be followed by the Bidder.

The Bidder will have to pay **Rs. 11,800/-7,080 (**Rupees Ten thousand) only as per NIT for each bid towards the cost of the Bid document to be deposited in online mode only through e_portal. The bidders shall also have to deposit the EMD mentioned above against each package in online mode only through e_portal. If any further necessary information is required, the bidder can **Seek Clarification** on the bids within **dt. 05.11.2026 up to 17.00 hrs**. The employer response for the queries raised by the bidder will be posted in the portal.

The Bidder shall prepare the document and upload the scanned copy of the documents in PDF format and BOQ in MS Excel format (as specified in the portal) in the appropriate place. Bidders are not permitted to furnish their tender in their own manuscript. Submission of bid documents shall be effected by using DSC of appropriate class and thus shall be in encrypted form. The Bidder shall only submit single copy of the document. He is required to check the documents uploaded with the requirement asked for in the bid. Only after satisfying that all the documents have been uploaded, the Bidder should activate submit button. If the Bidder does not provide the required documents or provides illegible documents, the bid shall not be considered responsive. Clarity of the document may be ensured by taking out a sample printing. It is allowed to modify the bid through the e-procurement portal. The Bidder shall have to log in the system and resubmit the documents as asked for by the system including the Financial Bid. In doing so, the bids already submitted by the Bidder will be removed automatically from the system and latest bid only will be admitted. The system shall consider only the latest bid submitted to the portal. But the Bidder should avoid modification of the bid at the last moment to avoid system failure, disconnection of the Internet or conjunction. If the modification process is not completed, or fails for some reason, the bids already in the system shall be taken for evaluation.

Each bid document must contain a Technical Bid (Cover-I) and a Financial Bid (Cover-II) in the form of an Intelligent Bill of Quantity in MS Excel format.

The Technical Bid will be **Opened on dt. 10.11.2026 at 10.00 hrs (Cover-I)** in the office of the Executive Engineer, L.I. Division, Kendujhar in presence of the Bidders or their authorised representatives if any. The participating Bidders can witness the opening of the bid from any location by logging on to the portal on any system connected to the Internet at the time of opening the Technical Bids. The bids can only be opened by the pre designated officials and only after the opening time mentioned in the bid. In the event of specified date of opening being declared holiday, the bid will be opened at the same location on the next working day. The date, time and place of opening of the Financial bid (cover-II) shall be intimated separately to those Bidders found qualified after evaluation of Technical Bid (Cover-I). The intimation letter will be sent both through their e-mail address and postal address. The period of completion of work is 03 (three)months from the date of issue of work order.

Intending Bidders are required to produce the attested copies of valid GST registration certificate and PAN along with the tender documents otherwise their tenders shall be rejected. Bidders from outside the State intending to participate in the tender but have not been registered under Odisha state GST act have to show their place of business in Odisha state or as applicable in GST Rule.

Off-line bids / hard copy tenders will be rejected.

All taxes, royalties payable under the local, Income taxes and surcharges as applicable, labour cess etc. will be borne by the Bidder as admissible. The quoted rates shall be inclusive of all such elements. Payment of GST as applicable will be made or as per the prevailing rate applicable under GST rule .

Request for raising and lowering the rates or dealing with any point in connection with the tender will not be considered.

Conditional tenders will not be taken into consideration. A tender containing extraneous conditions not covered by the tender notice are liable for rejection. Quotations should be strictly in accordance with the tender call notice. Any change in the wording will not be accepted.

All tenders received will remain valid for 120 days from the last date prescribed for receipt of the tender. The validity period of work is **90 days/ 120 days** from the date of opening of the tender. If required,

the validity of tenders can also be extended without any change in the terms and conditions of the DTCN with the consent of the Employer and the Bidder.

The EMD will be retained in the case of successful Bidder (L1) and will be dealt with as per the terms and conditions of OPWD code. The EMD of the unsuccessful Bidders will also be refunded within 15 days of execution of agreement through online mode.

The EMD will be forfeited in the following cases:

a) In case of a successful Bidder, if he/she fails within the specified time limit to

i) Execute the agreement or

ii) Furnish the required Performance Security (ISD & APS)

b) If any of the statements, documents, certificate uploaded by the Bidder through e-procurement portal, is found to be false/fabricated/bogus, the Bidder will be black listed.

1. a) The rates quoted by the Bidder shall be deemed to be exclusive of GST but inclusive of royalty and other taxes (if any) on all materials .

b) GST on works contract will be deducted as per the prevailing rate from the gross amount of the bill and credited to Govt. account.

c) 1% / 2% (As applicable for company or individual) of the gross amount of the bill followed by surcharge and cess as admissible are to be deducted towards income tax.

d) 1% of the gross amount of the contractor bill will be deducted towards labour cess.

2. Eligibility criteria and condition in the tender with reference to principal machinery / equipment (here in after called rig):-

Bidders are required to furnish evidence of ownership of rigs and ancillaries for only those asked for in the tender. In case the Bidders executing several works, he is required to furnish a time schedule for movement of rig from one work site to other at the time of execution of works. The Bidder shall furnish ownership documents for those rigs he/they is planning to deploy for that tendered work if they are not engaged or produce a certificate from authority under whom these are deployed at the time of tendering as to the period by which these rigs are likely to be released from the present contract. Certificate from the authority shall not be 90 days old on the last date of receipt of tender. The Bidder are required to furnish proof of ownership from the Company.

4.The Bidder, whose tender is accepted must submit work plan (PERT CHART) at the time of execution of agreement in PWD P1 Contract adopted with mutatis and mutandis with the Engineer-in-charge (E.E.) in the prescribed format to be obtained from Executive Engineer and submit for his (Executive Engineer's) approval.

5. No claim of idle labour / machinery / equipment on any account will be entertained by the Dept. /Authority.

6. The authority will accept the Tube well as successful only after the yield test (minimum yield 900 LPM) observing all other terms and conditions as prescribed.

7. The Executive Engineer-in-charge shall issue cluster-wise (A cluster formulated by Executive Engineer-in-charge based on suitability) job order and date of issue of such work order shall be the notified date of commencement of work for that cluster for purpose of review of liquidated damage and completion of work. The Job order shall be made available to the service provider electronically through registered e-mail id as provided in the bid document and in any alternate e-mail id to be provided by the service provider.

8. The bidder who have agreement with OLIC for previous work and have incomplete projects without any satisfactory valid reason prior to 2017-18 shall be disqualified in technical bid .

9. If at any stage , it comes to knowledge that those parties who have executed work in OLIC through various agencies and have failed to make payment to parties/ labourers , his tender will not be considered in order to weed out fraudulent parties who have litigation pending against them for non- payment to agencies/ labourers.

10. Subsequent corrigendum/ Addendum /cancellation if required shall be uploaded in the website.

Over and above these conditions including the Technical specifications the terms, conditions, rules , regulations and specification laid down in BIS code are also binding on the part of the Bidder.

The authority reserves the right to accept/reject any or all bids without assigning any reason thereof. Further clarification if any is required, the Bidder may seek such clarifications online in the e-procurement portal using his/her DSC, provided the questions are raised within the period of seeking clarification as

mentioned in the tender call notice/Bid. The officer inviting the Bid / Procurement Officer-Publisher will clarify the queries related to the tender.

Sd/-
Executive Engineer,
L.I. Division, Kendujhar

SECTION – 2

SECTION – 2 (A) (FROM SL.No.1 & 2)	DETAILS OF THE DOCUMENTS TO BE FURNISHED FOR BIDDING
SECTION - 2 (B) (FROM SL. No. 2.1 TO 2.39)	INSTRUCTIONS TO BIDDER
SECTION -2 (C)	DATA SHEET
SECTION – 2(D)	LETTER FOR SUBMISSION OF TENDER
SECTION – 2 (E)	TENDER DECLARATION
SECTION – 2 (F)	LETTER OF INTIMATION
SECTION – 2 (G)	MEMORANDUM

SECTION – 2 (A)

DETAILS OF THE DOCUMENTS
TO BE FURNISHED FOR BIDDING

1. The bids must be accompanied with scanned copies of,
    a. GST Certificate
    b. PAN card.
    c. Regd. Certificate as proof of class/grade of contractor.
    d. E.M.D. and cost of tender paper (bid document) as required through online mode. Document in support of deposit of GST on reverse charge basis towards cost of bid document.
    e. Working capital requirement as specified in the Detailed Tender Call Notice (DTCN).
    f. Number of Rigs as specified in DTCN
    g. Completed similar work as per DTCN
    h. Experience in completion of similar major items of work as per DTCN
    i. Documents on bid capacity as per DTCN
    j. Joint venture Agreement in case of tenders with Joint venture
    k. Irrevocable affidavit regarding working capital.
    l. Affidavit regarding correctness of certificates.
    m. Affidavit regarding no relation certificate
    n. Any other relevant required document as per DTCN

    N.B.: The defaulter Contractor under this division should not be participated in this tender otherwise it will be rejected in Technical Bid.

2. Scanned copies of the Certificates/Formats showing details of information as required in the prescribed formats are to be accompanied with the bid document.

SCHEDULE – A	Work Experience in shape of FORM-G from Executive Engineer, OLIC.
SCHEDULE – B, B(I) and B(II)	Financial Requirement.
SCHEDULE – C	Lists of Plants, Equipment proposed to be deployed by the Bidder.
SCHEDULE - D	Information regarding current litigation. Debarring / Expelling of Tender of Abandonment of work by Tender.

SCHEDULE - E	Declaration
SCHEDULE - F	Documentation of Owned Rigs and Machineries.
SCHEDULE - G	Document of owned Rigs engaged in works outside the State & proposed to be deployed in this work.
SCHEDULE - H	Information to be furnished by the Bidder. (Before drilling)
SCHEDULE - I	Information to be furnished by the Bidder. (After Drilling)
SCHEDULE - J	Type test of Materials.

SECTION- 2 (B)
INSTRUCTIONS TO BIDDER

2.1. Definitions

(a) "Employer" means the Executive Engineer, L.I. Division, Kendujhar or his authorised representative with whom the selected Bidder signs the contract for the services.

(b) "Bidder" means Contractor / firm/Engineer firm/ Company carry the same meaning throughout the DTCN and Contract.

(c) "Contract" means the agreement signed by the parties along with all attached documents listed in the DTCN (Tender Document Part -I & II).

(d) "Data Sheet" means such part of the Instructions to Contractor as are used to reflect assignment conditions and evaluation of the bid.

(e) "Day" means a calendar day.

(f) "Government" means the Government of Odisha.

(g) "Instructions to Bidder" (Section 2 of the Part-I of DTCN) means the document which provides all information needed to prepare their proposals.

(h) "TCN" (Section I of the DTCN) means the Letter of Invitation being sent by the Employer.

(i) "Personnel" means professionals and support staff provided by the Bidder and assigned to perform the services in full or in any part thereof.

(j) "Proposal" means the Technical Proposal (Tender Document Part I – General & Technical Bid) and the Financial Proposal (Tender Document Part II – Financial Bid).

(k) "DTCN" means the Detailed Tender Call Notice prepared by the Employer for the selection of contractor which includes Part-I & II.

(l) "Cluster Job Order-Drilling" means the cluster- wise work order issued by Executive Engineer for Bidder to commence drilling work.

(m) "Cluster job Order-Electrification" means the cluster-wise work order issued by Executive Engineer for Bidder to commence electrification and energisation work.

2.2. Introduction / Selection Procedure.

The Employer named in the Data Sheet will select Contractor / firm/Engineer firm/ Company (Herein after to be called "Service Provider" to execute the work as described in the scope of work and in the Data sheet.

The scheme envisages installation, electrification, energisation and commissioning of Medium Deep Tubewell Tube wells on turnkey basis. Procurement/manufacture of all other

materials along with manufacturer's quality assurance, shop testing (including type testing where specified/required) conformed to the specifications of respective regulatory authority. The procurement of PVC casing pipes (CS) and HDPE delivery pipes will be subject to pre and post delivery inspection by CIPET as the case may be before their acceptance and use. The transportation, storage, erection, including all civil/structural works, site testing, commissioning of all items and materials and associated activities those though not descriptively specified, the Bidder is required to complete entire works under this package following suggested sequence of actions.

1. Locating hydro geological suitable place in the district for installation of Medium Deep Tube wells and as handed over by Executive Engineer.
2. Installation of Tube wells by deploying DTH / Combination rigs as specified in DTCN.
3. Conduct Yield test – Requirement of discharge is 900 LPM.
4. Construction of new3 phase, 3 wire 11 KV H.T. line overhead line over 10 Mtr. long 330Kg PSC Pole as per requirement.
5. Construction of 11/.0.4 KV; 25 KVA DP mounted Electrical Sub-station.
6. Construction of L.T. 3 phase 4 wire with AB Cable support by 9 Mtr. long 300 Kg.PSC Pole, using required size of XLPE AB Cable by fixing Cross arm and shackle insulator etc. and other accessories with provision for road / river crossing with 10 Mtr. Pole.
7. Installation of Submersible pump set at required depth, Control panel and energisation.

The Service Provider must procure the materials necessary for execution of work contract from local manufacturers and registered under EP & M and rate contract holders of Odisha having ISI marks so that the interest of SSI units and M.S.M.E Enterprises is protected.

However, at any point of time during the operation of the agreement, the Employer reserves the right to provide PVC Pipes required for the Tube well in order to ensure uniformity in quality and to protect the interest of SSI units and M.S.M.E Enterprises operating in the state of Odisha.

The Bidder shall bear all costs associated with the execution of the work as per contract. The Employer is not bound to accept any proposal, and reserves the right to cancel the selection process at any time prior to contract award without thereby incurring any liability to the Bidder.

2.3. Location of the Project:

Executive Engineer of concerned Divisions will provide location in the respective districts/ packages to be indicated in cluster-wise job order. The location will be indicated in the Job order to be issued by him.

2.4. Source of Funding

The work will be funded by Govt. of Odisha under Jalanidhi-II scheme.

2.5 Eligibility

2.5.1 A Bidder shall be deemed to have the nationality of India.

2.5.2 Government-owned companies shall be eligible only if they can establish that they are legally and financially autonomous and operate under commercial law and otherwise eligible to perform the contract in conformity with other qualification requirement.

2.5.3 Registered Bidders, with valid HT licence issued by ELBO in possession of requisite set/number of following equipments/machineries on Ownership basis having

i. A set-up equipped Yield test machinery, equipments with all required accessories etc,
ii. DTH/combination rigs as specified in DTCN.

2.5.4 'B' Class / 'A' Class contractors (as applicable) Registered with the State Govt. of Odisha or Contractors of equivalent grade/ class registered with other state Govt./Central Govt./ M.E.S./ Railways or other Govt. under takings having valid agreements partnerships /Joint venture with an ELBO HT License Holder and in possession on ownership.

A set-up equipped Yield test machinery, equipments with all required accessories etc,

i. DTH/combination rigs as specified in DTCN.

2.5.5 A qualified bidder must submit supporting document to establish that, they have executed similar type of work successfully as indicated in SCHEDULE- A of SECTION- 2(H) and SCHEDULE-B(B)

2.5.6 The Bidder must be having labour licence.

2.5.7 The Bidder shall submit annual I.T. Return of last 2 years for assessment of financial soundness and furnish other documents .

2.5.8 **Bids from Joint ventures are acceptable.**

2.5.9 The bidder must submit supporting documents to qualify in Bid capacity.

2.6. History of Litigation and Criminal Record

2.6.1. If any criminal cases are pending against the Bidder and/or his/her partners at the time of submitting the tender, then the tender of such Bidder shall be summarily rejected. The Bidder shall submit an affidavit to the effect that the history of litigation, criminal cases pending against him/her/partners furnished by him/her is true.

2.6.2. In case it is detected at any stage that the affidavit is false, he will abide by the action taken by the Employer or his authorised representative without approaching any court whatsoever for redressal. He will however, be given suitable opportunity to offer his explanation before action is taken against him.

2.7. The Bidder has to furnish a declaration that no near relatives are working in the cadre of a Junior Engineer and above in the organisation, Odisha Lift Irrigation Corporation Ltd., Kendujhar.

2.8. Other Requirements

2.8.1. Even if the Bidder meets other criteria, his/her tender shall be summarily rejected if he/she is found to have misled or made false representation in the form of any of the statements submitted in proof of the eligibility and qualification requirements.

2.8.2. The tender shall also be summarily rejected if the Bidder has a record of performance such as absconding from work, works not properly completed as per contract, inordinate delays in completion, financial failure.

2.8.3. In addition to the above, even while executing the work, if it is found that the Bidder produced false / fake certificates in his/her tender, the Bidder will be blacklisted.

2.8.4 The bidder who have agreement with OLIC for previous work and have incomplete projects without any satisfactory valid reason prior to 2023-24 shall be disqualified.

2.8.5 If at any stage , it comes to knowledge that those parties who have executed work in OLIC through various agencies and have failed to make payment to parties/ labourers , his tender will not be considered in order to weed out fraudulent parties who have litigation pending against them for non- payment to agencies/ labourers.

2.9. Original Certificates

Originals of the certificates and other credentials furnished along with tender shall be produced as and when required to verify. Failure to produce original documents in time will lead to disqualification.

2.10. Cost of Tendering

All expenses associated with the preparation and submission of tender shall be borne by the Bidder. Odisha Lift Irrigation Corporation or its' authorised representative shall in no case be responsible or liable for reimbursement of such expenses, regardless of the conduct or outcome of the tendering process.

2.11. Field Check

The Bidder may contact the Executive Engineer from whom proposed location can be obtained. He can also study the ground water resources position from the C.G.W.B., G.W.S. & I and NRSA data as available basing on which the field check/site inspection can be made. This may be necessary for preparing the tender and quoting rates.

DTCN PART- I : GENERAL & TECHNICAL BID

Section	Description
Section-1	Notice Inviting Tender (NIT)/Invitation for BID (Invitation for Bid(IFB).
Section-2(A)	Details of the Documents to be Furnished
Section-2(B)	Instructions to Bidders
Section-2(C)	Data Sheet
Section-2(D)	Letter of Submission of Tender
Section-2(E)	Tender Declaration
Section-2(F)	Letter of Acceptance/Intimation of Tender
Section-2(G)	Memorandum
Section-3	Information regarding Bidder
Section-4	Declaration by the Bidder
Section-5	Form of Agreement
Section-6	Conditions of Contract
Section-7	Special Conditions of Contract
Section-8	Scope of Work
Section-9	Technical Specification
Schedule-A to J	Formats for furnishing Information by the Bidder

PART – II: FINANCIAL Bid

2.12.2. The Bidder is expected to examine carefully all instructions, terms of reference, tender conditions, forms, appendices to tender, addenda in the tender documents. Failure to comply with the requirements of tender submission will be at the Bidder's own risk.

2.13. Clarification of Tender Documents

The Bidder shall carefully examine the tender documents and be fully informed of all the conditions and matters, which may in any way affect the work or the cost thereof. If a Bidder find any discrepancy or omission from the specification or any other of the tender documents or if he/she be in doubt as to their meaning, the Bidder may ask question online in the e-procurement portal using his/her DSC, provided the questions are raised within the period of seeking clarification as mentioned in the tender call notice/Bid. The officer inviting the Bid / Procurement Officer-Publisher will clarify

the queries related to the tender in the same e-procurement portal. However, the bidders are requested to participate in the pre-Bid meeting specified at SECTION-I of DTCN

2.14. Amendment of Tender Documents

2.14.1 At any time prior to the dead line for submission of tenders, the Executive Engineer, L.I. Division, Kendujhar or his authorised representative may for any reason, whether at its own initiative or in response to the clarifications requested by the prospective Bidders, modify the tender documents by issuing an Addendum/ Corrigendum in the e-procurement portal.

2.14.2. Such Addendum/ Corrigendum will be binding upon the Bidders.

2.14.3. In order to afford reasonable time to prospective Bidders to take such addenda into account in preparing their tenders, the Executive Engineer, L.I. Division, Kendujhar or his authorised representative at his discretion, may extend the dead line for the submission of tenders to be posted in the e-procurement portal .

2.14.4 COMMENCEMENT AND COMPLETION OF WORK:

The work shall have to be commenced within such period so that the total work under this contract shall be completed within a specified time from the date of placement of order. The work after due completion under the supervision of DISTCOM and OLIC, shall be inspected by competent authority (Electrical Inspector) of Govt. of Odisha. All arrangement for this inspection fees shall be the responsibility of the bidder.

2.14.5 **Documentation:**

The Bidder shall collect the documents/form from the beneficiaries, preparation of ayacut map, water sharing agreement with beneficiaries in cluster basis, GPS location, pre & post installation photographs at different stages i.e , Drilling , Lowering of Casing pipe , Yield test , Installation of Pump sets , energisation , handing over of the project to the beneficiary and collection of electrical estimates etc.

C. PREPARATION OF TENDER DOCUMENT

2.15. Language of the Documents

All documents relating to the Tender shall be in the English language.

2.16. Documents Comprising the Tender

(a) General & Technical Bid (Part-I of Tender Document)
(b) Financial Bid (Part-II of Tender Document)
(c) All documents stipulated at elsewhere in the DTCN.

2.17. Sufficiency of Tender

The Bidder shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the services to be provided and of the prices quoted in the financial bid, which shall cover all his obligations under the contract and all matters and things necessary for the successful accomplishment of the work.

2.18. Preparation of Bid

2.18.1. The Bid as well as all related correspondences exchanged by the employer & the Bidder shall be written in the language specified in the Data Sheet.

2.18.2. In preparing the Bid, the Bidder is expected to examine in detail the documents comprising the DTCN. Material deficiencies in providing the information requested may result in rejection of a proposal.

2.18.3 Field check / site inspection by Bidder/study of hydro-geological data basing on CGWB/DGWS&I & NRSA as available before submission of tender and study of permissible electrical scopes as under the scheme at the time of installation of Tube well is the responsibility of the Bidder.

2.19. Technical Bid format and content

The Bidder should have sufficient man power to execute & complete the work within the time schedule. He/She should have sufficient financial background / work experience in Tube Well scheme/ machinery and equipment required for execution of the work / free from litigation / should have sound working record of completion of the works in time as stipulated in the data sheet. It may be noted that the Bidder should satisfy the minimum eligible criteria for award of Contract in accordance with data sheet. The information for Technical Bid should be provided using the prescribed standard Forms. A page is considered to be one printed side of A4 or letter size paper.

2.19.1 The Bidder has to furnish documents for calculation of bid capacity as per clause 2.33.4.5 , Similar work experience as in SCHEDULE-A and completion of similar major item of work as in SCHEDULE-B(B) of SECTION 2(H).

2.19.2. Financial statement in as in schedule – B with Bank Credit Certificate in form B(I) and irrevocable affidavit in non-judicial stamp paper as per form No. B(II).

2.19.3. The list of plants and equipment proposed to be deployed by the Bidder in Schedule – C along with schedule F & G.

2.19.4. A description of the approach, methodology and work plan for performing the assignment.

2.19.5. Copy of GST Certificate in compliance to GST Act and subsequent modification there to upon introduction of GST Act by Finance Deptt. Govt. o f Odisha.

2.19.6 Copy of PAN Card.

2.19.7 General power of attorney if required in favour of the authorised signatory.

2.19.8 Other information as required under Data Sheet and also as per DTCN.

2.19.9 The Technical Bid shall not include any financial information related to the Financial Bid. A Technical Bid containing financial information related to the Financial Bid shall be declared non responsive.

2.**20. Financial Proposal**

2.20.1. The Bidder shall quote their offer on percentage rate contact basis as per BOQ in the prescribed format of the Part-II of the tender document. Financial bid in no other format shall be accepted.

2.20.2. The offer shall be inclusive of all costs associated with the assignment including cost of all materials to be utilized in the work, cost of T&P, consumables, infrastructure back up etc. The offer shall also be inclusive of all duties, levies, taxes cess of the Central and State Govt except GST . Further it shall also include all other expenses incidental thereto for successful accomplishment of the assignment in conformity with the DTCN.

2.20.3. The Bidder should make realistic assessment of the exhaustive nature of work and the extent of expert technical and managerial inputs and resources required to carry out the work diligently to complete the work within the stipulated time and quote their offer accordingly.

2.20.4. The rate quoted by the Bidder shall be firm.

2.21. Tender Validity

2.21.1. The validity of the tender is 180 days from the last prescribed date for receipt of the Tender.

2.21.2 The validity period of work is 180 days from the date of opening of the Tender.

2.21.3. A Bidder agreeing to the request of extending the validity period of work will not be required or permitted to modify his tender, but will be required to extend the validity of his EMD.

2.**22. Authorisation in Tender Papers**

2.22.1. The tender document shall be signed by a person or persons duly authorized to do so. Proof of authorization shall be furnished in the form of a certified copy of Power of Attorney, if required, which shall accompany the tender.

2.22.2 Only one tender shall be submitted by a Bidder for that bid. No Bidder shall participate in the tender of another as JV Partner/consultant for the same bid in any capacity whatsoever.

2.23. Earnest Money Deposit / ISD / SD / Additional Performance Security & GST Certificate.

2.23.1 Earnest Money Deposit

The EMD shall be of **as section- I** and in favour of Executive Engineer, L.I. Division, Kendujhar to be deposited through online mode only. EMD in any other form shall not be accepted. **The EMD shall accompany the General & Technical Bid (Cover-I).** Tenders without EMD or with Part EMD/ E.M.D. in other forms shall not be considered and such tenders shall be out rightly rejected.

2.23.2 Initial Security Deposit

The successful Bidder, after receipt of formal order shall have to furnish Initial Security Deposit (ISD) equal to 2% (two percent) of the value of the order in shape Post Office Savings Bank Account / NSC/ Post Office Time Deposit / Kissan Vikash Patra/ Bank Deposit Receipt (STDR)in Schedule Bank duly pledged/drawn in favour of the Executive Engineer, L.I. Division, Kendujhar, within 7 days of letter of intimation failing which their tender shall be cancelled with forfeiture of EMD .The security deposit shall be released after completion of guarantee period of 18 (eighteen) months from the date of handing over of Project to the beneficiary, Electric line with sub-station to the DISTCOM on with satisfactory performance.

2.23.3 Additional Performance Security:

(i) <u>Amendment to Para- 3.5.5 (v) of Note-II of OPWD Code, Vol-I by Modification</u>

Additional performance Security shall be obtained from the bidder when the bid amount is less than the estimated cost put to tender. In such an event , only the successful bidder who has quoted less bid price/rates than the estimated cost put to tender shall have to furnish the Additional Performance Security as follows in obedience to Govt. Of Odisha Works Department Office Memorandum No. **17941 dated 08.10.2026 (Copy enclosed in the DTCN).**

Additional performance security (APS) in shape of Term Deposit Receipt pledged in favour of Executive Engineer, L.I. Division, Kendujhar from any Nationalized / Scheduled Bank in India counter guaranteed by its local branch at Bhubaneswar with in 7 (Seven) days of issue of letter of acceptance (LOA) by the Executive Engineer, OLIC (by-email) to the successful bidder. Otherwise the bid of the successful bidder shall be cancelled and the Earnest Money Deposit / Bid Security shall be forfeited .Further proceeding for black listing shall be initiated against the bidder.

ii) <u>Amendment to Para- 3.5.5(v) of Note-III of OPWD Code, Vol-I by Modification</u>

Note-(III):– For availing Incentive Clause in any project which is completed before the stipulated date of completion, subject to other stipulations it is mandatory on the part of the concerned Executive Engineer to report the actual date of completion of the project as soon as possible through Fax or e-mail so that the report is received within 7 (seven) days of such completion by the concerned Superintending Engineer, Chief Engineer and The Administrative Department.

The incentive for timely completion should be a graduated scale of 1% to 5% of the contract value. Assessment of incentives may be worked out for earlier completion of work in all respect in the following scale;

Before 30% of contract period = 5% of contract value
Before 20% to 30% of contract period = 4% of contract value
Before 10% to 20% of contract period = 3% of contract value
Before 5% to 10% of contract period = 2% of contract value
Before 5% of contract period = 1% of contract value

2.23.4 GST Registration Certificate AND PAN :

Bidder are required to submit attested copies of valid GST Clearance Certificates along with their tenders, failing which their tenders will not be considered. The Bidders from outside the state who intend to participate in the tender and who have not been registered under Odisha GST act, tyey have to show their place of business in Odisha State .(Finance Deptt. Memo No.CTA-12/2008(pt) 3202(230) dt.15.01.2009 and other relevant Acts) . Bidders are also required to submit attested copy of PAN along with the tender failing which tender will not be considered.

2.23.5 Seven percent of gross value (including 2 % ISD) will be deducted from bill(s) of the Bidder towards Security Deposit which will be refunded after the defect liability period from the date of handing over of Project to the beneficiary and Electric line and sub-station to the DISTCOM with satisfactory performance.

2.23.6 EMD of unsuccessful Bidder shall be returned on finalisation of the tender or on expiry of the Tender validity period, whichever is earlier through online mode.

2.23.7. The EMD shall be forfeited if (a) a Bidder withdraws the tender during the validity period of tender or (b) if the firm fails to furnish ISD, performance security within due time or (c) the successful Bidder fails to sign the Agreement for whatever reason.

2.23.8 In consideration of the Executive Engineer Government to investigate and to take into account each tender and in consideration of the work thereby involved, all earnest money deposited by the Bidder will be forfeited in the event of such Bidder either modifying or withdrawing his tender at his instance within the validity period.

2.24. Clarification on an Amendment to DTCN Document:

Bidder may request a clarification of any of the DTCN documents up to date of clarification indicated in the Data Sheet before the proposal submission date. The Employer will respond accordingly. If the Employer feel it necessary to amend the DTCN as a result of a clarification.

2.25. At any time before the submission of Proposals, the Employer may amend the DTCN by issuing an addendum.

Note :- Regarding electronic payment of EMD and cost of tender document, bidders are requested to follow Works deptt guideline vide Notification No.17254 Dt.05.12.2017(Enclosed for reference – Annexure -A)

D. SUBMISSION OF TENDERS

2.26.1 The Bidder may raise his query if any up to **dt 05.11.2026 up to 17.00 Hours**. The employer's response for the queries raised by the Bidder will be intimated and the same will be posted in official web site of the Employer.

2.26.2 The Bidder is advised to submit the bid documents carefully examining the required documents as instructed in this DTCN and checking the check list.

2.26.3 The bid price is to be submitted in the Financial bid in cover-II.

2.26.4 The bid security/EMD will be as per Section-I.

2.26.5 The EMD will be forfeited in any of the following case:

a) If the Bidder withdraws the Bid after Bid opening during the period of Bid validity.
b) If the Bidder does not accept the correctness of the Financial bid.
c) In the case of a successful Bidder, if he/she fails within the specified time limit to
   i) Sign the Agreement or
   ii) Furnish the required Additional performance Security.
d) If any of the statements, documents, certificate submitted by the Bidder is found to be false/fabricated/bogus, the Bidder will be blacklisted and his EMD/ Bid security will be forfeited.

2.26.6 **Submission of Bid:**

The Bidder may submit his bids up to **dt. 09.11.2026 up to 17.00** Hours. The submission of bids after the due date and time will not be accepted.

2.27 **Modification & Withdrawal of Bid:**
Modification and withdrawal of bid as instructed in the DTCN.

2.28 **Bid Opening:**
Technical bid – Dt**. 10.11.2026 at 10.00 Hours (Cover-I)**

2.29 **Award of Work:**
After finalization of tender, it will be intimated to successful Bidders.

E- TENDER OPENING AND EVALUATION

2.30. Tender Opening:

2.30.1 The tenders will be opened online by the designated official at **10.00 hours of dt 10.11.2026** The bidder who participated in online bidding can witness opening of the bids logging on to the portal away from the opening place.

2.30.2 A tender shall be rejected at primary examination, if,

a) Financial Bid is not enclosed.
b) Bid document cost is not deposited along with the Technical bid (Cover-I).
c) EMD as per Clause 2.23.1 is not deposited along with the Technical bid (Cover-I).
d) Proof of eligibility and qualifications is not enclosed.
e) There is any criminal case pending.
f) Copy of PAN is not enclosed.
g) Affidavit is not enclosed.
h) Power of Attorney, if required, is not enclosed.
i) History of criminal cases is not enclosed .
j) Record of litigation and arbitration is not enclosed.
k) Other documents as required are not enclosed.
l) GST certificate and document in support of deposit of GST on reverse charge basis towards cost of bid document
m) Adverse performance report of the Bidder observed in the past tender by OLIC for any reason will result for disqualification of such Bidder and liable for rejection of his offer.
n) Certificate towards relation not working above Junior Engineer Position in OLIC.
o) Joint venture agreement if applicable.

2.30.3 The cover containing financial bid shall be opened only for those Bidders who qualify in the technical evaluation as described. The date of opening of financial bid (Cover-II) shall be notified by E-mail/through telephone/ any correspondences to the qualified Bidder(s) of technical evaluation.

2.30.4 **The Executive Engineer, L.I. Division, Kendujhar** may prepare, for his own record, minutes of the tender opening, including the tender opening summary/ attendance etc.

2.31. Clarification on tenders from Bidder:
To assist in the scrutiny, evaluation and comparison of the tenders, the **Executive Engineer, L.I. Division, Kendujhar** may ask Bidder individually for clarification on their tenders. The request for

clarification and response shall be in writing or by mail. However, no change in the tender amount/ rate or substance shall be sought, offered or permitted by the **Executive Engineer, L.I. Division, Kendujhar** during the evaluation of the tenders.

2.32. Determination of Responsiveness

2.32.1 Prior to the detailed evaluation of tenders, **Executive Engineer, L.I. Division, Kendujhar** will determine whether each tender has been submitted in the proper form and whether it is substantially responsive to the requirements of the tender documents. Tenders, which have not been submitted in the proper form, will be rejected.

2.32.2 Any tender which is not substantially responsive to the requirements of the tender documents will be rejected by the **Executive Engineer, L.I. Division, Kendujhar.** Such a tender shall not be allowed subsequently to be made responsive by the Bidder by correcting or withdrawing the non-conforming deviation(s) or reservation(s).

2.33. Proposal Evaluation

2.33.1 Any effort by a Bidder to influence the client in any form directly or indirectly during the examination, evaluation, ranking of proposals, and recommendation for award of the contract may result in the rejection of the Bid.

2.33.2 Evaluation of Technical Bid shall have no access to the Financial Bid until the technical evaluation is concluded.

2.33.4 Evaluation of Technical Bids:

2.33.4.1. The Technical Committee shall evaluate the Technical Bids on the basis of their responsiveness to the DTCN, applying the evaluation criteria, sub-criteria, specified in the Data Sheet. Each responsive Proposal will be qualified /disqualified on the basis of evaluation criteria.

2.33.4.2. A Proposal shall be rejected at this stage if it does not respond to required aspects of the TCN/ DTCN or if it fails to achieve the qualification desired.

2.33.4.3 **To qualify for a package made up of this and other packages for which bids are invited in the present DTCN**, the bidder must demonstrate having experience and resources sufficient to meet the aggregate of the qualifying criteria for the individual packages.

2.33.4.4. During technical evaluation, the Bidders may have to make a presentation on their technical proposal before the Evaluation Committee, if felt necessary. The date of such presentation shall be intimated to them in writing, if required.

2.33.4.5. **Bid capacity**

Bidders who meet the minimum qualification criteria will be qualified only if the available bid capacity at the expected time of bidding is more than the total estimated cost put to tender . The available bid capacity will be calculated as under.

Assessed bid capacity = (2x A x N - B)

Where A= maximum value of work executed in any one financial year during last five years (updated to the current price level). The rate of inflation shall be taken as 10% per year (Escalation factor) which will take into account the completed as well as work in progress.

B= value at current price level of the existing commitments and ongoing works to be completed during the year (period of completion of works for which bids are invited) .

N= No. of years prescribed for completion of the work for which the bids are invited.

Note- In case of joint venture , the available bid capacity will be applied for each partner to the extend of his proposed participation in the execution of work. In case the extend of participation is not mentioned, the proposed participation in the execution of the work shall be considered as equal for each partner.

The statement showing the value of existing commitments and ongoing works as well as the stipulated period of completion remains for each of the work listed should be countersigned by the Engineer-in –Charge not below the rank of Executive Engineer.

2.33.4.6 **COMBINED EVALUATION** :

If the bid has been invited in a common tender call notice for a nos of works, the order of opening of the bids shall be that in which they appear in the "Invitation for bIds". Further, the bidder(s) must demonstrate experience and recourses sufficient to meet the aggregate of the qualifying criteria for the individual contracts.

2.33.5 Evaluation of Financial Bids:

2.33.5.1. After the technical evaluation is completed, the Employer shall inform in writing the Bidder, who have qualified in the technical bid, the date and time for opening the Financial Bids (Financial Bid).

2.33.5.2 The Evaluation Committee will correct any computational errors. When correcting computational errors, in case of discrepancy between a partial amount and the total amount or between words and figures the amount in words will prevail.

2.33.4.3. **Deleted.**

2.33.4.4. **The packages so left out in the event of above mentioned upper limit of award to any single bidder, the offer will be passed on to the bidder whose financial offer is assessed to be next lowest bidder . The later will be offered to accept the lowest financial offer of that package. Failure/Non-acceptance of the negotiated offer will result in , the offer being passed on to next lowest bidder. This process will be followed till award is made for this package**.

2.33.6 Selection of Bidder on the basis of financial bid :

2.33.6.1 Other condition being equal, the Bidder bidding the lowest price will be considered for acceptance by competent authority.

2.33.6.2 However the Bidder will be eligible for more than one package depending on his/her capacity basing on technical evaluation to assess qualification and responsiveness.

2.34. Negotiations:

2.34.1 Negotiations will be held if required with the lowest valid Bidder. In the event of furnishing any condition by the L-1 Bidder which grossly affects the tender value / contains such conditions which make the value of the offer indefinite, such L-1 Bidder may be given an opportunity to withdraw such condition(s) so that it does not affect the tender value / to make the tender definite. Failure to withdraw such conditions may lead to rejection of the tender as inconsistent / non responsive. In such case the employer may explore the possibility of considering the next valid tender as L-1.

2.34.2 Technical Negotiation: Negotiations will also include a discussion on the Technical Bid, the proposed technical approach and methodology, work plan, and organization and staffing, and suggestions, if any, made by the Bidder to improve work schedule. These documents will then be incorporated in the contract. The Employer shall prepare minutes of negotiations which will be signed by the Employer and the Bidder.

F. AWARD OF CONTRACT

2.35. Award Criteria:

2.35.1. After acceptance of financial bid of the tender by competent authority, the selected Bidder will be intimated about such acceptance .

2.35.2. The Bidder is expected to commence the work on the date and at the location specified in the Data Sheet/ as per the detailed job order, furnished by the concerned Executive Engineer.

2.36. Right to Accept or Reject any or all Tenders

Notwithstanding Clause 2.35, the **Executive Engineer, L.I. Division, Kendujhar** reserves the right to accept or reject any tender, annul the tendering process, reject all tenders at any time or any stage prior to the award of contract without thereby incurring any liability to the affected Bidders.

2.37. Process to be Confidential

2.37.1 After the opening of tenders as per Clause 2.30 & 2.33, information relating to examination, clarification, evaluation and comparison of tenders and recommendations, concerning to the award of contract shall not be disclosed to the Bidder or any other persons, officially not concerned with the process, until the award of the contract to the successful Bidder has been announced.

2.37.2 Any effort by any Bidder to influence the Department/Corporation officials in scrutiny, clarification, evaluation and comparison of tenders, and in any decisions concerning award of a contract, may result in the rejection of their Tender.

2.38. Notification of Award

2.38.1 Prior to the expiry of the Tender validity period prescribed in the Data Sheet, the **Executive Engineer, L.I. Division, Kendujhar** or his authorised representative will issue Letter of Intimation (LOI) in favour of successful Bidder by e-mail. On acceptance, the successful Bidder shall move to the office of Executive Engineer to execute agreement/receive work order as instructed.

2.38.2 The letter of acceptance/work order will constitute notification of the intention of the employer to enter into a contract with the Bidder for the execution of the work under this contract.

2.39. Signing of Agreement:

The successful Bidder shall attend office of the Executive Engineer of Odisha Lift Irrigation Corporation Ltd within 7 days from the date of issue of intimation/as instructed with for execution and signing of agreement.

1. Required ISD & APS if applicable.
2. Work programme.
3. Other documents as per DTCN.

SECTION – 2(C)
Data Sheet

Ref Cl.No.	Description:
1.	a)Name of the employer: **Executive Engineer, L.I. Division, Kendujhar**. b) Method of selection: Qualifying in the Tech bid and L-1 in the Financial bid
2.	Name of the Work: INSTALLATION, ELCTRIFICATION, ENERGISATION AND COMMISSIONING OF MEDIUM DEEP TUBEWELL PROJECTS UNDER ANANDAPUR, GHASIPURA AND HATADIHI BLOCK IN **KENDUJHAR DISTRICT.**
3.	**Scope of Works :- Annexure-I**
4.	Two part bid system: Technical Bid (Tender Document Part-I:) and Financial Bid (Tender Document- Part-II:) to be submitted together in separate covers as detailed at Clause-2.26 in online mode.
5.	The employer will provide the following inputs and facilities: The employer would provide necessary assistance for ensuring availability of data, records, reports etc. and will facilitate the required field check for bidding.

6.	Proposals shall be submitted in English language.
7.	The validity period of work must remain for 180 DAYS from the date of opening of tender.
8.	Clarifications may be requested within specified date and time i.e. up to **Dt. 05.11.2026 up to 17.00 Hours**
9.	**The Tender will be opened on following date and time:** **Dt. 10.11.2026 at 10.00 A.M. (Cover-I)**
10.	The criteria of technical evaluation are as follows: 1. Registration Certificate of Bidder i. Registered Bidders, with valid HT license issued by ELBO ii. Registered contractors in appropriate class having valid agreements / partnerships / joint venture with an ELBO HT License Holder. 2. GST certificate from Tax authority as applicable. 3. Valid PAN. 4. EMD and Cost of tender paper as required. 5. Experience in Similar major item of works (As indicated at 6. Documents in support of bid capacity. 7. Any other criteria with supporting documents as per DTCN
12	The date of opening of Financial Bid shall be intimated to the qualified Bidders separately after the technical evaluation is over.
13	Expected date and address for contract negotiations: Date: To be intimated. Address: **Executive Engineer, L.I. Division, Kendujhar**.
14	Expected date for commencement of work : To be indicated in the Work order **Period of completion : 3(Three) months/ 4(Four) months as per NIT**

Annexure-I

SCOPE OF WORK

1. Installation of Tube well:
   - I. Installation of Medium Deep Tubewell.
   - II. Yield test – Requirement of discharge is 900 LPM.
   - I. Electrification:
   - II. Construction of new3 phase,3 wire 11 KV line over 10 Mtr. long 330Kg. PSC Pole, as per requirement;
   - III. Construction of 11/.0.4 KV; 25 KVA DP mounted Electrical Sub-station;
   - IV. Construction of L.T. 3 phase 4 wire AB Cable feeder support by 9 Mtr. long 200 Kg.PSC Pole, using different size of XLPE AB Cable by piercing connector etc. and other accessories as required having road / river crossing with 9 Mtr. Pole with complete system design, procurement/manufacture, manufacturer's quality assurance, shop testing (including type testing where specified/required), transportation, storage, erection, including all civil/structural works, site testing, commissioning of all items and materials including all associated activities that though not exclusively specified here in but are required for the completion of the entire works under this package.

     All poles should be painted in navy blue colour band with inscription "OLIC" .
2. Energisation and commissioning:
   - I. Installation of submersible pump set in the Tube well at desired depth with due precautions against slipping of the pump set inside the Tube well.

II. On completion of electrification works i.e. Sub-stations, HT and LT lines and installation of pumping unit, the same is to be inspected successfully by the appropriate authority of Govt. of Odisha and hand over to DISTCOM through OLIC.

III. Facilitating execution of electrical Agreement between each beneficiary of the Tube well projects with DISTCOM and water sharing agreement with other beneficiaries.

IV. Charging the Electrical installations by DISTCOM.

V. Commissioning the Tube well project and test running for at least **six hours**.

SECTION –2(D)

LETTER FOR SUBMISSION OF TENDER

(To be filled in by the Bidder)

Note: (1)Additional conditions appended to the tender will make the tender liable for rejection.
(2)Non-submission of EMD along with the technical Bid in proper shape and other required documents as detailed hereinafter shall make the tender liable for rejection.

Ref. No. _____ / dated_____
To
The Executive Engineer,
L.I. Division, Kendujhar.

Sub: ----------

Ref: **Identification No. ---------- published News Paper ……in the website** www.tendersodisha.gov.in.

Dear Sir,

With reference to the above, I/We are to inform you that in response to your above referred TCN, we have downloaded the Detailed Tender Call Notice (DTCN) Part-I & II and thoroughly examined the same. We hereby tender to execute the work within the stipulated time and in conformity with the relevant clauses of the DTCN along with all related statutory rules and regulations for the amounts as quoted in the accompanying Financial Bid.

1) I/We have studied, acquainted and satisfied ourselves with the job.

2) I/We are willing to undertake works at the given location in the district/package to be handed over by the concerned Executive Engineer.

3) I/We are satisfied with working conditions for the successful and timely completion of the work.

4) Our offer is unconditional and is in conformity with the requirements of the DTCN. We understand that any additional condition put by us in the tender shall make our tender liable for rejection.

5) I/We understood that you are not bound to assign any reason in case of rejection of our tender.

6) I/We agree to keep our offer open for 2(two) years from the date of opening of tender. Further extension of validity will be on mutual agreement between us and the authority.

7) Our registered e-mail Id for all correspondence is : olickjr@gmail.com

On acceptance of the tender, we hereby agree to abide by and fulfil all the terms and provisions of this Detailed Tender Call Notice (DTCN).

Thanking you.

Yours faithfully,

(Name and Signature of the authorised signatory along with seal and address of the firm.)

SECTION - 2(E)

TENDER DECLARATION

(To be filled in by the Bidder)

I/We do hereby tender for the execution of the work specified in the enclosed memorandum at the rates given in the Financial Bid and will complete the said work in all respect within the period as specified in the Detailed Tender Call Notice and in accordance with the specifications, designs, drawings and other documents referred to therein, which shall have to be approved by the Odisha Lift Irrigation Corporation Ltd., Kendujhar(OLIC) and such other written instructions as may be given by the OLIC, Odisha from time to time for duly carrying out of the said works in accordance with the conditions and special conditions hereto attached. I/We have studied/inspected the work site/districts and with its conditions, labour, materials and have understood the tender implications in complete.

Should this tender be accepted I/We hereby agree to abide by and fulfil all the terms and provisions of the said conditions and special conditions of the contract annexed hereto or in default thereof to forfeit and pay to OLIC, the sums of money mentioned in the said conditions and in the event of such default the transaction effected by this tender shall cease and determine.

Signature of Bidder / Bidder
(Seal)

SECTION - 2(F)
LETTER OF ACCEPTANCE OF TENDER
(To be filled in by Executive Engineer, L.I. Division, Kendujhar)

To

M/S

Sub:- Letter of intimation for Tender Call Notice No. dt. for installation, electrification, energisation and commissioning of Medium Deep Tube wells in District,
Bid Identification No..

Ref:- Tender Call Notice No..

Sir,

The above tender is hereby shortlisted in favour of M/S for installation of nos. of Medium Deep Tube wells in cluster basis in District PKG No.

You are requested to be present in the office of the Executive Engineer, L.I.Division, ---------- and execute the agreement on non-judicial stamp paper of worth Rs.21/- (Rupees Twenty one)only as per Section-5 of the DTCN along with the Additional Performance Security Deposit of Rs. (If applicable) only in shape of Term Deposit receipt/ bank guarantee in favour of **Executive Engineer, L.I. Division, Kendujhar** from any Nationalized / Scheduled Bank in India counter guaranteed by its local branch at Bhubaneswar & Initial Security Deposit (2%) of Rs. only in shape of Post Office Savings Bank Account/ NSC/ Post Office time Deposit/ Kissan Vikash Patra / Bank Deposit Receipt(STDR) in schedule Bank duly pledged in favour of **Executive Engineer, L.I. Division, Kendujhar** within 7(|Seven) days from the date of issue positively, failing which your offer will not be considered and EMD will be forfeited.

Yours faithfully,

Executive Engineer,
L.I. Division, Kendujhar.

SECTION - 2(G)

MEMORANDUM

(*To be filled in by the Bidder during signing of Agreement)*

1.	Name of the work	:	
2.	Approximate Cost	:	
3.	Accepted tender Value	:	
4.	Earnest Money Deposit	:	
5.	Initial Security Deposit. @ 2% of the accepted tender amount including earnest money.	:	
6.	Percentage to be deducted from each Bill as security deposit	:	**@ 5 (five)%**
7.	Time allotted for completion of the work (from the date of written cluster-wise work order to commence by Executive Engineer concerned)	:	**3(Three)/ 4(Four) Calendar Months**
8.	Date of written order to commence	:	
9.	Total number of items of work tendered for (as per schedule attached hereto)	:	

Signature of Bidder/Bidder

WORK EXPERIENCE FORMAT

1. General Information

a) Name of the Bidder :

b) Office Address :

Tel No. :

Fax No. :

E-mail ID :

(c) Class of contractor/ firm/ agency/
Company and year of incorporation
(Attach copy of certificate of
Registration & Authentic/ definite proof)

d) Main Lines of Business :

e) Key personnel to the deployed

(i) Project Manager :

(ii) Site Engineer :

(iii) Supervisor :

(iv) Geophysicist /Geo hydrologist for VES test :

f) Work experience for last 2 years

(To be supported by certificate from authority not below the rank of Executive Engineer or any other competent authority)

SCHEDULE – B

(FINANCIAL REQUIREMENT)

A. To qualify for award of the contract, each bidder or his JV partner in its name should have minimum working capital requirement (Credit facility) as mentioned below :

The firm must possess credit facilities of not less than twenty percentage (20%) of the amount put to tender and furnish the credentials from any scheduled commercial bank along with the bid against the specific work by mentioning the name of work and tender identification number in the prescribed format.

(Credit lines / letter of credit / certificates from Banks for meeting the funds requirement etc.)

The working capital will be proposed to be met out of:

(i) Bank Credit in Form No. **B (I).**

(ii) An **irrevocable affidavit in stamp paper** will be submitted to provide balance working capital (from own sources and others) subtracting bank credit of 2(i) from working capital requirement No.1 above in Form No. **B (II).**

GOVERNMENT OF ODISHA
WORKS DEPARTMENT
*****

OFFICE MEMORANDUM

File No.07556900012016- 17254 /W, dated, 5.12.17

Sub: **Electronic Receipt, Accounting and Reporting of Cost of Tender Paper and Earnest Money Deposit on submission of bids.**

1. The State Government have been working on formulation of rules and procedures for Electronic receipt, accounting and reporting of the receipt of Cost of Tender Paper and Earnest Money Deposit on submission of bids through the e-procurement portal of Government of Odisha i.e. "https://tendersodisha.gov.in" for some time past.
2. Electronic receipt of cost of tender paper has been successfully tested through SBI payment gateway. Now it has been decided to introduce electronic receipt of **Cost of Tender Paper and Earnest Money Deposit on submission of bids** through payment gateway of designated banks such as SBI/ICICI Bank/HDFC Bank for all Government Departments, State PSUs, Statutory Corporations, Autonomous Bodies and Local Bodies etc. in phases(ANNEXURE-I). The process outline as well as accounting and reporting structure are indicated below:

a) It will be carried out through a single banking transaction by the bidder for multiple payments like **Cost of Tender Paper and Earnest Money Deposit on submission of bids**.
b) Various payment modes like Internet banking/ NEFT/RTGS of Designated Banks and their Aggregator Banks as well can be accessed by the intending bidders.
c) Reporting and accounting of the e-receipts will be made from a single source.
d) Credit of receipts into the Government accounts and to the designated Bank account of the participating entities indicated in Para 2 above would be faster.

3. Only those bidders who successfully remit their **Cost of Tender Paper and Earnest Money Deposit on submission of bids would be eligible to** participate in the tender/bid process. The bidders with pending or failure payment status shall not be able to submit their bid. Tender inviting authority, State Procurement Cell, NIC, the designated Banks shall not be held responsible for such pendency or failure.

-1-

4. Banking arrangement:

a) Designated Banks (SBI/ICICI Bank/HDFC Bank) payment gateway are being integrated with e-Procurement portal of Government of Odisha (https://tendersodisha.gov.in)

b) The Designated Banks participating in **Electronic receipt, accounting and reporting of Cost of Tender Paper and Earnest Money Deposit on submission of bids** will nominate a Focal Point Branch called e-FPB, who is authorized to collect and collate all e-Receipts. Each such branch will act as the Receiving branch and Focal Point Branch notwithstanding the fact that the bidder might have debited his account in any of the bank's branches while making payment.

5. Procedures of bid submission using electronic payment of tender paper cost and EMD by bidder :

a) The bidders have to log onto the Odisha e-Procurement portal (https://tendersodisha.gov.in) using his/her digital signature certificate and then search and then select the required active tender from the "Search Active Tender" option. Now, submit button can be clicked against the selected tender so that it comes to the "My Tenders" section.

b) Uploading of Prequalification/Technical/Financial bid: The bidders have to upload the required Prequalification /Technical/Financial bid, as mentioned in the bidding document and in line with Works Department office memorandum No.7885/W dt.23.07.2013.

c) Electronic payment of tender paper cost and EMD : Then the bidders have to select and submit the bank name as available in the payment options :

i. A bidder shall make electronic payment using his/her internet banking enabled account with designated Banks or their aggregator banks.

ii. A bidder having account in other Banks can make payment using NEFT/RTGS facility of designated Banks.

- Online NEFT/RTGS payment using internet banking of the bank in which the bidder holds his account, by adding the account number as mentioned in the challan as an interbank beneficiary.

d) **Bid submission:** Only after receipt of intimation at the e-Procurement portal regarding successful transaction by bidder the system will activate the 'Freeze Bid Submission' button to conclude the bid submission process.

e) **System generated acknowledgement receipt for successful bid submission:** System will generate an acknowledgement receipt for successful bid submission. The bidder should make a note of **'Bid ID'** generated in the acknowledgement receipt for tracking their bid status.

6. **Settlement of Cost of Tender Paper:**

a) **Cost of Tender Paper** : In respect of Government receipts on account of **Cost of Tender Paper**, the e-Procurement portal shall generate a MIS for the State Procurement Cell (SPC). The MIS will contain an abstract of the cost of tender paper collected with reference to **Bid Identification Number**. The State Procurement Cell shall generate Bank-wise challans under the head of Account for **Cost of Tender Paper** and instruct the designated Banks to remit the money to the proper head of account of State Government. In respect of the cost of tender paper received through the e-procurement portal, the remittance to the Cyber Treasury account will be made to the Head of Account 0075-Misc. General Services-800-Other Receipts -0097-Misc. Receipts-02237-Cost of Tender Paper.

b) For the time being, the State Procurement Cell (SPC) will use over the counter payment facility of the Odisha Treasury portal. Thereafter, remittance through NEFT & RTGS will be facilitated through the Odisha Treasury portal.

c) Similarly, in case of State PSUs, Statutory Corporations, Autonomous Bodies and Local Bodies etc. **Cost of Tender Paper**, the e-Procurement portal shall generate a MIS for the State Procurement Cell (SPC). The MIS will contain an abstract of the cost of tender paper collected with reference to **Bid Identification Number**. The cost of tender papers will be credited to the registered Bank account of the concerned State PSUs, Statutory Corporations, Autonomous Bodies and Local Bodies etc

d) Bank will refund (in case the Tender Inviting Authority (TIA) issues such instructions) the tender fee and EMD to the bidder, in case the tender is cancelled before opening of Bid as per direction received from TIA through e-procurement system.

e) Back-end Transaction Matrix of Electronic receipt of Cost of Tender Paper and Earnest Money Deposit on submission of bids is enclosed in the **Annexure- I.**

7. **Settlement of Earnest Money Deposit on submission of bids:**

a) The Bank will remit the **Earnest Money Deposit on submission/cancellation of bids** to respective bidders accounts as per direction received from TIA through e-procurement system.

8. **Forfeiture of EMD :**

Forfeiture of **Earnest Money Deposit on submission of bid** of defaulting bidder is occasioned for various reasons.

a) In case the **Earnest Money Deposit on submission of bid** is forfeited, the e-Procurement portal will direct the Bank to transfer the EMD value from the Pooling Account of SPC to the registered account of the tender inviting authority.

b) The Tender inviting authorities of the Government Departments will deposit the forfeited **Earnest Money Deposit on submission of bid,** in the State Government Treasury under the appropriate head (8782-Cash Remittances and Adjustments between the officers rendering accounts to the same Accounts Officer-102-P.W.Remittances-1683-Remittances-91028-Remittances into Treasury) after taking the amount as a revenue receipt in their Cash Book under the head 0075-Misc. General Services-00-101-Unclaimed Deposits-0097-Misc. Receipts-02080-Misc. Deposits and submit the detail account to D.A.G., Puri as a deposit of the Division.

c) By clicking submit button, system will initiate the forfeiture of EMD. System will not allow the evaluator to edit the initiation after clicking the submit button. Forfeiture option can be carried out in phased manner like one bidder at a time.

9. **Role of the Banks:**

a) Make necessary provision / customizations at their end to enable the provision for online payments / refunds as per this document.

b) Provide necessary real-time message to bidders regarding successful or unsuccessful transactions during online payment processes and redirect them to e-Procurement website with necessary transaction reference details enabling them to submit their bids.

c) The bank shall ensure transfer of funds from the pooling account to the Government Head/current account of PSUs/ULBs within the next bank working day as per the directions generated from e-Procurement portal.

d) Bank should provide timely reports and reference details to NIC enabling them to carry out their role as stated below.

e) Refund of amount to bidders as per the XML file provided by e-Procurement system on the next bank working day from the date of generation of the XML file and also provide a confirmation to NIC on the same.

10. Role of State Procurement Cell:

a) Communicate requirements of Government departments/ State PSUs/ Autonomous Bodies/ ULBs online payment requirements to National Informatics Centre / the authorised Banks for mapping/ customization.

b) In every working day, the State Procurement Cell shall generate MIS from the e-Procurement portal to ascertain the tender paper cost received in the e-Tendering process separately bank-wise for the Government Department and the PSUs/ULBs. The SPC shall generate bank-wise separate online challans from the Odisha Treasury portal and make the remittance through over the counter facility or NEFT/RTGS (as and when this functionality is available in Treasury portal) and issue instruction to the bank for remittance of the receipt to the State Government account.

c) The State Procurement Cell shall be responsible for providing challan details and MIS in respect of the remittance towards tender paper cost to the Tender inviting authorities for their record.

d) State Procurement Cell shall monitor the progress of e-Tendering by different Government Departments / State PSUs/ Autonomous Bodies / ULBs through MIS. State Procurement Cell shall monitor and send monthly progress reports to the Government.

e) The e-Procurement system will generate a consolidated refund & settlement XML file as an end of the day activity.

f) e-procurement system will provide a web service for Payment Gateway (PG) provider to pull the encrypted refund and settlement details in XML file against a day.

g) Similarly, Payment Gateway (PG) provider will provide a web service to pull the refund and settlement status against a day.

h) e-procurement system will update the status accordingly for reconciliation report.

11. Role of National Informatics Centre :

a) Customize e-Procurement software and web-pages of Government of Odisha (https://tendersodisha.gov.in) to enable the provision for electronic payment.

b) The NIC, Odisha will modify / rectify the errors in electronic data relating to the Chart of Account.

c) NIC will provide an interface to organisations to download the electronic receipt data.

d) Enable automatic generation of daily XML files from e-Procurement system and ensure delivery of the same to the authorised Banks for enabling automatic refund/settlement of funds.

e) NIC shall enable the e-Procurement portal to generate MIS as required for the State Procurement Cell in order to make remittance of the tender paper cost to the State Government account using the Odisha Treasury Portal.

12. Role of Cyber Treasury :

a) The cost of the tender paper deposited by the SPC using the Odisha Treasury Portal which will be accounted for by the Cyber Treasury and it shall submit the accounts to A.G. (O) as per the established process.

b) The Cyber Treasury will provide MIS as required to the SPC for the purpose of accounting and reconciliation of the electronic remittances made to the State Government account.

13. Redressal of Public grievances :

a) The State Procurement Cell, Odisha, National Informatics Centre, Odisha and the e-FPB will have an effective procedure for dealing with, public complaint for e-Receipt related matters. In case, any mistake is detected by any of the stakeholders in reporting of receipt of tender paper cost and EMD, either suomoto or on being brought to its notice, the State Procurement Cell, Odisha, National Informatics Centre, Odisha unit, Cyber Treasury and the bank will promptly take steps for rectification. The e-Focal Point Branch of the participating Banks, National Informatics Centre, Odisha and the State Procurement Cell, Odisha will notify the contact number and address of the Help Desk for resolution of any dispute regarding e-Receipt.

14. Applicability and modification of existing rules / orders:

The modalities prescribed in this Office Memorandum for downloading of tender paper. submission and rejection of bid, acceptance of Bids as well as refund and forfeiture of earnest deposit will be applicable for electronic submission of bids through e-procurement portal. Existing provisions regulating cost of Tender Paper and Earnest Money Deposit in OPWD Code and OGFR would stand modified to the extent prescribed in this Office Memorandum.

15. These arrangements would be made effective after signing of MoU between the designated Banks and the State Procurement Cell, firming up of Banking arrangements and technical integration between designated Bank and e-Procurement Portal.

1. This shall take effect from the date of issue of this Office Memorandum.
2. Accordingly, relevant existing codal / contractual provision exist vide Office Memorandum No.6785/W dt.09.05.2017 of Works Department stands modified to the above extent.
3. This has been concurred in by the Finance Department vide their UOR No.-39-WF-I dt.09.11.2017.

5/11/17

E.I.C-cum-Secretary to Government
(P.T.O.)

Memo No. 17255 /W, dated, 5.12.17

Copy forwarded to P. S. to Hon'ble Chief Minister, Odisha for information and necessary action.

FA - cum- Addl. Secretary to Government

Memo No. 17256 /W, dated, 5.12.17

Copy forwarded to OSD to Chief Secretary, Odisha / Sr. P.S. to Development Commissioner-cum-Additional Chief Secretary, Odisha / Sr. P.S. to Additional Chief Secretary, Finance for information and necessary action.

FA - cum- Addl. Secretary to Government

Memo No. 17257 /W, dated, 5.12.17

Copy forwarded to All Departments / Managing Director, OB & CC Ltd., Bhubaneswar / Managing Director, OCC Ltd., Bhubaneswar for information and necessary action.

FA - cum- Addl. Secretary to Government

Memo No. 17258 /W, dated, 5.12.17

Copy forwarded to EIC (Civil), Odisha, Bhubaneswar / All Chief Engineers, Odisha / All Superintending Engineers / All Executive Engineers (under Works Department) for information and wide circulation among subordinate offices.

FA - cum- Addl. Secretary to Government

Memo No. 17259 /W, dated, 5.12.17

Copy forwarded to the Principal Accountant General (A&E), Odisha, Bhubaneswar / Principal Accountant General, Odisha, Puri Branch, Puri for information and necessary action.

FA - cum- Addl. Secretary to Government

Memo No. 17260 /W, dated, 5.12.17

Copy forwarded to the Director, Treasuries & Inspection, Odisha, Bhubaneswar for information and necessary action.

FA - cum- Addl. Secretary to Government

ANNEXURE-I

Back-end Transaction Matrix of Electronic receipt and remittance of Cost of Tender Paper and Earnest Money Deposit on submission of bids.

	Cost of Tender Paper	Earnest Money Deposit on submission of bids
Government Departments	I. The *payment* towards the **cost of Tender Paper,** in case of Government Departments, shall be collected in separate pooling accounts opened in Focal Point Branch called e-FPB of respective designated banks [as stated in Para 2] at Bhubaneswar on T+1 day.	I. In case of tenders of Government Departments, amount towards **Earnest Money Deposit** on submission of bids shall be collected in a pooling account opened for this purpose at Focal Point Branch called e-FPB of respective designated banks at Bhubaneswar, and the banks will remit the amount to respective bidder's account within two working days on receipt of instruction from TIA through refund and settlement of e-procurement system.
	II. With reference to the Notice Inviting Tender/ Bid Identification Number, the amount so realised is to be remitted to Government Account under the Head of Account 0075-Misc. General Services-800-Other Receipts -0097-Misc. Receipts-02237-Cost of Tender Paper through Odisha Treasury Portal after opening of the bid.	II. In case of forfeiture of **Earnest Money Deposit** on submission of bids, the e-Procurement portal will direct the Bank to transfer the EMD value from the Pooling Account of SPC to the registered account of the tender inviting authority within two working days of receipt of instruction from TIA.
State PSUs, Statutory Corporations, Autonomous Bodies and Local Bodies	I. In case of State PSUs, Statutory Corporations, Autonomous Bodies and Local Bodies etc. the amount towards **Cost of Tender Paper** on submission of bids shall be collected in separate pooling accounts opened in Focal Point Branch called	I. Amount towards **EMD** on submission of bids shall be collected in a separate pooling account of Focal Point Branch called e-FPB of respective designated banks at Bhubaneswar and the banks will remit the amount to respective bidder's

	e-FPB of respective designated banks at Bhubaneswar on T+1 day.	account on receipt of instruction from TIA through refund and settlement of e-procurement system within two working days from receipt of such instruction.
	II. The **Paper cost** will be transferred to the respective current accounts of concerned State PSUs, Statutory Corporations, Autonomous Bodies and Local Bodies etc. after opening of bid.	II. In case of forfeiture of **Earnest Money Deposit** on submission of bids, the e-Procurement portal will direct the Bank to transfer the EMD value from the Pooling Account of SPC to the registered account of the tender inviting authority within two working days of receipt of instruction from TIA.

GOVERNMENT OF ODISHA

WORKS DEPARTMENT

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OFFICE MEMORANDUM

No. 07764600022025 17941 /W., Bhubaneswar Dt. 8.10.26

Sub:- Amendment of Codal & Contractual Provisions.

Earlier, the provisions of threshold negative bid caps of 15% introduced in Appendix-IX, Clause 36 of OPWD Code Vol.-II had been abolished, and the system of incremental Additional Performance Security (APS) was adopted vide Works Department O.M. No.173/W., dated 03.01.2026 in the procurement of Works undertaken by Government of Odisha and its agencies to ensure that the procurement process results in a viable and successful manner.

Subsequently, a clarification vide Works Department O.M. No. 632/W., dated 09.01.2026, and a corrigendum No. 14560/W., dated 11.08.2026, were issued on the subject.

Considering the continuing trend of quoting of abnormally low bids in procurement of Works, Government, after careful consideration, have been pleased to further review the issue of abnormally low bid prices.

Now, therefore, in supersession of Works Department O.M. No.173, dated 03.01.2026, O.M. No.632/W., dated 09.01.2026 and Corrigendum No.14560/W., dated 11.08.2026, it has been decided that the Additional Performance Security (APS) shall be obtained from the selected bidder, on an incremental basis, where the accepted bid price is lower than the Cost Put to Tender, in the following manner:

1. The Additional Performance Security (APS) shall be calculated as a percentage of the accepted Bid Price of the selected bidder.
2. For the purpose of determining the APS, the percentage by which the accepted Bid Price is lower than the Cost Put to Tender shall be calculated and rounded off.
3. The rounded-off percentage so determined shall be referred to as the Rounding Off of Percentage Less (ROPL) of accepted Bid Price and shall form the basis for calculation of the APS in accordance with the applicable incremental rate prescribed under this Office Memorandum.
4. Rounding Off of Percentage Less (ROPL) of accepted Bid Price, i.e. the percentage by which the accepted Bid Price is less than the Cost Put to Tender, shall be as follows:

    - Where the decimal fraction is less than 0.50, the percentage shall be rounded off to the next lower whole percentage.

- Where the decimal fraction is 0.50 or above, the percentage shall be rounded off to the next higher whole percentage.
- For avoidance of doubt, 13.25% less shall be reckoned as 13% less, whereas 13.50% less shall be reckoned as 14% less, for the purpose of determining the applicable APS under this Office Memorandum.

5. Calculation of Additional Performance Security:
   - Where the accepted bid price is such that the ROPL is up to (-)10%, no additional performance security is required.
   - where the accepted bid price is such that the ROPL is below (-)10% but not below (-)20%, the additional performance security percentage shall be incremented by 0.2% for every percentage of ROPL below (-)10%; for avoidance of doubt, if ROPL is (-)13%, then APS shall be @ 0.2% x (13-10) = 0.6% of accepted bid price.
   - where the accepted bid price is such that the ROPL is below (-)20% but not below (-)30%, the additional performance security percentage shall be incremented by 0.3% for every percentage of ROPL below (-)20% in addition to 2% of the accepted bid price; for avoidance of doubt, if ROPL is (-)24%, then APS shall be @ 0.3% x (24-20) +2% = 1.2% + 2% = 3.2% of accepted bid price.
   - Where the accepted bid price is such that the ROPL is below (-)30% or more, the additional performance security percentage shall be incremented by 0.5% for every percentage of ROPL below (-)30% in addition to 5% of the accepted bid price; for avoidance of doubt, if ROPL is (-)37%, then APS shall be @ 0.5% x (37-30) + 5% = 3.5% + 5% = 8.5% of accepted bid price.
6. The additional performance security shall be treated as part of the performance security.
7. The provision of additional performance security shall be applicable to all forms of tender except Turnkey Tender.
8. Justification for abnormally low bids shall be scrutinized by the Technical Committee and recommended to the Competent Authority for Acceptance of Tender as per Para 6.3.15 of OPWD Code, Vol-I for the approval of the Additional Performance Security (APS). An abnormally low bid is one in which the Bid price, in combination with other elements of the Bid, appears so low that it raises material concerns as to the capability of the Bidder to perform the contract at the offered price. Procuring Entity may, in such cases, seek written clarifications from the Bidder, including detailed price analysis of its Bid price in relation to scope, schedule, resource mobilization, allocation of risks and responsibilities, and any other requirements of the bid document. If, after evaluating the price analysis, the procuring entity determines that the Bidder has substantially failed to demonstrate its capability to deliver the contract at the offered price, the Procuring Entity may reject the

Bid/ Proposal. However, it would not be advisable to fix a normative percentage below the estimated cost, which would automatically be considered as an abnormally low bid.

9. If more than one bid is quoted (decimal up to two numbers will be taken for all practical purposes, in percentage rate tenders) as lowest, either at the estimated cost put to tender or less than the estimated cost put to tender, the Tender Accepting Authority will finalize the tender through a transparent lottery system, where all the concerned bidders/their authorized representatives, the concerned SE/EE of the concerned Division and DAO will remain present.
10. If the rate quoted by the SC and ST Category Contractors comes to the rate quoted by the lowest bidder (decimal up to two numbers will be taken for all practical purposes, in percentage rate tenders) after availing 10% price preference as per Para 2 of Works Department Resolution No. 16262 dated 30.10.2018, the tender shall be finalized by the Tender Accepting Authority through a transparent lottery system along with other categories of contractors.
11. Accordingly, the relevant existing codal/contractual provision stands modified with effect from the date of issue of this O.M.
12. However, as regards the bidding process in which the tender has been floated before the issue of this Office Memorandum, the APS shall be calculated as per Works Department O.M.No.173 dt 03.01.2026 r/w O.M. No.632/W., dated 09.01.2026 and Corrigendum No.14560/W., dated 11.08.2026.
13. In pursuance to, Works Deptt. OM No.2375/W, dt.03/03/2022, Additional Performance Security(APS) shall be refunded immediately on successful completion of the work within seven(07) days of issuance of Completion Certificate/ Provisional Completion Certificate.
14. This has been concurred in by the Finance Department vide OSWAS file No.**FIN-WFI-MISC-0102-2025.**

By order of the Governor

Principal Secretary to Government

Memo No. 17942 /W, dated 8.10.26

Copy along with soft copy forwarded to Gazette Cell, Commerce and Transport (Commerce) Department, Bhubaneswar, for information and necessary action.

They are requested to publish the Office Memorandum in the extraordinary issue of the Gazette and supply 20 (twenty) copies to this Department.

8/10/26.

EIC-cum-Special Secretary to Government

Annexure: B

ADDITIONAL PERFORMANCE SECURITY (BANK GUARANTEE FORMAT)

To: _____ [name of Employer]

_____ [address of Employer]

WHEREAS _____ [name and address of Contractor] (hereinafter called "the Contractor") has undertaken, in pursuance of Package No. _____ of Bid id. No. dated _____ offer to execute the work _____ [name of Contract and brief description of Works] (hereinafter called "the Work");

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the tender provision;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of _____ [amount of guarantee]1_____ [in words], such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ [amount of guarantee]1 as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until for 24 months from the date of issue of work order.

Signature and seal of the guarantor _____

Name of Bank _____

Address _____

Date _____

Lists of plants and equipments to be deployed by the Bidder for use on the work along with ownership (Rig with valid Registration)					
Sl No of Pkg.	Name of the District	Suggested minimum number of DTH/ Combination Rig as specified in DTCN	To be filled by Bidder		Remarks
			Owned		
			Nos.	Ownership Certificate Furnished / Not furnished	
1	**2**	**3**	**4**	**5**	**6**
1.	**KENDUJHAR**				

NB.: 1. A Certificate/undertaking to be produced from the Bidder that "I/We shall provide the requisite VES units, 15 KVA Genset and pumping units for yield test along with Rig units failing which action deemed fit will be taken against me and decision of authority will be final.

Signature of Bidder

INFORMATION REGARDING CURRENT LITIGATION, DEBARRING / EXPELLING OF TENDER OF ABANDONMENT OF WORK BY TENDER

1. (a) Is the applicant currently involved in any litigation relating to any contract works Yes/No

(b) If yes, give details

2.(a) Has the applicant or an of its constituent partners been debarred / expelled by any agency in India during the last 2 years Yes/No

(b) If yes, give details

3 (a) Has the applicant or any of its constituent partners failed to perform/absconded/ rescinded on any contract work in India during the last 2 years: Yes/No

(b) If yes, give details

Note : If any information in this schedule is found to be incorrect or concealed pre-qualification application will be summarily rejected.

DECLARATION

1. I/We have read the instructions appended in the DTCN.

2. I/We agree that the decision of the Govt. of Odisha/ **Executive Engineer, L.I. Division, Kendujhar** in selection of Bidders will be final and binding upon me/us.

3. All the information on furnished herewith are correct to the best of my/our knowledge and belief. In case of any information or documents furnished found to be false or incorrect, I / we have no objection if my / our tender is rejected.

4. I/We agree that I/We have no objection if inquiries are made about construction work and its related areas regarding all projects and works listed by us in the accompanying sheets or any other enquiry on information furnished herewith in the accompanying sheets.

5. I/We agreed that I/We have no objection if our past construction works are inspected by any authority of Govt. of Odisha to assess the quality of construction.

Date:
Place:

Signature
Name & Designation
Name of the organisation

(As per Schedule C: for rigs only)

DOCUMENTS OF OWNED RIGS AND MACHINERIES

Sl No	Name of the Rigs / Machineries with Regd. No.	Identification No/ Engine/ Chassis No	Capacity	Year of purchase	Condition (working/ break down)	Proof of owner ship furnished/ not furnished	Remarks
1	2	3	4	5	6	7	8

N.B.: (i) Attested copy of R.C. Book of Rigs and Machineries stated above are to be enclosed.

Document of owned Rigs deployed in works
Outside the State and proposed to be deployed in this work

(To be filled in by authority under whom the rigs are deployed (if any) / self certification)

Sl. No.	Name of the rigs/ Regd. Nos.	Identification No./ Engine / Chassis No.	Capacity	Year of purchase	Condition (working / break down)	Since when deployed under him.	When it is likely to be released from current assignment	Re mar ks
1	2	3	4	5	6	7	8	9

Dated Signature of Bidder

Dated Signature of authority
with address and seal (if any)

SECTION – 3

INFORMATION REGARDING BIDDER

(To be filled in by the Bidder)

A. In case of individuals:

i. Name of Business :

ii. Whether his business is registered :

iii. Date of commencement of business :

iv. Whether he pays income tax each year. :
If yes, furnish particulars.

B. In case of Partnership:

i. Names of Partners :

ii. Whether partnership is registered. :

iii. Date of registration of partnership agreement of the firms.
(supporting documents to be submitted) :

iv. In case, income tax is paid by each Partner, the details be furnished. :

C. In case of limited Liability Company:

i. Amount of paid up capital. :

ii. Names of Directors. :

iii. Date of registration of the Company. :

iv. Copies of the last five year's balance sheets of the Company. :

Signature of the Bidder

SECTION - 4

DECLARATION BY THE BIDDER / AFFIDAVIT

1. I/We have made field check / visited the site, studied the data provided by Odisha Lift Irrigation Corporation and have fully been acquainted myself with the local situation regarding materials, labour and the factors pertaining to the work before submitting the tender.

2. I/We have carefully studied the conditions of the contract specification and other documents of this work and I/We agree to execute the same accordingly.

3. I/We solemnly pledge that I/We shall be sincere in discharging my duties as responsible Bidder and complete the work within the prescribed time limit. I/We shall submit detailed construction programme with target dates for various items and stages of work keeping in view the time limit and shall accordingly arrange for necessary labours, materials, and equipments etc., punctually. In case there are deviations from the construction programme, I/We shall abide by the decision of the Engineer-in-charge for revision of the programme and shall arrange for labour, materials, equipments etc

4. I/We shall follow all rules and regulations of the state in force with regard to engagement of labour for the work.

5. The documents furnished with the tender are correct to the best of my/our knowledge and belief and if any information found to be incorrect in future, OLIC has the liberty to take any action as deemed fit.

Signature of the Bidder

.

SECTION – 5

FORM OF AGREEMENT

This contract made the …… day of……, …….. between the Executive Engineer, L.I. Division Kendujhar (hereinafter called "the employer" and…… (name and address of Bidder) (hereinafter called "the Service Provider") of the other party).

WHEREAS the Employer is desirous that the Bidder executes

……

……(Name and identification number of contract) (hereinafter called "the Works") and the employer has accepted the Bid by the Bidder for the execution and completion of such works and the remedying of any defects therein, at a contract price of Rs……..

NOW, THEREFORE IT IS HEREBY AGREED BETWEEN THE PARTIES AS FOLLOWS:

1. In this contract, words and expressions shall assume the same meanings as are respectively assigned to them in the conditions of Contract hereinafter referred to and they shall be deemed to form and be read and construed as part of the Agreement.
2. In consideration of the payments to be made by the employer to the Bidder as hereinafter mentioned, the Bidder hereby covenants with the Employer to execute and complete the works and remedy the defects therein in conformity in all aspects with the provision of the contract.
3. The Employer hereby covenants to pay the Bidder in consideration of the execution and completion of the works and in remedying the defects wherein the contract price or such other sum as may become payable under the provisions of the contract at the times and in the manner prescribed by the Contract.
4. The following documents shall be deemed to form and be read and construed as part of this contract, viz:

    i) Letter of acceptance
    ii) Work order
    iii) Bidder's bid
    iv) Bidding data
    v) General conditions of contract (including special conditions of contract)
    vi) Specifications
    vii) Drawings
    viii) Bill of quantities
    ix) Any other documents listed in the contract data as forming part of the contract.
    x) Drawing and design of structure(s) or part thereof submitted by the Bidder and duly approved by the competent authority after this Agreement.
    xi) Condition for supply of materials.
    xii) Conditions for failed Medium Deep Tube wells.

IN WITNESS WHEREOF the parties have caused this contract to be executed the day and year first before written.

Binding signature of employer signed by……

(for and on behalf of the Odisha Lift Irrigation Corporation Ltd.)

Binding signature of Bidder signed by……(for and on behalf of …….. duly authorised vide Resolution No…… dated……. of the Board of Directors of ……)

In the presence of
(Witnesses)

1.

2.

Executive Engineer,
L.I. Division, Kendujhar

Bidder

SECTION-6

CONDITIONS OF CONTRACT

6.1 The party whose tender is accepted hereinafter called the Service Provider is to provide everything of every sort and kind which may be necessary and requisite for the due and proper execution of the several works included in the contract according to the true intent and meaning of the drawings and specification taken together, which are to be signed by the **Executive Engineer** herein after called the Executive Engineer and the Bidder whether the same may or may not be particularly described in the specification or shown on the drawing provided that the same are reasonably and obviously to be inferred there from and in case of any discrepancy between the drawings and the specifications the Executive Engineer is to decide which shall be followed.

6.2 The Bidder is to set out the whole of the works in conjunction with an officer to be deputed by the Executive Engineer and during the progress of the works to amend on the requisition of the Executive Engineer any errors which may arise therein and provide all the necessary labour and materials for such works. The Bidder is to provide all plant, labour and materials, which may be necessary and required for the works. All materials and workmanship are to be the best of their respective kinds. The Bidder is to leave the works in all respects clean and perfect at the completion thereof.

6.3. The Bidder shall not employ for the purpose of this contract any person who is below the age of twelve years, and shall pay to each labourer, for the work done by such labourer, fair wages. Fair wages means wages whether for time or piecework, prescribed by the State P.W.D. provided that where higher rates have been prescribed under the minimum wages Act, 1948, wages at such higher rates should constitute fair wages.

The Executive Engineer shall have the right to enquire into and to decide any complaint alleging that the wages paid by the Bidder to any labourer for the work done by such labourer is less than the wages paid for similar work in the neighbourhood.

The Officer-in-charge of the work shall have the right to decide whether any labourer employed by the Bidder is below the age of twelve years and to refuse to allow any labourer whom he decides to be below the age of twelve years, to be employed by the Bidder. The Contractor's shall observe all applicable regulations regarding safety on the Site. The Supplier shall be entitled to use for the purpose of performing the Services such supplies of electricity and water as may be available on the Site and shall provide any apparatus necessary for such use. The Supplier shall pay the Purchase at the applicable tariff plus the Purchaser's overheads, if any, for such use. Where such supplies are not available, the Supplier shall make his own arrangement for provision of any supplies he may require.

6.4. Complete copies of the drawing and specifications signed by the Executive Engineer and the same or copies thereof are to be kept with the works in-charge of the Bidder's agent which is to be constantly kept on the ground by the Bidder and to whom instructions can be given by the Executive Engineer. The Bidder is not to sublet the works or any part thereof without the permission of Executive Engineer.

6.5 The Executive Engineer is to have at all times access to the works, which are to be entirely under his control. He may require the Bidder to dismiss any person in the Bidder's employ upon the works who may be incompetent or misconduct himself and the Bidder is forthwith to comply with such requirements.

6.6.1 The Bidder is not to vary or deviate from the drawings or specifications or execute any extra work of any kind whatsoever unless upon the authority of the Executive Engineer to be sufficiently shown by any order in writing, by any plan or drawing expressly given and signed by him as an extra or variation or by any subsequent written approval signed by him. In case of daily labour all vouchers for the same are to be delivered to the Executive Engineer or the Officer-in-Charge at least during the week following that in which the work may have been done and no day work shall be allowed unless authorised by the Executive Engineer and no such authority shall be given if the work is capable of being measured and being paid for at an agreed rate.

6.6.2 Any authority given by the Executive Engineer for any alterations or addition in or to the works is not to vitiate contract but all additions omissions or variations made in carrying out the works are to be measured and valued and certified by the Executive Engineer and added to or deducted from the amount of the contract as the case may be at rates in accordance with the sanctioned schedule of rates in force at the time when the particular item of work was commenced with approval of **Executive Engineer, L.I. Division, Kendujhar**. In those cases in which rates do not exist, the **Executive Engineer, L.I. Division, Kendujhar** will fix the rates to be paid and his decision shall be final.

Conditions:-

a) Executive Engineer reserves the right to pre-close the contract, increase/decrease the quantities of work in any of the district or withdraw any district and also add any new districts.

b) Selected sites can be changed by Executive Engineer/ offer new sites after drilling failure.

c) **Executive Engineer, L.I. Division, Kendujhar** reserves the right to increase/decrease the period of completion depending on the workload.

6.7 **Extension of Time & Variations**:

6.7.1 If the Service Provider shall desire an extension of time for completion of the work on the ground of his having been come across with unavoidable hindrance in its execution or any other grounds he shall apply in writing to competent authority within 30 days of the date of the hindrance on account of which he desires such extension as aforesaid and the authority shall if in his opinion (which shall be final) as reasonable ground be shown thereof authorized such extension of time if any, as may in his opinion, be necessary or proper. The authority shall at the same time inform the Bidder whether the authority claims compensation for delay, in case there is any delay in execution due to land or rise in cost of materials and labour or any reason whatsoever beyond the control of authority, the Bidder is bound to execute the work as per the terms and rates in the contract and no monetary claim on such account will be acceptable to the authority but extension of time, proportionate to the delay in execution may be granted by the authority considering the merit of the case. The competent authority reserves the right to take any expert advice of any Committee/Secretary/Legal Advisor/ Engineer associated with while considering the application of the Bidder for extension of time and can impose any condition which shall be binding on the Bidder.

6.7 2 Variations

All Variations shall be included in updated Programs produced by the Contractor.

6.7.3 Payments for Variations

a. The Contractor shall provide the Engineer with a quotation (with breakdown of unit rates) for carrying out the Variation when requested to do so by the Executive Engineer. The Executive Engineer shall assess the quotation, which shall be given within seven days of the request or within any longer period stated by the Executive Engineer and before the Variation is ordered.

b. If the work in the Variation corresponds with an item description in the Bill of Quantities and if, in the opinion of the Executive Engineer, the quantity of work above the permissible limit or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in form of new rates for the relevant items of work.

c If the Contractor's quotation is unreasonable (or if the contractor fails to provide the Engineer with a quotation within a reasonable time specified by the Executive Engineer in accordance with above Clause), the Executive Engineer may recommend the Variation and the **Executive Engineer, L.I. Division, Kendujhar**, Odisha shall make a change to the Contract Price which shall be based on Executive Engineer's own forecast of the effects of the Variation on the Contractor's costs.

d The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.

6.8 All works and materials brought and left at site by the Bidder or by his orders for the purpose of forming part of the works are to be considered to be the property of the **Odisha Lift Irrigation Corporation Ltd.** and the same are not to be removed or taken away by the Service Provider or any other person without the specific permission in writing of the Executive Engineer but the **Executive Engineer, L.I. Division, Kendujhar** will not be liable for any loss or damage which may happen to or in respect of any such work or materials either by the same being lost or stolen or injured by weather or otherwise.

6.9 The Executive Engineer has full power to require the removal from the premises of all materials which, in his opinion, are not in accordance with the specification and in case of default, the Executive Engineer is to be at liberty to sell such materials and to employ other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Executive Engineer is also to have full power to require other proper materials to be substituted and in case of default, the Executive Engineer may cause the same to be supplied and all costs which may attend such removal and substitution are to be borne by the Bidder and may be recovered from the sale proceeds of such rejected materials when necessary, the balance, if any, being kept in deposit in the Bidder's favour.

6.10 If in the opinion of the Executive Engineer any of the works have been executed with improper materials or defective workmanship, the Bidder is then required by the Executive Engineer forthwith to re-execute the same and to substitute proper materials and workmanship and in case of default of the Bidder in so doing within a week, the Executive Engineer is to have full power to employ other to re-execute the work and the cost thereof shall be borne by the Bidder.

6.11 Any defects, shrinkage or other faults which may appear within 18 (eighteen) months from the completion of the work arising out of defective or improper materials or workmanship are upon the direction of the Executive Engineer to be amended and made good by the Bidder at his own cost unless the Executive Engineer for reasons to be recorded in writing shall decide that they ought to be paid for and in case of default, the Odisha Lift Irrigation Corporation Ltd. may recover from the bidder the cost of making good the works.

6.12 From the commencement of the works to the completion of the same they are to be under the Bidder's charge. The Bidder is to be held responsible for and to make good all injuries, damages and repairs occasioned or rendered necessary to the same by fire or other causes and they are to hold the Odisha Lift Irrigation Corporation Ltd. harmless from any claims for injuries to persons or for structural damage to property happening from any neglect, default, want of proper care or misconduct on the part of the Bidder or of any one of his employees during the execution of the works.

6.13 The Executive Engineer is to have full powers to send workmen upon the premises to execute fittings and other works not included in the contract for whose operations the Bidder is to afford every reasonable facility during ordinary working hours provided that such operations shall be carried on in such a manner as not to impede the progress of the work included in the contract but the Bidder is not to be responsible for any damage which may happen to or be occasioned by any such fittings or other works.

6.14 **Liquidated Damages**

6.14.1 The Bidder is to commence work comprised in this tender immediately on receipt of cluster-wise orders to commence from the Executive Engineer, OLIC Division concerned. The whole work, including all such additions and variations as aforesaid (but excluding such, if any, as may have been postponed by an order from the Executive Engineer), shall be completed in every respect within **3(Three) Calendar months**, from the date of the aforesaid orders to commence and if from any cause whatsoever other than wilful obstruction or default on the part of the Executive Engineer or his staff and except as hereinafter provided, the whole of such work shall not be finished to the satisfaction of the Executive Engineer within the said period, the Bidder shall forfeit and pay to **Odisha Lift Irrigation Corporation Ltd.** by way of ascertained and liquidated damages for each default and by way of penalty at each stage of mile stone as detailed in

following para (s) and Data Sheet subject to **a maximum of 10%** (ten percent) of the uncompleted tendered value work. The compensation shall be @1.5% per month to be computed on per day basis subject to **a maximum of 10%** (ten percent) of the uncompleted tendered value work as per OPWD Code.

Milestone dates:

	Physical Works target	Period from issue of Work Order	Liquidated damage be levied per day per Cluster and that for the mile stone are as under :
Milestone 1 i.e.	Completion of Tube well drilling and declared successful in yield test	1 (One) months from issue of "Cluster Work Order-Drilling".	Rs 1000.00
Milestone 2 i.e.	Completion of Electrification work	2 (Two) months from issue of "Cluster Work Order-Electrification"	Rs 2500.00
Milestone 3 i.e.	Completion of all items of work in The BOQ	3 (Three) months from issue of "Cluster Work Order-Drilling".	Rs 3000.00

(Mile stone for computation of "Liquidated Damage" for individual cluster and shall be considered from the date of issue of cluster job order for drilling)

6..14.2 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in Cl. 6.14.1 above for each day that the Completion Date is later than the Intended Completion Date (for the whole of the works or the milestone as stated . The total amount of liquidated damages shall not exceed the amount defined in the Cl. 6.14.1. The Employer may deduct liquidated damages from payments due to the Contractor. "Time is the essence of the contract and payment or deduction of liquidated damages shall not relieve the contractor from his obligation to complete the work as per agreed construction program and milestones or from any other of the contractor's obligations and liabilities under the contract."

6.14.3 If the Intended Completion Date is extended after liquidated damages have been paid, the Engineer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate.

6.15 The Bidder shall be paid within 30 working days commencing from the date on which work is completed in all respect a sum equal to **95 percent of total value** of work done since the last payment according to the certificate of the Executive Engineer. The remaining 5% will be retained by the Executive Engineer as security for the due performance of Contract and Bidder shall not be entitled to get a refund of this security till **18 (eighteen**) months after handing over of the work. Provided always that no final or other Certificate is to cover or relieve the Bidder from the liability under the provision of Clause-6.11, whether or not the same be notified by the time or subsequently to the granting of any such Certificate.

6.16 A Certificate of the Executive Engineer or an award of the refer hereinafter referred to as the case may be showing the final balance due or payable to the Bidder is to be conclusive evidence of the works having been duly completed and that the Bidder is entitled to receive payment of the final balance, but without prejudice to the liability of the Bidder under the provisions of clause-6.11.

6.17 The Executive Engineer shall make payment of work in full or part thereof those shall have been certified, subject to availability of fund.

6.18 Prices are firm.

6.19 If at any time after the commencement of the work the OLIC shall for any reason whatsoever not require the whole thereof as specified in the tender to be carried out the Engineer-in-charge shall give notice in writing of the fact to the Bidder who shall have no claim to any payment or compensation whatsoever on account of any profit or advantage, which he might have derived from execution of the work in full but which he did not derive in consequence of the full amount of the work not having been carried out, neither shall he have any claim for compensation by reason of any alterations having been made in the original specification, drawings, designs and instruction which shall involve any curtailment or increase of the work as originally contemplated.

6.20 **Defects Liability Period:**

The defect liability is **18 (eighteen**) months from the date of handing over of work to the beneficiary and electric line and sub- station to the distribution company, whichever is later.

6.21 Bidder liable for damage done & for imperfection for six months after certificate:

If the Bidder or his work people or servant shall break, defence, injure or destroy any part of a building or structure in which they may be working or any building, road, fence, enclosure or grass land cultivated ground continue to the premises on which the work or any part of it is being executed or in any damage shall happen to the work while in progress from any cause whatsoever or any imperfection become apparent in it within six months from the date of the final certificate of its completion shall have been given by the Engineer-in-charge, as aforesaid, the Bidder shall make the same good at his own expenses, or in default the Engineer-in-charge may cause the same to be made good by other workman and deduct the expenses of which the certificate of the Engineer-in-charge shall be final from any sums that may be then or at any time thereafter may become due to the Bidder or from his security or the proceeds of sale thereof or a sufficient portion thereof and the Bidder shall be liable to pay of the expenses not so recovered by the Engineer-in-charge.

6.22 **Action where no Specification**: In the case of any class or items of works for which there is no such specification as mentioned in file, if such work shall be carried out in accordance with the detailed standard specification of Odisha , as followed by the State PWD/ OLIC and in the event of there being no specifications born in the said standard specification of Odisha for such items of work, then in such case said item of work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-charge.

6.23 Payment on intermediate certificate to be regarded as advance upto an amount not exceeding 75 % of the value of such work , provided that they are of an imperishable nature and that a formal agreement is drawn with the contractor. A bill shall be submitted by the Bidder each month on or before the date fixed by the Engineer-in-charge for all works executed in the previous month and the Engineer-in-charge and/or Assistant Engineer and/or Junior Engineer in immediate charge of the work shall take the requisite measurements for the purpose of having the same verified, and the claims for as admissible adjusted if possible before the expiry of ten days from the presentation of the bill. If the Bidder does not submit the bill within the time fixed as aforesaid, the Engineer-in-charge and/or his Engineering subordinates shall measure up the said work in the presence of the Bidder, whose counter signature to the measurement list will be sufficient warrant, and the Engineer-in-charge and/or Assistant Engineer and/or his Engineering subordinates shall prepare a bill from such list which shall be binding on the Service Provider in all respects. Payment shall be made to the Bidder in all respects.

The Engineer-in-charge will deduct @ 5% (five percent) of the value of each running bill preferred by the Bidder if any, on account of works done, and such sum or sums to be held in deposit as a further security for the due performance of the condition of the contract provided always that the Executive Engineer may refuse to make such monthly payments in his opinion. The progress of the work or the conduct of the Bidder is not satisfactory or the Bidder has in any other may done or neglect to do anything as to make it appear doubtful to the authority as to whether the works will be completed by the Bidder in accordance with his contract, or has failed to comply with any instruction or order of Engineer personal. All such interim

payments from time to time shall be regarded as payments by way of advance against the final payment only and not as payments of work actually done and completed and shall not preclude the requirement of bad, unsound and imperfect or unskilful work to be removed and taken away and for reconstructed or re-erected, or be considered as an admission of the due performance of the contract, of any part thereof in any respect, or accrual of any claim not shall it conclude, determine or affect in any way the powers of Engineer-in-charge and/or Assistant Engineer and/or the Executive Engineer under these condition or any of them as to the final settlement of adjustment of the accounts or otherwise or in any other way vary or affect this contract. The Bidder shall submit the final bill within one month of the date for completion of the work failing which the Engineer-in-charge or his authorized representatives in the presence of the Bidder shall prepare the final bill. For recording final measurement of the work, the Engineer-in-charge or his authorized shall serve a notice upon the Bidder stipulating therein the date fixed for recording such measurement. If the Bidder fails to attend the recording of final measurement by the Engineer-in-charge or his authorized representative on the date of stipulated, the Engineer-in-charge may at his discretion get the measurements recorded ex-parte or fix up another date as per his own convenience. Such measurements and the total amount payable to the Bidder as certified by the Engineer-in-charge shall be final and binding on all parties.

SECTION-7
SPECIAL CONDITIONS OF CONTRACT

7.1 Changes in Constitution of Firm:

In the case of tender by a partnership firm, any change in the constitution of the firm shall be forth with notified by the Bidder to the Executive Engineer/Superintending Engineer for his information. In case of failure to notify the change in the constitution within 15 days, the Executive Engineer/Superintending Engineer may by notice in writing, rescind the contract and the security deposit of the Bidder shall thereupon stand forfeited and be absolutely at the disposal of the Executive Engineer, L.I. Division, Kendujhar and the same consequence shall ensure as if the contract had been rescinded thereof and in addition the Bidder shall not be entitled to recover or be paid for any work there for actually performed under the contract.

7.2 Action where no Specification is mentioned:

In the case of any class of items of works, for which no specification is mentioned, such work(s) shall be carried out in accordance with the detailed standard specifications of Odisha as followed by the State OPWD/ OLIC and in the event of there being no specification, in such case the said item of work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-charge.

7.3 Workmen Compensation Act VIII of 1923:

The Governor of Odisha shall be entitled to recover in full from Bidder any amount that the Governor of Odisha may be liable to pay under Workman's Compensation Act VIII of 1923 to any workman employed in course of execution of any part of the work covered by this contract.

7.4 Jurisdiction in the Event of Dispute:

That for the purpose of jurisdiction in the event of dispute if any, the contract should be deemed to have been entered into within the State of Odisha and it is agreed that neither party to this agreement will be competent to bring a suit in regard to the matters covered by this contract at any place outside Odisha.

7.5 Lighting & Sanitary Arrangement:

Lighting & Sanitary arrangement and supply of drinking water will be made by the Bidder at his own cost for his labour camp.

7.6 Payment of Duties, Levies & Taxes:

The Bidder shall bear all taxes including duties, levies, including work contract tax, Income tax, royalties, fair weather charges, and any other taxes where necessary except GST which will be

applicable extra as admissible. Statutory deduction of taxes as applicable shall be done from each running bill.

7.7 Site Clearance:

After the work is finished or completed, surplus materials and debris are to be removed by Service Provider at his own cost and preliminary works such as GSTs, mixing platforms, level pillars, temporary sheds and go-downs etc. are to be dismantled and all such materials removed from site. The site involved in the construction activities should be cleared and dressed properly with outward slope away form the structure. After the work is completed in all respects as per the contract, the Bidder shall vacate the site within three months from the date of completion & commissioning, by making good the damages if any.

7.8 Works to be carried out

The work to be carried out under the contract shall include all materials, labour, tools and plants, equipment and transport which may be required in preparation of and for in the full and entire execution and completion of the works. The description given in the schedule of quantities/scope of work shall, unless otherwise stated, be held to include wastage on materials, carriage & cartage, carrying and return of empties, hoisting, setting, fitting and fixing in position and all other labours necessary in and for the full and entire execution and completion of the work as aforesaid in accordance with good practice and recognized principles.

7.9 Sufficiency of Tender

The Bidder shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the rates and prices quoted in the schedule of quantities (DTCN part-II Financial Bid), which rates and prices shall, except as otherwise provided, cover all his obligations under the contract and all matters and things necessary for the proper completion and commissioning of the works.

7.10 Rates:

The Bidder shall quote their offer on 'percentage rate' basis for the complete work in all respect on 'Turnkey Basis'as 2.2 of DTCN. The offer shall be inclusive of cost of all materials, labour, T&P inclusive of all duties, levies, cess, taxes of Central and State Government including Works Contract tax with, tollages, royalties, packing and forwarding, transportation, insurance,loading&unloading, storage, watch and ward, delivery of the materials to the site etc. and all other expenses incidental there to for successful completion, testing & commissioning of the work except GST which will be paid extra as applicable.

7.11 Transportation:

The Bidder shall be responsible for the transportation of all materials, tools and plant, equipment and machinery to the work site as may be required at site.

7.12 Custody of the Materials:

The Bidder shall be responsible for safe custody of the materials at site and the **Executive Engineer, L.I. Division, Kendujhar** or the subordinate office will not be responsible for any loss or damage of the property at site.

7.13 Construction Schedule:

7.14 The Bidder shall submit a detailed work schedule in the form of Pert Chart along with his tender / before signing of agreement indicating the detailed break-up of the job. This will include all operations from procurement of materials to final testing at site to be indicated in detail with reference to the time period for each, failing to achieve the target (as per the works programme) may resulting to termination of agreement and cancellation of work order with imposition of penalty as deem proper.

The construction schedule as submitted by the Bidder shall be revised by the Executive Engineer and approved with necessary modification if any after acceptance of the tender. The Bidder shall furnish 6 (six) copies of the approved schedule within a time to be intimated to him before drawl of the agreement. The approved Pert Chart shall form a part of the agreement. This approved schedule shall be binding on the Bidder.

In addition, the Bidder shall submit Bar Chart in commensurate with the approved PERT Chart within 15(Fifteen) days of signing of the agreement. The PERT Chart on approval by the Executive Engineer shall be used to monitor the various project activities at micro level.

7.14 Initial Security Deposit:

The Bidder whose tender is selected for acceptance shall make an security deposit of **2% (two percent)** of the accepted tender amount which forms the initial security deposit (ISD) within 7(Seven) days of issue of letter of intent and sign the agreement in the prescribed form .The ISD shall be deposited in shape of NSC / POTD / Post Office Savings Bank Account / K.V.P/Bank Deposit Receipt (STDR) in Schedule Bank duly pledged in favour of the **Executive Engineer, L.I. Division, Kendujhar.** No tender shall be accepted unless required amount of security money is deposited.

In addition to the **Security Deposit @ 3%** of the bill amount shall be deducted from each bill towards the security deposit. The earnest money deposit, the initial security deposit before and after acceptance of tender together with the subsequent deduction from the Bidder's bill shall form part of the security deposit equivalent to 5% of the contract value for the due fulfilment of the contract.

The security deposit is refundable after **18 (eighteen)** months from the date of satisfactory completion & energisation of the work provided that the Bidders final bill has been paid. If however there is inevitable delay in payment of final bill the earnest money deposit and initial security deposit forming part of the security deposit may be refunded on orders of competent authority.

7.15 Monitoring of the Project:

Time is the essence of the contract. The execution of the project shall be closely monitored to ensure that quality; cost & time of the project are not compromised in any manner.

The Bidder shall submit monthly progress reports in a format as may be prescribed by the Engineer-in-charge. The monthly progress report shall be evaluated by the Executive Engineer vis-à-vis the approved bar chart & PERT Chart & any deficiency observed thereto shall be communicated to the Bidder. The Bidder shall have to make up the deficiencies within the specific time period communicated to him by the Executive Engineer failing which the service provider shall be liable for action.

In addition, the Bidder shall submit monthly day wise work program one week in advance to Executive Engineer for approval under intimation to the **Executive Engineer, L.I. Division, Kendujhar** to ensure speedy implementation of the work and effective monitoring at all levels. Failing to do so shall also invite action.

7.16 Site Order Book:

A site Order Book shall be issued to the Bidder by the Engineer-in-charge or his representative. The Bidder shall keep this Book always at site and any special order or instruction to be issued to the Bidder shall be recorded in this Book by the Engineer-in-charge or his representative. The Bidder shall sign all orders and instructions as token of his knowledge about the same. The site Order Book shall be the property of the department but will remain during the period of the progress of the work with the Bidder. The safe custody of the site Order Book during this period shall be the responsibility of the Bidder. After completion of the work, the Book shall be returned back by the Bidder to the Engineer-in- charge, which will be enclosed in the final bill.

7.17 Guarantee:

Default liability period is **18(eighteen) months** from the date of preliminary acceptance of the work conforming to provisions in scope of work. During this period, the Bidder shall replace the defective materials if any or rectify the defects if any at his own cost as pointed out by the Engineer-in-charge to the satisfaction of the later.

7.18 Land:

The department may provide land if available for construction of site office to the Bidder on payment of usual rent.

7.19 Unilateral stoppage of work:

Unilateral stoppage of work by the Bidder without prior written permission of the Engineer-in-charge shall be considered as breach of contract and the **Executive Engineer, L.I. Division, Kendujhar** on behalf of Governor of Odisha reserves the right to take such actions as it may be deemed fit.

7.20 Resident Engineer:

The Bidder shall engage for this work competent, qualified and authorised resident Engineers and Assistants to the satisfaction of the Engineer-in-charge. The Resident Engineer shall represent the Bidder in his absence in receiving directions from officers of the Department, which will be binding on the Bidder.

7.21 Force Majeure:

Neither the Bidder nor the Executive Engineer shall be considered in default in delayed performance of its obligation if such performance is prevented or delayed because of work to hostilities, revolution, civil commotion, epidemic, accident, fire, cyclone, flood, earthquake or because of any law and order proclamation, regulations or ordinance of the Government thereof or because of any act of God or for any cause beyond reasonable control of the party affected. Should one or both the parties be prevented from fulfilling their contractual obligations a state of force majeure lasting continuously for a period of 6 months, the two parties shall consult each other regarding the future execution of the contract for mutual settlement.

7.22 Damages to Persons and Property:

The Bidder shall take every precaution not to damage or injure adjoining or other property of any persons. He shall indemnify and keep indemnified the employee against all claims for injuries or damages to any person or any such property (including surface or land or crops in site) which may arise out of or in consequence of any negligence or default on the representatives and against all claim, demands proceedings damages, costs, charges and expenses whatsoever in respect of or in relation thereto. The Department/Corporation does not take any responsibility on this account.

7.23 Attention to Urgent Works:

If any urgent work in the opinion of Engineer-in-charge becomes necessary to be executed and the Bidder is unable and unwilling at once to carry out, the Engineer-in-charge may by his own or through other agency carry it out, as he may consider necessary. All expenses incurred on it shall be recoverable from the Bidder or be adjusted against any sum payable to him.

7.24 Safety Devices:

i) Scaffolding: Suitable scaffolding shall be provided for workmen for all works that can not be safely done from the ground or solid construction except such short period of work as can be done safely from the ladders. When a ladder is used an extra labour shall be engaged for holding the ladder and if the ladder is used in carrying the materials, suitable foot holds and handholds shall be provided on the ladder.

The Engineer-in-charge will have the right to inspect the scaffolding and centring etc. for the work and can reject partly or fully such structure if found defective in his opinion.

ii) ***Working platforms***: Working platforms, gangways and stairways shall be constructed such that they do not sag unduly or unequally. If the height of the platforms or gangway or stairway is more than 3.25 meters above the ground or floor level, it shall be closely guarded, have adequate width and suitably fenced.

iii) **Safe means of access***:* Safe means of access shall be provided to all working platform and other working places.

iv) **Precaution *against electrical equipment***: Adequate precaution shall be taken to prevent danger from electrical equipment. Hand lamps shall be provided with Mesh guard, wherever required.

v) ***Preventing public from accident****:* No materials on any of the sites shall be so stacked or placed as to cause danger or inconvenience to any person or public. The Bidder shall provide all necessary fencing and light to protect the public from accident and shall be bound to bear expenses of defence or any suit action or other proceedings at law that may be brought by any persons for injury sustained owing to neglect of the above precaution and to pay any damages and cost which may be awarded in any such suit action or proceedings to any such person or which may with the consent of the Bidder , be paid to compromise any claim by any such person.

The Bidder not to come cause blockage of traffic /disruption of the traffic
vi) ***Demolition***: Before any demolition work is commenced and also during process of work: a) all roads and open areas adjacent to the work site shall either be closed or suitably protected, b) no electric cable or apparatus which is liable to be a source of danger shall remain electrically charged, c) all practical steps shall be taken to prevent danger to persons employed from the risk of fire, explosion or flooding, d) no floor roof or other parts of the building shall be so over loaded with debris or materials as may render it unsafe.

vii) ***Personal safety equipment***: All personal safety equipment shall be made adequately available by the Bidder for use of persons employed at the site of work and maintained in a condition suitable for immediate use. The Bidder shall take adequate steps to ensure proper use of the equipment by persons concerned.

viii) ***Precaution against fire****:* Suitable fire extinguishers, water and sand buckets shall be provided at the work site to tackle situations of fire.

7.25 Rescission of Contract:

Subject to other provisions contained in this clause the Executive Engineer of OLIC may without prejudice to his any other rights or remedy against the Bidder in respect of any delay, inferior workmanship, any claims for damages and/or any other provisions of this contract or otherwise, and whether the date of completion has or has not elapsed, recommend the accepting authority to rescind the contract in any of the following cases:

i) If the Bidder having been given by the Executive Engineer a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper or un-workmen like manner shall omit to comply with the requirement of such notice for a period of seven days thereafter.

ii) If the Bidder being a company shall pass a resolution on the court shall make an order that the company shall be wound up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall arise which entitle the court or the creditor to appoint a receiver or a manager or which entitle to court to make a winding up order.

iii) If the Bidder has, without reasonable cause, suspended the progress of the work with due diligence so that in the opinion of the Executive Engineer (which shall be final & binding) he will be

unable to secure completion of the work by the date of completion and continues to do so after a notice in writing of seven days from the Executive Engineer.

iv) If the Bidder fails to comply with the provisions of clause-7.15 & other relevant clauses mentioned elsewhere in this DTCN.

v) If the Bidder fails to complete the work within the stipulated date or items of the work with individual date of completion, if any stipulated, on or before such date(s) of completion and does not complete them within the period specified in a notice given in writing in that behalf by the Executive Engineer.

When the Bidder has made himself liable for action under any of the cases aforesaid, the **Executive Engineer, L.I. Division, Kendujhar** shall have the powers to rescind the contract (of which rescission notice in writing to the Bidder under the hand of Executive Engineer shall be conclusive evidence), **20% of the value of the left over work** will be realized from the Bidder as Penalty.

7.25-1 In case of rescission of contract as per clause 7.25 the Bidder shall have no claim to compensation for any loss sustained by him by regions of having purchased or procured any materials or entered any engagement on account of or with a view to execute the work / performance of the Bidder.

7.26(a) Conditions for Reimbursement of Levy/Taxes if Levied after Receipt of Tenders.

i) All tendered rates shall be inclusive of all taxes (except GST) and levies payable under respect statutes. However, pursuant to the Constitution (46th Amendment) Act, 1982, if any further tax or levy is imposed by Statute, after the last stipulated date for the receipt of tender including extensions if any and the Bidder thereupon necessarily and properly pays such taxes/levies the service provider shall be reimbursed the amount so paid, provided such payments, if any, is not, in the opinion of the **Executive Engineer, L.I. Division, Kendujhar** (whose decision shall be final and binding on the Bidder) attributable to delay in execution of work within the control of the Bidder.

ii) The Bidder shall keep necessary books of accounts and other documents for the purpose of this condition as may be necessary and shall allow inspection of the same by a duly authorised representative of the Department and/ or the Engineer-in-Charge and further shall furnish such other information/ document as the Engineer-in-Charge may require from time to time.

iii) The Bidder shall, within a period of 30 days of the imposition of any such further tax or levy, pursuant to the Constitution (Forty Sixth Amendment) Act, 1982, give a written notice thereof to the Engineer-in-Charge that the same is given pursuant to this condition, together with all necessary information relating thereto.

7.26(b) Other statutory duty, Tax such as I.T., GST., Cess etc. will be deducted at sources from the bills of the Bidder as applicable and deposited with concerned authority.

7.26(c) Royalty at the prevailing rate on minerals will be deducted from the bills of the Bidder as applicable and deposited with concerned authority.

7.27 Fair wages clause:

Clause 34(a) – The Bidder shall not employ for the purpose of this contract any person who is below the age of twelve years and shall pay to each labourer for work done by such labourers fair wages.

Explanation – "**Fair Wage**" means wages, whether for time or piece work prescribed by the State Public Works Department provided that where higher rates have been prescribed under the minimum wages Act 1948 wages at such higher rates should constitute fair wages.

The Executive Engineer shall have the right to enquire into and decide any compliant alleging that the wages paid by the Bidder to any labourer for the work done by such labourer is less than the wages as per sub-paragraph-I above.

The Bidder shall, notwithstanding the provisions of any contract to contrary, cause to be paid a fair wage to labourers indirectly engaged on the work including any labour engaged by his sub-contractors in connection with the said work, as if, the labourers had been immediately employed by him.

In respect of all labour directly or indirectly employed in the works for the performance of the Bidder's part of this agreement, the Bidder shall comply with or cause to be complied with all regulations made by Government in regard to payment of wages, wage period deductions from wages, recovery of wages not paid and deductions unauthorizedly made, maintenance of wage register, wage cards, publication of scale of wages and other terms of employment, inspection and submission of periodical returns and all other matters of a like nature.

The Executive Engineer or Sub-Divisional Officer concerned shall have the right to deduct, from the money due to the Bidder, any such required or estimated to be required for making good the loss suffered by a worker or workers by reason of non-fulfilment of the conditions of the contract for the benefit of the workers non-payment of wages or of deduction made from his or their wages, which are not justified by their terms of the contract or non-observance of the regulations. Money so deducted should be transferred to the workers concerned.

Vis-à-vis, the Government of Odisha, the Bidder shall be primarily liable for all payments to be made under and for the observance of the regulations aforesaid without prejudice to his right to claim indemnity from his sub-contractor.

The regulations aforesaid shall be deemed to be a part of this contract and any breach thereof shall be breach of this contract.

Odisha PWD/Electricity Department Contractor's Labour Requirement

7.27.1 Short title – These regulations may be called "The Odisha Public Works Department Contractor's Labour Regulation".

7.27.2. Definitions – In these Regulations, unless otherwise expressed or indicated the following words and expressions shall have the meaning here by assigned to them respectively, that is to say -

i)"Labour" means a worker employed by a Bidder of the Odisha Public Works Department / directly or indirectly through a sub-contractor or other person, or by an agent on his behalf.

ii) "Fair Wages" means wages whether for time or piece work prescribed by the State Public Works Department provided that where higher rates have been prescribed under the minimum wages Act, 1948 wages at such higher rates should constitute fair wages.

iii) "Bidder" shall include every person whether a sub-contractor or headman or agent employing labour on the work taken on contract.

iv) "Wages" shall have the same meaning as defined in the payment of Wages Act and include time and piece rate wages, if any.

7.27.3. Display of notices regarding wages, etc. -
The Bidder shall –

(a) Before he commences his work on contract display and correctly maintain and continue to display and correctly maintain, in a clean and legible condition, in conspicuous places on the work, notices in

English and in the local Indian language spoken by the majority of the workers, giving the rate of wage prescribed by the State Public Works Department / Electricity Department for the district which the work is done.

(b) Send a copy of such notices to the Engineer-in-charge of the work.

7.27.4. Payment of wages –

(1) Wages due to every worker shall be paid to him direct.

(2) All wages shall be paid in current coin or currency or in both

7.27.5. Fixation of wage period-

(1)The Bidder shall fix the wage period in respect of which the wages be payable.

(2)No wage period shall exceed one month.

(3)Wages of every workman employed on the contract shall be paid before the expiry of ten days, after the last day of the wage period in respect of which the wages are payable.

(4)When the employment of any worker is terminated by or on behalf of the Bidder, the wages earned by him shall be paid before the expiry of the day succeeding the one on which his employment is terminated.

(5)All payments of wages shall be made on a working day.

7.27.6. Wage book and wages cards, etc. -

(1) The Bidder shall maintain a wage book of each worker in such form as may be convenient, but the same shall include the following particulars -

(a)Rate of daily or monthly wages.

(b)Nature of work on which employed

(c)Total number of days worked during each wage period

(d)Total amount payable for the work during each wage period.

(e)All deductions made from the wages with an indication in each case of the ground for which the deduction is made.

(f)Wage actually paid for each wage period.

(2)The Bidder shall also maintain a wage card for each worker employed on the work.

(3)The Executive Engineer may grant an exemption from the maintenance of wage bond, wage cards to a Bidder who, in his opinion – may not directly or indirectly employ more than 100 persons on the work.

7.27.7 Fines and deduction which may be made from wages –

(I) The wages of a worker shall be paid to him without and deduction of any kind except the following -

(a)Fines

(b)Deductions for absence from duty, i.e., from the place of places whereby the terms of his employment he is required to work. The amount of deductions shall be in proportion to the period for which he was absence.

(c)Deductions for damage to or loss of good expressly entrusted to the employed person for custody or for loss of money for which he is required to account where such damage or loss is directly attributable to his neglect or default.

(d)Any other deductions which the Odisha Government may from time to time allow.

(II)No fines shall be imposed on a worker and no deduction for damage or loss shall be made from his wages until the worker has been given an opportunity of showing cause against such fines or deduction.

(III)The total amount of fines which may be imposed in any one wage period on a works shall not exceed an amount equal to five paisa in a rupee of the wages payable to him in respect of that wage period.

(IV)No fine imposed on any worker shall be recovered from him by instalment, or after the expiry of 60 days from the date on which it was imposed.

7.27.8 Register of fines, etc.-

(I) The Bidder shall maintain a register of fines and of all deduction for damage or loss. Such register shall mention the reason for which fine was imposed or deduction for damage or loss was made.

(II)The Bidder shall maintain a list in English and in the local Indian language, clearly defining acts and omissions for which penalty of fine can be imposed. It shall display such list and maintain it in a clean and legible condition in conspicuous places on the work.

7.27.9. Preservation of register -

The wage register, the wage cards and the register of fines, deduction required to be maintained under the regulations shall be **preserved for 18months** after day of the last entry made in them.

7.27.10. Powers of Labour Welfare Officers to make investigation or enquiry-

The Labour Welfare Officers or any other persons authorized by the Odisha Lift Irrigation Corporation Ltd. on their behalf shall have power to make enquiries with a view to ascertaining and enforcing due and proper observance of the fair wage clauses and the provisions of these regulations. He shall investigate into any complaint regarding default made by the Bidder, sub-contractor in regard to such provisions.

7.27.11. Report of Labour Welfare Officers -

The Labour Welfare Officer or others authorized as aforesaid shall such a report of the results of his investigation or enquiry to the Executive Engineer concerned, indicating the extent, if any, to which the default has been committed with a note that necessary deductions from the service provider bill be made and the wages and other dues be paid to the labourers concerned.

7.27.12. Appeal against the decision of Labour Welfare Officer -

Any persons aggrieved by the decision and recommendation of the Labour Welfare Officer or other person so authorized may appeal against such decision to the Labour Commissioner within 30 days from the date of decision forwarding simultaneously a copy of his appeal to the Executive Engineer concerned but subject to such appeal, the decision of the officer shall be final and binding upon the Bidder.

7.27.13. Inspection of register -

The Biddershall also allow inspection of the wage book and wage cards to any of his workers or to his agent at a convenient time and place after due notice is received, or to the Labour Commissioner or any other person authorized by the Odisha Lift Irrigation Corporation Ltd. on his behalf.

7.27.14. Submission of return -

The Bidder shall submit periodical returns as may be specified are schedule time.

7.27.15. Amendments -

The Odisha Lift Irrigation Corporation Ltd. may from time to time, add to or amend these regulations and on any question as to the application, interpretation of effect of these regulations, the decision of the Labour Commissioner or any other person authorized by the Odisha Lift Irrigation Corporation Ltd. in that behalf shall be final.

7.27.15.1 Other terms & conditions which are not part of this tender will be followed as per OPWD code.

7.28 The failure Tube wells should be filled with sand for its closure. It is responsibility of the bidder. No cost for same will be paid extra.

7.29 The terms and conditions of the agreement have been read by Me/Us and I/ We certify that I/We clearly understand them and agree to abide by them.

Witness

Bidder

SECTION – 8

SCOPE OF WORK

8.1. Location: Any site in the district subject to its feasibility basing on NRSA/CGWB/DGWS&I, Bhubaneswar. For the inspection, concerned Executive Engineer will provide the list of sites and location.

District : KENDUJHAR
State : Odisha

8.2 Intent of this Section

The intent of the section is to provide information related to execution of works.

8.3 Scope of Work

(A) Installation of successful Tube wells as per section – 1 are as follows:

(i) Pin pointing of **Tube** well location will be provided by the Engineer-in-charge.

(ii) Upon successful test result subject to minimum criteria of yield (900 LPM) and depth (on approval of engineer in charge) drilling of **Tube** well is to be conducted.

(iii) Upon successful drilling with criteria as mentioned in (ii), yield test will be conducted.

(iv) Upon successful yield test (requirement of 900 LPM.

(v) On the event of failed Tube well, if any, Engineer in charge may provide alternative location, if required.

(vi) The bore hole of failed Tube well should be closed immediately with sand as safety measures.

(vii) Authority will accept only successful Tube well.

(viii) Clustering of successful Tubewells for electrification work and collection of power supply estimate from DISTCOM.

(B) Electrification and Energisation of Tube **wells as per Section-1 are as follows:**

i) Complete design and engineering of all the systems, sub-systems, equipment, material and services.

ii) Providing engineering data, drawings and O&M manuals for Owner's review,

iii) Manufacturing, supply, testing, packing, transportation and insurance from the manufacturer's work to the site.

iv) Receipt, storage, insurance, preservation and conservation of equipment at the site.

v) All Civil and structural works as required.

vi) Fabrication, pre-assembly (if any), erection, testing and putting into satisfactory operation of all the equipment/material including successful commissioning.

vii) In addition to the requirements indicated in this section (Technical specifications), all the requirements as stated in other sections shall also be considered as a part of this specification as if completely bound herewith.

viii) The Bidder shall be responsible for providing all material, equipment and services specified or otherwise which are required to ensure operability, maintainability and the reliability of the complete work covered under this specification.

ix) Survey, Pole spotting for all HT and LT lines and finalisation of substation location.

x) Construction of 11 KV & LT lines.

xi) Construction of D.P. mounted distribution Sub Station of 25 KVA,11/0.4 KV Sub-Station.

xii) Conversion of 2 phase 2 wire to 3phase 3 wire H.T. line.

xiii) All services and activities required to be given contractually, by the Bidder, during warranty period.

(C) Energisation and commissioning:

VI. Installation of submersible pump set in the Tube well at desired depth with due precautions against slipping of the pump set inside the Tube well.

VII. On completion of electrification works i.e. Sub-stations, HT and LT lines and installation of pumping unit, the same is to be inspected successfully by the appropriate authority of Govt. of Odisha and hand over to DISTCOM through OLIC.

VIII. Facilitating execution of electrical Agreement between each beneficiary of the Tube well projects with DISTCOM.

IX. Charging the Electrical installations by DISTCOM.

X. Commissioning the **Tube** well project and test running for at least six hours.

The above scope of works is not exhaustive but gives only an idea about the type of work involved. Any other items / works, which have not been specifically mentioned but required for completeness and soundness of the systems, shall be automatically covered within the scope of work & no extra claim shall be entertained due to such coverage.

The above works shall have to be executed in accordance with the detailed scope of work, drawing/ diagram & specifications given in the Part-I Section-9 and succeeding clauses & other conditions mentioned elsewhere in the DTCN, & subsequent correspondences made if any.

8.4 Site Plan :

The site plan/ plot will be provided by Executive Engineer,

8.5. Site Visit / Field Check:

The Bidder shall inspect the site at his own cost and shall satisfy himself with regard to the nature and extent of the work involved, the actual site conditions, existing facilities & shall collect any other information which may be required before submitting the tender. Any claim afterwards by the Bidder shall not be entertained on account of the ignorance of the site conditions.

8.6. Format Language and Units:

The language of all documents shall be in English. Units of measurement in the documents, on the drawings, and the submissions shall be in S.I/ Metric Units.

8.7. Detailed Designs & Drawings of Works, their Submission and Approval:

The Bidder is supposed to have the best of the expertise available in the field of VES test and installation of **Tube** wells yield test basing with hydro geological scope to the extent available.

8.8. Obligation to Provide Documentation:

The Bidder shall supply detailed documentation of drilling and yield of Tube well. Within the specified periods and assist in checking the other information or data relating to problems arising from the design of well.

The Bidder shall supply all the documentation etc. asked for or implied in this section or elsewhere in the specification (refer Schedule – 'H' & 'I').

Approval of designs, or equipment supplied by the Bidder shall not relieve the Bidder from any of his contractual responsibilities or obligations, if any rectification or replacement is felt necessary at a later stage.

8.9 Quality of Material and Workmanship:

All the materials supplied by the Bidder shall be best of their respective kinds and shall comply with latest revisions of Indian Standards.

The Bidder shall be responsible for the comprehensive design of the entire system and quality of materials and workmanship. The Bidder shall guarantee the satisfactory functioning & performance of entire work. If any modification/ replacement is necessitated during trial-run and guarantee period, the same shall be carried out immediately free of cost.

8.10. Construction & Erection Facilities:

Water, power, accommodation and storage of materials for construction, erection at site shall be arranged by the Bidder at his own cost. The power supply & consumption during the construction stage shall be the responsibility of the Bidder& no extra payment shall be made on account of this. The power supply and consumption during testing and commissioning shall be the Bidder's responsibility.

All the 11 KV line will be constructed over 300 Kg 9 Mtr./200 Kg.8 Mtr. long PSC Pole respectively with 55 mm^2 AAAC the detail of which is shown in the tender schedule. LT line will be constructed over 200 Kg 8 Mtr. long PSC Pole (3 ph 4W Aerial Bunched Cable of size $3x35mm^2+1x25mm^2$ with averagespan of 30 to 50Mtrs.), the detail of which is shown in tender schedule.

Sub-Station:

Type of DT :-	BIS Level-II or as per DISTCOM
Voltage ratio:-	11/0.4 KV
Rating:-	25 KVA
No. of Earthing:-	03 to 05 nos.

The Sub-station should be constructed as per REC specifications and approved drawing of Engineer-in-charge of DISTCO.

8.11. Inspection & Testing:

For all materials, the Bidder shall have to furnish Manufacturer's test certificate wherever applicable and as per direction of the Engineer-in-charge. The PVC casing pipes(200 mm CS) and delivery pipes(63mm dia) shall be subject to pre and post-delivery inspection to be undertaken by CIPET,Bhubaneswar.

Inspection by the Engineer-in-charge of the Department shall not relieve the Bidder of his liability for rectifying the defects which may subsequently appear or be detected during testing and commissioning or subsequent operation. After rectification of the defects or replacement, the equipments shall be re-tested to the satisfaction of the Department.

All equipments, labour, tools & plants, instruments and other facilities for testing shall be provided by the Bidder. He shall also maintain records of all the tests and furnish copies of the same to the Department.

Whenever untested materials are used, written permission from the Engineer-in-Charge shall be obtained. Manufacturer's test certificates shall be furnished by the Bidder for such equipments and materials used.

The Department reserves the right to test any material at any of the reputed laboratories if necessity arises & the cost of such test(s) shall be borne by the Bidder& rejected materials shall have to be replaced by the Bidder by approved material at his cost.

8.12. Completion Schedule:

The time is the essence of this contract. The entire job is to be completed within a time frame of **3(Three)/ 4(Four)** months from the date of issue of work order by the Executive Engineer. The Bidder shall submit a Bar Chart indicating starting and completion dates of each activity such as submission of designs & drawings, site mobilization, procurement of materials and equipments, transportation, execution, assembly/ erection, testing, trial running and commissioning without which the tender shall be liable for rejection and as per direction of Executive Engineer.

On approval, the Bar Chart shall form a part of the contract as detailed in the DTCN. The successful Bidder shall submit PERT Net work based on above Bar Chart for monitoring of the project as per relevant clause of "Conditions of Contract/Special condition of contract".

8.13. Tendering:

The Bidders will be given a chance to suggest suitable modifications/ alterations within the scope of technical specification, which will be discussed at length, and the Department's decision shall be communicated to them. Ordinarily, modifications of technical specifications during execution of the work shall not be permitted excepting in cases where such a modification is warranted due to technical requirements.

8.14. Tender Drawings:

The tender drawings submitted by the Bidder /firm in their offer are subjected to change during detailed design if so required from technical considerations without extra financial implications.

8.15. Schedule of Tender for Submission:

The Bidder shall submit the following details in addition to other documents as indicated elsewhere in this DTCN along with the General & Techno-commercial Bid of his tender document without which his 'tender' shall not be considered further for appraisal.

i) Technical write-up on the facility/scheme offered and any other.
ii) Equipments, tools & plants (with their capacities) proposed to be mobilized to the site.
iii) Personnel & staff proposed to be deployed at site.
iv) Past experience of the Bidder with respect to eligibility criteria. A list of similar jobs designed &executed by the Bidder with their capacity, year of commencement & installation, value of work and addresses of their client.
v) Brief details of the Bidder, technical personnel/ executive Employed with the Bidder, their qualifications & experience, Organization chart and as applicable.

SECTION – 9
TECHNICAL SPECIFICATION

Name of work	:	Installation, electrification, energisation and commissioning of Medium Deep Tube well lift irrigation projects under Anandapur, Ghasipura and Hatadihi block in **KENDUJHAR DISTRICT**
A. Location	:	The Executive Engineer, **Kendujhar** will provide the location.
B. State	:	Odisha

9.1. General Conditions

Conducting Integrated Hydrological and Geophysical survey for exploration for Ground Water and location of sites for construction of Tube wells in any parts of Odisha.

After selection of potential source of ground water in land of applicants of villages in any part of Odisha, to undertake successful Tube wells (yield 900 LPM) through DTH/ Combination Rigs with PLC facilities as specified in DTCN.

The rates quoted should include the cost of materials, all taxes, levies, duties, Cess, royalties and Income tax, sales tax, labour cess (except GST) , transportation, erection and operation of drilling equipments, cost of fuel, lubricants, boring mud (if any) and water etc. required for operation and other unforeseen items pertaining to drilling of Tube well work, dismantling, removing and shifting of drilling machine from the site and clearance of site etc. complete, electrification and energisation and there after handing over to the beneficiaries.

Pole Spotting:

a) Span:-

Average span of HT & LT lines with proposed conductors is given in the table below.

Sl. No.	Line Class	Support (Height in Mtrs / Kg Class)	Conductor Type	Nominal conductor size in sq mm.	Max. Span in Mtrs.
1	2	3	4	5	6
1.	11 KV 3Ph 3 Wire(for new line)	PSC(10/330)Kg/PSC (9mtr /300) 9 mtr at cut point	Insulated	55	50 mtrs. as per schedule
2.	LT 3 Ph 4 W	PSC(9/300)Kg	ABC	3x35+1x25	40 mtrs as per schedule

b) Road/River Crossing:

At all major road/river crossings, the poles shall be fitted with strain type insulators but the ground clearance at the roads under maximum temperature and in still air shall be such that even with conductor broken in adjacent span, ground clearance of the conductor from the road surfaces shall not be less than 6.1 meters.

c) Power line crossings:

Where the proposed lines require to cross over another line of the same voltage or lower voltage, provisions to prevent the possibility of its coming into contact with other overhead lines shall be made in accordance with the Indian Electricity Rules, 1956 as amended from time to time. All the works related to the above proposal shall be deemed to be included in the scope of the Contractor. Where existing lines of higher voltages are to be crossed under another line, the Bidder shall take up suitable re-routing so as to obtain necessary sectional clearances, otherwise crossing through 11 KV cable shall be proposed.

d) Telecommunication Line Crossings:

The angle of crossing shall be as near to 90 degree as possible. However, deviation to the extent of 30 degree may be permitted under exceptionally difficult situations.

HT line shall be routed with requisite suppression with parallel telecom line to avoid inductance during faults.

e) **Details Enroute**:

All topographical details, permanent features, such as trees, telecommunication lines, building etc. 5.5 meter on either side of the alignment shall be detailed on the route plan.

f) **Clearance from Ground, Building, Trees etc**.:

Clearance from ground, buildings, trees and telephone lines shall be provided in conformity with the Indian Electricity Rules, 1956 as amended up to date. The Bidder shall select the height of the poles such that all electrical clearances are maintained. RCC/rail poles shall be used for all road & drain crossings, if required. In case of exceptional terrain, rail pole may be used with the approval of owner.

g) The minimum planting depth of poles shall be governed by IS: 1678. However, if due to the ground conditions, e.g. water logged area etc. depth of planting of poles shall be suitably increased the Bidder will supply the poles of suitable height in order to maintain the required clearances, the vendor will submit *the* details of the same on case to case basis.

h) Guarding mesh shall be used in all electric line/ telecom line/ road/drain/canal crossing and at all points as per statutory requirements. The Bidder shall provide & install anti climbing devices and danger plates on all poles and DT stations.

DESIGN PARAMETERS:

a) Factor of safety 2.5 for 11 KV line and LT line PSC supports.
b) Wind pressure on Pole and conductor – As per IS: 802.
c) In addition to wind load on cross-arms , insulators guy-wire etc. shall be considered.
d) Wind load on full projected area of conductors and pole is to be considered for design.
e) Ground clearance shall be minimum 4.6 m for 11 KV line & LT line for bare conductor at locations other than road crossings.
f) Ground clearance shall be minimum 4 m for 11 KV ABC line & LT ABC line.
Pole accessories like danger plates, phase plates and number plates shall be provided.

POLES:

Erection of Pole, PSC footing and compaction of soil:

Pits are to excavated to a size of 0.6 meter x 1.2 meter with its longer axis in the direction of the line. In case Bidder employs Earth augers, the pit size can be considered 0.6 meter dia with 1.5 meter depth of $1/6^{th}$of length of the pole which is higher.

For hard rock locations, 1 meter deep hole of diameter 20% in excess of the longest dimension of the bottom most portion of pole shall be excavated. The pole shall be grouted in the pit with 1:2:4 nominal concrete mix at the time of pole erection.

The planting depth of pole over the base precast concrete slab shall be 1500 mm in the ground except in wet soil and black cotton soil where depth shall be increased by 0.2 mtr. to 0.3 mtr. with reduced wind span.

Following arrangement shall be adopted for erection of PSC type poles and properly compacting of the soil around the base/ foot of the poles.

1. All the PSC poles shall be provided with a RCC block base having dimensions and constitutions as per REC Construction Standard K-1.
2. The poles shall then be lifted to the pit with the help of wooden supports. The pole shall then be kept in the vertical position with the help of 25mm (min.) manila ropes, which will act as the temporary anchor. The verticality of the pole shall be checked by spirit level in both longitudinal and transverse directions. The temporary anchor shall be removed only when poles set properly in the foundation after compacting the soil.
3. Entire void space above the block is to be filled with uniform pieces of bricks and rigidly compacted by ramming in layers maintaining verticality of the PSC pole.

4. Concreting of foundation up to a height of 1.8 meters from the bottom of the pit with a circular cross-section of radius 0.25 mtrs. (Volume of 0.3 cu.mtr. per pole) in the ratio of 1:2:4 shall be done at the following locations:

i) At all the tapping points and dead end poles.
ii) At all the points where DT is to be installed.
iii) At all the points as per REC construction dwg. No.A-10 (for the diversion angle of 10-60 degree)
iv) Within a maximum distance of 1 Km from the last Jhama filled pole structure.
v) Both side poles at all the crossing for road, nallaha railway crossings etc.
vi) Where Rail poles, double pole and four pole structures.

5. In case the route of 33/11 KV lines encounters marshy low laying area , special type of foundations shall be used. In such a case, difference in execution quantity, concreting and reinforcement between special foundation and normal foundation shall be paid extra as per Schedule of Rate (SR) applicable on the date of bid opening. No other payment incidental to special foundation locations shall be made to the contractor.

Earthling of Poles:

In 11 KV & LT line, each pole shall be earthed with coil type earthing as per REC Construction Standard J-1.

All DP and the poles on both sides of railway, Telecommunication, road, drain and river crossing shall be earthed by pipe earthing as per REC Construction Standard J-2.

Extension Pole:

PSC Pole with pole extension arrangement upto two meters shall be used at low ground level locations for maintaining ground clearance and for road crossings for HT & LT lines. Extension of poles shall be by use of 100x50x6 mm galvanize channel up to three meters. An overlap of one meter shall be maintained with the pole.

Wherever such extended poles will be used the span on both sides of the extension pole shall be suitably reduced to take care of loading on the pole.

PROVIDING OF GUYS/STRUT POLES TO SUPPORTS:

Strut poles/ flying guys wherever required shall be installed on various pole locations as per REC Construction standards. For selection of guing locations REC guidelines & construction practices shall be followed.

In this work anchor type guy sets are to be used. These guys shall be provided at

i) Angle locations
ii) Dead end locations
iii) T- off points
iv) Steep gradient locations
v) Double pole, and four poles

The stay rod should be placed in a position so that the angle of rod with the vertical face of the pit is $30^0/45^0$ as the case may be.

G.I. stay Wires of size7/3.15 mm (10SWG) with GI turn buckle rod of 16mm dia& 16 mm dia G.I. stay rods, shall be used for 11 KV & LT line.

For double pole structure(DP) , four stays along the line, two in each direction and two stays along the bisection of the angle of deviation(or more) as required depending on the angle of deviation are to be provided. Hot dip galvanized stay sets are to be used.

The anchor plate shall be fixed to 200mm x 200mm MS plate of 6mm thickness. M.S.rod with a bolt arrangement at one end and other end is given shape of 40mm dia circle to bind one end of the stay wire. The anchor plate shall be buried in concrete. The dimensions for concreting & earth & boulder fill shall be as per the drawing.

The turn buckle shall be mounted at the pole end of the stay and guy wire so fixed that the turns buckle is half way in the working position, thus giving the maximum movement for tightening or loosening.

If the guy wire proves to be hazardous, it should be protected with suitable asbestos pipe filled with concrete of about 2 m length above the ground level, painted with white and black strips so that, it may be visible at night.

CROSS ARMS:

Cross arms for 11 KV overhead power lines shall be made out of 100 x 50 x 6 mm and 75x40x6 mm M.S. Channel. Cross Arms made out of M.S. angle shall not be used. Cross arms shall conform as per specification.

Fixing of Cross Arms:

After the erection of supports and providing guys, the cross-arms are to be mounted on the support with necessary clamps, bolts and nuts. The practice of fixing the cross arms before the pole erection can also be followed. In case, the cross- arm shall be mounted after the pole is erected, the lineman should climb the pole with necessary tools. The cross-arm shall then tied to a hand line and pulled up by the ground man through a pulley, till the cross- arm reaches the line man. The ground man should station himself on one side, so that if any material drops from the top of the pole, it may not strike him. All the materials should be lifted or lowered through the hand line, and should not be dropped.

INSTALLATION OF LINE MATERIALS:

Insulator and Bindings:

Prior to fixing, all insulators shall be cleaned in a manner that will not spoil, injure or scratch surface of the insulator, but in no case shall any oil be used for that purpose. Pin insulators shall be used on all poles in straight line and disc or shackle insulators on angle and dead end poles. Damaged insulators and fittings, if any shall not be used. The insulator and its pin should be mechanically strong enough to withstand the resultant force due to combined effect of wind pressure and weight of the conductor in the span.

Strain insulators shall be used at terminal locations or dead end locations and where the angle of deviation of line is more than 100. Strain insulators shall be used at major crossings.

The pins for insulators shall be fixed in the holes provided in the cross-arms and the pole top brackets. The insulators shall be mounted in their places over the pins and tightened. In the case of strain or angle supports, where strain fittings are provided for this purpose, one strap of the strain fittings is placed over the cross-arm before placing the bolt in the hole of cross-arms. The nut of the straps shall be so tightened that the strap can move freely in horizontal direction.

Handling of Conductor and Earth wire:

Running out of the Conductor**:** The contractor shall be entirely responsible for any damage to the pole or conductors during stringing. Care shall be taken that the conductors do not touch and rub against the ground or objects, which could scratch or damage the strands.

The sequence of running out shall be from the top to down i.e. the top conductor shall be run out first, followed in succession by the side conductors. Unbalanced loads on poles shall be avoided as far as possible. When lines being erected run parallel to existing energized power lines, the Contractor shall take adequate safety precautions to protect personnel from the potentially dangerous condition.

Monitoring of Conductors during stringing:

The conductor shall be continuously observed for loose or broken strands or any other damage during the running out operations. Repair to conductors, if necessary, shall be carried out with repair

sleeves. Repairing of the conductor surface shall be carried out only in case of minor damage, scuff marks, etc. The final conductor surface shall be clean, smooth and free from projections, sharp points, cuts, abrasions, etc. The Contractor shall be entirely responsible for any damage to the poles during stringing.

Crossings:

All crossings shall be at right angles. Derricks or other equivalent methods ensuring that normal services need not be interrupted nor damage caused to property shall be used during stringing operations where roads, channels, telecommunication lines, power lines and railway lines have to be crossed. The contractor shall co-ordinate with DISTCOM for obtaining work permit and shut down of the concerned line. However, shut down shall be obtained when working at crossings of overhead power lines. The contractor shall be entirely responsible for the proper handling of the conductor, earth wire and accessories in the field.

Guarding shall be provided at major crossings. The Guardings shall consists of G.I. guard cross arm of length 2.5 mtrs. made out of 75x40x6mm channel &shall be hot dipped galvanised generally conforming to IS:2633/72. The clamps shall also be hot dipped galvanized generally conforming to IS:2633/72. Guardings shall be erected with ground and line clearances as per the I.E. rules. The guarding shall be provided with GI Wire 8 SWG for 11 KV & LT line.

Anti-climbing Devices:

Anti Climbing Devices shall be provided with G.I. Barbed wire, they shall be provided and installed by the Contractor for all poles. The barbed wire shall conform to IS:278 (Grade A1). The barbed wires shall be given chromating dip as per procedure laid down in IS:1340.

Painting Materials:

All the metal parts except G.I. Parts are to be painted with one coat of red oxide and one coat of aluminium paint.

STRINGING OF CONDUCTOR:

The works include spreading of conductors of HT/LT AB Cables without any damage and stringing with proper tension without any Kinks/damage including binding of conductor at pin points, jumpering at cut points etc. The ground and line clearances at road crossings shall be as per the relevant I.E. rules.

While transporting conductors drums to site, precautions are to be taken so that the conductor does not get damaged. The drum shall be mounted on cable drum support. The direction of rotation of the drum shall be according to the mark in the drum so that the conductor could be drawn. While drawing the conductor, it shall not rub causing damage. The conductor shall be passed over poles on wooden or aluminium snatch block (pulley) mounted on the poles for this purpose.

The conductor shall be pulled through come-along clamps to stringing the conductor between the tension locations.

Conductor splices shall not crack or otherwise be susceptible to damage in the stringing operation. The Contractor shall use only such equipment/ methods during conductor stringing which ensures complete compliance in this regard. All the joints including mid span joints on the conductor and earth-wire shall be of the compression type, in accordance with the recommendations of the manufacture, for which all necessary tools and equipment like compressors dies, etc., shall be obtained by the Contractor. Each part of the joint shall be cleaned by wire brush till it is free of rust or dirt, etc., and be properly greased with anti-corrosive compound, before the final compression is carried out with the compressors. After completing the jointing, tensioning operation shall be commenced.

All the joints or splices shall be made at least 15 meters away from the pole. No joints or splices shall be made in spans crossing over main roads, railways and small river spans. Not more than one joint per sub-conductor per span shall be allowed. The compression type fittings shall be of the self centring type. After compressing the joint, the aluminium sleeve shall have all corners rounded; burrs and sharp edges removed and smoothened.

During stringing of conductor to avoid any damage to the joint, the contractor shall use a suitable protector for mid span compression joints in case they are to be passed over pulley blocks/aerial rollers. The pulley groove size shall be such that the joint along with protection can be passed over it smoothly.

TAPPING ARRANGEMENT FROM EXISTING 11KV LINE:

Tapping of existing 11 KV line shall be taken by providing a horizontal cross arm below the existing V cross arm of the pole and mounting disc insulators on it. The tapping conductors may be guided by providing pin insulators as required. A new two pole structure shall be erected within 10-15 metrs of this tapping pole and the new line will emerge from this two pole structure with disc insulators. The Taping pole to the double pole conductor tension should be such that it avoids looseness & sag to the extent possible & it should avoid extra tension on the tapping pole.

Wherever the proposed spur line length is more than two Km after the tapping an AB switch arrangement shall be provided at the double pole for isolation of the line.

Aligning/re-erection of tilted/bent poles wherever found in the route of line along with strengthening of its foundation is in the scope of the Bidder.

Before undertaking the Re-conducting work in the given line, the Bidder shall make assessment of type and quantity of the existing conductor in consultation/presence of owner's representative.

While Re-conducting of 11 KV line, disconnection/connection of existing Distribution Transformer shall be in the scope of the contractor/Bidder. The supply and erection of line material for achieving the DT disconnection and connection shall be in the scope of the contractor.

The empty conductor drums, available after laying of conductor, shall be disposed of by the contractor at his cost. These drums may be used for rewinding of Conductor removed from the line at the later stage of Re-conducting work.

Any other work not mentioned above exclusively but required for accomplishing desired work will be in the scope of the Bidder/contractor.

For all above activities shut down will be provided for the line by owner. Restoring the disturbance/damage caused by above activities to the existing infrastructure e.g. road, /sewerage pipes, telecommunication lines etc. will be in the scope of the Bidder/contractor.

While Repairing & Replacing the equipment, if any equipment gets damaged due to negligent handling of the contractor the same shall be replaced by the contractor, at his cost, to the owner/employer's satisfaction.

Survey of existing lines:

Survey shall have to be carried out by the contractor of existing lines.

Span:

Since the work shall be done on the existing line, the existing span shall be maintained. However, if any new pole is required to be erected along the route of existing line, the span should be as near as possible to the basic design span indicated below.

11KV line: 70 to 80 meters (as per schedule).

TECHNICAL SPECIFICATION FOR 200 mm DIA CS /ASTM CASING PIPE:

A. **200 mm DIA PVC CS PIPE:** Conforming to IS-12818/2010 specification with CIPET Test certification on the outer surface of each pipe in indelible ink or stencilled.

B. **200 mm DIA PVC CM PIPE:** Conforming to IS-12818/2010 specification with CIPET Test certification on the outer surface of each pipe in indelible ink or stencilled.

C. **200 mm DIA PVC ASTM Schedule-80 PIPE:** Conforming to ASTM-1785/2004 specification with CIPET Test certification on the outer surface of each pipe in indelible ink or stencilled.

TECHNICAL SPECIFICATION FOR 63 mm DIA HDPE DELIVERY PIPE:

A. **63 mm dia HDPE PN-10 ISI Mark Polyethylene PIPE (PE-80)** : Conforming to IS-4984/2016 specification with CIPET Test certification on the outer surface of each pipe in indelible ink or stencilled.

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TECHNICAL SPECIFICATION FOR 11KV LINE MATERIALS SUPPORT POLES, CROSSARMS AND NUTS & BOLTS:

Scope:

This specification covers Design, Engineering, Manufacture, testing, inspection before despatch, forwarding, packing, transportation to site, Insurance(both during transit & storage), Storage, Erection, Supervision, testing and commissioning of 11 KV support Poles, Cross Arms and Bolts & Nuts for use in the networks of DISTCOM.

The equipment offered shall have been successfully type tested and the design shall have been satisfactory operation for a period not less than two years on the date of bid opening. Compliance shall be demonstrated by submitting with the bid,(i) authenticated copies of the type test reports and (ii) performance certificates from the users.

The line support poles and cross arms shall conform in all respects to highest standards of engineering, design, workmanship, this specification and the latest revisions of relevant standards at the time of offer and the Engineering-in-charge shall have the power to reject any work of material, which, in his judgement, is not in full accordance therewith.

GENERAL:

The line support poles and cross arms shall be designed to carry the line conductors with the necessary insulators and all other fittings and equipment under the conditions specified.
Poles may be manufactured from concrete (pre-stressed) or steel.
Pole cross arms are normally constructed of steel and shall be bolted to the pole.
V-cross arm on the 11 KV line structures at intermediate and right angle locations to reduce problems from birds bridging insulators. The Bidder's cross arm design must provide a similar level of protection from bird contact and explain how this is achieved from the offered design.

DESIGN REQUIREMENT:

In order to limit the range of materials required for line construction, maintenance and repair the Contractor shall limit the number of different types of support structures and cross arms as far as possible.
The following are minimum requirements:

- Pole top fixings and cross arms:

For any particular pole function, the pole top equipment shall be identical regardless of the height of the structure.

- The number of cross arm types for a particular voltage and conductor size shall be limited to three types.
- Fixing bolts and nuts for cross arms and bracing straps shall be limited to two sizes by diameter(M16 and M20)

The line support poles and cross arms shall be designed to the following requirements:

- The wind pressure to be applied to the conductors, poles and cross arms are specified in IS:5613(Part 1/Section1):1995 and as stipulated in the Service Conditions.
- Three wind zones are found within the state of Odisha and the design of structures shall take account of this fact. The Bidder shall take account of the wind loading regimes together with the respective terrain category necessary for the projects for which he is bidding and shall propose the design of support poles and cross arms which will prove most effective for the project and for the Employer's system.

- The working load on the support poles and cross arms should correspond to those that are likely to come onto the structure during its working life. Existing designs meet system requirements where working loads are applied at a point 600 mm from the top of the pole. The offered design shall meet requirements with the point of application of the load as per Bidder's design but not more than 600 mm from the top of the pole.

The structures shall be planted directly into the ground with a planting depth as per IS 1678:1978 and as stipulated in this specification.

All structures shall have a depth mark made at a point 3 meters from the butt end. This mark shall be in the form of a horizontal line with "3m" engraved directly below the line. In the case of steel structures ;the mark shall be embossed or indented before surface treatment.

Pole details provided in this specification are indicative of poles used on the distribution system, or available as standard designs. The Bidder must determine the requirements of the design offered and select suitable poles to deliver the specified performance. The inclusion of a particular size in the specification does not indicate approval of the pole for any function.

PSC POLES:

PSC Poles shall be of solid rectAnugolaar type with an overall length of 9.0 M 300 Kg for LT support & 10.0 M 330 Kg suitable for use in 11 KV overhead power lines and double pole and for distribution S/S as indicated separately in the Analysis.

APPLICATION STANDARDS:

Except when they conflict with specific requirements in this Specification, the PSC poles shall comply with the relevant provisions made in the following Indian Standards or the latest versions thereof.

a) IS:1678, Specification for pre-stressed concrete poles for overhead power lines.

b) IS: 2905, Method of test for concrete poles for overhead power line.

c) IS:7321, Code of Practice for selection, handling and erection of concrete poles for overhead power line.

TERMINOLOGY:

For the purpose of this specification, following definitions shall apply.

AVERAGE PERMANENT LOAD:

That fraction of the working load which may be considered of long duration over a period of one year. The ratio of ultimate transverse load to the transverse load at first crack.

TRANSVERSE:

The direction of the line bisecting the angle contained by the conductor at the pole. In the case of a straight run, this will be normal to the run of the line.

TRANSVERSE LOAD AT FIRST CRACK:

For design, the transverse load at first crack shall be taken as not less than the value of the working load.

WORKING LOAD:

The maximum load in the transverse direction, that is ever likely to occur, including the wind pressure on the pole. This load is assumed to act at a point 600 mm below the top with the butt end of the pole planted to the required depth as intended in the design.

ULTIMATE FAILURE:

The condition existing when the pole ceases to sustain a load increment owing to either crushing of concrete, or snapping of the pre-stressing tendon or permanent stretching of the steel in any part of the pole.

ULTIMATE TRANSFERSE LOAD:

The load at which failure occurs, when it is applied at a point600 mm below the top and perpendicular to the axis of the pole along the transverse direction with the butt end of the pole planted to the required depth as intended in the design.

Application:

9.0 M Poles(300 Kg)

These poles shall be used at tangent locations for L.T .Lines in wind pressure zones of 100Kg/M^2 in accordance with REC Construction Standards No.A-5.

10.0 M Poles(330 Kg)

These poles shall be used for 11 KV line double pole structures of distribution Sub Station as per REC Construction Standards F-2 to F-4 and for special locations in 11 KV and L.T. Lines, such as road crossing etc.

Material

Cement:

The Cement used in the manufacture of pre-stressed concrete poles shall be ordinarily or rapid hardening Portland Cement conforming to IS:269-1976 (Specification for ordinary and low heat Portland cement) or IS:8041 E-1978(Specification for rapid hardening Portland cement).

Aggregates:

Aggregates used for the manufacture of pre-stressed concrete poles shall confirm to IS: 383 (Specification for coarse and fine aggregates from natural sources for concrete). The nominal maximum size of aggregates shall in no case exceed 12mm.

Water:

Water should be free from chlorides, sulphates, other salts and organic matter. Potable water will be generally suitable.

Admixture:

Admixture should not contain calcium Chloride or other Chlorides and salts which are likely to promote corrosion of pre-stressing steel. The admixture shall conform to IS: 9103.

Concrete Mix:

The concrete mix shall be designed to the requirements laid down for controlled concrete (also called design mix concrete) in IS:1343-1980 (code of practice for pre-stressed concrete) and IS:456-1978(Code of practice for plain and reinforced concrete), subject to the following special conditions;

a) Minimum works cube strength at 28 days should be at least 420 Kg/Cm^2.
b) The concrete strength at transfer should be at least 210Kg/cm^2.
c) The mix should contain at least 380Kg. of cement per cubic meter of concrete.
d) The mix should contain as low water content as is consistent with adequate workability. If it becomes necessary to add water to increase the workability, the cement content also should be raised in such a way that the original value of water cement ratio is maintained.

Design Requirements:

The poles shall be designed for the following requirements:

a) The poles shall be planted directly in the ground with a planting depth as per IS:1678. Wherever, planting depth is required to be increased beyond the specified limits or alternative arrangements are required to be made, on account of ground conditions e.g. water logging etc., the same shall be in the scope of the Bidder at no extra cost to owner. The Bidder shall furnish necessary design calculators/details of alternative arrangements in this regard.
b) The working load on the poles should correspond to those that are likely to come on the pole during their service life.
c) The factor of safety for all poles 9.0 Mtrs. shall not be less than 2.0 and for 8.0 M Poles, the factor of safety shall not be less than 2.5.
d) The average permanent load shall be 40% of the working load.
e) The F.O.S against first load shall be 1.0.
f) At average permanent load, permissible tensile stress in concrete shall be 30Kg/cm^2 .
g) At the design value of first crack load, the modulus of rapture shall not exceed 53.0 Kg/cm^2 for M-40.
h) The ultimate moment capacity in the longitudinal direction should be at least on fourth of that in the transverse direction.
i) The maximum compressive stress in concrete at the time of transfer of pre-stress should not exceed 0.8 times the cube strength.
j) The concrete strength at transfer shall not be less than half, the 28days strength ensured in the design, i.e. 400 x 0.5= 200Kg/cm^2.

Dimensions and Reinforcement:

The cross-sectional dimensions and the details of pre-stressing wires should conform to the particulars given in the annexure.

The Provision of holes for fixing cross-arm and other fixtures should conform to the REC Specification No.15/1979.

Manufacture:

All pre-stressing wires and reinforcements shall be accurately fixed and maintained in position during manufacture. The un-tensioned reinforcement, as indicated in the drawings, should be held in position by the use for stirrups which should go round all the wires.

All wires shall be accurately stretched with uniform pre-stress in each wire. Each wire or a group of wires shall be anchored positively during casing. Care should be taken to see that the anchorages do not yield before the concrete attains the necessary strength.

Cover:

The cover of concrete measured from outside of pre-stressing tendon shall be normally 20mm.

Welding and Lapping of Steel:

The high tensile steel wire shall be continuous over the entire length of the tendon. Welding shall not be allowed in any case. However, jointing or coupling may be permitted provided the strength of the joint or coupling is not less than the strength of each individual wire.

Compacting:
Concrete shall be compacted by spinning, vibrating, shocking or other suitable mechanical means. Hand compaction shall not be permitted;

Curing:
The concrete shall be covered with layer of sacking, canvass, hessian or similar absorbent material and kept constantly wet up to the time when the strength of concrete is at least equal to the minimum strength of concrete at transfer of pre-stress. Thereafter, the pole may be removed from the mould and watered at intervals to prevent surface cracking of the unit, the interval should depend on the atmospheric humidity and temperature.

The pre-stressing wires shall be de-tensioned only after the concrete has attained the specified strength at transfer (i.e. 200 or 210 Kg/cm^2, as applicable). The cubes cast for the purpose of determining the strength at transfer should be cured, as far as possible, under conditions similar to those under which the poles are cured. The transfer stage shall be determined based on the daily tests carried out on concrete cubes till the specified strength indicated above is reached. Thereafter the test on concrete shall be carried out as detailed in IS:1343 (Code of practice for pre-stressed concrete). The manufacturer shall supply, when required by the owner or his representative, result of compressive test conducted in accordance with Is:456(Code of practice for plain an reinforced concrete) on concrete cubes made from the concrete used for the poles. If the owner so desired, the manufacturer shall supply cubes for test purposes and such cubes shall be tested in accordance with Is: 456(Code of practice for plain and reinforced concrete).
The de-tensioning shall be done by slowly releasing the wires, without imparting shock sudden load to the poles. The rate of de-tensioning may be controlled by any suitable mean either mechanical (screw type) or hydraulic.

The poles shall not be de-tensioned or released by cutting the pre-stressing wires using flames or bar croppers while the wires are still under tension.

Lifting Eye-Hooks or Holes:
Separate eye-hooks or holes shall be provided for handling the transport, one each at a distance of 0.15 times the overall length, from either end of the pole. Eye-hooks, if provided should be properly anchored and should be on the face that has the shorter dimension of the cross-section. Holes, if provided for lifting purposes, should be perpendicular to the broad face of the pole.

Holes for Cross Arms etc.:
Sufficient number of holes shall be provided in the poles for attachment of cross arms and other equipments.

Stacking & Transportation:
Stacking should be done in such a manner that the broad side of the pole is vertical. Each tier in the stack should be supported on timber sleeper located as 0.15 time the overall length, measured from the end. The timber supported in the stack should be aligned in a vertical line.

Poles should be transported with their board faces placed vertically and in such manner that shocks are avoided. Supports should be so arranged that they are located approximately at a distance equal to 0.15 times the overall length from the ends. The erection of the pole should be carried out in such a way that the erection loads are applied so as to cause moment with respect to the major axis, i.e. the rope used for hoisting the pole should be parallel to the broader face of the pole.

Earthing:
Earthing shall be provided by having length of 8 SWG GI wire embedded in concrete during manufacture and the ends of the wires left projecting from the pole to a length of 100 mm to 250mm from top and 150 mm below ground level.

Earth Wire shall not be allowed to come in contract with the pre-stressing wires.

TESTS:
Transverse Strength Test:
Poles made from ordinary Portland cement shall be tested only on the completion of 28 days and poles made from repaid hardening cement only on the completion of 14 days, after the day of manufacture.

The poles may be tested in either horizontal or vertical position. If tested in horizontal position, provisions shall be made to compensate for the overhanging weight of the pole, for this purpose, the overhanging portion of the pole maybe supported on a movable trolley or similar device.

The pole shall be rigidly supported at the butt end for a distance equal to the agreed depth of planting.

Load shall be applied at a point 600 mm from the top of the pole and shall be steadily and gradually increased to the design value of the transverse load at first crack. The deflection at this load shall be measured.
A pre-stressed concrete pole shall be deemed not to have passed the test if cracks wider than 0.1 mm appear at a stage prior to the application of the design transverse load is less than the design ultimate transverse load.

The load shall then be reduced to zero and increased gradually to a load equal to the first crack load plus 10% of the minimum ultimate transverse load, and held up for 2 minutes. This procedure shall be repeated until the load reaches the value of 80 percent of the minimum ultimate transverse load and thereafter increased by 5 percent of the minimum ultimate transverse load until failure occurs. Each time the load is applied, it shall be held for 2 minutes. The load applied to pre-stressed concrete pole at the point of failure shall be measured to nearest five Kilograms.

The pole shall be deemed not to have passed the test if the observed ultimate transverse load is less than the design ultimate transverse load.

Measurement of Cover:
After completion of the transverse strength test, the sample pole shall be taken and checked for cover. The cover of the pole shall be measured at 3 points, one within 1.8 meter from the butt end of the pole, the second within 0.6 meters from the top and the third at an intermediate point and the mean value compared with the specified value.

The mean value of the measured cover should not differ by more than (+)1 mm from the specified cover. The individual values should not differ by more than(+)3 mm from the specified value.

If these requirements are not met, the workmanship with reference to aligning of the end plates and pre-stressing wires and assembly of moulds should be improved and inspection at pre-production stage tightened suitably.

Sampling and Inspection:

Scale of sampling:
Lot: In any batch, all poles of the same class and dimensions shall be grouped together to constitute a lot.

Sub-Lot: If the number of poles in a lot exceed 500, the lot shall be divided into a suitable number of sub lots such that the number of poles in any sub-lot shall not exceed 500. The acceptance or otherwise of a sub-lot shall be determined on the basis of the performance of samples selected from it.

The number of poles to be selected from a lot or a sub-lot shall depend upon its size and shall be in accordance with col.1 and 2 of the following table:

SAMPLE SIZE AND CRITERION FOR CONFORMITY

Size of lot or Sub-lot	Dimensional Requirement		No. of poles for transverse strength test
	Sample size	Permissible No. of defective samples	
Upto 100	10	1	*
101to 200	15	1	3
201to 300	20	2	4
301 to 500	30	3	5

*The number of poles to be tested shall be subject to the agreement between the owner and supplier.

These poles shall be selected at random. In order to ensure randomness, all the poles in the lot or the sub-lot may be arranged in a serial order and starting from any random pole, every r^{th} pole may be included in the sample, r being the integral part of N/n where N is the size of the lot or the sub-lot and n is the sample size.

Number of Tests:
All the poles shall be tested for overall length, cross-selection and uprightness. The tolerance shall be (+)15 mm on overall length (+), 3 mm on cross sectional dimensions and 0.5 percent on uprightness.

The number of poles to be tested for transverse strength test shall be accordance with Col.4 of the above table. These poles may be selected from those already tested in 10.2.1.

Criteria for Conformity:
A Lot or sub-lot shall be considered as conforming to this specification.

The number of poles which does not satisfy the requirements of overall length, cross section and uprightness shall not exceed the corresponding number, if the number of such poles exceeds the corresponding number, all poles in the lot or sub-lot shall be tested for these requirements and those not satisfying the requirements shall be rejected.

All the poles tested for transverse strength test shall satisfy the requirements of the test. If one or more poles fail, twice the number of poles originally tested shall be selected from those already selected and subjected to the test, if there is no failure among these poles, the lot or the sub-lot shall be considered to have satisfied the requirements of this test.

Marking:
The pole shall be clearly and indelibly marked with the following particulars either during or after manufacture but before testing at a position so as to be easily read after erection in position.

a) Month and year of manufacture
b) Transverse strength of pole in Kg.
c) Marker's serial No. and mark of Odisha Lift Irrigation Corporation Ltd. as "**OLIC**"

9.1 The rates quoted should include the cost of materials, all taxes, levies, duties, Cess, royalties and Income tax, sales tax labour, transportation, erection and operation of equipments, cost of fuel, etc.

required for operation and other unforeseen items pertaining to electrification of Tube well work, dismantling, removing and shifting of machine from the site and clearance of site etc. complete.

TIME OF COMPLETION:

The work is to be completed as specified in the work order.

EMD: Consolidated EMD as specified in DTCN. Tenders received without EMD/ Part EMD/Un-pledged EMD in other shape will be summarily rejected.

ISD: The tenders are also required to furnish initial security deposit 2% the total value of the work and as applicable before issue of the work order which will be refunded as per provision in Odisha Government P1 contract/as applicable.

9.2. Site for the work will be shown and handed over to the Bidder by the Engineer-in-charge of the work soon after execution of the agreement/ site is ready in form of cluster-wise work order.

Approach road to work site wherever necessary shall be made by the Bidderat his own cost.

9.3. The authority reserves the right to change the site in case required and no compensation to that effect shall be paid to the Bidder

9.4. The rates quoted should be inclusive of conveyance of all materials to and from the place of work, their erection, operation maintenance etc, during execution and dismantling, shifting, removal etc. after completion of work as may be required along with others as specified.

9.5. No part of the contract shall be sub-let without written permission of the concerned Executive Engineer, nor can the Bidder transfer any portion of work by power of Attorney authorising others to receive payment and exercise powers relating to the work on the Bidder's behalf.

9.6 Govt will not pay any extra charges for lead or any other reason in case the Bidderfinds later on to have mis-judge the availability of materials

Income tax, GST and turn over tax, Labour Cess, Security etc. as applicable will be deducted from Bidder's bills as per the rules in force.

9.7. The Bidder shall bear cost of all incidental charges sundries and contingencies associated with the work. Fees and dues by Municipal council and competent authorities if any be paid by the Bidder.

9.8 Suitable equipments and wearing apparatus for the labour engaged in risky operation shall be provided by the Bidder at his own cost.

9.9 For the purpose of drilling and electrification, approach road, water, crew, camp and other infrastructure etc. are to be arranged by the Bidder at his own cost.

9.10 Technical problems during drilling, like jamming of drill string, damages to Button Bits/Hammer/Drill rods/Caving of over burden, stoppage of work due to unforeseen reasons etc. would be the responsibility of the Bidder and no compensation of any kind would be paid by the Corporation.

9.11 Diameter and depth of Tube well :

(a) Drilling in overburden with suitable bit (RR/button bit) to make pilot hole to accommodate the lowering of 200 mm dia PVC plastic Pipes (ASTM Sch-80)/CM/C.S. and as per direction of Engineer in charge.
(b) Minimum 150mm diameter bore hole in hard rock formation.
(c) Depth in (a & b) may vary in different formation depending upon local site condition and as per decision of Engineer-in-Charge and written order of Executive Engineers beyond the prescribed depth.

9.12 Length of 0.60 m of casing pipe should be left above ground level.

9.13 Casing should be installed on compact rock properly and as per instructions of the Engineer-in-charge and in a manner so that there is no passage between the sheet rock and casing pipe to avoid entry of foreign materials.

9.14 Jointing of casing pipes: As per relevant BIS Code.

9.15 Necessary arrangements shall be made for verification by Engineer-in-charge for checking of depth of overburden and bore hole, length of casing, static water level, discharge, and any other requirement as shall be felt necessary from time to time.

9.16 Formation samples at intervals of 3 m or wherever there is a change in formation shall be collected during drilling and properly packed in polythine bags and labelled with depths and Tube well names and handed over to site in charge.

9.20 Drilling fluid/ betonites Mud/Drilling Foam, if required, for drilling borehole for efficient removal of cuttings to reach the targeted depth and saving borehole from collapsing will be the responsibility of the Bidder.

9.21 Bidder shall collect 1-litre Water samples during the following Stages as per direction of Engineer in charge;

(a) Whenever first water bearing zone is encountered.
(b) When development is complete.

9.22 After completion of the work the Bidder shall arrange all requisite equipments for testing yield of the Tube wells for requirement of `900 LPM.

9.23 The lowering of pipes shall be concentric with the bore hole. The concentricity in no case shall exceed the tolerable limit as per direction of engineer-in-charge.

9.24 The quality of water in the Tube well should be acceptable quality as per ISS / as directed by Engineer-In-charge.

9.25 A bore should not be declared failure until it is successfully drilled for a target depth . The failure bore is to be 100% checked by the concerned Asst-Engineer before finally recommending a bore as failure. The Executive Engineer should be fully satisfied on the genuineness of failure bore cases. If required the drilling operation will be allowed up to 100 Mtrs. beyond the prescribed drilling depth with due approval of Executive Engineers.

9.26. If during any operation carried-out for completion of the Tube well any tools, pipes etc. fails down in the bore hole the Bidder shall carry out the necessary fishing operation at his own cost. He shall use his own equipment for such operation. If the Tube well becomes useless due to any fallen articles, it shall he treated as abandoned Tube well no payment shall be made and any payment made earlier the running bill will be recovered from him.

9.27 It shall be the responsibility of the Bidder to keep finished bore of bore wells with or without pump installed for testing over it, will be protected and guarded from vandalism till the entire work assigned to him is completed and measurements thereof recorded in the department measurement book. In the event of the Tube well damaged by miscreants or otherwise before taking over by OLIC, the Bidder shall have to restore it to its' original condition at his own cost. In case of failure to do so, no payment shall be made to him. The Bidder shall clean the site and level it after shifting the drilling machine from the site of work.

9.28. In the event of failure of a Tube well due to less than minimum yield, (900 LPM) no alternative fresh boring shall be taken up without written approval of the Engineer-In- Charge .

9.29. After approval of strata and strata chart (showing well pipes assembly) by the Engineer-in-Charge casing pipes are to be lowered in presence of the Asst-Engineer and Junior Engineer concerned.

9.30. The Departmental officers will inspect the lowering of the Tube wells as soon as possible of getting information from the Bidder to that effect.

9.31 The Tube well shall be developed until stabilisation and turbidity free clear water is obtained. The turbidity in final discharge shall in no case exceed the acceptable limit of 5 units collected after 20 minutes of starting the pump in the Tube wells or as per direction of engineer in Charge.

9.32 The length of casing pipe of bore hole is selected on the basis of over burden / water bearing fracture and yield expected.

9.33 Cement grouting in the bore around the casing pipe is to be made to avoid entry of foreign materials to the Tube wells.

9.34 All the abandoned /rejected bore holes are to be filled in with sand to prevent fatal accident in future.

9.35 The Contractor shall have to deposit the processing fees, inspection charges of H.T./L.T. line/Sub-Station , M.V. inspection charges of motor, service connection charges and security deposits etc. Initially, which will be reimbursed by OLIC on production of documents.

9.36 No separate cost will be paid for failure Tube well.

9.37 In case of failed Tube wells, it is the responsibility of the Bidder to lift the casing pipes for reuse. If casing pipes are not recovered from the failed bore wells, the cost of such pipes will be deducted from the bills of the Bidder or to be recovered from the security deposit of the Bidder.

9.38 Agreement for the work will be drawn up in PWD P1 contract with adopted mutatis-mundatis form of Govt. of Odisha and these terms & conditions form a part of the agreement.

9.39 Any other instruction of Engineer-in-charge are to be carried out depending on the field condition.

TECHNICAL SPECIFICATION FOR STEEL MATERIALS

100X50 MM MS CHANNEL
50X50X6 MM MS ANGLE

01.00 **Scope:**

The Specification covers the manufacturing, testing before dispatch and delivery at destination at site stores.

100X50 MM MS CHANNEL
75x40 MM MS CHANNEL
50X50X6 MM MS ANGLE

As per I.S: 2062 and its latest amendments for grade A

02.00 **Standards:**

The steel materials shall comply with the requirements of latest issue of IS -2062 Gr-A except where specified otherwise.

03.00 **'V' CROSSARMS:**

The cross-arm shall normally be constructed of steel and it will be the contractor's responsibility to ensure that the conductor spacing at the Cross-arms is adequate to prevent phase clash while supporting the loads generated, as per the Contractor's line design, by conductor weight, by wind, and by conductor tension for maximum wind span and worst design conditions, for all pole duties and for all permitted line deviations.

Cross-arms shall be fixed to the pole in a manner which prevents rotations in any plane even if the bolts are not fully tightened.

The Cross-arms dimensions and characteristics given in this specification are intended to describe typical distribution structure and to maintain the general look of the existing network and take advantage of the familiarity of the Employer's staff with these kinds of arrangements.

04.00 **Cross arms Design Calculations:**

The Contractor shall design the cross arm length and section configuration. He shall provide calculations to satisfy the Executive Engineers that the choice of length complies with the requirements of 11KV lines in respect of conductor phase spacing and to avoid conductor clashing for the span lengths and tension limitations specified or designed.

The Cross arm sections shall be determined by taking cognisance of the design wind and weight spans, cross arm length, as well as calculated conductor tension limits under worst design conditions and wind pressure.

04.01 **Fabrication:**

Cross arms for 11KV construction at intermediate and light angle poles shall be fabricated from grade 43A mild steel of channel section and for heavy angle poles, end poles and section poles fabricated from grade 43A mild steel of angle section. The grades of structural steel shall conform to ISO/R/630/1967 or IS- 226:1975they shall be hot dip galvanized as per specification.

The Cross arm shall be drilled to accommodate pole bolts and any insulator fittings included in the Contractors' design.

Except where otherwise indicated all dimensions are subject to the fallowing tolerances:

- Dimensions up to and including 50mm : + 1 mm; and
- Dimensions greater than 50 mm : + 2%

All steel members and other parts of fabricated material, as delivered, shall be free of warps, local deformations, unauthorized splices, or unauthorized bends. Bending of flat strap shall be carried out cold. Straightening shall be carried out by pressure and not by hammering. Straightness is of particular importance if the alignment of bolt holes along a member is referred to its edges.

Holes and other provisions for field assembly shall be properly marked and cross referenced. Where required, either by notations on the drawings or by the necessity of proper identification and fitting for field assembly, the connections shall be match marked.

A tolerance of not more than 1 mm shall be permitted in the distance between the centre lines of bolt holes. The holes may be either drilled or punched and, unless otherwise stated, shall be not more than 2 mm greater in diameter than the bolts. When assembling the components, force may be used to bring the bolt holes together (Provided neither members nor holes are thereby distorted) but all force must be removed before the bolt is inserted. Otherwise strain shall be deemed to be present and the structure may be rejected even though it may be, in all other respects, in conformity with the specification.

The backs of the inner angle irons of lap joints shall be chamfered and the ends of the members cut where necessary and such other measures taken as will ensure that all members can be bolted together without strain or distortion. In Particular, steps shall be taken to relieve stress in cold worked steel so as to prevent the onset of embrittlement during galvanizing.

Similar parts shall be interchangeable.

Shapes plates shall be fabricated and assembled in the shop to the greatest extent practicable. Shearing, flame cutting, and chipping shall be done carefully, neatly, and accurately. Holes shall be cut, drilled, or punched at right angles to the surface and shall not be made or enlarged by burning. Holes shall be clean –cut without torn or ragged edges and burrs resulting from drilling or reaming operations shall be removed with the proper tool.

Shapes and plates shall be fabricated to tolerances that will permit field erection within tolerances, except as otherwise specified. All fabrication shall be carried out in a neat and workmanlike manner so as to facilitate cleaning, painting, galvanizing and inspection and to avoid areas in which water and other matter can lodge.

Contact surfaces at all connections shall be free of loose scale , dirt, burrs, oil and other foreign materials that might prevent solid seating of the parts.

04.02 **Cross arm replacement:**

Where rehabilitation of existing networks requires the replacement of 'V' or horizontal cross arm or replacement of a pole with a 'V' or horizontal cross arm then the replacement unit shall be matched to the original so as not to change the general look of the line.

Only in instances, where large sections of the line may require replacement or the original design is no longer available or desirable, shall be contractor, with the permission they replace the original cross arm configuration with a new design.

The replacement cross arm shall conform to the requirements of the fabrication section of this specification.

04.03 **Other Associated Steel work:**

Other steelwork may be required for mounting line equipment such as AB switch, surge arresters and insulators.

The contractor is expected to design the steelwork and to accompany the bid with the relevant drawing and substantiating design calculations.

The steelwork shall be fabricated from 43 A mild steel as per ISO/R/630/1967 or IS-226: 1975 and it shall be hot dip galvanized as per the surface Treatment section of this specification.

All required fixing nuts, bolts and washers shall be supplied along with cross arms.

05.00 **BOLTS AND NUTS :**

All bolts and nuts shall comply with ISO 272, 885, 888, 4759/1 and the washer shall conform with ISO/ R/ 887. All hardware shall be galvanized as per the surface Treatment.

All bolts, studs, screw threads, pipe threads, bolts heads and nuts shall comply with the appropriate Indian Standards for metric threads, or the technical equipment.

All bolts, nuts and washers placed in outdoor positions shall be treated to prevent corrosion and electrolytic action between dissimilar metals.

Protective washers of suitable material shall be provided front and back on the securing screws.

The dimensions and characteristics given are intended to describe typical ISO metric bolts, nuts and washers, such as are commonly used in the construction of distribution lines and other distribution plant and equipment. However, the Bidder is free to propose alternative hardware.

Furthermore, it shall be the Bidder's responsibility to ensure that the bolts, screws, nuts, washers, clips, fasteners of any description and any other hardware, are capable of supporting the loads action

on them, as per the Bidder's design, by wind, vibration and short circuit forces for all permitted line and plant duties.

The ISO metric galvanized back hexagon bolts list in the table of Bolt Threaded Depth in this specification shall be used either as pole bolts, namely, where the bolt is required to pass through the centre of the pole, or as assembly bolts. The bolts shall comply with ISO 272, 885, 888, 4759/1 and shall also conform with the dimensions given in the table of Bolt Treaded Depth Nuts shall be in accordance with ISO 272, 885, 888, 4759/1.

Unless otherwise specified, each bolt shall be supplied with one full nut and one washer. Individual nuts may also be used for special purpose, such as lock nuts. These nuts shall also conform with ISO272, 885, 888, 4759/1.

Bolt threaded length

Diameter	Length (mm)	Threaded Length (mm)
M12	80	30
	140	70
	200	70
	220	70
	230	70
	260	80
M16	40	Fully Threaded
	45	Fully Threaded
	110	38
	200	70
	220	70
	230	70
	260	80
	280	80
M20	40	Fully Threaded
	220	70
	280	80
M22	40	Fully Threaded

Screw threads shall be parallel throughout their length. They shall be so formed that, after galvanizing, the nut can be easily screw by hand over the whole threaded length, without excessive play. Before dispatch from the works one washer shall be fitted to each bolt and a nut shall be screwed on the whole threaded length and left in this position.

05.01 **Permissible Loads**

The safe working shear stress of bolts is 118N/mm^2, with the area of the bolt measured at the root of the thread. The following table referenced Bolts Safe Working Loads shows the ultimate tensile strength and the tensile stress areas, as per ISO 272, 885, 888, 4759/1 and the safe working tensile and safe working shear loads for the bolts covered by this specification. The ultimate shear strength has been assumed to be 75% of the ultimate tensile load and a factor of 2.5 has been applied:

Bolts safe working loads

Bolt Size	Ultimate Tensile Stress (N/mm^2)	Tensile Stress Area (MM^2)	Ultimate Tensile Strength (kN)	Safe Working Tensile Load (kN)	Safe Working Shear Load (kN)
M12	392	84.3	33.05	13.22	9.91
M16	392	157.0	61.54	24.62	18.46
M20	392	245.0	96.04	38.42	28.81

05.02 **Eye Bolts and Nuts**

M20 eye bolts shall preferably be of drop forged manufacture and shall be supplied complete with one full nut.

Eyebolts shall be manufactured from steel to ISO 272, 885, 888, 4759/1 and shall meet the requirements for mechanical properties detailed in ISO 272, 885, 888, 4759/1.
Where a welding process is used in the manufacture, each eye bolt shall be individually proof tested by the manufacturer in accordance with ISO 272, 885, 888, 4759/1 to 125% of its safe working tensile load that is to 48kN. The safe working tensile load shall be the ultimate axial tensile strength divided by the factor of safety of 2.5.

The eye shall be permanently and legibly stamped with the letter METRIC in letters not less than 3 mm high.

The safe working load of any eye bolt is that load which may be safely carried in an axial direction. If loaded in any other direction the safe working load is reduced and reference shall be made to the following table for safe working loads of M20 eye bolts and eye nuts.

Safe working loads of M20 eye bolts and eye nuts

Angle between Direction of Load and Axis of Bolt	**Safe Working Load (KN)**
0	38.42
5	30.55
10	25.52
15	22.05
20	19.54
25	17.67
30	16.24
35	15.13
40	14.26
45	13.58
50	13.06
55	12.68
60	12.40
65	12.23
70	12.15
75	12.17
80	12.28
85	12.49
90	12.81

05.03 **Tie Rods**

The rods shall be supplied with four full nuts. The material of the rods shall be steel to ISO 272, 885, 888, 4759/1 and shall meet the requirements for mechanical properties detailed in ISO 272, 885, 888, 4759/1. Associated nuts shall comply with ISO 272, 885, 888, 4759/1.

05.04 **Washers**

Washers shall be of the following different types:

- Round, flat, mild steel washers and having the dimensions shown in the following table: Round flat washer dimensions.
- Tapered, squared (curved) malleable iron washers.

- Square (curved) mild steel washers;
- Square, flat, mild steel washers, in accordance with ISO/R/887 or IS- 2016: 1967.
- Tapered, D shaped, malleable iron washers, in accordance with ISO/R/887 or IS- 2016:1967.

Round flat washer dimensions

Type	Internal Diameter (mm)	External Diameter (mm)	Thickness (mm)
M12	14	28	2.5
M16	18	34	3.0
M20	22	39	3.0
M22	24	44	3.0

05.05 **Screws**

Screws may be:

- Coach screws of galvanized mild steel, gimlet pointed, in accordance with BS 1494.The screws shall be 10mm in diameter and supplied in lengths of 38mm, 76mm and 152mm; or
- Roundhead drive screws of galvanized mild steel, 63 mm long and with 6.3 mm diameter and in accordance with BS 1494-1.

TECHNICAL SPECIFICATION FOR 11KV INSULATORS

01.0 **SCOPE**

This Specification covers Design, Engineering, Manufacture, testing, inspection before despatch, forwarding, packing, transportation to site, Insurance (both during transit & storage), storage, Erection, Supervision, testing and commissioning of 11 KV Insulators for use in the networks of DISTCOMS.

The equipment offered shall have been successfully type testes and design shall have been satisfactory operation for a period not less than five years on the date of bid opening. Compliance shall be demonstrated by submitting with the bid, (i) authenticated copies of the type test reports and (ii) performance certificates from the users.

The scope of supply includes the provision of type test, Rates for type tests shall be given in the appropriate price schedule of the bidding document and will be considered for evaluation.

The insulators shall conform in all respects to highest standards of engineering, design, workmanship, this specification and the latest revisions of relevant standards at the time of offer.

Any departure from the provisions of this specification shall be disclosed in the Non Compliance Schedule at the time of bidding.

02.00 **STANDARDS**

Except where modified by the specification, the Insulator shall be designed, manufactured and tested in accordance with the latest editions of the following standards.

IEC/ISO/BS	IS	Subject
IEC 120		Dimensions of ball and socket coupling of string insulator units.

IEC 372 (1984)		Locking devices for ball and socket couplings of string insulator units: Dimensions and tests.
IEC 720		Characteristics of the line post insulators.
IEC 383		Insulators for overhead lines with a nominal voltage above 1000V.
	IS- 731	Porcelain insulators for overhead power lines.
	IS- 2486 (Part I,II,III)	Specification for insulator fittings for overhead power lines with a nominal voltage greater than 1000V.
IEC 273		Characteristics of indoor and outdoor insulators.
	IS- 2544	Porcelain post insulators.
IEC 168		Tests on post insulators.
IEC 575		Thermal-mechanical performance test and mechanical performance test on string insulator units.
IEC 575		Thermal-mechanical performance test and mechanical performance test on string insulator units.
	IS- 1445	Porcelain insulators for LV overhead power lines.
	IS- 5300	Stay insulators.
ISO 8501-1		Shot blasting.
	IS- 6005	Phosphating of iron and steel.
	IS- 2633	Tests on galvanized steel.
ISO 1460	IS- 2629	Hot dip galvanizing.
IEC 1109		Composite Insulators.
IEC 305		Characteristics of string insulators of the cap and pin type.
IEC 471		Dimensions of clevis and tongue coupling of string insulator units.
ISO 1460 BS 729	IS 2629	Specification for hot dip galvanized coatings on iron and steel articles.

This list is not be considered exhaustive and reference to a particular standard or recommendation in this specification does not relieve the contractor of the necessity of providing the goods complying with other relevant standards or recommendations.

TECHNICAL

The types of insulators described in this specification are intended to maintain the general look of the existing network and to take advantage of the familiarity of the employer's staff with these types of units. However, the Bidder is free to make alternative proposals.

It shall be the Bidders responsibility to ensure that the insulators conform to or exceed both the mechanical electrical properties specified in this specification and all related international and Indian standards.

The strength of the proposed insulators shall be capable of supporting the loads generated as per the Bidder's line design, by wind acting on the conductors and insulators, by conductor tensions for maximum winds pan and worst design conditions and for all insulator duties and permitted line deviations.

03.00 **PIN INSULATOR.**

Nominal Voltage	**11KV**
Visible discharge Voltage	9 KV rms.
Wet power frequency one minute withstand voltage	35 KV rms.
Power frequency puncture voltage	105 KV rms.
Impulse withstand voltage peak	75 KV peak
Creepage distance	320 mm
Protected Creepage distance	--
Minimum failing load up to conductor size 100 mm^2	**11KV**

04.00 **Performance Characteristics**

The insulators shall be suitable for use on the DISTCOMS distribution systems with conditions as shown in the sections on service conditions and system conditions.

They shall conform to IEC 720 or IS 731 and shall meet the following performance criteria.

05.00 **Materials**

The insulators used by the Employer at present are of the brown glazed porcelain type.

Porcelain in the line pin insulators shall be sound, free from cavities and other defect, thoroughly verified with uniform brown glaze and have a high quality smooth finish. The glaze shall cover all the external parts of the insulator. The cement used shall not give rise to chemical reaction with metal fittings.

05.01 **Design and Construction**

The relevant vertical dimension shall be such that when combined with pin insulator spindle describe in technical specification for line fittings, the design requirements are the specified voltage level for conductor clearance from the cross arm shall be met.

The design shall be such that stresses due to expansion and contraction in any part of the insulator shall not lead to deterioration. Precautions shall be taken to avoid chemical reaction between cement and metal fittings by the choice of suitable materials or by the manufacturing method. Single piece insulator construction is preferred.

The insulating material shall not engage directly with hard metal. Pin insulator shall be provided with a thimble of suitable material. Cement used in the insulator shall not cause fracture by expansion or loosening by contraction and proper care shall be taken to locate the individual parts correctly during cementing. The insulators shall have a centre conductor groove.

05.02 **Dimensions**

The Bidder shall guarantee that the dimensions and tolerances of the insulator offered are in accordance with the technical drawing submitted with the bid documents.

05.03 **Markings**

All insulators shall be clearly marked with the name or trademark of the manufacture, the minimum failing load in KN and the month and year of manufacture. They shall also br marked with the name of the employer. These marking shall be legible and indelible. The markings may be printed or impressed, provided such impressions do not impair the performance of the insulator. Markings shall be applied before firing.

05.04 **Tests**

Type, acceptance and routine tests shall be carried out and results given alongwith certification as appropriate in the Technical Schedule and Test Certificates Schedule of this specification. The insulators shall comply with the following tests as per IS- 731.

05.05 **Types tests**

The following type tests are required:

- Visible Discharge test;
- Impulse voltage withstand test;
- Wet power frequency voltage withstand test;
- Mechanical failing load test

24-hour mechanical strength test;

05.06 **Acceptance Tests**

The test samples having withstood the routine tests shall be subjected to the following tests according to the sampling procedure if IEC 383 clause 23;

- Verification of dimensions
- Electro-mechanical failing load test;
- Puncture test;
- Porosity test;
- Test for galvanization of ferrous parts

05.07 **Routine Tests**

The following routine tests shall be conducted on each set and results are to be furnished for consideration:

- Visual examination:
- Tensile load test;
- Power frequency voltage test

06.00 **DISC INSULATOR**

06.01 **Performance Characteristics**

Nominal Voltage		11 KV
Minimum Number of disc is string		1
Visible discharge Voltage		9 KV rms.
Wet power frequency one minute withstand voltage		35 KV rms.
Power frequency puncture voltage		
Impulse withstand voltage peak		75 KV
Minimum Creepage distance		320 mm
Minimum protected Creepage distance		--

Minimum Mechanical failing load for conductor sizes of 232 MM^2 AAAC		120 KN
80 & 100 mm^2		90
55 mm^2		70

06.02 **Materials**

The disc insulators used by the Employer at present are of the brown glazed porcelain type.

Insulators shall be of the cap and pin type and the insulating material shall be brown glazed aluminous porcelain.

The porcelain used in the manufacture of shells and shall be sound, free from defects, thoroughly vitrified and smoothly glazed. The finished porcelain shall be glazed in brown colour. The glaze shall cover all exposed parts of the insulator and shall have a good lustre, smooth surface and good performance under the extreme weather conditions of a tropical climate. It shall have the same coefficient of expansion as of the porcelain body throughout the working temperature range. Cement used in the construction of the insulators shall not cause fracture by expansion or loosening by contrition and proper care shall be taken to locate the individual parts correctly during cementing.

06.03 **Design and Construction**

The design shall be such that stress due to expansion and contraction in any part of the insulator shall not lead to deterioration. Precautions shall be taken to avoid chemical reaction between cement and metal fittings, either by choice of suitable materials, or by the manufacturing method.

The design of the insulators shall be such that the shell shall not engage directly with hard metal. When units are coupled together, there shall be no contact between the shell of one unit and metal of the next adjacent unit.

Pin and cap shall be designed to transmit the mechanical stress to the shell by compression and develop uniform mechanical strength in the insulator. The cap shall be circular with the inner and outer surfaces concentric, of such design that it will not yield or distort under load conditions.

The pin ball shall move freely in the cap socket but without danger of accidental uncoupling during erection or in position. The design of the disc should be such that stresses due to expansion or contrition in any part of the insulator shall not lead to deterioration.

The locking device shall be so formed that when set there shall be no risk of the locking device being displaced accidentally under any conditions. Nothing but extreme deformation of the locking device shall separation of the insulator units or fittings. The hole for the security clip shall be counter sunk and the force required to pull the clip into its unlocked position shall not be less than 50 N (5 kg) or more than 250N(25 Kg.) Locking devices when in position shall be independent of rotation, and the efficiency of the locking shall be independent of the degree of opening applied to the locking device after insertion. The locking device shall be of austenitic stainless steel or phosphor brose and of the same design for all the complete insulator sets.

Pin shall be made drop forged steel and caps shall be made of malleable cast iron, spheroid graphite iron or drop forged steel. Pins and caps shall be duly hot dip galvanized and shall not be made by jointing, welding, shrink fitting or any other process from more than one piece of

material. The finished product shall be free from cracks and air-holes, and shall be of such quality so as to comply with the requirements of this Specification.
Insulator units assembly shall be concentric and co-axial within limits as permitted by the relevant standards.

06.04 **Corrosion Protection and Finish:**
Ferrous parts, unless of stainless steel, shall be hot dip galvanized in accordance with BS -729 or IS 2629. However, the minimum average thickness of coating of 85 micron (μm).

06.05 **Dimensions:**
The dimensions of ball and socket insulators shall be in accordance with the standard dimensions stated in IS 2486-(Part-II)/IEC-120. The dimensions shall be checked by appropriate gauge after galvanizing.

The Bidder shall guarantee that the dimensions and tolerances of the insulator offered are in accordance with the drawing, which shall accompany the bid documents.

All components shall comply with the relevant standards.

06.06 **Markings:**
All insulators shall be clearly marked with the name or trademark of the manufacture and the year of manufacture. In addition each unit shall be legible and indelible. The markings may be printed or impressed provided such impressions do not impair the performance of the insulator. Markings shall be applied before firing.

One 10 mm. thick ring of suitable quality of paint shall be marked on the cap of each insulator of particular strength for easy identification of the type of insulator. The paint shall not have any deteriorating effect on the insulator performance. Different colour codes shall be used as identification mark for different insulators.

06.07 **Associated Hardware**
The hardware for insulator springs with disc insulators together with ball socket fittings shall be of standard design, so that units are interchangeable with each other and suitable for use with disc insulator of any make conforming to relevant Indian or International Standard.

06.08 **Security Clips**
Security clips use with ball and socket coupling shall be W-shaped type which provides positive locking of the coupling as per IS: 2468-(Part-III)/IEC: 372. The legs of the security clips shall be spread after assembly in the works to prevent complete withdrawal from the socket. The locking device shall be resilient, corrosion resistant and of suitable mechanical strength. There shall be no risk of the locking device being displaced accidentally or being rotated when in position. Under no circumstances shall be locking devices allow separation of fittings.

Split pins shall be used with bolts and nuts. The Bidder must note that 2.5% extra fasteners are to be supplied without any extra cost to the Employer to deal with losses during erection.

06.09 **Tests**
Type, acceptance and routine tests shall be carried out and results given alongwith certification as appropriate in the technical Data Schedule and Test Certificates Schedule of this specification.

06.10 **Type Tests**
The following type tests are required:

- Visible discharge test:

- Impulse voltage withstand test;
- Wet power frequency voltage withstand test;
- Electro-mechanical failing load test for string insulator units(porcelain type)
- 24 hour mechanical strength test;

06.11 **Acceptance Tests**

The test samples having withstood the routine tests shall be subjected to the following tests according to the sampling procedure of IEC 383 clause 23:

- Verification of dimensions
- 24 hour mechanical strength test;
- Electro-mechanical failing load teat string insulator units (porcelain type)
- Puncture test;
- Porosity test (porcelain type);
- Test for galvanization of ferrous parts

6.12 **Routine Tests**

The following routine tests shall be conducted on each set results are to be furnished for consideration:

- Visual examination;
- Tensile load test;
- Power frequency voltage test;

07.00 **POST INSULATOR FOR PRIMARY SUBSTATIONS**

07.01 **Post insulator (clamp top type)**

Bidders may offer substation design using post insulators of the clamp top type. The insulators shall be suitable for use in DISTCOMS primary substations with conditions as shown in the sections on Service Conditions and System Conditions.

They shall conform to IEC 273 or IS 2544 and shall meet the following performance criteria:

Normal Voltage		11 KV
Visible discharge voltage		9 KV rms.
Wet and dry power frequency one minute withstands voltage.		35 KV rms.
Power frequency puncture withstand voltage		1.3 times the actual dry flashover voltage.
Impulse withstand voltage peak		75 KV peak
Minimum creep age distance		380 mm
Minimum protected creep age distance		--
Minimum failing load (bending)		12.5 KN
Minimum failing load(torsion)		1200 Nm*

*while these are the minimum failing loads acceptable to the employer, it shall be the Bidder's responsibility to ensure that the mechanical strength of the offered insulators shall be capable of insulators, by conductor tensions for maximum wind span and worst design conditions and for all insulator duties and permitted line deviations.

The Bidder shall quote the make, type of insulation material, metal fittings along with cantilever, torsion, and tension and compression strengths.

The porcelain shall be sound, free from defects thoroughly vitrified and smoothly glazed to give a brown coloured finish. The glaze shall cover all exposed parts of the insulator and shall have a good luster, smooth surface and good performance under the extreme weather conditions of a tropical climate. It shall not be cracked or chipped by ageing under the specified service conditions .The glaze shall have the same co efficient of expansion as of the porcelain body throughout the working temperature range. The cement used shall not give rise to chemical reaction with metal fittings.

07.02 **Tests**

Type, acceptance and routine tests shall be carried out and results given alongwith certification as appropriate in the Technical Data Schedule and Test Certificates Schedule of this specification.

07.03 **Type Tests**

The following type tests are required:

- Visible discharge withstand test;
- Impulse voltage withstand test;
- Dry power frequency voltage withstand test
- Wet power frequency voltage withstand test
- Mechanical strength test for the poat insulators as per IEC 168/IS 2544;

07.04 **Acceptance tests**

The test samples having withstood the routine tests shall be subjected to the following tests according to the sampling procedure of IEC 383 clause 23;

- Verification of dimensions
- Temperature cycle test
- Mechanical strength test post insulators as per IEC 168/IS 2544;
- Porosity test on post insulators;
- Puncture test
- Test for galvanization of ferrous parts

07.05 **Routine Tests**

The following routine tests shall be conducted on each set and results are to be furnished for consideration:

- Visual examination
- Power frequency voltage dry test;
- Tests to prove mechanical strength

08.00 **STAY INSULATORS (11 KV)**

The insulators shall be suitable for use on the DISTCOMS distribution system with son dictions as shown in the sections on service Conditions and system Conditions 11KV Stay insulators shall be used on L.V. Stays.

08.01 **Performance Characteristics shall be strictly as per relevant IS.**

08.02 **Materials**

The insulators shall be brown glazed porcelain.

08.03 **Design**

The Bidder shall guarantee than the dimensions and tolerance of the insulators offered are in accordance with the drawing which shall accompany the bid documents.

The insulators shall be used with 7/8 SWG (7/4.00 mm) steel stay wire, having an overall diameter of 12.2 mm and tensile strength of 70 Kgsf/sq. mm. The insulators shall be suitable for use having a minimum stay wire hole diameter of 22 mm and be such that a straight stay wire can be passed through it.

08.04 **Markings**

All insulators shall be clearly marked with the name or trademark of the manufacture and the year of manufacture. These markings shall be legible and indelible. The markings may be printed or impressed, provided such impressions do not impair the performance of the insulator .Marking shall be applied before firing.

08.05 **Tests**

The insulators shall be subjected to the following type, acceptance and routine tests in accordance with IS -5300: 1969.

08.06 **Type Tests**

The following type tests are required:

- Dry power frequency voltage withstand test;
- Wet power frequency voltage withstand test;
- Mechanical strength test;

08.07 **Acceptance Tests**

The test samples having withstood the routine tests shall be subjected to the following tests according to the sampling procedure of IEC 383 clause 23;

Verification of dimensions

- Mechanical or electro- mechanical failing load test;
  Mechanical load shall be applied under conditions reproducing service conditions as closely as possible.
- Porosity frequency puncture test.

08.08 **Routine Tests**

The following routine tests shall be conducted on each insulator:

- Visual examination
- Mechanical load test.

TECHNICAL SPECIFICATION FOR 11 KV LINE FITTINGS

01.0 SCOPE

This Specification covers Design, Engineering, Manufacture, testing, inspection before despatch, forwarding, packing, transportation to site, Insurance (both during transit & storage), Storage, Erection, Supervision, testing and commissioning of 11 LV Line Fittings for use in the networks of DISTCOMS, Orissa.

The equipment offered shall have been successfully type tested and the design shall have been in satisfactory operation for a period not less than two years on the date of bid opening. Fittings which are components of insulator assemblies shall have been in satisfactory operation for a period not less than five years. Examples of such fittings are spindles for pin insulators, and hooks, conductor clamps, armour rods, and yoke plates for strain and suspension disc insulators. Compliance shall be demonstrated by submitting with the bid (i) authenticated copies of the type test reports and (ii) performance certificates from the users.

The scope of supply includes the provision of type tests. Rates for type tests shall be given in the appropriate price schedule of the bidding document and will be considered for evaluation.

The line fittings shall conform in all respects to highest standards of engineering, design, workmanship, this specification and the latest revisions of relevant standards at the time of offer.

02.00 **STANDARDS**

Except where modified by the specification, the fittings shall be designed, manufactured and tested in accordance with the latest editions of the following standards.

IEC/ISO / or other International Standard	**IS**	**Title**
	IS-2486	Metal fittings of insulators
ISO/R/630/1967	IS-2062:1992	Steel for general structural purposes
ISO 2092-1/2	IS-5082:1981	Wrought aluminium and aluminium alloys
DIN 6796		Conical washers
IEC 1284	IS-2121	Overhead power line fittings
BS 3288		Insulator and Conductor fittings performance
IEC 1089	IS-398	Aluminium conductors
IEC 502		Insulated power cables 1 -33 KV
ASTM D1000 IEC 454		Test methods of pressure sensitive, adhesive coated taps for electrical and electronic applications
BS 183		General purpose Galvanised Steel Wire
BS 4429		Turnbuckles for general engineering purposes
BS EN 20218-1 : 1994		Mechanical tests on steel wire
ISO 8501-1		Shot blasting
	IS -6005	Phosphate of iron and steel
ISO 1460	IS -2629	Hot dip galvanizing
	IS -2633	Galvanised steel tests
BS 1924		Tests on materials before stabilization
ISO 68, 261, 262, 724, 965/1, 965/3, BS-3643		Metric screw threads
BS 1387		Screwed and Socketed steel tubes
	IS – 2141	Hot dip galvanized stay strand

This list is not be considered exhaustive and reference to a particular standard or recommendation in this specification does not relieve the Contractor of the necessity of providing the goods complying with other relevant standards or recommendations.

GENERAL

03.00 This specification covers the design, manufacture, testing, supply, delivery and performance requirements of insulator fittings / hardware, conductor, splices, terminating connectors, binding and stay wire materials as required by the lines.

The dimensions and characteristics given in this specification are intended to described typical distribution overhead line fittings and hardware which will maintain the general look of the existing network and will take advantage of the availability of tools and the familiarity of the employers staff with these kind of arrangements.

However, the Bidder is free to propose alternative fittings and hardware provided the bid respects the general requirements of this specification.

Further more, it will be the Bidder's responsibility to ensure that all the fittings, hardware and accessories are capable of supporting the mechanical and electrical loads imposed on them by climatic conditions, conductor tensions and structure loads under worst design conditions as stated in the specification.

The Bidder is referred to the associated DISTCOMS Technical Specifications for additional information.

04.00 INSULATOR FITTINGS AND HARDWARE

Insulator fittings and hardware for use in the terminations or anchor points shall be capable of withstanding a tension force at least equal to the breaking loads of the insulators which are as follows ;

04.01 Conductors nominal breaking load

Conductor	Actual AAAC cross sectional area (mm^2)	Nominal Breaking Load (KN) of Conductor	Nominal Breaking Load (KN) of Insulator
Rabbit Equivalent	55 AAAC	16.03	70 KN
Racoon Equivalent	80 AAAC	23.41	90 KN
Dog Equivalent	100 AAAC	29.26	90 KN
Panther Equivalent	232 AAAC	68.05	120 KN

04.02 Disc Insulator Fittings

The insulators shall be cap and pin type with ball and socket couplings. The hardware for insulator strings, whether suspension or strain insulators, together with ball and socket fittings shall be of standard design. This hardware shall be interchangeable and suitable for use with disc insulators of any make conforming to relevant Indian and International Standards.

Fully dimensioned drawing of the complete insulator string hardware and their components parts should show clearly the following arrangements.

1. Attachment of hanger or strain plate
2. Suspension assemble.
3. Dead and assembly
4. Yoke plates.
5. Hardware fittings of ball and socket type for interconnecting units to the yoke plate.
6. Anchor links for connection of tension strings to cross arms with suitable fittings.

6.2.1(a) Ball and socket designation

The designation should be in accordance with the standard dimensions stated in IS: 2486 (part-II) / IEC : 120. The dimensions shall be checked by appropriate gauge after galvanizing.

04.03 Ball Ended Hooks

Ball ended hooks, together with section straps, shall be used to attach the ball and socket chain of insulators to the angle, section and end pole cross arm.
Ball ended hooks shall be manufactured to comply with ISP/R/630/1967 or IS-2026:1992 and shall be hot dip galvanized to conform with the section of Surface Treatment in this specification.
The dimensions of the ball ended hook shall be compatible with those of the section strap.

04.04 **U Bolt Shackles**

Where the requirements of the line design requires a double set of tension insulators, then a U bolt shackle, together with a ball ended eye link and a socket clevis, may be used to attach a combination of dual yoke plates, double chain of tension insulators and conductor clamp to the cross arm of the pole.

U bolt shackles shall be made to comply with ISO/R/630/1967 or IS-2062:1992 and shall be hot dip galvanized to conform with the section on Surface Treatment.

The dimensions of the U bolt shackle shall be compatible with those of the ball ended eye link and the cross arm, specified in the DISTCOMS specification.

04.05 **Ball Ended Eye Links.**

Where the requirements of the line design requires a double set of tension insulators, a ball ended eye line, together with an U bolt shackle and a socket clevis, shall be used to attach a combination of dual yoke plates, double chain of tension insulators and conductor clamp to the cross arm of the intermediate H pole. In general, ball ended eye links shall be used to attach ball and socket combinations to other associated hardware.

Ball ended eye links shall be made to comply with ISO/R/630/1967 or IS-2062:1992 and shall be hot dip galvanized to conform with the section on Surface Treatment.

The dimensions of the ball ended eye link shall be compatible with those of the insulators and those of the U bolt and socket clevis.

04.06 **Socket Clevises**

Socket clevises may be used at 11 KV termination points to attach the compressed termination to the closest insulator in the chain. They shall also be used where lines require a duplicate chain of tension or suspension insulators. In this case a socket clevis may be required to attach the bottom insulator to the bottom dual yoke plate and the ball ended hook or eye link to the top dual yoke plate.

Socket clevises shall be made to comply with ISO/R/630/1967 or IS -2062:1992 and all ferrous parts shall be hot dip galvanized in conformity with the section on surface treatment. The socket clevises shall be delivered complete with phosphor bronze security clip, mild steel pin and washer and stainless steel split pin.

The dimensions of the socket clevis shall be compatible with the ball end in strain insulator pins and in other hardware and with the dimensions of the dual yoke plate.

04.07 **Dual Yoke Plates**

Dual yoke plates may be used where 33 KV line require a duplicate chain of tension or suspension insulators. The dual yokes may be required to attach the insulators to the cross arm on the one hand and to the conductor termination or suspension clamp on the other.

Dual yoke plates shall be made to comply with ISO/R/630/1967 i.e.. IS-2062:1992 and all ferrous part shall be hot dip galvanized in conformity with the section on surface treatment.

The dimensions of the dual yoke place shall be compatible with those of the ball clevis and of the socket clevis, respectively.

04.08 **Ball Clevises**

Ball clevises may be used where lines require a duplicate chain of tension of suspension insulators. The ball clevises may be required to attach the first insulator in the chain to the first dual yoke plate.

Ball clevises shall be made to comply with ISO/R/630/1967 or IS- 2062:1992 and all ferrous parts shall be hot dip galvanized in conformity with the section on surface treatment. The ball clevises shall be delivered complete with mild steel pin and washer and stainless steel split pin.

The dimensions of the ball clevis shall be compatible with those of the dual yoke plate.

04.09 **Socket Tongues**

Socket tongues may be used where lines require a duplicate chain of suspension insulators. The socket tongue may be required to attach the suspension clamp to the lower dual yoke plate by means of a ball ended eye link. Alternatively, the suspension clamp may be attached directly to the dual yoke plate.

Socket tongues shall be made to comply with ISO/R/630/1967 or IS-2062:1992 and all ferrous parts shall be hot dip galvanized in conformity with the section on surface treatment. The socket tongues shall be delivered complete with phosphor bronze security clip.
The dimensions of the socket tongue shall be compatible with those of the suspension clamp.

04.10 **Pin Insulator Fittings.**

5.00 **Insulator Pin**

Pin insulator pins shall be made from grade 43A steel complying with ISO/R/630/1967 or IS-2062:1992 and shall be hot dip galvanized to conform with the section on Surface Treatment. The pins shall also comply with the requirements of IS-2486 (p[arts 1 & 2). The collar which is required in straight pins shall not be welded to the stalk. The complete pin shall be forged out of a single piece of material. The lower surface of the collar must be perpendicular to the axis of the stalk.
Each straight pin shall be fitt4ed with one hexagonal ISO metric nut and washer comply with the section reference Bolts, Nuts and Washers in the CESU specification.

The treads shall cover the whole of the stalk to ensure that the same pin insulator can be used both on channel and angle cross arms. They shall be ISO metric complying with ISO 68, 261, 262, 724, 965/1, 965/83 coarse threaded series, and shall be formed before galvanizing to such a depth that, in the finished state, the nut can be easily screwed by hand over the whole threaded length of the pin without excessive play. The bid shall state by what process the threads are formed.

05.01 **11 KV Insulator Pin**

The 11 KV pin insulator assembly complete is for use with the requisite cross arm and structure in an intermediate or light angle pole position. The galvanized steel pin when used with the 11 KV pin insulator described in the CESU specification of 33 KV, 11 KV Insulators, the combination shall meet the following requirements:

- Conductor clearance to cross arm shall be a minimum of 220 mm;
- The minimum creep age distance shall be not less than 320 mm;
- The insulator pin shall fit the steel channel or angle cross arms outlined in the specification.
- When fitted to the steel channel or angle cross arms shall have a mechanical failing loan (MFL) of at least, 10 KN.
- The deflection of the top of the pin at the specified failing loan shall be less than 1.5mm.

However, the strength of the proposed insulator assembly shall be capable of supporting the loads generated as per the Bidder's line design, by wind acting on the conductor and insulators, by conductor tensions for maximum wind span and worst design conditions and for all insulator duties and permitted line deviations. Design calculations shall determine the strength of the insulator assembly offered.

06.00 **TERMINATIONS AND CONNECTORS**

All splice or termination connectors shall be capable of being used with AAAC conductors complying with the DISTCOM Technical Specification for all Aluminium Alloy Conductors, the sizes stipulated in this specification.

The barrel of each fitting shall be packed with an abrasive, neutral, high melting point, soft grease and shall be delivered with the ends sealed. The quantity of grease shall be approximately half the volume of the bore.

The bore shall be tapered at each end for a distance of 5 mm. Tension splices shall be chamfered off leaving a minimum wall thickness at the ends of 2 mm.

All straight through tension and non tension connectors shall be provided with a conductor stop at the centre of the tube.

In the lug terminals, the palm faces shall be flat and the barrel length shall correspond to half the appropriate non tension connector.

If lugs have to be used with PVC covered conductors, an additional barrel length of 20mm shall be provided and the lugs counter bored to accommodate the PVC covering.

The palm faces of the lug connections shall be protected with an oil impregnated strippable plastic or other suitable coating.

The maximum tolerance in connector tubes shall be + 0.15 mm in internal and external diameters and +0.35 mm in concentricity.

The connectors offered shall be suitable for application by compression.

All terminations and splices shall be capable of being made with hand operated compression tool. The dies shall be removable from and interchangeable with the respective tools. For all AAAC conductors up to a cross section of 100 mm^2 die-less compression tools can be used.

A one piece tension connector shall be used and it shall be possible to compress the aluminium conductor without a requirement for de-stranding.

All connectors shall perform without distress under normal, cyclic loading and fault conditions and shall not limit the rating of the conductor on which they are used.

Conductor connectors shall be able to accommodate typical variations in dimensions of conductors supplied by different manufacturers and shall be of a material which will not react chemically with the conductors to which they are attached.

Tension connectors for use in line terminations of anchor points shall be capable of withstanding a tension force of at least 90% of the breaking loads of the conductors as given in the section referenced Conductors nominal breaking loads in this specification.

06.01 **Tension or Dead End Terminations.**

These terminations shall be manufactured from aluminium and be of the compression type, factory filled with a special grease compound to give optimum electrical and mechanical performance. They shall be used to terminate the main conductor under full tension at heavy angle, section and end pole position.

Conductor	**All Aluminium Alloy Conductor Cross Section (mm^2)**	**Overall Diameter (mm)**
Rabbit Equivalent	55 AAAC	9.45
Racoon Equivalent	80 AAAC	11.43
Dog Equivalent	100 AAAC	12.78
Panther Equivalent	232 AAAC	19.70

The dead end assembly shall be compression type with jumper connection terminal at one end. The jumper terminal shall be set such that the jumper will leave the clamp at an angle of 60 degrees to the axis of the main conductor. The area of bearing surface on all the connections shall

be sufficient to ensure positive electrical and mechanical contact and avoid local heating due to I2R losses. The resistance to the clamp when compressed on conductor shall not be more than 75% of the resistance of equivalent length of conductor.

Die compression areas shall be clearly marked on each dead-end assembly designed for continuous die compressions and shall bear the words "COMPRESS FIRST" suitably inscribed near the point on each assembly where the compression begins. If the dead end assembly is designed for intermittent die compressions it shall bear identification marks 'COMPRESSION ZONE' AND 'NON-COMPRESSION ZONE' distinctly with arrow marks showing the direction of compressions and knurling marks showing the end of the zones. The letters, number and other markings on the finished clamp shall be distinct and legible.

06.02 **Non Tension Terminations**

These fittings shall consist of palm type lug terminals and shall be used to terminate line jumpers and other non tension conductors on to equipment terminals, such as pole mounted transformers. Lugs shall be of two types: aluminium and bimetal. In the bimetal lugs the bimetal junction within the palm shall be of such design as to afford adequate protection against electrolytic corrosion.

All bolts, nuts and washers used to connect aluminium lugs shall be made of galvanized steel. Lugs with an aluminium palm shall be supplied with conical washers. The conical washer shall conform to DIN 6796 or equivalent.

The lugs shall be suitable for conductors having overall diameters as shown in the above table.

Lugs shall be suitable for fitting to 10 mm, 13 mm and 17 mm studs and the lug palm shall be of adequate dimension to accommodate the current rating of the conductor.

06.03 **Tension Connectors**

Tension connectors shall be used for making conductor splices under full tension and shall consist of an aluminium sleeve, factory filed with a special grease compound to give optimum electrical and mechanical performance.

These connectors shall be capable of being used to make splices in mid span and shall therefore be capable of supporting tension loads at least equal to the maximum conductor breaking load, as listed in table reference conductor nominal breaking load in this specification.

The fullest possible use shall be made of maximum conductor lengths and therefore tension joints shall be minimized but where they are not avoidable they shall preferable of the compression type and in accordance with the requirement of IEC-1284, IS-2121 and IS – 2486.

06.04 **Non Tension Connectors**

Non tension connectors comprise tap off connectors and straight through non tension connectors. The tap off connectors shall be used for branching off a main line and shall consist of a "C" shaped barrel which can be compressed on to the main conductor and in electrical contact with another closed barrel, holding the branch conductor forming a tee configuration. Both the closed and "C" shaped barrels shall be factory filled with a special grease compound to give optimum electrical and mechanical performance.

The straight through non tension connectors shall be used to splice jumpers and other non tension conductors and shall consist of an aluminium sleeve, factory filled with a special grease compound to give optimum electrical and mechanical performance. They shall preferably be of the compression type.

The range of connectors shall be of the AAAC listed in the section on Tension Terminations in this specification.

06.05 **Compression Tooling**

The range of connectors offered for conductors up to and including 232 mm^2 AAAC shall be capable of being compressed by a hand operated tool. The employer is already committed to the use of die-less hand operated mechanical compression tools on overhead line work. Use of this method of jointing will be preferred. However where the Bidder offers other types of compression jointing and connecting systems, details of the tools, dies and methods shall be submitted with the bid.

Full details of jointing methods and quality control system shall be included in the Quality Assurance Plan.

06.06 **Materials**

The aluminium portion in all connectors shall be 99.5% pure aluminium, conforming with IS-5082 : 1981: Wrought aluminium and alloy bars.

Compounds and greases for improving contact between connectors and conductor strands shall used. They shall however, be chemically neutral to the connector and conductor materials and must be present in position in the delivered connectors.

The quantity of grease shall be approximately half the volume of the bore. As a rule of thumb to check that sufficient quantity is present, grease should be squeezed out of the conductor barrel entry point as the conductor is fully inserted. The grease in the connectors shall be protected from accumulating dust and other debris by means of plastic plugs, or equivalent.

06.07 **Markings**

The manufacturer's name or trademark shall be clearly stamped on every fitting. In addition, the following information shall be provided on connectors :

- Metric conductor size for which the connector is suitable;
- The die number suitable for compressing the connector;
- The points on the connector surface to be compressed;
- The sequence of die action i.e. the order in which different parts of the connector shall be compressed;
- The insertion length for the conductor with the location of any blocked off portions in the connector centre.

All markings shall be legible and indelible.

06.08 **Tests**

06.09 **Type tests**

The mechanical type test shall comply with BS 3288 part 1, whereas the electrical type test shall conform with IEC 1284/IS -2486.

06.10 Tensile type tests on tension connectors.

For these tests a connector shall be compressed onto the Employer's conductor in accordance with the manufacturer's installation instructions. The assembly shall be mounted in a tensile test rig and anchored in a manner approximating, as nearly as possible, the arrangement to be used in service, precautions being taken to avoid conductor bird caging. The length of conductor between the connector and any other joint or clamp in the test assembly shall be not less than 100 times the overall diameter of the conductor.

A tensile load of 50% of the breaking load of the conductor shall be applied and the conductor marked in such a way that movement relative to the connector can easily be detected. The tensile load shall be steadily increased to 95% of the break load of the conductor and then reduced to 90% and maintained at that level for one minute. During this period there shall be no movement of the conductor relative to the connector and no connector failure.

The loan shall ten be steadily increased until failure occurs. The load reading at which the failure occurs shall be recorded as a percentage of the nominal breaking load of the conductor.

This test shall be repeated successfully on three identical connectors.

06.11 **Tensile type tests on non tension connectors**.

This test shall be similar to the tensile test on tension connectors, except that the one minute test will take place at 10% of the nominal breaking load of the conductor.

For tap off connectors the tension shall be applied between the main and the tap off conductor and failure shall be recorded as a percentage of the nominal breaking load of the tap off rather than the main conductor.

06.12 **Electrical type tests.**

These tests shall be in accordance with the full electrical requirements of the latest edition of IEC 1284/IS-2486.

06.13 **Acceptance Tests**

Sample tests are intended to verify the quality of the materials and workmanship. They are made on connectors taken at random from batches about to be delivered. If required the sample test

shall be carried out on a sample of 0.4 percent of the quantity in the consignment subject to a minimum of three units.

In the event of a sample not meeting the test requirements, twice ;the original number of samples shall be tested. If all these samples meet the test requirements the consignment will be acceptable, but if any fail to do so, the consignment in total will be deemed to be unacceptable and shall be rejected.

Sample inspection however will be carried out, during which the following requirements shall be checked out on the chosen connector samples;

- That the connector dimensions correspond with those shown on the manufacture's drawing. The maximum tolerance allowable shall be +2%;
- That the ends of the connectors are suitably chamfered or coned to facilitate insertion of the conductors without damage;
- That the connectors are smooth, seamless and free from any defects likely to cause them to be unsatisfactory in service;
- That all identification marks are clearly legible;
- That galvanized parts are in accordance with the section on Surface Treatment;
- Those adequate quantities of grease are present in the connectors.

The number of samples to be checked shall be determined by the following algorithm :

$s = 4$ for $100<n<500$

$s = 4+1.5n/1000$ for $500<n<20,000$

$= 19 + 0.75n/1,000$ for $n>20,000$

Where s = number of samples selected and n = number of connectors in the consignment

Tests shall be carried out on all units. Mechanical routine testing shall comply with BS 3288 part 1, whereas electrical routine testing shall conform with IEC 1284/IS-2486.

The bid shall be accompanied by test certificates giving successful results of the type tests carried out on connectors identical in all details and representative of the range offered.

The test certificate must contain the following details:

- Type of connector;
- Manufacturer;
- Textual and photographic description of test arrangements;
- Description of conductors used;
- Details of tools and dies used;
- Details of grease or compound used;
- Test results;
- Level and duration of load current ; and
- Level and duration of short circuit current.

07.00 **BOLTS AND NUTS**

Bolts, nuts and washers shall conform to the section on Bolts and Nuts in the specification.

08.00 **LINE BINDING ACCESSORIES**

Line binding accessories consisting of soft aluminium binding wire, aluminium binding stirrups, semiconducting tape and anticorrosive tape are required for the line.

The aluminium binding wire & stirrups are for use to bind bare aluminium conductor to the insulators in the construction of all lines.

Semiconducting tape shall be used under the bind with 11 KV PVC covered conductors.

Anticorrosive tape shall be used as a barrier against ingress of moisture wherever copper and aluminium are spliced together, such as at the interface between aluminium conductors and the copper or brass terminals of equipment connected to the line. It may also be used to seal the ends of PVC covered conductor.

08.01 **Aluminium Binding Wire**

08.02 **Physical Characteristics**

The binding wire shall be EC grade hard-drawn aluminium rods of 3.53 mm diameter complying with IEC 1089/IS-398. The material comprising the wire shall have the following chemical composition:

- Aluminium 99.5% minimum
- Copper, silicon and iron 0.5% maximum

The surface of the wire shall be smooth and free from all irregularities and imperfections. Its cross section shall closely approximate that of a true circle.

08.03 **Characteristics of Aluminium Binding Wire**

Diameter of wire (mm)			**Cross sectional area of nominal dia. Wires (mm)**	**Weight of wire kg/km**	**Breaking Load (KN)**
Minimum	Nominal	Maximum			
3.51	3.53	3.55	9.787	26.45	1.57

08.04 **Inspection and Tests**

The following routine checks and tests shall be carried out on 10% of the coil of aluminium binding wire. If anyone sample fails to pass any one of the tests nominated for that wire, then samples shall be taken from every coil in the consignment and any coil from which a sample proves defective shall be rejected. On no account shall any rejected material be presented for test again.

- Physical properties

The surface of the finished wire shall be checked to ensure that it is smooth, free from all irregularities, imperfections and inclusions and that its cross section approximates closely that of a true circle.

The wire shall be checked to ensure that its diameter and weight are within the values given in the table above: Characteristics of aluminium binding wire.

- Ultimate tensile strength

When tested on a standard tensile testing machine, the value obtained for the ultimate tensile stress shall not be less than 1.57 KN.

- Wrapping test

The wire shall be closely wrapped round a wire of its own diameter to form a close helix of eight turns. Six turns shall ten be unwrapped and again closely rewrapped in the same direction as the first wrapping. The wire shall not break or crack when subjected to this test.

08.05 **Delivery**

The aluminium binding wire shall be delivered in 30 m coils, with a permitted tolerance of +5%. Random or non standard lengths shall not be permitted.

Each coil shall be adequately guarded against damage due to transportation and handling and shall have an outer layer of tightly wound polythene tape or be contained in a suitable, transparent plastic bag.

The internal diameter of the wound coil shall not be such as to result in a permanent set in the conductor.

08.06 **Aluminium Binding Stirrups**

08.07 **Physical Characteristics**

The following types shall be required:

- Intermediate pole binding stirrups for 33 KV and 11 KV; and
- Light angle pole binding stirrups for 33 KV and 11 KV.

It shall be the responsibility of the Bidder to ensure that the stirrups match the insulators.

Each aluminium stirrup shall be made of a 7 mm diameter aluminium rod complying with ISO 209-1/2.

The tensile strength of the stirrups shall be between 135N/mm^2 and 170 N/mm^2

08.08 **Fabrication**

Stirrups shall be cold formed on a suitable mandrel such that the bends are smooth and the surfaces free from indentations.

The stirrups for intermediate positions shall be formed through the following steps :

- The U shape shall be formed first around a mandrel of the appropriate diameter;
- The 90^0 bend in one plane and 45^0 bend in the other plane shall then be formed simultaneously with the ends of the rod fee. This is to ensure that torsion stresses are not induced in the material during this forming operation ; and
- The legs shall then be formed through 45^0 and finally the ends of the stirrup shall be bent through 90^0.

08.09 **Inspections and Tests**

The binding stirrups shall be inspected for surface indentations and irregularities. All bends shall be smooth and even.

08.10 **Semiconducting Tape**

08.11 **Physical and Other Characteristics**

The semiconducting tape shall be used to relieve 11 KV PVC covered conductor from electrical stress at insulator positions.

This tape shall be a soft, semiconducting, ethylene propylene rubber based, high voltage tape, used for binding 11 KV PVC covered conductor.

The semiconducting tape shall be non vulcanizing stable at temperatures upto 130^0 C, highly resistant to cracking, moisture and ultra violet radiation, unaffected by vibration and compatible with hydrocarbon and chlorinated solvents.

In addition, it shall be a semiconducting, self amalgamating tape, highly conformable to irregular shapes and compatible with solid dielectric cable insulation.

Specifically, the type offered shall be suitable for use with the 11 KV PVC covered conductors: AAA conductors and it shall comply with IEC 502 or equivalent.

The tape shall be indelibly and legibly marked along its length with a suitable legend, such as, “caution: semiconducting”. The tape shall be suitable for outdoor locations exposed to severe climatic conditions including ultraviolet rays, rain and wind. The tape shall have the characteristics shown in the following table.

Characteristics	**Characteristic Value**
Physical	
Thickness	0.75 mm
Tensile strength	1.00 kg/ cm^2
Elongation	800 %
Normal conditions temperature	90^0 C,
Emergency conditions temperature	130^0 C,
Electrical	
Ac resistivity	750 ohm-cm
Dc resistivity	750 ohm –cm
Maximum capacity	5 mA

In addition, all these tapes shall be ozone resistant (even when stretched 500%), they shall be resistant to ultraviolet radiation and they shall be compatible with ketones and hydrocarbon and chlorinated solvents.

09.00 **Inspection and Tests**

The semiconducting tapes shall be tested in accordance with ASTM D 1000: Test methods for pressure sensitive, adhesive coated tapes used for electrical and electronic applications, or equivalent.

09.01 **Anticorrosive Tape**

This tape shall be used to protect bimetal connections from the ingress of moisture and to seal the ends of PVC covered conductor. Therefore, the anticorrosive tape offered shall retain its composition and plasticity over a wise temperature range.

The anticorrosive tape shall be non cracking and non hardening and shall not be affected by vibration. The tape shall be highly impermeable to water and highly resistant to mineral acids, alkalis and salts.

In general, the anticorrosive tape offered shall comply with IEC 454 or equivalent.

09.02 **Markings**

The tape cores shall be marked with :i) the manufacturer's name or trademark and ii) the product reference.

10.00 **STAY ASSEMBLIES**

The stay assemblies are required for 11 KV & LV Line.

It will be the Bidder's responsibility to ensure that the stay assembly and each of the components offered in this bid are capable of supporting the loads generated, as per the Bidder's line design, by wind acting on the pole and by conductor tension for maximum wind span and worst design conditions, for all pole duties and for all permitted line deviations and stay angles.

The designs should be such that the number of stays used on any structure shall be kept to a minimum and in any event shall not be more than three for all structures except double end structures and section structures.

10.01 **Stay wire**

10.02 **Design**

The stay wire must be so designed and manufactured that it will withstand satisfactorily the thermal, mechanical and environmental stress to which it will be subjected during installation and throughout its lifetime in service on the employer's electrical networks. They stay wire covered by this specification is required for use on stays from concrete and steel poles on the Employer's overhead distribution networks. It may be used in localities close to the sea and where service corrosion conditions apply. Stay wires shall comply with the requirements of IS:2141 for Grade 4 steel wire. The minimum failure load shall be no less than the values shown in the following tables.

10.03 **Minimum Breaking Load**

Type of wire	Number of wires and construction	Nominal wire diameter (mm)	Minimum breaking load of single wire before stranding KN	Minimum breaking load of the stranded wire KN
Grade 4	7 (6/1)	4.00	8.78	58.45

10.04 **Manufacture**

The stay wire in this specification shall be drawn from steel which shall conform to BS 183 or IS-2141:1992. Galvanising shall comply with the requirements of IS 4826 for Heavy Coating or IEC 888 Class 2. The coating shall not be less than 490 g/m^2.

The wire shall be stranded galvanized steel wire, comprising seven wires, each having a nominal diameter of 4.0 m.

Each wire shall be completely and smoothly galvanized before stranding. The stranding shall be carried out in such a way that if an evenly distributed pull is applied at the ends of the completed strand, each wire shall take an equal share of the pull.

The lay of the wires shall be right handed. The length of lay, which shall be defined as the axial length of one complete turn of the helix, shall be 12 to 18 times the strand diameter.

10.05 **Stay sire Coils**

Normally, the stay wire shall be smoothly and uniformly coiled in standard 100 m coils with a tolerance of + 5%.

The coils shall have a minimum diameter of 520 mm. to prevent damage during transportation, handling or storage, the coils shall be lagged with paper and hessian or with hessian laminated paper, or in other alternative manner suggested by the contractor at the time of bidding and demonstrably safe.

10.06 **Labelling**

Each coil shall be clearly labelled with a metallic tag securely attached to the inner part of the coil and marked with the following information :

- Manufacturer's name;
- Size of wore;
- Length of wore in meters ; and
- Weight of wire in kilograms.

11.00 **Pole Brackets**

The pole bracket shall be made of mild steel to grade 43A conforming to ISO/R/630/1967 or IS-2062:1992 and galvanized in accordance with the section on Surface Treatment in this specification. Pole brackets shall be suitable for use on steel or concrete poles. The minimum strength of the bracket shall be equal to the design breaking load of the stay wire.

All bolts, nuts and washers shall be supplied with the stay assemblies, and shall conform to the requirements. Bolts shall have a metric thread and a 20 mm diameter.

11.01 **Stay thimbles**

Stay thimbles shall be made of mild steel, crescent shaped, steel bar conforming to ISO/R/630/1967 or Is-2062:1992 and galvanized in accordance with specification. The minimum strength of the thimble shall be equal to the design breaking load of the stay wire.

Thimbles shall have no sharp points and will normally supplied closed, in position with the fittings to which they are associated.

11.02 **Stay rods**

Stay rods shall be made of a steel bar of grade 43A, complying with ISO/R/630/1967 or IS-2062:1992 and galvanized in accordance with the specification.

The stay rod shall be adjustable by means of a turnbuckle complying with BS 4429 and shall be supplied complete with one lock nut and two thimbles. The tube portion of the turnbuckle shall be manufactured from heavy gauge steel tube, complying with BS 1387. The threads shall be cut to BS 3643, coarse pitch.

Alternatively a fixed length stay rod with eye end may be supplied, in which case a separate turn buckle shall be supplied. The turn buckle shall be of the type shown in Sketch in this specification.

The minimum strength of the stay rod shall be equal to the design braking load of the stay wire. The stay rod shall be at least 1800 mm long.

12.00 **Bolts and Nuts**

All bolts, nuts and washers shall conform to the section on Bolts and Nuts in the specification.

12.01 **Tests**

12.02 **Stay wire**

Sampling of stay wire shall be in accordance with IS -2141.

The wires shall be subjected to the following tests before manufacture and in accordance with BS 443, BS 4545 and IS-2141: 1992.

- Ductility test
- Tolerance on wire diameter

- The completed strand shall be tested as follows and in accordance with BS 433, BS 4545 and IS – 2144 : 1992, IS 4826
- Tensile and elongation test
- Chemical analysis
- Galvanising test
- The results of the tests shall conform to the values given in the following table

12.03 **Measurements and Tests for Stay Wire**

Description		**Required Value (Grade 4)**
Nominal size of stay wire		7/4.00 mm
Nominal Diameter of Individual Wires		4.00 mm
Minimum Diameter of Individual wires		3.90 mm
Maximum Diameter of Individual wires		4.10 mm
Minimum ultimate tensile strength of individual wires		700 N
Minimum percent elongation at rupture before stranding		5%
Minimum percent elongation at rupture after stranding		4.25%
Wrapping test for ductility : Turns on and off its own diameter		8
Lay ratio of finished strand		19 to 21
Minimum weight of zinc coating before stranding		490 g/ mm^2
Minimum weight of zinc coating after stranding		475 g/ mm^2
Chemical test : Sulphur and phosphorus content		Less than or equal to 0.060% each

TECHNICAL SPECIFICATION FOR ALL ALUMINIUM ALLOY CONDUCTORS (AAAC)

01.0 **SCOPE**

This Specification covers Design, Engineering, Manufacture, Testing, Inspection before despatch, forwarding, packing, transportation to site, Insurance (both during transit & storage), Storage, Erection, Supervision, testing and commissioning of all sizes of all Alluminium Alloy Conductors of the aluminium – magnesium – silicon for use in the distribution overhead power lines of DISTCOMS of Odisha.

The equipment offered shall have been successfully type tested and the design shall have been in satisfactory operation for a period not less than two years on the date of bid opening. Compliance shall be demonstrated by submitting with the bid, (i) authenticated copies of the type test reports and (ii) performance certificates from the users.

The scope of supply includes the provision of type tests, Rates for type tests shall be given in the appropriate price schedule of the bidding document and will be considered for evaluation.

The Aluminium Alloy Conductor shall conform in all respects to highest standards of engineering, design, workmanship, this specification and the time of offer.

02.00 **STANDARDS**

Except where modified by the specification, the Aluminium Alloy Conductor shall be designed, manufactured and tested in accordance with the latest editions of the following standards.

IEC/ISO/Other International Standard	**IS**	**Subject**
IEC : 1089		Round wire concentric lay overhead electrical standard conductors
	IS 398	Aluminium Alloy Stranded Conductors
	IS 9997	Aluminium Alloy redraw rods for electrical purposes

IEC 502 : 1994		Extruded solid dielectric insulated power cables for rated voltages 1.0 KV up to 30 KV
IEC 104		Aluminium Magnesium Silicon alloy wire for overhead line conductors
	IS 1778	Reels and drums of bare conductor.
BS : 6485-1971		PVC covered conductors for overhead power lines.

This list is not to be considered exhaustive and reference to a particular standard or recommendation in this specification does not relieve the contractor of the necessity of providing the goods complying with other relevant standards or recommendations.

03.00 GENEREAL

The wires shall be of heat treated aluminium, magnesium silicon alloy containing approximately 0.5% silicon and having the mechanical and electrical properties specified in the table and be smooth and free from all imperfections, such as, spills, splits and scratches.

Neutral grease shall be applied between the layers of wires. The drop point temperature of the grease shall not be less that 120^0 C.

03.01 Mechanical and Electrical Characteristics of Aluminium Alloy Wires used in the Construction of Stranded Aluminium Alloy Conductors

Nominal Diameter	Minimum Diameter	Maximum Diameter	Cross Sectional Area	Mass	Minimum Breaking Load		Maximum. Resistance at 20^0 C.
					Before stranding	After stranding	
1	2	3	4	5	6	7	8
mm	mm	mm	mm^2	Kg.km	KN	KN	Ohms/km
2.00	1.98	2.02	3.142	8.482	0.97	0.92	10.653
2.50	2.47	2.53	4.909	13.25	1.52	1.44	6.845
2.89	2.86	2.92	6.560	17.71	2.03	1.93	5.106
3.15 *	3.12	3.18	7.793	21.04	2.41	2.29	4.290
3.31	3.28	3.34	8.605	23.23	2.66	2.53	3.882
3.41	3.37	3.43	9.079	24.51	2.80	2.66	3.677
3.45	3.42	3.48	9.348	25.24	2.89	2.75	3.571
3.55	3.51	3.59	9.898	26.72	3.06	2.91	3.390
3.66	3.62	3.70	10.52	26.41	3.25	3.09	3.187
3.71	3.67	3.75	10.81	21.19	3.34	3.17	3.101
3.81 *	3.77	3.85	11.40	30.78	3.52	3.34	2.938
3.94 *	3.90	3.98	12.19	32.92	3.77	3.58	2.746
4.00	3.96	4.04	12.57	33.93	3.88	3.69	2.663
4.26 *	4.22	4.30	14.25	38.48	4.40	4.18	2.345

Maximum resistance value given in column 8 have been calculated from the maximum values of the resistivity as specified and the cross sectional area based on the minimum diameter.

The minimum breaking load is calculated on nominal diameter at ultimate tensile strength of 0.309 KN / mm^2 for wire before stranding and 95% of the ultimate tensile strength after stranding.

04.00 **PHYSICAL CONSTANTS FOR ALUMINIUM ALLOY WIRES**

04.01 **RESISTIVITY:**

For the purpose of this specification, the standard value of resistivity of aluminium alloy wire which shall be used for calculation is to be taken as 0.0325 ohm mm^2 /m at 20^0C. The maximum value of resistivity of any single ;wire shall not, however, exceed 0.0328 ohm. mm^2 /m at 20^0C.

04.02 **Density** :

At a temperature of 20^0 C, the density of aluminium alloy wire is to be taken as 2700 kg/m^2.

04.03 **Temperature Coefficient of Liner Expansion:**

The temperature coefficient of linear expansion of aluminium alloy wire is to be taken as 23 x $11^{-6}/^{0}$ C.

04.04 **Constant – Mass Temperature Coefficient**:

At a Temperature of 20^{0} C, the constant – mass temperature coefficient of resistance of aluminium alloy sires, measured between two potential points rigidly fixed to the wire, is taken as 0.00360/^{o} C.

05.00 **STANDARD SIZES**

05.01 **Nominal Sizes of Wires**

The aluminium alloy wires for standard constructions covered by this specification shall have the diameters as specified in the table and a tolerance of $\pm$ 1% shall be permitted on the nominal diameter.

05.02 **Standard Conductors**

The sizes, resistance and masses (excluding the mass of grease) of stranded aluminium alloy conductors shall be as given in table. The TPNODL preferred sizes are highlighted in the table.

05.03 Mechanical and Electrical Characteristics of Aluminium Alloy Stranded Conductors.

Sl. No.	Actual Area	Stranding and Wire Dia	Approx. Overall Dia	Approx. Mass	Calculated Maximum Resistance at 20^{0} C	Approx. Calculated Breaking Load
1	2	3	4	5	6	7
	mm^2	mm	mm	Kg.km	Ohms/km	KN
1	22	7/2.00	6.00	60.16	1.5410	6.45
2	34*	7/2.50	7.50	94.00	0.9900	10.11
3	55*	7/3.15	9.45	149.20	0.6210	16.03
4	80*	7/3.81	11.43	218.26	0.4250	23.41
5	100*	7/4.26	12.78	272.86	0.3390	29.26
6	125	19/2.89	14.45	342.51	0.2735	36.64
7	148	19/3.15	15.75	406.91	0.2290	43.50
8	173	19/3.40	17.00	474.02	0.1969	50.54
9	200	19/3.66	18.30	549.40	0.1710	58.66
10	232*	19/3.94	19.70	636.67	0.1471	68.05
11	288	37/3.15	22.05	794.05	0.1182	84.71
12	346	37/3.45	24.15	952.56	0.0984	101.58
13	400	37/3.71	25.97	1101.63	0.0829	117.40
14	465	37/4.00	28.00	1280.50	0.0734	136.38
15	525	61/3.31	29.79	1448.39	0.0651	146.03
16	570	61/3.45	31.05	1573.71	0.0598	158.66
17	604	61/3.55	31.95	1666.0	0.0568	167.99
18	642	61/3.66	32.94	1771.36	0.0534	178.43
19	695	61/3.81	34.29	1919.13	0.0492	193.25
20	767	61/4.00	36.00	2115.54	0.0446	213.01

- Sizes used by DISTCOMs

05.04 **Increases in Length due to Stranding**

When straightened out, each wire in any particular layer of a stranded conductor, except the central wire, is longer than the stranded conductor by an amount depending on the lay ratio of that layer.

05.05 **Resistance and Mass of Conductor**

The resistance of any length of stranded conductor is the resistance of the same length of any one wire multiplied by a constant as set out in the table below.

The mass of each wire in any particular layer of the stranded conductor, except the central wire, will be greater than that of an equal length of straight wire by an amount depending on the lay ratio of that layer. The total mass of any length of an aluminium stranded conductor is, therefore, obtained by multiplying the mass of an equal length of straight wire by an appropriate constant as mentioned below. In calculating the stranding constants as mentioned in the table below, the

mean lay ratio, that is the arithmetic mean of the relevant minimum and maximum values in table for lay ratio has been assumed for each layer.

05.06 **Calculated Breading Load of Conductor**

- For a conductor containing not more than 37 wires, 95% of the sum of strength of the individual wires calculated from the values of the minimum breaking load given in this specification.
- For a conductor containing more than 37 wires, 90% of the sum of the strengths of the individual wire calculated from the value of the minimum breaking load given in this specification.

05.07 **Calculated Area and Maximum Resistance of Conductor**

The actual area of a stranded conductor has been taken as the sum of the cross- sectional areas of the individual wires of nominal diameter.

Maximum resistance values of stranded conductor have been calculated on the basis of maximum resistivity and the cross-sectional area based on the minimum diameter of wires.

05.08 Stranding Constants

Number of Wires in Conductor	Stranding Constants	
	Mass	Electrical Resistance
(1)	(2)	(3)
7	7.091	0.1447
19	19.34	0.05357
37	37.74	0.02757
61	62.35	0.01676

06.00 **JOINTS IN WIRES**

06.01 **Conductor containing seven wires**

There shall be no joint in any wire of a stranded conductor containing seven wires, except those made in the base rod or wire before final drawing.

06.02 **Conductors containing more than seven wires**

In stranded conductors containing more than seven wires, joints in individual wires are permitted in any layer except the outermost layer (in addition to those made in the base rod or wire before final drawing) but no two such joints shall be less than 15 m apart in the complete stranded conductor. Such joints shall be made by cold pressure butt welding. They are not required to fulfil the mechanical requirements for un jointed wires.

07.00 STRANDING

The wire used in the construction of a stranded conductor shall, before and after stranding, satisfy all the relevant requirements of this standard.

The lay ratio of the different layers shall be within the limits given in the table for lay ratio.

In all constructions, the successive layers shall have opposite directions of lay, the outermost layer being right-handed. The wires in each layer shall be evenly and closely stranded.

In aluminium alloy stranded conductors having multiple layers of wires, the lay ratio of any layer shall not be greater than the lay ratio of the layer immediately beneath it.

07.01 **Lay Ratios for Aluminium Alloy Stranded Conductors**.

Number of Wires in Conductor	LAY RATIOS							
	3/6 Wire Layer		12 Wire Layer		18 Wire Layer		24 Wire Layer	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.

7	10	14						
19	10	16	10	14				
37	10	17	10	16	10	14		
61	10	17	10	16	10	15	10	14

NOTE: For the purpose of calculation the mean lay ratio shall be taken as the arithmetic mean of the relevant minimum and maximum values given in this table.

08.00 LENGTHS AND VARIATIONS IN LENGTHS:

Unless otherwise agreed between the Employer and the Contractor, stranded aluminium alloy conductors shall be supplied in the manufacturer's usual production lengths to be indicated in the bid Schedule. The Employer reserves the right to specify particular lengths of conductor such that certain drum lengths will be shorter than others. There will in both cases be a permitted variation of -0 +5% in the length of any one conductor length.

09.00 PVC COVERED CONDUCTOR

Where the AAAC is required to be covered with Polyvinyl Chloride (PVC) then the requirements for the covering shall be in accordance with BS 6485 : 1971 or other International Standard.

The PVC covering shall comply with the requirements of IEC 502 for Type ST1 or ST2 compound and shall be green in colour. The minimum thickness of the PVC covering at any point shall not be less than 1.66mm.

All PVC covered conductors shall be subjected to the spark test described in BS 6485: 1971 and there shall be no breakdown of the PVC covering during this test at an r.m.s. voltage of 12 KV. The same test may be completed with a DC voltage of 18 KV.

In addition each sample shall be subjected to high voltage, insulation resistance and thickness of covering tests as defined in the BS 6485 : 1971 standard.

The PVC covering of each of the samples subjected to the high voltage test shall withstand a R.M.S voltage of 25 KV for 5 minutes and those samples subjected to the insulation resistance test shall have a resistance, at 20^0 C, not less than the equivalent of 10 M ohm for a 1 Km length.

10.00 **TESTS**

10.01 **Type Tests**

The following tests shall be carried out once on samples of completed line conductor during each production run of up to 500 kms. of the conductor from each manufacturing facility.

10.02 **Ultimate Tensile Strength Test**

This test is intended to confirm not only the breaking strength of the finished conductor but also that the conductor has been uniformly stranded.

A conductor sample of minimum 5 m length fitted with compression dead end clamps at either end shall be mounted in a suitable tensile test machine. Circles perpendicular to the axis of the conductor shall be marked at two places on its surface. Tension on the conductor sample shall be increased at a steady rate up to 50% of the minimum UTS specified and held for one minute. The circles drawn shall not be distorted due to relative movement of the individual strands. Thereafter the load shall be increased at a steady rate to the specified minimum UTS and held at that load for one minute. The conductor sample shall not fail during this period. The applied load shall then be increased until the failing load is reached and the value recorded.

10.03 **D.C. Resistance Test**

On a conductor sample of minimum 5 m length two contact clamps shall be fitted with a pre-determined bolt torque. The resistance between the clamps shall be measured using a Kelvin double bridge by initially placing the clamps at zero separation and subsequently one meter apart. The test shall be repeated at least five times and the average value recorded. The value obtained shall be corrected to the value at 20^0 C, which shall conform to the requirements of this specification.

14.04 **Routine Tests**

10.05 **Selection of Test Samples**

Samples for the tests specified in this specification shall be taken by the manufacturer before stranding, from not less than 10% of the individual lengths of aluminium alloy wire included in any one final heat-treatment batch and which will be included in any one consignment of the stranded conductors to be supplied.

Samples shall then be obtained by cutting 1.2 meters from the outer end of the finished conductor from not more than 10% of the finished reels or drums.

Tests for electrical and mechanical properties of aluminium alloy wire shall ordinarily be made before stranding since wires unlaid from conductors may have different physical properties from those of the wire prior to stranding because of the deformation brought about by stranding and by straightening for test.

Spools offered for inspection shall be divided into equal lots, the number of lots being equal to the number of samples to be selected, a fraction of a lot being counted as complete lot. One sample spool shall be selected at random from each lot.

The following test shall be carried out once on samples of completed line conductor during each production run of up to 500 km. of the conductor from each manufacturing facility.

10.06 **Breaking Load Test**

The breaking load of one specimen, cut from each of the samples taken shall be determined by means of a suitable tensile testing machine. The load shall be applied gradually and the rate of separation of the jaws of the testing machine shall be not less than 25mm / min and not greater than 1000mm / min.

10.07 **Elongation Test**

The elongation of one specimen cut from each of the samples taken shall be determined as follows :

The specimen shall be straightened by hand and an original gauge length of 200mm shall be marked on the wire. A tensile load shall be applied as described above and the elongation shall be measured after the fractured ends have been fitted together. If the fracture occurs outside the gauge marks, or within 25 mm of either mark, and the required elongation is not obtained, the test shall be disregarded and another test should be made.

When tested before and after stranding, the elongation shall not be less than 4% on a gauge length of 200mm.

10.08 **D.C. Resistance Test**

The electrical resistance test of one specimen cut from each of the samples taken shall be measured at ambient temperature. The measured resistance shall be corrected to the value at 20^0 C by means of the formula :

$$R_{20} = R_T \left(\frac{1}{1 + \square(T-20)} \right)$$

Where,

R_{20} = resistance corrected at 20^0 C

R_T = resistance measured T^0C

$\square$ = constant – mass temperature coefficient of resistance, 0.0036, and

T = ambient temperature during measurement.

The resistance corrected at 20^0 C shall not be more than the maximum values specified.

0.09 **Chemical Analysis of Aluminium Alloy**

Samples taken from the alloy coils / strands shall be chemically / spectrographically analysed. The results shall conform to the requirements stated in this specification. The Contractor shall make available material analyses, control document documents and certificates from each batch as and when required.

10.10 **Dimensional and Lay Length Check**

The individual strands of the conductors shall be dimensionally checked and the lay lengths checked to ensure that they conform to the requirements of this specification.

Ten percent drums from each lot shall be rewound to allow visual checking of the conductor for joints, scratches or other surface imperfections and to ensure that the conductor generally conforms to the requirements this specification. The length of conductor would on the drum shall be re-measured by means of an approved counter / meter during the rewinding process.

10.11 **Visual and dimensional Checks on the Conductor Drums**.

The drums shall be visually and dimensionally checked to ensure that they conform to the requirements of this specification and of IS 1778 : Specification for reels and drums of bare conductors. For wooden drums, a suitable barrel batten strength test procedure is required. The Bidder shall state in his bid the tests to be carried out on the drums and shall include those tests in the Quality Assurance Programme.

11.00 **REJECTION AND RETESTS**

11.01 **Type Tests**

Should the conductor fail any of the type tests specified will not be accepted any conductor manufactured from the material, nor conductor made by the manufacturing methods used for the conductor, which failed the test.

The manufacturer shall propose suitable modifications to his materials and techniques in order that he can produce conductor which will satisfactorily pass the type test requirements.

11.02 **Routine Tests**

Should any one of the test pieces first selected fail the requirements of the tests, two further samples from the same batch shall be selected for testing, one of which shall be from the length from which the original test sample was taken unless that length has been withdrawn by the manufacturer.

Should the test pieces from both these additional samples satisfy the requirements of the tests, the batch represented by these samples shall be deemed to comply with the standard. Should the test pieces from either of the two additional samples fail, the batch represented shall be deemed not to comply with the standard.

If checks on individual strand diameters, conductor lay lengths and conductor surface condition indicate non-compliance with the requirements of the specification, the particular drum will be rejected. Inspection will then be carried out on two further drums within the same batch. If the conductor on either of the drums is non-complaint, the complete batch will be rejected.

11.03 **Rejection of Conductor**

The rejection of conductor due to its failure to pass either type or routine tests shall not permit the Contractor to apply for any extension to the time period within which he has contracted to complete the project.

11.04 **Tensile Load Test**

The tensile load test for the mains to mains tap off connector shall be made with the maximum and minimum sizes of tap conductor, that is a test with the 50mm^2 section conductor and a test with the 95mm^2 section conductor (two separate tests).

The tensile load for the mains to service cable tap off connector shall be made with the maximum and minimum sizes of mains tap conductor and maximum and minimum sizes of service cable (four separate tests).

12.00 **SPARE PARTS AND SPECIAL TOOLS**

The Bidder shall provide a list of recommended spare parts, special erection and installation tools/ equipment together with their individual prices. This list shall identify all essential spares items for any recommended maintenance for a period of five years after commissioning.

The Engineer-in-charge may order all or any of the spare parts/erection/installation tools listed at the time of contract award and the parts so ordered shall be supplied as part of the definite works. The Engineer-in-charge may order additional spares at any time during the contract period at the rates stated in the Contract Document.

A spare parts catalogue with price list shall be provided and this shall form part of the drawings and literature to be supplied.

The Bidder shall give an assurance that spare parts and consumable items will continue to be available through the life of the equipment, which shall be 25 years minimum. However, the Contractor shall give a minimum of 12 months notice in the event that the Contractor or any sub-contractors plan to discontinue manufacture of any component used in this equipment.
Any spare apparatus, parts or tools shall be subject to the same specification, tests and conditions as similar material supplied under the Contract. They shall be strictly interchangeable and suitable for use in place of the corresponding parts supplied with the plant and must be suitably marked and numbered for identification.
Spare parts shall be delivered suitably packed and treated for long periods in storage. Each pack shall be clearly and indelibly marked with its contents, including a designation number corresponding to the spare parts list in the operation and maintenance instructions.

13.00 **SUBMITTALS**

13.01 Submittals required with the bid

The following shall be required in duplicate:

- Completed technical data schedule;
- Descriptive literature giving full technical details of equipment offered;
- Outline dimension drawing for each component showing mounting arrangement details;
- Type test certificates, where available, and sample routine test reports;
- Detailed reference list of customers already using equipment offered during the last 2 years with particular emphasis on units of similar design & rating;
- Details of manufacturer's quality assurance standards and programme and ISO 9000 series or equivalent national certification;
- Deviations from this specification. Only deviations approved in writing before award of contract shall be accepted;
- List of recommended spare parts for five years of operation with prices and spare parts catalogue with price list for future requirements.

TECHNICAL SPECIFICATION FOR 11 KV 200 AMPS 3 POLE AB SWITCH FOR TRANSFORMER

01.00 **SCOPE :** This specification covers manufacturing testing and supply of 11 KV 200 AMPS 50 Hz Air Break switches for outdoor installation in horizontal configuration. The switches are suitable for operation under off load conditions only and are intended for use on Distribution Sub-stations.

02.00 DESCRIPTION OF THE MATERIALS:

The 11 KV A.B. Switch sets shall confirm to the following parameters:

i.	Number of poles	3
ii.	Number of Post insulator per pole	2 nos. 12 KV post insulator
iii.	Nominal system voltage	11 KV
iv.	Highest System Voltage	12 KV
v.	Rated frequency	50 Hz
vi.	System earthing	effectively earthed.
vii.	Rated nominal current	200 amps
viii.	Altitude of installation	Not exceeding 1000 M

The post insulators used in the A.B. Switches shall have the following ratings

i.	Power frequency withstand voltage (dry)	35 KV (RMS)
ii.	Power frequency withstand voltage (wet)	35 KV (RMS)
iii.	Impulse withstand voltage (dry)	75 KV peak
iv.	Power frequency puncture withstand Voltage	1.3 times the actual dry Flashover voltage of the unit.

03.00 **STANDARDS:-**The AB Switch Set shall conform to the following standards:

a) IS-9920 (Part-I to V)
b) IS-2544/1973 (for porcelain post insulators)

c) IS-2633 (for galvanisation of ferrous parts) or its latest amendments if any.

04.00 **INSULATOR MAKE :-**

1. 12 KV POST Insulators complete with post and cap duly cemented to be used in the aB Switch Set conforming to IS-2544/1973)

The Bidder shall furnish the type test certificate of the post insulators from their manufacturer for reference and scrutiny.

The Bidders shall mention make, type of insulation materials, metal fittings, Creepage distance, protected Creepage distance, tensile strength, compression strength, torsion strength and cantilever strength.

05.00 CLIMATIC CONDITIONS:- The A.B. Switch set shall be suitable for operation under the following climatic conditions.

1.	Maximum ambient air temperature.	45˚ C
2.	Maximum daily average air temperature	35˚ C
3.	Maximum yearly average ambient air temperature	30˚ C
4.	Maximum temperature attainable by a body exposed to the sun	50˚ C
5.	Minimum ambient air temperature	0˚ C
6.	Maximum relative humidity	100%
7.	Minimum number of rainy days per annum	70
8.	Average number of rainy days per annum	120
9.	Average annual rain fall.	150 cm.
10.	Number of months of tropical monsoon conditions	4
11.	Maximum wind pressure	260 Kg./mm^2
12.	Degree of exposure to atmospherics pollution	Normally polluted Atmosphere.

06.00 **TECHNICAL DETAILS:-**

6.1 **General:-** The 11 KV A.B. Switch Set shall be the gang operated rotating single air break type having 2 post insulator per phase. The operating mechanism shall be suitable for manual operation from the ground level and shall be so designed that all the three phases shall open or close simultaneously. The Switches shall be robust in construction, easy in operation and shall be protected against over travel or straining that might adversely affect any of its parts. The required base M.S. Channel(hot dip galvanised) phase coupling rod, operating rod with intermediate guide braided with flexible electrolytic copper, tail piece of required current carrying capacity and operating mechanism with 'ON' & 'OFF' positions shall be provided. The operating rod shall be medium gage of 32mm diameter nominal bore G.I. pipe single length 6 meters. The phase coupling rod for gang operation shall be of medium gauge 25mm dia nominal bore G.I. Pipe. The Rotating post insulators shall be provided with suitable bearing mounted on a base channel with 8 mm dia thrust collar and 6mm split pin made out of stainless steel. The operating down rod shall be coupled to the spindle (minimum dia – 32mm) for gang operation through another suitable bearing by two numbers 10mm dia stainless steel bolts with double nuts. All he bearings shall be provided with grease nipples. All metal (ferrous) parts shall be galvanised and polished. The pipe shall be galvanised in accordance with IS-4736/1968. The post insulators should be fixed with the base channel using Galvanised Nuts and Bolts.

06.01 Mounting: The A.B. Switches shall be suitable for horizontal mounting in double pole/Single pole sub-station structures.

06.02 Switching Blades:- It shall be made out of electrolytic copper with silver plated. The approximate size shall be 220mm x 50mm x 8mm. the switch shall have such a spring mechanism so as to ensure that the speed of the opening of contact is independent of speed of manual operation.

06.03 Fixed Contracts:- The fixed jaw type female contracts shall be made of electrolytic copper (minimum 95% copper composition) duly electroplated controlled by Phosphor bronze high pressure spring housed in robust G.I. Cover.

06.04 It is essential that provision shall be made in fixed female contracts to take the shock arising from the closing of moving contract blade without the same being transmitted to the post insulator. The arrangement made in this regard shall be specifically shown in the drawing.

06.05 Arcing Horn:- As the switches are generally meant for isolating transmission line and distribution transformers, suitable arcing horns shall be provided for breaking the charging current horn shall be made of 10 mm dia G.I. Rod with spring assisted operation.

06.06 Terminal Connectors:- Terminal connectors shall be robust in design. The size of fixed connector shall be (80 x 50 x 8 mm) and size of movable connector shall be of (80 x 50) x (80 x 50) x 8mm of copper casting with uniform machine finishing duly silver plated made out of minimum 95% copper composition with 2 nos. 12 mm dia holes provided with suitable brass bolts and double nuts, flat washers & 2 nos. bio metallic solder less sockets suitable upto 80mm^2 conductor.

06.07 Spacing:- The minimum clearance between phase to the switch shall be 760 mm. the operating down rod shall be at a transverse distance of 300 mm from the outer limb of the switch. The centre spacing between two post insulators of the same phase shall be 380 mm. In the open position of the A.B. Switches the moving blade shall rotate through 90^0. This shall be exhibited in the drawing.

06.08 Sample, Drawing & Literatures:- Samples of each item 11 KV 200 amps. A.B. Switch shall be furnished and three copies of drawings item similar to the sample shall be furnished along with the tender.

The details of construction and materials of different parts of the A.B. Switch shall clearly be indicated in the tender and illustrative pamphlet/literature for the same shall be submitted along with the tender.

07.00 **TESTS & TEST CERTIFICATE:-**

Type Test: Certificates for the following type tests conducted within five years preceding to the date of opening of tender) on a prototype set of A.B. Switch in a Govt. Approved Testing Laboratory preferably at CPRI Bangalore shall have to be submitted for reference.

Dielectric Test (impulse and one minute wet power frequency withstand voltage test)

- Temperature rise test (for contracts and terminals)
- Short Time current and peak withstand current test.
- Mainly active load breaking capacity test.
- Transformer off-load breaking capacity test.
- Line charging breaking capacity test.
- Cable charging breaking test.
- Operation and mechanical endurance test.
- Mechanical strength test for post insulator, as per IS-2544/1973 shall be furnished.
- Test for galvanisation of metal (ferrous) parts.

Routine Tests: The following routine tests shall have to be conducted on each sets and results are to be furnished for consideration of deputing inspecting officer for inspection and conducting testing of the materials.

1. Power frequency voltage dry test.
2. Measurement of resistance of main circuit.
3. Tests to prove satisfactory operation.
4. Dimension check.

5. Galvanisation test.

08.00 **GUARANTEED TECHNICAL PARTICULARS:-**

The Bidder shall furnish the guaranteed technical particulars duly filled in the proforma along with the tender.

09.00 **COMPLETENESS OF EQUIPMENT:-**

All fittings, accessories or apparatus which may not have been specifically mentioned in this specification but which are usual or necessary in equipment of similar plant shall be deemed to be included in the specification and shall be supplied by the Bidder without extra charge. All plant and equipment shall be completed in all details whether such details are mentioned in the specification or not.

10.00 **INSPECTION:-**

Routine tests shall be conducted at the place of manufacturer. The Bidders are requested to furnish details of equipment which will be used for testing along with tender. The Bidders of those manufacturers who do not have adequate testing facilities for conducting routine and acceptance test are liable for cancellation. The successful Bidder has to furnish routine test certificate and guaranteed certificate for approval prior to offer of materials for inspection for each consignment of offer.

TECHNICAL SPECIFICATION FOR 11kv 200 amp THREE POLE / H.G. FUSE SETS FOR DISTRIBUTION S/S

01.00 SCOPE:- This specification covers the manufacture, testing and supply of 11 KV, 200Amps 3 pole/Two pole, H.G. Fuse Sets.

02.00 (a) The 11 KV H.G. Fuses shall be suitable for out door operation in horizontal configuration under the climatic conditions specified. It shall be of the following ratings.

i. Number of poles	3
ii. Number of Post insulator per pole	2 nos. 12 KV post insulator
iii. Nominal system voltage	11 KV
iv. Highest System Voltage	12 KV
v. Rated frequency	50 Hz
vi. System earthing	effectively earthed.
vii. Rated nominal current	200 amps
viii. Altitude of installation	Not exceeding 1000 M

The post insulators used in the H.G.Fuse shall have the following ratings

1. Power frequency withstand voltage (dry)	35 KV (RMS)
2. Power frequency withstand voltage (wet)	35 KV (RMS)
3.Impulse withstand voltage (dry)	75 KV peak
4. Power frequency puncture withstand Voltage	1.3 times the actual dry Flashover voltage of the unit.

03.00 **STANDARDS:-**The H.G. shall conform to the following standards:

a) IS-9385-1980 (for high voltage expulsion fuses and similar fuses)
b) IS-2544/1973 (for porcelain post insulators or its latest amendments if any)
c) IS-2633/1979 (for galvanisation of ferrous parts)

04.00 **INSULATOR MAKE:-**

12 KV POST Insulators complete with pedestal cap duly cemented to be used in the 11KV H.G. Fuse sets confirming to IS-2544/1973.

05.00 **TECHNICAL DETAILS:-**The H.G. Fuses shall have adjustable arcing horns made of solid copper rod having 7.62 mm dia. The horns shall be fitted with screwing devices with fly nuts for fixing and tightening the fuse wire. It shall have robust terminal connector 5s of size 80mm x 50mm x6mm made of copper casting (95% minimum copper composition) duly silver plated with two numbers

of 12mm dia brass bolts and double nuts with flat brass washers. The connector should be capable of connecting crimp able conductor up to 80 Sq.mm. size (ACSR/Alloy) with bimetallic solder less sockets. The H.G. Fuse Set shall suitable for horizontal mounting on sub-station structures. The minimum clearance between the adjacent phases of the fuse set shall be

760 mm and the centre to centre (distance between two post insulators of the same phase) shall be 410mm. All metal (Ferrous) parts shall be galvanized and polished. Only 12 KV post insulator (original cemented and not pin insulators shall be used for the H.G. Fuse Set.

06.00 **CLIMATIC CONDITIONS**:- The H.G. Fuse set shall be suitable for operation under the following climatic conditions.

1.	Maximum ambient air temperature.	45˚ C
2.	Maximum daily average air temperature	35˚ C
3.	Maximum yearly average ambient air temperature	30˚ C
4.	Maximum temperature attainable by a body exposed to the sun	50˚ C
5.	Minimum ambient air temperature	0˚ C
6.	Maximum relative humidity	100%
7.	Average no.of thunderstorm days per annum	70 days
8.	Average number of rainy days per annum	120
9.	Average annual rain fall.	150 cm.
10.	Number of months of tropical monsoon conditions	4
11.	Maximum wind pressure	260 Kg./mm^2
12.	Degree of exposure to atmospheric pollution	Normally polluted atmosphere.

07.00 **TESTS & TEST CERTIFICATE:-**

Type Test: Certificates for the following type tests conducted within five years preceding to the date of opening of tender) on a prototype set of H.G. Fuse set in a Govt. Approved Testing Laboratory preferably at CPRI Bangalore shall have to be submitted for reference.

- Dielectric Test (impulse and one minute wet power frequency withstand voltage test)
- Temperature rise test (for terminals)
- Mechanical strength test for post insulator, as per IS-2544/1973
- Test for galvanisation of metal (ferrous) parts.

Routine Tests: The following routine tests shall have to be conducted on each test and results are to be furnished for consideration for acceptance of deputing inspecting officer for inspection and conducting testing of the materials.

1. Power frequency voltage dry test.
2. Dimension check.
3. Galvanisation test.

08.00 **GUARANTEED TECHNICAL PARTICULARS:-**

The Bidder are requested to furnish the guaranteed technical particulars duly filled in the proforma along with the tender.

09.00 **COMPLETENESS OF EQUIPMENT:-**

Any fittings, accessories or apparatus which may not have been specifically mentioned in this specification but which are usually necessary in equipment of similar plant shall be deemed to be included in the specification and shall be supplied by the Bidder without extra charge. All plant and equipment shall be completed in all details whether such details are mentioned in the specification or not.

10.00 **INSPECTION:-**

Routine and acceptance tests shall be conducted at the place of manufacturer. The Bidders are requested to furnish details of equipment which will be used for testing along with tender. The Bidders of these manufacturers who do not have adequate testing facilities for conducting routine and acceptance test are liable for cancellation. The successful Bidder has to furnish routine test certificate and guaranteed certificate for each consignment of materials to be inspected at the time of offer of materials for inspection.

11.00 **NATURE OF PRICE:-** The nature of price shall be "FIRM".

TECHNICAL SPECIFICATION FOR 11 KV SURGE ARRESTOR (L.A.)

01.00 **SCOPE**

This Specification covers Design, Engineering, Manufacture, testing, inspection before despatch, forwarding, packing, transportation to site, Insurance (both during transit & storage), Storage, Erection, Supervision, testing and commissioning of 11 KV Surge Arrestor(L.A.) for use in the networks.

The equipment offered shall have been successfully type tested and the design shall have been satisfactory operation for a period not less than two years on the date of bid opening. Compliance shall be demonstrated by submitting with the bid, (i) authenticated copies of the type test reports and (ii) performance certificates from the users.

The scope of supply includes the provision of type test, Rates of type tests shall be given in the appropriate price schedule of the bidding document and will be considered for evaluation.

The Surge Arresters shall confirm in all respects to highest standards of engineering, design, workmanship, this specification and the latest revisions of relevant standards at the time of offer.

02.00 **STANDARDS**

Except where modified by technical specification, the Surge Arresters shall be designed, manufactured and tested in accordance with the latest editions of the following standards.

IEC/ISO/BS	IS	Subject
IEC 99 – Part-1	IS 3070-Part 1	Non linear resistor gapped surge arresters for A.C. systems.
IEC 99-Part-4	IS 3070-Part 3	Metal-oxide surge arresters without gaps for A.C. systems.
	IS 5621	Hollow insulators for use in electrical equipment.
IEC 233		Tests on hollow insulators for use in electrical equipment.
IEC 270		Partial discharge measurement
IEC 455		Guide for solvent less polymerisable resinous compounds used for electrical insulator.
IEC 815	IS 13134	Guide for selection of insulators in respect of polluted conditions.
BS 729 ISO 1460	IS 2629, IS 4736 IS 2633	Hot dip galvanizing. Method of testing uniformity of zinc coated articles.

This list is not be considered exhaustive and reference to a particular standard or recommendation in this specification does not relieve the Contractor of the necessity of providing the goods complying with other relevant standards or recommendations.

03.00 **TECHNICAL**

The Station Class Surge Arrestor shall be heavy duty, metal oxide, gapless type generally for installation on the 33 KV and 11 KV sides of 33/11 KV Primary substations and 11/0.4 KV Distribution substation.

The performance requirements are as follows:

Performance Characteristics of Surge Arresters

Nominal System Voltage	**11 KV**
Class	**Station Class**
• Arrestor voltage rating	12 KV
• Rated frequency	50 Hz
• Continuous operating voltage, rms	9.6 KV
• Leakage current through arrestor at	Less than 1 mA

	operating voltage	
•	Long duration discharge class	Class 2
•	Nominal 8/20 µs discharge current peak	10 kA
•	Maximum Lightning impulse residual voltage with 8/20 µs discharge current peak	32KV(31KV*)
•	Maximum switching impulse residual voltage peak	28 KV (24 KV*)
•	Maximum residual voltage with steep current peak	38 KV (34 KV*)
•	High current impulse test value (4/10 µs wave)	100 KA
•	Insulator housing impulse withstand voltage, 1.250 µs wave-peak	41.6 KV
•	Insulator housing power frequency voltage withstand capability for one minute (wet) – peak	29.68 KV
•	Minimum creepage distance of insulator	380 mm
•	Minimum protected creepage distance	Not applicable.

- Figures shown in bracket are preferred ratings, Insulation withstand voltage of arrester housing shall be related to the residual voltages in accordance with clause 5.1 of IEC : 99.4

04.00 **GENERAL CONSTRUCTIONAL FEATURES**

The surge arresters shall be single phase gapless units suitable for outdoor installation. They shall consist of non-linear blocks of metal oxide assembled in series in hollow porcelain or polymer insulator housings. Bidder shall offer either porcelain or polymeric insulators with the equipment.

04.01 **Springs**

In order to arrest the longitudinal vibrations, sturdy spring assemblies are to be provided on either end of the metal oxide stacks inside the arresters.

04.02 **Galvanising**

All ferrous parts excluding the springs shall be of steel casting and hot dip galvanized with heavy coating as set out in the section on Surface Treatment.

04.03 **Other features**

- Live parts shall be designed to avoid sharp point edges and other corona producing surfaces as far as possible.
- Hermetic sealing shall be provided to prevent ingress of moisture. The sealing shall not be affected during the maximum line discharge current over the life of the arrester which shall be 25 years minimum.
- Disconnectors are not required with the arresters.

05.00 INSULATOR HOUSING

The housing of the arrester packs which are under continuous electrical stress shall be brown glazed hollow porcelain or polymeric insulator. The creepage and flashover distances of the insulators shall be dimensioned and the type and profile designed in accordance with IEC:815; IS:13134 and shall be suitable for the worst environmental conditions. The creepage distance to earth shall suit the outdoor service conditions mentioned in the relevant standards for heavily polluted atmosphere and shall not be less than 380 mm in case of 11 KV surge arresters. The internal surfaces of hollow porcelain insulators shall also be glazed.

All porcelain used on the surge arresters shall have the following properties : high strength, homogeneity, uniform glaze, free from cavities and other flaws and high quality uniform finish. Porcelain components shall withstand the maximum expected static and dynamic loads to which the surge arresters may be subjected during their service life. Porcelain insulators shall conform to IS 5621 and shall be subjected to and successfully pass the tests listed in this standard and in IEC 233.
If polymeric insulators are offered, they shall conform to the requirements of the relevant parts of IEC : 455.

06.00 **TERMINATION**

The surge arresters shall be supplied with electrical connection terminals on the top of size and rating appropriate for all the duties, including overload duty specified for the equipment. The terminals shall be of the bi-metallic type, suitable for connection of all aluminium alloy conductor (AAAC) or aluminium conductor steel reinforced (ACSR). The 11 KV station class arresters shall have terminals suitable for 55 MM^2 to 232 MM^2 or Panther ACSR. In general connections using palm type solder less sockets shall be preferred. Where the terminals are of the clamp type, they shall be suitable for taking a range of conductors.

All nuts, bolts, washers and spring washers required to complete the connection shall be supplied with the equipment.

The proposed method of connection shall be stated in the offer.

06.01 **Earthing terminal**

An earthing terminal adequate for the full rated discharge current having clamping bolts complete with nuts, washers and spring washer shall be provided on the base of the arrester.

The earthing terminals shall be identified by means of appropriate symbol marked in a legible and indelible manner adjacent to the terminals.

07.00 **PRESSURE RELIEF DEVICE**

The 11 KV arresters shall be fitted with pressure relief devices as under :

Stations Class - 10(C)

08.00 **PARTIAL DISCHARGE**

The intensity of partial discharge of the surge arresters shall not exceed 50 pico coulomb (PC) at 1.05 times the continuous operating voltage;

09.00 **RATING PLATE**

Each surge arrester shall be provided with a non ferrous nameplate, fixed in a suitable location on the arrester and bearing the following information, in a legible and indelible manner:

- Manufacturer's name and Trade mark
- Type and identification of arrester.
- Employer's name;
- Type and identification of arrester;
- Year of manufacture;
- Rated Voltage;
- Continuous operating voltage;
- Nominal discharge current;
- Pressure relief class
- Long duration discharge class or duty type;

10.00 **TESTS**

10.01 **Type tests:-**

The type tests are required in conformity with IEC:99-4; IS:3070-3 and other relevant standards. The tests shall include the followings:

- Insulation withstand tests, including lightning impulse voltage withstand test and power frequency voltage withstand test;
- Residual voltage tests, including steep current impulse residual voltage test, lightning impulse residual voltage test and switching impulse residual voltage test (for 10 KA station class only);
- Long duration current impulse withstand test;
- Operating duty tests, including accelerated ageing test, heat dissipation behaviour test, high current impulse operating duty test, switching surge operating duty test (for 10KA station class only) and tests to evaluate thermal stability;
- Pressure relief tests, including high current pressure relief test and low current pressure relief test as per IEC:99-1;
- Seal leakage test. The bid shall describe the sensitive checking method adopted by the manufacturer.
- Partial discharge tests;
- Temperature cycle test on porcelain housing;
- Porosity test on porcelain housing;
- Hot dip galvanizing test;
- Mechanical strength test of porcelain housing;

10.02 **Acceptance tests**

Acceptance tests shall be carried out, in conformity with ISI 99-4, on the nearest lower whole number to the cube root of the number of surge arresters to be supplied. The tests shall include the following.

- Measurement of power frequency voltage on the complete arrester at the reference current measured at the bottom of the arrester;
- Lightning impulse residual voltage on the complete arrester at nominal discharge current or at a suitable lightning impulse value, depending on the manufacturer's choice of routine test procedure;
- Partial discharge test;
- Temperature cycle test on porcelain housing;
- Porosity test on porcelain housing;
- Mechanical strength test on porcelain housing;
- Hot dip galvanizing test.

10.03 **Routine Tests**

The minimum requirement for routine tests shall be :

- Visual examination;
- Measurement of reference voltage;
- Residual voltage test for lightning impulse current in the range between 0.01 and 2 times the nominal discharge current;
- Check for satisfactory absence from partial discharges and contract noise, in conformity with IEC 270;
- Leakage current tests;
- Leakage check on the housing seals;

THREE PHASE, STAR RATED DISTRIBUTION TRANSFORMER

01.00 **SCOPE OF WORK**

This specification covers design, engineering, manufacture, inspection, testing at manufacturers works including type testing before dispatch, supply delivery at destination, storage at site, erection & commissioning star rated distribution transformer of double wound, oil filled, naturally cooled. 50Hz, outdoor type.

01.01 **APPLICABLE STANDARDS**

Star rated Distribution transformers shall comply with the latest version of following Standards along with the amendments. The star rated distribution transformer of 25 KVA, 11/0.4KV should be DISTCOMS specification.

i. IS 1180 : Part 1 : Outdoor type distribution transformers up to and including 100 KVA 11 KV: Part 1 Non-sealed.
ii. IS 3347: Dimensions for Porcelain Transformer Bushings
iii. IS 335: New insulating oils
iv. IS 2099 : Bushings for alternating voltages above 1000 Volts
v. IS 9335 : Cellulosic papers for electrical purposes;
vi. IS 1576 : Solid pressboard for electrical purposes – specification;
vii. REC Specification 2/1971. (Revised 1997)

02.00 **RATINGS AND TYPE**

The KVA ratings and types of distribution transformer shall be as follows:

KVA Ratings	No. of Phases	Nominal System voltage (ph-ph)	No Load voltage Ratio.
25	Three phase Star rated	11KV	11/0.400 KV (Ph-Ph)

03.00 **CLIMATIC CONDITIONS**

i. Temperature : 10˚C to +55˚C (in shade)
ii. Humidity: up to 95% RH non-condensing
iii. Average annual rainfall: 150cm. (if not specified otherwise)
iv. Max. Wind Pressure: 150-kg/sqmtr.
v. Max. Altitude above MSL: 1000 meters (if not specified otherwise)

04.00 **WINDING CONNECTIONS & VECTORS**

For three phase star rated distribution transformer, the primary winding shall be connected in delta and secondary winding in star so as to yield vector notation of Dyn11.

05.00 **TAPS**

Turns ratio of star rated Distribution transformer shall be fixed. No taps are to be provided on these transformers.

06.00 **WINDING**

06.01 **Material**

Super enamel covered Aluminium conductor/DPC Aluminium conductor shall be used.

Unless otherwise specified, DPC insulation shall be used for HV and LV winding wires and Electrical Grade Epoxy Dotted insulation paper shall be used for interlayer insulation of the HV and LV coils. Use of aluminium foil for LV winding shall be preferred.

Conductor used for HV and LV winding shall be from continuous wire without any joint or brazing, as far as possible.

Angle shaped End Rings made from pre-compressed board should preferably be used between the end coils and core.

Construction of winding shall be adequately designed to withstand the short circuit test not withstanding the type of conductor being used.

07.00 **CORE**

The type of Core and Core material shall be as given below:

i. The design of magnetic circuit shall be such as to avoid static discharges development of short circuit paths within itself or in the earthed clamping structure.
ii. Stage level inspection for core construction shall be carried out by the owner.
iii. Each lamination shall be insulated such that it will not deteriorate due to mechanical pressure and the action of hot transformer oil.
iv. The core shall be constructed from new high grade, non-ageing Cold Rolled Grain Oriented (CRGO) silicon steel laminations conforming to grade M4 or better. The Bidder shall provide saturation curve of the core material proposed to be used.
v. The Bidder shall offer the core for inspection and approval by the purchaser during the manufacturing stage. Bidder's call notice for the purpose shall be accompanied with the following documents as applicable as a proof towards use of prime core material:
    a) Invoice of the supplier
    b) Mills test certificate
    c) Packing list
    d) Bill of lading
    e) Bill of entry certificate to customs
vi. Core material shall be directly procured either from the manufacturer or through their accredited marketing organisation of repute and not through any agent. The complete design of core must ensure permanency of the core losses with CONTINUOUS WORKING of the transformers. The value of the flux density allowed in the design and grade of lamination used shall be clearly stated in the offer.
vii. All parts of the core shall be of robust design, capable of withstanding any shocks to which they may be subjected during handling, lifting, transportation installation and service. Clamping of core and winding assembly with tank should be done by angle iron pieces, welded to tank walls and not to be done with flat iron pieces.
viii. Adequate arrangement shall be provided to enable the core and winding to be properly supported.

07.01 **Core Clamping**

Core clamping shall be with top & bottom clamps made of sheet steel, clamped with H.T. steel tie rods for proper clamping.

M.S. core clamps shall be painted with varnish or oil resistant paint.

Provision shall be made in bottom core clamp/plate to arrest movement of active part.

08.00 **PERMISSIBLE FLUX DENSITY & OVERFLUX**

The flux density at rated voltage and frequency shall not exceed 1.69 telsa. The maximum flux density in any part of the cores and yoke at normal voltage and frequency shall be such that the flux density with + 12.5 % voltage variation from rated voltage and frequency variation of +5%

shall not exceed 1.9 Tesla. The transformer shall be suitable for over fluxing due to combined effect of voltage and frequency. The supplier shall furnish necessary design data in support of this stipulation.
The core and coil assembly shall be securely held in position to avoid any movement under short-circuit conditions.

09.00 **SYSTEM SHORT CIRCUIT LEVEL**

The transformer shall be rated for a maximum fault level as per IS 2026.

10.00 **TRANSFORMER TANK**

10.01 **Construction**

The transformer tank shall be made of good quality steel sheet of adequate thickness and shall be suitably stiffened to provide sturdy and robust construction to withstand extreme pressure conditions. The tank shall be capable of withstanding pressure up to (+) 80 Kpa and (-) 70 Kpa (gauge pressure) without any deformation.

The tank cover shall have plasticised surface at the top to guard against bridge faults. Alternatively, suitable insulating shrouds shall be provided on the bushing terminals.

10.02 **Sealing Gaskets**

All sealing washers/gaskets shall be made of oil and heat resistant nitrile rubber. Gaskets made of natural fubber or cork sheet are not permissible. Rubberized cord sealing gaskets may be accepted, subject to clearance for quality.

11.00 **Conservator**

For Transformers, manufacturers may adopt conservator type designs per their standard practice.

The conservator shall be provided with a drain plug and a filling hole with cover. In addition, the cover of main tank shall be provided with an air release plug to enable trapped air to be released plug to enable trapped air to be released unless the conservator is so located as to eliminate the possibility of air being trapped within the main tank.

The inside diameter of the pipe connecting the conservator to the main tank shall be within 20 to 50 mm and it should project into the conservator in such a way that its end is approximately 20 mm above the bottom of he conservator so as to create a sump for collection of impurities. The minimum oil level (corresponding to-50C should be above the sump level.

Each transformer shall be fitted with a breather in which Silica gel is the dehydrating agent. The breather is so designed that the passage of air through the Silica gel and the external atmosphere is not continuously in contact with silica gel.

12.00 **PAINTING PROCEDURE**

The paint material and procedure for the distribution transformer shall be as per details given below.

All paints shall be applied in accordance with the paint manufacturer's recommendations. Particular attention shall be paid to the following:

- **a)** Proper storage to avoid exposure as well as extremes of temperature.
- **b)** Surface preparation prior to painting.
- **c)** Mixing and thinning.
- **d)** Application of paints and the recommended limit on time intervals between coats.
- **e)** Shelf life for storage.

All paints, when applied in normal full coat, shall be free from runs, sags, wrinkles, patchiness, brush marks or other defects.

All primers shall be well marked into the surface, particularly in areas where painting is evident, and the first priming coat shall be applied as soon as possible after cleaning. The paint shall be applied by airless spray according to the manufacturer's recommendations. However, wherever airless spray is not possible, conventional spray be used with prior approval of purchaser.

The supplier shall, prior to painting protect nameplates, lettering gauges, sight glasses, light fittings and similar such items.

12.01 **Cleaning and Surface Preparation**

After all machining, forming and welding has been completed, all steel work surfaces shall be thoroughly cleaned of rust, scale, welding slag or spatter and other contamination prior to any painting.

Steel surfaces shall be prepared by Sand / Shot blast cleaning or Chemical cleaning and process including Phosphate to the appropriate quality.

The Pressure and Volume of the compressed air supply for the blast cleaning shall meet the work requirements and shall be sufficiently free from all water contamination prior to any painting.

Chipping, scraping and steel wire brushing using manual or power driven tools cannot remove firmly adherent mill-scale and shall only be used where blast cleaning is impractical.

12.02 **Protective Coating**

As soon as all items have been cleaned and within four hours of the subsequent drying, they shall be given suitable anticorrosion protection.

12.03 **Paint Material**

Followings are the type of paints that may be suitably used for the items to be painted at shop and supply of matching paint to site:

Heat resistant paint (Hot oil proof) for inside surface.

For external surfaces one coat of Thermo Setting Paint or 2 coats of Zinc chromate followed by 2 coats of Synthetic Enamel paint. The colour of the finishing coats shall be dark admiral gray conforming to No.632 of IS 5:1961.

12.04 **Painting Procedure**

All painting shall be carried out in conformity with both specifications and with the paint manufacturer's recommendations. All paints in any one particular system, whether shop or site applied, shall originate from one paint manufacturer.

Particular attention shall be paid to the manufacturer's instructions on storage, mixing, thinning and pot life. The paint shall only be applied in the manner detailed by the manufacturer e.g. brush, roller, conventional or airless spray and shall be applied under the manufacturer's recommended conditions. Minimum and maximum time intervals between coats shall be closely followed.

All prepared steel surfaces should be primed before visible re-rusting occurs or within 4 hours whichever is sooner. Chemical treated steel surfaces shall be primed as soon as the surface is dry and while the surface is warm.

Where the quality of film is impaired by excess film thickness (wrinkling, mud cracking of general softness) the supplier shall remove the unsatisfactory paint coatings and apply another. As a general rule, dry film thickness should not exceed the specified minimum dry film thickness by

more than 25%. In all instances, where two or more coats of the same paints are specifies, such coatings may or may not be of contrasting colours.

Paint applied to items that are not be painted, shall be removed at supplier's expense, leaving the surface clean, un-stained and undamaged.

12.05 **Dry Film Thickness**

To the maximum extent practicable, the coats shall be applied as a continuous film of uniform thickness and free of pores. Over-spray, skips, runs, sags and drips should be avoided. The different coats may or may not be of same color.

Each coat of paint shall allowed to hardened before the next is applied as per manufacturer's recommendations.

Particular attention must be paid to full film thickness at edges.

The requirement for the dry film thickness (DFT) of paint and the material to be used shall be as given below.:

Sl. No.	**Paint type**	**Area to be painted**	**No. of coats**	**Total dry film thickness(min)**
1.	Powder paint	Inside	01	20 microns.
a)	Thermo powder setting	Inside	01	20 microns
		Outside	01	60 microns
2	Liquid Paint			
a)	Epoxy Zinc chromite (primer)	Outside	01	30 microns
b)	Synthetic Enamel(Finish Coat) or by Urethene(Finish Coat)	Outside	02	35 microns
c)	Hot Oil paint/Varnish	Inside	01	35 microns/ 10 microns.

13.00 **TRANSFORMER OIL**

New insulating oil of petroleum origin shall be used. The oil shall be of low viscosity type and completely free from additives.

Transformer oil shall comply with REC specification: 39/1985 & IS:335.

The requirements have been given in two parts.

For new transformer oil in drums / tankers.

For oil after it is filled in the transformer (the values shall be applicable after 3 days from the date of filling).

14.00 **New Oil**

The important characteristics of new oil shall be as follows:

14.01

Characteristics	**Requirement**
1. Flash point Pensky Marten (closed), Min.	1400 C
2. Neutralization value :	
a. Total acidity, Max.	0.03mg KOH/g
b. Inorganic acidity/alkalinity	Nil
3. Corrosive Sulphur	Non-Corrosive
4. 4 Electric Strength (breakdown voltage) Min.	
a. New unfiltered oil	30KV(ms)
b. New oil after filtration	50KV(ms)
5. Dielectric dissipation factor (tan delta) at 900 C (Max.)	0.005
6. Specific resistance (resistively)	
a. At 900 C (Min.)	30x1012 ohm-cm
b. At 270 C (Min.)	500x1012 ohm-cm
7. Oxidation stability:	
a. Neutralization value after oxidation(Max.)	0.4mg KOH/g.

b. Total sludge after oxidation (Max.)	0.10% by weight
8. Ageing Characteristics	
a. Specific resistance (resistively)	
i) at 270C	2.5x10 12 ohm-cm(Min.)
ii) at 900 C	0.2x10 12 ohm-cm (Min.)
b. Dielectric dissipation factor (tan delta) At 900 C	0.20 Max.
c. Total acidity in mg KOH/g	0.05 Max.
d. Total sludge	

14.02 **Characteristics of oil in the Transformer**

The important characteristics of the transformer oil after it is filled in the transformer (after 3 days of filling0 shall be as follows:

Characteristics	**Specification**
1. electric strength (Breakdown voltage	30xKV Min.
2. Deflection dissipation factor (tan deltla) at 900C	0.01 Max.
3. Specific delta resistance (resistively) at 270 C(Ohm-cm)	10x1012
4. Flash point, P.M.(Closed)	140˚C (Min.)
5. Interfacial tension at 270 C	0.03 N/m (Min.)
6. Neutralization value (total acidity)	0.05 mg KOH/g(Max.)
7. Water content, PPM	35 (Max.)

14.03 **Tests**

All tests to verify the characteristics as incorporated in this specification shall be carried out in accordance with IS:335-1983 or its latest version.

15.00 **TERMINAL ARRANGEMENT**

The transformer shall be fitted on high voltage and low voltage sides with outdoor type bushings of appropriate voltage and current ratings. The three phase transformers shall have three HV bushings and four LV bushings. LV Neutral Terminal of bushing shall be connected to earth externally. All bushings shall conform to IS:1347 and 2099. The bushings shall not have arcing horns.

The high voltage bushings shall conform to IS 2099 : 1986. The low voltage bushings shall conform to IS-7421 : 1974. Alternatively the low voltage side may be made suitable for adoption of PVC cable of suitable size.

The terminal arrangements shall be such that it shall be possible to replace teh bushings (external) without opening the cover and also without affecting the sealing of the transformer.

15.01 **HV Bushing**

The bushing shall be made in two parts. The outer bushing shall be of porcelain. The dimensions of the outer bushing shall conform to IS 3347 (part 3/Sec 1) : 1972. The internal bushing shall be of either porcelain or tough insulating material, HGS-REC (II) like epoxy and shall have embedded stem. Metal portion of the internal HV bushing inside the tank shall remain dipped in oikl in all operating conditions. For typical arrangement, Appendix – II of REC Specification No.2/1971 (R-1997) can be referred. Any other superior design is also acceptable. The same may be explained in detail.

15.01 **LV Bushing**

Where provided, these shall be of porcelain. For details, Appendix-II of REC Specification No.2/1971 (R-1997) can be referred.

15.02 **Bushing Terminals**

Both HV and LV bushing stems shall be made of aluminium alloy conforming to the requirement of IS:3347. The bushing terminals shall be of clamp type to directly receive aluminium conductors (cables) without requiring use of lugs. The terminals shall be directly screwed on to the stem to ensure effective sealing of the bushings.

The design of internal bushings shall be such as to provide adequate creepage distance in accordance with 7.1 of IS 2099:1986 and minimum clearance as given below:

	HV side		**LV side**	
	Internal	**External**	**Internal**	**External**
Phase to phase	127 mm	255 mm	45 mm	75 mm
Phase to earth	76 mm	140 mm	20 mm	40 mm

All sealing washers/gaskets shall be made of oil and heat-resistant nitrile rubber.

16.00 **MOUNTING ARRANGEMENT**

The under-base of all transformers shall be provided with two 75x40mm channels 460mm long with holes (at a centre-to-centre distance of 415mm) to make them suitable for fixing on a platform or plinth. For mounting dimensions, Fig 3 of REC specification 2 / 1971 can be referred.

17.00 **RATING AND TERMINAL MARKING PLATE**

The transformer shall be provided with non-detachable rating marking plate(s) of weather proof material, fitted in a visible position and showing the complete information given in Clause No.15.2 of IS:2026 (Part-1)-1977.

18.00 **LIMITS OF TEMPERATURE RISE**

The temperature rise shall not exceed the limits of 550C (measured by resistance) for transformer windings and 450C (measured by thermometer) in top oil above the ambient temperature of 500C, when tested in accordance with IS:2026(Part-2).

19.00 **LOSSES AND IMPEDENCE VALUES**

The Bidder shall furnish the maximum guaranteed values of no load and load losses (at 75˚C) with no plus tolerance. Bids not furnishing guaranteed transformer losses shall be considers non-responsive and are liable to rejected.

19.01 **Loss Capitalisation Factors**

For Bid evaluation purpose, transformers losses will be capitalised during bid evaluation as indicated below.

The following Capitalisation formula shall be used:

Capitalised cost of TRF= Initial cost of TRF + Rs. A x WI + Rs. B x Wc Where:

WI = Iron loss in KW & A = for iron loss 1,92,873 / K-Watt

WC = Copper loss in KW & B = for copper loss 25,459 / K-Watt

19.02 **Condition for Losses Exceeding Guaranteed Values**

Purchaser reserves the right to reject any transformer during the test at supplier's works, if the guaranteed values of no load and load losses as declared in the bid by the Bidder is exceeded or temperature rise exceeds the guaranteed values.

The percentage impedance at 750C shall not exceed 4.5% subject to tolerance as per IS:2026.

20.00 **TYPE TESTING OF DISTRIBUTION TRANSFORMERS**

Transformer of each rating shall be type tested by the successful Bidder at an independent Govt. approved Laboratory.

Type Test Charges including transportation, insurance, packing of transformer shall be indicated by the Bidder at relevant schedule.

Tests shall be carried out in the presence of owner's representative.

20.01 **TESTS**

20.02 **Type Test Report**

Bidder shall enclose Type Test report carried out in an independent government lab (CPRI, ERDA etc.), for Distribution transformers of each type and rating being offered under this package. The test shall be carried out as per IS:1180. The test report shall not be older than 24 months, as on the date of opening of the bid. Detailed drawing of the distribution transformer showing general Arrangement, mounting arrangement etc. corresponding to the type tested transformer is to be enclosed for reference.

20.03 **Routine Tests**

All transformers shall be subjected to the following routine tests at the manufacturer's works and in accordance with IS:2026 and IS:1180 (Part-I & II) (or as agreed upon between purchaser and the manufacturer). These shall also include:

i. Measurement of winding resistance.

ii. Measurement of voltage ratio and check of voltage vector relationship.

iii. Measurement of impedance voltage/short-circuit impedance and load loss.

iv. Measurement of no-load loss and no load current.

v. Measurement of insulation resistance.

vi. Induced over voltage withstand test.

vii. Separate source voltage withstand test.

viii. Tank Pressure Test – (IS:1180(Pt-II), Cl:21.5.1 for sealed type)

20.04 **Type Tests**

The following type tests shall be conducted on each type/rating of Distribution transformers as per details given in IS:2026/IS-1180. These tests shall be carried out in presence of owner's representation at an independent Govt. Lab. The cost of the bid shall be inclusion of the type test charges and no separate payment shall be made on this account.

i. (i) to (vii) as indicated under routine tests.

ii. Lightning impulse test.

iii. Temperature rise test.

iv. Short-circuit test

v. Pressure test (As per IS:1180. Part 2 Cl.No.21.5)(Vacuum also).

Following routine tests shall be operated after short circuit and impedance test is carried out on the transformer.

Measurement of impedance voltage/short circuit impedance, load loss.

i. Measurement of voltage ratio.

ii. Measurement of Insulation resistance.

iii. The supplier shall furnish calculations in accordance with IS:2026 to demonstrate the thermal ability of the transformers to withstand short circuit.

21.00 **WARRANTY**

The supplier shall guarantee satisfactory performance of transformers and all the associated components for a period of one and half years from the date of receipt by the purchaser or 18 months from date of commissioning, whichever is earlier. During the warranty period, all repairs/replacements shall be carried out free of cost.

SCHEDULE – A

INFORMATION REGARDING CURRENT LITIGATION, DEBARRING / EXPELLING OF TENDER OF ABANDONMENT OF WORK BY TENDER

1. (a) Is the applicant currently involved in any litigation relating to any contract works Yes/No

   (b) If yes, give details

2. (a) Has the applicant or an of its constituent partners been debarred / expelled by any agency in India during the last 5 years Yes/No

   (b) If yes, give details

3 (a) Has the applicant or any of its constituent partners failed to perform/absconded/ rescinded on any contract work in India during the last 5 years: Yes/No

   (b) If yes, give details

Note : If any information in this schedule is found to be incorrect or concealed pre-qualification application will be summarily rejected.

Signature of the Tenderer

SCHEDULE – B

DECLARATION

1 I have made field check / visited the site, studied the data provided by Odisha Lift Irrigation Corporation and have fully been acquainted myself with the local situation regarding materials, labour and the factors pertaining to the work before submitting the tender.

2. I have carefully studied the conditions of the contract specification and other documents of this work and I agree to execute the same accordingly.

2 I solemnly pledge that I shall be sincere in discharging my duties as responsible service provider and complete the work within the prescribed time limit. I shall submit detailed construction programme with target dates for various items and stages of work keeping in view the time limit and shall accordingly arrange for necessary labours, materials, and equipments etc., punctually. In case there are deviations from the construction programme, I shall abide by the decision of the Engineer-in-charge for revision of the programme and shall arrange for labour, materials, equipments etc

3 I shall follow all rules and regulations of the state in force with regard to engagement of labour for the work.

4 The documents furnished with the tender are correct to the best of my knowledge and belief and if any information found to be incorrect in future, the Department has the liberty to take any action as deemed fit.

Signature of the Tenderer

SCHEDULE – C

INFORMATIONS TO BE FURNISHED BY THE BIDDER
(BEFORE DRILLING)

1. Suitability of the site proposed by the owner after VES Test:
   With reference to minimum yield
   a. Test Site – I
   b. Test Site – II
   c. Test Site – III
2. Depth proposed to be drilled (approx)
3. Length of casing to be provided (approx)
4. Guarantee with regard to verticality of the Tube well

SCHEDULE – D

INFORMATIONS TO BE FURNISHED BY THE SERVICE PROVIDER (AFTER DRILLING)

1. Agency drilling the Tube well :
2. Name of the beneficiary :
3. Location (Plot No. &Khata no.) :
4. Date of starting :
5. Date of completion :
6. Depth of the Tube well with size :
7. Length of casing pipe lowered :
8. Yield of the Tube well (in LPM) :
9. Static water level (in m) :
10. Draw down after pumping (in m) :

Strata chart of the Bore hole indicating different type of soil formations met at different Depths and indicating the depth of each type of soil formation	Tube well diagram with dimensions. (not to scale)

Bidder Beneficiary Junior Engineer(Mech.) Asst. Engineer (Mech.)

Junior Engineer (Civil)

Executive Engineer

Schedule-E

BIDDERS CONTACT DETAILS

***1. NAME :**

***2. ADDRESS :**

3. TELEPHONE NO. :

****4. MOBILE NO. :**

****5. E-MAIL ID :**

***Marked information are mandatory failing to which it will be treated as incomplete submission.**
**** Mention valid phone number with valid e-mail-ID.**

Signature of the Contractor

Signature of the Contractor

FORM – A

STRUCTURE AND ORGANISATION

Name of Tenderer. …….
Nationality of Tenderer. …….
Office Address ……..……..
Telegraphic Address ……
Telephone No. : …….
Mobile No : …….
E mail address …….
Location of establishment …….

The tenderer is

1. An individual
2. A proprietary firm.
3. A limited company or limited corporation
4. A member of a group of companies (If yes, give names, address and present description of other companies.)
5. A subsidiary of large organization
   (If yes, give names address of the present organization)
6. If the company is subsidiary, state what involvement if any, will the parent company have in the project.
   Attach the organization chart showing the structure of the organization including the names of the Directors position of officer.
7. Number of year of experience
   a) As a Prime contractor
      I. In own country
      II. Other country (specify country)
   b) In a Joint venture
      I. In own country
      II. Other country (Specify country)
8. Name of the address of any associates the tenderer has in India who are knowledgeable in the procedure of customs, immigration takes and other information necessary to do work.
9. How many years has your organization been in business under your present name? Add what were your fields were and when you establishment your organization. When did you add new field (if any)?
9. Where you ever required for suspending construction for a period of more than six months continuously after you started ? If so, give the names of project and reason of failure.
10. Have you ever not completed any work awarded to you ?if so give name of project and reasons for not completing the work.
12. In how many projects were imposed penalties for delay ? Please give details.
13. In which fields of Civil Engineering construction do you claim specialization and Interest.
14. Give detail of your experience in modern concerning / Earth work and quality control.
15. Give details of your material testing laboratory.

Signature of tenderer

FORM – B

FINANCIAL STATEMENT

(Must be given separately for each partner in case of joint ventures)

1. Name of Firm.
2. Name of partner / Directors
3. Capital
   a. Authorised
   b. Issued and paid-up

4a. Details of the work completed and tenderer's performance record for last three years. (Vide Annexure – A)

b. Details of work on hand and tenderer's performance record for last three years. (Vide Annexure – B)

5. Furnish Balance sheet and profit & loss statement with auditors reports for the Last three years, it should include the following information.

i. Working capital

ii. Foreign investment.

iii.

iv. Gross income

Total liabilities

Current ratio

a. Current assets to current liabilities

b. Total liabilities to network.

6. What is the maximum annual value of work that you can handle ?
7. Have you ever been denied tendering facilities by any Government Department / Public sector undertaking ?
   (Give details)
8. List your sources of finance ?
   a. Own resources
   b. Bank credit
   c. Other sources-specify if any?
9. Certificate of financial soundness by Bank (To be signed by Senior manager of a Nationalized Bank)
10. Name and address of bank from whom reference can be obtained.
    Name:
    Address:
    Telephone No.:
    Fax No.
11. Have you ever been declared bankrupt?
    (if yes, please give details)

Signature of tenderer

FORM – C
RESOURCE PERSONNEL

Details of key Technical and Administrative personnel who could be assigned to the work be mentioned in the following proforma.

A. Details of the Board of Directors.

1. Name of the Director.
2. Organisation
3. Address
4. Remarks

B. Key Technical and Administrative personnel

1. Individual Name
2. Qualification
3. Present position of Office
4. Professional experience and details of works.
5. Years with the tenderer
6. Language known
7. Remarks.

Signature of Tenderer

ANNEXURE - A
FORMAT FOR PERFORMANCE RECORD OF CONTRACTORS

1. Name of the Contractor :

2. Registration No. and Date :

3. Class of Contractor :

4. Licensing Authority :

5. License valid up to :

6. Details of works executed :

Sl. No.	Jobs under execution	Agreement amount	Date of Commencement	Stipulated Date of Completion	Whether work is progressing as per programme	Reasons for delay, if any
1	2	3	4	5	6	7

7. Whether the contractor has requisite machineries & personnel deployed.
(details of machinery and personnel deployed) :

8. Whether the quality of construction is satisfactory. :

9. Whether he has capability to make good the loss in time. :

10. Whether the Contractor has abandoned any work in the past three years, if yes, the details thereof.

11. Whether the Contractor has entered in to any litigation in the past if yes, the details thereof.

Name of the Certifying Officer
With Official Seal

Signature of Contractor

ANNEXURE – B

Details of the works on hand and performance for last three years as on the date of submission of pre-qualification documents in the following proforma.

(Separate form for each work)

1. Name of work _____

2. Place and Country _____

3. Total tender cost of work _____

4. Brief description of works including principal features and quantities of main items
._____
_____

5. Details of works in hand

i. Percentage of physical completion and amount billed for the work completed.

ii. Cost of work remaining to be executed.

iii. Stipulated date of completion

iv. Anticipated date of completion

6. Explain for non-completion of work within stipulated time limit if so.

7. Were there any penalties / fines / stop notice / compensation / liquidated damages imposed ?
Yes or No ?
If yes, give amount and explanations.

8. Where there any fines, claims or notice field by the employer ? (Yes or No.)
(If yes give amount and explanation)

Signature of Tenderer.

ANNEXURE – 'C'
AFFIDAVIT

I, Sri …… aged …… years, Son / Daughter / Wife of Sri ……..…. at present residing At ……. P.O. …….. P.S. …….. Dist …….. Pin …….. do here by solemnly affirm as follows.

i) That, I/We possess a valid license for execution of works contract issued by * ……. Belongs to ……..…… Class & is valid up to ……
I am submitting tenders before the Executive Engineer, Lift Irrigation Division, Kendujhar, Dist – Kendujhar, Odisha for execution of _____ River lift project at _____Block of _____District in response to Bid identification No. _____
I am the authorised signatory on behalf of contractor for the tender of the work mentioned above.

ii) I am swearing this affidavit that all tender documents and accompanying papers those being submitted by me before the Executive Engineer, Lift Irrigation Division, Kendujhar, Dist – Kendujhar, Odisha including E.M.D. in any shape are all authentic and bonafied documents in the eyes of the law of the land.

That the facts stated in the affidavit are true to the best of my knowledge and belief.

Signature of Contractor /
Authorised Signatory

Note :

* Mention the license issuing authority.
** Mention the date up to which the license is valid.

ANNEXURE – 'D'
JOINT VENTURE AGREEMENT

BETWEEN

1st Party: I Smt. ……, aged about years, Daughter of ……. of Village- ……, Po- ……., P.S.- …….., Dist- …… being the "…….." Class Contractor issued by Competent Authority & valid license up to …… (Herein after called the 1st Party Civil Contractor)

AND

2nd Party: M/s ……., Prop- ……..., S/o- …….. , At- ……., Po- ……., Dist- …… being the "HT" Electrical Contractor vide Regd. No. HT- ……. issued by the Competent Authority & valid license up to …… (Herein after called the 2nd party HT Electrical Contractor).

AND Whereas the 1st party is the Civil Contractor having valid license and of 2nd party HT (Electrical) Contractor vide No. HT-……. which is valid till date.

And whereas the 1st Party is willing to appoint the 2nd party to execute the HT (Electrical) work portion for the tender work under the Executive Engineer, Lift Irrigation Division, ……. and valid upto …… years.
AND WHEREAS the second party accepted the offer of 1st party for doing tender work on Joint Venture.

NOW THIS DEED OF AGREEMENT WITNESS AS FOLLOWS:
1.That, the 2nd Party shall do the all the PH work as per inst. of HT (Electrical) if the tender schedule is awarded to the 1st party.
2.That, the 2nd Party shall fulfil all the HT (Electrical) Work as per the tender schedule by instruction of the Engineer-in-charge.
3.Thar, the 1st Party will receive all payment and singing the bill documents for the concerned work/ works.
4.That, the 2nd Party shall abide the rules and regulations and specification of HT (Electrical) works of the concerned department as mentioned in the guidelines of the tender/ tenders.

IN WITNESS WHEREOF, both the parties have put their signature in presence of witness on the day month and year first above written being present in the court premises at Kendujhar.

Identified by,

First Party

Second party

Annexure - E

DETAILS MACHINERIES AND EARTH MOVING MACHINERIES IMMEDIATELY
AVAILABLE WITH THE CONTRACTOR FOR USE IN THE WORK

Sl. No.	Name of equipment with regd. No	No. of Unit	Kinds of make	Capacity	Age and Condition	Present location	Remarks
1	2	3	4	5	6	7	8

ANNEXURE – F

<u>*No Relation Certificate</u>

Certified that I / We am / are not related to any officer of Water Resources Department / OLIC Ltd., of the rank of Junior Engineer and above or any officer of the rank of Assistant / under Secretary and above of the works department, Government of Odisha. I / We am / are aware that, if the fact subsequently proved to be false, my / our contract will be rescinded with forfeiture of EMD and security deposit and I/we shall be liable to make good the loss or damage resulting from such cancellation.

I / We also note that non-submission of this certificate will render my / our tender liable for rejection.

***The above information should be executed through bond paper undersigned by notary public.**

ANNEXURE – 'G'
JOINT VENTURE AGREEMENT

This Joint Venture is made on this
BETWEEN

1st Party: I Sri. ……, aged about years, Son of ……. of Village- ……, Po- ……., P.S.- ……..., Dist- …… being the "C" Class Contractor issued by Competent Authority & valid license up to ……. Herein after called the 1st Party Civil Contractor

AND

2nd Party: M/s ……., Prop- ……..., S/o- ……..., At- ……., Po- ……., Dist- ……, State. …… herein after called as second party owner of the. …… Rig Mounted vehicle having Registration no. …….

Whereas the 1st Party of 2nd party is the partner of …… and whereas the 1st party willing to appoint the second party execute the drilling work (Tube well installation) portion of the tender work and the tender is awarded in favour of the 1st party by E.E. L.I. Division, Kendujhar, Bid No. ……. / Dated. …… Kendujhar.

NOW THIS DEED OF AGREEMENT WITNESS AS FOLLOWS:

1.That, the 2nd Party shall do the all the drilling work if the tender schedule is awarded to the 1st party.
2.That, the 2nd Party shall fulfil all the drilling work as per the tender schedule by instruction of the Engineer-in-charge.
3.That, the 1st Party will receive all payment and singing the bill documents for the concerned work/ works.
4.That, the 2nd Party shall abide the rules and regulations and specification of drilling work works of above Said matter.

IN WITNESS WHEREOF, both the parties have put their signature in presence of witness on the day month and year first above written being present in the court premises at Kendujhar.

Identified by,

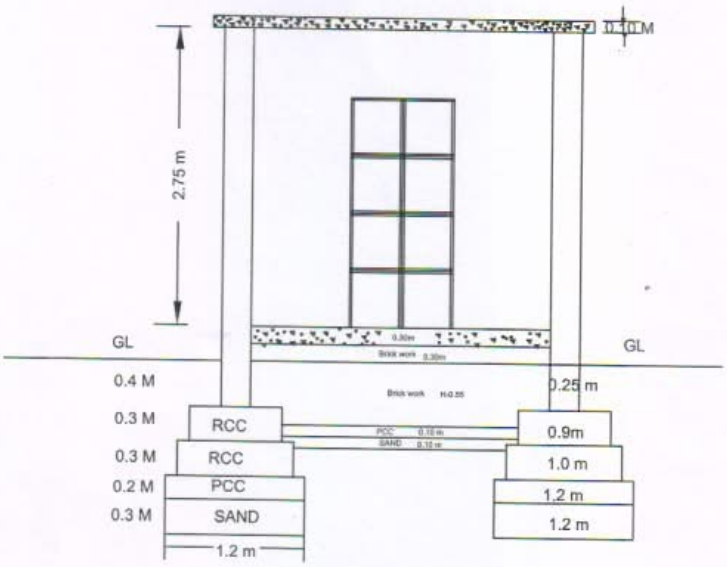
First Party

Second party

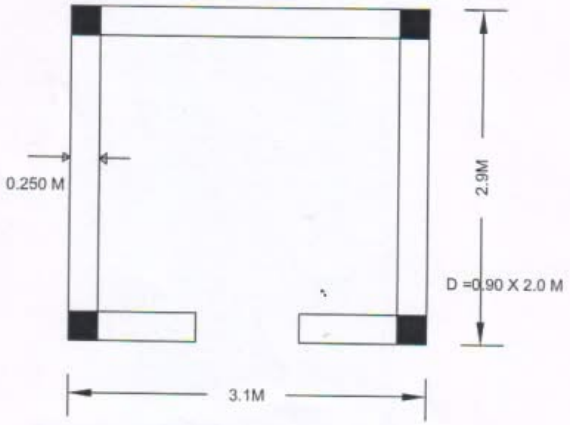
CHECK LIST
SUBMITTED OR NOT

1	**Form A**	**Structure and Organization**	**Yes/No**
2.	**Form B**	**Financial Statement**	**Yes/No**
3.	**Form-C**	**Resource Personnel**	**Yes/ No**
3.	**Annexure-A**	**Performance Record**	**Yes/No**
4.	**Annexure-B**	**Work in Hand**	**Yes/No**
5.	**Annexure-C**	**Affidavit**	**Yes/No**
6.	**Annexure-D**	**Joint Venuture**	**Yes/No**
7.	**Annexure-E**	**Plant/Machineries**	**Yes/No**
8.	**Annexure-F**	**No Relation Certificate**	**Yes/No**
9.	**Annexure-G**	**Rig Agreement**	**Yes/No**
9.	**Bidders Contact Details**		**Yes/No**

T/W PUMP CHAMBER



FRONT ELEVATION



PLAN

16/10/2026
AE

16/10/26
Executive Engineer
L.I. Division
Keonjhar