



**ADMINISTRATOR
WESCO UTILITY**

**TENDER NOTICE NO.
WESCO/WORKS/16-17/04**

Dt.19.08.2016

FOR

Semi Turnkey Contract (Supply & Erection)

- **DATE OF OPENING OF TENDER: Dt.09.09.2016
(Techno Commercial Bid)**
- **TIME OF OPENING OF TENDER: 4 : 0 0 P M .**
- **PLACE: Headquarters Office, West Block, Burla,**

WESCO Utility

Head Quarter:

AT/Po- Burla, Dist:- Sambalpur- 768017

Ph. No. 0663-2430417, Fax: 0663-2432115

TENDER NOTICE NO: -WESCO/ WORKS/16-17/04 Date:19.08.2016

For and on behalf of Administrator WESCO Utility (herein after WESCO), the undersigned invites sealed bids in duplicate on two part bidding system from qualified and eligible bidders, who comply with the terms and conditions for **Construction of 33KV Line from (i) 132/33KV GSS Padampur to existing 33KV Paikmal Feeder at Barikel for connecting 33/11KV PSS Paikmal to Padampur GSS and (ii) 132/33KV GSS Padampur to existing 33KV line near Gaisilet College for connecting 33/11KV PSS Gaisilet & Malchamunda to Padampur GSS, under Bargarh West Electrical Division.**

Name of Package	Estimated Cost (in Rs)	Earnest Money Deposit (in Rs)	Last date/time for submission of bids	Date and time of opening of bid	Non refundable Cost of Bid document
Gaisilet	8923743.00	89237.00	09.09.2016 up to 1.00 PM	09.09.2016 at 4.00 PM	Rs. 10,000.00+5 % VAT = Rs.10,500/-
Paikmal	2825172.00	28252.00			

The intending bidders can also download the tender document from our website www.wescodisha.com. However the bidder has to furnish a Demand Draft drawn on any Scheduled Bank in favour of "Administrator WESCO Utility" payable at Burla/Sambalpur for the cost of the Tender Paper & EMD indicated above, along with their bid, failing which the bid will be rejected outright. In the event of any specified date for the sale, submission or opening of bids being declared as holiday for WESCO, the bids will be sold / received / opened up at the appointed time on the next working day. WESCO also reserves the right to accept or reject any or all tenders without assigning any reason thereof, if the situation so warrants.

For detail Tender Specification & Terms and Conditions, please visit our website www.wescodisha.com

**-Sd-
General Manager (Works)
WESCO, Burla**

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SECTION – I

INVITATION FOR BIDS (IFB)

TENDER NOTICE NO -
WESCO/WORKS/16-17/04
Dt.19.08.2016

1.0 WESCO invites sealed tenders in duplicate on two part bidding system from reputed licensed Firms/ individuals having valid HT Electrical License for carrying out **Construction of 33KV Line from (i) 132/33KV GSS Padampur to existing 33KV Paikmal Feeder at Barikel for connecting 33/11KV PSS Paikmal to Padampur GSS and (ii) 132/33KV GSS Padampur to existing 33KV line near Gaisilet College for connecting 33/11KV PSS Gaisilet & Malchamunda to Padampur GSS, under Bargarh West Electrical Division.** on ‘Semi Turnkey’ basis in the jurisdiction of their respective licensed area. The bidder must fulfill all the qualification requirements as specified below. The sealed envelopes shall be duly super scribed as **“TENDER NOTICE NO: -WESCO/ WORKS/16-17/04 Date:19.08.2016 ”**

Due date of opening :- Dt. 09.09.2016 at 4.00P.M.

Name of Packages	Estimated Cost	Earnest Money Deposit	Last date/time for submission of bids	Date and time of opening of Techno-Commercial bid	Non refundable Cost of Bid document
1	2	3	4	5	6
As per tender Notice above	As per tender Notice above	As per tender Notice above	09.09.2016 up to 1.00 PM	09.09.2016 at 4.00 PM	Rs. 10,000.00+ 5% VAT = Rs.10,500/-

2.0 Bidder may quote for any one package or for multiple packages; however, bidder must quote for the entire quantum of works specified under each such package(s).

The HT Electrical Contractor should be having the average Annual turnover (the average of Best three financial years out of the last five financial years ending 31st March of previous year) **not less than 50% of the estimated value** of all the package(s) quoted by the bidder(s), in Electrification works. In case the Bidder is in existence for less than three financial years, the average annual turnover shall be sum of turnover in the completed no. of financial years divided by three for the purpose of meeting the above criteria. Turnover of the entity only (excluding it’s sister concerns) shall be considered for arriving at Annual Turnover.

In addition to above criteria the bidder should have experience as mentioned in the table below.

PACKAGE WISE MINIMUM QUALIFYING REQUIREMENTS

Package	Construction of New 33 Kv Line or higher Voltage in Km
Gaisilet	16 Kms.
Paikmal	5 Kms.

“The bidder must have executed the quantum of work as mentioned in the Table above during the last three financial years preceding to the year of tender notification and should have successful operation of minimum period of one year. Bidder must enclose copies of the relevant work orders along with client certified copies of Final Invoices and/or Performance Certificates dully signed by

If the bidder(s) participate in multiple packages, the qualifying requirement for work experience shall be considered /evaluated independently/separately for each package. **However, the qualifying requirement for Turn Over shall be added together to qualify the Turnover requirement for each package(s).**

The bidder should submit the proof of the experience certificate conforming to above criteria.

Note: - The bidder has to furnish the certificate from the Chartered Accountant certifying the turnover of the entity only (excluding it's sister entity) based on the audited account of the last five financial years.

03. Work Completion Period: - 90 Days for Paikmal Package and 180 days for Gaisilet Package
04. Bid documents can be downloaded from the website namely: - www.wescoodisha.com.

05. The bid documents in duplicate filled in all respects should be accompanied with the following documents in a sealed cover envelopes clearly “Super scribing, Tender Call Notice No., Name of the package/packages, Dt of opening”.
- (i) The cost of Tender Paper as indicated above should be deposited in shape of Bank Draft. drawn on any scheduled Bank in favour of **Administrator WESCO Utility** payable at Burla/Sambalpur.
 - (ii) The E.M.D. as mentioned above should be deposited in shape of Bank Draft drawn on any scheduled Bank in favour of **Administrator WESCO Utility**, payable at Burla / Sambalpur. The E.M.D. of unsuccessful tenderers will be refunded soon after finalization of the tender.
 - (iii) Photocopy of valid HT Electrical License confirming to scope of work mentioned in the Technical Bid.
 - (iv) Copy of PAN Card.
 - (v) Copy of acknowledgement of Income Tax Return for Last five financial years.
 - (vi) Copy of Audited Financial statements of any 03years out of last five financial years excluding the financial year in which the tender is floated.
 - (vii) TIN Registration Certificate and Up-to-date VAT Clearance Certificate.
 - (viii) Photocopy of EPF and Labour License. The successful bidder shall submit Labour License of the concerned district within 15days, issue of LOI.
 - (ix) Photocopy of Experience Certificate, if any relating to this type of work.
 - (x) Photocopy of Service Tax Registration Certificate.
 - (xi) The bidders registered in other States, are to produce “Non-assessment Certificate” from the Sale Tax Commissioner Orissa.
06. The bidder shall submit Turnover certificate from a certified Chartered Accountant for the last five financial years. The bidder should submit the proof of the experience certificate conforming to the criteria mentioned under clause no.2.
07. Bid documents will be received at WESCO Utility. Works & Planning Department, Head Quarter Office, Burla, Dist-Sambalpur , on or before **Dt.09.09.2016 up to 1:00 P.M.**
08. The “**Technical and commercial bid**” will be opened on **Dt.09.09.2016 at 4:00 P.M.** in the presence of the bidders/ or his authorised representatives.
09. The Date & time for opening of “**Price Bid**” will be intimated latter on. The price bid of bidders who are successfully qualified on “Techno-Commercial” evaluation shall only be opened. The price bid shall be opened in presence of the bidders/ or his authorized representatives.

10. Bidders are required to quote the rates in words and figures and put their signatures below every page and also sign every corrections made in the bid documents. No over-writing will be entertained.
11. The intending tenderers/ applicants may verify the scope of the work from the Works and Planning Department, WESCO, Burla in any working day between **10:00 AM to 05:00 PM**. The last date of receipt of tender/application by the Works and Planning Department, WESCO, Burla, is on **Dt.09.09.2016 up to 1:00 PM** and tender received beyond the stipulated period will not be taken into consideration.
12. In the event of any specified date for the sale, submission or opening of bids being declared as holiday. The bids will be sold/received/opened up at the appointed time on the next working day. The undersigned reserves every right to accept or reject any or all the tenders without assigning any reason thereof and the authority reserves the right to negotiate with the L1 bidder only.

-Sd-
General Manager (Works)

Section-II

GENERAL CONDITIONS OF CONTRACT (GCC)

TENDER NOTICE NO.

WESCO/ WORKS/16-17/04

Dt.19.08.2016

1.0 GENERAL: -

Administrator WESCO Utility hereinafter referred to as the “Owner” is desirous for construction of **33KV Over Head line** with bare conductor on ‘Semi turnkey’ basis except **Conductor, Channel, Angle, RS Joist Pole, V Cross arm, GI Wire, HT Stay Set, HT Stay Insulator, Eathing Pipe, AB Switch** which will be supplied by WESCO.

2.02 The detailed scope of the work shall include;

- i. Detailed survey of lines and preparation of SLD & BOQ.
- ii. Complete manufacture, including shop testing & supply of materials from the approved vendors (materials which are to be supplied by the bidder) on prior approval of the owner.
- iii. Providing Engineering drawing, data, operational manual, etc wherever applicable for the Owner’s approval;
- iv. Packing and transportation from the manufacturer’s works to the site.
- v. Receipt, storage, preservation and conservation of equipment at the site.
- vi. Pre-assembly, if any, erection testing and commissioning of all the equipment;
- vii. Reliability tests and performance and guarantee tests on completion of commissioning;
- viii. Loading, unloading and transportation as required.
- ix. Erection of equipment in including civil works.
- x. Erection of lines of specified voltage.
- xi. Testing, Commissioning of substations and lines / installations
- xii. Getting the substations & lines inspected by Electrical Inspector after completion of work.
- xiii. Transportation and transit insurance of all free issue materials to be supplied from Owner’s nearest stores to site and as well as all other required materials (under the scope of supply by bidder) from supplier’s premises to work site, construction of new electrical / civil structures, etc.
- xiv. Dismantling of existing electrical structures and return of these dismantled items at the Owner’s stores, safe custody of the items and return of unused Owner’s supplied materials to the Owner’s stores.

3.0 DEFINITION OF TERMS

- (i) The **‘Contract’** means the agreement entered into between the Owner 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) **‘Owner’** shall mean Administrator WESCO Utility and shall include its legal representatives, successors and assigns.
- (iii) **‘Contractor’** shall mean the Bidder whose bid will be accepted by the Owner 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 Owner 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 Owner 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 Owner or Contractor in the performance of the Contract.
- (viii) **‘Inspector’** shall mean the Purchaser or any person nominated by the Owner from time to time, to inspect the equipment; stores or Works under the Contract and/or the duly authorized representative of the Owner.
- (ix) **‘Notice of Award of Contract’/ ‘Letter of Award’** shall mean the official notice issued by the Owner 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 Owner’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 Owner to be available for continuous operation at different

loads up to and including rated capacity. Such declaration by the Owner, however, shall not relieve or prejudice the Contractor of any of his obligations under the Contract.

- (xiv) Words imparting **'Person'** shall include firms, body corporate including 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'**.
 - d) **"WESCO" wherever mentioned shall always mean "Administrator WESCO Utility"**.

4.0 SUBMISSION OF TENDER: -

- 4.01 Sealed tenders in Two parts each in duplicate, each complete in all respects in the manner hereinafter specified are to be submitted at Works Department, Head Quarter Office, WESCO, BURLA, SAMBALPUR-768017 on or before the date and time specified in the notice inviting the tenders. Each copy of the bids (original and duplicate) shall be submitted in separate double sealed envelopes superscripted on each of the covers the tender specification number and the due date of opening of the bids on the right hand top side of the envelop. On the left top side original/ duplicate as is relevant shall be written.
- 4.02 The tenders are required to be submitted in Two Parts each in separate double sealed covers.
 - Part - I: Superscribed as **"Technical and commercial bid"** shall contain Cost of Bid Documents, Techno commercial documents and package wise EMD.
 - Part - II, Superscribed as **"Price Bid, Package Name- "**. The Part - II should contain **package wise Price bid** only.
- 4.03 Fax and Telegraphic tenders shall not be accepted.
- 4.04 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 Owner shall not be responsible for any delay in transit in post / courier etc. in this regard.

5.0 VALIDITY:-

The offer shall be valid for a period not less than **180 days** from the date of bid opening.

6.0 PRICE: -

Bidders are required to quote firm price as per the prescribed format. The quoted price shall be firm and inclusive of all taxes, duties, freight & insurance and other levies, if any. Owner shall not be liable to pay anything extra over and above the quoted price.

7.0 RECEIPT AND OPENING OF THE BID: -

- 7.01 Bids in duplicate as described under clause 4.0 shall be received in the office of the Owner and shall be opened on the scheduled date and time. The Owner'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 to Bid or in case any extension has been given thereto, on the extended bid opening date and time notified.
- 7.02 Only 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.
- 7.03 The Bidders' names, bid prices, modifications, bid withdrawals and the presence or absence of the requisite bid guarantee and such other details as the Owner, at its discretion, may consider appropriate will be announced at the opening. No electronic recording devices will be permitted during bid opening.
- 7.04 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 Owner's processing of Bids or award decisions may result in the rejection of the Bidder's Bid.

8.0 EVALUATION OF BIDS & AWARD OF CONTRACT:

- 8.01 To assist in the examination, evaluation and comparison of Bids, the Owner 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.
- 8.02 Owner 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.
- 8.03 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.
- 8.04 Prior to the detailed evaluation, Owner 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.
- 8.05 The Owner'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
- 8.06 The Owner will award the Contract to the successful Bidder whose Bid has been determined to be the lowest - evaluated responsive Bid, when the lowest bidders is not ready and/or express their inability to undertake the entire work envisaged, then the Owner may explore the possibility of the execution of works through other bidders if they are willing to execute at L1 negotiated final rate. Such exploration shall be carried out in a sequential order starting with L2 bidder then with L3 bidder and so on.
- 8.07 In case of omission of any item in the price bid or the price for the item has not been quoted by the firm, then zero cost shall be loaded to the bid and the contract shall be awarded with zero cost that means the firm will have to bear the cost of that item entirely as the item price shall be considered as inclusive anywhere in other items. The bidder shall have to give an undertaking to the

effect that prices for any item not quoted shall be treated as free supply or to be done free of cost.

- 8.08 In case of different price quoted for the supply of same material for different works, the lowest price quoted shall be considered for supply of the material for all the works of the project. Similarly in case of RS joist poles the lowest rate per Kg. quoted will be considered for all the RS Joist Poles (i.e. per Kg. cost of 9mtr, 10mtr, 11mtr. Etc Joist Poles shall be same.)

9.0 EARNEST MONEY DEPOSIT (EMD):-

- 9.01 The Tender must be accompanied by Earnest Money Deposit as described in the Tender Notice in shape of Bank Guarantee issued by a Scheduled Bank (valid for 180 days beyond the validity of bid) only and en-cashable at Burla/Sambalpur or in shape of Demand Draft drawn on any scheduled bank in favour of “Administrator WESCO Utility.” payable at Burla/Sambalpur. Bids without EMD deposit will be rejected outrightly. The Bank Guarantee for EMD shall be strictly as per the format (Annexure – XIII(A)) prescribed by the Owner. In case of any deficiency such as the ownership of the security bond (other than the issuing bank), deviation from the approved format, absence of signature of witness etc. found in the EMD Bank Guarantee, the same shall be liable for rejection upfront. The bidder will not be given any chance to rectify the same.

NB: The validity of EMD BG shall be minimum for 30 days over and above the validity of the tender (180 days) i.e., 210 days from the date of opening of the tender.

- 9.02 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.

- 9.03 The Earnest Money so deposited shall be forfeited:

(a) if the Bidder:

- i) Withdraws its bid during the period of bid validity specified by the Bidder in the Bid Form; (b) in the case of a successful Bidder, if the Bidder fails: (i) to sign the Contract, or (ii) to furnish the required Contract Performance Bank Guarantee.

- 9.04 The EMD of unsuccessful bidders shall be returned within 30 days from the date of finalization of the order.

10.0 OWNER’S RIGHT TO VARY QUANTITIES AT TIME OF AWARD:

While placing orders and / or during execution of contract, Owner reserve the right to increase or decrease the quantity of goods and services specified in the Schedule of Requirement up to **20%** of the tender quantity without any change in price or other terms and conditions.

11.0 INSPECTION AND TESTING:-

11.1 All the materials shall be inspected by the Owner or any authorized representative of the Owner as per relevant ISS at the Contractor's or its Sub-Vendors manufacturing works. They shall give the advance notice in writing about the place of Inspection and or testing at least 15 days before the schedule date on which the materials will be ready for Inspection & Testing

If turnkey supply materials procured from the far off places located out of Odisha, WESCO may offer the same to third party agency (RITES Ltd.) for pre-dispatch inspection.

11.2 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 inspection & testing. The inspecting officer's coordinating office for the entire work shall be the Owner's authorized representative.

12.0 COMPLETION AND COMPLETENESS OF THE EQUIPMENT:-

12.01 Time being the essence of the contract; the work shall be completed as per tender schedule.

12.02 The work shall be treated as complete item wise when each 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 specifically been included in the contract.

12.03 All similar components and/or parts of similar equipment supplied shall be interchangeable with one another. All equipment supplied under this contract shall be subject to Owner's approval.

12.04 Owner however reserves the right to re-schedule the completion period, if required.

13.0 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, Owner 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 Owner. If the contractor 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.

15.0 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" 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, notwithstanding any deviations mentioned elsewhere in the Bid. However the acceptance of deviation is not binding on the Owner.

In case of inconsistency between technical specification (TS) & bid proposal sheet, (BPS) quantities of various items as specified in the bid proposal

sheet shall be considered for quoting. However the work shall be executed as specified in the technical specification. Only brief description is given in the BPS & the work shall be executed in line with the requirement given in the TS.

16.0 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.

17.0 PATENT RIGHT: -

The contractor shall indemnify the Owner 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.

18.0 GUARANTEE PERIOD: -

18.01 The materials to be supplied by the contractor if any shall be expressly 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 for commercial operation at required voltage level.

18.02 The above guarantee certificate shall be furnished in triplicate to the Owner by the contractor for their approval. Any defects noticed during the above period shall 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 Owner. The Contractor as notified by the Owner shall rectify any such defects within one month failing which the Owner will set right the defects through other agency and recover the cost so incurred either from any pending Invoices or Bank Guarantee.

19.0 PENALTY FOR DELAY IN COMPLETION OF CONTRACT: -

19.01 If the contractor fails to complete the works by the scheduled period or any extension granted thereby, the contractor shall be liable for payment 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 and subject to force majeure conditions. After receipt of LOA, the Contractor shall sign a contract agreement with the Owner within 15 days along with the detail work plan through PERT chart/BAR chart. The penalty for liquidated damage as mentioned above will be levied if any deviation to be schedule on any item of work due to the fault of the contractor is observed.

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

19.03 Extension of delivery period could be with / without levy of penalty with the discretion of the Owner.

20.0 RIGHT OF WAY:

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

21.0 CONTRACTOR'S DEFAULT:

21.01 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 Owner 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 Owner 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 Owner 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 Owner 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 wear and tear thereof and to the exclusion of any right of the Contractor over the same, and the Owner 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.

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

21.03 Such action by the Owner 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.

22.0 TERMINATION OF CONTRACT ON OWNER'S INITIATIVE:

22.01 Owner 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 Owner shall in such an event give fifteen (15) days notice in writing to the Contractor of his decision to do so.

22.02 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 Owner, stop all further sub-contracting or purchasing activity related to the work terminated, and assist Owner 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 to be determined by the arbitrator without stopping the work but to carry out the left over work to other agency.

22.03 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 Owner 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 Owner shall be entitled to cancel the Contract as to its uncompleted 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 Owner 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 Owner 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.

23.0 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 Owner in writing of the cause of delay. The Owner shall verify the facts and grant extension as facts justify.

24.0 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 within 3 days to the Owner in writing of his claim for an extension of time. The Owner 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.

25.0 SAFETY PRECAUTIONS:-

The agency shall observe all applicable regulations regarding safety at the Site. Any compensation due on account of accident at site shall be to the contractor's account.

26.0 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 Owner for any damage or loss of materials during storing, transit transportation and at the time of erection.

27.0 INSURANCE: -

Contractor shall arrange adequate Transit-cum-storage-cum-erection policy and shall submit the copy of the same to the Owner. 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 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.

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 to public at large not connected with the works process. Any claim(s) pertaining to this shall be the responsibility of the Contractor. 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 Owner's stores.

28.0 ENGINEER IN CHARGE:-

Authorized engineer of the Owner in writing shall be the Engineer in charge for the Project.

29.0 CONTRACT PERFORMANCE BANK GUARANTEE:-

29.01 Within 15 days of issue of the Work Order or Letter of Award, whichever is earlier, the Contractor shall submit Contract Performance Bank Guarantee issued by a scheduled Bank, in favour of the Owner, covering 10% of the total value of the work order,

29.02 The said Bank Guarantee shall be prepared in the prescribed proforma. 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 Burla/Sambalpur branch of the issuing Bank.**

29.03 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 and acceptance thereof, failing which the work orders (W.O) will be liable for cancellation without any further notice with forfeiture of E.M.D.

29.04 No interest shall be allowed by the Owner on the above Performance Security Deposit.

30.0 TERMS OF PAYMENT:

- 30.01 An advance of 10% (ten percent) of total lump sum contract price shall be paid as Mobilization Advance, subject to the following.
- (a) Submission of Invoice for payment of advance.
 - (b) Receipt and acceptance of unconditional irrevocable Contract ` Performance Bank Guarantee in favour of Owner as mentioned in clause 29.01.
 - (c) Receipt and acceptance of unconditional and irrevocable Advance Payment Bank Guarantee in favour of Owner for an amount equivalent to the amount of advance as per the prescribed format. The Bank Guarantee so provided should be en-cashable on the Burla/Sambalpur branch of the issuing Bank.
 - (d) Establishment of contract site office and certification by the engineer that satisfactory mobilization for erection exists.
 - (e) All advance payment shall be interest bearing and recovery of advance along with the interest component on the advance amount shall be as under:
 - i) All advance payment made shall be recovered proportionately from each running bill of the contractor.
 - ii) The amount of interest to be recovered from a particular bill shall be calculated @ 10% per annum on the value of advance corresponding to the percentage of total progressive payment being released. The period for which the interest is to be calculated shall be reckoned from the date of release of the advance payment to the actual date of release of the said progressive payment or the expiry of the stipulated time frame for release of such progressive payment. If any amount payable under any interim bill is not sufficient to cover all deductions to be made for interest on the advance payment and other sums deductible there from, the balance outstanding shall be recovered from the next payments immediately falling due.
- 30.02 80% (Eighty percent) of contract price on pro-rata basis along with taxes and duties shall be paid progressively (after necessary advance adjustment with interest as applicable) for each completed items of work certified by the Jr. Manager, Asst. Manager/SDO/EE concerned against each calendar month by first week of the succeeding months along with utilization certificate. No payment shall be released if the accounts for utilization of materials **unless** follow with proper certification by the concerned Jr. Manager, Asst. Manager/SDO/EE within 30 days of submission of claim subject to certification by Owner's Engineer-in-charge on the basis of check points involved in such items of work.

N.B. Each Package shall be divided into 5 equal parts and after approval of the same by the competent authority, one bill can be claimed after completion of each part/ item of the work, and maximum 5 nos. RA bills will be allowed under each package.

30.03 Balance 20% (twenty percent) of contract price shall be paid after completion of all works, envisaged under this package including any additions and alterations, testing & commissioning, return of dismantled materials/ un-used free supply material, taking over certificate and entire stretch is fully ready for commercial operation. The payments shall be subjected to clearance from electrical inspectorate.

30.04 The final payment will be made as per actual quantity of materials work done.

31.0 PAYING OFFICER

D.D.O, WESCO Utility, Head Quarter, Burla.

32.0 OWNER'S RIGHTS: -

The Owner 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 Owner shall bear no liability.

33.0 DISTINCT MARK ON EQUIPMENT AND MATERIALS:

All the accessories shall have distinct mark of 'WESCO' either by way of punching on metal part(s) and/or in built during casting and painting on insulation cover of Cable as per common practice. This should be clearly visible in day light in naked eye.

34.0 DISPUTE RESOLUTION AND JURISDICTION: -

(a) All disputes shall be subjected to exclusive jurisdiction of the Courts at Sambalpur and the writ jurisdiction of Hon'ble High Court of Orissa at Cuttack.

35.0 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 Owner.

36.0 FREE ISSUE OF MATERIALS

36.01 Owner shall issue Conductor, Channel, Angle, RS Joist Pole, V Cross arm, GI Wire, HT Stay Set, HT Stay Insulator, Eathing Pipe, AB Switch for said work and all other materials shall be supplied by the Bidder.

36.02 Before issue of the free issue materials the Contractor at its own cost shall arrange suitable stores adjacent to the works site and shall offer the same for inspection to the Owner's Engineer.

36.03 The bidder shall furnish Indemnity bond for an amount equivalent to the estimated value of the free supply materials / dismantled materials returnable as certified by Engineer in charge. The Contractor shall submit Indemnity Bond in the prescribed format.

36.04 Subject to compliance of above clauses, the Contractor shall be permitted to draw the materials from the designated stores of the Owner. The Contractor shall duly acknowledge the materials along with copies of the notification to the Insurer regarding such transit of material from designated stores of the Owner to the stores of the Contractor.

36.05 After completion of the works all surplus materials shall be returned to the Owner's stores. For any shortage with regard to materials supplied by the Owner, the Owner shall be entitled to recover 125% of the purchase cost of such materials or present market cost, whichever is higher, from the dues of the Contractor.

37.0 SUBMITTALS REQUIRED AFTER AWARD OF CONTRACT

37.01 Within 30 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.

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

38.0 DRAWINGS

Within 15 days of contract commencement the contractor shall submit, for approval by the Engineer in Charge, a schedule of the drawings to be produced. The schedule shall also provide a program of drawing submission, for approval by the Engineer in Charge. All drawings and design should be submitted to Engineer-In-Charge within the period specified above.

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

- 39.01 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.
- 39.02 Three copies of all drawings, GTP, QAP shall be submitted for approval and three copies for any subsequent revision.
- 39.03 If the drawings are as per the technical specifications, the competent authority of the Purchaser will return the drawings & documents to the contractor marked with “Approved” stamp.

40.0 TAKING OVER

- 40.1 Upon successful completion of all the tests to be performed at site on equipment / materials supplied, erected and commissioned by the contractor, the supply engineer shall issue to the contractor a taking over certificate as a proof of the final acceptance of the equipment / materials on a written request within 10 days of commercial operation. 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. A conditional Taking over Certificate can be issued if any minor omission or defects pointed by the Engineer- in-Charge/Supervising Officer/Electrical Inspector. The Contractor should rectify those defects within a month of conditional T.O.C failing which Owner will rectify those by replacing those materials or engaging other agencies. The amount so involved will be fully recovered from the Contractor’s bill. 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.
- 40.2 For the satisfaction of Owner about quality, the Owner 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 Owner. The contractor is expected to agree and extend necessary help during such test if necessary.
41. The Contractor, its successor and assignee shall indemnify the Owner, its successor and assignee from all current & future liabilities that may arise out of Turn Key Contract(s) entered into between the Owner & the Contractor under this Project.

SECTION - III

ANNEXURE

BID PROPOSAL LETTER**Electrical Installation of Works under WESCO**

Bidder's Name and Address:

(in case of JV/Consortium, Name of JV/Consortium) Bid
Proposal Reference:

Person to be contacted:

Designation:

Telephone No. :

E-mail:

Fax No. :

To,**WORKS DEPARTMENT****WESCO HEAD QUARTER OFFICE,****AT/PO-BURLA, DIST-SAMBALPUR-768017.**

Dear Sir,

We the undersigned bidder have read and examined the detailed specification and bidding documents for execution of **various** electrical installations works and do herewith submit our

bid for the following **packages**:

Sl. No.	Name of the Owner	Name of the Package	Estimated Cost (Rs. in Cr.)

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 180 days 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 Sales tax on Works Contract, Turnover Tax or any other similar taxes under the Sales Tax Act, as applicable, are included in our quoted bid price and there shall not be any liability on this account to the Owner. We understand that Owner 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 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 Bank Draft / Bank Guarantee No. _____ dtd. _____ amounting to Rs.----- (Rupees _____ only) issued by Bank -----branch, payable on Burla/ Sambalpur towards Bid Security against our above Bid. The Bid Security amount has been computed by adding the Estimated Cost of the work.

4.0 EQUIPMENT PERFORMANCE GURANTEEE

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, 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 2.0 '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 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 clauses
- c) Technical Deviation Schedule

8.02 We confirm that specified stipulation of following critical clauses is 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 15 (fifteen) days from the date of ‘Notice of Award of Contract’ and enter into a formal agreement with you immediately thereafter.

Dated thisday of20.....

Thanking you,
Yours faithfully,

(Signature of the Authorized Signatory)
Name
Designation
Seal of the company.....

Date :

Place :

(Written power of Attorney of all signatories of the bid to commit the Bid must be enclosed with the Bid. In case of joint venture, the written Power of Attorney of all signatories from respective partners must be enclosed with the Bid. .

*** Applicable case of a Bid from Joint Venture of Firms. Further, the Bid must be signed by each partner of the Joint venture.

ANNEXURE – II

To,
WORKS DEPARTMENT
WESCO HEAD QUARTER OFFICE,
AT/PO-BURLA, DIST-SAMBALPUR-768017.

Sir,

Having examined the above specifications together with the Tender terms and conditions referred to therein

1 – I / We the undersigned do hereby offer to execute the contract covered there on in complete shape in all respects as per the rules entered in the attached contract schedule of prices in the tender.

2 – I / We do hereby under take to have executed the contract within the time specified in the tender.

3 – I / We do hereby guarantee the technical particulars given in the tender supported with necessary reports from concerned authorities.

4 – I / We do hereby certify to have purchased a copy of the tender specifications by remitting Cash / Demand draft & this has been duly acknowledged by you in your letter No.....Dt.....

5 – I / We do hereby agree to furnish the composite Bank Guarantee in the manner specified / acceptable by WESCO (as the case may be) & for the sum as applicable to me / us as per clause **No.29 of Section-II** of this specification within fifteen days of issue of Letter of Award / Work Order , in the event of Work order being decided in my / us favour , failing which I / We clearly understand that the said LOA / W.O. shall be liable to be withdrawn by the Owner.

Signed this.....Day of.....20...

Yours faithfully

(Signature of Bidder with Seal of Company)

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 Administrator WESCO Utility (WESCO) HAVING THEIR Head Quarter Office,
At/Po-Burla, Sambalpur-768017 registered under the Company Act 1956 (here in after

called “Owner”), has placed Work Order No. _____ Dt. ____ (hereinafter called

“Agreement”) with M/s _____ (hereinafter called
“the Contractor”) for supply and installation of _____ (description of the works)
and whereas Owner 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 Owner 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 Owner 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

Owner an amount not exceeding Rs. _____ (Rupees _____)

only against any loss or damage caused to or suffered by the Owner 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 Owner stating that the amount claimed is due by way of loss or damage caused to or suffered by Owner 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 Owner any money so demanded notwithstanding 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 Owner 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 Burla/Sambalpur branch at _____ (Name, address of the Burla/Sambalpur 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 Owner 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 Owner or any indulgence by Owner 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 Owner in writing.

Dated _____ the _____ day of Two thousand _____.

Notwithstanding 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 Burla/Sambalpur (Name & Address of the Burla/Sambalpur 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 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:

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

(3) Amount of W.O:

(4) Name of Work:

(5) Name of the Bank:

(6) Amount of the Bank Guarantee:

(7) Name, Address and Code No. of the Burla/Sambalpur 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 issuing Branch & from main branch/specified branch at Burla/Sambalpur of issuing Bank.

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 Authorised Officer
of the Administrator,
WESCO Utility, Burla**

Dear Sir,

In consideration of Whereas Administrator WESCO Utility (WESCO) (hereinafter referred to as the 'Owner', which expression shall, unless repugnant to the context or meaning thereof include its successors, administrators and assigns) having awarded to M/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 Owner'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 Owner 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 Owner, immediately on demand any or, all monies payable by the Contractor to the extent of as aforesaid at any time up to @ without any demur, reservation, contest, recourse or protest and / or without any reference to the Contractor. Any

such demand made by the Owner 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 Owner discharges this guarantee.

The Owner 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 Owner 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 Owner and the Contractor or any other course or remedy or security available to the Owner. The Bank shall not be released of its obligations under these presents by an exercise by the Owner 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 Owner or any other indulgence shown by the Owner or by another matter or thing, whatsoever, which under law would, but for this provision have the effect of relieving the Bank.

Bank also agrees that the Owner 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 Owner may have in relation to the Contractor's liabilities.

Notwithstanding anything contained hereinabove our liability under this guarantee is limited to and it shall remain in force up to 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 Owner.

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

Dated _____ the ____ day of Two thousand

Notwithstanding anything contained herein above.

(Signature of the Bidder)

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

The Bank Guarantee shall be valid up to _____ only.

Our branch at Burla/Sambalpur (Name & Address of the Burla/Sambalpur 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 Burla/Sambalpur branch a written claim or demand and received by us at our Burla/Sambalpur 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 of20..... 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,

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

To,

WORKS DEPARTMENT

WESCO HEAD QUARTER OFFICE,

AT/PO-BURLA, DIST-SAMBALPUR-768017.

Dear Sirs,

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					Documents provided in proof of having executed the works during the relevant FY.
			Sl. No.	FY	Name of Client	WO Ref	Qty Installed	

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)
		Last Three Year preceding to the year of tender	
Total Estimated Cost of the packages quoted for		Average Turnover	

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

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).

**LETTER OF COMPLIANCE OF QUALIFYING REQUIREMENT
(In case of Bidder being a Joint Venture / Consortium Firm)**

To,

WORKS DEPARTMENT

WESCO HEAD QUARTER OFFICE,

AT/PO-BURLA, DIST-SAMBALPUR-768017.

Dear Sirs,

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.

Name of the members of the JV / Consortium

1.

2.

3.

Table – A: Previous Works Experience: Name of the Member (any one member only)

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

Table – B: Average Annual Turnover: (All the members of JV/Consortium taken together)

Package Quoted for	Estimated Cost of the Package (Rs. in Lakh)	Annual Turnover (Rs. in Lakh)		Annual Turnover (Rs. in Lakh)		Total Annual Turnover (Rs. in Lakh)	
		Name of Member	1	Name of Member	2	Name of Member	2
		Financial Year	Turnover (Rs. in Lakh)	Financial Year	Turnover (Rs. in Lakh)	Financial Year	Turnover (Rs. in Lakh)
		FY 2010-11		FY 2010-11		FY 2010-11	
		FY 2011-12		FY 2011-12		FY 2011-12	
		FY 2012-13		FY 2012-13		FY 2012-13	
		Total		Total		Total	
Total Estimated Cost of the packages quoted for						Average Turnover	

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

2. In case of Joint Venture, separate sheet for each partner of Joint Venture should be used.

Date: (Signature)

Place: (Printed Name)
(Designation)
(Common Seal)

DETAILS OF COMMERCIAL DEVIATIONS

Bidder's Name & Address

To,

WORKS DEPARTMENT

WESCO HEAD QUARTER OFFICE,

AT/PO-BURLA, DIST-SAMBALPUR-768017.

Dear Sirs,

Sub: Commercial Deviation for Construction of Name of the project.

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

	Ref./Page	As specified in the	Commercial deviation and variation

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. This will be read out during opening of Part-I Bid.

DETAILS TECHNICAL DEVIATIONS

Bidder's Name & Address

To,**WORKS DEPARTMENT****WESCO HEAD QUARTER OFFICE,****AT/PO-BURLA, DIST-SAMBALPUR-768017.**

Dear Sirs,

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

		As specified in the Specification / Relevant	Technical deviation and variation to the

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.

ADDITIONAL INFORMATION

Bidder's Name & Address

To,

**WORKS DEPARTMENT,
WESCO HEAD QUARTER OFFICE,
AT/PO-BURLA, DIST-SAMBALPUR-768017.**

Dear Sirs,

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

Sl. No	Brief description of Information	Ref.& Page No.

Date: (Signature)

Place: (Printed Name)
(Designation)
(Common Seal)

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

BOUGHT OUT & SUB CONTRACTED ITEMS

Bidder's Name & Address

To,

WORKS DEPARTMENT

WESCO HEAD QUARTER OFFICE,

AT/PO-BURLA, DIST-SAMBALPUR-768017.

Dear Sirs,

We hereby furnish the details of the items/sub-assemblies amounting to more than 10% of our bid price, we propose to buy for the purpose of subject package

Sl. No	Item description	Qty. Proposed	Source of Supply
	Be bought/ Sub-contracted		
1.
2.
3.
4.
5.
6.
7.

Date: _____

(Signature)

Place:

(Printed Name)

(Designation)

(Common Seal)

WORK COMPLETION SCHEDULE

Bidder's Name & Address

To,

WORKS DEPARTMENT

WESCO HEAD QUARTER OFFICE,

AT/PO-BURLA, DIST-SAMBALPUR-768017.

Dear Sirs,

We hereby declare that the following Work Completion Schedule shall be followed by us for the purpose of subject package

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

Date: (Signature)

Place: (Printed Name)
(Designation)
(Common Seal)

CHECK LIST

Bidder's Name & Address

To,

**WORKS DEPARTMENT
WESCO HEAD QUARTER OFFICE,
AT/PO-BURLA, DIST-SAMBALPUR-768017.**

Dear Sirs,

Sl. No.	Item Description	Status of the Submission of data	Remarks
1	2	3	4
1.	Bid Guarantee	Yes /No	If yes please give details No, amount,
2.	Qualifying Data	Yes /No	
3.	Commercial Deviation	Yes /No	
4.	Technical Deviation	Yes /No	
5.	Cost of withdrawn of	Yes /No	
6.	Bid validity	Yes /No	If yes state here the period.
7.	Period of completion	Yes/No	If, yes please state here the period of
8.	Additional information		State here briefly

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

.....

Signature of Bidder

Date & Seal:

N.B:-

1. The bid guarantee one original and one copy shall be furnished in two separate sealed envelopes appropriately superscribed thereon.

2. All Schedules pertaining to prices (originals) shall be furnished in a sealed envelope duly superscribed 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 and another copy shall be submitted in two separate sealed envelope (these are to be opened during Part –I bid opening)

Date: (Signature)

Place: (Printed Name)
(Designation)
(Common Seal)

SELF DECLARATION FORM

Name of the Bidder: -----

Tender Notice No: -----

- Sir, 1. I / we, the undersigned do hereby declare that, I / we have never ever been blacklisted 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, my bid/contract shall be liable for truncation / cancellation / termination without any notice at the sole discretion of the owner, without prejudice to the right of WESCO for claiming compensation/ loss caused due to such hiding of facts.

Yours faithfully,

Place-
Date-

Signature of the bidder

With seal

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

ANNEXURE – XIII (A)

PROFORMA FOR BANK GUARANTEE FOR EARNEST MONEY DEPOSIT

(ON NON-JUDICIAL STAMP PAPER OF Rs.100/-)

Ref Date Bank Guarantee No:

In accordance with invitation to Tender Notice No.----- Dated ----- of Administrator WESCO Utility. [herein after referred to as the WESCO] for the execution of (name _____ of package)

M/s _____ Address

_____ wish/wished to participate in the said tender and as the Bank Guarantee for the sum of Rs. _____ [Rupees _____ Valid for a period of days (in words) is required to be submitted by the Bidder.

1. We the _____ [Indicate the Name of the Bank] [Hereinafter referred to as 'the Bank'] at the request of M/S _____ [Herein after referred to as supplier (s)] do hereby unequivocally and unconditionally guarantee and undertake to pay during the above said period, on written request by WESCO an amount not exceeding Rs. _____ to the WESCO, without any reservation. The guarantee would remain valid up to 4.00 PM of _____ [date] and if any further extension to this is required, the same will be extended on receiving instructions from M/s _____ on whose behalf this guarantee has been issued.

2. We the _____ [Indicate the name of the bank] do hereby further undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the WESCO stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the WESCO by reason of any breach by the said supplier [s] of any of the terms or conditions or failure to perform the said Bid. 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. _____ (in wards)

3. We, the _____ WESCO any money so demanded no Bank undertake to pay the WESCO any money so demanded notwithstanding any dispute or disputes so raised by the supplier [s] in any suit or proceeding instituted/pending before any Court or Tribunal relating thereto, our liability under this agreement being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the supplier(s) shall have no claim against us for making such payment. We, the _____ Bank [Indicate the name of the bank] or our local branch at Sambalpur further agree that the guarantee herein contain shall remain in full force and effect during the aforesaid period of --

----- days and it shall continue to be so enforceable till all the dues of the WESCO under by virtue of the said Bid have been fully paid and its claims satisfied or discharged or till WESCO certifies that the terms and conditions of the said Bid have been fully and properly carried out by the said Supplier [s] and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the _____ (date) we shall be discharged from all liability under this guarantee thereafter.

5. We, the _____ Bank [Indicate the name of the bank] or our local branch at Sambalpur further agree that the WESCO shall have the fullest liberty without our consent and without affecting in any manner our obligations here under to vary any of the terms and conditions of the said Bid or to extend time of performance by the said Supplier [s] from time to time or to postpone for any time or from time to time any of the powers exercisable by the WESCO against the said supplier [s] and to forbear or enforce any of the terms and conditions relating to the said bid and we shall not be relieved from our liability by reason of any such variation, postponement or extension being granted to the said Supplier [s] or for any forbearance act or omission on the part of the WESCO or any indulgence by the WESCO to the said Supplier[s] or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the name, style and constitution of the Bank or the supplier [s].

7. We, the _____ Bank or our local branch at Burla/Sambalpur lastly undertake not revoke this Guarantee during its currency except with the previous consent of the WESCO in writing.

8. We, the _____ Bank further agree that this guarantee shall also be invocable at our place of business at Burla/Sambalpur **[Indicate address & Branch code of local branch at Sambalpur/Burla]** in the State of Orissa.

Dated _____ Day of 2016.

Witness ((Signature, names & address)

For _____ [Indicate the name of Bank]

1.

Power of Attorney No. _____

2

Date: _____

SEAL OF BANK

Note: The non-judicial stamp paper of worth Rs.100/- shall be purchased in the name of the bank, which has issued the bank guarantee.

ANNEXURE- XIII(B)

FORM OF EXTENSION OF BANK GUARANTEE

**(ON NON-JUDICIAL STAMP PAPER OF
Rs.100/-)**

Ref. No. _____

Dated: _____

Administrator WESCO Utility ,

Head Quarter Office: At/Po- Burla,

Sambalpur-768017.

Dear Sirs,

Sub: Extension of Bank Guarantee No. _____ for Rs. _____ favouring yourselves

expiring _____ on account of M/s. _____ in respect of contract

No. _____ dated _____ (hereinafter called original bank guarantee).

At the request of M/s. _____ we _____ bank Branch office at _____ having its head office at _____ do hereby extend our liability under the above mentioned guarantee No.

_____ Dated _____ for a further period of _____ Years/months from _____ to

expire on _____ except as provided above, all other terms and conditions of the original bank guarantee No. _____ dated _____ shall remain unaltered and binding.

Please treat this as an integral part of the original guarantee to which it would be attached.

Yours faithfully,

For _____
Manager/Agent/Accountant
t Power of Attorney No. _____

Date: _____

SEAL OF BANK

Note: The non-judicial stamp paper of worth Rs.100/- shall be purchased in the name of the bank, which has issued the bank guarantee.

PROFORMA OF INDEMNITY BOND TO BE EXECUTED BY THE CONTRACTOR FOR THE EQUIPMENT/MATERIAL HANDED OVER BY WESCO 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 of20..... 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 WESCO Utility, Headquarter At/Po-Burla, Dist-Sambalpur (here in after called “Owner”)”Which expression shall include its successors and assigns) :

WHEREAS Owner 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 Owner 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 Owner for the Equipment/Material handed over to it by Owner 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 Owner 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

dispatch title documents in respect of the said Equipment duly endorsed by Owner 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 in trust as a Trustee for and on behalf of Owner.

2. That the Contractor is obliged and shall remain absolutely responsible for the safe transit / protection and custody of the Equipment at Owner 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 Owner. The Contractor undertakes to keep Owner 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 WESCO (as the case may be) 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 Engineer in Charge / Engineer or other employees/agents authorized by him in this regard. Further, Owner 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, misutilised 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 Owner 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 Owner 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 Owner without demur, reservation or protest. This is without prejudice to any other right or remedy that

may be available to Owner 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 Owner, 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 authorized 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

- 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.

TECHNICAL SPECIFICATION

FOR

CONSTRUCTION OF

33 KV SC SUB-TRANSMISSION

LINES

TECHNICAL SPECIFICATION FOR CONSTRUCTION OF 33 KV LINES

1.0 NATURE OF WORK

The work covered by this Specification is for 33kV distribution lines as specified herein and in the attached Schedules. The overhead distribution lines will form part of the WESCO_s distribution System.

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 —

- a) Electrical energy is transmitted from 132/33 KV or from 220/33 KV grid S/S of OPTCL to WESCO_s Primary 33/11 KV sub-stations as three-phase supply at a frequency of 50 Hz, and transmitted there from by means of overhead lines.
- b) The system will be in continuous operation during the varying atmospheric and climatic conditions occurring at all seasons.

1.2 SCOPE-

(A) Construction of 33 KV New Lines under various packages i.e

- (i) 33KV Link line from **132/33KV GSS Padampur to existing 33KV Paikmal Feeder at Barikel for connecting 33/11KV PSS Paikmal to Padampur GSS - 10Kms** line under Paikmal Package and
- (ii) 33KV New Line from **132/33KV GSS Padampur to existing 33KV line near Gaisilet College for connecting 33/11KV PSS Gaisilet & Malchamunda to Padampur GSS -31.5Kms** line under Gaisilet Package.

Important: The eligible Contractor has to obtain project license from the competent authority in respect of the mentioned works prior to commencement of the works. All the expenses towards the project license and inspection thereof have to be borne by the contractor.

The department will provide different size Conductor, Channel, Angle, RS Joist Pole, V

Cross arm, GI Wire, HT Stay Set, HT Stay Insulator, Eathing Pipe, AB Switch etc. which will be received from WESCO”s store. All other items required for construction of New lines are to be supplied by contractor.

DISCLAIMER:

This Document includes statements, which reflect various assumptions, which may or may not be correct. Each Bidder/Bidding Consortium should conduct its own estimation and analysis and should check the accuracy, reliability and completeness of the information in this Document and obtain independent advice from appropriate sources in their own interest.

Neither Purchaser nor its employees will have any liability whatsoever to any Bidder or any other person under the law or contract, the principle of restitution or unjust enrichment or otherwise for any loss, expense or damage whatsoever which may arise from or be incurred or suffered in connection with anything contained in this Documents and mater deemed to form part of this documents, provision of services and any other information supplied by or on behalf of purchaser or its employees, or otherwise arising in any way from the selection process for the supply.

Though adequate care has been take while issuing the Bid document, the Bid document, the Bidder should satisfy itself that documents are complete in all respects. Intimation for any discrepancy shall be given to this office immediately.

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 33 KV, 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 and tower schedule 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 33KV & 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, WESCO, WESCO & WESCO 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 types of tower structures/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 tower structures/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.

Railway Crossings- The railway crossing overhead or underground shall be carried out in the manner as approved & prescribed by the railway authorities from time to time.

The crossing shall normally be at right angle to the railway track. In case crossing is required to be done through underground cable, cost of the cable including laying and other accessories shall be in the scope of the contractor. During detailed engineering, the contractor shall submit

his proposed arrangement for each railway crossing to the owner. The approval for crossing railway track shall be obtained by the owner from the Railway Authority.

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 & 33 KV trunks & main spur line. 11kV & 33 KV 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 33kv,11 kV DP structures , H pole

structures and towers 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 33 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.

c) The stay set to be installed complete in all respect and would broadly consist of following items:

7/8 SWG G.I. Stay wire for 33 kV lines and 7/12 SWG for LT line as per REC Specification No.46/1986 Stay Insulator type A for LT line and type C for 11 kV line as per

REC Specification No. 21/1981, Turn Buckle. Anchor rod and plate (Hot Dipped galvanized). Thimbles and Guy Grip Complete stay set shall be as per REC Construction Standards no. G-1. The stay clamp is envisaged as GS structure along with other clamps brackets etc.

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.

X. Stringing and Installation of Line with Bare Conductors.

General

The scope of erection work shall include the cost of all labour, tools and plants such as tension stringing equipment and all other incidental expenses in connection with erection and stringing work. The Bidders shall indicate in the offer the sets of stringing equipment he would deploy exclusively for work under each package.

The stringing equipments shall be of sufficient capacity to string AAA conductor ACSR conductor.

The Contractor shall be responsible for transportation to site of all the materials to be provided by the Contractor as well as proper storage, insurance etc. at his own cost, till such time the erected line is taken over by the owner.

Contractor shall set up required number of stores along the line and the exact location of such stores shall be discussed and agreed upon with the owner.

Insulator Fixing

Pin insulators shall be used on all poles while strain insulators shall be used on all angle & dead end poles. The special type Pin Insulators should be used for conductors more than 100 mm². Damaged insulators and fittings, if any, shall not be used. Prior to fixing, all insulators shall be cleaned in a manner that shall not spoil, injure or scratch the surface of the

insulator, but in no case shall any oil be used for this purpose. Torque wrench shall be used for fixing various line materials and components, such as suspension clamp for conductor, whenever recommended by the manufacturer of the same.

Running Out of the Conductors

The contractor shall be entirely responsible for any damage to the pole or conductors during stringing. The conductors shall be run out of the drums from the top in order to avoid damage to conductor

A suitable braking device shall be provided to avoid damaging, loose running out and kinking of the conductors. Care shall be taken to ensure that the conductor does not touch and rub against the ground or objects, which could scratch or damage the strands.

The sequence of running out shall be from the top to down i.e. the top conductor shall be run out first, followed in succession by the side conductors. Unbalanced loads on poles shall be avoided as far as possible.

Wherever applicable, inner phase off-line conductors shall be strung before the stringing of the outer phases is taken up.

When lines being erected run parallel to existing energized power lines, the Contractor shall take adequate safety precautions to protect personnel from the potentially dangerous voltage build up due to electromagnetic and electrostatic coupling in the pulling wire, conductors and earth wire during stringing operations.

The Contractor shall also take adequate safety precautions to protect personnel from potentially dangerous voltage build up due to distant electrical storms or any other reason.

Repairs to Conductors

The conductor shall be continuously observed for loose or broken strands or any other damage during the running out operations. Repair to conductors, if necessary, shall be carried out with repair sleeves and not more than one repair sleeve will be used in one span.

Repairing of the conductor surface shall be carried out free of cost only in case of minor damage, scuff marks, etc. The final conductor surface shall be clean, smooth and free from projections, sharp points, cuts, abrasions etc. After compression the sharp edges must be smoothed by filing.

The Contractor shall be entirely responsible for any damage to the poles, insulators etc during stringing.

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.

Jointing

When approaching the end of a drum length at least three coils shall be left in place when the stringing operations are stopped. These coils are to be removed carefully, and if another length is required to be run out, a joint shall be made as per the recommendations of the accessories manufacturer.

Conductor splices shall not crack or otherwise be susceptible to damage during stringing operation. The Contractor shall use only such equipment/methods during conductor stringing which ensures complete compliance in this regard.

All the joints on the conductor shall be of compression type, in accordance with the recommendations of the manufacturer, for which all necessary tools and equipment like compressors, dies etc., shall be arranged by the contractor. Each part of the joint shall be cleaned by wire brush till it is free of rust or dirt, etc. This shall be properly greased with anti-corrosive compound if recommended by the manufacturer, before the final compression is carried out with the compressors.

All the joints or splices shall be made at least 30 meters away from the pole. No joints or splices shall be made in spans crossing over main roads, railway line and Small River spans. Not more than one joint per conductor per span shall be allowed. The compression type fittings shall be

of the self centering type or care shall be taken to mark the conductors to indicate when the fitting is centered properly.

During compression or splicing operation, the conductor shall be handled in such a manner as to prevent lateral or vertical bearing against the dies. After compressing the joint, the Aluminium sleeve shall have all corners rounded; burrs and sharp edges removed and smoothed. To avoid any damage to the joint, the contractor shall use a suitable protector for mid span compression joints in case they are to be passed over pulley blocks/aerial rollers. The pulley groove size shall be such that the joint along with protection can be passed over it smoothly.

In case of ACSR conductors the filler compound should be used during compression. In case AAAC is used each press should overlap 25% of the previous press.

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.

Clipping In

Clipping of the conductors into position shall be done in accordance with the manufacturer's recommendations.

Jumpers at section and angle towers shall be formed to parabolic shape to ensure maximum clearance requirements. Pilot pin insulator shall be used, if found necessary, to restrict jumper swing & to ensure proper clearance to design values. Fasteners in all fittings and accessories shall be secured in position. The security clip shall be properly opened and sprung into position.

Fixing of Conductors and Earth wire Accessories

Conductor and earth wire accessories supplied by the Contractor shall be installed by the Contractor as per the design requirements and manufacturer's instructions. While installing the conductor and earth wire accessories, proper care shall be taken to ensure that the surfaces are clean and smooth and that no damage occurs to any part of the accessories or of the conductors.

Replacement:

If any replacements are to be effected after stringing and tensioning or during maintenance e.g. replacement of cross arms, the conductor shall be suitably tied to the pole at tension points or transferred to suitable roller pulleys at suspension points.

HT/LT/Road Crossing Guarding

The contractor shall provide & install protective guarding as per REC construction standard for both 33 and 11 kV line, The guarding shall be provided at all the crossing i.e. road, telecommunication & power lines, railway line, nallaha etc.

The contractor is required to follow local statutory regulations stipulated in Electricity (Supply) Act 1948, Indian Electricity Rules 1956 as amended and other local rules and regulations referred in these specifications.

Reference Standards

The codes and/or standards referred to in the specifications shall govern, in all cases wherever such references are made. In case of a conflict between such codes and/or standards and the specifications, latter shall govern. Such codes and/or standards, referred to shall mean the latest revisions, amendments/changes adopted and published by the relevant agencies unless otherwise indicated. Other internationally accepted standards which ensure equal or better performance than those specified shall also be accepted, subject to prior approval by the owner. In case no reference is given for any item in these specifications, latest REC specification & Construction Standards shall be referred to.

2.0.6 SPAN

1. The span should be as near as possible to the basic design span so that the minimum ground clearance should not less than 7.0 mts in cross country at maximum sag condition.(The span length should be applicable for both 33KV& 11 KV lines.)
2. In all areas minimum in every Half KM one angle tower (Cut point) has to be provided.

2.0.7 WAY-LEAVE AND TREE CUTTING

Way-leave permission which may be required by the contractor shall be arranged at his cost. While submitting final-survey report for approval, proposals for way-leave right of way shall be submitted by the contractor. Employer may extend help to get the permission within a reasonable time as mutually agreed upon for which due notice shall be given by the contractor in such a way so that obtaining permission from appropriate authority do not hinder the continued and smooth progress of the work.

The employer shall not be held responsible for any claim on account of damage done by the contractor or his personnel to trees, crops and other properties.

The contractor shall take necessary precaution to avoid damage to any ripe and partially grown crops and in the case of unavoidable damage, the employer shall be informed and necessary compensation shall be paid by the contractor.

All the documents required for application to the statutory authorities must be prepared by the contractor & submitted to the employer for submission of the application towards approval of Railway Crossing etc. However, the responsibilities lie with the contractor to get the clearance.

Trimming of tree branches or cutting of a few trees en-route during survey is within the scope of survey to be done by the contractor. Contractor shall arrange for necessary way-leave and compensation in this regard. During erection of the line, compensation for tree cutting, damage caused to crops, actual cutting and falling of the trees including way-leave permission for such route clearance shall be arranged by the contractor at his cost. The contractor will identify the number of trees and detail of obstructions to be removed for erection of the line and intimate the employer well in advance in case of any help. Other related works like construction of temporary approach roads, etc. as required, shall be done by the contractor and the same will lie within the scope of contractor_s work and such cost shall be considered to be included in the rates quoted by him.

2.0.8 SUB-SOIL INVESTIGATION (In case of river crossing locations/other locations where PILLING may be required)

To ascertain soil parameters in locations where higher tower will be required in order to get adequate ground clearance (Either 220KV or 132 KV tower normally used in OPTCL) the contractor shall carry out sub-soil investigation through reputed soil consultant as approved by the employer.

2.0.8.1 SCOPE OF WORK

The scope of sub-soil investigation covers execution of complete soil exploration for the transmission line under this contract including boring, drilling, collection of undisturbed soil sample where possible, otherwise disturbed samples, conducting laboratory test of soil samples to find out the various parameters as detailed in this specification and submission of detailed reports in 6 copies along with specific recommendation regarding suitable type of foundation for each bore-hole along with recommendation for soil improvement where necessary.

2.0.8.2 QUALIFYING REQUIREMENTS OF SOIL CONSULTANTS

The soil consultants shall provide satisfactory evidence concerning the following as and when asked for.

That, he/they has/have adequate technical knowledge and previous practical experience in carrying out complete soil investigation jobs in any kind of soil.

That he/they has/have well equipped, modernized soil testing laboratory of his/their own. If asked for by the employer, the contractor shall arrange inspection of such laboratory of the soil consultant by the representative of the employer.

If in the opinion of the employer, the soil consultant (proposed by the contractor) is not well equipped or capable to undertake the sub-soil investigation job relating to this contract, then such soil consultant shall not be engaged to undertake the job. In that case, they shall have to engage other agency as will be approved by the employer.

2.0.8.3 TEST BORING

The boring shall be done at the major locations / crossing of special towers. However, it is desirable that all 132 KV and 220KV in river X-ing spans sub-soil investigation bore-hole will be required. The test boring through different layers of all kinds of soil shall have to be carried out by the contractor through the approved soil consultant as briefed hereunder.

- (a) Method of boring, selection of sampling tubes, sampling, recording of boring, protection, handling, leveling of samples shall be done as specified in IS: 1892/1977, if any, after obtaining approval from the employer. The contractor/consultant shall furnish in the soil report in details, the equipment and method of boring actually adopted.
- (b) Depth of boring below ground level shall be normally 15 Mts to 25 Mts., in river crossing locations.
- (c) Undisturbed soil samples shall be obtained for the initial 4M depths at every 1.5M interval and at change of strata. After these initial 4M depths, samples shall be obtained preferably at every 3M or where there is a change of strata, or as advised by the employer.
- (d) In case collection of undisturbed samples becomes difficult/impossible detailed soil testing on remolded soil samples is to be considered and reported in the soil report.
- (e) Standard penetration test as per IS: 2131 with latest amendment shall have to be conducted in different strata and recorded properly.
- (f) The ground water table shall be recorded during boring operation and incorporated in the bore log. If possible, the position of the water table just after monsoon period be ascertained from local people and indicated in the report.

2.0.8.4 LABORATORY TESTS OF SOIL SAMPLES

The method and procedure of testing of soil sample to be followed shall be as per relevant IS codes. Adequate volume of test samples shall be collected from site. Sample shall be properly sealed immediately after recovery as specified in relevant IS code and transported carefully to laboratory for carrying out necessary laboratory tests to find out the following parameters of every samples. Data and time of taking of the sample shall be recorded in the test report.

- (a) Natural moisture content, Liquid limit, Plastic limit and Plasticity index.

- (b) Bulk, dry and buoyant density of soil.
- (c) Void ratio (e-long P curve shall be submitted)
- (d) Specific gravity.

- (e) Grain size distribution (Sieve analysis and hydrometer analysis)
- (f) Tri-axial and consolidation tests (consolidation un-drained and consolidated drained as and when application in table, graph and drawing.
- (g) Permeability tests
- (h) Chemical tests for both water and soil samples at different layers.
- (i) Evaluation of safe bearing capacity at different strata for square footings shall be done for a maximum value of 25-mm. settlements.
- (j) At depts. From 3M to 25 different strata.
- (k) Factor of safety shall be considered as 3 for evaluation of safe bearing capacity of soil.
- (l) Unconfined compression test for cohesive soil ($c=0$) if encountered.

2.0.8.5 REPORT ON SUB-SOIL INVESTIGATION

The contractor shall make analysis of soil samples as collected by him in the field and approved by the employer. A comprehensive report shall have to be prepared by him, finally incorporating all the data collected in proper tabular forms or otherwise along with the analysis. Three copies of report in the draft form shall be submitted for employer's approval. 6(six) copies of final report incorporating employer's comments, if any, shall be submitted within

3(three) weeks after completion of this work.

Recommendations shall include but not be limited to the following items (a) to

- (o) (a) Geological information of the region.
- (b) Past observations and historical data, if available, for the area or for other areas with similar profile or for similar structures in the nearby area.
- (c) Procedure of investigations employed at field as well as laboratory test results.
- (d) Net safe bearing capacity and settlement computation for different types of foundations for various widths and depths of tower and building.
- (e) Recommendations regarding stability of slopes, during excavations etc.
- (f) Selection of foundation types for towers, transformers and buildings etc.
- (g) Bore hole and trial pit logs on standard proforma showing the depths, extent of various soil strata etc.
- (h) A set of longitudinal and transverse profiles connecting various boreholes shall be presented in order to give a clear picture of the site, how the soil/rock strata are varying vertically and horizontally.
- (i) Modulus of sub grade reaction from plate load test for pressure ranging up to 6 kg/cm².

The recommended values shall include the effect of size, shape and depth

of foundations.

- (j) Deformation modulus from plate load test in various test depth/stratification.
- (k) Coefficient of earth pressure at rest.
- (l) Depth of ground water table and its effect on foundation design parameters.
- (m) Recommendations regarding stability of slopes, during shallow excavation etc.
- (n) Whether piles are necessary or not. If piles are necessary, recommendation of depth, diameter and types of piles to be used.
- (o) Recommendations for the type of cement to be used and any treatment to the underground concrete structure based on the chemical composition of soil and sub-soil water.

3.0 CONDUCTOR

In normal practice 100 sq. mm AAAC will be used in 33 KV lines.

3.0.1 ROAD CROSSING (Cross country, Village pucca roads)

At all major road crossings, the angle towers/ poles shall be provided. The ground clearance above the roads should not be less than 8.5 mts. Double tension fittings should be provided in every road crossing span. Guarding should be provided in each road crossing.

3.0.2 POWER LINE CROSSINGS

Where the lines cross over another line of the same voltage or lower voltage, provisions to prevent the possibility of its coming into contact with other overhead lines shall be made in accordance with the Indian Electricity Rules, 1956 as amended from time to time. All the works related to the above proposal shall be deemed to be included in the scope of the Contractor.

3.0.3 TELECOMMUNICATION LINE CROSSINGS

- a) The angle of crossing shall be as near to 90 degree as possible. However, deviation to the extent of 20 degree may be permitted under exceptionally difficult situations. The existing line route may be changed where required.
- b) HT line shall be routed with requisite suppression with parallel telecom line to

avoid inductance during faults.

3.0.4 DETAILS EN -ROUTE

All topographical details, permanent features, such as trees, telecommunication lines, building etc. 7.5 mtr (33 kV) and 3.5 mtr (11 kV) on either side of the alignment shall be detailed on the route plan before execution of work. However, any problems arising out of Right of way, shall be taken care of by the Contractor. The owner shall extend all possible Co-operation.

3.0.5 CLEARANCE FROM GROUND, BUILDING, TREES ETC.

3.0.5.1 Clearance from ground, buildings, trees and telephone lines shall be provided in conformity with the Indian Electricity Rules, 1956 as amended up to date. The bidder shall select the height of the poles such that all electrical clearances are maintained.

3.0.5.2 Guarding mesh shall be used in all electric line / telecom line / road / drain / canal crossing and at all points as per statutory requirements. The bidder shall provide & install anti climbing devices and danger plates on all poles and DT stations. Where there is no such provision in the existing line.

3.0.5.3 Pole accessories like danger plates, and number plates shall be provided.

3.0.6. TOWERS/ POLES

Support Structures may be of lattice type or joist or PSC poles. Double Ckt. both suspension and tension poles in case of all 33 KV lines and if required in case of 11 KV lines to be specified individually in the packages. **2 to 3 mts.** extension where ever necessary in case mini base tower is to be used. The total steel structures to be inducted to the existing or as additional features should be Galvanized with minimum zinc coating of 610 gms / Sq. Mts. Any new design (approved and tested in any approved test bed) as per the required parameters is also acceptable. In case of 11KV and LT lines the conventional PSC poles may be used. No more MS poles without Galvanization will be used. For easy transportation two pieces of galvanized poles with single splice joint using

galvanized sections of channels/angles/plates of adequate size along with required size GI bolt nuts & spring washers is to be adopted. Joist with minimum 150x150mm or 116x100 mm sections are to be considered for the supports (in accordance to scope). 2 nos **450** mm long cleats with 65 x 65 x 5mm angle to be welded **or bolted by providing minimum 2 nos 16 mm B&N, sp. washer.** Full length welding is to be done on either side in the base level. The materials must conform to IS: 800. All the test on materials and fabrication etc will be as per the relevant Indian standards

In upgraded schemes all care must be taken to rectify the damaged steel supports especially in the base level through adequate size and height of coping. In case, section size is corroded splices be provided with 2 numbers of channels on either side to suit to the joints for coupling as per the approved drawing. The splices to be supported with welding which are to be embedded in RCC concrete.

In different crossings the contractor shall take into consideration the prevailing regulations of the respective authorities before finalizing type and location of the towers. While carrying out survey work, the contractor has to collect all relevant data, prepare and submit drawings in requisite number for obtaining clearance from road, aviation, railways, river and forest authorities.

4.0 ERECTION WORK

When the survey is approved, the contractor shall submit to the employer a complete detail schedule of all materials to be used in the line. Size and length of conductor etc. are also to be given in the list. This schedule is very essential for finalizing the quantities of all line materials. The contractor shall furnish the same.

4.1 SCHEDULE OF ERECTION PROGRAMME

After due approval of the detailed and check survey, the contractor shall submit to the employer a complete detailed schedule of erection programme with a Bar-Chart for construction of the lines indicating there in the target date of completion.

5.0 CONSTRUCTION OF FOUNDATION FOR TOWER, (RS Joist) POLES AND PSC POLES

5.0.1 ERECTION OF POLE, CONCRETING OF POLES AND COMPACTION OF SOIL

Drawing for the excavation of pits, Foundation of both wet and Black cotton soil is enclosed which are to be adopted. If better design with less volume approved or tested by any other distribution agencies will also be acceptable.

5.0.2 Following arrangement shall be adopted for proper erection of poles wherever necessary and properly compacting of the soil around the base / foot of the poles, under this package.

(a) Excavation has to done as per the drawing to the required depth and size. After final excavation the pit should be dressed properly so that uneven portion and loose soil should be removed before PCC (M-7.5) of thickness 75 mm is laid. The base footing of the pole concreting RCC (M-15) has to be done by proper alignment and verticality.

(b) The verticality and leveling of pole/structure should be done by the help of plumbob or with theodolite and leveling instrument.

(c) **In case of Joist pole Base clits and in case of PSC pole GI base plate (450x450x10) mm or**

RCC Pre -cast slab of size (500 x 500 x 100) mm has to be provided over the Lean concrete.

5.0.3 CEMENT CONCRETE (PLAIN OR REINFORCED), STUB SETTING GROUNDING AND BACK FILLING etc.

A) Materials

All materials whether to be consumed in the work or used temporarily shall conform to relevant

IS specification, unless stated otherwise, and shall be of the best approved quality.

B) Cement

Cement to be used in the work under the contract shall generally conform to IS:269/455-1989. Cement bags shall be stored by the contractor in a water tight well ventilated store

sheds on raised wooden platform (raised at least 150 mm above ground level) in such a manner as to prevent deterioration due to moisture or intrusion of foreign matter. Cements to be used within three months from the date of manufacture. Sub-standard or partly set cement shall not be used and shall be removed from the site by the contractor at his cost.

C) Coarse Aggregates i.e Stone chips or stone ballast. For M15 concrete (mix 1:2:4) the aggregate will be in the ranges from 12mm to 20mm.size and for M7.5 concrete (mix 1:4:8) these will be from 25mm to 40mm size.

D) **Pole erection**

1. **After proper alignment**, checking of verticality and leveling, the pole or structure should be properly tied before placing of base concrete of required height. Again the verticality and leveling should be checked.
 2. **The RCC pedestal concrete (M-15)** is to be done by providing good quality of shutters, so that there will no leakage of cement slurry during concreting. The cooping height should be **450 mm/750 mm** above the existing ground level in urban area and in cultivated lands respectively. The top portion of the cooping should be made tapered.
 3. **Above** the cooping 450 mm of pole or structure should be painted with double layer of Black Bituminus paints.
 4. **All the bolted joints** should be tightened properly by providing suitable size GI Bolt Nuts and Spring washers. After completion of erection works all the bolts should be spot welded in order to avoid theft of members.
 5. **The back filling** of locations should be done by using the excavated soil only in layers (each layer should not be more than 500 mm) by putting water and ramming by using wooden rammers. In no case stone of size more than 75mm used for back filling. Back-filling has to be done 75mm above ground level or as specified
 6. **Curing of concrete** should be done for 28 day continuously. Curing should not be done within 24 Hours of concreting.
 7. **All the excess** excavated materials and other unused materials from the concreting site should be disposed of to a suitable site by the contractor.
- a) Mixer (Running time-2 min.)

- b) **In case of** hand mixing, 10% extra cement has to be provided. Hand mixing should be done on GI sheet platform only.
- c) **Poking rod** may be used for compacting in locations at PSC poles only
- d) **Use of vibrator** for compacting is mandatory.
- e) **Clean water** (free from saline and alkaline) should be used for concreting.
- f) **Aggregates** (both coarse and fine) used should be free from foreign materials.
- g) **Shutters** used should not be removed before 24hrs. of casting.
- h) **In case of** black cotton soil borrowed earth (morum soil mixed with sand is preferable) may be used for back filling.
- i) **Sufficient qty. of water** should be sprinkled over backfilled earth and chimney kept wet by using wet gunny bags.

5.0.4 All the persons working on tower shall wear safety helmet, safety belt and safety shoes, Similarly all the persons working on ground shall wear safety helmet and safety shoes.

5.0.4.1. If there is any LT/HT power line near the vicinity of tower erection, necessary shutdown of the power line shall be obtained in writing from the concerned Agency in order to avoid electrical hazards caused by accidental touching of stay/Guy ropes with power line.

5.0.4.2 Safety precaution Safety shall be given utmost importance during stringing. The following need to be ensured.

5.0.4.3 Safe working conditions shall be provided at the stringing site.

5.0.4.4 Full proof communication through walky- talkie / mobile phones shall be used in order to avoid any damage to workmen or public on ground.

5.0.5 In case of 11 KV and LT lines (PSC)

5.0.5 (A) PSC Pole (9 mtr x 415 Kg, 9 Mtr x 300 Kg, 10mtr x 425Kg, 11mtr x 330 Kg & 8 Mtr x 200 Kg)

TECHNICAL SPECIFICATIONS

I. Qualification Criteria of Sub

Vendor / Manufacturer:-

The prospective bidder may source PSC Poles from manufacturers who should have supplied at least the following quantity of PSC Poles to Electricity Supply Utilities / PSUs. The bidder should enclose Performance Certificates from the above users, issued in favour of the Sub Vendor / manufacturer, as proof of successful operation in field.

Sl. No.	Size	Minimum Past Supply Qty
1	8 Mtr. X 200 Kg	1000
2	9 Mtr. X 300 Kg	1000
3	9 Mtr. X 415 Kg	200
4	10 Mtr. X 425 Kg	200
5	5 11 Mtr X 330 Kg	200

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 conforming to IS: 269-1976 (Specification for ordinary and low heat Portland cement) or IS: 8041 E-1978 (Specification for rapid hardening Portland cement).

Aggregates

Aggregates 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 9.0Mts. Shall not be less than 2.0 and for 8.0 M poles,

the factor of safety 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. $420 \times 0.5 = 210 \text{ kg/cm}^2$. 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 Reinforcement

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-stress 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 cured, as far 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 contact with the pre-stressing wires

B. PSC Pole (9 Mtr x 415 Kg, 9 Mtr x 300 Kg, 10mtr x 425Kg, 11mtr x 330 Kg & 8 Mtr x 200 Kg)

GUARANTEED TECHNICAL PARTICULARS

(To be submitted along with offer)

Sl No.	Description	Unit	Bidder's Offer				
			10mtr X 425 Kg	9 Mtr X 300 Kg	9mtr X 415 Kg	8 Mtr X 200 Kg	11 Mtr X 330 Kg
1	Type of pole						
2	Factor of Safety						
3	Overall Length of Pole Meters	meters					
4	Working Load Kg	Kg					
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						
9	No. of Untensioned wire						
10	Length of each untensioned wire						
11	Concrete Detail						
A	Cement Type						
B	Grade						
C	Type						
D	Quantity	Cubic meter/pole					

(Signature of the Bidder)

E	Standard confirming to:						
12	Steel Quality	Kg/Pole					
A	Ultimate Tensile Strength (UTS)	Km/Cm ²					
B	Weight						

5.0.5.1 All the poles shall be provided with a RCC block base or MS base plate having dimensions as mentioned at 5.0.2 © as per the site requirement to be decided by Engineer in Charge. The decision of Engineer in Charge will be Final.

5.0.5.2 The poles shall then be lifted to the pit with the help of wooden supports. The pole shall then be kept in the vertical position with the help of 25 mm (min.) manila ropes, which will act as the temporary anchor. The verticality of the pole shall be checked by spirit level in both longitudinal & transverse directions. The temporary anchor shall be removed only when **poles set properly in the pit for foundation concreting & backfilling with proper compacting the soil. The backfilling should be done in layers (maxm. 0.5 mts at a time with sprinkling of water and by using wooden hammer. No stone more than 75 mm should be used during back filling.**

5.0.5.3 Suspension type H/W fittings in all tangent locations and Four pair bolted type tension H/W fittings should be used in all new 33&11 Kv lines. 45 KN & 70 KN normal B&S insulators will be used in suspension & tension locations respectively.

5.0.5.4 Concreting of foundation up to a minimum height of 1.8 mtrs from the bottom of the pit with a circular cross-section of radius 0.25 mtrs. (volume of 0.3 cu.mtr. per pole) in the ratio of 1:2:4 shall be done at the following locations: The **depth** has to be increased to 2mtr or as required at site condition if poles more than 11 Mts. are to be used.

- i) At all the tapping points and dead end poles.
- ii) At all the points as per REC construction dwg. No. A-10 (for the diversion angle of 10-60 degree) or **better there of as per the instruction of Engineer in charge. The decision of Engineer in charge will be final.**
- iii) Both side poles at all the crossing for road, Nallaha railway crossings etc.
- iv) Where Rail poles, Joist poles, double pole and four pole structures are to be erected.

6.0. Earthing of Support

6.0.1 Each pole shall be earthed with coil type earthing as per REC Construction Standard J-1.

6.0.2 All DP & Four pole structures & the poles on both sides of railway crossing shall be earthed by providing two nos. **pipe earthing as per Drawing provided by WESCO.**

6.0.3 Each tower/structures should be earthed by providing 2.5 mts.50x6 GI flat and 40 x 3000 mm heavy gauge ISI mark earthing pipe. The top of the earthing pipe should remain 600 mm below ground level. All railway X-ing locations two nos. earthing should be provided. In case the required footing resistance is not achieved on measurement, counterpoise earthing has to be provided as per the standard.

6.0.3 (A) 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.

b) The manufacturer should have supplied at least 1000 no.s o electricity supply utilities / PSUs. The bidder should enclose Performance Certificates from the above users issued in the name of the manufacturer as proof of successful operation in field.

II. SCOPE

The specification covers design, manufacture, testing and dispatch to the owner_s stores of Earthing Coils for use in earthing of the HT & LT 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

Galvanizin 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

AdhesionTest

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

The turns should be closely bound. Weight of one finished Earthing Coils (min.) – 1.850 Kg.

6.0.3(B)**EARHTING COIL
GUARANTEED TECHNICAL PARTICULARS**

(To be submitted along with Offer)

Sl. No.	GENERAL TECHNICAL PARTICULARS	Bidder's Offer
1	Nominal diameter of wire	
2	No. of turns	
3	External dia of Coil	
4	Length of Coil	
5	Mass of Zinc	
6	Total weight of Coil	
7	Whether drawing enclosed (yes)	

6.0.4 EXTENSION POLE

Pole with pole extension arrangement up to two **to three** meters (**in case** of 33 KV new **Mini base** GI tower structure) shall be used at low ground level locations for maintaining ground clearance and for road crossings for HT Lines.

7.0 PROVISION OF GUYS/STRUT POLES TO SUPPORTS

7.0.1 The arrangement for guys shall be made wherever necessary. Strut poles/flying guys wherever required shall be installed on various pole locations as per REC construction standards. In order to avoid guys/ Strut self supported GI poles/ structures may be used.

7.0.2 In this work anchor type guy sets are to be used. These guys shall be provided at following locations where guys are damaged or not provided.

- (i) Angle locations
- (ii) Dead end locations
- (iii) T-off points
- (iv) Steep gradient locations.
- (v) Double Pole, & four pole

The stay rod should be placed in a position so that the angle of rod with the vertical face of the pit is 30^0 to 45^0 as the case may be maximum movement for tightening or loosening.

7.0.3 If the guy wire proves to be hazardous, it should be protected with suitable asbestos pipe

filled with concrete of about 2 m length above the ground level, painted with white and black strips so that, it may be visible at night.

7.0.4 The guy insulator should have a minimum vertical clearance of 3.5 mtr from the ground.

7.0.4 (A)

HT & LT STAY SETS

TECHNICAL SPECIFICATION

I. Qualification Criteria of Manufacturer:-

The prospective bidder may source Stay Sets from manufacturers only must qualify all the following requirements:

- a) 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.
- b) The manufacturer should have supplied at least 1000 sets (both HT & LT taken together) to electricity supply utilities / PSUs. The bidder should enclose Performance Certificates from the above users issued in the name of the manufacturer as proof of successful operation in field.

II. SCOPE

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

III. 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 to IS: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 33 Kv,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 an overall length of 995 mm and height of 450 mm. The apex or top of the bow shall be bent at an angle of 10R. The 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 mm 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 fillet 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 conform 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 (WESCO) 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 no 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 (To be submitted along with Offer)

Sl No.	Item Description	Specified Parameters			Bidder's Offer
		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	Set LT Stay Set HT Stay
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 +	GI Round 16mm dia GI Round 16mm dia GI Round 20mm dai GI Round 20mm dia	LT Stay Set HT Stay Set

(Signature of the Bidder)

			3%. Threading 40mm +11%-5%			
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 100x50x4.7m m	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					

(C) **STAY WIRE (7/8SWG) / (7/10 SWG) & (7/12 SWG)**

TECHNICAL SPECIFICATIONS

I. Qualification Criteria of Manufacturer:-

The prospective bidder may source Stay Wire from manufacturers only 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.
- b) The manufacturer should have supplied at least 1000 Kg (all sizes taken together) to electricity supply utilities / PSUs. The bidder should enclose Performance Certificates from the above users issued in the name of the manufacturer as proof of successful operation in field.

II. 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.

III. 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 7/8SWG 7/4 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.

IV. 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 IS: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
7 (6/1)	4.0	8.80	54.9

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 meters 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 IS: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.

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

GURANTEED TECHNICAL PARTICULARS

(To be submitted along with offer)

Sl. No.	GENERAL TECHNICAL PARTICULARS	7/08 SWG	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/mm ²			
B	Max. N/mm ²			
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 ± 20°C			

(Signature of the Bidder)

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%			

**(E) GI WIRE 6 SWG & GI WIRE 8 SWG
TECHNICAL SPECIFICATIONS**

I. Qualification Criteria of Manufacturer:-

The prospective bidder may source GI Wire from manufacturers only 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.
- b) The manufacturer should have supplied at least 1000 Kgs. (all sizes taken together) to electricity supply utilities / PSUs. The bidder should enclose Performance Certificates from the above users issued in the name of the manufacturer as proof of successful operation in field.

II. SCOPE

This specification covers manufacture, testing and supply of hot dip galvanized MS solid wire of sizes 6 SWG (5 MM) & 8 SWG (4 MM) diameters.

III. APPLICABLE STANDARDS ZINC

Zinc shall conform to grade Zen 98 specified in IS 209& IS: 4826-1979 with up to date amendments.

ZINC COATING

Zinc coating shall be in accordance with IS: 4826-1979 for heavily coated hard quality.

GALVANISING

Galvanizing shall be as per IS: 2629-1966, IS 4826-1979 with up to date amendments

UNIFORMITY OF ZINC COATING

Uniformity of zinc coating shall be as per IS: 2633-1972 with up to date amendments

TENSILE PROPERTIES

The tensile strength of the wire after galvanizing shall be between 55-95 Kg/sq.mm ensuring MS wire mechanical properties as per IS-28:1972 8.1 to 8.3.

FREEDOM FROM DEFECTS

As per IS: 2629-1966 & 4826-1979 & with up to date amendments be ensured

IV. MATERIAL

The mild steel wire shall have chemical composition maximum sulphur- 0.055%, phosphorous -0.055%, Carbon 0.25%.

V. TESTS

During the process of manufacturer/fabrication and all tests for chemical, mechanical, galvanizing as per IS- 280-1979, IS1521-1972, IS-1755-1961, IS: 6745-1972 & 4826-1979 shall be carried out. The certificate towards, chemical composition shall be submitted for each lot offered for inspection.

The following tests shall be conducted in presence of the representative of the purchaser:
Visual physical inspection and measurement of specified dimension Coating test as per IS: 1755-1961, IS 2629-1966, IS: 2633-1972, IS: 4826-1969 Adhesion test as per IS: 1755-1961, IS: 2629-1966, IS: 2633-1972, IS: 4826-1969,& IS:6745-1972

Tensile strength and breaking load and elongation determined as per IS: 1521-1972 with up to date amendments

VI. PACKING & MARKING

Packing shall be as per IS: 280-1979 and each coil shall be between 50-100 kg. marking shall be as per IS:280-1972.

(F)

GI WIRE 6 SWG & GI WIRE 8 SWG

GUARANTEED TECHNICAL PARTICULARS

(To be submitted along with offer)

Sl. No.	GENERAL TECHNICAL PARTICULARS	6 SWG	8 SWG
1	Nominal diameter of wire		
2	Tolerance in diameter		
3	Sectional Area (In Sq. mm.)		
4	Tensile strength		
A	Min. N/mm ²		
B	Max. N/mm ²		
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 ± 20°C		
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%		

(Signature of the Bidder)

(G)

EYE BOLT FOR GUARDING

TECHNICAL SPECIFICATIONS

GENERAL REQUIREMENTS:

M20 eye bolts (120 mm long) shall preferably be of drop forged manufacture and shall be supplied complete with full thread and two full nuts.

Eye bolt shall be manufactured from steel to ISO 272, 885, 888, 4759/1 and shall meet the requirements for mechanical properties detailed in ISO 272, 885, 888, 4759/1.

Where a welding process is used in manufacture, each eye bolt shall be individually proof tested by the manufacture in accordance with ISO 272, 885, 888, 4759/1 to 125% of its safe working tensile load that is to 48kN. The safe working tensile load shall be the ultimate axial tensile strength divided by the factor of safety of 2.5.

The eye shall be permanently and legibly stamped with the letter METRIC in letters not less than 3mm high. The safe working load of any eye bolt is that load which may be safely carried in an axial direction. If loaded in any other direction the safe working load is reduced and reference shall be made to the following table for safe working load of M20 eye bolts and eye nuts.

(H)

ALUMINIUM BINDING WIRE

TECHNICAL SPECIFICATION

SCOPE:

Scope covers manufacture, testing and supply of 3.53 mm dia Aluminium Binding Wire as per IS 398.

MATERIALS:

The material comprising the wire shall have the following chemical composition:

Aluminium 99.5% minimum Copper, silicon and iron 0.5% maximum

The surface of the wire shall be smooth and free from all irregularities and imperfections. Its cross sections shall closely approximate that of true circle.

Characteristics of Aluminium Binding wire

Diameter of wire			Cross sectional area of nominal dia. Wires (mm)	Weight of wire kg/km	Breaking Load (kN)
Minimum	Nominal	Maximum			
3.15	3.53	3.55	9.787	26.45	1.57

Inspection and Tests

The following routine checks and tests shall be carried out on 10% of the coils of aluminium binding wire. If anyone sample fails to pass any one of the test nominated for that wire, then samples shall be taken from every coil in the consignment and any coil from which a sample proves defective shall be rejected. On no account shall any rejected material be presented for test again unless with the written approval of, and under conditions determined by the Purchaser.

Physical properties

The surface of the finished wires shall be checked to ensure that it is smooth , free from all irregularities, imperfections and inclusions and that its cross section approximates closely that of true circle.

The wire shall be checked to ensure that its diameter and weight are within the values given I the table above characteristic of a aluminium binding wire.

Ultimate tensile strength

When tested on a standard tensile testing machine, the value obtained for the ultimate tensile stress shall not be less than 1.57kN

Wrapping test

The wire shall withstand one cycle of a wrapping test as follows:

The wire shall be closely wrapped round a wire of its own diameter form a close helix of eight turns. Six turns shall then be unwrapped and again closely rewrapped in the same direction as the first wrapping. The wire shall not break or crack when subjected to this test.

Packing & Delivery

The aluminium binding wire shall be delivered in 30m coils, with a permitted tolerance of +5%.Random or non standard lengths shall not be permitted. Each coil shall be adequately guarded against damage due to transportation and handling and shall have an outer layer of tightly wound polythene tape or be contained in a suitable transparent plastic bag.

The internal diameter of the wound coil shall not be such as to result in a permanent set in the conductor. The coils shall be contained in non returnable wooden cases, with a gross weight not in excess of 300 kg. The number of coils contained shall be marked on the outside of each case.

(I)

**ALUMINIUM BINDING WIRE
GUARANTEED TECHNICAL PARTICULARS**

Item No.	Description	Bidder's Offer
1	Manufacturer Address	
2	Indian Standard No. IS 398 (Part-4) 1994	
3	Material of Binding Wire	
4	Dia. Of Wire	
5	Maximum D.C. resistance at 20 degree centigrade	
6	Individual Aluminium Alloy Strands	
a)	Tensile breaking stress	
b)	Elongation on 200 mm length in breaking	
7	Particulars of Raw Materials	
7.1	Aluminium	
	a) Minimum Purity of aluminium	
7.2	Aluminium Alloy	
	a) Aluminium redraw rod conforming to	
	Elements	
	(a) Si	
	(b) Cu	
	(c) Other Element (If any)	
8	Linear mass of Wire	
9	Modulus of Elasticity	
10	Coefficient of Linear Expansion (per deg. Cent.)	

8.0 CROSS ARMS

Cross Arms should be made by using 100x50x6 mm GI. channel. For both 33 KV & 11 KV system. Cross Arms made out of M.S. angle shall not be used.

In tower type poles (GI) all the X-arms are part of the structure.

(Signature of the Bidder)

**33 KV,11 KV “V” CROSS ARM, BACK CLAMP FOR “V”
CROSS ARM & POLE TOP BRACKET (F CLAMP)**

**TECHNICAL
SPECIFICATIONS**

8.0.1 Qualification Criteria of Manufacturer:-

The prospective bidder may source the above items from manufacturers who must qualify the following requirements:

The manufacturer should have supplied at least 1000 no.s (of each item) to electricity supply utilities / PSUs.

The bidder should enclose Performance Certificates from the above users issued in the name of the manufacturer as proof of successful operation in field.

a) Cross arms and Pole Top Brackets for both 33 KV & 11kV construction at intermediate and light angle pole shall be fabricated from grade 43A mild steel of channel section and for heavy angle poles, end poles and section poles fabricated from grade 43A mild steel of angle section. The grades of structural steel shall conform to IS – 226: 1975.

b) The 33 KV & 11 KV _ V _ Cross arm shall be made out of 100x 50x5.6. mm MS Channel of(9.56 kg/mtr weight) .

The Back Clamp for both 33 KV & 11 KV shall be made out of 75 x 10 MS Flat and shall be suitably designed to fit PSC Pole 9 Mtr x 300 Kg , 8 Mtr x 200 Kg.and 9 mtrx415kg

c)The Pole Top Bracket (F Clamp) shall be made out of 75 x 10 MS Flat suitably designed to fit PSC Pole 9 Mtr x 300 Kg ,10X Mtr x 425 Kg.& 9mtrx415 kg for both 33 KV & 11 KV.

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

dimensions up to and including 50mm:+1mm: and dimensions greater than 50mm:
+2%

All steel members and other parts of fabricated material as delivered shall be free of warps, local deformation, unauthorized splices, or unauthorized bends. Bending of flat strap shall be carried out cold. Straightening shall be carried out by pressure and not by hammering.

Straightness is of particular importance if the alignment of bolt holes along a member is referred to its edges.

Holes and other provisions for field assembly shall be properly marked and cross referenced. Where required, either by notations on the drawing or by the necessity of proper identification and fittings for field assembly, the connection shall be match marked. A tolerance of not more than 1mm shall be permitted in the distance between the center lines of bolt holes.

The holes may be either drilled or punched and, unless otherwise stated, shall be not more than

2mm greater in diameter than the bolts. When assembling the components force may be used to bring the bolt holes together (provided neither members nor holes are thereby distorted) but all force must be removed before the bolt is inserted. Otherwise strain shall be deemed to be present and the structure may be rejected even though it may be, in all other respects, in conformity with the specification.

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

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

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

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

8.0.2 Fabrication has to be made as per drg. of “ V “ X-arm, Back clamp & “ F “ clamp.

33 KV & 11 KV V CROSS ARM GURANTEED TECHNICAL PARTICULARS

(To be submitted along with offer)

Sl. No.	Description Unit		Bidder's offer	
			33 Kv	
1	Type of crossarm			
2	Grade of steel			
3	Steel standard			
4	Fabrication Standard			
5	Dimensions	Mm		
6	Steel section utilized			
7	Steel tensile strength	N/cm ²		
8	Working load	Kg		
9	Details of galvanizing method utilized and standard/specification conforming to?			
10	Weight of cross arm	kg		
11	Whether drawing has been submitted with the			

(Signature of the Bidder)

8.0.4

POLE TOP BRACKETS (F CLAMP)**GURANTEED TECHNICAL PARTICULARS**

(To be submitted along with offer)

Sl. No.	Description Unit		Bidder"s offer	
			33 Kv	
1	Type of crossarm			
2	Grade of steel			
3	Steel standard			
4	Fabrication Standard			
5	Dimensions	Mm		
6	Steel section utilized			
7	Steel tensile strength	N/cm ²		
8	Working load	Kg		
9	Details of galvanizing method utilized and standard/specification conforming to?			
10	Weight of cross arm	kg		
11	Whether drawing has been submitted with the bid			

8.0.5

BACK CLAMP FOR "V" CROSS ARM**GURANTEED TECHNICAL PARTICULARS**

(To be submitted along with offer)

Sl. No.	Description Unit		Bidder"s offer	
			33 Kv	
1	Type of Clamp			
2	Grade of steel			
3	Steel standard			
4	Fabrication Standard			
5	Dimensions	Mm		
6	Steel section utilized			
7	Steel tensile strength	N/cm ²		
8	Working load	Kg		
9	Details of galvanizing method utilized and standard/specification conforming to?			
10	Weight of back clamp	kg		
11	Whether drawing has been submitted with the bid			

(Signature of the Bidder)

8.0.6 Fixing of Cross Arms

After the erection of supports and providing guys, the cross-arms are to be mounted on the support with necessary clamps, bolts and nuts. The practice of fixing the cross arms before the pole erection should be followed.

9.0 INSTALLATION OF LINE MATERIALS

9.0.1 Insulator and Bindings - These materials are to be procured from the approved vendors only after type test subsequent to the design approval of GM(Works),WESCO

1. Suspension type H/W fittings (Single suspension normally to be used and in important X-ings double suspension fittings to be used) in all tangent locations. In S/S fittings 3 nos. 45 KN normal disc insulators, D/S fittings 6 nos. 45 KN normal disc insulators **to be used in 33 KV line. In case of 11 KV line 2 nos & 4 nos 45 KN B&S normal insulators are to be used.**
2. In angle locations single tension fittings to be used with 4 nos. 70 KN disc insulators. In all road X-ings and other important X-ings Double Tension H/W fittings 8 nos. 70 KN disc insulators to be used **in case of 33 KV line & in 11 KV line it should be 70 KN insulators 2 nos. & 4 nos. are to be used.**
3. Suitable pre formed armoured rods should be used in all suspension fittings **in case of higher size Conductors.**
4. Guarding / pilot insulators at the sharp angle points has to be provided.
5. Four **pair** bolted type (**suitable for M-16 bolts**) tension fittings for AAA conductors and compression type tension fittings for ACSR conductors has to be used.
6. The -distribution tie - meant for pin insulator binding should be of no. 6 size and that of soft annealed wire having a minimum length of 3 mtr.
7. **Compression type jointing sleeves should be used for jointing of conductors only.**

9.0.2 Checking of Suspension Fitting

- a) It shall be checked that there is no damage to any component of hardware fittings.
- b) It shall be verified that all nuts and bolts are tightened properly.
- c) It shall be made sure that all the necessary security pins (split pins) are fixed properly as per approved drawings.

9.0.3 Insulator hoisting

- a) Insulators shall be completely cleaned with soft and clean cloth.
- b) It shall be verified that there is no crack or any other damage to insulators.
- c) It is very important to ensure that R clips in insulator caps are fixed properly. This is a security measure to avoid disconnection of insulator discs.
- d) Both Arcing horns (both at top & bottom) of each insulators string has to be provided.

Where change of insulators required, prior to fixing, all insulators shall be cleaned in a manner that will not spoil, injure or scratch surface of the insulator, but in no case shall any oil be used for that purpose.

OR (If specified in areas where tower structures cannot be used)

Pin insulators shall be used on all poles in straight line and disc insulators on angle and dead end poles. Damaged insulators and fittings, if any, shall not be used. The insulator and its pin should be mechanically strong enough to withstand the resultant force due to combined effect of wind pressure and weight of the conductor in the span.

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

All materials, which are to be supplied by the contractor should be procured from the approved Manufactures of WESCO's only. Procurement from any suppliers will not be permitted. All the related drawings of materials have to be approved by department. All the materials has to be tested in presence of authorized representative of department as well as officers of third party engaged by Government if any also.

10.0 Handling of Conductor

The Conductor will be supplied by the department from the designated stores of WESCO which the contractor has to lift for the work at their cost. All cares should be taken not to damage conductor surface during transit. Necessary tools and plants for the same have to be

effectively used by the agency.

10.0.1 Running Out of the Conductors:

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

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

10.0.3 Monitoring of Conductors during Stringing

- a) The conductor shall be continuously observed for loose or broken strands or any other damage during the running out operations. Repair to conductors, if necessary, shall be carried out with repair sleeves. The final conductor surface shall be clean, smooth and free from projections, sharp points, cuts, abrasions, etc. The Contractor shall be entirely responsible for any damage to the poles during stringing.
- b) Conductor shall be checked constantly as it is unwound from Conductor drum for any broken, damage or loose strand. If any major defect is noticed then the defective portion has to be removed and mid span joint provided. However if the defect is of minor nature i.e. number of damaged strands is not more than 1/6th of the total strands in outer layer, a repair sleeve shall be provided.
- c) M.S. (mid span) Joint shall be provided at least 15 meters away from 33 KV line tower. All MS joints should be Compression type by providing suitable aluminium compression pipes. The compression joints should be continuous. In case of AAAC compression joints, minimum 25% over lapping with the previous compression should be done.
- d) There shall not be any Mid-Span joint over Rly / River / Main Road Crossing.
- e) Not more than one M.S. Joint shall be provided in one span for each conductor.
Rough sagged conductors of one phase shall be simultaneously tightened by which machine fixed on tower till the desired final sag is achieved.

11.0 CROSSINGS

- a) As far as possible all Railway line, telecommunication lines crossings shall be made at right angles. Scaffolding to be used during stringing operations where roads, channels, telecommunication lines, power lines and railway lines are crossing. The contractor shall co - ordinate with WESCO for obtaining work permit and shut down of the concerned line. The Contractor shall be entirely responsible for the proper handling of the conductor and accessories in the field.
- b) Guarding shall be provided at major crossings, if not provided. The Guarding shall consist of GI guard cross arm of length 2.5 mtrs made out of 75x40 x6 mm channel & shall be hot dipped galvanized generally conforming to IS:2633/72. The clamps shall also be hot dipped galvanized generally conforming to IS: 2633/72. Guarding shall be erected with ground & line clearances as per the I.E. rules. The guarding shall be provided with GI wire 8 SWG for 33 KV.

12.0 PAINTING OF MATERIALS

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

- 12.0.1 At least two coats of cold galvanized zinc rich paint having 90% zinc contents shall be applied on the welding to avoid rusting.

13.0 STRINGING OF CONDUCTOR

- 13.0.1 The works include spreading of conductors without any damage and stringing with proper tension without any kinks/ damage Jumpering at cut points by using two nos., three bolted, PG claps has to be done. **No binding of two conductors with aluminium wires will be allowed.** In each and every joints three bolted very good quality PG clamps should be used wrapping of suitable aluminium tapes if required as per the decision of the EE/DE. The ground & line clearances at road crossings along roads other crossings shall be as mentioned in this specification. (which also should not be less than the relevant clearances mentioned in I.E. rules.)
- 13.0.2 While transporting conductors_ drums to site, precautions are to be taken so that the conductor does not get damaged. The drum shall be mounted on cable drum support. The direction of

rotation of the drum shall be according to the mark in the drum so that the conductor could be drawn. While drawing the conductor, it shall not rub against surface causing damage. The conductor shall be passed over poles on rubberized or aluminum snatch block (pulley) mounted on the poles for this purpose.

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

13.0.4 Conductor splices shall not crack or otherwise be susceptible to damage in the stringing operation. The Contractor shall use only such equipment / methods during conductor stringing which ensures complete compliance in this regard. All the joints including mid span joints on the conductor shall be of the compression type, in accordance with the recommendations of the manufacturer.

13.0.5 All the joints or splices shall be made at least 15 meters away from the pole. No joints or splices shall be made in spans crossing over main roads, railways and small river spans. Not more than one joint per sub-conductor per span. After compressing the joint, the aluminum sleeve shall have all corners rounded; burrs and sharp edges removed and smoothed

The contractor shall remain fully responsible for the exact alignment of the line. If after erection, any tower is found to be out of alignment, the same shall have to be dismantled and re-erected after correction by the contractor at his own cost, risk and responsibility, including installation of fresh foundation, if felt necessary by the employer.

NB:- 0.5% is the non-accountable allowable wastage (for both sag & wastage) will be permitted

14.0.6 PIN INSULATORS

- 14.0.6.1** 33 Kv Pin Insulators.-IS-731/77 (Porcelain Insulator for O/H power lines with nominal voltage greater than 1000 volts.
- 14.0.6.2** 33 Kv GI Pin: - Confirming to IS-2486 Part-I/1971.
- 14.0.6.3** 11 Kv Pin Insulators: - IS-731/77 (Porcelain Insulator for O/H power lines with nominal voltage greater than 1000 volts.
- 14.0.6.4** 11 Kv GI Pin: - Confirming to IS-2486 Part-I/1971.

14.0.7 DISC -INSULATORS (B&S), 70KN:

14.0.7.1 Insulator Strings

Sl. No.	Particulars	
1.	No. of standard Discs (nos) 1) 33 KV 2) 11 kV	1X3 1X2
2.	Size of Disc (33 Kv/11 Kv)	255X145

14.0.7.2 PORCELAIN GLAZE:

Surfaces to come in contact with cement shall be made rough by sand glazing. All other exposed surfaces shall be glazed with ceramic materials having the same temperature coefficient of expansion as that of the insulator shell. The thickness of the glaze shall be uniform throughout and the colour of the glaze shall be brown. The glaze shall have a visible luster and smooth on surface and be capable of satisfactory performance under extreme tropical climatic weather conditions and prevent ageing of the porcelain. The glaze shall remain under compression on the porcelain body throughout the working temperature range.

14.0.7.3 METAL PARTS:

Cap and Ball pins:

Twin Ball pins shall be made with drop forged steel and 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 material. The pins shall be of high tensile steel, drop forged and heat malleable cast iron and annealed. Galvanizing shall be by the hot dip process with a heavy coating of zinc of very high purity with minimum of 6 dips. The bidder shall specify the grade, composition and mechanical properties of steel used for caps and pins.

14.0.7.4 SECURITY CLIPS:

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

14.0.7.5 FILLER MATERIAL:

Cement to be used as a filler material shall be quick setting, for 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.

14.0.7.6 MATERIAL DESIGN AND WORKMANSHIP:

- i) All raw materials to be used in the manufacture of these insulators shall be subject to strict raw materials 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.
- ii) 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 voltage

14.0.7.7 INSULATOR SHELL:

The design of the insulator shell 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 temperature cycle test followed by mallet test. Shells shall

be dried under controlled conditions of humidity and temperature.

14.0.7.8 METAL PARTS:

- a) The twin ball pin and cap shall be designed to transmit the mechanical stresses 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 insulator or 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.
- b) 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 parts or irregularities which may cause corona. All load bearing surfaces shall be smooth and uniform so as to distribute the loading stresses uniformly. Pins shall not show any macroscopically visible cracks, insulations and voids.

14.0.7.9 GALVANIZING:

All ferrous parts shall be hot dip galvanized six times 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.

14.0.7.10 CEMENTING:

The insulator design shall be such that the insulating medium shall not directly engage with hard metal. The surfaces of porcelain and coated with resilient paint to offset the effect of difference in thermal expansions of these materials.

14.0.7.10 (a) Specific Requirement for Insulators

The insulators shall conform in the following specific conditions of respective IS given in the table below

Insulator		Designation	Minimum mechanical failing load	Minimum Creepage distance
11 KV	Pin	Type-B of IS731	10 KN	320 mm
33 KV	Pin	Type-B of IS731	10 KN	580 mm
33KV/11KV	Stay	Type-C of IS 1445	88 KN	57 mm
LT	Stay	Type-C of IS 1445	44 KN	41 mm

14.0.7.11 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 some adding after installation to prevent complete withdrawal from the socket. The locking device shall be 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 when placed in position and under no circumstances shall it allow separation of insulator units and fitting W type security clips are also acceptable. The hole for the security clip shall be countersunk 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 position shall not be less than 50 N (5 Kgs.) or more than 500N (50 Kgs.)

DISC INSULATORS 70KN (B & S Type)
GURANTEED TECHNICAL PARTICULARS
 (To be submitted along with offer)

Sl. No.	Description	WESCO"s Approved Standard	Bidder"s Offer
1	Manufacturer_s name		
2	Address of manufacturer		
3	Location of type testing		
4	Applicable standard		
5	Type of insulator (Porcelain or toughened glass)		
6	Dry impulse withstand voltage		
7	Wet power frequency, 1 minute, withstand voltage		
8	Dry, Critical Impulse Flashover Voltage		
9	Dry, power frequency, Critical Flashover Voltage		

10	Wet, power frequency, Critical Flashover Voltage		
11	Power frequency Puncture Voltage		
12	Mechanical Routine Test Load		
13	Mechanical Impact Strength		
14	Shattered Strength (Glass)		
15	Electromechanical Failing Load		
16	Safe Working Load		
17	Minimum Failing Load		
18	Creepage Distance		
19	Protected Creepage Distance		
20	Type and Grade of Materials : Insulator		
21	Type and Grade of Materials : Cap		
22	Type and Grade of Materials : Pin		
23	Type and Grade of Materials : Locking Pin		
24	Type and Grade of Materials : Cement		
25	Type of semi conducting Glaze		
26	Colour of Insulator		
27	Weight of Insulator		
28	Number of Insulators per Crate		
29	Gross Weight of Loaded Crate		
30	Whether drawing showing dimensional details have been furnished along with Bid		

(Signature of the Bidder)

**33 KV,11 KV PIN INSULATORS
GURANTEED TECHNICAL PARTICULARS
(To be submitted along with offer)**

Sl. No.	Description	WESCO"s Approved Standard	Bidder"s Offer
1	Manufacturer_s name		
2	Address of manufacturer		
3	Location of type testing		
4	Applicable standard		
5	Type of insulator (Porcelain or toughened glass)		
6	Dry impulse withstand voltage		
7	Wet power frequency, 1 minute, withstand voltage		
8	Dry, Critical Impulse Flashover Voltage		
9	Dry, power frequency, Critical Flashover Voltage		
10	Wet, power frequency, Critical Flashover Voltage		
11	Power frequency Puncture Voltage		
12	Safe Working Load		
13	Minimum Failing Load		
14	Creepage Distance		
15	Protected Creepage Distance		
16	Type and Grade of Materials : Insulator		
17	Type and Grade of Materials : Thimble		
18	Type and Grade of Materials : Cement		
19	Type of semi conducting Glaze		
20	Radius of conductor Groove		
21	Colour of Insulator		
22	Weight of Insulator		
23	Number of Insulators per Crate		
24	Gross Weight of Loaded Crate		
25	Whether drawing showing dimensional details have been furnished along with Bid		
26	Whether Type Test Certificate have been furnished		
27	Other particulars (if any)		

(Signature of the Bidder)

**HT STAY INSULATOR & LT STAY INSULATORS
GURANTEED TECHNICAL PARTICULARS**

(To be submitted along with offer)

Sl. No.	Description	WESCO's Approved Standard	Bidder's Offer
1	Manufacturer's name		
2	Address of manufacturer		
3	Location of type testing		
4	Applicable standard & Type		
5	Type of insulator (Porcelain or toughened glass)		
6	Dry impulse withstand voltage		
7	Wet power frequency, 1 minute, withstand voltage		
8	Dry, Critical Impulse Flashover Voltage		
9	Dry, power frequency, Critical Flashover Voltage		
10	Wet, power frequency, Critical Flashover Voltage		
11	Power frequency Puncture Voltage		
12	Safe Working Load		
13	Minimum Failing Load		
14	Creepage Distance		
15	Protected Creepage Distance		
16	Type and Grade of Materials : Insulator		
17	Colour of Insulator		
18	Weight of Insulator		
19	Number of Insulators per Crate		
20	Type of semi conducting Glaze		
21	Minimum dia of Stay wire hole		
22	Whether drawing showing dimensional		
23	Whether Type Test Certificate have been		
24	Other particulars (if any)		

(Signature of the Bidder)

GURANTEED TECHNICAL PARTICULARS
(To be submitted along with offer)

Sl. No.	Description	Bidder's Offer	
		33 KV GI PIN	
1	Manufacturer_s name Manufacturer_s name & Address		
2	Standard applicable specification		
3	Minimum failing load		
4	Dimensions (mm)		
A	Total length		
B	Shank length		
C	Stalk length		
5	Type of threads		
6	Threads per Inch		
7	Type of galvanization of pin & nuts		
8	Mass of zinc (minimum)		
9	Applicable specification		
10	No. of Nuts with each pin & its size		
11	No. of spring washer with each pin & its size		
12	Packing details		
A	Type of packing		
B	Weight of each pin approx, (with nut & washers)		
C	No. of Pins in each packing (Kg)		
13	Tolerance in weight / dimensions, if any		
14	I.S.I. Certificate License number		
15	Any other relevant information the bidder would like to indicate		
16	Manufacturer_s Trade mark with each GS Pins		
17	Whether drawing has been submitted by the bidder		

(Signature of the Bidder)