TENDER DOCUMENTS

FOR

Turnkey execution for Extension of 11KV line, installation of S/S & extension of LT line for dedicated power supply to different wings of SCS (A) college, Puri under electrical section Kacheri.

CENTRAL ELECTRICITY SUPPLY UTILITY OF ODISHA (CESU)
Office of the Superintending Engineer, Electrical Circle No.II, BBSR
Plot No. MIG 95&9 , Baramuinda Housing Board colony , Baramunda ,BBSR
TELEPHONE: (0674) – 2354775,2354863
FAX: 0674 – 2354775

TENDER SPECIFICATION NO: SEEC-II/PED/04/Tech/ 2019-20

APPROVED

Sd-

Superintending Engineer
EC-II, CESU, Bhubaneswar

CENTRAL ELECTRICITY SUPPLY UTILITY OF ODISHA (CESU)
Office of the Superintending Engineer, Electrical Circle No.II, BBSR
Plot No. MIG 95&96 ,Baramunda Housing Board colony
,Baramunda ,BBSR
TELEPHONE: (0674) – 2354775,2354863
FAX: 0674 – 2354775

TENDER SPECIFICATION NO: SEEC-II/PED/04/Tech/ 2019-20

BIDDING DOCUMENTS

CENTRAL ELECTRICITY SUPPLY UTILITY OF ODISHA (CESU)

Office of the Superintending Engineer Electrical Circle No.II,BBSR
Plot No. MIG 95&9 ,Baramunda Housing Board colony ,Baramunda ,BBSR

TENDER NOTICE NO: SEEC-II/PED/04/Tech/ 2019-20

Turnkey execution for Extension of 11KV line, installation of S/S & extension of LT line for dedicated power supply to different wings of SCS (A) college, Puri under electrical section Kacheri.

CONTENTS

Turnkey execution for Extension of 11KV line, installation of S/S & extension of LT line for dedicated power supply to different wings of SCS (A) college, Puri under electrical section Kacheri.

CENTRAL ELECTRICITY SUPPLY UTILITY OF ORISSA
Registered Office : IDCO TOWERS, (IInd Floor), Janapath, Bhubaneswar – 751 022
OFFICE OF THESUPERINTENDING ENGINEER, ELECTRICAL CIRCLE NO.II,BHUBANESWAR
Phone : 2354775,2354863,Fax:0674-2354775

TENDER CALL NOTICE

SEEC.II./Tech/…… **Dt: ……**

For and on behalf of CESU the undersigned invites sealed bids on bidding system from qualified and eligible bidders, who comply to the terms and conditions for the following work on turnkey /single source basis in Deposit work.

Brief Description of Work	Estimated Cost (inRs.)	Earnest Money Deposit (in Rs)	Last date&time for submission of bid	Date and time of opening of bid	Non refundable Cost of Bid document in Rs
1	2	3	4	5	6
Extension of 11KV line, installation of S/S & extension of LT line for dedicated power supply to different wings of SCS (A) collage, Puri under electrical section Kacheri	**18,63,657.00 (inclusive of all taxes)**	**18,637.00**	1.00 P.M of 30.03.2020	3P.M of 30.03.2020	8000.00 + 12% GST

Sale and downloading of tender documents starts from Date **14.03.2020.** For details please visit our web site : www. cescoorissa.com/ www.cesuodisha.com on or after Date14.03.2020. Sale of tender paper will be closed on Dt. 27.03.2020 (2p.m). Pre biding meeting will be held on dt.21.03.2020 at 11.00 A.m. on the office of S.E.E.C.II,BBSR.

The prospective bidders are requested to follow the above CESU website time to time for any Clarification/ Corrigendum/ Addendum against the referred Tender.

The authority reserves the right to accept or reject any or whole of the offers without assigning any reason thereof.

Superintending Engineer, EC.II, BBSR
--(Authorised Signatory)--

PART- I

SECTION – I

INVITATION FOR BIDS (IFB)

1.0 CESU invites sealed tenders in two part bidding system from reputed Electrical Contractors with required HT license for carrying out various Electrical Installation works on 'Turnkey' basis in the jurisdiction of their respective licensed area under deposit work. The bidder must fulfill all the qualifying requirements as specified in clause 2.0 stated below. The sealed envelopes shall be duly super scribed as "**TENDER NOTICE No: SEEC-II/PED/04/Tech/ 2019-20 dt. 13.03.2020 Due date of opening Dt. 30.03.2020 at 3P.M.**

Brief Description of Work	Estimated Cost (inRs.)	Earnest Money Deposit (in Rs)	Last date&time for submission of bid	Date and time of opening of bid	Non refundable Cost of Bid document in Rs
1	2	3	4	5	6
Extension of 11KV line, installation of S/S & extension of LT line for dedicated power supply to different wings of SCS (A) collage, Puri under electrical section Kacheri	**18,63,657.00 (inclusive of all taxes)**	**18,637.00**	1.00 P.M of 30.03.2020	3P.M of 30.03.2020	8000.00 + 12% GST

2.0 Bidders to be considered as eligible for the bid should meet the following qualifications;

a) Bidder must quote for the complete package.

b) Bidder should have installed and commissioned **at least following quantum of works** as specified under the bid for which the bidder is submitting his bid during the last three financial years preceding to the year of tender notification i.e. FY 2016-2017**,FY 2017-18 & FY2018-19.** Bidder must enclose copies of the relevant Work Orders along with Client Certified copies of Final Invoices and/or Performance Certificates duly signed by the competent authority of the client and/or Final Inspection Certificate issued by Electrical Inspector in proof of having executed the desired quantum works during the last three financial years.

Minimum qualifying experience to be given as per scope :-

M

i

1. Installation of plinth mounted 250KVA 11/0.4KV S/S using 11mtr long 150X150mm RS joist.
2. Installation of line DP with AB switch arrangement using 11mtr long 150X150mm RS joist.

n

3. Erection of LT feeder box with plinth.

i

4. Erection of 1phase Service line using 10mm2 twin core PVC cable.
5. Construction of 11KV line 1k.m.

m

c) **Average Annual Turnover during the last three financial years preceding to the year of tender notification should be equal to or more than the estimated cost of the bid** for which the bidder has submitted his bid. The bidder shall furnish audited accounts for the last three years i.e.**FY 2016-17,2017-18**, FY 2018-19 evidencing their turnover requirement.

d) Bidder shall be financially sound and stable having liquid assets as stated in the enclosed format and/or access to credit facility of **not less than one fifth of estimated cost of the Bid** for which he has submitted the bid. Bidder shall furnish the documentary evidence to establish the financial soundness. **So, to access this, Bidders are required to furnish liquid assets as on Dt. 31.10.2019 certified by their concerned Bank in bank letter head only.**

e) In addition to above the bidder should submit the following documents in part-I bid as qualifying terms.

i. Valid electrical (HT) license for electrical works.
ii. EPF & ESI registration
iii. PAN & GSTIN with registration certificate

f) The bidders who have earlier failed to execute the work order(s) of the CESU shall not be eligible to participate in this tender.

g) CESU reserves the right to waive minor deviation, if they do not materially affect the capacity of the bidder to perform the contract.

3.0 Bids specification document can be obtained from the office of the undersigned on payment of Rs.8,000/- + GST @ 12% towards non-refundable cost of bid documents through **Bank DD drawn in favour of "CESU, Superintending Engineer Electrical Circle No.II "** , Payable at Bhubaneswar during office hours from 11.00 am. to 5.00 pm. **till Dt.27.03.2020.**

4.0 The tender documents can also be downloaded from CESU websites **www.cesuodisha.com**. In case tender papers are downloaded from these websites, then the bidder has to enclose a Demand Draft drawn on any scheduled bank **in favour of CESU, Superintending Engineer Electrical Circle No.II** covering the cost of bid documents as stated above in a separate envelope with suitable superscription **"Cost of Bid Documents : Tender Notice Ref : SEEC-II/PED/04/Tech/ 2019-20 dt. 13.03.2020** This envelope should accompany the Bid Documents.

5.0 The Bids shall be **submitted and received** in the office of the undersigned on all office working days **up to 1.00 P.M of Dt.30.03.2020** In the event the date of opening is a holiday, the next working day shall be treated as the date of opening.

6.0 **Part-I of the bid (Technical Bid) & Part-II of the bid (Price bid) will be opened on Date 30.03.2020 at 3P.M** as indicated above, in the presence of the authorized representatives of the Bidders. Bidders shall depute only one representative to attend price bid opening if they wish to be represented . The undersigned reserves the right to reject any or all tenders if the situations so warrants

7.0 All correspondence with regard to the above shall be made to the following address .

Superintending Engineer
ELECTRICAL CIRCLE NO.II, CESU, BHUBANESWAR
Plot No. M-95 & 96, Baramunda Housing Board Colony,
Bhubaneswar – 751003
☎ - (0674)-2354775, 2354863, Fax : (0674)-2354775

Sd/-
Superintending Engineer

Electrical Circle No.II, BBSR

SECTION – II

GENERAL TERMS AND CONDITIONS OF CONTRACT (GTCC)

1.0 GENERAL: -

CESU hereinafter referred to as the "Purchaser" is desirous of Turnkey execution for Extension of 11KV line, installation of S/S & extension of LT line for dedicated power supply to different wings of SCS (A) college, Puri under electrical section Kacheri.

SCOPE OF WORK: -

The scope shall include supply of all the materials & equipments and installation/erection/commissioning to complete the works.

2. THE DETAIL SCOPES OF THE WORK:

The detail scopes of work are available Technical Specification of the Tender document.

a) DEFINITION OF TERMS

i. The 'Contract' means the agreement entered into between the Purchaser and the Contractor as per the Contract Agreement signed by the parties, including all attachments and appendices there to and all documents incorporated by reference therein.

ii. 'Purchaser' shall mean CESU and shall include its legal representatives, successors and designated officers/Engineers.

iii. 'Contractor' shall mean the Bidder whose bid will be accepted by the Purchaser for the award of the Works and shall include such successful Bidder's legal representatives, successors and permitted assigns.

iv. 'Sub-Contractor' shall mean the person named in the Contract for any part of the works or any person to whom any part of the Contract has been sublet by the contractor with the consent in writing of the Engineer and will include the legal representatives, successors and permitted assigns of such person.

v. 'Engineer in Charge' shall mean the officer appointed in writing by the Purchaser to act as Engineer from time to time for the purpose of the Contract.

vi. 'Specifications' shall mean the specifications and Bidding Document forming a part of the Contract and such other schedules and drawings as may be mutually agreed upon.

vii. 'Site' shall mean and include the land and other places on, into or through which the works and the related facilities are to be erected or installed and any adjacent land, paths, street or reservoir which may be allocated or used by the Purchaser or Contractor in the performance of the Contract.

viii. 'Inspector' shall mean the Purchaser or any person nominated by the Purchaser from time to time, to inspect the equipment; stores or Works under the Contract and/or the duly authorized representative of the Purchaser.

ix. 'Notice of Award of Contract'/ 'Letter of Award' shall mean the official notice issued by the Purchaser notifying the Contractor that his bid has been accepted.

x. 'Date of Contract' shall mean the date on which notice of Award of Contract/ Letter of Award has been issued.

xi. 'Performance and Guarantee Tests', shall mean all operational checks and tests required to determine and demonstrate capacity, efficiency, and operating characteristics as specified in the Contract Documents.

xii. The term 'Final Acceptance'/ 'Taking Over' shall mean the Purchaser's written acceptance of the works performed under the Contract, after successful commissioning/ completion of Performance and Guarantee Tests, as specified in the accompanying Technical Specifications or otherwise agreed in the contract.

xiii. 'Commercial Operation' shall mean the condition of operation in which the complete equipment covered under the Contract is officially declared by the Purchaser to be available for continuous operation at different loads up to and including rated capacity. Such declaration by the Purchaser, however, shall not relieve or prejudice the Contractor of any of his obligations under the Contract.

xiv. Words imparting 'Person' shall include firms, companies, corporations and associations or bodies of individuals, whether incorporated or not.

xv. Terms and expressions not herein defined shall have the same meaning as are assigned to them in the Indian Sale of goods Act (1930), failing that in the Indian Contract Act (1872) and failing that in the General Clauses Act (1897) including amendments thereof, if any.

xvi. In addition to the above the following definition shall also apply

a) 'All equipment and materials' to be supplied shall also mean 'Goods'
b) 'Constructed' shall also mean erected and installed.
c) 'Contract Performance Guarantee' shall also mean 'Contract Performance Security'.

3.0 SUBMISSION OF TENDER: -

.01 Sealed tenders in two parts, each complete in all respects in the manner hereinafter specified are to be submitted to **Superintending Engineer, Electrical Circle No.II ,CESU,BBSR** on or before the date and time specified in the notice inviting the tenders. Bids shall be submitted as per format provided in Section – III & IV. Bid shall be submitted in double sealed envelopes superscripted on the covers the tender specification number and the due date of opening of the bids on the right hand top side of the envelope. On the left top side of the price bid original/ duplicate as is relevant shall be written.

.02 The tenders are required to be submitted in Two Parts each in separate double sealed covers**.**

a) Part - I : Superscribed as "Technical and commercial bid " shall contain EMD, Bid Documents cost and Techno commercial documents.

b) Part - II, Superscribed as "Price Bid". The Part - II should contain only Price bid of participation in duplicate in separate envelope.

.03 Fax and Telegraphic tenders shall not be accepted.

.04 Receipt of bids / revised bids after the cut off time and date as specified in the Tender specification shall not be permitted and such bids shall be rejected outright. The Purchaser shall not be responsible for any delay in transit in post / courier etc. in this regard.

.05 Regarding less quoting of price bid w.r.t tender estimated cost as per amendment of OPWD code: Additional Performance Security shall be obtained from the successful bidder who has quoted less bid price/ rate than the estimated cost put to the tender. In such an event only the successful bidder who has quoted less bid price shall have to furnish the exact amount of differential cost i.e. estimated cost put to tender minus the quoted amount as **Additional Performance Security in shape of Term Deposit Receipt/ Fixed Deposit pledged in favour of CESU with validity same as the validity of CPBG for this tender within 7 (Seven) days from issuance of letter on L1 bidder before placement of work order, otherwise the bid shall be cancelled and security deposit (EMD) shall be forfeited and other consequential action may be taken against the bidder.**

This security amount shall be released only after expire of validity of CPBG as mentioned in Clause 29.04 of GCC. The aforesaid amount shall not carry any interest payable to the bidder.

4.0 VALIDITY :-

The offer shall be valid for a period not less than **Six months** from the date of bid opening.

5.0 PRICE: -

Bidders are required to quote firm price as per the prescribed format enclosed of Bid Proposal Sheets. The quoted price shall be firm and inclusive of all taxes, duties, freight & insurance and other levies, if any. CESU shall not be liable to pay anything extra over and above the quoted price. However, any variation in taxes & duties shall be borne by the bidder during the period of contract including extension period.

6.0 RECEIPT AND OPENING OF THE BID: -

.01 Bids as described shall be received in the office of the Purchaser and shall be opened on the scheduled date and time. The Purchaser's authorized representatives shall open bids in the presence of Bidders' representatives on the date and time for opening of bids as specified in the Invitation for Bid or in case any extension has been given thereto, on the extended bid opening date and time notified.

.02 Maximum one representative for each bidder shall be allowed to witness the opening of bids. The representative must produce suitable authorization in this regard to be eligible to witness the bid opening on behalf of the bidder. Bidders' representatives who are present shall sign in a register evidencing their attendance.

.03 The Bidders' names, bid prices, modifications, bid withdrawals and the presence or absence of the requisite bid guarantee and such other details as the Purchaser, at its discretion, may consider appropriate will be announced at the opening. No electronic recording devices will be permitted during bid opening.

.04 Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not

officially concerned with such process. Any effort by a Bidder to influence the Purchaser's processing of Bids or award decisions may result in the rejection of the Bidder's Bid.

7.0 EVALUATION OF BIDS & AWARD OF CONTRACT:

.01 To assist in the examination, evaluation and comparison of Bids, the Purchaser may, at its discretion, ask the Bidder for a clarification of its Bid. All responses to requests for clarification shall be in writing and no change in the price or substance of the Bid shall be sought, offered or permitted.

.02 Purchaser will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the Bids are generally in order.

.03 Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price per item that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price per item will be corrected. If there is a discrepancy between the Total Amount and the sum of the total price per item, the sum of the total price per item shall prevail and the Total Amount will be corrected. **In the event of multiple unit supply rates for the same item is found, then the lowest quoted supply rate for the same item shall be considered**.

.04 Prior to the detailed evaluation, Purchaser will determine the substantial responsiveness of each Bid to the Bidding Documents including production capability and acceptable quality of the Goods offered. A substantially responsive Bid is one, which conforms to all the terms and conditions of the Bidding Documents without material deviation.

.05 The Purchaser's evaluation of a Bid will take into account, in addition to the Bid price, the following factors, in the manner and to the extent indicated in this Clause:

a) Work Schedule
b) Deviations from Bidding Documents
c) Compliance of the criteria in Technical Bid
d) If the quoted/evaluated rate of the bidder is less than 14.99% (without round off) of the tender estimated cost, then such a bid shall be rejected and tender shall be finalized basing on merits of rest bids i.e. for Rs. 100 estimated cost lowest accepted quoted/evaluated price is Rs. 85.01.

.06 The Purchaser will award the Contract to the successful Bidder whose Bid has been determined to be the lowest - evaluated responsive Bid based in the price quoted in the price bid in their offered BOQ and services, when the lowest bidders is not ready and/or capable to undertake the entire work envisaged, then the Purchaser may explore the possibility of the execution of works through other

bidders if they are willing to execute at **L_1 rate**. Such exploration shall be carried out in a sequential order starting with **L_2** bidder then with **L_3** bidder and so on.

8.0 EARNEST MONEY DEPOSIT (EMD):-

.01 The Tender must be accompanied by Earnest Money Deposit in shape of account payee Bank Draft drawn on any scheduled bank **in favour of CESU, Electrical Circle No.II,BBSR, payable at Bhubaneswar** shall be, as mentioned in the tender notice of the bid for which the bidder has submitted the bid. Bids without EMD deposit will be rejected out rightly.

.02 No adjustment of any previous deposit or any amount payable from Purchaser shall be entertained for EMD. EMD amount so submitted shall not carry any interest payable to the bidder.

.03 The Earnest Money so deposited shall be forfeited if the Bidder Withdraws its bid during the period of Bid validity specified by the Bidder in the Bid form or the Successful Bidder fails

04. The EMD of unsuccessful Bidder shall be returned within 30 days of from date of finalization of the Order, Further the EMD of successful Bidder shall be refunded within 30 days of finalization of the Order subject to submission of 10% of the Work Order in form of CPBG

9.0 PURCHASER'S RIGHT TO VARY QUANTITIES AT TIME OF AWARD:

CESU reserves the right to increase or decrease the quantity of goods/services specified in the Schedule of Requirement during execution of Contract limiting to ±20% of Contract price without any change in unit price (as per the Price Schedule & Bills Of Materials) or other terms and conditions. However, quantity of individual items required may vary without any limitation.

10.0 INSPECTION AND TESTING :-

i) The Engineer-in-charge shall be entitled at all reasonable times during manufacture / installation to inspect, examine and test the materials at the contractor's premises / erection site about workmanship of the materials to be supplied under this contract. If the said materials are being manufactured in other premises, the contractor shall provide unhindered clearance, giving full rights to the purchaser to inspect, examine and test as if the materials were being manufactured in his premises. Such inspection / examination and testing shall not relieve the contractor of his obligations to execute the contract by letter and spirit. The contractor shall give the purchaser advance notice in writing of the Date and the Place at which the materials will be ready for testing. The inspecting officer for the entire work shall

be the Purchaser representative for the concerned site. Inspection of all the materials will be completed within maximum two lots. The contractor shall ensure that all the inspected materials along with seal and intact at site and the same will be again cross checked and certified in the presence of project in charge.

The contractor shall give the owner at least 15days prior advance notice in writing of the Date and the Place at which the materials will be ready for testing. The inspecting officer for the entire work shall be the Purchaser representative for the concerned site. **Inspection of all the materials will be completed within maximum two lots. The contractor shall submit the inspection call to SEEC.II . The required DI shall be issued by the CESU after which the contractor shall lift the materials.** The contractor shall ensure that all the inspected materials along with seal and intact and the same will be again cross checked and certified in the presence of project in charge at the site.

ii) INSPECTION OF COMPLETED WORK – After receipt of completion report, **Executive Engineer (Elect.) PED, Puri** will deposit the required amount towards inspection charge in the prescribed format to Govt. of Odisha and the party will comply the observation of the inspection report in any before charging of the line and subsequent release of payment to the party .

However, such Inspection and Testing shall not relieve Contractor of his obligation to execute the contract by letter of spirit. Any defects pointed out by the Electrical Inspector, shall be corrected or attended by the bidder at his own cost.

11.0 COMPLETION AND COMPLETENESS OF THE EQUIPMENT :-

Time being the essence of the contract; the work shall be completed within **6 (Six) Months maximum from the date of issue of work order** including supply of all the materials, erection, Testing, dismantling, Electrical inspection & commissioning.

.01 The work shall be treated as complete item wise when one item shall be complete in all respects with all mountings, fixtures and standard accessories which are normally supplied even though not specifically detailed in the specification. No extra payment shall be payable for such mounting, fittings, fixtures and accessories which are needed for safe operations of the equipment as required by applicable code of the country though this might not have included in the contract.

.02 All similar components and/or parts of similar equipment supplied shall be inter-changeable with one another. Various equipments supplied under this contract shall be subject to Purchaser’s approval.

.03 Purchaser however reserves the right to re-schedule the completion period, if required.

12.0 REJECTION OF MATERIALS : -

In the event of the materials supplied by the contractor and/or the installation works are found to be defective in quality and the workmanship is poor or otherwise not in conformity with the requirements of the contract specification as per (Technical specification), Purchaser shall reject such materials / services and ask the contractor in writing to replace / rectify the defects. The contractor on receipt of such notification shall rectify or replace the defective materials and/or re-install the work already executed, free of cost to the Purchaser. If the contactor fails to do so the Purchaser may at his option take the following actions which could be on concurrent basis.

a) *Replace or rectify such defective materials and recover the extra cost so involved plus 25% from the Contractor.*
b) *Terminate the contract for balance supply and erection with enforcement of penalty as per contract.*
c) *Acquire the defective materials at reduced price considered acceptable under the circumstances.*
d) *Forfeit the Contract Performance Bank Guarantee.*

13.0 EXPERIENCE OF BIDDERS : -

The bidders are required to furnish information regarding their experience on the following aspects as per format provided in Section – IV, Annexure VII (A) & (B) :

a) Description of similar type of work executed during the last three FY years i.e. FY 2016-17 ,FY-2017-18, FY 2018-19 with the name(s) of the party(s) to whom / where supplies / erection were made.
b) Work orders details (W.O No. and date only) executed during the last three years along with Electrical inspection report copies and copies of user's completion / performance certificate.

Bids may not be considered if the past performance is found to be un-satisfactory.

14.0 DEVIATION FROM SPECIFICATION: -

The bidders are requested to study the specification and the attached drawings thoroughly before tendering so that if they make any deviations, the same are prominently brought on a separate sheet under the headings "Deviations" as per formats provided .All such deviations to the technical & commercial terms of the specification shall be indicated in a separate list as indicated above. In absence of such deviation schedule, it will be presumed that the bidder has accepted all the conditions stipulated in the tender specification, not withstanding any deviations mentioned elsewhere in the Bid. However the acceptance of deviation is not binding on the Purchaser.

15.0 CONTRACTOR TO INFORM HIMSELF FULLY: -

The contractor shall examine the instructions, general conditions of the contract, specifications and the schedule of quantity and delivery to satisfy himself as to all the terms and conditions and circumstances affecting the contract price. He shall quote prices according to his own judgment and shall understand that no additional cost except as quoted shall only be considered.

16.0 PATENT RIGHT: -

The contractor shall indemnify the purchaser against all claims, actions, suits and proceedings for the alleged infringement any patent design or copy right protected either in country of origin or in India by the use of any equipment supplied by the contractor but such indemnity shall not cover any use of the equipment other than for the purpose indicated by or reasonable to be informed from the specification.

17.0 GUARANTEE PERIOD: -

.01 The materials to be supplied by the contractor shall be guaranteed for satisfactory operation against defects in design and workmanship for a period of **24 months** from the date of handing over the completed installations.

.02 The above guarantee certificate shall be furnished in triplicate to the Purchaser for his approval. Any defects noticed during the above period should be rectified by the Contractor free of cost to the Utility provided such defects are due to faulty design, bad workmanship or bad materials used on receipt of written notice from the Purchaser.

18.0 PENALTY FOR DELAY IN COMPLETION OF CONTRACT: -

.01 If the contractor fails to complete the works by the scheduled period or any extension granted thereby, the contractor shall be liable for deduction of penalty amounting to **0.5% (half percent)** of the contract price per week of un-finished works subject to the maximum of **5% (five percent)** of the total contract price of incomplete work and subject to force majeure conditions.

.02 Penalty amount can be realized from the proceeds of the Contract Performance Bank Guarantee, if the situation so warrants.

.03 Extension of completion period could be with / without levy of penalty with the discretion of purchaser.

19.0 RIGHT OF WAY :

Right of way issues, if any, arising during execution of the works shall have no liability of CESU. These issues shall be settled at the sole discretion of the Contractor with compensation (if any)**.** CESU shall however extend all possible help to the Contractor including discussion with the local authorities for early resolution of these issues.

20.0 CONTRACTOR'S DEFAULT :

.01 If the Contractor neglects to execute the works with due diligence and expedition or refuses or neglects to comply with any reasonable order given to him, in writing by the Engineer in connection with the works or contravenes the provisions or the contract, the Purchaser may give notice in writing to the Contractor to make good the failure, neglect or contravention complained of. Should the Contractor fail to comply with the notice within thirty (30) days from the date of serving the notice, the Purchaser shall be at liberty to employ other workmen and forthwith execute such part of the works as the contractor may have neglected to do or if the Purchaser thinks fit, without prejudice to any other right, he may have under the Contract to take the work wholly or in part out of the Contractor's hands and re-contract with any other person or persons to complete the works or any part thereof and in that event the Purchaser shall have free use of all Contractor's equipment that may have been at the time on the Site in connection with the works without being responsible to the Contractor for fair wear and tear thereof and to the exclusion of any right of the Contractor over the same, and the Purchaser shall be entitled to retain and apply any balance which may otherwise be due on the Contract by him to the Contractor, or such part thereof as may be necessary, to the payment of the cost of executing the said part of works or of completing the works as the case may be. If the cost of completing of works or executing part thereof as aforesaid shall exceed the balance due to the Contractor, the Contractor shall pay such excess. Such payment of excess amount shall be independent of the liquidated damages for delay which the Contractor shall have to pay if the completion of works is delayed.

.02 In addition, such action by the Purchaser as aforesaid shall not relieve the Contractor of his liability to pay liquidated damages for delay in completion of works.

.03 Such action by the Purchaser as aforesaid the termination of the Contract under this clause shall not entitle the Contractor to reduce the value of the Contract Performance Guarantee nor the time thereof. The Contract Performance Guarantee shall be valid for the full value and for the full period of the Contract including guarantee.

21.0 TERMINATION OF CONTRACT ON PURCHASER'S INITIATIVE :

.01 Purchaser reserves the right to terminate the Contract either in part or in full due to reasons other than those mentioned under clause entitled 'Contractor's Default'. The Purchaser shall in such an event give fifteen (15) days notice in writing to the Contractor of his decision to do so.

.02 The Contractor upon receipt of such notice shall discontinue the work on the date and to the extent specified in the notice, make all reasonable efforts to obtain cancellation of all orders and Contracts to the extent they related to the work terminated and terms satisfactory or the Purchaser, stop all further sub-contracting or purchasing activity related to the work terminated, and assist Purchaser in maintenance, protection, and disposition of the works acquired under the Contract by the Purchaser. In

the event of such a termination the Contractor shall be paid compensation, equitable and reasonable, dictated by the circumstance prevalent at the time of termination.

.03 If the Contractor is an individual or a proprietary concern and the individual or the proprietor dies and if the Contractor is a partnership concern and one of the partners dies then unless the Purchaser is satisfied that the legal representatives of the individual Contractor or of the proprietor of the propriety concern and in the case of partnership, the surviving partners, are capable of carrying out and in the case of partnership, the surviving partners, are capable of carrying out and completing the Contract, the Purchaser shall be entitled to cancel the Contract as to its incompleted part without being in any way liable to payment of any compensation to the estate of deceased Contractor and /or to the surviving partners of the Contractor's firm on account of the cancellation of the contract. The decision of the Purchaser that the legal representatives of the deceased Contractor or surviving partners of the Contractor's firm cannot carry out and complete the contract shall be final and binding on the parties. In the event of such cancellation the Purchaser shall not hold the estate of the deceased Contractor and/ or the surviving partners of the Contractor's firm liable to damages for not completing the Contract.

22.0 FORCE MAJEURE: -

The Contractor shall not be liable for any penalty for delay or for failure to perform the contract for reasons of Force Majeure such as "acts of God, acts of the Public enemy, acts of Govt., Fires, Flood, Epidemics, Quarantine restrictions, Strikes, Freight Embargos and provided that the Contractor shall within ten (10) days from the beginning of such delay notify the Purchaser in writing of the cause of delay. The Purchaser shall verify the facts and grant extension as facts justify.

23.0 EXTENSION OF TIME: -

If the delivery of the equipments / materials is delayed due to reasons beyond the control of the Contractor, the Contractor shall immediately inform the Purchaser in writing of his claim for an extension of time. The Purchaser on receipt of such notice may agree to extend the contract period as may be reasonable but without prejudice to other terms & conditions of the contract.

24.0 SAFETY PRECAUTIONS:-

The agency shall observe all applicable regulations regarding safety at the Site. Any compensation due on account of any type of accident at site shall be to the contractor's account. The contractor should follows various safety provisions as provided under Regulation-3, Regulation-4 & Regulation-7 of CEA (Measures relating to safety & electric supply) Regulation -2010 and Regulation -7 of CEA (Safety requirement for construction, operation and maintenance of electrical plants and electrical lines) Regulation-2011.

25.0 STORE :-

Storing of materials from supply to erection shall be arranged by the contractor at his own cost. No compensation shall be made by the Purchaser for any damage or loss of materials during storing, transit transportation and at the time of erection.

26.0 INSURANCE: -

i. Contractor shall arrange adequate **Transit-cum-storage-cum-erection** policy of all the materials including OSM materials and shall submit the copy of the same to the Purchaser. The policy shall initially remain valid for a period of sixty days over & above of the contractual guarantee period and shall be extended as required

ii. Till handing over. Contractor shall be responsible for lodging of claim with the insurer as well as for all required follow up with the insurer for settlement of claim in case of loss/damage/theft of material during transit/storage/erection till the completed works is handed over to the Purchaser and is accepted by the authorized representative of the Purchaser in writing and CESU shall have no liability regarding any damage or theft of OSM items after handing over the materials to the contractor from the CESU store.

iii. Contractor shall also arrange adequate cover for his employees / labourers engaged in the works as well as arrange third party insurance cover to indemnify any possible damages/accident to public at large not connected with the works process and shall submit a copy of the same to the Engineer In Charge of the Project prior to starting of the work. Any claim(s) pertaining to this shall be the responsibility of the Contractor.

The Contractor shall take out a comprehensive **insurance policy under the Workman Compensation Act 1923,** to cover such workers, who will be engaged to undertake the jobs covered under this Work and a copy of this insurance policy will be given to CESU and Engineer-in-charge solely for their information, reference and records and Official use. The Contractor shall ensure that such insurance policies are kept at all times valid.

iv. The contractor shall undertake free replacement of the materials damaged or lost during transit, which will be intimated by the Consignee within 30 days of receipt of the materials at purchaser's stores.

27.0 ENGINEER IN CHARGE & PROJECT CO-ORDINATOR :-

Concerned **Divisional Head of Electrical division PED, Puri** of CESU shall be the Engineer in charge for the Project. **The Divisional Engineer, E&MR Division, Khordha** shall be the project coordinator for the project. All inspection, supervision, erection, testing and commissioning of the project shall be carried out in coordination with the Engineer in charge and the project co-coordinator. All drawings & GTPs should be submitted to this office for approval prior to inspection.

28.0 CONTRACT PERFORMANCE BANK GUARANTEE :-

a) Within 30 days of issue of the Work Order, the Contractor shall submit Contract Performance Bank Guarantee issued by a scheduled Bank, in favour of the Purchaser, covering 10% of the total value of the work order.

b) In case of Joint venture/consortium performance bank guarantee shall be in the name of lead partner @ of 10% of the contract price and additional @1% each by the Joint venture partner(s) separately(or) single bank guarantee for (lead partner @ 10% and each JV partner @1%) mentioning the name and address of the lead & JV partner to be submitted by lead partner from a nationalized /scheduled bank encashable with the Bhubaneswar branch of the issuing bank in favor of Central Electricity Supply utility of Odisha ,Bhubaneswar , in the prescribe proforma .

c) The said Bank Guarantee shall be prepared in the prescribed Performa as attached in Section IV, Annexure - III. The Bank Guarantee furnished shall be executed on Non-judicial Stamp paper worth of Rs 100/- (Rupees Hundred only), purchased in the name of the issuing bank, as per the prevalent rules. The Bank Guarantee so provided shall be en-cashable on the Bhubaneswar branch of the issuing Bank.

d) The Contract Performance Bank Guarantee shall remain valid for a period not less than 90 days over and above the guarantee period, basing on stipulated completion period in the W.O. towards security i.e. **33 (Thirty three) months from the date of issue of the work order and acceptance thereof,** failing which the BG amount shall be deducted in one stroke from the 1st running bill which will be released after completion of the guarantee period .Only after such deduction the EMD shall be returned .

e) No interest shall be allowed by the Purchaser on the above Performance Security Deposit submitted by the Bidder.

f) The Contract Performance Bank Guarantee may be extended for the delay period of completion of work, if any.

g) The advance BG & CPBG shall be submitted before this office for necessary acceptance and approval thereof.

29. TERMS OF PAYMENT:

Payment shall be made within 30 days after successful completion of work and verification thereof subject to approval of Guarantee certificate. However the PBG submitted by the Bidder shall be retained with CESU and returned after expiry of PBG period. 1% CESS of the amount shall be deducted from bill prior to payment. The Tax invoice is to be submitted by the contractor showing GST ,Number, CGST and SGST as applicable separately within the contractor value of works .Following documents Invoice in triplicate duly certified by the Engineer-in-charge , concerned SDO(Elect.), concerned Junior Manager (Elect.) and by the contractor. The Invoice issued by the contractor should indicate clearly the GST Number, CGST & SGST as applicable separately with in the value of work.

Following documents shall be furnished by the firm for processing & releasing the payment .

a) Work completion certificate alongwith date with date of completion /joint measurement certificate (JMC) for completed work duly certified by the Engineer in charge, concerned SDO(Elect.),concerned Junior Manager (Elect.)and by the contractor .
b) Materials Utilization certificate (OSM) duly certified by the Engineer-in-charge .
c) Copy of Dispatch clearance letter against all the contract supply items .
d) Return of dismantled materials ,if any duly acknowledged /certified by the concerned store division (Bhubaneswar/ Choudwar).
e) Acceptance of Performance Bank Guarantee .
f) Acceptance of mobilization Advance Bank Guarantee ,if any .
g) Copies of all statutory documents such as EPF Challan, ESI challan ,comprehensive insurance policy documents, Pan card ,GSTIN registration certificate and any other documents as required by the paying officer .
h) Final completion certificate ,Electrical inspection report of Govt. of Odisha ,clearance from electrical inspectorate for final charging and final charging report and handing over & Taking over for whole scope of work shall be submitted for final bill .

29.02 20% (Eighty percent) of contract price on pro-rata basis along with taxes and duties shall be paid progressively for each portion of proportionally completed items (Supply and erection at site only) of work as per the agreed Bill of Materials within 30 days of submission of claim subject to certification by Purchaser's Engineer-in-charge on the basis of check points involved in such items of work. **However, contractor shall raise R/A bill with a copy of the comprehensive insurance policy as per the Clause-27 on completion of at least 20 % of the total contract value**

29.03 . Balance 80%(twenty percent) of contract price shall be paid after completion of all works, envisaged under this project including any additions/alterations and on the basis of the final amendment work order ,testing and commissioning , return of dismantled materials /un-used free supply materials at store (Bhubaneswar/Choudwar),taking over certificate and entire stretch is fully ready for commercial operation . The payments shall be subjected to clearance from electrical inspectorate, Govt of Odisha .

Note :

1. The Contractor shall furnish CPBG at this office of S.E.E.C.II for approval.

30. **PAYING OFFICER AND NODAL AUTHORITY**:

The Superintending Engineer, Electrical Circle.II.BBSR, CESU will be the paying authority and the Nodal authority for the project. He will monitor the progress and redress all the issues for smooth execution of the work in consultation with the concerned Authorities and report fortnightly to the this office . All drawings, GTP and type test reports submitted for approval.

Apart from the above, **The Superintending Engineer, Electrical Circle.II, BBSR , CESU** shall be the Paying Officer as mentioned below;

31. PURCHASER'S RIGHTS: -

The Purchaser reserves the right to accept any bid or reject any or all bids or cancel / withdraw invitation of bid or to vary the quantity for placement of order without assigning any reason to such decision. Such decision by the Purchaser shall bear no liability.

32.0 DISTINCT MARK ON EQUIPMENT AND MATERIALS:

All the equipments and materials required for the works shall have distinct mark of Purchaser either by way of punching on metal part(s) and/or in built during casting and/or painting as per common practice and/or as mutually agreed. This should be clearly visible in day light in naked eye.

33.0 DISPUTE RESOLUTION AND JURISDICTION : -

a) Any Dispute arises of the contract shall referred to CEO,CESU, who shall decide the case as sole arbitrator .

b) For the purpose of dispute resolution, this agreement shall be governed by the provision of Arbitration and Conciliation Act,1996.\

c) All disputes shall be subjected to exclusive jurisdiction of the Courts at Bhubaneswar and the writ jurisdiction of Hon'ble High Court of Odisha at Cuttack..

34.0 TRANSFER AND SUB-LETTING:-

The Contractor shall not sublet, transfer, assign or otherwise part with the Contract or any part thereof, either directly or indirectly, without prior written permission of the Purchaser.

35.0 FREE ISSUE OF MATERIALS (Owner Supply Materials / OSM) BY CESU :-

The list of OSM materials as per the scope to be supply by CESU are available at Price Schedule. However, transportation cost of OSM materials from any CESU Central store at Bhubaneswar & Choudwar to work site is to be borne by the contractor. Rate should be quoted accordingly including transportation.

36.0 SUBMITTALS REQUIRED AFTER AWARD OF CONTRACT:-

.01 Within 15 days of the effective date of contract the contractor shall provide three copies of an outline program of production, inspection, testing, delivery, survey, erection, pre-commissioning and commissioning in chart form. Included in the program will be the detailed schedule of drawing to be submitted.

.02 The bar chart & pert chart for each item of the work so as to complete the work in scheduled period of, **6 months** for the project shall be furnished by the contractor/Successful Bidder.

.03 The periodic progress report as required by the purchaser shall be submitted by the contractor as per the format prescribed by the Engineer in Charge.

37.0 DRAWINGS

Within 15 days of contract commencement the contractor shall submit, for approval to the SEEC.II a schedule of the drawings to be produced. The schedule shall also provide a program of drawing submission, for approval by the S.E.EC.II All drawings and design should be submitted to S.E,EC.II within the period specified above.

38.0 APPROVAL PROCEDURE OF SUB VENDORS & DRAWINGS OF BOUGHT OUT MATERIALS

.01 The contractor shall submit all drawings, documents and type test reports, QAP, Name of Sub vendor, samples (as applicable) etc, to the engineer in charge within 15 days of award of LOA for approval. If modifications to be made if such are deemed necessary, the contractor has to resubmit them for approval without delaying the initial deliveries or completion of the contract work.

.02 Three copies of all drawings, GTP, QAP shall be submitted for approval and three copies for any subsequent revision.

.03 If the drawings will be as per the technical specifications, the competent authority of the Purchaser will return the drawings & documents to the contractor marked with “Approved” stamp.

39.0 TAKING OVER

.01 Upon successful completion of all the tests to be performed at site on equipment / materials supplied and erected by the contractor, the Engineer-in-charge of the project shall issue to the contractor a taking over certificate as a proof of the final acceptance of the equipment / materials. Such certificate shall not be un-reasonably withheld nor will the engineer delay the issuance thereof on account of minor omission or defects, which do not affect the commercial operation and / or cause any serious to the equipment/material. Such certificate shall, however, not relieve the contractor of any of his obligations which otherwise survive by the terms & conditions of the contract after issuance of such certificate.

.2 For the satisfaction of purchaser about quality, the purchaser shall have unreserved right for arrangement of testing of equipment/ materials and the complete system independently by self or any other agency chosen by the purchaser. The contractor is expected to agree and extend necessary help during such test if necessary.

40.0 LATENT DEFECT WARRANTY

The period of latent defect warranty in terms of this bidding documents, shall be limited to five (05) years from the date of completion of Guarantee period.

41.0 CLEARANCE OF SITE:

The Contractor's shall from time to time during the progress of the Works clear away and remove all surplus materials and rubbish disposal in an approved manner. On completion of the work the Contractor shall remove all Contractors' equipment and leave the whole of the Site clean and in a workable condition, to the satisfaction of the CESU. The Contractor shall obtain prior approval of the CESU to remove the surplus materials. **The contractor should rectify any damage occur during execution to its original position.**

42.0 EMBOSSING / PUNCHING / CASTING / PAINTING

All major equipments and materials supplied /erected under this project shall bear distinct mark of ***"Name of the Purchaser, CESU, WO Order No. & Date"*** by a way of embossing / punching / casting etc. This should be clearly visible to naked eye.

.01 CESU may or may not take over any balance materials left in the project in their account. So the contractor should procure the materials as per site condition.

0.2 Any terms & conditions not included above shall be abide by OPWD / CPWD / CVC codes / guidelines.

43.0 DECLARATION

The contractor has to declare that, any other miscellaneous materials required as per site condition to execute the work in complete manner which is not included in the price schedule, has been taken into consideration during quoting the price for each scope. They understand that, the quoted sub scope price shall be considered as inclusive of these extra required items.

Further, the contractor has to declare that, in the event of any deviation to scope of work, they will submit the rate analysis (both supply and erection), drawing (if required) for the additional items not included in the price schedule before execution of the deviated/extra work beyond the original scope of the work .

SECTION – III

PRICE SCHEDULE FORMAT

SCHEDULE OF QUANTITY & PRICE

ERECTION & COMMISSIONING OF ……..
(Firms shall quote the unit rate and total rates including all taxes and Duties)

Sl. No.	Description of works.	Unit	Quantity	Unit Supply Rate. (Rs.)	Supply Amount (Rs.)	Unit Erection Rate (Rs.)	Erection Amount (Rs)	Total (Rs)
1	**2**	**3**	**4**	**5**	**6=(4x5)**	**7**	**8=(4x7)**	**9=(6+8)**
1.								
2.								
	TOTAL (RS.)							

Rupees in words……..

Please refer Deatil price schedule format of the Bid proposal sheets enclosed with this tender specification as Part-II, Section-VII.

Bidders will be permitted to only enter the item wise rates. No other modification shall be permitted. Bidders are required to sign each and every page and enclose the same in the Price Bid envelope for the package separately in Sealed Condition. One soft copy in CD shall also be submitted in the Price Bid.

(Signature of the Bidders)

Note :

i. Unit rate is inclusive of all taxes and duties.
ii. Any discrepancy in unit rate and amount, unit rate stands.
iii. Any column left bank shall be treated as nil/inclusive of.
iv. If the unit rate column left blank and the price given in the total rate column, then unit rate shall be calculated by dividing the total rate by quantity. Similarly, If the total rate column left blank and the price given in the unit rate column, then total rate shall be calculated by multiplying the unit rate with quantity.
v. In the event of multiple supply and erection price quoted for the same item the lowest quoted supply and erection rate for the item shall be considered for evaluation.
vi. Any other miscellaneous materials required as per site condition to execute the work in complete manner which is not included in the above price schedule, has to be taken into consideration during quoting the price for each scope. The quoted sub scope price is considered to be inclusive of these extra required items
vii. If the quoted/evaluated rate of the bidder is less than 14.99% (without round off) of the tender estimated cost, then such a bid shall be rejected and tender shall be finalized basing on merits of rest bids i.e. for Rs. 100 estimated cost lowest accepted quoted/evaluated price is Rs. 85.01.
viii. Regarding less quoting of price bid w.r.t tender estimated cost as per amendment of OPWD cod

Additional Performance Security shall be obtained from the successful bidder who has quoted less bid price/ rate than the estimated cost put to the tender. In such an event only the successful bidder who has quoted less bid price shall have to furnish the exact amount of differential cost i.e. estimated cost put to tender minus the quoted amount as Additional Performance Security in shape of Demand draft / Term Deposit Receipt pledged in favour of S.E..E.C.II with validity same as the validity of CPBG for this tender within 7 (Seven) days from issuance of letter on L1 bidder before placement of work order, otherwise the bid shall be cancelled and security deposit (EMD) shall be forfeited and other consequential action may be taken against the bidder.

This security amount shall be released only after expire of validity of CPBG as mentioned in Clause 29.04 of GCC. The aforesaid amount shall not carry any interest payable to the bidder.

ix. Transportation cost of OSM materials from any CESU Central store to work site is to be borne by the contractor . Rate should be quoted accordingly including transportation . Transportation means transportation of OSM materials from CESU central store to divisional store to work site . The central store means central store of CESU situated at Bhubaneswar and Choudwar .

(This form should be duly filled up by the tenderer and submitted in duplicate in separate envelops super-scribing “Part.II Price bid” signed and sealed in each page .)

SECTION – IV

BID PROPOSAL

ANNEXURE – I

BID PROPOSAL LETTER

Electrical Installation of Works under CENTRAL ELECTRICITY SUPPLY UTILITY OF ODISHA

Bidder's Name and Address :

Bid Proposal Reference:

Person to be contacted:

Designation:

Telephone No. : E-mail : Fax No. :

To, Fax No:-

Name & Address of the Purchaser's designated Officer

Dear Sir,

We the undersigned bidder have read and examined the detailed specification and bidding documents for execution of various electrical installation works and do herewith submit our bid for the following package:

Sl. No.	Name of the Purchaser	Name of the Division	Package Code Reference

We declare the following:

1.0 PRICES AND VALIDITY :

1.01 All the prices and price components stated in our bid proposal are firm and not subject to any price adjustment, in line with the bidding documents. All the prices and other terms and conditions of this proposal are valid for a period of six months from the date of opening of the bids. We further declare that prices stated in our proposal are in accordance with "Instructions to Bidders" of bidding documents.

1.02 We do hereby confirm that our bid prices as quoted in attached Schedules include all import duties and levies including license fees lawfully payable by us on imported items and other taxes, duties and levies applicable on bought – out components, materials, equipment and other items and confirm that any such taxes, duties and levies additionally payable shall be to our account.

1.03 We confirm that the GST or any other similar taxes under the GST Act, as applicable, are included in our quoted bid price and there shall not be any liability on this account to the Purchasers. We

understand that Purchasers shall, deduct such taxes at source as per the rules and issue TDS Certificate to us.

1.04 We confirm that, in our Bid Price, we have considered service tax in line with lawful prevalent practice.

1.05 Price components of various items are indicated in the B.O.Q. for the respective works.

1.06 We further declare that while quoting the price, the due credit under MODVAT scheme, re-christened as CENVAT scheme, as per relevant Government policies wherever applicable, have been taken into account.

1.07 We, having studied the bidding document in three volumes relating to taxes & duties and hereby, declare that if any income tax, charge on income tax or any other corporate tax is attracted under the law, we agree to pay the same.

1.08 We are aware that the Price schedules do not generally give a full description of the supplies to be made and work to be performed under each item and we shall be deemed to have read the Technical Specifications and other bidding documents and drawings to ascertain the full scope of work included in each item while filling in the related and prices. We agree that the entered rates and prices shall be deemed to include the full scope as aforesaid, including overheads and profits.

1.09 We understand that in the price schedule, if there is discrepancy between the unit price and total price, the same shall be corrected as per relevant provisions.

1.10 We declare that prices for items left blank in the schedules will be deemed to have been included in other items. The TOTAL for each schedule and the TOTAL of Grand summary shall be deemed to be the total price for executing the facilities and sections thereof in complete accordance with the contract, whether or not each item has been priced

2.0 CONSTRUCTION OF THE CONTRACT

2.01 We declare that we are making the offer on the basis of indivisible supply-cum- Erection contract on a single source responsibility basis.

3.0 BID SECURITY(EMD)

We are enclosing DD no. dtd. Amounting to Rs. (Rupees only) issued by bank branch, payable on Bhubaneswar towards Bid Security against our above Bid. The Bid Security amount has been computed by adding the Estimated Cost of the package no.s for which we are submitting our bid.

4.0 EQUIPMENT PERFORMANCE GURANTEE

We declare that the ratings and performance figures of the equipment to be furnished and erected by us are guaranteed. The Guaranteed particulars of different equipments are enclosed along with our bid.

5.0 BID PRICING

We further declare that the prices stated in our proposal are in accordance with your 'Instruction of Bidders of Conditions of Contract, Volume-1 of the bid documents.

6.0 PRICE ADJUSTMENT

We declare that all the prices and price components stated in our offer are on FIRM price basis.

7.0 QUALIFICATION

We confirm having submitted the Qualification Data in original plus one copy, as required by you under clause 6.0 'Invitation for Bids'. Further we have filled in the information for qualification requirements. In case you require any further information in this regard, we agree to furnished the same in time

8.0 DEVIATIONS

8.01 We declare that the contract shall be executed strictly in a accordance with the specifications and documents except for the variations and deviations all of which have been detailed out exhaustively in the following schedules, irrespective of whatever has been stated to the contrary anywhere else in our proposal.

a) Commercial Deviations Schedule
b) Cost of withdrawal of Deviations on Critical
c) Technical Deviation Schedule

8.02 We confirm that specified stipulation of following critical clauses are acceptable to us and no deviations/exceptions are taken on any account whatsoever in the following clauses :

(a) Payment Terms :
(b) Bid Guarantee :
(c) Contract Performance Guarantee :
(d) Liquidated Damages for delay :
(e) Prices and Price Adjustment :
(f) Guarantee / Warrantees :

8.03 Further, we agree that the additional conditions, deviations, if any, found in our bid proposal documents other than those stated in attached Deviation Schedules, save that pertaining to any rebates offered, shall not be given effect to.

9.0 ADDITIONAL INFORMATION

We have included with this proposal additional information listed. We further confirm that such additional information does not imply any additional deviation beyond those covered in appropriate schedules and in case of any contradiction between these additional information and other provisions of Bid, the latter prevail.

10.0 GURANTEE DECLARATION

We guarantee that the equipment offered shall meet the rating and performance requirements stipulated in this specification. The Guarantee Declaration which shall attract levy of liquidated damages for non-performance is indicated in the relevant schedule.

11.0 BOUGHT-OUT AND SUB-CONTRACTED ITEM

We are furnishing herewith at appropriate Schedule, the detail of all major item of supply amounting to more than 10% of our Bid Price, which were propose subletting giving detail of the name of sub-contractor/sub-vendor and quantity for each item.

12.0 WORK SCHEDULE

If this proposal is accepted by you, we agree to submit engineering data, provide services and complete the entire work from time to time, in accordance with schedule indicated in the proposal. We fully understand that the time schedule stipulated in this proposal is the essence of the contract, if awarded.

The completion schedule of the various major key phases of the work is indicated in the designated schedule.

13.0 CONTRACT PERFORMANCE GUARANTEE

We further agree that if our Bid is accepted we shall provide an irrevocable Bank guarantee towards Contract Performance Guarantee, of value equivalent to ten percent (10%) of the Contract Price initially valid up to the end of ninety (90) days after the end of the contract warranty period in the form of Bank Guarantee in your favour within 30 (thirty) days from the date of 'Notice of Award of Contract' and enter into a formal agreement with you immediately thereafter.

14.0 CHECK LIST

We have included a check list duly filled in Schedule. We understand that only this check list, commercial and technical deviation will be read out during the part-I bid opening before the bidders present.

ANNEXURE – I (A)

U N D E R T A K I N G

Under the scope of the tender specification No_____, We M/s _____ do hereby undertake to

1) Execute the Project covered under the above specification on Complete turnkey basis (Supply and Erection) and there shall be no deviation in any manner both for commercial & technical requirement as stipulated in bid documents. We understand that our price offer shall not be considered if we are found unsuitable in the minimum qualifying criteria.

2) Declare that, any other miscellaneous materials required as per site condition to execute the work in complete manner which is not included in the price schedule, has been taken into consideration during quoting the price for each scope. We understand that, the quoted sub scope price shall be considered as inclusive of these extra required items.

3) Declare that, in the event of any deviation to scope of work we will submit the rate analysis (both supply and erection), drawing (if required) for the additional items not included in the price schedule before execution of the deviated/extra work beyond the original scope of the work to the satisfaction of CESU.

(To be made in the company letter head)

Authorized Signatory and seal of the company

ANNEXURE – II

SELF DECLARATION FORM

Name Of The Purchaser :……

Tender No :…….

Sir,

1. I/We the undersigned do hereby declare that, I/We have never been blacklist and/or there were no debarring actions against us for any default in supply of material/ equipments or in the performance of the contract entrusted to us in any of the electricity utilities of India.
2. In the event of any such information pertaining to the aforesaid matter found at any given point of time either during the course of the contract or at the bidding stage, may bid/ contract shall be liable for truncation/ cancellation /termination without any notice at the sole discretion of the purchaser.

Place :

Date :

Yours faithfully,

Signature of the bidder with seal.

(form shall be duly filled-up and signed by the bidder and submitted along with the original copy of the bid).

ANNEXURE – III

PROFORMA FOR CONTRACT PERFORMANCE BANK GUARANTEE

(To be executed on Rs. 100/- Non-judicial Stamp Paper purchased in the name of the BG Issuing Bank)

This Guarantee Bond is executed this ____ day of _____ by us,

_____ Bank at _____
P.O._____ P.S. _____Dist _____ State _____

Whereas the Superintending Engineer, Electrical Circle No.II, CESU, Bhubaneswar Office: M-95&96, Baramunda Housing Board Colony, Bhubaneswar-03 a Body corporate/ Company (CESU), constituted under the Electricity Act, 2003. (here in after called "Purchaser") has placed Work Order No._____ Dt._____ (hereinafter called "Agreement") with M/s_____(Lead partner) and M/s _____(JV Partner(s)) (hereinafter called "the Contractor") for Power supply of Railway and whereas CESU has agreed (1) to exempt the Contractor from making payment of security deposit, (2) to release 100% payment of the cost of materials as per the said agreement and (3) to exempt from performance guarantee on furnishing by the Contractor to the CESU a composite Bank Guarantee of the value of 10% (ten percent) of the Contract price of the said Agreement.

1. Now, therefore, in consideration of the Purchaser having agreed (1) to exempt the Contractor for making payment of security deposit, (2) to release 100% payment to the Contractor and (3) to exempt from furnishing performance guarantee in terms of the said Agreement as aforesaid, we the _____ Bank, Address _____ (code No. _____) (hereinafter referred to as "the Bank") do hereby undertake to pay to the Purchaser an amount not exceeding Rs._____ (Rupees _____) only against any loss or damage caused to or suffered by the Purchaser by reason of any breach by the said Contractor(s) of any of the terms or conditions contained in the said Agreement.

2. We, the _____ Bank do hereby undertake to pay the amounts due and payable under the guarantee without any demur, merely on a demand from the Purchaser stating that the amount claimed is due by way of loss or damage caused to or suffered by Purchaser by reason of any breach by the said Contractor(s) of any of the terms or conditions contained in the said Agreement or by the reason of any breach by the said Contractor's failure to perform the said Agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs._____ (Rupees _____) only.

3. We, the _____ Bank also undertake to pay to the Purchaser any money so demanded not withstanding any dispute or dispute raised by the Contractor(s) in any suit or proceeding instituted/ pending before any court or Tribunal relating thereto our liability under this Agreement being absolute and irrevocable.

The payment so made by us under this bond shall be valid discharge of our liability for payment there under and the Contractor(s) shall have no claim against us for making such payment.

4. We, the _____ Bank further agree that the guarantee herein contain shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and it shall continue to remain in force endorsable till all the dues of the Purchaser under by virtue of the said Agreement have been fully paid and its claim satisfied or discharged or till Purchaser certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharge this guarantee and will not be revoked by us during the validity of the guarantee period. Unless a demand or claim under this guarantee is made on us or with our Bhubaneswar branch at _____ (Name, address of the Bhubaneswar branch and code No.) in writing on or before _____ (date) we shall be discharged from all liability under this guarantee thereafter.

5. We, the _____ Bank further agree that the Purchaser shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said Contractor(s) and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said Contractor(s) or for any forbearance act or omission on part of the Purchaser or any indulgence by the Purchaser to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would but for this provisions have effect of so relieving us.

6. The Guarantee will not be discharged due to change in the name, style and constitution of the Bank and or Contractor(s).

7. We, the _____ Bank lastly undertake not to revoke this Guarantee during its currency except with the previous consent of the Purchaser in writing.

Dated _____ the _____ day of Two thousand _____ .

Not withstanding anything contained herein above.

Our liability under this Bank Guarantee shall not exceed Rs._____ (Rupees _____ _____) only.

The Bank Guarantee shall be valid up to _____ only.

Our ……. branch at Bhubaneswar (Name & Address of the Bhubaneswar branch) is liable to pay the guaranteed amount depending on the filing of claim and any part thereof under this Bank Guarantee only and only if you serve upon us at our Bhubaneswar branch a written claim or demand and received by us at our Bhubaneswar branch on or before Dt._____ otherwise bank shall be discharged of all liabilities under this guarantee thereafter.

For _____

(indicate the name of the Bank)

N.B.:

(1) Name of the Contractor:

(Mention the name of JV partner(s), if any)

(2) No. & date of the purchase order/ agreement:

(3) Amount of P.O. :

(4) Name of Materials :

(5) Name of the Bank:

(6) Amount of the Bank Guarantee:

(7) Name, Address and Code No. of the Bhubaneswar Branch of the Issuing Bank:

(8) Validity period or date up to which the agreement is valid:

(9) Signature of the Constituent Authority of the Bank with seal

(10) Name & addresses of the Witnesses with signature:

(11) The Bank Guarantee shall be accepted only after getting confirmation from the respective Banks.

ANNEXURE – III(A)

PROFORMA OF BANK GUARANTEE FOR ADVANCE PAYMENT

(To be stamped in accordance with Stamp Act)

(To be executed on Rs. 100/- Non-judicial Stamp Paper purchased in the name of the BG Issuing Bank)

Ref..... Bank Guarantee No.....

Date .....

To

The Superintending Engineer
Electrical Circle No.II, CESU,
Bhubaneswar.

Dear Sir,

In consideration of CESU (hereinafter referred to as the 'Purchaser', which expression shall, unless repugnant to the context or meaning thereof include its successors, administrators and assigns) having awarded to M/s..... (Lead partner) and M/s _____(JV Partner(s)) (hereinafter referred to as the "Contractor" which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns), a Contract by issue of Purchaser's Letter of Award No..... dated ..... and the same having been acknowledged by the Contractor, resulting in a Contract bearing No..... dated ..... valued at ..... for ..... (scope of work)..... (hereinafter called the 'Contract') and the Purchaser having agreed to make an advance payment to the Contractor for performance of the above Contract amounting ..... (in words and figures) as an advance against Bank Guarantee to be furnished by the Contractor.

We,.....

(Name of the Bank)

having its Head Office at ..... (hereinafter referred to as the 'Bank', which expression shall, unless repugnant to the context or meaning thereof , include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the Purchaser, immediately on demand any or, all monies payable by the Contractor to the extent of ..... as aforesaid at any time upto ..... @ ..... without any demur, reservation, contest, recourse or protest and / or without any reference to the Contractor. Any such demand made by the Purchaser on the Bank shall be conclusive and binding notwithstanding any difference between the Purchaser and the Contractor or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. We agree that

the guarantee herein contained shall be irrevocable and shall continue to be enforceable till the Purchaser discharges this guarantee.

The Purchaser shall have the fullest liberty without affecting in any way the liability of the Bank under this guarantee, from time to time to vary the advance or to extend the time for performance of the Contract by the Contractor. The Purchaser shall have the fullest liberty without affecting this guarantee, to postpone from time to time the exercise of any powers.

Vested in them or of any right which they might have against the Contractor, and to exercise the same at any time in any manner, and either to enforce or to forbear to enforce any covenants, contained or implied, in the Contract between the Purchaser and the Contractor or any other course or remedy or security available to the Purchaser. The Bank shall not be released of its obligations under these presents by an exercise by the Purchaser of its liberty with reference to the matters aforesaid or any of them or by reason of any other act or forbearance or other acts of omission or commission on the part of the Purchaser or any other indulgence shown by the Purchaser or by an other matter or thing, whatsoever, which under law would, but for this provision have the effect of relieving the Bank.

Bank also agrees that the Purchaser at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee that the Purchaser may have in relation to the Contractor'' liabilities.

Notwithstanding anything contained hereinabove our liability under this guarantee is limited to ..... and it shall remain in force upto and including .....@ ..... and shall be extended from time to time for such period (not exceeding one year), as may be desired by M/s. ..... on whose behalf this guarantee has been given.
The Guarantee will not be discharged due to change in the name, style and constitution of the Bank and or Contractor(s).

All other contentions in B.G will safe guard the interest of <Purchaser>.
We, the _____ Bank lastly undertake not to revoke this Guarantee during its currency except with the previous consent of the <Purchaser> in writing.
Dated _____ the _____ day of Two thousand _____ .
Not withstanding anything contained herein above.

Our liability under this Bank Guarantee shall not exceed Rs._____ (Rupees _____ ____) only.
The Bank Guarantee shall be valid up to _____ only.

Our …….. branch at Bhubaneswar (Name & Address of the Bhubaneswar branch) is liable to pay the guaranteed amount depending on the filing of claim and any part thereof under this Bank Guarantee only and only if you serve upon us at our Bhubaneswar branch a written claim or demand and received by us at our Bhubaneswar branch on or before Dt._____ otherwise bank shall be discharged of all liabilities under this guarantee thereafter.

For _____

(indicate the name of the Bank)

Dated this ..... Day of .....20..... at .....

WITNESS

.....	.....
(Signature)	(Signature)
.....	.....
(Name)	(Name)
.....	.....
(Official Address)	(Designation with Bank Stamp) Attorney as per Power of Attorney No..... Dated .....

@ This date shall be ninety (90) days after the schedule date of completion of the Contract.

ANNEXURE –I V

LETTER OF COMPLIANCE OF QUALIFYING REQUIREMENT
(In case of Bidder being a Single Firm)

To

The Superintending Engineer
Electrical Circle NO.II, BBSR

Dear Sir,

I/We ……. (Name of Bidder) are submitting the bid as a single firm. In support of our meeting the Qualifying requirements (QR) for bidders, stipulated in this tender specification, we furnish herewith the details/documents etc. as follows.

Table – A : Previous Works Experience :

Package Quoted for	Description of Proposed Works	Tender Qty	Qty Installed & Commissioned					
			Sl. No.	FY	Name of Client	WO Ref	Qty Installed	Documents provided in proof of having executed the works during the relevant FY.

Table – B : Average Annual Turnover :

Package Quoted for	Estimated Cost of the Package (Rs. in Lakh)	Annual Turnover Data (Rs. in Lakh)	
		Financial Year	Turnover (Rs. in Lakh)
		2016-17	
		2017-18	
		2018-19	
Total Estimated Cost of the packages quoted for		**Average Turnover**	

Table – C : Access to Credit Facility :

Package Quoted for	**Estimated Cost of the Package (Rs. in Lakh)**	**Liquid Assets as on 31.10.2019**		**Credit Facility**	
		Description	(Rs. in Lakh)	Description	(Rs. in Lakh)
		Cash at Bank		Un Utilized Cash Credit Balance	
		Short term Fixed Deposits		Others (Pl Specify)	
One fifth of the total Estimated Cost.		Total Liquid Assets		Total Credit Facility	

Note- 1 : Continuation sheets, of like size and format, may be used as per Bidder's requirements and annexed to this Schedule.

2 : Bidder are required to furnish all the above data against their liquid assets from their concerned Bank as on 31.10.19 in Bank letter head only.

I/We declare that we are fulfilling the qualifying requirements as per clause no. 2.0 of Section – I, Invitation for Bids (IFB).

For & on behalf of …… (Name of the Bidder).

ANNEXURE – V

DETAILS TECHNICAL & COMMERCIAL DEVIATIONS

To

The Superintending Engineer
Electrical Circle No.II,BBSR

Dear Sir,

Sub: Technical Deviation for Construction of ……. Name of the Project.

The following are the Technical Deviations and variations from and exceptions to the specifications and documents for the subject package. These deviations and variations are exhaustive. Except for these deviations, the entire work shall be performed as per your specifications and documents

Volume/Clause	Ref./Page No.	As specified in the Specification / Relevant ISS	Technical deviation and variation to the specification

Date: (Signature) ……..

Place: (Printed Name) …….

(Designation) ……..

(Common Seal) ……

Note: 1. Continuation sheets, of like size and format, may be used as per Bidder's requirements and annexed to this Schedule.

2. The deviations and variations, if any, shall be brought out separately for each of the equipment.

3. This will be read out during opening of Part – I bid.

ANNEXURE – VI

WORK COMPLETION SCHEDULE

To

The Superintending Engineer
Electrical Circle No.II,BBSR

Dear Sir,

We hereby declare that, the work shall **be completed within 6 (Six) months from date of award of contract** as per following Work Completion Schedule which shall be followed by us

Sl. No	Description of Work	Period in Months(from the date of WO)
1	Completion of detailed engineering	
2	Procurement of raw materials	
3	Establishment of site office	
4	Erection (a) Commencement (b) Completion	
5	Testing & Pre-commissioning (a) Commencement (b) Completion	
6	Commissioning	

Date: (Signature of bidder) ……..

Place:

ANNEXURE – VII

PROFORMA OF INDEMNITY BOND TO BE EXECUTED BY THE CONTRACTOR FOR THE EQUIPMENT HANDED OVER BY <PURCHASER> FOR PERFORMANCE OF ITS CONTRACT

(Entire Equipment consignment in one lot)

(On non-Judicial stamp paper of appropriate Value)

INDEMNITY BOND

THIS INDEMNITY BOND is made this ..... day of .....20 ..... by ..... a Company registered under the Companies Act, 1956/ Partnership Firm / Proprietary Concern having its Registered Office at .....(hereinafter called as 'Contractor' or "Obligor" which expression shall include its successors and permitted assigns) in favour of <Purchaser>, a <Company/ Body Corporate> incorporated under the <Companies Act, 1956 / Electricity Act-2003> having its <Registered Office/ Head Office> at < Address> and its project at .... (hereinafter called "<Purchaser>"Which expression shall include its successors and assigns) :

WHEREAS <Purchaser> has awarded to the Contractor a Contract for ..... vide its Letter of Award / Contract No..... dated ..... and its Amendment No. ..... and Amendment No..... (applicable when amendments have been issued) hereinafter called the "Contract") in terms of which <Purchaser> is required to handover various equipment to the Contractor for execution of the Contract.

And WHERAS by virtue of Clause No..... of the said Contract, the Contractor is required to executive an Indemnity Bond in favour of <Purchaser> for the Equipment handed over to it by <Purchaser> for the purpose of performance of the Contract / Erection portion of the Contract (hereinafter called the "Equipment")

NOW THEREFORE, This Indemnity Bond witnessth as follows :

1. That in consideration of various equipment as mentioned in the Contract, valued at Rs... ..... (Rupees .....) handed over to the Contractor for the purpose of performance of the Contract, the Contractor hereby undertakes to indemnify and shall keep <Purchaser> indemnified, for the full value of the Equipment. The Contractor hereby acknowledges receipt of the Equipment as per despatch title documents handed over to the Contractor duly endorsed in their favour and detailed in the Schedule appended hereto. It is expressly understood by the Contractor that handing over of the despatch title documents in respect of the said Equipment duly endorsed by <Purchaser> in favour of the Contractor shall be construed as handing over of the Equipment purported to be covered by such title documents and the Contractor shall hold such Equipment is trust as a Trustee for and on behalf of <PURCHASER> .

2. That the Contractor is obliged and shall remain absolutely responsible for the safe transit / protection and custody of the Equipment at <PURCHASER> project Site against all risks, whatsoever, till the Equipment are duly used / erected in accordance with the terms of the Contract and the Plant / Package duly erected and commissioned in accordance with the terms of the Contract, is taken over by <PURCHASER> . The Contractor undertakes to keep <Purchaser> harmless against any loss or damage that may be caused to the Equipment.

3. The Contractor undertakes that the Equipment shall be used exclusively for the performance/ execution of the Contract strictly in accordance with its terms and conditions and no part of the equipment shall be utilized for any other work or purpose whatsoever. It is clearly understood by the Contractor that non-observance of the obligations under this Indemnity Bond by the Contractor shall inter-alia constitute a criminal breach of trust on the part of the Contractor for all intents and purpose including legal / penal consequences .

4. That <PURCHASER> is and shall remain the exclusive Owner of the Equipment free from all encumbrances, charges or liens of any kind, whatsoever. The Equipment shall at all times be open to inspection and checking by Engineer0in Charge / Engineer or other employees/agents authorised by him in this regard. Further, <Purchaser> shall always be free at all times to take possession of the Equipment in whatever form the Equipment may be, if in its opinion the Equipment are likely to be endangered, mis-utilised or converted to uses other than those specified in the Contract, by any acts of omission or commission on the part of the Contractor binds himself and undertakes to comply with the direction of demand of <Purchaser> to return the Equipment without any demur or reservation.

5. That this indemnity Bond is irrevocable. If at any time any loss or damage occurs to the Equipment or the same or any part thereof is misutilized in any manner whatsoever, then the Contractor hereby agrees that the decision of the Engineer-in-Charge/Engineer of <Purchaser> as to assessment of loss or damage to the Equipment shall be final and binding on the Contractor. The Contractor binds itself and undertakes to replace the lost and/or damaged Equipment at its own cost and/or shall pay the amount of loss of <Purchaser> without demur, reservation or protest. This is without prejudice to any other right or remedy that may be available to <Purchaser> against the Contractor under the Contract and under this Indemnity Bond.

6. NOW THE CONDITION of this Bond is that if the Contractor shall duly and punctually comply with terms and conditions of this Bond to the satisfaction of <Purchaser>, THEN, the above Bond shall be void, but otherwise, it shall remain in full force and virtue.

IN WITNESS WHEREOF, the Contractor has hereunto set its hand through its authorised representative under the common seal of the Company, the day, month and year first above mentioned.

SCHEDULE

Particulars of the Equipment handed over	Quantity	Particulars of Dispatch Title Documents		Value of the Equipment	Signature of Attorney (authorised representative as a token of receipt
		RR / GR / No. / Date of Bill of Lading	Carrier		

For an on behalf of M/s.....

WITNESS

37.1 1. Signature ..... Signature .....

2. Name ..... Name .....

3. Address..... Designation .....

Authorised representative *

2. 1. Signature .....

2. Name ..... (Common Seal in case of Company)

3. Address .....

---

* Indemnity Bonds are to be executed by the authorised person and (i) in case of Contracting Company under common seal of the Company or (ii) having the Power of Attorney issued under common seal of the company with authority to execute Indemnity Bonds, (iii) In case of (ii), the original Power of Attorney if it is specifically for this Contract or a Photostat copy of the Power of Attorney if it is General Power of Attorney and such documents should be attached to Indemnity Bond.

ANNEXURE – VIII

PROFORMA OF INDEMNITY BOND TO BE EXECUTED BY THE CONTRACTOR FOR THE EQUIPMENT HANDED OVER IN INSTALMENTS BY <PURCHASER> FOR PERFORMANCE OF ITS CONTRACT
(On non-Judicial stamp paper of appropriate Value)

INDEMNITY BOND

THIS INDEMNITY BOND is made this ..... day of .....20 ..... by ..... a Company registered under the Companies Act, 1956/ Partnership Firm / Proprietary Concern having its Registered Office at .....(hereinafter called as 'Contractor' or "Obligor" which expression shall include its successors and permitted assigns) in favour of <Purchaser>, a <Company/ Body Corporate> incorporated under the <Companies Act, 1956/ Electricity Act-2003> having its <Registered Office/ Head Office> at <Address> and its project at .... (hereinafter called "<PURCHASER> "Which expression shall include its successors and assigns) :

WHEREAS <PURCHASER> has awarded to the Contractor a Contract for ..... vide its Letter of Award / Contract No..... dated ..... and its Amendment No. ..... and Amendment No..... (applicable when amendments have been issued) hereinafter called the "Contract") in terms of which <PURCHASER> is required to handover various equipment to the Contractor for execution of the Contract.

And WHERAS by virtue of Clause No..... of the said Contract, the Contractor is required to executive an Indemnity Bond in favour of <PURCHASER> for the Equipment handed over to it by <PURCHASER> for the purpose of performance of the Contract / Erection portion of the Contract (hereinafter called the "Equipment")

NOW THEREFORE, This Indemnity Bond witnessth as follows :

1. That in consideration of various equipment as mentioned in the Contract, valued at Rs... ..... (Rupees .....) handed over to the Contractor for the purpose of performance of the Contract, the Contractor hereby undertakes to indemnify and shall keep <PURCHASER> indemnified, for the full value of the Equipment. The Contractor hereby acknowledges receipt of the Equipment as per dispatch title documents handed over to the Contractor duly endorsed in their favour and detailed in the Schedule appended hereto. It is expressly understood by the Contractor that handing over of the despatch title documents in respect of the said Equipment duly endorsed by <PURCHASER> in favour of the Contractor shall be construed as handing over of the Equipment purported to be covered by such title documents and the Contractor shall hold such Equipment is trust as a Trustee for and on behalf of <PURCHASER> .
2. That the Contractor is obliged and shall remain absolutely responsible for the safe transit / protection and custody of the Equipment at <PURCHASER> project Site against all risks, whatsoever, till the Plant / Package duly erected and commissioned in accordance with the terms of the Contract, is taken over by <PURCHASER> . The Contractor undertakes to keep <PURCHASER> harmless against any loss or damage that may be caused to the Equipment.

3. The Contractor undertakes that the Equipment shall be used exclusively for the performance / execution of the Contract strictly in accordance with its terms and conditions and no part of the equipment shall be utilised for any other work or purpose, whatsoever. It is clearly understood by the Contractor that non-observance of the obligations under this Indemnity Bond by the Contractor shall inter-alia constitute a criminal breach of trust on the part of the Contractor for all intents and purpose including legal / penal consequences.
4. That <PURCHASER> is and shall remain the exclusive Owner of the Equipment free from all encumbrances, charges or liens of any kind, whatsoever. The Equipment shall at all time be open to inspection and checking by Engineer-in-Charge / Engineer or other employees / agents authorized by him in this regard. Further , <PURCHASER> shall always be free at all times to take possession of the Equipment in whatever from the Equipment may be, if in its opinion the Equipment are likely to be endangered, mis-utilised or converted to use other than those specified in the Contract, by any acts of omission or commission on the part of the Contractor or any other person or on account of any reason, whatsoever, and the Contractor binds himself and undertakes to comply with the directions of demand of <PURCHASER> to return the equipment without any demur or reservation.
5. That this Indemnity Bond in irrevocable. If at any time any loss or damage occurs to the Equipment or the same or any part thereof is mis-utilized in any manner whatsoever, then the Contractor hereby agrees that the decision of the Engineer-in-Charge / Engineer of <PURCHASER> as to assessment of loss or damage to the Equipment shall be final and binding on the contractor. The Contractor binds itself and undertakes to replace the lost and / or damaged Equipment as its own cost and / or shall pay the amount of loss to <PURCHASER> without any demur, reservation or protest. This is without prejudice to any other right to remedy that may be available to <PURCHASER> against the Contractor under the Contract and under this Indemnity Bond.
6. NOW THE CONDITION of this Bond is that if the Contractor shall duly and punctually comply with the terms and conditions of this Bond to the satisfaction of <PURCHASER> , then above Bond shall be void, but otherwise, it shall remain in full force and virtue.

IN WITNESS WHEREOF, the Contractor has hereunto set its hand through its authorized representative under the common seal of the Company, the day, month and year first above mentioned.

SCHEDULE No. 1

Particulars of the Equipment handed over	Quantity	Particulars of Despatch Title Documents		Value of the Equipment	Signature of Attorney (authorized representative as a token of receipt
		RR / GR / No. / Date of Bill of Lading	Carrier		
(Please	number	subsequent	schedules)		

For an on behalf of M/s.....

WITNESS

1. 1. Signature ..... Signature .....

.

2. Name ..... Name .....

3. Address..... Designation .....

ANNEXURE – IX

SELF DECLARATION FORM

Name Of The Purchaser :……

Tender No :…….

Sir,

1. I/We the undersigned do hereby declare that, I/We have never been blacklist and/or there were no debarring actions against us for any default in supply of material/ equipments or in the performance of the contract entrusted to us in any of the electricity utilities of India.

2. In the event of any such information pertaining to the aforesaid matter found at any given point of time either during the course of the contract or at the bidding stage, may bid/ contract shall be liable for truncation/ cancellation /termination without any notice at the sole discretion of the purchaser.

Place :

Date :

Yours faithfully,

Signature of the bidder with seal.

(This form shall be duly filled-up and signed

by the bidder and submitted along with

the original copy of the bid).

ANNEXURE – X

CHECK LIST

To

The Superintending Engineer
Electrical Circle No.II,BBSR

Dear Sir,

Sl. No.	Item Description	Status of the Submission of Data	Remarks .
1	DD for EMD & Cost of Bid Doc	Yes/ No	
2	Qualifying Experience Data	Yes/ No.	
3	Audited Balance Sheet (FOR t.O.)	Yes/ No.	
4	Bank certificate (For Liquid assets		
5	Valid Electrical License (HT)		
6	ESI,EPF,PAN,GSTIN Reg		
7	All annexure as per requirement	Yes/ No	

N.B:- The contents of this schedule will be read out during opening of Part.I Bid.

Signature of the bidder with seal.

N.B:-

1) The Bid guarantee one original shall be furnished in sealed envelope appropriately super scribed thereon .

2) All Schedules pertaining to pric3e (originals)shall be furnished in a sealed envelope duly super scribed thereon . Similarly one set of copies of such schedules shall be given in a separate sealed envelope (these are not to be opened during opening of part.I)

3) All other schedules , one set original shall be submitted in sealed envelope (these are to be opened during part.I Bid opening .)

Date :……

Place:……. (Signature)……..

ANNEXURE – XI

ADDITIONAL INFORMATION

To

The Superintending Engineer
Electrical Circle No.II,BBSR

Dear Sir,

We have enclosed with our proposal the following additional information for the subject , package .

Sl. No	Brief description of information	Ref . & P age No .

Date :

(Signature)……

Place :

(Printed Name)…….

(Designation)……

(Common seal)……

Note : Continuation sheets , of like size and format ,may be used as per bidders requirement and annexed to this schedule .

ANNEXURE – XII

BOUGHT OUT & SUB CONTRACTEDITEMS

To

The Superintending Engineer
Electrical Circle No.II,BBSR

Dear Sir,

We hereby furnish the details of the items/sub-assemblies to buy for the purpose of subject package .

SL. No	Item description	Source of Supply / Manufacture name

Date :

N.B : All the major materials having valid type test certificate from CPRI/NABL accredited laboratory/govt. approved laboratory within 5 year from the date of tender notification will be considered for the project .

Signature of Bidder

Place

Date

ANNEXURE – XIII

SAFETY PRECAUTIONS

CENTRAL ELECTRICITY AUTHORITY

F.NoCEA/TETD/MP/R/02/2011:- In exercise of the powers conferred by section 177 read with clause (C) of Section 73 of the Electricity Act,2003 (36 of 2003), the Central Electricity Authority hereby makes the following regulations, namely:-

1 Short title and commencement:- (1) These regulations may be called the Central Electricity Authority (Safety Requirements for Construction, Operation and Maintenance of Electrical Plants and Electric Lines) Regulations,2011

(2) They shall come into force on the date of their publication in the Official Gazette

Definition:- (1) In these regulations, unless the context otherwise requires:

(a) " Act" means the Electricity Act,2003:

(b) " Contractor" means a person or an agency who undertake to produce a given result, not merely supply of goods or articles of manufacture but including civil works or erection of equipment or testing and commissioning of equipment or operation and maintenance of equipment and includes a sub-contractor:

(c) Owner" means a company or body corporate or association or body of individuals, whether incorporated or not, or artificial juridical person, which owns or operates or maintains electrical plants or electric lines and includes:-

(i) "Occupier" as defined in the Factories Act, 1948 (63 of 1948; Provided that where number of employees, including contract workers is two hundred and fifty or less, the safety committee shall be constituted by the Owner for a group of electrical plants or electric lines, as the case may be.

(b) The safety committee shall promote co-operation between the workers and the management for maintaining proper safety and health at our place

(c) The safety committee shall meet at lese once in a month during construction stage and once in three months during operation and maintenance of electrical plants and electric lines and the decisions and recommendations of the safety committee shall be complied with by the Owner within the time limit as decided by the safety committee

7 Safety provisions relating to contractor :-

(1) The Owner shall incorporate the safety provisions in the contract document which are required to be complied by the contractor's employees during execution of the contract to facilitate safe working during execution of the work.

(2) The Contractor shall observe safety requirements as laid down in the contract and in case of sub-contract, it shall be the responsibility of main contractor that all safety requirements are followed by the employees and staff of the sub-contractor.

(3) The contractor employing tow hundred employees or more, including contract worker, shall have a safety co-ordination in order to ensure the implementation of safety requirements of the contract and a contractor with lesser number of employees to act as safety co-ordinator, who shall liaise with the safety officer on matters relating to safety and his name shall be displayed on the notice board at a prominent place at the work site.

(4) The contractor shall be responsible for non-compliance of the safety measures, implications, injuries, fatalities and compensation arising out of such situations or incidents.

(5) In case of any accident, the contractor shall immediately submit a statement of the same to the Owner and the safety officer, containing the details of the accident, any injury or casualties , extent of property damage and remedial action taken to prevent recurrence and a addition, the contractor shall submit a monthly statement of the accidents to the Owner at the end of each month.

		CENTRAL ELECTRICITY AUTHORITY
		NOTIFICATION
		New Delhi, the 20th September,2010
		No.CEI/1/59/CEA/El.:- In exercise of the powers conferred by section 177 of the Electricity Act,2003 (36 of 2003); the Central Electricity Authority hereby makes the following regulations for measures relating to Safety and Electric Supply namely:-
		Chapter-I
	(1)	Short title and Commencement:- (1) These regulations may be called the Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations,2010
	(2)	They shall come into force on the date of their final publication in the official Gazette
	(2)	Definitions:- (1) In these regulations, unless the context otherwise requires,
	(a)	"Act" means the Electricity Act,2003
	(b)	"accessible" means within physical reach without the use of any appliance or special effort;
	(c)	" ampere" means a unit of electric current and is a constant current which flowing in two parallel straight conductors of infinite length of negligible cross section and placed at a distance of one meter apart in a vacuum will produce a force of 2×10^{-7} . Newton per meter length between the conductors;
	(d)	"apparatus" means electrical apparatus and includes all machines, fittings, accessories and appliances in which conductors are used;
	(e)	"bare" means not covered with insulating materials;
	(f)	" cable" means a length of insulated single conductor (solid or standard) or of two or more such conductors each provided with its own insulation, which are laid up together. Such insulated conductor or conductors may or may not be provided with an overall mechanical protective

		covering;
	(g)	" circuit" means an arrangement of conductor or conductors for the purpose of conveying electricity and forming a system or a branch of a system;
	(h)	"circuit breaker" means a device, capable of making and breaking the circuit under all conditions, and unless otherwise specified, so designed as to break the current automatically under abnormal conditions;
	(i)	" concentric cable" means a composite cable comprising an inner conductor which is insulated and one or more outer conductors which are
		Chapter-II
	(3)	Designating person(s) to operate and carry out the work on electrical lines and apparatus:- (1) A supplier or a consumer, or the owner, agent or manager of a name, or the agent of any company operating I an oil-field or the owner of a drilled well in an oil field or a contractor who has entered into a contract with a supplier or a consumer to carry out duties incidental to the generation, transformation, transmission, conversion, distribution or use of electricity shall designate persons for the purpose operation and maintenance of Electrical lines and apparatus.
	(2)	The Supplier or consumer or the owner, agent or manager of a mine or the agent of any company operating in an oil-field or the owner of a drilled well in an oil field or a contractor referred to on sub-regulation(1) shall maintain a register where in the names of the designated persons and the purpose for which they are engaged shall be entered.
	(3)	No person shall be designated under sub-regulation(1) unless:-
	(i)	He possesses a certificate of competency or electrical work permit, issued by the Appropriate Government.
	(ii)	His name is entered in the register referred to in sub-regulation(2)
	(4)	Inspection of designated officers and other safety measures:-
		(1) The register maintained under sub-regulation(2) of regulation 3 shal;l be produced before the Electrical Inspector when required by him.
		(2) of If on inspection, the Electrical Inspector finds that the designated person does not fulfill the required qualification, he shall recommend the removal of the name of such persons from the register.
	(5)	Electrical Safety Officer:- (1) All suppliers of electricity including generating companied, transmission companies and distribution companies shall designate an Electrical Safety Officer for ensuring observation of safety measures specified under these regulation in their organization for construction, operation and maintenance of power stations, sub-stations, transmission and distribution lines.
	(2)	The electrical Safety Officer shall be an Electrical Engineering degree holder with at least ten years of experience in operation and maintenance of electricity plants or an Electrical Engineering Diploma holder with at least fifteen years of experience in operation and maintenance of electric

		plant.
	(3)	The Electrical Safety Officer designated under sub-regulation(1) shall ensure periodic inspection of such installations, get them tested and keep a record thereof and such records shall be made available to the Electrical Inspector if and when required.
	(4)	For every factory registered under Factory Act,1948, where more than 250 KW of electrical load is connected, the management of the factory shall designate a person having qualification specified in sub-regulation(2) for ensuring the person having qualification specified in sub-regulation(2) for ensuring the observation of the safety provisions laid under the Act and the regulations made there under, who shall periodically inspect such installation, get them tested and keep a record thereof and such records shall be made available to the Electrical Inspector if and when required.
6		Safety measures for operation and maintenance of electric plants:-
	(1)	Engineers and supervisions appointed to operate aor undertake maintenance of any part or whole of a thermal power generating station and a hydro power plant together with the associated sub-station shall hold diploma in Engineering from a recognized institute, or a degree in Engineering from a university.
	(2)	The Technicians to assist engineers or supervisors shall possess a certificate in appropriate trade, preferably with a tow years course from a Industrial Training Institute recognized by the Central Government or the State Government.
	(3)	Engineers, supervisors and Technicians engaged for operator and maintenance of electric plants should have successfully undergone the type of training as specified in Schedule-I
		Provided that the existing employees shall have to undergo the training mentioned in sub-regulation (3) within three years from the date of coming into force of these regulations.
	(4)	The owner of every thermal power generating station and hydro power plant together with their associated sub-station shall arrange for training of personnel engaged in the operation and maintenance of his generating station along with associated sub-station in his own institute or any other institute recognized by the Central Government or the State Government.
		Provided that separate training shall be given to the person engaged in operation and maintenance of thermal power stations and hydro power stations including associated sub-stations.
7		Safety measures for operation and maintenance of transmission, distribution systems:-
	(1)	Engineers or supervisors engaged in operation and maintenance of transmission and distribution systems shall hold diploma in electrical, mechanical, electronics and instrumentation Engineering from a recognized institute or university.
	(2)	The Technician to assist engineers or supervisors shall posses a certificate in appropriate trade, preferably with a two year course from a Industrial Training Institute recognized by the Central Government or State Government.
	(3)	Engineers, supervisors and Technicians engaged for operation and maintenance of transmission and distribution systems electric plants should have successfully undergone the type of training as

		specified in Schedule-II.
		Provided that the existing employees shall have no undergo the training mentioned in sub-regulation (3) within three years from the date of coming into force of these regulations.
	(4)	Owner of every transmission or distribution system shall arrange for training of their personnel engaged in the operation and maintenance of transmission and distribution system in his institute or any other institute recognized by the Central Government or State Government.
8		Keeping of records and inspection thereof:-
	(1)	The generating company or licensee shall maintain records of the maps, plans and sections relating to supply of transmission of electricity and submit the same to the Electrical Inspector for inspection as and when required by him.
	(2)	The Electrical Inspector shall supply a copy of report of Inspection referred to in Sub-regulation (1) to the generating company or Licensee as the case may be.
9		Deposit of Maps
		When Licensee has been granted two set of maps showing as regards such Licensee the particulars specified in application for Licensee shall be signed and dated to correspond with date of notification of grant of the Licensee by an officer designated by the appropriate commission in this behalf, one set of such map shall be retained by the said officer and the other one shall be furnished to Licensee.
0		Deposit of printed copies:-
	(1)	Every person who granted a Licensee shall within 30 days of the grant thereof, have copies of the Licensee and maps showing the areas of supply as specified in the Licensee to exhibit the same for public inspection at all reasonable times at his head office, his local office, if any, and at the office of the every local authorities within the area of supply.
	(2)	Every such licensee shall, within the aforesaid period of third days, supply free of charge one copy of the license along with the relevant maps to every local authority within the area of supply and shall also make necessary arrangement for sale of printed copied of the licensee and map to all persons applying for same, at a price to be notified by the appropriate Govt. from time to time.
11		Plan for area of supply to be made and kept open for inspection
	(1)	The licensee shall after commencing to supply electricity forthwith cause a plan to be made in electronic form, of the area of supply and shall cause to be mart thereon the alignment and the case of underground works the approximate depth below the surface of all the existing electric supply lines street distributing boxes and other was and shall once in every year cause that plan to be duly corrected so as to show the electric supply lines street distributing boxes and other works further time is being in position and shall also if so required by an Electrical Inspector caused to be made section showing the approximate level of all his existing underground works other than service lines.
	(2)	Every plan shall be drawn to such horizontal and vertical scale as the Appropriate Commission

		may enquire.
		Provided that no scale shall be required unless maps of the locality on that scale are for the time being available to the public.
	(3)	Every plan and section so made or corrected, or a copy thereof, marked with the date when it was made or corrected, shall be kept by the licensee at his

SECTION – V

TECHNICAL SPECIFICATION

1.0. INTRODUCTION:

Turnkey execution for extension of 11KV line, installation of S/S & extension of LT line for dedicated power supply to different wings of SCS (A) college, Puri under electrical section Kacheri.

.The detail route survey to be conducted including route map

(i) Complete manufacture, including shops testing & supply of materials from the approved vendor(materials which are to be supplied by the bidder)

(ii) Providing Engineering drawings related to foundation details, structural details of both line & Sub-station work, equipments data, operational manual, preparation of Cable Schedule (in shape of a booklet) etc for the Owner's approval;

(iii) Packing and transportation from the manufacturer's works to the site.

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

(v) Pre-assembly, if any, erection testing and commissioning of all the equipments;

(vi) Reliability tests and performance and guarantee tests on completion of commissioning'

(vii) Loading, unloading and transportation as required,

(viii) Erection of installations of specified voltages,

(ix) Testing, Commissioning of installations of the Sub-Station inclusive of all related Civil works.

(x) Storing before erection

(xi) Getting the Sub-Stations/lines inspected and certified by Electrical Inspection after completion of work.

(xii) Transportation of required OSM materials from Purchaser's nearest store (Bhubaneswar, Choudwar) to site and all other required materials (to be supplied by bidder) from supplier's premises to work site, construction of new electrical/ civil structures, dismantling of existing electrical structures (if any) and return of these dismantled items at the purchaser's stores, safe custody of the items and return of unused purchaser supplied materials to the purchaser's stores.

(xiii) Clearance from Govt. authority like BDO or any other department if any.

(xiv) Rectify any damage occur during execution to its original position.

(xv) Provide other miscellaneous materials required as per site condition to execute the work in complete manner

N.B: All the major materials should be of reputed make and should have valid type test certificate (within 5 year) from CPRI/ Govt. approved laboratory / NABL accredited laboratory is only be consider for this project. Prior to the commencement of the supply / work all relevant drawings, designs must be got approved by CESU.

Scope of work:-	1. Installation of 2X250KVA 11/0.4KV plinth mounted S/S using 10mtr long 330mm PSC pole= 1No.
	2. Extension of 11KV 3Ph3W line using 55mm2 Insulator conductor=0.05KM.
	3. Extension of 3Ph5W LT line over 9mtr/8mtr PSC pole using ABC (3X95+1X70+1X16)mm2 = 0.25KM
	4. Extension of 3Ph5W LT line over 9mtr/8mtr PSC pole using ABC (3X50+1X35+1X16)mm2 = 1.5KM
	5. Dismantling of existing 3Ph5W LT line (Bare conductor) = 0.4KM (8span).

SCOPE WISE BOQ

Part-A

Sl. No.	Name of the Materials	Unit	Qty.
1. Installation of 2X250KVA 11/0.4KV plinth mounted S/S using 10mtr long 330mm PSC pole= 1No.			
1	10Mtr long 330KG PSC pole	No.	4
2	Pressure Channel 100 x 50 x 6mm MS channel each 2.8 mtr. Long(9.2 K.g. per mtr.)x16 Nos for double bay arrangement	K.g.	412.16
3	S/S DP bressing chhanel 75 x 40 x 6mm MS channel each 2.8 mtr. Long(6.8 K.g. per mtr.)x8 Nos	K.g.	152.32
4	Metering Unit chhanel 75 x 40 x 6mm MS channel each 2.8 mtr. Long(6.8 K.g. per mtr.)x2 Nos	K.g.	38.08
5	Cantilever chhanel for supporting MU, 75x40x6-1 mtr. Long, 4 nos.(6.8 K.g. per mtr.)	K.g.	13.6
6	AB Swith & HG Fuse, Mounting Channel 75x40x6 -2.8 mtr.long, 4 nos.(6.8K.g. per mtr.)	K.g.	76.16
7	Cantilever chhanel for supporting AB Switch arm, 75x40x6-1 mtr. Long, 4 nos.(6.8 K.g. per mtr.)	K.g.	27.2
8	Contnilever chhanel for supporting HG Fuse 50 x 50 x 6 mm MS Angel (1.0 mtrs. Long 4 nos.)4.5K.g. per mtr.	K.g.	18
9	Angle for Cantilever arrrangement for AB Switch & HG Fuse 50 x 50 x 6 -2 mtr .each 4 nos.(4.5 K.g. per mtr.)	K.g.	36
10	Angle for mounting LT distribution Box 50 x 50 x 6 mm MS Angel -2.5 mtrs.each Long 2 nos.(4.5 K.g. per mtr.)	K.g.	22.5
11	11KV AB Switch 3 Pole (200 Amp)	Set	2
12	11KV HG Fuse 3 Pole (200 Amp.)	No.	2
13	11 KV L.A. 12KV-10KA	No.	6
14	GI Pipe Earthing 40 Dia Medium gage 3 mtrs. Long	No.	12
15	No.6 GI Wire	K.g.	50
16	40x6mm GI Flat for nutral	K.g.	50
17	55mm2 AAAC	Km	0.1
18	GI Nut , Bolt & Washer	K.g.	130
19	250KVA, 11/0.4KV (AL) BIS Energy lable-2	No	2

20	L.T. Distribution box with MCCB, Aluminium Busbar for 3bay with Kit Kat fuse for 250KVA S/S	No.	2
21	3 1/2 x 300mm2 PVC Cable for I/C (1no.)250 KVA TFR.	Mtr.	40
22	100x116mm RS Joist 4mtr longx23kg for resting of LT cable	Kg	92
23	Al. Paint	Ltr	10
24	Redoxid Paint	Ltr	10
25	Black Paint	Ltr	3
26	11 K.V.GI Pin	No.	9
27	11 K.V. Pin Insulator	No.	9
28	11 K.V. H.W. Fitting (B & S)	No.	12
29	11 K.V. DISC Insulator (B & S) Double Disc 70KN	No.	24 (OSM)
30	LT Dead end clamp with I hook	No.	6
31	Sundries for survey , PVC tape, Ampire tape,Danger Board, small size nut & Bolt, PG clamp, preparation of drawing allm. Cable socket etc.	LS	1
	2. Extension of 11KV 3Ph3W line using 55mm2 Insulator conductor=0.05KM.		
1	11 K.V.GI Pin	No.	3
2	11 K.V. Pin Insulator	No.	3
3	11 K.V. H.W. Fitting (B & S)	No.	6
4	11 K.V. DISC Insulator (B & S) Double Disc 70KN	No.	12 (OSM)
5	55mm2 Insulated conductor	K.M.	0.15
6	H.T.stay set (Complete)	Set	1
7	H.T. Stay Insulator	No.	1
8	H.T. Stay clamp (1.9 K.g./ Pair)	Pair	1
9	7/10 SWG Stay Wire	K.g.	10
10	100 x 50 x 6 mm MS channel	K.g.	30
11	GI Nut , Bolt & Washer of different sizes	K.g.	3

	3. Extension of 3Ph5W LT line over 9mtr/8mtr PSC pole using ABC (3X95+1X70+1X16)mm2 = 0.25KM **4. Extension of 3Ph5W LT line over 9mtr/8mtr PSC pole using ABC (3X50+1X35+1X16)mm2 = 1.5KM**		
1	8 Mtr. long 200 Kg. PSC Pole	No.	9
2	9 Mtr. long 200 Kg. PSC Pole	No.	14
3	LT Stay set Complete	Set	10
4	7/12 SWG Stay Wire	K.g.	100
5	LT Stay clamp (1.4 K.g./ Pair)	pair	10
6	LT Stay Insulator	No.	10
7	Eye hook for XLPE ABC	No.	25
8	Suspension clamp with I-Hook	No.	25
9	pole clamp Eye hook for XLPE ABC	Pair	25
10	GI Nuts and Bolts	Kg	50
11	AB Cable(3 x95 + 1x70 + 1x16mm²)	K.m.	0.25 (OSM)
12	AB Cable(3 x50 + 1x35 + 1x16mm²)	K.m.	1.5

Part-B (Civil Item)

1	Fixing of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire , stay insulator .	No.	1
2	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm = 0.081 0.651Cum @ 3071.25= 1999.38each	No	4
3	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	Nos	4
4	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2"x2") and RCC slab cover	No.	12
6	Plinth for TFR 6ft hight (below GL2ft)x5ftx5ft	No	2
7	Plinth for L.T. Distribution box 6ft hight (below GL2ft)x5ftx5ft	No	2
8	Barbed Fencing (size 20'x10')with constn. of retaining wall ,erection of RCC fencing post, Sand filling and metal spreading, Fixing of Iron gril gate etc as per CESU specification	No	1

Part "C" (Labour) 5. Dismentaling of existing 3Ph5W LT line (Bare conductor) = 0.4KM (8span).

Sl. No.	Name of the Work	Unit	Quantity
1	Dismentaling of existing 3Ph5W LT line (Bare conductor)	Span	8

Technical Specification Detalis

1	Supply of Materials for construction of 11KV 3Ph3W line using 55mm2 Insulator conductor.
2	Supply of Materials for construction of 3Ph3W LT line using over 9mtr/8mtr PSC pole using ABC (3x95+1x70+1x16)mm2 and (3x95+1x35+1x16)mm2.
3	Sundries

1. **SCOPE** :This specification covers design, manufacture, testing and dispatch to owner's stores of M.S./GI Channel & Angle for use in structures in distribution system.
2. **APPLICABLE STANDARD:**Materials shall conform to the latest applicable Indian standards. In case bidders offer steel section and supports conforming to any other international specifications which shall be equivalent or better than IS, the same is also acceptable.

Sl.No.	Standard No.	Title
1	IS: 2062 Grade 'A'	Quality Specification for M.S. Angles, M.S./ GI Channel
23	IS: 1852	Rolling and Cutting Tolerances
	IS: 2062	Chemical and Physical composition of material for Hot Rolled Steel products

3. GENERAL REQUIREMENTS

a. Raw material

The Steel Sections shall be re-rolled from the BILLETS/INGOTS of tested quality as per latest version of IS:2830 or to any equivalent International Standard and shall be arranged by the bidder from their own sources.

The Chemical composition and Physical properties of the finished material shall be as per the equivalent standards.

Chemical Composition and Physical Properties of M.S. Angles, M.S. Channels, and M.S.Flat conforming to

IS: Conforming to IS:2062/84

b. Chemical Composition

Chemical composition For Fe 410 WA Grade

1 C - 0.23% MAX

2 Mn - 1.5% MAX

3 S - 0.050% MAX

4 P - 0.050% MAX

5 SI - 0.40% MAX6 CE

(Carbon Equivalent)- 0.42% MAX

c. Mechanical Properties

1. Tensile strength Kgf/mm²‾ - 410

2. Yield stress Min. for thickness/diameter

< 20 mm	- 26 Kgf/mm² OR 250 N/ mm²
20-40 mm	- 24 Kgf/mm² OR 240 N/ mm²
> 40 mm	- 23 Kgf/mm² OR 230 N/ mm²
3. Elongation %	- 23%
4. Bend Test (Internal Dia)	- Min-3ţ (t–is the thickness of the material).

b. Tolerance

Variation in ordered quantity for any destination and overall ordered quantity be only to the extent of ±2%.

Rolling and weight tolerances shall be as per version of IS: 1852 or to any equivalent International Standard.

e. TEST

Steel Section shall be tested in IS approved Laboratory or Standard Laboratory the Bidder country having all facilities available for conducting all the test prescribed in relevant IS or IEC or to any equivalent International

Standard or any recognized and reputable International Laboratory or Institutions. The bidders are required to specifically indicate that;

They hold valid IS (or equivalent IEC) License.

Steel Section offered are bearing requisite IS certification or equivalent marks.

The bidders are required to submit a copy of the valid IS (or equivalent IEC) License clearly indicating size and range of product against respective ISS or any equivalent International Standards along with their offer.

f. MARKING

It is desirable that the bidder should put his identification marks on the finished material. The mark shall be in "legible English letter" given with marking dies of minimum 18 mm size.

g.INSPECTION AND TEST CERTIFICATES

The material to be supplied will be subject to inspection and approval by the purchaser's representative before dispatch and/or on arrival at the destination. Inspection before dispatch shall not however, relieve the bidder

of his responsibility to supply the Steel Sections strictly in accordance with the specification.

The purchaser's representative shall be entitled at all reasonable time during manufacture to inspect, examine and test at the bidder's premises the materials and workmanship of the steel section to be supplied.

As soon as the steel Section are ready for testing, the bidder shall intimate the purchaser well in advance , so that action may be taken for getting the material inspected. The material shall not be dispatched unless waiver of inspection is obtained or inspected by the purchaser's authorized representative.

Test certificates shall be in accordance with latest version of the relevant Indian Standards or any equivalent International Standard.

The acceptance of any batch/lot shall in no way relieve the bidder of any of his responsibilities for meeting all the requirements of the specification and shall not prevent subsequent rejection of any item if the same is later found defective.

DESIGNATION	Weight kg/m
100 x 50 x 5 mm MS Channel	**9.56**
75 x 40 x 5 mm MS Channel	**7.14**
65 x 65 x 6 mm MS Angle	**5.8**
50 x 50 x 6 mm MS Angle	**4.5**

TECHNICAL SPECIFICATION FOR 11KV, 400A, 3 POLE HG FUSES

9.0 SCOPE

This specification covers the design manufacture, shop testing, loading, transportation and delivery at sub-station site of 11KV, 400Amp, 3Pole H.G. Fuse Sets for out door installations to suitable for operation under off load conditions.

9.1 DESCRIPTION OF THE MATERIALS:-

9.1.2 The 11KV, 400Amps, 3 Pole H.G Fuse Sets shall confirm to the following parameters:-

i) Number of Poles:- 3
ii) No. of insulator per pole:- 2nos. 12KV Post Insulator/ Phase
iii) Nominal system voltage 11KV
iv) Highest system voltage:- 12KV

v) Rated frequency:- 50 Hz
vi) System earthing:- Effectively earthed
vii) Rated normal current 400 Amps
viii) Altitude of installation Not exceeding 1000 M.

The post insulator used in the H.G. Fuse set shall have the following ratings:-

i) Power frequency withstand voltage (dry) 35KV (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.

9.2. STANDARDS:- The H.G. Fuse Set shall confirm to the following standards:-

i) IS- 5792- 1973 (For high voltage expulsion fuses & similar fuses)
ii) IS-2544-1973 (for porcelain post insulators)
iii) IS-9385-1979 or its latest amendments if any.
iv) IS-2633-1979 (For Galvanization of ferrous parts)

9.3 INSULATORS:-

The 12KV post insulators complete with pedestal cap duly cemented to be used in the H.G. Fuse sets confirming to IS-2544/1973.

The tenderer shall mention make, type of insulation materials, metal fittings, Creepage distance, protected Creepage distance, tensile strength compression strength, torsion strength and cantilever strength.
The tenderer shall furnish the type test certificate of the post insulators from their manufacturer for reference & scrutiny.

9.4 CLIMATIC CONDITIONS: - The H.G. Fuse Set shall be suitable for operation under the following climatic conditions:-

i) Maximum ambient air temperature **50 ^{0}C**
ii) Maximum daily average air temperature 35 ^{0} C
iii) Maximum yearly average ambient air temperature 30 ^{0} C
iv) Maximum temperature attainable by a body Exposed to the sun. 60 ^{0} C
v) Minimum ambient air temperature **5 ^{0} C**
vi) Maximum relative humidity. 100%
vii) Minimum number of rainy days per annum 70
viii) Average number of rainy days per annum 120
ix) Average annual rain fall. 150 cm.
x) Number of months of tropical monsoon conditions 4
xi) Maximum wind pressure. 260 Kg./ m^2
xii) Degree of exposure to atmospheric pollution. Normally polluted atmosphere.

9.5 TECHNICAL DETAILS:-
The H.G. Fuses shall have adjustable arcing horns made of solid copper rod having 8.23 mm dia. The horns shall be fitted with screwing devices with flynuts for fixing and tightening the fuse wire. It shall have robust terminal connector 5s of size 80mm x50 mm x 8 mm 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 232 Sq.mm. size (ACSR/ AAAC) 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 1200 mm and the centre to centre (distance between two post insulators of the same phase) shall be 760 mm. All metal (ferrous) parts shall be galvanized and polished. Only post insulator (original cemented and not pin insulators shall be used for the H.G. Fuse Set.

9.6 DRAWIING & LITERATURES:-

Three copies of drawings of each item of 33KV & 11KV, 400Amp, 3 Pole H.G. Fuse shall be furnished along with the tender for reference. The details of construction and materials of different parts of the H.G Fuse shall clearly be indicated in the tender and illustrative pamplet/ literature for the same shall be submitted along with the tender.

9.7 TESTS & TEST CERTIFICATE:-

9.7.1 Type Test:- Certificates for the following type tests conducted within five years proceeding to the date of opening of tender on a prototype set of H.G. Fuse in a Govt. Approved Testing Laboratory preferably at CPRI Bangalore shall be submitted along with the tender.

i) Impulse voltage dry test
ii) Power frequency voltage dry test
iii) Power frequency voltage wet test
iv) Temperate of resistance.
v) Test to prove the capability of carrying the rated peak short circuit current and the rated short time current.
vi) Mainly active load braking capacity test.
vii) Transformer off-load breaking test.
viii) Line charging breaking capacity test.
ix) Operation tests.
x) Mechanical endurance test.
xi) Mechanical strength test for the post insulator as per IS:2544/1973, 5350 (Pt-II)/1970 & relevant IEC.
xii) Test for galvanization of metal (ferrous) parts as per IS- 2633/1973.

Besides above, mechanical endurance test will have to be conducted on one set in the presence of our authorized person who shall be deputed to carryout acceptance test before delivery of the materials.

9.7.2 Routine Tests:-

The following routine tests shall have to be conducted on each sets and results are to be furnished for consideration for acceptance of deputing inspecting Officer for inspection & conducting testing of the materials.

i) Power frequency voltage dry test.
ii) Tests to prove satisfactory operation.
iii) Dimension check.
iv) Galvanisation test.

9.8 GUARANTEED TECHNICAL PARTICULARS :-

The tenderers are required to furnish the guaranteed technical particulars at Schedules attached to this specification duly filled in along with the tender.

9.9 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 Tenderer without extra charge. All plant and equipment shall be complete in all details whether such details are mentioned in the specification or not.

GURANTEED TECHNICAL PARTICULARS FOR 400 AMP, 3 POLE, H.G. FUSES.

Sl. No.	**Particulars**	Desired Values for
		11 KV
1	Maker's name and country or origin	To be specified by the tenderder.
2	Suitable for mounting	Horizontal only.
3	Number of supporting post insulator per phase	2 nos. 12KV Post Insulator per phase as per ISS -2544/ 1973
4	Post Insulator	
(a)	Maker's name and country or orgin	To be specified by the tenderder.
(b)	Type of cemeting	To be quoted original cemented only.
(c)	One minute power frequency withstand voltage dry	35KV RMS
(d)	One minute power frequency withstand voltage wet.	35KV RMS
(e)	Visible discharge voltage	9KV RMS
(f)	Dry Flashover Voltage	To be specified by the tenderder.
(g)	Power frequency puncture withstand voltage	1.3 times of actual dry flash over voltage.
(h)	Impulse withstand voltage (switch in position)	170KV (peak) 75KV (peak)

(I)	Creepage distance	230mm minimum. (actual creepage distance for which type test have been conducted is to be specified by the tenderer)
5	Impulse withstand voltage for positive and negative polarity (1.2/50 micro second wave)	
(a)	Across the isolating distance	85KV (peak)
(b)	To earth & between poles	75 KV (peak)
6	One minute power frequency withstand voltage	
(a)	Across the isolating distance	32 KV (RMS)
(b)	To earth & between poles	28 KV (RMS)
7	Rated normal current and rated frequency.	400 amps, 50 Hz , 3 Pole
8	Operating Voltage	11 KV
9	Vertical clearance from top of insulator cap to mounting Channel	254 mm (minimum)
10	Height of the riser for carrying the horns.	150mm from the cap (top) of insulator.
11	Details of Arcing Horns	Copper rod having 7.62 mm dia Silver-plated provided with screwing arrangement for fixing use wire made of copper casting. (Total length 635mm). All the bolts, nuts and washers should be made out of brass.
12	Riser Unit (250mm total height).	(a) The shape of connectors may be made of straight copper Flat of size adequate enough to carry a current density not less than 1.5 Amp/ mm^2. 2 Nos of 3/8" G.I. Bolts, double nuts, plain and spring washers and 2 nos. solder less bimetallic shockets per each connector suitable up to 100 mm^2 AAA conductor.

		(b) 100mm height G.I. Riser made of 19mm nominal bore medium gauge G.I. Pipe welded with 2 nos. G.I. Flat of 30 x 5 mm at both ends fixed with 10mm dia stainless steel, bolts and nuts with flat stainless steel spring washers.
13	Supporting Channels	75 x 40 x 6 mm M.S. Channel (galvanized)
14	Galvanisation	
15	Weight of each pole (complete)	To be specified by the tenderder.

PSC Pole (10 Mtr x 400 Kg)

TECHNICAL SPECIFICATIONS

Applicable Standard :

The Poles shall comply with latest standards as under:

REC Specification No. 15/1979, REC Specification No. 24/1983, IS 1678, IS 2905, IS 7321.

II. Materials :

Cement

Cement to be used in the manufacture of pre-stressed concrete poles shall be ordinary for rapid hardening Portland cement confirming 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 to be 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 sizes of aggregates shall in no case exceed 12 mm.

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.

Pres-Stressing Steel

Pre-stressing steel wires including those used as un tensioned wires should conform to IS:1785 (Part-I) (Specification for plain hard-drawn steel wire for pre-stressed concrete, Part-I cold drawn stress

relieved wire).IS:1785 (Part-II)(Specification for plain hard-drawn steel wire) or IS:6003 (Specification for indented wire for pre-stressed concrete).The type design given in the annexure are for plain wires of 4 mm diameter with a guaranteed ultimate strength of 160 kg/mm². All pre-stressing steel shall be free from splits, harmful scratches, surface flaw, rough, aged and imperfect edges and other defects likely to impair its use in pre-stressed concrete.

Concrete Mix

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:

Minimum works cube strength at 28 days should be at least 420 Kg/cm².

The concrete strength at transfer should be at least 210 Kg/cm².

The mix should contain at least 380 Kg of cement per cubic meter of concrete.

The mix should contain as low water content as is consistent with adequate workability. 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.

III. Design Requirements

The poles shall be designed for the following requirements:

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 calculations/details of alternative arrangements in this regard.

The working load on the poles should correspond to those that are likely to come on the pole during their service life.

The factor of safety for all poles shall not be less than 2.5.

The average permanent load shall be 40% of the working load.

The F.O.S. against first load shall be 1.0.

At average permanent load, permissible tensile stress in concrete shall be 30 kg/cm².

At the design value of first crack load, the modulus of rupture shall not exceed 53.0kg/cm² for M-40.

The ultimate moment capacity in the longitudinal direction should be at least one fourth of that in the transverse direction.

The maximum compressive stress in concrete at the time of transfer of pre-stress should not exceed 0.8 times the cube strength.

The concrete strength at transfer shall not be less than half, the 28 days strength ensured in the design, i.e. 420x0.5=210kg/cm². For model check calculations on the design of poles, referred to in the annexure, a reference may be made to the REC "Manual on Manufacturing of solid PCC poles, Part-I-Design Aspects".

IV. Dimensions and Reinforcements

The cross-sectional dimensions and the details of pre-stressing wires should conform to the particulars given in the enclosed drawing. The provisions of holes for fixing cross-arms and other fixtures should conform to the REC specification No.15/1979.

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

All wires shall be accurately stretched with uniform pre-stressed in each wire. Each wire or 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.

V. Cover

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

VI. 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, joining or coupling may be permitted provided the strength of the joint or coupling is not less than the strength of each individual wire.

VII. Compacting

Concrete shall be compacted by spinning, vibrating, shocking or other suitable mechanical means. Hand compacting shall not be permitted.

VIII. Curing

The concrete shall be covered with a 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/cm² as applicable).The cubes cast for the purpose of determining the strength at transfer should be coursed, a sear as possible, under condition 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 manufacture 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 and reinforced concrete) on concrete cubes made from the concrete used for the poles. If the manufacture so desired, the manufacture shall supply cubes for test purpose and such cubes shall be tested in accordance with IS: 456 (Code of practice for plain and reinforced concrete).

IX. Lifting Eye-Hooks or Holes

Separate eye-hooks or hoes 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 purpose, should be perpendicular to the broad face of the pole.

X. Holes for Cross Arms etc

Sufficient number of holes shall be provided in the poles for attachment of cross arms and other equipments.

XI. 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 times the overall length, measured from the end. The timber supported in the stack should be aligned in vertical line.

XII. Earthing

(a) Earthing shall be provided by having length of 6 SWG GI wire embedded in Concrete during manufacture and the ends of the wires left projecting from the pole to a length of 100mm at 250 mm from top and 1000 mm below ground level.

(b) Earth wire shall not be allowed to come in contract with the pre-stressing wires.

GUARANTEED TECHNICAL PARTICULARS

	Description	**Unit**	**9 Mtr X 300 Kg**
1	Type of pole		
2	**Factor of Safety**		**2.5**
3	Overall Length of Pole Meters	meters	**9**
4	Working Load Kg	Kg	**300**
5	Overall Dimensions		
A	Bottom Depth	mm	
B	Top Depth		
C	Breadth		
6	Reinforcement Detail:		

7	Diameter of prestressing wire		
8	**No. of Tensioned wires**	**No**	**20**
9	No. of Un tensioned wire	No	0
10	Length of each un tensioned wire		
11	Concrete Detail		
A	Cement Type		
B	**Grade**		**M-40**
C	Type		
D	Quantity	Cubic meter/pole	
E	Standard confirming to:		
12	Steel Quality	Kg/Pole	
A	Ultimate Tensile Strength (UTS)	Km/Cm²	
B	Weight		

L.T. DISTRIBUTION BOX Transformers

1.) Scope:-

LTDBs	Quantity in Nos	Incoming MCCB Current capacity	No of Poles	Outgoing 2 nos of three pole MCCB of current capacity	Number of Out going Feeders of 3 pole MCCB	No of Poles
For 500 KVA Sub-Station	30	800 A	4 Pole	400 A	2 Sets	3 Pole

DESCRIPTION OF MATERIALS:- The L.T. Distribution Cabinets are meant for installation in the D.P. Structure Plinth Mounted / Pole Mounted Distribution 11/.433 KV Sub- station of the ratings indicated above. These Distribution Cabinets are to be outdoor type and to be fabricated out of **2.5 mm GI sheet steel for load bearing**

DESCRIPTION OF MATERIALS:- The L.T. Distribution Cabinets are meant for installation in the D.P. Structure Plinth Mounted / Pole Mounted Distribution 11/.433 KV Sub- station of the ratings indicated above. These Distribution Cabinets are to be outdoor type and to be fabricated out of **2.5 mm GI sheet steel for load bearing side and 2.00 mm GI sheet steel for rest side.** The body of the boxes shall have sufficient reinforcement with suitable size of channels keeping a provision for fixing these boxes either on DP structure or plinths.

The Box shall have double door with self locking (When the main MCCB is in close position the inner door can not be opened and after closing of the inner door only the main MCCB can be closed) arrangement and a door handle conforming to general quality conditions. Any compromise on quality of the door handle used shall be liable for rejection. *The roof of the box shall be slightly slanting both sides as*

per drawing with an over hang of 50 mm on all side. Locking arrangement shall be Godrej Type, 3 Position Locking System for better Security. However, a separate provision for manual locking arrangement shall also be provided as stand by.

The nuts, bolts, washers used in the box shall be galvanized to avoid rusting. The door hinges shall not be visible from outside. The box shall have two no.s of solid Earthing points on either side with an arrangement for sufficient ventilation.

The boxes should confirm to IP-55 degree of protection. The bidders shall have to enclose type test certificate for degree of protection (IP-55) after their product duly tested at CPRI or any Govt. approved laboratory failing which their bid is liable for rejection. Preference shall be given to those who have successfully conducted type test as mentioned above.

The box shall have provision of bus bars of Electrolytic Aluminium / Copper mounted on epoxy resin cast bus insulators fixed on suitable fixing arrangement. The bus bars shall be conveniently placed so as to provide adequate clearance from the body of the box conforming to I.E. Rules applicable for L.T. supply with provision for one Bus Bar arrangement with 4 pole MCCB for all capacities of LTDBs & 2 numbers of out going feeder arrangement with 2sets of three pole MCCBs in each feeder for 500 KVA, LTDBs. The Bus-Bar arrangement may be suitably made to house two out-going feeders with sufficient clearance between phases inside the LT Distribution Boxes.

There should be Heat Shrinkable bus bar insulation tubing of Red Yellow-Blue &Black. Alternatively phase coloured insulated paint (not less than 3.0kv) should be applied on the Bus-Bars.

The arrangement and dimensions shall be as per the drawing enclosed.

The provision of Earthing is to be made up with **Copper Flat of Size 25x 4mm**. Suitable cable glands of heavy duty, double compression type **made up of Brass** shall be provided at the bottom of the Box. One for incoming cable and two for outgoing cables. Detachable plates shall be provided for fixing of cable glands.

4.) (i)MCCB OF REQUIRED MAKE:- It may be of reputed make preferably of M/s L&T, M/s Havells, M/s HPL, M/s Siemens, M/s C&S, M/s Indo Asian, M/s Schneider and M/s. ABB.

LTDBs	Quantity in Nos	Incoming MCCB Current capacity	No of Poles	Outgoing 2 nos of three pole MCCB of current capacity	Number of Out going Feeders of 3 pole MCCB	No of Poles
For 500 KVA Sub-Station	16	800A	4 Pole	400 A	2	3 Pole

The percentage of rated service short circuit breaking capacity to rated ultimate short circuit breaking capacity shall be mentioned as per the Table - I, Page -13 of IS - 3947 (Part - 2).

All other features of the MCCB shall confirm to the ISS : 13947 (Pt. - 2) / 1993 & IEC Pub - 947 (Pt. 2) /1989.

ii) Type of protection: - Overload & short circuit protection is a must with static/electro magnetic/ thermo magnetic trip release with manual resetting. For Neutral un-balance current protection the bidders are o furnish alternative rates as indicated above.

GUARANTED TECHNICAL PARTICULALS

Sl No	Particulars	Specification
1	Rated Voltage & Type	433 V AC, Plinth/ Pole mounted Out door type
2	Materials & Thickness	2.5 mm thick for load bearing side & 2.0 mm thick GI sheet for rest side
3	Size & material of main Bus bar	
	500 KVA	EC grade Copper Bus-Bar 60x10 mm for each phase
4	Size & material of neutral Bus bar	
	500 KVA	EC grade Copper Bus-Bar 60x10 mm for suitable length
5	Overall dimension (DxWxH)	
	500 KVA	500x1500x1500 mm
6	Bus Bar supporting	
	500 KVA	SMC/DMC Insulators
7	Standard followed	IS-13947 (part-I /1993 & IEC pub-947-2(1989)ISI 13945 (part-2) /1989
8	Terminal capacity	
	500 KVA	800 A
9	Heat Shrinkable insulation to bus	Heat shrinkable bus bar insulation tubing of Red, Yellow, Blue & Black
B	MCCB (4 pole incoming MCCB & 3 Pole Outgoing	
1	Name of manufacturer & Type	ABB/Indo Asian / L&T /Seimens/ Schineider
	500 KVA	ABB/ Indo Asian / L&T /Seimens/ Schineider
2	Rated current	
	500 KVA	800 A
3	No of poles	I/C 4 Pole & O/G 3 Pole
	500 KVA	4 Pole, 800A MCCB 1 No for I/C & 2 Nos 3 Pole 400 A MCCB Out going feeder
4	Standard followed	IS-13947 (part-I /1993 & IEC pub-947-2(1989)ISI 13945 (part-2) /1989
5	Rated insulated level in voltage	1110V
6	Rated operational voltage & frequency	455 V, 50 Hz
7	Type of release provided	Static/ electromagnetic/thermomagnetic trip release
8	Overload setting	80% to 100%
i	Short circuit	As per IS
ii	Trip setting	As per IS
iii	Operation setting	As per IS
C		
1	Shunt Release coil	As per IS
	Rating	As per IS
	Pick up	As per IS

2	**Relay**	**As per IS**
	Pick up	**As per IS**
	Time Delay	**As per IS**
4	**Rating**	
	500 KVA	**800/5 A**
5	**Saturation factor**	**As per IS**
6	**Rated service short circuit breaking capacity**	
	500 KVA	**Ics = 70 KA**
7	**Rated ultimate short circuit breaking capacity**	
	500 KVA	**Icu = 70 KA**
8	**Type of protection provided**	**Overload & SC protection with static electromagnetic/ thermo magnetic trip release with manual resetting**
9	**Extra preference if any**	**CT Operated Ammeter- 1 No, Ammeter Switch- 1 Nos, Red, Yellow & Blue Indication lamp**
D	**Outgoing Feeder Bus bar Main Bus bar to Out going 3 Pole MCCB & 4 Pole Incoming MCCB to main Bus**	**Size & Type of material used for 1 no I/C & 2 No O/G Feeder**
	500 KVA/ 800 A	**EC grade Copper Bus-Bar 60x10 mm for each phase**
E	**Embossing/ Punching/ Casting**	**CESU Odisha/ WO No …. Dt……/ Supplier Name/ Year of mfg on the name plate of LTDB**
F	**Degree of protection**	**IP55**
G	**Gland size inlet/ Outlet**	
H	**Separation barrier between I/C & O/G MCCB**	**2.5 mm thickness bakelite barrier**
I	**Locking Arrangement**	**MCCB can not be made ON unless door is closed & vice versa.**
J	**Louver**	**Louver type ventilation windows shall be provided in each LTDB with rain water protection**

TECHNICAL SPECIFICATIONS FOR 11kV AB Switch (3 Pole, 400 Amps)

1.0 SCOPE:-

This specification provides for manufacture, testing at works and delivery For supply of 11KV AB switches. The 11KV AB switches shall conform to IS: 9920 (Part-I to IV)

2.0 AB SWITCHES:-

The 11KV Air Break Switches are required with three poles in each phase. The AB Switches shall be supplied complete with phase coupling shaft, operating rod and operating handle. It shall be manually gang operated and vertically break and horizontal mounting type.

2.0.1 The AB Switch shall be designed for a normal current rating of 400 Amps and for continuous service at the system voltage specified as under:

11 KV AB Switch: 11KV + 10% continuous 50 C/s solidly grounded earthed neutral system. The length of break in the air shall not be less than 400 mm for 11KV AB Switches.

2.0.2 The 11KV AB Switches are required with post insulators. The AB switches should be suitable for mounting on the structure. The mounting structure will be arranged by the purchaser separately. However, the AB Switches shall be supplied with base channel for mounting on the structure which will be provided by the purchaser. The phase to phase spacing shall be 750mm in case of 11KV AB Switches.

3.0 POST INSULATORS:-

The complete set of three phase AB Switches shall have post insulators.

11KV AB Switches : 11KV Post Insulators

The post insulators should conform to the latest applicable Indian standards IS: 2544 Specification for Porcelain Post insulator Polycon or of compact solid core or long rod insulators are also acceptable. Creepage distance should be adequate for highly polluted outdoor atmosphere in open atmosphere. The porcelain used for manufacture of AB Switches should be homogeneous free from flaws or imperfections that might affect the mechanical dielectric quality. They shall be thoroughly vitrified, tough and impervious to moisture. The glazing of the porcelain shall be of uniform brown in colour, free from blisters, burns and other similar defects. Insulators of the same rating and type shall be interchangeable.

The porcelain and metal parts shall be assembled in such a manner that any thermal expansion differential between the metal and porcelain parts through the range of temperature variation shall not loose the parts or create undue internal stresses which may affect the electrical or mechanical strength. Cap and base of the insulators shall be interchangeable with each other. The cap and base shall be properly cemented with insulators to give perfect grip. Excess cementing must be avoided.

1.0 Each 11KV Post Insulators should have technical particulars as detailed below:

		11 KV
i	Nominal system voltage kV (rms)	11
ii	Highest system voltage kV (rms.)	12
iii	Dry Power Frequency one kV minute withstand voltage (rms) in	35
iv	Wet Power frequency one minute withstand voltage (rms) in KV	35
v	Power Frequency puncture kV (rms) voltage	1.3 times the actual dry flashover voltage
vi	Impulse withstand voltage kV (Peak)	75
vii	Visible discharge voltage kV (rms)	9
viii	Creepage distance in mm (minimum)	320

5.0 The rated insulation level of the AB Switches shall not be lower than the values specified below:-

Sl. No	Standard declared voltage KV/RMS	Rated Voltage of the AB Switches	Standard impulse with stand voltage (positive & negative polarity KV (Peak)		One Minute power frequency withstand voltage kV (rms)	
			Across the Isolating distance	To earth & between poles	Across the Isolating distance	To earth & between poles
i	11KV	12KV	85KV	75KV	32KV	28KV

6.0 TEMPERATURE RISE:-

The maximum temperature attained by any part of the equipment when in service at site under continuous full load conditions and exposed to the direct rays of Sun shall not exceed 45 degree above ambient.

7.0 MAIN CONTACTS:-

AB Switches shall have heavy duty self-aligning type contacts made of hard drawn electrolytic copper/brass. The various parts should be accordingly finished to ensure inter changeability of similar components. The moving contacts of the switch shall be made from hard drawn electrolytic copper brass. This contact shall have dimensions as per drawing attached so as to withstand safely the highest short-circuit currents and over voltage that may be encountered during service. The surface of the contact shall be rounded smooth and silver-plated. In nut shell the male and female contact assemblies shall ensure.

(i) Electro-dynamic withstands ability during short circuits without any risk of repulsion of contacts.
(ii) Thermal withstands ability during short circuits.

(iii) Constant contact pressure even when the lower parts of the insulator stacks are subjected to tensile stresses due to linear expansion of connected bus bar of flexible conductors either because of temperature variations or strong winds.
(iv) Wiping action during closing and opening.
(v) Fault alignment assuring closing of the switch without minute adjustments.

8.0 CONNECTORS:-

The connectors shall be made of hard drawn electrolytic copper or brass suitable for Raccoon/Dog ACSR conductor for both 11KV AB Switches. The connector should be 4 -bolt type.

9.0 OPERATING MECHANISM:-

All AB Switches shall have separate independent manual operation. They should be provided with ON/OFF indicators and padlocking arrangements for locking in both the end positions to avoid unintentional operation. The isolating distances should also be visible for the AB Switches.

The AB Switch will be supplied with following accessories:

Sr. No	Item	Size of 11KV AB Switch
i	Operating Rod (GI dia)	Length 5.50 meter dia 25 mm
ii	Phase coupling square rod (GI)	Length 1800 mm Size 25x25 mm
iii	Hot dip galvanized Operating handle (GI)	1 No.

The AB Switches shall be capable to resist any chance of opening out when in closed position. The operating Mechanism should be of robust constructions, easy to operate by single person and to be located conveniently for local operation in the switchyard. The GI pipe shall conform to ISS: 1239-68 and the vertical down rod should be provided with adequate joint in the mid section to avoid bending or buckling. Additional leverage should be provided to maintain mechanical force with minimum efforts.

All iron parts should be hot dip galvanized. All brass parts should be silver plated and all nuts and bolts should be hot dip galvanized.

12.0 DESIGN, MATERIALS AND WORKMANSHIP:-

The successful tenderers shall assume full responsibility for co-ordination and adequate design.

All materials used in the construction of the equipment shall be of the appropriate class, well finished and of approved design and material. All similar parts should be accurately finished and interchangeable.

Special attention shall be paid to tropical treatment to all the equipment, as it will be subjected during service to extremely severe exposure to atmospheric moisture and to long period of high ambient temperature. All current carrying parts shall be of non- ferrous metal or alloys and shall be designed to limit sharp points/edges and similar sharp faces.

The firm should submit the following type test certificate along with the certified copy of the drawing (from NABL Testing Lab). The type test should be from NABL accredited testing laboratory & should not be older than 5 years from the date of opening of tender.

1. Test to prove capability of rated peak short circuit current and the rated short time current. The rated short time current should correspond to minimum of 10K Amp and the peak short circuit current should correspond to minimum of 25K Amps.
2. Lightning impulse voltage test with positive & negative polarity.
3. Power Frequency voltage dry test and wet test
4. Temperature rise test
5. Mill volt drop tests

13.0 Dimension of 11KV AB Switches in (Max.) Tolerance 5%.

Sr.	Particulars	11KV AB Switch
i	Drawing No.	EB/P-6/MPSEB/7 (revised) dated 01.05.88

ii	MS Channel	450x75x40
iii	Creepage distance of Post Insulator	320mm (Min)
iv	Highest of Port shell	254 mm
v	Fixed contact assembly	
	i) Base	165x36x8
	ii) Contact	70x30x6
	iii) GI cover	110x44
	Spring	6 Nos.
vi	Moving contract assemble	
i	Base Assembly	135x25x8
ii	Moving	180x25x9
iii	Bush	Bronze Metal
iv	Thickness of Grooves	7

14.0 CONNECTORS:-

i	Connector (diamentions of each	60x50x8 (Moving & fix both)	60x50x8 (Moving & fix both)

The bidder should provide AB Switches with terminal connectors, set of insulators, mechanical inter works and arcing horns sets. The base channel for the mounting of AB Switches shall also be included in the scope of AB Switches. The operating mechanisms together with down pipe operating handle etc. are also included in the scope of supply.

15.0 ROUTINE TEST CERTIFICATE : -

The Routine test certificate should invariably be submitted in duplicate of each lot offered for inspection as per ISS: 9920 (part-I to IV). The offers received without Routine test certificate shall not be entertained.

16.0 ACCEPTANCE TEST : -

At the time of inspection following test shall be carried out: -

a. Physical verification and measurement of dimension.
b. Power frequency high voltage test.
c. Temperature rise test.
d. Mechanical endurance test / operation test.
e. Milli volt drop test.
f. Galvanising test as per ISS: 2633.

17.0 NAME PLATE: -

The name plate in the following design shall be fixed on each AB Switch.

i) Name of supplier :
ii) Name of purchaser :
iii) Order No. and date :
iv) Rating :
v) serial number of unit :

The size of name plate shall be 2” x 1” for 11 kV AB Switch.

Guaranteed Technical Particulars for 11 KV AB Switches

No	Particulars	Requirement
1	Type / make	To be indicated
2	Maximum permission continuous service voltage (KV)	12 KV
3	Length of the Break/Phase (Min.)	400 mm
4	Phase to Phase Spacing	750 mm
5	Power Frequency withstand test voltage for completely assembled switches	
A)	Against ground	
i	Dry KV	28 KV
ii	Wet KV	28 KV
B)	Across open contact	
i	Dry KV	32 KV
ii	Wet KV	32 KV
C)	Between Phases	
i	Dry KV	28 KV
ii	Wet KV	28 KV
6	Impulse withstand test voltage of completely assembled switch without arcing horns with	85 KV
7	100% impulse flashover voltage of completely assembled switch with arcing horns with	85 KV
8	Particulars of the main contacts i.e. fixed contacts and moving contacts	
a	Type	Spring loaded fixed & knife type moving contacts
b	Material	Hard drawn electrolytic
c	Surface Treatment & Thickness of Silver Coating	Silver plated of thickness of 5
d	Contact Pressure	25 KG
9	Continuous Current Rating, Amps	400 amps
10	Short Time Current Rating KA (rms) min. for	16 KA
11	Rated Peak Short Circuit Current (KA Peak)	25 KA
12	No. of operations which the switch can withstand without deterioration of	2000
13	Type of Mounting	Horizontal up right
14	Type & Material used in connector	Brass/ Bronze strips
15	Location and Type of Bushing	Bush bearing at rotating
16	Particulars of Post Insulators	
i	Make(ISI make)	To be indicated
ii	Type	11 KV Post insulator type

iii	Strength	10 KN
iv	Weight	5 Kg (approx.) / unit
v	No. of units per stack	One
vi	Height of stack mm	254 mm
viii	Creepage distance mm	320 mm
ix	One Minute Power Frequency Dry withstand voltage KV (rms)	65 KV
x	Power Frequency Flashover voltage KV (rms)	70 KV
xi	Impulse flashover voltage KV (Peak)	85 KV
xii	Impulse withstand voltage KV (Peak)	80 KV (peak)
xiii	Puncture voltage (KV)	105 KV

HT & LT STAY SETS

TECHNICAL SPECIFICATION for HT & LT Stay

I. SCOPE

This specification covers design, manufacture, testing and dispatch of LT Stay Sets of 16 mm and HT stay sets 20 mm dia**.**

II. GENERAL REQUIREMENTS

16 MM Dia Stay sets (Galvanized) – LT Stay Set

This stay sets (Line Guy set) will consist of the following components:-

Anchor Rod with one washer and Nut

Overall length of rod should be 1800 mm to be made out of 16 mm dia. GI Rod, one end threaded up to 40 mm length with a pitch of 5 threads per cm and provided with one square GI washer of size 40X40x1.6mm and one GI hexagonal nut conforming to IS:1367:1967 & IS:1363:1967. Both washer and nut to suit threaded rod of 16 mm dia. The other end of the rod to be made into a round eye having an inner dia. of 40mm with

best quality welding.

Anchor Plate Size 200 x 200 x6 mm

To be made out of GI plate of 6 mm thickness. The anchor plate should have at its centre 18 mm dia. hole.

Turn Buckle & Eye Bolt with 2 Nuts

To be made of 16 mm dia. GI Rod having an overall length of 450mm, one end of the rod to be threaded up to 300 mm length with a pitch of 5 threads per cm and provided with two GI Hexagonal nuts of suitable size conforming toIS:1363:1967 & IS:1367:1967. The other end of rod shall be rounded into a circular eye of 40mm inner dia. with proper and good quality welding.

Bow with Welded Angle

To be made out of 16mm dia GI rod. The finished bow shall have an over all length of 995 mm and eight of 450 mm, the apex or top of the bow shall be bent at an angle of 10 R. The other end shall be welded with proper and good quality welding to a GI angle 180 mm long having a dimension of 50x50x6mm. The angle shall have 3 holes of 18 mm dia. each.

Thimble

To be made on 1.5 mm thick GI sheet into a size of 75x22x40mm and shape as per standard shall be supplied.

Average Weight of Finished 16mm Stay Sets shall be at least 7.702 KG (Minimum)

(Excluding Nuts Thimbles and Washer) 8.445 Kg. (Maximum)

20 mm Dia. Stays Sets for 11 KV Lines (Galvanized) HT Stay Set

The Stay Set (Line Guy Set) will consist of the following components:

Anchor Rod with one Washer and Nut

Overall length of Rod should be 1800mm to be made out of 20 mm dia. GI rod one end threaded up to 40 mm length with a pitch of threads per cm. And provided with one square G.I Washer of Size 50x50x1.6mm and one GI Hexagonal nut conforming to IS: 1363:1967 & IS:1367:1967. Both washer and nut to suit the threaded rod of 20mm. The other end of the rod to be made into a round eye having an inner dia. of 40mm with best quality of welding. Dimensional and other details are indicated and submitted by bidders for owner’s approval before start of manufacturing.

Anchor Plate Size 300 x 300 x 8 mm

To be made out of G.S. Plate of 8 mm thickness. The anchor plate to have at its centre 22mm dia. hole.

Turn Buckle, Eye Bolt with 2 Nuts.

To be made of 20 mm dia. G.I Rod having an overall length of 450 mm. One end of the rod to be threaded up to 300 mm length with a pitch of 4 threads per cm. The 20 mm dia. bolt so made shall be provided with two G.I Hexagonal nuts of suitable size conforming to IS: 1363:1967 & IS: 1367:1967.The other end of the rod shall be rounded into a circular eye of 40mm inner dia. with proper and good quality of welding. Welding details are to be indicated by the bidder separately for approval.

Bow with Welded Channel:

To be made out of 16mm dia. G.I Rod. The finished bow shall have and overall length of 995 mm ad height of 450 mm. The apex or top of the bow shall be bent at an angle of 10R. he other end shall be welded with proper and good quality welding to a G.I Channel 200 mm long having a dimension of 100x50x4.7 mm. The Channel shall have 2 holes of 18 mm dia. and 22 dia. hole at its centre as per drawing No.3 enclosed herewith.

Thimble 2 Nos.

To be made of 1.5 mm thick G.I sheet into a size of 75x22x40mm and shape as per standard.

Galvanizing

The complete assembly shall be hot dip galvanized.

Welding

The minimum strength of welding provided on various components of 16mm and 20 mm dia. stay sets shall be 3100 kg & 4900 kg respectively. Minimum 6mm filet weld or its equivalent weld area should be deposited in all positions of the job i.e. at any point of the weld length. The welding shall be conforming to relevant IS:823/1964 or its latest amendment.

Threading

The threads on the Anchor Rods, Eye Bolts and Nuts shall be as per specification IS; 4218:1967 (ISO Metric Screw Threads). The Nuts shall be conforming to the requirements of IS: 1367:1967 and have dimension as per IS 1363:1967. The mechanical property requirement of fasteners shall confirm to the properly clause 4.6 each for anchor rods and Eye bolt and property clause 4 for nuts as per IS: 1367:1967.

Average weight of finished 20 mm Stays Set: 14.523 Kg.(Min) (Excluding Nuts Thimble & Washer) :15.569 Kg.(Max.)

IV. TESTS

The contractor shall be required to conduct testing of materials at Govt./ Recognized testing laboratory during pre-dispatch inspection for Tensile Load of 3100 Kg / 4900Kg. applied for one minute on the welding and maintained for one minute for 16 mm and 20mm dia stay sets respectively.

V. IDENTIFICATION MARK

All stay sets should carry the identification mark of the Purchaser (CESU)applicable.

This should be engraved on the body of stay rods to ensure proper identification of the materials. The nuts should be of a size compatible with threaded portion of rods and there should be not play or slippage of nuts.

Welding wherever required should be perfect and should not give way after erection.

VI. TOLERANCES

The tolerances for various components of the stay sets are indicated below subject to the condition that the average weight of finished stay sets of 16mm dia. excluding nuts, thimbles and washers shall not be less than the weight specified above:-

B) HT / LT STAY SET

GURANTEED TECHNICAL PARTICULARS

Sl No	Item Description	Specified Parameters			
		Section Tolerances	**Fabrication Tolerances**	**Material**	
1	Anchor Plate	6mm thick +2.5%-5% 8mm thick+2.5%-5%	200x200mm+1% 300x300mm+1%	GI Plate 6 mm thick GI Plate 8 mm thick	**LT Stay Set** **HT Stay Set**
2	Anchor Rod	16mmdia +5%-3% 20mm dia +3%-2%	Length 1800mm+0.5% Rounded Eye 40 mm inside dia + 3% Threading 40mm +11%-5% Length 1800mm +0.5% Round Eye 40mm inside dia + 3%. Threading 40mm +11%-5%	GI Round 16mm dia GI Round 16mm dia GI Round 20mm dai GI Round 20mm dia	**LT Stay Set** **HT Stay Set**
3	Turn Buckle Bow	16mm dia +5%-3%	Length 995mm +1% 16mm dia Length180mm +1% 50x50x6mm Channel length 200mm + 1%	GI Round 16mm dia. GI Angle G I Channel 100x50x4.7mm	**LT Stay Set** **HT Stay Set**
4	Eye Bolt Rod	16mm dia +5%-3% 20mm dia + 3% - 2%	Length 450mm + 1% Threading 300mm +1% Round Eye 40mm inside dia+3% Length450mm +1% Threading 300mm +1% Round Eye 40 mm inside dia +3%	GI Round 16 mm dia GI Round 20mm dia.	**LT Stay Set** **HT Stay Set**
5	Galvanisation thickness				**LT Stay Set** **HT Stay Set**
A	Anchor Plate				**LT Stay Set** **HT Stay Set**
B	Anchor Rod				**LT Stay Set** **HT Stay Set**
C	Turn Buckle				**LT Stay Set** **HT Stay Set**

D	Eye Bolt Rod				**LT Stay Set** **HT Stay Set**
6	Weight of complete set				**LT Stay Set** **HT Stay Set**
7	Whether drawing submitted				

STAY WIRE (7/10 SWG) & (7/12 SWG)

TECHNICAL SPECIFICATIONS

I. Application Standards

Except when they conflict with the specific requirements of this specification, the G.I Stay Stranded Wires shall comply with the specific requirements of IS: 2141-1979. IS: 4826-1979 & IS: 6594-1974 or the latest versions thereof.

II. Application and Sizes

The G.I. stranded wires covered in this Specification are intended for use on the overhead power line poles, distribution transformer structures etc.

The G.I stranded wires shall be of 7/8SWG7/4 mm for 33 kv lines, 7/10SWG (7/3.15 mm for 11KV lines and 7/12 SWG 7/2.5 mm for LT lines standard sizes.

III. Materials

The wires shall be drawn from steel made by the open hearth basic oxygen or electric furnace process and of such quality that when drawn to the size of wire specified and coated with zinc, the finished strand and the individual wires shall be of uniform quality and have the properties and characteristics as specified in this specification. The wires shall not contain sulphur and phosphorus exceeding 0.060% each.

Tensile Grade

The wires shall be of tensile grade 4, having minimum tensile strength of 700 N/mm² conforming to 1S:2141.

General Requirements

The outer wire of strands shall have a right-hand lay.

The lay length of wire strands shall be 12 to 18 times the strand diameter.

Minimum Breaking Load

The minimum breaking load of the wires before and after stranding shall be as follows:

No. of Wires & Const.	Wire Dia (mm)	Min. breaking load of the Single wire before stranding (KN)	Min. breaking load of the standard wire (KN)
7 (6/1)	2.5	3.44	21.40
7 (6/1)	3.15	5.46	34.00

V. Construction

The galvanized stay wire shall be of 7-wire construction. The wires shall be so stranded together that when an evenly distributed pull is applied at the ends of completed strand, each wire shall take an equal share of the pull. Joints are permitted in the individual wires during stranding but such joints shall not be less than 15 metres apart in the finished strands.

The wire shall be circular and free from scale, irregularities, imperfection, flaws, splits and other defects.

VI. Tolerances

A tolerance of (+) 2.5% on the diameter of wires before stranding shall be permitted.

VII. Sampling Criteria

The sampling criteria shall be in accordance with IS :2141.

VIII. Tests on Wires before Manufacture

The wires shall be subjected to the following tests in accordance with IS :2141.

Ductility Test Tolerance on Wire Diameter

Tests on Completed Strand

The completed strand shall be tested for the following tests in accordance with IS:2141. Tensile and Elongation Test: The percentage elongation of the stranded wire shall not be less than 6%.

Chemical analysis Galvanizing Test

The Zinc Coating shall conform to "Heavy Coating" as laid down in 1S:4826

IX. Marking

Each coil shall carry a metallic tag, securely attached to the inner part of the coil bearing the following information:
a) Manufacturers name or trade mark
b) Lot number and coil number
c) Size

d) Construction
e) Tensile Designation
f) Lay
g) Coating
h) Length
i) Mass
j) ISI certification mark, if any

X. Packing

The wires shall be supplied in 75-100 Kg. coils. The packing should be done in accordance with the provisions of IS:6594

XI. Other Items:

For remaining items of stay sets mentioned in the enclosed drawing, relevant applicable Indian standards shall be applicable.

STAY WIRE (7/10 SWG) & (7/12 SWG)

GURANTEED TECHNICAL PARTICULARS

Sl. No.	GENERAL TECHNICAL PARTICULARS	7/10 SWG	7/12 SWG
1	Nominal diameter of wire		
2	Tolerance in diameter		
3	Sectional Area (In Sq. mm.)		
4	Tensile strength		
A	Min. N/mm²		
B	Max. N/mm²		
5	Minimum breaking load (KN)		
6	Type of coating Heavy/Medium/Light		
7	Variety Hard/Soft		
8	Weight of Zinc coating (Gms/Sq. Mtr.) Min.		
9	No. of dips the coating is able to withstand as 18 ± 20ºC		
10	Adhesion Test (Wrap Test at 1 turn per second coiling while stress not exceeding % nominal tensile strength)		
A	Min. complete turn of wrap		
B	Dia of mandrel on which wrapped		
11	Bend Test		
A	Angle		
B	Dia round a format to be bent		
12	Freedom from defect		
13	Chemical composition the MS Wire used shall not exceed		
A	Sulphur 0.060%		
B	Phosphorous 0.065%		

EARHTING COIL

TECHNICAL SPECIFICATION

I. Qualification Criteria of Manufacturer:-

The prospective bidder may source Earthing Coil from manufacturers who must qualify all the following requirements :

a) The manufacturer must have successfully carried out Type Test of similar item from any NABL Accredited Laboratory within the last 5 years, prior to the date of submission of the bid.

II. SCOPE

The specification covers design, manufacture, testing for use in earthing of the HT poles.

III. GENERAL REQUIREMENTS

Earthing coils shall be fabricated from soft GI Wire Hot Dip Galvanized. The Hot Dip galvanized wire shall have clean surface and shall be free from paint enamel or any other poor conducting material. The coil shall be made as per REC constructions standard.

The Hot Dip galvanizing shall conform to IS: 2629/1966, 2633/1972 and 4826/1969

with latest amendments.

IV. TESTS

Galvanizing Tests

Minimum Mass of Zinc

On GI Wire used 280 cm/m²

After Coiling-266 gm/m².The certificate from recognized laboratory shall be submitted towards mas of zinc.

Dip Test

Dip test shall stand 3 dips of 1 minute and one dip of ½ minute before coiling and 4 dips of 1 minute after coiling as per IS: 4826/1979

Adhesion Test

As per ISS 4826 – 1979.

V. DIMENSIONAL REQUIREMENT

Nominal dia of GI Wire -4 mm (Tolerance±2.5%)

Minimum no. of turns – 115 Nos.

External dia of Coil (Min) – 50 mm

Length of Coil (Min) – 460 mm

Free length of GI Wire at one end coil (Min.) – 2500 mm

Minimum length of wire to be grounded during installation -1000 mm.

The turns should be closely bound.

HARDWARES

5.0 TECHNICAL SPECIFICATION FOR HARDWARE FITTINGS

5.1 SCOPE

This Specification covers design manufacture, testing at manufacturer's Works, supply and delivery of power conductor accessories, insulator and hardware fittings for string insulators suitable for use in 11 KV Over-head transmission lines of CESU. The hard wares to be supplied shall be as per approved drawings of CESU. Any change there of shall be with due permission of CESU. The firm shall submit his drawings for approval of CESU and only after which the manufacturing shall be started.

The materials/equipment offered, shall be complete with all components, which are necessary or usual for the efficient performance and satisfactory maintenance. Such part shall be deemed to be within the scope of contract.

5.2 STANDARDS

The materials covered under this Specification shall comply with the requirement of the latest version of the following standards as amended upto date, except where specified otherwise.

i)	IS;2486 Part-II & III	Insulator fitting for overhead power lines with a nominal voltage greater than 1,000 volts.
ii.	IS:2121 Part I & II	Conductor & earth wire accessories for overhead power lines.
iii	IS:9708	Stock Bridge Vibration Dampers on overhead power lines.
iv	IS:2633	Method of testing of uniformity of coating on zinc coated articles
v)	IS:209	Specification for Zinc.
vi	BS:916	Specification for Hexagonal bolts and nuts.

5.3 MATERIALS AND DESIGN

Aluminium and aluminium alloys, malleable iron and forget steel, having required mechanical strength, corrosion resistance and mach inability depending on the types of application for which accessories / fittings are needed, shall be employed.

In manufacturer of the accessories / fittings, the composition of the aluminium alloys used shall be made available to Employer if required for verification.

The materials offered shall be of first class quality, workmanship, well finished and approved design. All castings shall be free from blow-holes, flaws, cracks of other defects and shall be smooth, close grained and true forms and dimensions. All machined surfaces should be free, smooth and well finished.

Metal fittings of specified material for conductor and earth wire accessories and string insulator fittings are required to have excellent mechanical properties such as strength, toughness and high resistance against corrosion. All current carrying parts shall be so designed and manufactured that contact resistance is reduced to the minimum.

All bolts, nuts, bolt-heads shall be the white worth's standard thread. Bolt heads and nuts shall be hexagonal. Nuts shall be locked in an approved manner. The treads in nuts and tapped holes shall be cut after galvanizing an shall be well fabricated and greased. All other treads shall be cut before galvanizing. The bolt treads shall be undercut to take care of increase in diameter due to galvanizing.

All nuts shall be made of materials to Clause 4.8 of IS:1367 (latest edition) with regard to its mechanical properties.

The general design conductor and earth wire accessories and insulator fittings shall be such as to ensure uniformity, high strength, free from corona formation and high resistance against corrosion even in case of high level of atmosphere pollution.

All hooks, eyes, pins, bolts, suspension clamps and other fittings for attaching to the tower or to the line conductor or to the earth wire shall be so designed that the effects of vibration, both on the conductor and the fittings itself, are minimized.

Special attention must be given to ensure smooth finished surface throughout. Adequate bearing area between fittings shall be provided and point or line contacts shall be avoided.

All accessories and hardwires shall be free from cracks, shrinks, slender air holes, burrs or rough edges.

The design of he accessories and hard wares shall be such as to avoid local corona formation or discharge likely to cause interference to tele-transmission signals of any kind.

5.4 GALVANISING :

All ferrous parts of conductor and ground wire accessories and insulator hardwares shall be galvanized in accordance with IS:2629-Recommended Practice for hot dip galvanizing of iron and steel or any other equivalent authoritive standards. The weight of zinc coating shall be determined as per method stipulated in IS:2633 for testing weights, thickness and uniformity of coating of hot dip galvanized articles or as per any other equivalent authoritative standards. The zinc used or galvanization shall conform to grade zn 98 of IS:209. The galvanized parts shall withstand four (4) dips of 1 minute each time while testing uniformity of zinc coating as per IS:2633.

Spring washers shall be electro galvanized.

5.5 INSULATOR HARDWARES

The insulator disc hardwires and string assemblies to be offered by the tenderer shall be suitable to meet the requirement given in the specific technical particulars as detailed hereinafter.

Hardwires for suspension and tension insulator shall be suitable for insulator with normal pin shank diameter of 20 mm. in case of tension string unit and 16mm. for suspension string unit.

Each insulator string shall generally include the following hardware components.

Single Suspension Set.	**Double Suspension Set.**
a) Ball Hook.	i) Ball Hook.
b) tower side arcing horn	(i) Socket clevis with R Type security clip-3 Nos.
c) Socket Eye with R-Type security	(ii) Yoke Plate-2 Nos. clip.
d) Line side arcing horn.	(iii) Tower side arcing horns-2Nos.
e) Suspension clamps	(iv) Ball clevis – 2 Nos. (v) Line side arcing homs-2 Nos. (vi) Clevis Eye. (vii) Suspension Clamp.
Single Tension Set :	Double Tension Set :
a) Anchor Shackle.	a) Anchor Shackle.
b) Ball Eye.	b) Chain Link.
c) Tower side arcing horn.	c) Yoke Plate – 2 Nos.
d) Socket Clevis with R-Type security clip.	d) Tower side arching horn.
e) Line side arcing horn	e) Ball Clevis – 2 Nos.
f) Bolted type dead end clamp.	f) Socket Clevis with R-Type security clip – 2 Nos.
	g) Line side arcing horns.
	h) Bolted type dead end clamps.

5.6 SUSPENSION CLAMPS

This clamp will be envelope type made out of aluminum alloy suitable for accommodating preformed armored rod.

5.7 TENSION CLAMPS

The Tension Clamps shall be made out of aluminium alloy and of 4 **pair** bolted **(M-16)** type suitable for **80mm, ²100 mm² & 148 mm²** AAAC. The tension clamps shall not permit slipping or damage to failure of the complete conductor or any part thereof at a load less than 90% of the ultimate strength of conductor. The mechanical efficiency of tension / clamps shall not be affected by method of erection involving come / along or similar clamps or tension stringing operation during or after assembly and erection of tension clamp itself. The tension clamp shall be of a design that will ensure unrestricted flow of current without use of parallel groove clamps. The clamps shall be as light as possible.

5.8 ARCING HORNS

Each hardware assembly shall have provision for attaching arcing horns of both adjustable and non/adjustable type across the suspension and tension strings or tower side. However each hardware assembly shall be provided with arching horn of fixed type on line side only.

5.9 TESTS, TEST CERTIFICATE AND PERFORMANCE REPORTS

The fittings and accessories for the power conductor, insulator and hardwares shall be tested in accordance with IS:2121, IS:2486, BS:916 for hexagonal bolts and nuts or any other authoritative equivalent standards. Six sets of type and routine test certificates and performance reports are to be submitted by the bidder.

The Employer however, reserves the right to get all the tests performed in accordance with the relevant I.S. Specification as Acceptance Test in presence of Employer-s representatives.

The tenderer shall clearly state the testing facilities available in the laboratory at his Works and his ability to carry out the tests in accordance with this Specification. All the specified tests shall be carried out without any extra cost.

Acceptance Test for power conductor accessories.

4Visual examination
5Dimensional verification
6Failing load test
7Slip strength test (for clamps)
8Electrical resistance test
9Fatigue test (for vibration dampers)
10Mass pull off test (for vibration dampers)
11Galvanizing test.

5.10 ACCEPTANCE TEST FOR HARDWARES

i) Dimensional verification.
ii) Ultimate tensile test.
i) Slip strength test.
ii) Electrical resistance test.
iii) Heating cycle test
iv) Breaking strength of full string assembly.
v) Galvanizing test.

5.11 BONDING PIECES:

a) material : flexible copper bond (37/7/0.417 mm. tinned copper flexible stranded cable).

b) Length : Not less than 750 mm.

c) Bolt size : 16mm x 40 mm.

d) Copper area. : 34 sq.mm.

e) Thickness of long : 6 mm.

f) Material for connecting socket : Tinned Brass

5.12 FASTENERS: Bolts, Nuts & Washers

1. All bolts and nuts shall conform to IS-6639 – 1972. All bolts and nuts shall be galvanized. All bolts and nuts shall have hexagonal heads, the heads being truly concentric, and square with the shank, which must be perfectly straight.

2. Bolts upto M16 and having length upto ten times the diameter of the bolt should be manufactured by cold forging and thread rolling process to obtain good and reliable mechanical properties and effective dimensional control. The shear strength of bolt for 5.6 grade should be 310 Mpa minimum as per IS-12427. Bolts should be provided with washer face in accordance with IS-1363 Part-I to ensure proper bearing.

3. Fully threaded bolts shall not be used. The length of the bolt shall be such that the threaded portion shall not extend into the place of contact of the component parts.
4. All bolts shall be threaded to take the full depth of the nuts and threaded enough to permit the firm gripping of the component parts but not further. It shall be ensured that the threaded portion of the bolt protrudes not less than 3 mm and not more than 8 mm when fully tightened. All nuts shall fit and be tight to the point where shank of the bolt connects to the head.
5. Flat washers and spring washers shall be provided wherever necessary and shall be of positive lock type. Spring washers shall be electro-galvanized. The thickness of washers shall conform to IS-2016-1967.
6. The bidder shall furnish bolt schedules giving thickness of components connected, the nut and the washer and the length of shank and the threaded portion of the bolts and size of holes and any other special details of this nature.
7. To obviate bending stress in bolt, it shall not connect aggregate thickness more than three time its diameter.
8. Bolts at the joints shall be so staggered that nuts may be tightened with spanners without fouling.
9. Fasteners of grade higher than 8.8 are not to be used and minimum grade for bolts shall be 5.6.

5.13 GENERAL:

1. All ferrous parts including fasteners shall be hot dip galvanized, after all machining has been completed. Nuts may however be tapped (threaded) after galvanizing and the threads oiled. Spring washers shall be electro-galvanized. The bolt threads shall be undercut to take care of the increase in diameter due to galvanizing. Galvanizing shall be done in accordance with IS-2629-1985 and shall satisfy the tests mentioned in IS: 2633-1986. Fasteners shall withstand four dips while spring washers shall withstand three dips of one-minute duration in the standard Preece test. Other galvanized materials shall be guaranteed to withstand at least six successive dips each lasting one minute under the Standard Preece test for galvanizing.
2. The zinc coating shall be perfectly adherent of uniform thickness, smooth, reasonably bright, continuous and free from imperfections such as flux, ash, rust stains, bulky white deposits and blisters. The zinc used for galvanizing shall be of grade Zn 99.95 as per IS 209-1979.
3. Pin balls shall be checked with the applicable “G” gauges in at least two directions, one of which shall be across the line of die flashing and the other 90 deg. to this line. ‘NO GO’ gauges shall not pass in any direction.
4. Socket ends, before galvanizing shall be of uniform contour. The bearing surface of socket ends shall be uniform about the entire circumference without depressions or high spots. The internal contours of socket ends shall be concentric with the axis of the fittings as per IS 2486/IEC-120. The axis of the bearing surfaces of socket ends shall be coaxial with the axis of the fittings. There shall be no noticeable tilting of the bearing surfaces with the axis of the fittings.
5. All current carrying parts shall be so designed end manufactured that contact resistance is reduced to minimum.
6. Welding of aluminum shall be by inert gas shielded tungsten are or inert gas, shielded metal arc process. Welds shall be clean, sound, smooth, and uniform without overlaps, properly fused and completely sealed. There shall be no cracks, voids incomplete penetration, incomplete fusion, under-cutting or inclusions Porosity shall be minimized so that mechanical properties of the aluminum alloys are not affected. All welds shall be properly finished as per good engineering practices.

5.14 Electrical Design:

The normal duty and heavy duty suspension, light duty, normal duty and heavy duty tension insulator sets shall all comply with the technical requirements and satisfy the test requirements

5.15 Mechanical design:

The mechanical strength of the insulators and corresponding insulator fittings must match .The design shall be such that stresses due to expansion and contraction in any part of the insulator shall not lead to the development of defects.

Insulating material shall not engage directly with hard metal. All fixing materials shall be of approved quality, shall be applied in an approved manner and shall not enter into chemical action with the metal parts or cause fracture by expansion in service. Where cement is used as a fixing medium, cement thickness shall be as small and even as possible and proper care shall be taken to correctly centre and locate the individual parts during cementing.

5.16 Technical Specification for Design, Supply and Testing of Hard ware fittings.

5.16.1 Type tests:

The following type tests shall be conducted on hardware fittings.

A. On suspension hardware fittings only.

(i) Magnetic power loss test.
(ii) Clamp slip strength Vs torque
(iii) Mechanical strength test.
(iv) On one test on elastomer.

B. On Tension hard ware fittings only.

(i)	Electrical resistance test for Dead end assembly.	IS 2486 (Part-I) 1971
(ii)	Heating cycle test for dead end assembly.	-do-
(iii)	Slip strength test for dead end assembly.	IS 2486 (Part-I)
(iv)	Mechanical strength test.	

C. On both suspension and tension hardware fittings.

(i)	Visual examination.	IS-2486 (Part-I) 1971
(ii)	Verification of dimension.	-do-
(iii)	Galvanizing / electroplating test.	-do-
(iv)	Mechanical strength test of each component (including corona control ring/grading ring and arcing horn)	
(v)	Mechanical strength test of welded joint.	
(vi)	Mechanical strength test for corona control ring/ grading ring and arcing horn.	BS-3288 (Part-I)
(vii)	Test on locking device for ball and socket coupling.	IEC – 3721984
(viii)	Chemical analysis, hardness tests, grain size, inclusion rating and magnetic particle inspection for forging/casting.	

D. On suspension hardware fittings only.

(i)	Clamp slip strength ver as torque test for suspension clamp.	
(ii)	Shore hardness test of elastomer cushion for AG suspension clamp.	
(iii)	Bend test for armour rod set.	IS-2121 (Part-I)
(iv)	Resilience test for armour rod set.	-do-
(v)	Conductivity test for armour rod set.	-do-

All the acceptance tests stated at clause shall also be carried out on composite insulator unit, except the eccentricity test at clause. In addition to these, all the acceptance tests indicated in IEC 1109 shall

also be carried out without any extra cost to the employer.

E. **For hardware fittings.**

(a) Visual examination. IS-2121 (Part-I)
(b) Proof & test.

F. **Tests on conductor accessories.**

G. **Type tests.**

H. **Mid span compression joint for conductor and earth wire**.

(a)	Chemical analysis of materials.	
(b)	Electrical resistance tests.	IS-2121 (Part-II) 1981 clause 6.5 & 6.6
(c)	Heating cycle test.	-do-
(d)	Slip strength test.	-do-

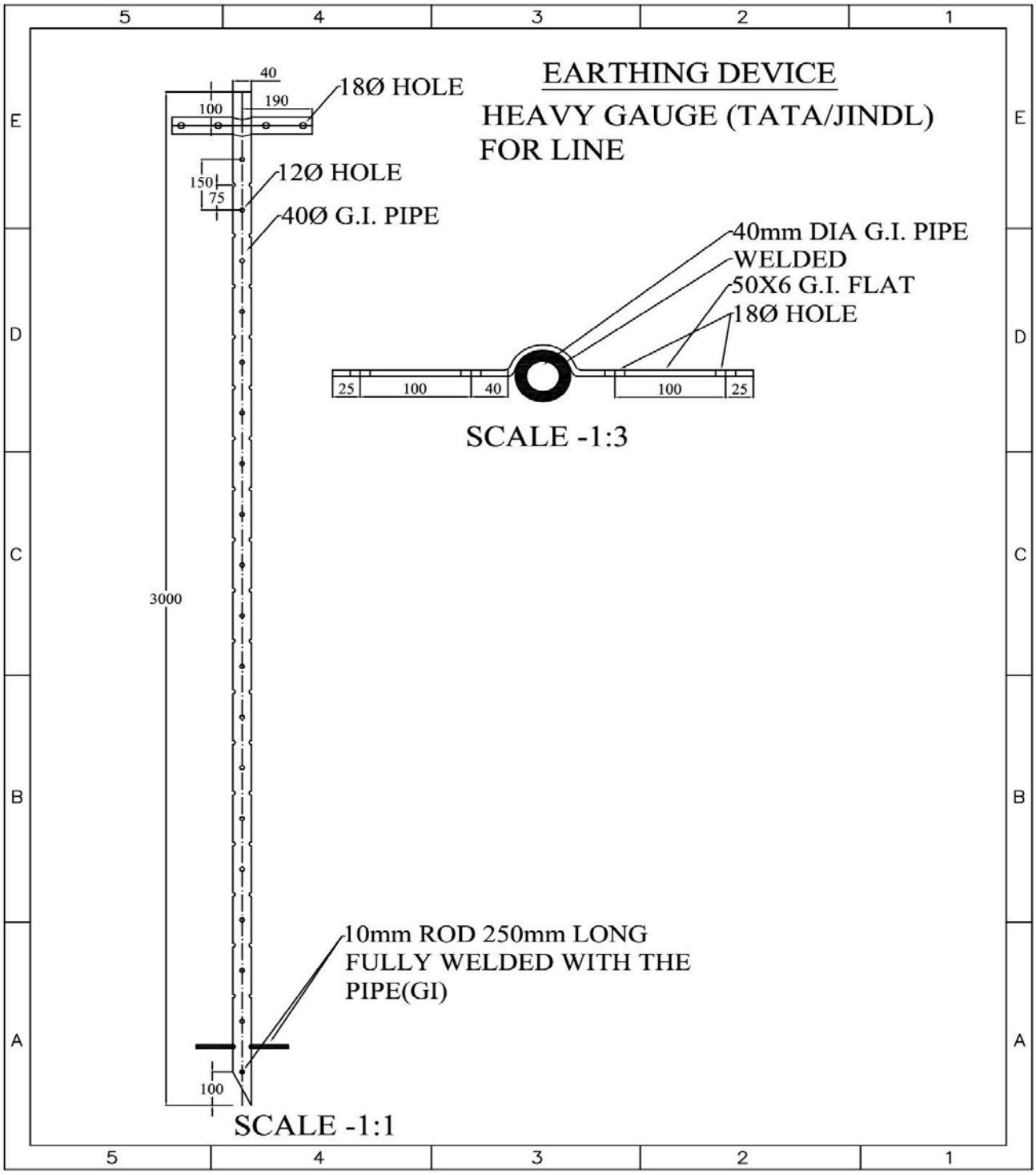
TECHNICAL SPECIFICATION FOR PG CLAMP

PG CLAMP

TECHNICAL DATA:
1.ALUMINUM ALLOY - LM-6
2.BOLT&NUT IS -1367(HDG)
3.SPRING & FLAT WASHER - ELECTRO GALVANIZED
4.TOLERENCE +5%
5.ALL DIMENSION ARE IN MM.

CONDUCTOR NAME	NOMINAL AREA(mm^2)	CONDUCTOR DIA	DIMENSION IN mm					NO. OF BOLTS
			A	B	C	D	E	
DOG-DOG	100	12.78 -12.78	100	65	10	4.5	15	3, M12 (HDG)
RACOON-RACOON	80	11.43-11.43	100	58	10	4.5	15	3, M12(HDG)
RABBIT-RABBIT	55	9.45-9.45	95	54	10	4.5	13	3,M12(HDG)
ZEBRA-ZEBRA	420	28.62-28.62	150	102	15	5	18	3,M16(HDG)
ZEBRA-PANTHER	420-230	28.62-19.70	150	102	15	5	18	3,M16(HDG)

TECHNICAL SPECIFICATION FOR EARTHING DEVICE



TECHNICAL SPECIFICATION FOR CONSTRUCTION OF 1) 11KV 2) LT LINES

1.0 NATURE OF WORK

The work covered by this Specification is for 11 kV lines as specified herein and in the attached Schedules.

1.1 GENERAL PARTICULARS OF THE SYSTEM

The following are the general particulars governing the design and working of the complete system of which the Works will form a part —

The system will be in continuous operation during the varying atmospheric and climatic conditions occurring at all seasons.

1.2 SCOPE-

(A) Construction of 11 KV New Lines

2.0 SURVEY (detail & check, estimating of quantities & spotting of towers / Poles)

Walk over survey, Theodolite survey, profile survey (if required) shall have to be carried out to establish the Route alignment by the contractor for new 11 KV lines. If the line is passing in any Municipal/ NAC areas permission from local bodies has to be obtained prior to execution of work. Suitable distance from the side of the road has to be made towards placement of line poles.

2.0.1 CHECK SURVEY

The contractor shall undertake the check survey during execution on the basis of the alignment profile drawing approved by the employer. If during check survey necessity arises for minor change in route to eliminate way leave or other unavoidable constraints, the contractor may change the said alignment after obtaining prior approval from the employer

2.0.2 GENERAL: Preliminary route alignment in respect of the proposed 11KV transmission lines has been fixed by the employer subject to alteration of places due to way leave or other unavoidable constraints. The Right of way shall be solved by the contractor and all expenses there of shall be borne by him. However, CESU shall render all helps in co-ordination with law and order department for solving the same. Involvement of Forest land should be restricted as far as possible.

2.0.3 Provisional quantities/numbers of different Joist poles/PSC poles have been estimated and indicated in the BOQ Schedule given. However final quantities for work shall be as determined by the successful bidder, on completion of the detail survey, preparation of route profile drawing and designing of the different types of Joist poles/PSC poles as elaborated in the specification and scope of work.

2.0.4 The contractor shall undertake detailed survey on the basis of the tentative alignment fixed by the employer. The said preliminary alignment may, however, change in the interest of economy to avoid forest and hazards in work. While surveying the alternative route the following points shall be taken care by the contractor.

(a) The line is as near as possible to the available roads in the area.

(b) The route is straight and short as far as possible.

(c) Good farming areas, religious places, forest, civil and defense installations, aerodromes, public and private premises, ponds, tanks, lakes, gardens, and plantations are avoided as far as practicable.

(d) The line should be far away from telecommunication lines as reasonably possible. Parallelism with these lines shall be avoided as far as practicable.

(e) Crossing with permanent objects are minimum but where unavoidable preferably at right angles.

(f) Difficult and unsafe approaches are avoided.

(g) The survey shall be conducted along the approved alignment only.

(h) For river crossing/ Crossing of Nallas : Taking levels at 25 meter interval on bank of river and at 50 meter interval at bed of river so far as to show the true profile of the ground and river bed railway/road bridge, road The levels shall be taken at least 100 m. on either side of the crossing alignment. Both longitudinal and cross sectional shall be drawn preferably to a scale of 1:2000 at horizontal and 1:200 vertical.

After completing the detailed survey, the contractor shall submit the final profile and tower schedule/ pole schedule (with no. of stay or struct) for final approval of the employer. To facilitate checking of the alignment, suitable reference marks shall be provided. For this purpose, concrete pillars of suitable sizes shall be planted at all angle locations and suitable wooden/iron pegs shall be driven firmly at the intermediate points. The contractor shall quote his rate covering these involved jobs.

2.0.5 (a) Optimization of Pole Location

I. Pole Spotting

To optimize the line length, the contractor shall spot the poles in such a way so that the line is as close as possible to the straight line drawn between the start & end point of the line.

II. Crossings

Road Crossings:- At all road crossings, the double tension HW fittings should be used. There should absolutely no joints in the conductors in all road, power line and all other major crossing. The ground clearance from the road surfaces under maximum sag condition shall be not less than 8.5mtr over roads. In National High way the minimum height of guarding at the maximum sagging point should be less than 8.5 mts.

Power Line Crossings-

Where the line is to cross over another line of the same voltage or lower voltage, provisions to prevent the possibility of their coming into contact with each shall be made in accordance with the Indian Electricity Rules.

III. Details En-route

After survey and finalization of route, the contractor shall submit detailed route map for each line. This would be including following details:

All poles on both sides of all the crossings shall be tension poles i.e. disc type insulators shall be used on these poles. At all the crossing described above the contractor shall use protective guarding as per REC Construction Standard A-1 to fulfill statutory requirements for 11 kV trunks & main spur line. 11kV branch spur line, being in the village, protective guarding shall be used wherever it will be required.

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 vendor shall select the height of the poles in order to achieve the prescribed electrical clearances.

IV. Final Schedule

The final schedule including Bill of quantity indicating location of poles specifically marking locations of failure containment pole/structure, DTs 11 kV line sectionalizes, line tapping points; angle of

deviation at various tension pole locations, all type of crossings and other details shall be submitted for the approval of the owner. After approval, the contractor shall submit six more sets of the approved documents along with one set in reproducible form to purchaser for record purpose.

V. Danger Boards

The vendor shall provide & install danger plates on all 11 kV DP structures , H pole structures besides in all poles where DT is installed. The danger plates shall conform to REC specification No. 57/1993.

VI. Anti-climbing Devices

The vendor shall provide and install anti-climbing device on all 33kv and 11 kV DP structures, towers and at all poles as per CEA guide line. This shall be done with G.I. Barbed wire or modified spikes as specified. The barbed wire shall conform to IS-278 (Grade A1). The barbed wires shall be given chromatin dip as per procedure laid down in IS: 1340.

VII. Fittings Common to all Line

Pin Insulator Binding: The contractor shall use AL. Binding wire for binding shall be as per REC Construction Standards No. C-5 or better thereof.

Mid Span Compression Joint & Repair Sleeves: The contractor shall supply & install the Mid Span Compression Joint and Repair Sleeves as per IS: 2121 (Part II).

Guy/Stay wire Clamp: The contractor shall supply & install Guy/Stay wire Clamp as per REC Construction Standard G-1 or better here of as specified..

VIII. Stay/Guy Sets

a) The Stay/Guys shall be used at the following pole locations;

At all the tapping points & dead end poles

At all the points where DT is to be installed

At all the points as per REC construction dwg. No. A-10 (for the diversion angle of 10-60 degree)

At every alternative pole for 11 kV line (two sets)

Both side poles at all the crossing for road, nallaha, railway crossings etc.

b) The arrangement and number of stay sets to be installed on different pole structures shall be as per REC Construction Standards no. A-23 to A-27, G-5 & G-8. However, this shall be decided finally during erection, as per the advice of Engineer.

IX. Erection of stay sets

The contractor shall install the stay set complete in all respect. This includes excavation of pit in all kinds of soil with PCC in the ratio 1:2:4 as specified which shall be placed in the bottom of the pit.

The rest (upper half) of the pit shall be filled with excavated soil duly compacted layer by layer. An angle between 30 to 45 degrees shall be maintained between stay wire and the pole. The stay wire shall be used with a stay insulator at a height of 5 mts. above ground level with F.I. turn buckle.

Stringing of Conductor

The stringing of the conductor shall be done by the standard stringing method.

The Bidder shall submit complete details of the stringing method for owner's approval. Conductors shall not be allowed to hang in the stringing blocks for more than 96 hours before being pulled to the specified sag.

Derricks/ scaffoldings or other equivalent methods shall be used to ensure that normal services are not interrupted and any property is not damaged during stringing operations for roads, telecommunication lines, power lines and railway lines. However, shut-down shall be obtained when working at crossings of overhead power lines. The contractor shall make specific request for the same to the owner.

Tensioning and Sagging Operations:

The tensioning and sagging shall be done in accordance with the approved stringing charts or sag tables.

The sag shall be checked in the first and the last section span for sections up to eight spans and in one additional intermediate span for sections with more than eight spans Tensioning and sagging operations shall be carried out in calm weather when rapid changes in temperature are not likely to occur.

FOUNDATION OF POLE

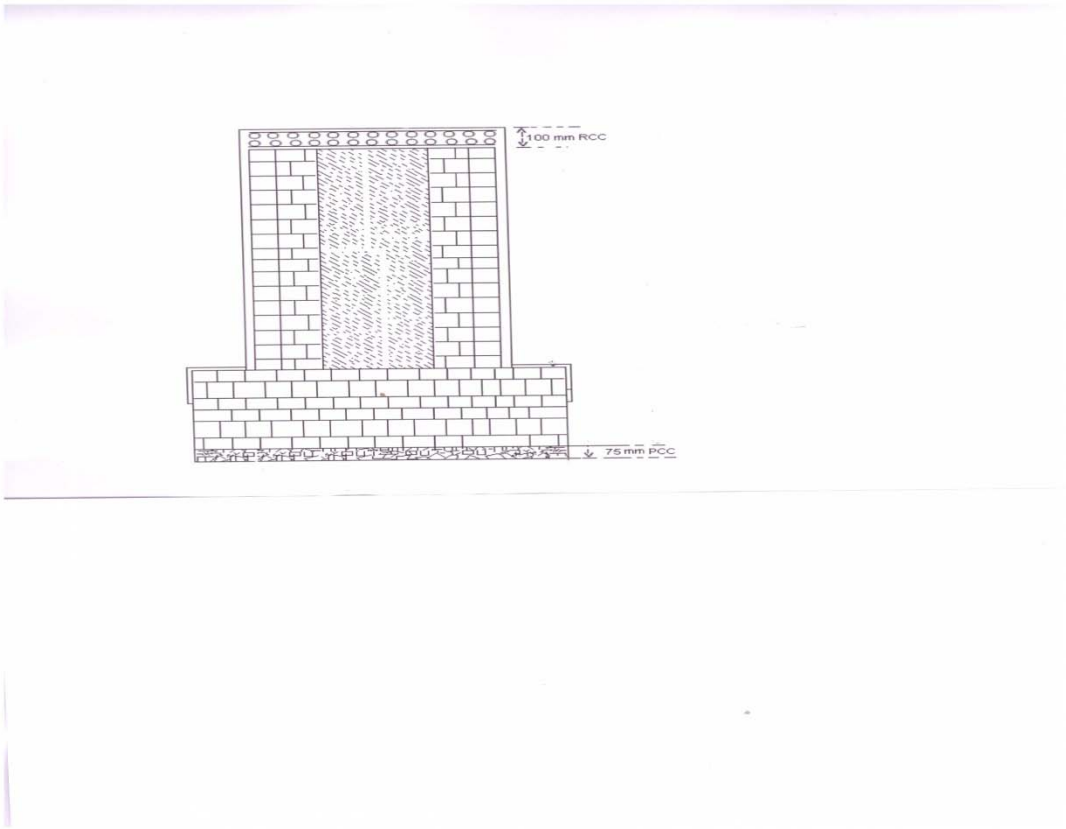
Sub-station Fencing :

250 mm wide Compound wall of size 4.5x4.75 mtr and 1.6 mtr height above ground level and minimum of 900 mm depth below soil with provision of Grill gate of size 1.5x1.5 meter height and earthing arrangement

of gate. Iron nail bed of 2 inch should be provided on the top of the boundary wall. All walls should be plastered with 12mm thick cement plaster (1:5). All external surfaces should be painted with weather proof synthetic paints. Spreading of metal and sand should be provided inside S/s.

Plinth for Transformer :

6 ft height (below ground level 2 ft) 5ft x 5ft. with a layer of 100mm thick RCC (1:3:6 20mm BHG metal size) should be provided on the top of the plinth.



METAL PARTS:

(i) Cap and Ball Pins:

Ball pins shall be made with drop forged steel caps with malleable cast iron. They shall be in one single piece and duly hot dip galvanized. They shall not contain parts or pieces joined together welded, shrink fitted or by any other process from more than one piece of materials. The pins shall be of high tensile steel, drop forged and heat-treated. The caps shall be cast with good quality black heart malleable cast iron and annealed. Galvanizing shall be by the hot dip process with a heavy coating of zinc of very high purity. The bidder shall specify the grade composition and mechanical properties of steel used for caps and pins. The cap and pin shall be of such design that it will not yield or distort under the specified mechanical load in such a manner as to change the relative spacing of the insulators or add other stresses to the shells. The insulator caps shall be of the socket type provided with nonferrous metal or stainless steel cotter pins and shall provide positive locking of the coupling.

(ii) Security Clips:

The security clips shall be made of phosphor bronze or of stainless steel.

3.5 FILLER MATERIAL:

Cement to be used, as a filler material be quick setting, fast curing Portland cement. It shall not cause fracture by expansion or loosening by contraction. Cement shall not react chemically with metal parts in contact with it and its thickness shall be as small and as uniform as possible.

3.6 MATERIALS DESIGN AND WORKMANSHIP:

3.6.1 GENERAL:

All raw materials to be used in the manufacture of these insulators shall be subject to strict raw material quality control and to stage testing/ quality control during manufacturing stage to ensure the quality of the final end product. Manufacturing shall conform to the best engineering practices adopted in the field of extra high voltage transmission. Bidders shall therefore offer insulators as are guaranteed by them for satisfactory performance on Transmission lines.

The design, manufacturing process and material control at various stages be such as to give maximum working load, highest mobility, best resistance to corrosion, good finish elimination of sharp edges and corners to limit corona and radio interference voltages.

3.6.2 INSULATOR SHELL:

The design of the insulator shells shall be such that stresses due to expansion and contraction in any part of the insulator shall not lead to deterioration. Shells with cracks shall be eliminated by temperature cycle test followed by mallet test. Shells shall be dried under controlled conditions of humidity and temperature.

METAL PARTS:

1) The 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 and of such design that it will not yield or distort under loaded conditions. The head portion of the pinball shall be suitably designed so that when the insulator is under tension the stresses are uniformly distributed over the pinhole portion of the shell. The pinball shall move freely in the cap socket either during assembly of a string or during erection of a string or when a string is placed in position.

vi) Metal caps shall be free from cracks, seams, shrinks, air holes, blowholes and rough edges. All metal surfaces shall be perfectly smooth with no projecting part or irregularities, which may cause corona. All load bearing surfaces shall be smooth and uniform so as to distribute the loading stress uniformly. Pins shall not show any microscopically visible cracks, inclusions and voids.

GALVANIZING:

All ferrous parts, shall be hot dip galvanized in accordance with IS: 2629. The zinc to be used for galvanizing shall conform to grade Zn 99.5 as per IS: 209. The zinc coating shall be uniform, smoothly adherent, reasonably light, continuous and free from impurities such as flux, ash, rust stains, bulky white deposits and blisters. Before ball fittings are galvanized, all die flashing on the shank and on the bearing surface of the ball shall be carefully removed without reducing the designed dimensional requirements.

3.6.5 CEMENTING:

The insulator design shall. Be such that the insulating medium shall not directly engaged with hard metal. The surface of porcelain and coated with resilient paint to offset the effect of difference in thermal expansions of these materials. High quality Portland cement shall be used for cementing the porcelain to the cap & pin.

3.6.6 SECURITY CLIPS (LOCKING DEVICES)

The security clips to be used as locking device for ball and socket coupling shall be 'R' shaped hump type to provide for positive locking of the coupling as per IS: 2486 (Part-IV). The legs of the security clips shall allow for spreading after installation to prevent complete withdrawal from the socket. The locking device shall resilient corrosion resistant and of sufficient mechanical strength. There shall be no possibility of the locking device to be displaced or be capable of rotation, which placed in position, and under no circumstances shall it allow separation of insulator units and fittings. 'W' type security clips are also acceptable. The hole for the security clip shall be counter sunk and the clip shall be of such design that the eye of the clip may be engaged by a hot line clip puller to provide for disengagement under energized conditions. The force required for pulling the clip into its unlocked positions shall not be less than 50 N (5 kg.) or more than 500 N (50 kgs.).

3.6.7 MARKING:

Each insulator shall have the rated combined mechanical and electrical strength marked clearly on the porcelain surface. Each insulator shall also bear symbols identifying the manufacturer, month, and year of manufacture. Marking on porcelain shall be printed, not impressed, and shall be applied before firing.

3.6.8 BALL AND SOCKET DESIGNATION:

The dimensions of the ball and sockets for 70/90 KN discs shall be of 16 mm designation in accordance with the standard dimensions stated in IS: 2486 (Part-II).

3.6.9 DIMENSIONAL TOLERANCE OF INSULATOR DISCS:

It shall be ensured that the dimensions of the disc insulators are within the limits specified below:

a) Diameter of Disc (mm)

	Standard	Maximum	Minimum
70/ 90 KN KN Disc	280	293	267

b) Ball to Ball spacing Between Discs (mm)

	Standard	Maximum	Minimum
70/90 KN Disc	170	175	165

	Standard
c) Creepage Distance	430 mm

3.6.10 INTERCHANGEABILITY:

The insulators inclusive of the ball and socket fittings shall be of standard design suitable for use with hardware fittings of any make conforming to relevant Indian Standards.

3.6.11 FREEDOM FROM DEFECTS:

Insulators shall have none of the following defects:

1) Ball pin shake.
2) Cementing defects near the pin like small blow holes, small hair cracks lumps etc.
3) Sand fall defects on the surface of the insulator.

3.7. INSULATOR STRINGS:

3.7.1 TYPE AND RATING:

The insulator strings shall be formed with standard discs described in this specification for use on 3 phases 33 KV 50 Hz effectively earthed systems in an atmosphere with pollution level as indicated in project synopsis. Suspension insulator strings for use with suspension/tangent supports are to be fitted with discs 45 KN EMS rating while tension insulator strings for use with Anchor / Tension towers are to be fitted with discs of 70 KN KN EMS level rating.

3.7.2 STRING SIZE:

The sizes of the disc insulator, the number to be used in different types of strings, their electro-mechanical strength and minimum nominal creep age distance shall be as given in this specification.

3.7.3 Insulator units after assembly shall be concentric and coaxial within limits as permitted by Indian Standards.

3.7.4 The strings design shall be such that when units are coupled together there shall be contact between the shell of one unit and metal of the adjacent unit.

3.8 DIMENSIONAL TOLERANCE OF INSULATORS DISCS

It shall be ensured that the dimensions of the long rod insulators are within the limits as per relevant IEC/ISS.

3.9 TESTS (FOR DISC INSULATORS) :

The following tests shall be carried out on the insulator string and disc insulators.

3.9.1 TYPE TEST:

This shall mean those tests, which are to be carried out to prove the design, process of manufacture and general conformity of the material and product with the intents of this specification. These tests shall be conducted on a representative number of samples prior to commencement of commercial production. The Bidder shall indicate his schedule for carrying out these tests.

3.9.2 ACCEPTANCE TESTS:

This shall mean these tests, which are to be carried out on samples taken from each lot offered for pre-despatch inspection for the purpose of acceptance of the lot.

3.9.3 ROUTINE TESTS:

This shall mean those tests, which are to be carried out on each insulator to check the requirements, which are likely to vary during production.

3.9.4 TESTS DURING MANUFACTURE:

Stage tests during manufacture shall mean those tests, which are to be carried out during the process of manufacture to ensure quality control such that the end product is of the designed quality conforming to the intent of this specification.

3.9.5 TEST VALUE:

For all type and acceptance tests the acceptance values shall be the value guaranteed by the bidder in the guaranteed technical particulars of the acceptance value specified in this specification of the relevant standard whichever is more stringent for that particular test.

3.9.6 TEST PROCEDURE AND SAMPLING NORMS:

The norms and procedure of sampling for the above tests shall be as per the relevant Indian Standard or the Internationally accepted standards. This will be discussed and mutually agreed to between the supplier and purchaser before placement of order. The standards and normal according to which these tests are to be carried out are listed against each test. Where a particular test is a specific requirement of this specification, the norms land procedure for the same shall be as mutually agreed to between the supplier and the purchaser in the quality assurance programme.

3.9.7 TYPE, ROUTINE & ACCEPTANCE TESTS:

The following type test shall be conducted on a suitable number of individual unit components, materials or complete strings.

	On complete insulator string with hardware fittings	**Standards**
	Power frequency voltage withstand test with corona control rings and under wet condition.	BS:137(Part-I)
b)	Impulse voltage withstand test under dry condition.	IEC: 383
c)	Mechanical strength test.	As per this specification.
2.	**On Insulators:**	
a)	Verification of dimensions.	IS: 731
b)	Thermal mechanical performance test:	IEC:575
c)	Power frequency voltage withstand and flashover (I) dry (ii) wet.	BS: 173
d)	Impulse voltage withstand flashover test (dry)	: IEC: 383
e)	Visible discharge test (dry)	: IS:731
	All the type tests given under clause No.5.14 above shall be conducted on single suspension and Double Tension insulator string along with hardware fittings.	
	ACCEPTANCE TESTS:	
	For insulator:	
a)	Visual examination	: IS:731
b)	Verification of dimensions.	: IS:731
c)	Temperature cycle test.	: IS:731
d)	Galvanizing test.	: IS:731
e)	Mechanical performance test.	: IEC:575
f)	Test on locking device for ball and socket coupling.	: IEC:372

g)	Eccentricity test.	As per this specification.
h)	Electro-mechanical strength test.	:
i)	Puncture test.	: IS:731
j)	Porosity test.	: IS:731
	ROUTINE TESTS:	
	For insulators:	
a)	Visual inspection.	: IS:731
b)	Mechanical routine test.	:
c)	Electrical routine test.	: IEC:383
	TEST DURING MANUFACTURE:	
	Chemical analysis, hardness test and magnetic particle inspection for forgings.	: As per this specification.

3.9.8 ADDITIONAL TESTS:

The purchaser reserves the right for carrying out any other tests of a reasonable nature at the works of the supplier/ laboratory or at any other recognized laboratory/ research institute in addition to the above mentioned type, acceptance and routine tests at the cost of the purchaser to satisfy that the material complies with the intent of this specification.

3.9.9 CO-ORDINATION FOR TESTING:

For insulator strings, the supplier shall arrange to conduct testing of their disc insulators with the hardware fittings to be supplied to the purchaser by other suppliers. The supplier is also required to guarantee overall satisfactory performance of the disc insulator with the hardware fittings.

NOTE:
In respect of electrical tests on a complete string consisting of insulators and hardware guarantee of values of responsibility of testing shall be with hardware manufacturer of RIV corona and voltage distribution test and with insulator manufacturer for all other tests.

3.10 TEST CHARGES AND TEST SCHEDULE:

3.10.1 TYPE TEST:

The insulator offered shall be fully type tested as per this specification. In case the equipment of the type and design offered, has already been type tested in an independent test laboratory. The bidder shall furnish four sets of type test reports along with the offer. These tests must not have been conducted earlier than five years. The purchaser reserves the right to demand repetition of some or all type tests in the presence of purchasers' carrying representative. For this purpose the bidder may quote unit rates for carrying out each type test. These prices shall be taken into consideration for bid evaluation. For any change in the design/type already type tested and the design/type offered against this specification, purchaser reserves the right to demand repetition of tests without any extra cost.

3.10.2 ACCEPTANCE AND ROUTINE TEST:

All acceptance and routine tests as stipulated herein shall be carried out by the supplier in the presence of purchaser's representative.

3.10.3 Immediately after finalisation of the programme of type/ acceptance/ routine testing, the supplier shall give sufficient advance intimation to the purchaser to enable him to depute his representative for witnessing the tests.

3.10.4 For type tests involving tests on a complete insulator string with hardware fittings, the purchaser will advice the supplier of the hardware fittings to provide the necessary fittings to the place of the test.

3.10.5 In case of failure of the complete string in any type tests, the supplier whose product has failed in the tests, shall get the tests repeated at his cost. In case of any dispute, assessment of the purchaser as to the items that has caused the failure in any of the type tests shall be final and binding.

3.10.6 VOLTAGE DISTRIBUTION TEST:

a) The voltage across each insulator unit shall be measured by sphere gap method. The result obtained shall be converted into percentage and proportionate correction be applied as to give a total of 100% distribution.

b) The complete insulator string along with its hardware fitting excluding arcing horn corona controlling/grading ring and suspension assembly/dead end assembly shall be subject to a load equal to 50% of the specified minimum ultimate tensile strength (UTS) which shall be increased already rate to 68% of the minimum UTS specified. The load shall be held for five minutes and then removed. After removal of the load, the string components shall not show any visual deformation and it shall be possible to disassemble them by hand,. Hand tools may be used to remove cotter pins and loosen the nuts initially. The string shall then be reassembled and loaded to 50% of UTS and the load shall be further increased at a steady rate till the specified minimum UTS and held for one minute. No fracture should occur during this period. The applied load shall then be increased until the failing loads reached and the value recorded.

3.11 INSPECTION:

i. Purchaser and its representative shall at all times be entitled to have access to the works and to all places of manufacturer where insulators are manufactured and the supplier shall afford all facilities to them for unrestricted inspection of the works, inspection of materials, inspection of manufacturing process of insulators and for conducting necessary tests as specified herein.

ii. The supplier shall keep the purchaser informed in advance of the time of starting and of progress of manufacture of insulators in its various stages so that arrangements could be made for inspection.

iii. No material shall be dispatched from its point of manufacture unless the materials has been satisfactorily inspected and tested.

iv. The acceptance of any quantity of insulators shall in no way relieve the supplier of his responsibility for meeting all the requirement of this specification and shall not prevent subsequent rejection, if such insulators are later found to be defective.

3.12 IDENTIFICATION MARKING:

(a) Each unit of insulator shall be legibly and indelibly marked with the trade mark of the supplier, the year of manufacture, the guaranteed combined mechanical and electrical strength in kilo-newtons abbreviated by 'KN' to facilitate easy identification and proper use.

(b) The marking shall be on porcelain for porcelain insulators. The marking shall be printed and not impressed and the same shall be applied before firing.

3.13 QUALITY ASSURANCE PLAN:

The bidder hereunder shall invariably furnish following information along with his offer, failing which the offer shall be liable for rejection.

a.Statement giving list of important raw materials, names of sub-suppliers for the raw materials, list of standards according to which the raw material are tested, list of tests normally carried out on raw materials in presence of bidder's representative, copies of test certificates.

b. Informations and copies of test certificates as in (i) above in respect of bought out materials.

c.List of manufacturing facilities available.

d. Level of automation achieved and lists of area where manual processing exists.

e. List of areas in manufacturing process, where stage inspections are normally carried out in quality control and details of such tests and inspection.

f. Special features provided in the equipment to make it maintenance free.

g. List of testing equipping available with the bidder for final testing of equipment specified and test plant limitation, if any, vis-à-vis the type, special, acceptance and routine tests specified in the relevant standards. These limitations shall be very clearly brought out in schedule of deviations from specified test requirements.

The supplier shall within 30 days of placement of order submit the following information to the owner. List of raw material and the names of sub-suppliers selected from those furnished along with the offer.

3.14 CHEMICAL ANALYSIS OF ZINC USED FOR GALVANIZING.

Samples taken from the zinc ingot shall be chemically analysed as per IS: 209. The purity of zinc shall not be less than 99.95%.

3.16 TEST ON CASTING:

The chemical analysis mechanical and metallographic tests and magnetic particle inspection for castings will be as per the internationally recognized procedures for these tests. The samplings will be based on heat number and heat treatment batch. The details regarding test will be as discussed and mutually agreed to by the supplier and purchaser in quality assurance programme.

3.17 HYDRAULIC INTERNAL PRESSURE TEST ON SHELLS:

The test shall be earned out on 100% shells before assembly. The details regarding test will be as discussed and mutually agreed to by the suppliers and purchaser in Quality Assurance Programme.

3.18 THERMAL MECHANICAL PERFORMANCE TEST:

The thermal mechanical performance test shall be carried out on minimum 15 number of disc insulators units as per the procedure given in IEC 575. The performance of the insulator unit shall be determined by the same standard.

3.19 ECCENTRICITY TEST:

The insulator shall be vertically mounted on a future using dummy pin and socket. A vertical scale with horizontal slider shall be used for the axial run out. The pointer shall be positioned in contact with the bottom of the outermost petticoat of the disc. The disc insulators shall be rotated with reference to the fixture and the slider shall be allowed to move up and down on the scale but always maintaining contact with the bottom of the outer most petticoats. After one full rotation of the disc the maximum and minimum position the slider has reached on the scale can be found out. Difference between the above two readings shall satisfy the guaranteed value for axial run out.

Similarly using a horizontal scale with veridical slider the radial run out shall be measured. The slider shall be positioned on the scale to establish contact with the circumstance of the disc insulator and disc insulator rotated on its future always maintaining the contact. After one full rotation of the disc the maximum and minimum position the slider has reached on the scale can be found out. Difference between the above two readings shall satisfy the guaranteed value for axial run out.

3.20 CRACK DETECTION TEST:

Crack detection test shall be carried out on each ball and pin before assembly of disc unit. The supplier shall maintain complete record of having conducted such tests on each and every piece of ball pin The bidder shall furnish full details of the equipment available with him for crack test and also indicate the test procedure in detail.

PART –II
Section - VII

PRICE SCHEDULE

Turnkey execution for Extension of 11KV line, installation of S/S & extension of LT line for dedicated power supply to different wings of SCS (A) college, Puri under electrical section Kacheri.

Part-A

Sl. No.	Name of the Materials	Unit	Qty.	Supply		Erection	
				Rate	Amt.	Rate	Amt.
1. Installation of 2X250KVA 11/0.4KV plinth mounted S/S using 10mtr long 330mm PSC pole= 1No.							
1	10Mtr long 330KG PSC pole	No.	4				
2	Pressure Channel 100 x 50 x 6mm MS channel each 2.8 mtr. Long(9.2 K.g. per mtr.)x16 Nos for double bay arrangement	K.g.	412.16				
3	S/S DP bressing chhanel 75 x 40 x 6mm MS channel each 2.8 mtr. Long(6.8 K.g. per mtr.)x8 Nos	K.g.	152.32				
4	Metering Unit chhanel 75 x 40 x 6mm MS channel each 2.8 mtr. Long(6.8 K.g. per mtr.)x2 Nos	K.g.	38.08				
5	Cantilever chhanel for supporting MU, 75x40x6-1 mtr. Long, 4 nos.(6.8 K.g. per mtr.)	K.g.	13.6				
6	AB Swith & HG Fuse, Mounting Channel 75x40x6 -2.8 mtr.long, 4 nos.(6.8K.g. per mtr.)	K.g.	76.16				
7	Cantilever chhanel for supporting AB Switch arm, 75x40x6-1 mtr. Long, 4 nos.(6.8 K.g. per mtr.)	K.g.	27.2				
8	Contnilever chhanel for supporting HG Fuse 50 x 50 x 6 mm MS Angel (1.0 mtrs. Long 4 nos.)4.5K.g. per mtr.	K.g.	18				
9	Angle for Cantilever arrrangement for AB Switch & HG Fuse 50 x 50 x 6 -2 mtr .each 4 nos.(4.5 K.g. per mtr.)	K.g.	36				
10	Angle for mounting LT distribution Box 50 x 50 x 6 mm MS Angel -2.5 mtrs.each Long 2 nos.(4.5 K.g. per mtr.)	K.g.	22.5				
11	11KV AB Switch 3 Pole (200 Amp)	Set	2				
12	11KV HG Fuse 3 Pole (200 Amp.)	No.	2				
13	11 KV L.A. 12KV-10KA	No.	6				
14	GI Pipe Earthing 40 Dia Medium gage 3 mtrs. Long	No.	12				
15	No.6 GI Wire	K.g.	50				
16	40x6mm GI Flat for nutral	K.g.	50				
17	55mm2 AAAC	Km	0.1				
18	GI Nut , Bolt & Washer	K.g.	130				
19	250KVA, 11/0.4KV (AL) BIS Energy lable-2	No	2				
20	L.T. Distribution box with MCCB, Aluminium Busbar for 3bay with Kit Kat fuse for 250KVA S/S	No.	2				

21	3 1/2 x 300mm2 PVC Cable for I/C (1no.)250 KVA TFR.	Mtr.	40				
22	100x116mm RS Joist 4mtr longx23kg for resting of LT cable	Kg	92				
23	Al. Paint	Ltr	10				
24	Redoxid Paint	Ltr	10				
25	Black Paint	Ltr	3				
26	11 K.V.GI Pin	No.	9				
27	11 K.V. Pin Insulator	No.	9				
28	11 K.V. H.W. Fitting (B & S)	No.	12				
29	11 K.V. DISC Insulator (B & S) Double Disc 70KN	No.	24 (OSM)				
30	LT Dead end clamp with I hook	No.	6				
31	Sundries for survey , PVC tape, Ampire tape,Danger Board, small size nut & Bolt, PG clamp, preparation of drawing allm. Cable socket etc.	LS	1				
2. Extension of 11KV 3Ph3W line using 55mm2 Insulator conductor=0.05KM.							
1	11 K.V.GI Pin	No.	3				
2	11 K.V. Pin Insulator	No.	3				
3	11 K.V. H.W. Fitting (B & S)	No.	6				
4	11 K.V. DISC Insulator (B & S) Double Disc 70KN	No.	12 (OSM)				
5	55mm2 Insulated conductor	K.M.	0.15				
6	H.T.stay set (Complete)	Set	1				
7	H.T. Stay Insulator	No.	1				
8	H.T. Stay clamp (1.9 K.g./ Pair)	Pair	1				
9	7/10 SWG Stay Wire	K.g.	10				
10	100 x 50 x 6 mm MS channel	K.g.	30				
11	GI Nut , Bolt & Washer of different sizes	K.g.	3				
3. Extension of 3Ph5W LT line over 9mtr/8mtr PSC pole using ABC (3X95+1X70+1X16)mm2 = 0.25KM **4. Extension of 3Ph5W LT line over 9mtr/8mtr PSC pole using ABC (3X50+1X35+1X16)mm2 = 1.5KM**							
1	8 Mtr. long 200 Kg. PSC Pole	No.	9				
2	9 Mtr. long 200 Kg. PSC Pole	No.	14				
3	LT Stay set Complete	Set	10				
4	7/12 SWG Stay Wire	K.g.	100				

5	LT Stay clamp (1.4 K.g./ Pair)	pair	10				
6	LT Stay Insulator	No.	10				
7	Eye hook for XLPE ABC	No.	25				
8	Suspension clamp with I-Hook	No.	25				
9	pole clamp Eye hook for XLPE ABC	Pair	25				
10	GI Nuts and Bolts	Kg	50				
11	AB Cable(3 x95 + 1x70 + 1x16mm²)	K.m.	0.25 (OSM)				
12	AB Cable(3 x50 + 1x35 + 1x16mm²)	K.m.	1.5				
Part-B (Civil Item)							
1	Fixing of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire , stay insulator .	No.	1				
2	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm = 0.081 0.651Cum @ 3071.25= 1999.38each	No	4				
3	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6'' above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	Nos	4				
4	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2"x2") and RCC slab cover	No.	12				
6	Plinth for TFR 6ft hight (below GL2ft)x5ftx5ft	No	2				
7	Plinth for L.T. Distribution box 6ft hight (below GL2ft)x5ftx5ft	No	2				
8	Barbed Fencing (size 20'x10')with constn. of retaining wall ,erection of RCC fencing post, Sand filling and metal spreading, Fixing of Iron gril gate etc as per CESU specification	No	1				
Part-C (Labour) 5. Dismentaling of existing 3Ph5W LT line (Bare conductor) = 0.4KM (8span).							
Sl. No.	**Name of the Work**	**Unit**	**Quanti ty**				
1	Dismentaling of existing 3Ph5W LT line (Bare conductor)	Span	8				

(Units Rates quoted are inclusive of freight & insurance, all taxes & duties and other levies, if any)

N.B:

1. Marked as OSM (Owner Supply materials), unit supply rate not to quote. But unit erection rate to be quoted.
2. All GI Items should be Hot dipped galvanised with 610gm/m^2.
3. All Works / Supply items should be as per approved specification and drawings.
4. The erection work should be in complete shape. The complete means the respective works should be completed in all respect and can be put into commercial operation by providing all required materials if required for completion of the same in all respect.

Additional information: (to be filled up by the bidder and to be submitted along with the Part-II, i.e. Price bid)

Signature of the Tenderer
with Company Seal

Place:

Date:

Bidders will be permitted to only enter the item wise rates. No other modification shall be permitted. Bidders are required to sign and enclose the same in the Price Bid in one envelope for total package separately in Sealed Condition. One soft copy in CD shall also be submitted in the Price Bid.

Note:

i. Unit rate is inclusive of all taxes and duties.
ii. Any discrepancy in unit rate and amount, unit rate stands.
iii. Any column left blank shall be treated as nil/ inclusive of.
iv. In the event of multiple supply and erection prices quoted for the same item the lowest quoted supply and erection rate for the item shall be considered for evaluation.
v. The bidder has to quote the unit price of materials as well as the unit price for erection of the same materials .There should not be any discount percentage mentioned in the bid proposal by the bidder .

   If any bidder mentioned the discount percentage in total the discount percentage shall not be taken to the consideration while evaluating the price bid .
vi. Any other miscellaneous materials required as per site condition to execute the work in complete manner which is not included in the above price schedule, has to be taken into consideration during quoting the price for each scope. The quoted sub scope price is considered to be inclusive of these extra required items.
vii. If the quoted/evaluated rate of the bidder is less than 14.99% (without round off) of the tender estimated cost, then such a bid shall be rejected and tender shall be finalized basing on merits of rest bids i.e. for Rs. 100 estimated cost lowest accepted quoted/evaluated price is Rs. 85.01.
viii. Regarding less quoting of price bid w.r.t tender estimated cost as per amendment of OPWD code:

Additional Performance Security shall be obtained from the successful bidder who has quoted less bid price/ rate than the estimated cost put to the tender. In such an event only the successful bidder who has quoted less bid price shall have to furnish the exact amount of differential cost i.e. estimated cost put to tender minus the quoted amount as **Additional Performance Security in shape of Demand draft / Term Deposit Receipt pledged in favour of CESU with validity same as the validity of CPBG for this tender within 7 (Seven) days from issuance of letter on L1 bidder before**

placement of work order, otherwise the bid shall be cancelled and security deposit (EMD) shall be forfeited and other consequential action may be taken against the bidder.

This security amount shall be released only after expire of validity of CPBG as mentioned in Clause 29.04 of GCC. The aforesaid amount shall not carry any interest payable to the bidder.

viii) Transportation cost of OSM materials from any CESU central store to work site is to be borne by the contractor. Rate should be quoted accordingly including transportation. Transportation means transportation of OSM materials from CESU central store to divisional store to work site. The central store means central sore of CESU situated at Unit-8, Bhubaneswar and Choudwar, Cuttack.

(This form should be duly filled up by the tenderer & submitted in duplicate in separate envelopes super-scribing "PART -II PRICE BID" signed and sealed in each page.)

Figures: (Rupees…… only)

(Units Rates quoted are inclusive of freight & insurance, all taxes & duties and other levies, if any)

N.B:

5. Marked as OSM (Owner Supply materials), unit supply rate not to quote. But unit erection rate to be quoted.
6. All GI Items should be Hot dipped galvanised with 610gm/m^2.
7. All Works / Supply items should be as per approved specification and drawings.
8. The erection work should be in complete shape. The complete means the respective works should be completed in all respect and can be put into commercial operation by providing all required materials if required for completion of the same in all respect.

Additional information: (to be filled up by the bidder and to be submitted along with the Part-II, i.e. Price bid)

Signature of the Tenderer
with Company Seal

Place:

Date:

Bidders will be permitted to only enter the item wise rates. No other modification shall be permitted. Bidders are required to sign and enclose the same in the Price Bid in one envelope for total package separately in Sealed Condition. One soft copy in CD shall also be submitted in the Price Bid.

Note:

i. Unit rate is inclusive of all taxes and duties.
ii. Any discrepancy in unit rate and amount, unit rate stands.
ii. Any column left blank shall be treated as nil/ inclusive of.
ix. In the event of multiple supply and erection prices quoted for the same item the lowest quoted supply and erection rate for the item shall be considered for evaluation.
x. The bidder has to quote the unit price of materials as well as the unit price for erection of the same materials .There should not be any discount percentage mentioned in the bid proposal by the bidder .

If any bidder mentioned the discount percentage in total the discount percentage shall not be taken to the consideration while evaluating the price bid .

xi. Any other miscellaneous materials required as per site condition to execute the work in complete manner which is not included in the above price schedule, has to be taken into consideration during

quoting the price for each scope. The quoted sub scope price is considered to be inclusive of these extra required items.

xii. If the quoted/evaluated rate of the bidder is less than 14.99% (without round off) of the tender estimated cost, then such a bid shall be rejected and tender shall be finalized basing on merits of rest bids i.e. for Rs. 100 estimated cost lowest accepted quoted/evaluated price is Rs. 85.01.

xiii. Regarding less quoting of price bid w.r.t tender estimated cost as per amendment of OPWD code:

Additional Performance Security shall be obtained from the successful bidder who has quoted less bid price/ rate than the estimated cost put to the tender. In such an event only the successful bidder who has quoted less bid price shall have to furnish the exact amount of differential cost i.e. estimated cost put to tender minus the quoted amount as **Additional Performance Security in shape of Demand draft / Term Deposit Receipt pledged in favour of CESU with validity same as the validity of CPBG for this tender within 7 (Seven) days from issuance of letter on L1 bidder before placement of work order, otherwise the bid shall be cancelled and security deposit (EMD) shall be forfeited and other consequential action may be taken against the bidder.**

This security amount shall be released only after expire of validity of CPBG as mentioned in Clause 29.04 of GCC. The aforesaid amount shall not carry any interest payable to the bidder.

viii) Transportation cost of OSM materials from any CESU central store to work site is to be borne by the contractor. Rate should be quoted accordingly including transportation. Transportation means transportation of OSM materials from CESU central store to divisional store to work site. The central store means central sore of CESU situated at Unit-8, Bhubaneswar and Choudwar, Cuttack.

(This form should be duly filled up by the tenderer & submitted in duplicate in separate envelopes super-scribing "PART -II PRICE BID" signed and sealed in each page.