



CENTRAL ELECTRICITY SUPPLY UTILITY OF ORISSA

TENDER SPECIFICATION No . CESU / 170 / 2010-2011

FOR

**Construction of over head line over River Devi using
OC+6 Towers on Turnkey**

INDEX

(Construction of over head line in River Devi on Turnkey)

SPECIFICATION No. CESU / 170 / 2010 – 2011

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SECTION - I

TENDER CALL NOTICE



CENTRAL ELECTRICITY SUPPLY UTILITY OF ORISSA
IDCO TOWERS (II nd Floor) , Janpath ,Bhubaneswar-751022
Phone : 2541727 , 2543721 Fax : 0674- 2543125
Web Site : www . cescoorissa . com .

Tender Notice No. CESU.H.Qrs./ A &C/ 353 /09-10/18668

Dt 03.05.2010.

For and on behalf of CESU the undersigned invites sealed bids in duplicate on two part bidding system from qualified and eligible bidders , who comply to the under mentioned terms and conditions for the following work on turn key /single source basis in S.I Scheme.

	Brief Description of Work	Appx. Cost (IRs Lakhs)	EMD (IRs Lakhs)	Last date/time for submission of bids	Date and time of opening of bid	Non refundable Cost of Bid document
1	2	3	4	5	6	7
1	Construction of Over Head line in 1448mm ² AAAC on River Devi near AliPingala by supply and erection of Two Nos OC+6 towers (including pile foundation)and two Nos of Anchor D.Ps on turnkey.	76.14	0.76	26/05/2010 13.00 hrs	26/05/2010 15.30 hrs	6000/-+ 4% VAT

A bidder can be an individual firm, joint Venture or consortium of firms. Bidders to be considered as eligible (to bid) (a) should have erected Minimum 10 (Ten) numbers of OC / UR towers with pile foundation in DMC method including stringing of 148mm² AAAC or above size conductor and Erected minimum 5 nos D.Ps in 116x100mm or above R.S size joist. during the last 3 (Three) years and the same should be under satisfactory operation (b) average annual turn over during the last three years from construction work shall not be less than the estimated cost of the Project . (c) shall be financially sound and stable having liquid assets or access to credit facility of not less than one sixth of estimated cost of the project. Bids for the project shall be accompanied by a security deposit(s) (EMD) in the prescribed format for an equivalent amount indicated above. Bids specification document can be obtained from the office of this undersigned on payment of non-refundable cost of bid document indicated above by cash or Bank D/D drawn in favour of CESU payable at Bhubaneswar from 10.00 to 16.00 hours on all office working day from **05.05.10**.

The cost of one complete set of bid specification document is Rs.6000/- + 4% VAT.

Interested parties may also down load the bid documents from the Web-site and submit their bids. However in such a case the bids shall be accompanied with a crossed Bank draft equivalent to the cost of bid document payable at Bhubaneswar without which such bids will be rejected.

The Bids shall be submitted/ received in the office of the undersigned on all office working days up to 13.00hrs of **26.05.10** . In the event the date of opening is a holiday, the next working day shall be treated as the date of opening. A pre bid meeting will be held on **14.05.10 at 11.30 A.M** in the conference hall of CESU for giving clarifications if any on the bid documents to the prospective bidders who may choose to attend the meeting as detailed in the Bid document. Part-I bid will be opened on **26.05.10 at 15.30 hrs** as indicated above

Bidders shall depute only one representative to attend pre bid meeting and tender opening if they wish to be represented. The undersigned reserves the right to reject any or all tenders if the situations so warrants.

Sr. General Manager
APDRP & Contract



CENTRAL ELECTICITY SUPPLY UTILITY OF ORISSA
Regd. Office: 2nd Floor, IDCO TOWERS, Bhubaneswar-751022
Phone- (0674)2541727, 2543721, Fax: (0674)2543125
Web Site: www.cescoorissa.com

Tender Notice No. CESU.H.Qrs./ A &C/353/09-10/18668

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2	3	4	5	6	7
Construction of Over Head line in 1448mm ² AAAC on River Devi near AliPingala by supply and erection of Two Nos OC+6 towers (including pile foundation)and two Nos of Anchor D.Ps on turnkey.	76.14	0.76	26/05/2010 13.00 hrs	26/05/2010 15.30 hrs	6000/-+ 4% VAT

Sale and downloading of tender documents starts from 05.05.10.

For details please Visit our Web site www.cescoorissa.com

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

Sr.General Manager (A&C)

Memo No 18669 dated 3.5.10.

Copy to

P.A to C.E.O / P.A to C.O.O / C.F.O / Sr.G.M (Tech) / G.M Electrical Circle Paradeep / Manager J.E.D Jagatsinghpur for information.

A.G.M., I.T for up loading the Notice and specification in Our Web site www.cescoorissa.com

PRO of this office for publishing the brief notice in Two leading English daily and Two leading Oriya Daily at an earliest.

Sr. General manager(A&C)

SECTION – II

GENERAL TERMS AND CONDITIONS



CENTRAL ELECTRICITY SUPPLY UTILITY OF ORISSA
IDCO TOWERS (II nd Floor) , Janapath ,Bhubaneswar-751 022
Phone : 2545681 , 2542895 , 2541727 , Fax : 0674- 2543125
Web Site : [www . cescoorissa . com](http://www.cescoorissa.com) .

(Construction of over head line in River Devi on Turnkey)

1.0 General Instruction: -

The Bidder shall ensure to follow the instructions given here under failing which the tender shall be liable for rejection.

2.0 Scope of Proposal: -

The scope of the Turnkey project shall be in accordance with the technical specifications covering design, engineering, manufacturing , supply , transit insurance, and erection of two nos of OC+6 towers with 1 mtr dia pile foundations and erection of two nos anchor D.P in 150 x150 mm R.S joist with stringing of 148 mm² AAC from D.P to D.P through Towers for drawal of 33KV over head line over River Devi near Alipingala as defined else where in this document along with other associated works to effect power supply to Sithalo island under J.E.D Jagatsinghpur.

3.0 Submission of Tender: -

Sealed tenders in Two parts each in duplicate, each complete in all respects in the manner hereinafter specified are to be submitted in the CESU Head quarters office, 2nd floor, IDCO Tower, Janpath, Bhubaneswar 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 superscribed 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.

(Construction of over head line in River Devi on Turnkey)

The Bids shall be submitted in the following manner:

- A) 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 EMD and Techno commercial documents.
- B) Part - II, Superscribed as “ Price Bid”. The Part - II should contain only Price bid.

3.01 : - Fax and Telegraphic tenders shall not be accepted.

4.0 Validity :-

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

5.0 Price: -

Bidders are required to quote firm price as per the prescribed format enclosed in Annex- IV. The quoted price shall be firm and inclusive of all taxes, duties, other levies, works contract tax etc. CESU shall not be liable to pay anything extra over and above the quoted price.

6.0 Receipt and opening of the Tender : -

Tenders in duplicate to be kept separately for both original and duplicate, as described under Clause – 3.0 shall be received in the office of the Central Electricity Supply utility of Orissa , IDCO Towers (2nd Floor) , Bhubaneswar and shall be opened on the scheduled date and time.

7.0 Flexibility in bidding, evaluation and execution:

When the lowest bidders is not ready and/or capable 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 rate. Such exploration shall be carried out in a sequential order starting with L₂ bidder then with L₃ bidder and so on.

(Construction of over head line in River Devi on Turnkey)

8.0 Earnest Money Deposit :-

The Tender must be accompanied by Earnest Money Deposit as mentioned in section -2 in shape of account payee Bank Draft in favour of Central Electricity Supply Utility of Orissa , Bhubaneswar , on any Nationalized / Scheduled Bank Payable at Bhubaneswar .Bids without E.M deposit will be rejected out right. No adjustment of any previous deposit or any payable from CESU shall be entertained for EMD. The E.M deposit shall be forfeited in case any or all the purposes of E.M.D is defeated. Failure on the part of successful (L1) Bidder, the EMD of unsuccessful bidders shall be returned within 15 days from the date of finalisation of the order.

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

The Purchaser reserve the right to increase or decrease by up to 20% of the quantity of goods and services specified in the Schedule of Requirement while placing orders and / or during execution of Contract without any change in price or other terms and conditions. Any change in quantity beyond the said percentage shall be settled by mutually discussion between the owner and the contractor .

10.0 Inspection and Testing :-

The Engineer in charge shall be entitled at all reasonable times during manufacture / erection to inspect, examine and test the materials at the supplier's premises / erection site about workmanship the materials to be supplied under this contract . If the said materials are being manufactured in other premises, the Supplier shall be provided 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 supplier of his obligations to execute the contract by letter and spirit. The supplier shall give the purchaser advance notice in writing of the Date and the Place at which the materials will be ready for testing. The inspecting officer for the entire work shall be the S.D.O Commerce / S.D.O Engineering of the concerned site.

11.0 Completion and Completeness of the Equipment :-

Time being the essence of the contract , the work should be completed within 03 months from the date of issue of work order.

The work shall be treated as complete item wise when one item shall be complete in all respects with all mountings, fixtures and standard accessories which are normally supplied even though not specifically detailed in the specification. No extra payment shall be payable for such mounting,

fittings, fixtures and accessories which are needed for safe operations of the equipment as required by applicable code of the country though this might not have included in the contract.

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(Construction of over head line in River Devi on Turnkey)

All similar components parts of similar equipment supplied shall be inter-changeable with one another. The various equipment supplied under this contract shall be subject to Purchaser's approval.

The purchaser however reserves the right to re-schedule the completion period if required.

12.0 Rejection of Materials : -

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

Replace or rectify such defective materials and recover the extra cost so involved plus 15% from the supplier.

- A) Terminate the contract for balance supply and erection with enforcement of penalty as per contract.
- B) Acquire the defective materials at reduced price considered acceptable under the circumstances.
- C) Forfeit the Contract Performance B.G.

13.0 Experience of Bidders : -

The bidders are required to furnish information regarding their experience on the following aspects:

- i. Description of similar type of work executed during the last three years with the name(s) of the party(s) to whom / where supplies / erection were made.
- ii. Testing facilities available at manufacturer's works along with the list of testing equipments.
- iii. Purchase / work orders details (P.O / W.O No. and date only) executed (construction work) during the last three years along with Electrical inspection report copies and copies of user's performance certificates.

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

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14.0 Deviation from Specification: -

The bidders are requested to study the specification and the attached drawings thoroughly before tendering so that if they make any deviations, the same are prominently brought on a separate sheet under the headings “Deviations”. 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 else where in the Bid. However the acceptance of deviation is not binding on the owner.

15.0 Contractor to inform himself fully: -

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

16.0 Patent right: -

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

17.0 Guarantee Period: -

The material covered under this specification should be guaranteed for satisfactory operation against defects in design and workmanship for a period of at least 12 months from the date of handing over the completed installations.

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

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18.0 Penalty for delay in completion of contract: -

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. Extension of delivery period could be with / without levy of penalty. Penalty shall be realized from the C.P.B.G if the situation warrants.

19.0 : Right of way : Right of way is normally not anticipated in the location. However right of way if any arise during execution CESU shall have no liability on the issue. The issue is to be settled at the sole discretion of the contractor.

20.0 CONTRACTOR'S DEFAULT

If the Contractor shall neglect to execute the works with due diligence and expedition or shall refuse or neglect to comply with any reasonable order given to him, in writing by the Engineer in connection with the works or shall contravene 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, then and in such case 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 shall think 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 fair 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 mount shall be independent of the liquidated damages for delay which the Contractor shall have to pay if the completion of works is delayed.

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.

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.

21.0 TERMINATION OF CONTRACT ON OWNER'S INITIATIVE

The 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.

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(Construction of over head line in River Devi on Turnkey)

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 Owner. 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.

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 in completed 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.

22.0 Force Majeure: -

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

23.0 Extension of Time: -

If the delivery of the equipments // materials is delayed due to reasons beyond the control of the Contractor, the Contractor shall immediately inform the 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.

24.0 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.

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25.0 Store :-

The 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.

26.0 Insurance: -

The insurance of all the equipments covered under this specification shall be done by the Contractors with their own insurance underwriters at their own risk. Any claim due to loss or breakage during transit shall be settled by the Contractor with its insurance underwriters. The contractor shall undertake free replacement of the materials damaged or lost during transit, which will be intimated by the Consignee within 30 days of receipt of the materials at purchaser's stores.

27.0 Engineer in charge :-

Manager (Elect.), JED, Jagatsinghpur shall be the Engineer in charge for the Project.

26.0 Contract Performance Bank Guarantee :-

A Composite Bank Guarantee as per the Performa enclosed for 10% (Ten percent) of the total work order should be furnished, from a Nationalized / Scheduled Bank, in favour of Central Electricity Supply Utility of Orissa , Bhubaneswar, within 7 days of issue of the work Order in the prescribed proforma (Attached in Annexure). The Bank Guarantee furnished shall be executed on Non-judicial Stamp paper worth of Rs 50/- (Rupees Fifty only) as per the prevalent rules valid for an initial period of 12 months from the date of completion of the last batch of works , basing on stipulated completion period in the W.O. towards security and acceptance there of, failing which the work orders (W.O) will be liable for cancellation without any further notice with forfeiture of E.M.D.

27.0 TERMS OF PAYMENT

- (i) An advance of 10%(ten) of total lump sum contract price excluding works contract tax shall be paid as initial advance subject to conditions in G.T.C.C. and the following.
 - (a) Submission of invoice for payment of advance.

- (b) Receipt and acceptance of unconditional irrevocable bank guarantee in favour of CESU for equivalent amount of advance. The validity such bank guarantee shall be initially valid up to the end of 90 (ninety) days after the schedule date of completion and shall be extend from time to time as may be required under this contract.
- (c) Receipt and acceptance of unconditional and irrevocable bank guarantee in favour of CESU for 10%(ten) of total contract price inclusive of works contract tax towards contract performance guarantee in accordance with GTCC strictly as per prescribed format which should be initially valid up to 90(ninety) days after the expiry of warranty period and shall be extended from time to time as may be required under the contract.
- (d) Establishment of contract site office and certification by the engineer that satisfactory mobilization for erection exists.
 - (ii) 70 % (seventy) of contract price excluding works contract tax shall be paid progressively for each completed items of work on certification by CESU engineer in charge after check point involved in such items of work.
 - (iii) Balance 20%(twenty) of contract price plus 100% works contract tax shall be paid after completion of all works, envisaged under this package including any additions and alterations, testing, commissioning and entire stretch is fully ready for commercial operation.
 - (iv) In case of joint venture and consortium all B.G.s shall be in the name of joint venture consortium covering all the partners and not in the name of Lead Partner or any other partner leaving behind other(s).

The payments shall be subjected to clearance from electrical inspectorate and release of funds from CESU Hqtrs. office, Bhubaneswar.

28.0 Paying Officer :

G.M Electrical Circle Paradeep shall be the paying officer for the project.

29.0 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.

30.0

QUALIFYING REQUIREMENTS

Qualification of bidders will be based on meeting the minimum criteria specified in Part-A below regarding the Bidders technical experience and financial position as demonstrated by the Bidder's response in the corresponding Bid Schedules. The Bidders shall also be required to furnish the information specified in Part-B in their Bid. Technical experience and financial resources of any proposed subcontractor shall not be taken into account in determining the Bidder's compliance with the qualifying criteria. The bid can be submitted by an individual firm or a joint venture/consortium of two or more firms.

CESU reserves the right to waive minor deviation if they do not materially effect the capacity of the Bidder to perform the contract.

(Construction of over head line in River Devi on Turnkey)

Field Experience

A bidder intending to bid must have experience in successfully executing similar works and similar Voltage level (s) or above during the last 3 (Three) years as indicated below and the same should be in satisfactory operation on the date of opening of the bid.

Sl.No	Min. required field experience of bidder
(a)	Erection of Minimum 10 (Ten) numbers of OC / UR towers with pile foundation in DMC method including stringing of 148mm ² AAAC or above size conductor.
(b)	Erection of minimum 5 nos D.Ps in 116x100mm or above R.S size joist.
(c)	Work order copies along with electrical inspection report and performance certificates from users to be submitted as evidence of completion of the above work within last 3 years.

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

- i. Valid electrical licence.
- ii. EPF regn.
- iii. Empllyees insurance
- IV VAT CC
- V PAN card and TIN No.
- Vi Turn over and balance sheet of last three years i.e. 2006-07, 2007-08 & 2008-09
- d. Annual average turnover of bidder during the last 3 (three) years shall not be less than the estimated cost of Project indicated in the I.F.B (N.I.T)
- e. All bidders are required to have adequate financial stability i.e. liquid assets and/or access to Credit facility of not less than (1/6) one sixth of the estimated cost of the Project indicated in the I.F.B. (NIT)

For bidders to qualify for the Project should satisfy the minimum criteria mentioned above.

Bids may be submitted by an individual firm, the bidder shall satisfy all the qualifying criteria pertaining to field experience and financial turnover and liquidity. If the bidder is joint venture or consortium including manufacturer(s) of towers they shall comply to the qualifying criteria where in at

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least one partner shall have the field experience stipulated. The field experience of other partner(s) shall not be added for qualifying the bid.

However the annual turnovers and liquidity figures of all partners shall be added to determine the bidder's compliance in these aspects if no single partner comply to these requirements.

31.0 Jurisdiction of Court: -

Suits, if any, arising out of this contract shall be filed by either party in a Court of Law to which the jurisdiction of High Court of Orissa extends.

Section – III

TECHNICAL SPECIFICATION FOR DRAWAL OF OVER HEAD LINES ON RIVER DEVI ON
OC+6 TOWERS

TECHNICAL SPECIFICATION CIVIL WORKS

1.0 TECHNICAL SPECIFICATION GENERAL

This specification covers the general requirements for pile foundation, fabrication, galvanizing supply and construction of civil, structural steel works for transmission lines. The contractor shall construct his own store shed at his own cost and shall keep his own security to guard his materials including arrangement of insurance at his own cost.

The contractor shall perform the works to meet the requirements of this specification, the attached bid drawings and the relevant articles in this contract document. This specification is intended for general description of quality and workmanship of materials and finished works. They are not intended to cover minute details. It shall be specifically understood that the work shall be executed in accordance with the best modern practices and with best quality of materials and workmanship to the entire satisfaction of the employer. This specifications shall generally have precedence in case anything contrary to this is stated anywhere in the contract document but the decision of the Employer shall be final and binding on the Contractor in respect of any issue arising out of such discrepancies.

Survey and design : The profile plotting and foundation design drawings (two locations) are enclosed in this specification based on the soil test and velocity of water at the point of erection. The contractor is to carry out the foundation work as per the design drawing enclosed. However for tower members and D.Ps, all design calculations, detail drawings, manufacturing supply and erection is to be done by the contractor.

1.2 LIST OF STANDARDS AND CODES OF PRACTICE

The following list of relevant Indian standards is provided for reference purposes only and is not to be considered as being comprehensive. The contractor shall be responsible for ensuring that the works comply in all respects with the relevant standards, codes or statutory requirements whether or not they be listed hereunder.

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1.3 STRUCTURAL CONCRETE

- IS: 383 Specification for coarse and fine aggregates from natural sources for concrete.
- IS: 456 Code of practice for plain and reinforced concrete.
- IS: 516 Method of test for strength of concrete.
- IS: 1199 Methods of sampling and analysis of concrete.
- IS: 1786 Specification for high strength deformed steel bars and wires for concrete reinforcement.
- IS: 1791 Specification for batch type concrete mixers.
- IS: 2502 Code of practice for bending and fixing of bars for concrete reinforcement.
- IS: 2645 Specification for integral cement water proofing compounds.
- IS: 3025 Methods of sampling and test (Physical and chemicals) for water used in industry.
- IS: 4925 Specification for concrete batching and mixing plant.
- IS: 4990 Specification for ply wood for concrete shuttering work.
- IS: 7320 Code of practice for extreme weather concreting.
- IS 10262 Recommended guidelines for concrete mix design.
- IS: 455 Specification for Portland slag cement.
- IS: 8112 Specification for ordinary Portland cement of 43 grade.

Tower Foundation :

The Scope of work covers the installation and testing of reinforced concrete cast-in-situ Direct Mud circulation(D.M.C) piles including all related items of work like Providing bored (DCM Method) cast-in- situ as per design drawing enclosed 1000 mm diameter piles to the required depth including tie beams and capping , including boring with motor driven/ hand drivin auger and other required equipments in all classes of soil including rock providing, platform if required at site, dewatering during drilling wherever necessary, filling the above bore hole with betonite solution during and after sinking lifting aliging reinforcement cage for welding, lowering and placing in poririon, placing the concrete in under water condition either with termic pipesor by specially designed under water placer as required at site compacting the concrete immediately after placement ofsand filling in the holes left after casting the piles, providing all labour, supervision and materials, construction equipments, tools and plant, supplying, binding wire, transportation of all other incidental items not shown or specified but reasonably implied or necessary for successful completion of the job.

MATERIAL :-

All materials as far as possible shall be obtained from local sources and shall be subjected to approval

by the Employer prior to use.

Mineral aggregates shall consist of natural or crushed stone. Sand, shall be of reasonably uniform quality throughout and shall be clean and free from soft or decomposed particles. Excess clay, foreign, organic or other deleterious matter.

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b) Coarse Aggregate for Water bound Macadam Course :-

Coarse aggregate shall be crushed or broken stone and shall possess high resistance against abrasion and impact.

Crushed or broken stone shall conform to the grading given in Table-1

Size Range	Sieve Designation weight	Percentage by passing Sieve
50 mm – 25 mm.	63 mm	100
	50 mm	90 – 100
	40 mm	35 – 70
	25 mm	0 – 15

C) Screenings :-

Screenings shall consist of non-plastic materials such as soft decomposed rock (moorum) or gravel (other than rounded river borne material) with Liquid Limit and Plasticity Index below 20 and 6 respectively and fraction passing 75 Micron Sieve not exceeding 10%. Moorum shall be sound and hard of a quality not affected by weather and shall be screened at the quarry and shall be free all impurities. Only the pure moorum shall be received on the work. Any large lumps shall be broken to pass gradation given in Table-2 Gravel shall be composed of large, coarse, siliceous grains, sharp and gritty to the touch, thoroughly free from dirt and impurities.

Screenings shall conform to the grading indicated in Table-2

Size	Designation. Screenings.	Sieve Percentage by Passing the sieve.
10 mm.	10 mm 100	
4.75 mm	4.75 mm.	85 – 100

d) Soling :-

Soling shall be either trap/basalt/granite/locally available approved stone and shall be hard, tough, sound, durable, dense, clean, of close texture and free from unsound material, cracks, decay and weathering. Water absorption when tested shall be not more than 5%.

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e) Stone Kerb :

The stone shall in the smallest dimension be equal to the thickness of the soling course specified with a tolerance of 25 mm. Soling stone shall be sufficiently flat bedded.

Kerb stones shall be clean, hard trap/basalt/granite/locally available approved stones free from decay and weathering. The stones shall be hammer dressed on all sides. The size of the stones shall be approximately 150 mm wide, 50 mm in depth and not less than 250 mm in length.

EARTH WORK IN EXCAVATION AND BACKFILL**EARTH WORK IN EXCAVATION :-**

Excavation shall conform to the dimension and elevation as shown on the approved drawings. Adequate side slope shall be provided, however, where the slope exceeds 1:1.5, temporary supports to the sides of excavation shall be provided by means of timbering or shoring.

When foundations rest on an excavated surface other than rock, special care shall be taken not to disturb the bottom of the excavation. When sub-soil for foundations become mucky on top due to construction operation or any other reasons, such sub-soil shall be removed and replaced by one or more layers of compacted sand or compacted crushed rock, as directed by the Employer.

Excavated material suitable for use as backfill shall be deposited by the Contractors in storage area approved by Employer. However, surplus excavated materials shall also be hauled and transported to the disposal area designated by Employer.

BACKFILL :

The contractor shall place and compact the backfill materials to the lines, grades and dimensions to be shown on the approved drawings. The materials to be used for backfill, the quantity thereof and the

manner of depositing the materials shall be approved the Employer.

MATERIALS :-

The Metal shall be clean and hard approved by Employer. The ration of the length to the thickness of the particles, for the control of particles shape, shall not exceed 2. The size of gravel shall be 40 mm. and down graded.

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CONCRETE AND ALLIED WORKS

Concrete work shall mean and include all and every concrete work for the civil work. The contractor shall perform the concrete work in strict conformity to IS: 456 and as directed by employer and shall inform Employer at least 24 hours in advance. Of the time s and places at which he intends to place concrete.

COMPOSITION OF CONCRETE

GENERAL MIX COMPOSITION

The concrete shall be composed of cement, fine aggregate, coarse aggregate, water and admixtures as specified. All materials shall be well mixed and brought to the proper consistency.

NOMINAL MIX CONCRETE

Nominal mix concrete may be used for concrete of grades M15 and M20. The proportions of materials or nominal mix concrete shall be in accordance with Table-3. cement shall be used by weight and not by volume.

PROPORTIONS FOR NOMINAL MIX CONCRETE

Grade of Concrete	Total Quantity of Dry Aggregates by Mass per 50 Kg of Cement to be Taken as the sum of the masses of fine & Coparse aggregates (max.)	Proportion of fine aggregates to Coarse aggregate	Qty of Water per 50 Kg of cement (Max.)
M15	350		32
M20	250		30

The detailed mix proportion shall be submitted to Employer for approval on the basis of producing concrete having suitable workability, consistency, density, impermeability, durability and required strength with concrete compressive strength test records.

CONSISTENCY

The detailed mix proportions shall be submitted to Employer for approval to secure concrete of the proper consistency and to adjust for any variation in the moisture content or grading of the aggregate as they enter the mixer. Addition of water to compensate for stiffening of the concrete before placing will not be permitted. Uniformity in concrete consistency from batch to batch will be required.

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LEAN CONCRETE

Lean concrete shall be used under all foundations with the ratio of cement: fine aggregate: coarse aggregate equal to 1:3:6 (by volume) and of 150 mm. thickness.

CEMENT

Generally cement shall be ordinary Portland cement conforming to IS : 269, or Portland slag cement conforming to IS : 455, or Portland pozzolona cement conforming to IS : 1489. In special cases, rapid hardening Portland cement, low heat cement, etc. may be permitted by the Employer.

COURSE AGGREGATE

Coarse aggregate shall conform to IS: 383 and shall be crusher broken granite natural gravel or manufactured coarse aggregate. Coarse aggregate shall consist of well shaped clean, arid, dense, durable granite rock fragments and shall not include elongated, flaky or laminated pieces and any other impurities or deleterious material.

FINE AGREGATE

Fine aggregate shall confirm to IS: 383 and shall be natural sand or manufactured sand. It shall consist of clean, hard, dense and durable rock particles free from injurious amount of dust, silt, stone powder, pieces of thin stone, alkali, organic matters and other impurities.

ADMIXTURE

The contractor shall use admixture, if required, in order to improve the quality of concrete or mortar such as workability and finish ability and water tightness as per manufacturer's instructions only with the approval of Employer. The admixture shall conform to IS: 9103.

WATER

Water used for both mixing and curing shall be clean and freed from injurious materials such as oil, acid, alkali, salts, organic materials or other substances that may be deleterious to concrete and steel. Potable water is generally satisfactory.

STEEL REINFORCEMENT

The contractor shall place all the reinforcement bars in the concrete structures as shown on the approved drawings and directed by the Employer.

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QUALITY

The reinforcement bars used for concrete structure shall be plain and deformed bars of tested quality and shall conform to IS: 432 and IS: 1786. All bars shall be of tested quality.

PLACING

Reinforcement bars shall be accurately placed and special care shall be exercised to prevent the reinforcement bars from being displaced during the placement of concrete. Intersecting points and splices of the reinforcement bars shall be fixed by using black annealed wires, the diameter of which shall be more than 1.626 mm. The reinforcement bars in structures shall be placed satisfactory devices to ensure required coverage between the reinforcement bars and the surface of concrete. Bar bending schedule shall be submitted for approval.

FORM WORK

GENERAL

Forms shall be used, wherever necessary, to confine and shape the concrete to the required lines and be directed by Employer. Forms shall have sufficient strength to withstand the pressure resulting from placing and vibrating of the concrete and shall be maintained rigidly in positions. Forms shall be sufficiently tight to prevent loss of cement slurry from the concrete. Each form shall be so prepared that each section may be removed individually without injuring the concrete.

Faces of form work coming in contact with concrete shall be cleaned and two coats of mould oil or any other insoluble, non-staining approved material applied before fixing reinforcement.

Form work, during any stage of construction, showing excessive distortion, shall be repositioned and strengthened. Placed concrete affected by faulty form work, shall be removed entirely and form work corrected prior to placement of new concrete.

REMOVAL OF FORMS

Forms shall not be removed without the approval of Employer. As a rule, the forms shall be removed at the following minimum times after concrete has been placed.

Side form of column, beam and wall: 2 days.

Supporting form of floors and beam: 14 days
(Spanning upto 6 M)

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Supporting form of floors and beam: 21 days
(Spanning over 6 M)

Before reuse, all forms shall be thoroughly scraped, cleaned, nails/ bolts removed, holes suitably plugged, joints repaired and warped lumber resized to the satisfaction of Employer.

Contractor shall equip himself with enough shuttering to complete the job in time.

BATCHING AND MIXING

The contractor shall provide Line and shall maintain and operate the Line to produce the required quality of concrete.

When any mixer produces unsatisfactory results, Employer may direct the contractor to increase the mixing time or repair the mixing blades and the contractor shall promptly carry out the directions of Employer.

The order feeding the materials into the mixer shall be subject to approval of Employer. All concrete shall be machine mixed.

2 PILE INSTALLATION

2.2 EQUIPMENT AND ACCESSORIES:

2.1.2 The equipments and accessories would depend upon the type of bored (a) cast in situ pile chosen in the job and would be selected giving due consideration to sub soil strata, ground water condition, type of founding materials and the required penetration therein wherever applicable. Boring may be with mud circulation method/bailer and chisel method as decided by Engineer-in-charge.

(b) For under reamed piles typical list of instruments as indicated in IS 2911(III)-1980 shall be followed.

2.2 Bore holes

2.2.1 The depth of bore holes should be checked before lowering reinforcement or concreting whichever is earlier. The contractor should be responsible to get the bore hole checked by the departmental Engineers.

- 2.2.2 The pile shall be installed as correctly as possible at the correct location and to the required level. Great care shall be exercised in respect of single pile or piles in group under a column (as per design). As a guide for vertical piles a deviation of 1.5 per cent shall not normally be exceeded. In special cases, a closer tolerance may be necessary. Piles shall not deviate more than 75 mm or one quarter, the stem diameter, whichever is less from the design position at the working level. In the case of single pile under a column, the positional deviation should not be more than 50mm or one quarters of the stem diameter whichever is less.
- 2.2.3 In case bored cast in situ pile Clause 7-13-1 of IS-2911 Pt-I/Sec-2 shall apply for keeping records. Any deviation from the designed location, alignment or load carrying capacity or any upheaval noticed during installation shall be immediately reported to the Engineer and adequate corrective measures shall be taken as decided by the Engineer at the cost of the Contractor. The record shall be filed in duplicate & submitted to the Engineer.
- 2.2.4 The contractor shall be responsible for accurate setting out of piles. In case the deviations exceed the limit as stated above, the pile(s) will be rejected. The contractor in such case, may be permitted to redesign the pile cap/beam suitably or to drive extra pile to satisfy structural consideration at his cost and risk to the satisfaction of the Engineer-in-charge. The contractor shall be fully responsible for any adverse effect due to such extra driven piles or other piles.
- 2.2.5 The Engineer reserves the right of rejecting any pile which in his opinion is not in proper place, alignment, having inferior grade of concrete or have failed in load test. The Contractor shall be bound to pull the same out and reinstall a new pile in its place or level the defective pile and install at the contractor's cost, one or more additional piles as per the direction of the engineer. The additional cost due to increase in the size of pile caps, if any and the cost of cement and reinforcement acquired for additional piles shall also be borne by the Contractor.

2.3 CONSTRUCTION

- 2.3.1 Before placement of concrete, care shall be taken to ensure that the inside of the bore hole is free from sludge or any foreign matter. Water inside shall be removed by boiling or pumping. Where this is not possible, under water concreting shall be done with necessary precautions with the specific approval of the Engineer.

2.3.2 Concreting shall be done as soon as possible after completing the pile bore. The bore hole full of drilling mud should not be left concrete for more than 12 to 24 hours, depending upon the stability of bore hole.

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2.3.3 For placing concrete in pile bores, a funnel should be used and method of concreting should be such that the entire volume of the pile bore is filled up without the formation of voids and/or mixing of soil and drilling fluid in the concrete.

2.3.4 In case the pile bore is stabilized with drilling mud and or by maintaining water head within the bore hole the bottom of bore hole shall be carefully cleaned by flushing it with fresh drilling mud and pile bore will be checked for its depth immediately before concreting. Concreting shall be done by tremie method. The Tremie should have valve at its bottom and lowered with its valve closed at the start and filled up with concrete. The valve is then opened to permit the flow of concrete which permits the onwards displacement of drilling mud. The pouring should be continuous and then is gradually lifted up such that the tremie pipe opening remains always in the concrete. In the final stage the quality of concrete in tremie should be enough so that on final withdrawal some concrete spills over the ground.

2.3.5 The top of concrete in a pipe shall be brought above the cut off level to permit removal of all Latinate and weak concrete before capping and to ensure good concrete at the cut off level for proper embodiment into the pile cap.

2.3.6 Where cut off level is less than 1.5 meter below working level concrete shall be cast to a minimum of 300 mm above cut off level. Higher allowance may be necessary depending upon the length of the pile when concrete is placed by tremie method and it shall be cast to the piling platform level to permit overflow of concrete for visual inspection or to minimum of one meter above the cut off level. In the circumstances where cut off level is below ground water, the need to maintain a pressure on the onset concrete equal to or greater than water pressure should be observed and accordingly length of concrete above cut off level shall be determined.

2.3.7 The volume of concrete actually placed shall be observed in the case of few piles initially cast and the average figure obtained may be used as a guide for working out the quantities of the concrete and cement for subsequent piles.

2.4 Measurements:

The length of pile shall be taken to be the clear distance from the under side of pile cap/capping beam to bottom of the bore hole.

2.5 **Load Testing:**

2.5.1 Vertical load tests shall be carried out on various working piles as decided by the Engineer. These tests shall not be undertaken by the Contractor within 28 (twenty eight) days after installation of the piles in position. Before any load test is made the proposed arrangement for carrying out the same including the preparation of the structure to receive the loads and the type of loading to be adopted shall be furnished by the contractor and shall be approved by the Engineer. The responsibility for carrying out such load tests satisfactorily, safely and on proper lines lies with the contractor. Minimum three dial gauge shall be used to record readings of settlement and rebound. Before installation to submit a certificate from a renowned agency regarding their proper calibration.

2.5.2 A full record giving all details of the tests in approved proforma shall be submitted in duplicate to the Engineer. The record shall also include the load settlement characteristics of the pile.

The maximum number of piles to be tested shall be 1%.

2.5.3 Preloading shall be 1 ½ times the safeload carrying capacity of the pile. The test load will be maintained till the progressive settlement is 0.02 mm per hour. The gross settlement at 1 ½ times design load shall not exceed 12 mm and the net settlement after removal of the test load shall not exceed 6mm. The test shall be carried out as per IS 2911(Part-IV)(Latest).

2.5.4 For bored cast in situ concrete piles BIS-2911 Part-I/Section-2-1979 reaffirmed 1997 shall govern.

3 **WORKMENSHP**

3.2 **Reinforcement**

3.2.1 All steel for reinforcement shall be made free from scale, oil, grease or other harmful materials. The bending/binding/welding and placing of reinforcement shall be in accordance with IS 2502 and IS 456.

3.2.2 The reinforcement of the pile shall be carried into caps/capping beams and anchored into it as per approved design. The reinforcement used in cast in situ piles should be made up into cages sufficiently well tied to withstand handling without damage. The bars shall be so spaced as not to impose the placing of the concrete and the lateral ties of spiral ring shall not be closer than 20 cm. center to center.

3.3 CONCRETE

- 3.3.1 Concrete shall be controlled as per Is 456-2000. In proportioning concrete the quantity of cement shall be determined by actual weight. The quantities of fine and coarse aggregate may be measured by weight. If aggregates are wet, due allowance shall be made for building in accordance with IS 2336(Part-I). The amount of surface water shall be determined in accordance with IS 2336(Part-III). Two test cubes shall be properly cured and tested for 7 days and 28 days compressive strength. The cost of the same shall be borne by the contractor. The acceptance criteria shall be as per IS 456. Concrete shall always be mixed in batching plant/weigh batcher. Water shall not be poured into the drum until the cement and aggregate constituting the batch shall be continued until there is an uniformity of colour and consistency but in no case shall the mixing be done for less than two minutes. No partly set, remixed or excessively wet concrete shall be used. Concrete shall be handled and conveyed from the place of mixing to the place and final laying as rapidly as practicable by approved means.
- 3.3.2 Consistency of concrete for cast in situ piles shall be suitable to the method of installation of piles. Concrete shall be so designed or chosen as to have homogeneous mix having a flowable character constant with the method of concreting under the given conditions of pile installation. In achieving those results, minor deviations in the mix proportions used in structural concrete may be necessary.
- 3.3.3 For concreting by tremie, a slump of 150mm to 180mm shall be used.
- 3.3.4 In case of tremie concreting for piles of smaller diameter and depth of upto 10 M the minimum cement content should 450 Kg/cum. of concrete. In case of piles subsequently exposed to free water or in case of piles where concreting is done under water or drilling and using methods other than the tremie, 10 per cent extra cement over that required for the design grade of concrete at the specified slump shall be used subject to the minimum quantities of cement specified above.

3.4 STANDARDS FOR STRUCTURAL STEEL WORK

- IS: 800 Code of practice for general construction in steel.
- IS 606 Code of practice for use of steel tubes in general building construction.

IS: 808	Rolled steel beams, Channels and angle sections.
IS: 813	Scheme of symbols for welding.
IS: 814	Covered electrodes for metal arc welding of structural steel.
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IS: 816	Code of practice for use of metal arc welding for general construction in mild steel.
IS: 1200	Method of measurement of steel work and iron work(Part8)
IS: 1236	Mild steel Tubes.
IS: 1363	Black hexagon bolts,nuts and lock nuts (dia 6 to 30 mm) and black hexagon screws (dia 6 to 24mm).
IS: 1364	Precision and semi-precision hexagon bolts, screws, nuts and lock nuts (dia range 6 to 39mm).
IS: 1367	Technical supply conditions for threaded fasteners.
IS: 1730	Dimensions for steel plate, sheet and strip for structural and general engineering purposes.
IS: 1977	Specification for structural steel(Ordinary quality).
IS: 2062	Steel for general structural purposes.

FABRICATION OF STRUCTURAL STEEL WORK:

2.1 SCOPE

This sub-section of the specification concerns the supply, fabrication, testing, surface protection and delivery to site of structural steel work, including the supply of all bolts, nuts, washers, electrodes and other materials and consumables stores required for the fabrication.

2.2 CODES AND STANDARDS

All work shall conform fully to the requirements of the current version of all relevant Indian standards as determined by the Engineer in charge.

2.3 WORK TO BE PROVIDED BY THE CONTRACTOR

The work to be provided by the contractor unless otherwise specified elsewhere in the contract shall include, but not be limited to the following.

- Preparation and submission for approval of complete detailed fabrication drawings and erection marking drawings required for all the structures covered under the scope of the contract based on the design drawings.

- Prepare and submit for review, design calculation for joints and connections of structural members where applicable.
- Furnish all materials, labour, tools and plant and all consumables required for fabrication and supply, including all necessary bolts, nuts washers, tie rods and welding electrodes for field connections.

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- Furnish shop painting of all fabricated steelwork in accordance with requirements of this Specification.
- Prepare and furnish a detailed Bill of Materials, Drawing Office Dispatch lists, Bolts list and any other list of items required in connection with the fabrication and erection of the structural steelwork.
- Insure load and transport all fabricated steelwork and field connection materials to site.
- Maintain a suitably equipped workshop at the site for fabrication, modification and repair of steelwork as may be required to complete the works in accordance with the Contract.

MATERIALS

The materials shall conform to the following requirements.

All steel materials to be used in construction within the purview of the specification shall comply with any of the following Indian Standard Specification as may be applicable.

All bolts shall be property class 5.6 of property class 5.0 and nuts shall be of properly class 5.0 HRH and shall conform to the requirements of Indian standard Specification IS: 1367 (Part 3) – 1991, IS: 6639-1972 and galvanizing quality shall be as per IS: 538. All bolts and nuts shall be of minimum diameter of 16 mm. unless otherwise stated. All mild steel for bolts and nuts when tested in accordance with the following Indian Standard Specification shall have a tensile strength of not less than 44 kg/sq.mm. and a minimum elongation of 23 percent on a gauge length of 5.6 A, where ‘A’ is the cross sectional area of the test specimen. Washers shall be made of steel conforming to IS:961 as may be applicable under the provisions of the contract.

Paints to be used for shop coat of fabricated steel (other than galvanized) under the purview of this contract shall conform to IS: 2074 – Ready mixed paint, red oxide – zinc chromate priming.

MATERIALS TO BE USED

All steel materials required for the work will be supplied by the Contractor unless otherwise specified elsewhere in the contract. The materials shall be free from all imperfections., mill scale, slag intrusions, laminations, pitting, rusts, etc. that may impair their strength, durability and appearance.

All materials shall be of tested quality only, test certificates in respect of each consignment of structural steelwork delivered to the site shall be submitted to the Engineer.

Electrodes for manual metal arc welding shall be of approved manufacturer and conforming to the relevant Indian Standard Codes of Practice and Specification. They shall be of the heavily coated type and the thickness of the coating shall be uniform and concentric. With each container of electrodes, the manufacturer shall furnish instructions giving recommended voltage and amperage, (and polarity in the case of direct current supply), for which the electrodes are suitable.

2.5.1 **Steel**

All steel materials shall comply with the relevant Indian Standard Specifications, including but not limited to the following document:-

- IS:1977 Specification for structural steel (ordinary quality)
- IS:2062 Steel for general structural purposes.

Where imported steel material is used, this shall conform to the relevant international specification which is deemed to be appropriate by the Engineer.

2.5.2 **Electrodes**

All electrodes to be used under the Contract shall be of approved manufacturer and shall comply with the relevant Indian Standard Specifications, including but not limited to the following requirements:-

- IS:814 Covered electrodes for manual metal arc welding of carbon and carbon making manganese steel.
- IS: 7280 Bare wire electrodes for submerged arc welding of structural steels.

2.5.3 **Bolts, Nuts and Washers**

All bolts and nuts shall conform fully to the requirements of Indian Standard Specification IS: 1367 – Technical Supply Conditions for Threaded Fasteners.

Materials for bolts and nuts under the purview of this contract shall comply with any of the following Indian Standard Specifications as may be applicable.

2.5.4 **Mild Steel**

When tested in accordance with the following Indian Standard specifications all mild steel for bolts and nuts shall have a tensile strength of not less than 44 Kg/mm^2 and a minimum elongation of 23 percent on a gauge length of $5.6 \sqrt{A}$, where “A” is the cross sectional area of the test specimen:-

- IS: 1367 Technical supply conditions for threaded fasteners
- IS: 1608 Method for tensile testing of steel products other than sheet, strip, wire and tube.

2.5.5 **High Tensile Steel**

The material used for the manufacture of high tensile steel bolts and nuts shall have the mechanical properties appropriate to the particular class of steel in accordance with the requirements of IS: 1367.

2.5.6 Washers

Washers shall be made of steel conforming to the appropriate Indian Standard Specifications including, but not limited to the following documents:-

- IS:1977 Specification for structural Steel (Ordinary quality)
- IS2062 Steel for general structural purposes.

IS 6649 Hardened and tempered washes for high strength structural bolts.

DESIGN METHOD

The stress analysis shall be conducted by any suitable method for all types of steel structures including towers, Line supporting structures, considering following worst case load combinations as applicable for respective structures: -

1. All possible combinations of dead loads, service loads and on any other applicable Loads as derived.
2. Wind induced loads.
3. Inertial forces induced due to seismic activities.
4. Thermal stresses.
5. Any other special loads like short circuit forces etc during service period of structures and during erection stages.

Usage of INHOUSE developed software shall not be permitted. Only standard widely used and tested software's i.e. STAAD-3, COSMOS, SAP-90 etc shall be used for analysis and design of structure.

ASSUMED WORKING LOADS

A) Wind load

Wind load on structure trusses, equipment, conductor, insulators, etc. shall be assessed confirming to IS: 802 (Part-I. Sec-I) – 1995 for the state of Orissa in costal district.

B) Conductor Tension

The tension for conductors will be 1000 Kg. And for shielding wire will be 750 kg. Angle of deviation

with respect to direction normal to take off structure beam will be) deg. to 15 deg.

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C) Short Circuit Loading

Short circuit forces including snatch in the case of bundle conductors shall be considered according to manufacturer's specification.

D) Seismic Loads

The lateral forces shall be established in accordance with recommendations of IS :1893-1984. A basic horizontal seismic co-efficient of 0.04 shall be used.

E) Dead Load

Dead weight, loads of conductors, insulators and electrical Line shall be taken into Consideration in the design as per data furnished by the manufacturers and conforming to IS: 802 (Part-I/Sec-I) – 1995.

F) Human Load

A point load of 150 Kg. Anywhere on the structure

G) Stress on members shall be checked conforming to IS: 802 (Part-I/Sec-2)- 1992.

COMBINATION OF LOADS

For the design of the steel structures, simultaneous application of loads as indicated shall be considered. The direction of wind should be assumed such as to produce the maximum Stress in any member for the combination of wind load and wire tensions.

NORMAL CONDITION

Strung Bus Bars

1. Wind load on bus bars, shield wires, insulator strings, electrical equipments structure members etc.
2. Unbalanced loads due to wire tension.
3. Dead loads of wire, insulators, electrical Line and structure members.

ABNORMAL CONDITIONS

Short Circuit Conditions

In addition to the combination of loading excluding the wind loads, earthquake forces as specified shall be considered for the design of structural members.

Earthquake Conditions

In addition to the combination of loading , short circuit forces shall be considered for the design of structural members.

FACTOR OF SAFETY

The factor of safety in the design of members for steel switchyard structures shall be as per IS: 802 (Part-1/Sec-2)-1992.

LIMIT OF EFFECTIVE SLENDERNESS RATIO :-

The effective slenderness (L/R) ratio of members shall meet the following limits.

Leg members, Gantry chords, main compression
Member and ground wire peaks. : 120

Other members having computed compressive
Stress : 200

Tension members : 400

Where

L: Length of the unsupported panel of member.

R: Radius of gyration of members.

In order to facilitate transportation and hauling, the length of any structural member shall

not exceed 6 m.

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MINIMUM THICKNESS AND SIZE OF STEEL MEMBERS :-

Minimum thickness of steel members of structures shall be as follows:-

- a) For leg members and compressive chords in Gantries. : 6 mm.
- b) For other members without calculated stress. : 5 mm.
- c) For redundant members without calculated stress. : 5 mm.
- d) Gusset plates : 6 mm
- e) Minimum bolt diameter for main members : 16 mm.
carrying calculated stress
- f) Minimum bolt diameter for bracing member : 12 mm.
Without calculated stress.

In computing the net section of tension members, the diameter of the bolt holes shall be taken as 1.5 mm. greater than the nominal diameter of the bolts.

DESIGN DRAWINGS AND CALCULATIONS :-

The design drawings shall show the following data and information :

Loading Diagram and scaled line diagram of the steel structures showing all redundant bracing members and their sizes completely dimensioned and proving compliance with all clearance requirements. All loadings and their manners of application including the determination of wind load (wind load on structure shall be applied at each panel point along the height of the steel structure).

Table showing the Following :-

1. Total stresses in each member for each loading case and the critical case.
2. The effective slenderness ratio, calculated stress, ratio of maximum total stress to calculated stress for each member and strength of connection.
3. The estimated weight of the complete galvanized steel structures.
4. Size and type of steel for each members and number of bolts required for its connection.
5. The compression and uplift reactions and corresponding horizontal shears at each leg of all steel, structures, columns and Line supports for all loading cases.

DETAILING :-

Detailing shall be done as per IS:802 (Part-II)-1978 and as follows :

(a) General :-

Steel structure dimensions, framing, member sizes and length, number, size and length of bolts, thickness of each filler and other necessary details to fabricate each piece shall be shown on the approved detailed drawings. No subsequent change shall be made without the written approval of Employer.

All web members shall be in one piece where practicable. All double diagonal web system members shall be connected at their point of intersection by at least one bolt.

b) Step bolts.

Step bolts shall be of 16-mm. diameters and shall have round or hexagonal head. Each step bolt shall be provided with two hexagonal nuts. The minimum bolt length and length of unthreaded portion shall be 150 and 100 mm. respectively. Step bolts shall not be used as connection bolts.

The step bolts shall be spread alternately on the inner gauge line on each face of the angle about 40 cm. Centers. They shall be furnished for one leg of each steel structure column from its base elevation.

c) 'U' bolts

Detailed drawings shall be complete with sizes and detailed dimensions of all steel structure members. At each joint there shall be the number, size and length of bolts, number and size of fillers and detailed dimensions of gusset plate, if any.

d) Bill of Material

Bill of Material shall give the size, length and galvanized weight of each member and the total weights of steel structures. It shall also include the number of bolts, nuts and washers per structure.

QUALITY CONTROL

The contractor shall establish and maintain quality control procedures for different items of work and material to ensure that all work is performed in accordance with the specifications and best modern practice.

In addition to the contractor's quality control procedures, materials and workmanship at all times shall be subjected to inspection by the Employer. As far as possible, all inspection by the Employer's representative shall be made at the Contractor's fabrication shop whether located at site or elsewhere. The contractor shall co-operate with the Employer in permitting access for inspection to all places where work is being done and in providing free of cost of all necessary help in respect of tools and plants, instrument, labour and material required to carry out the inspection. Materials or workmanship not in reasonable conformance with the provisions of these specification maybe rejected at any time during the progress of the work.

The quality control procedure shall cover but not be limited to the following items of work:

- (i) **Steel** : Quality, manufacturer's test certificates, test reports of representative samples of materials from unidentified stocks if permitted to be used.
- (ii) **Bolts, nuts & washers** : Manufacturer's certificate, dimension & washers, check, material testing.
- (iii) **Electrodes.** : Manufacturer's certificate, thickness and quality of flux coating.
- (iv) **Welds.** : Inspection, X-ray, ultrasonic test, and magnetic particle test.
- (v) **Paints.** : Manufacturer's certificate, physical inspection reports.
- (vi) **Galvanizing** : Tests in accordance with IS : 2633 – Methods of testing weight, thickness and uniformity of coating on hot dipped galvanizing articles

FABRICATION

WORKMANSHIP

All workmanship shall be equal to the best practice in modern structural shop and shall conform to the provisions of IS: 800 – 1984 & IS: 802 (Part II) 1978.

Rolled materials before being laid off or worked, must be clean free from sharp kinks, bends, or swifts and straight within the tolerances allowed by IS: 1852. If straightening is necessary, it may be done by mechanical means or by the application of a limited amount of localized heat not exceeding 600 deg. C.

Cutting shall be affected by shearing, cropping or sawing. Use of mechanically controlled Gas Cutting Torch may be permitted for mild steel only. Gas cutting of high tensile steel may also be permitted provided special care is taken to leave sufficient metal to be removed by machining, so that all metal that has been hardened by flame is removed. To determine the effective size of members, cut by gas, 3 mm. shall be deducted from each cut edge.

The erection clearance for cleared ends of members connecting steel to steel shall preferably be not greater than 2 mm. at each end. The erection clearance at ends of beams without cleats shall not be more than 3 mm. at each end, but where for practical reasons greater clearance is necessary suitably designed clearings shall be used.

All members shall consist of rolled steel sections.

Holes for bolts shall not be more than 1.5 mm. large than the diameter of the bolt passing through them.

All members shall be cut to jig and all holes shall be punched and drilled to jig. All parts shall be carefully cut and holes accurately located after the members are assembled and tightly clamped or bolted together.

Drifting or rimming of holes shall not be allowed. Holes for bolts shall not be formed by gas cutting process.

Punching of holes will not be permitted for M.S. members up to 8 mm. thick and in no case shall a hole be punched where the thickness of the material exceed the diameter of the punched hole.

The stress analysis shall be conducted by any suitable method for all types of steel structures. Any computer programme to be employed shall be prepared of approved by the recognized institute and be submitted to Employer/ Engineer Minimum bolt spacing and distances from edges for

members shall be in accordance with the provisions in the relevant Indian Standard Specification.

Built members shall, when finished, be true and free from all kinds of twists and open joints and the material shall not be defective or strained in anyway.

All bolts shall be galvanized including the threaded portion. The threads of all bolts shall be cleared of smelter by spinning or brushing. A die shall not be used for cleaning the threads unless special approved by the Employer. All nuts shall be galvanized with the exception of the threads, which shall be oiled.

When in position all bolts shall project through the corresponding nuts but not exceeding 10 mm. The nuts of all bolt attaching insulator sets and earth conductor clamps to the structure shall be carefully positioned as directed by the Employer. Bolts and nuts shall be placed in such a way so that they are accessible by means of an ordinary spanner.

Foundation bolts and tubes shall be fitted with washer plates or anchor angles and flats, nuts, etc and shall be manufactured from mild or special steel.

Washers shall be tapered or otherwise suitably shaped, where necessary to give the heads and nuts of bolts a satisfactory bearing. The threaded portion of each bolt shall project out through the nut at least one thread. In all cases, the bolt shall be provided with a washer of sufficient thickness under the nut to avoid any threaded portion of the bolt being within the washer, one spring washer or lock nut shall be provided for each bolt shall project out through the nut at least one thread. In all cases, the bolt shall be provided with a washer of sufficient thickness under the nut to avoid any threaded portion of the bolt being within the washer, one spring washer or lock nut shall be provided for each bolt for connections subjected to vibrating forces or otherwise as may be specified in the drawings.

CLEANING AND GALVANIZING

Cleaning

After fabrication as been completed and accepted, all materials shall be clear of rust, loose scale, dirt, oil grease and other foreign substances.

Galvanizing

All materials shall be hot-dip galvanized after fabrication and cleaning. Re-tapping of nuts after galvanizing is not permitted.

Galvanizing of structural mild steel products shall meet the requirements of IS: 4759-1984. All holes in materials shall be free of excess shelter after galvanizing.

Galvanizing for fasteners shall meet the requirements of IS: 1367 (Part – 3)-1983. The spring washers shall be electro galvanized as per IS: 1573 – 1986.

Finished materials shall be dipped into the solution of dichromate after galvanizing for white rust protection during transportation.

All galvanizing shall be uniform and of standard quality.

Mass of zinc Coating

The mass of zinc coating for different class of materials, as given in Table-4, shall be followed.

MASS OF ZINC COATING.

Sl. No.	Product	Minimum value of average Mass of coatings. Gm/m
1.	Castings – grey iron, malleable iron	610
2.	Fabricated steel articles :	
a.	5 mm thick and over	610
b.	Under 5 mm, but not less than 2 mm.	460
c.	Under 2 mm. but not less than 1.2 mm.	340
3.	Threaded work other than tubes and tube fittings:	
a.	10 mm. dia. and over.	300
b.	Under 10 mm. dia.	270

Straightening after Galvanizing

All plates and shapes which have been warped by the galvanizing process shall be straightened by being re rolled or pressed. The materials shall not be hammered or otherwise straightened in a manner that will injure the protective coating. If, in the opinion of Employer the material has been forcibly bent or warped in the process of galvanizing of fabrication such defects shall be cause for rejection.

Repair of Galvanizing

Materials on which galvanizing has been damaged shall be acid stripped and regularized, unless, in the opinion of employer, the damage is local and can be repaired by zinc spraying or by applying a coating of galvanizing repair compound. Where regularizing is required, any member which becomes damaged after having been dipped twice shall be rejected.

CONFIRMITY WITH DESIGN

The Contractor shall design the towers including all connections not detailed in the tender Drawings. Full design calculations for the connections shall be submitted with the fabrication drawings for review by the Engineer.

The Contractor shall design and fit all required lifting lugs or attachments required for erection of the structural steelwork and provide appropriate design drawings and calculations for review.

Contractor shall furnish all materials and fabricate all steelwork in accordance with the approved Drawings and/or as instructed by the Engineer keeping in view the maximum utilization of the available sizes and sections of steel materials.

The methods of painting, marking, packing and delivery of all fabricated materials shall be strictly in accordance with the provisions of the Specification and/or as approved by the Engineer.

STORAGE OF MATERIAL

General

All materials shall be so stored as to prevent deterioration and to ensure the preservation of their quality and fitness for the work. Any materials which has deteriorated or has been damaged shall be removed from the Contractor's yard immediately, failing which the Engineer shall be at liberty to arrange for removal of the material and the cost incurred thereof shall be realized from the Contractor.

The Contractor shall maintain up to date accounts in respect of receipt, use and balance of all sizes and sections of steels and other materials. Where fabrication is carried out in Contractor's fabrication shop or site and where fabrication works for their other projects are also carried out, all materials allocated for use on this projects shall be stored separately with easily identifiable marks.

QUALITY CONTROL

The contractor shall establish and maintain quality control procedure for all items of work and material provision to ensure conformity with the requirements of this specification in addition to the Contractor's quality control procedures, materials and workmanship shall at all times be subjects to be inspected by the Engineer in charge.

The quality control procedures shall cover but not be limited to the following items of work:-

- Steel Quality Manufacture's test certificates.
- Bolts, Nuts & Manufacture's certificate, dimension checks, material Washers testing.
- Electrodes Manufacture's certificate, thickness and quality of flux coating.

All inspection by the Engineer shall be carried out at the Contractor's fabrication shop unless the Engineer is an agreement with other arrangements being made. The Contractor shall permit access for inspection to all places where work is being carried out and shall provide, free of cost, all necessary assistance to the Engineer in respect of tools and plant instruments labour and materials required to carry out the inspection.

Materials or workshop which, in the opinion of the Engineer are not in compliance with the provisions of this Specification may be rejected at any time during the progress of the work.

Conductor Stringing :

The entire stringing work of conductor and earth wire shall be carried out by tension stringing technique. The contractor shall indicate in their offer, the sets of tension stringing equipment he is having in his possession and the sets of the stringing equipment he would deploy exclusively for this package which under no circumstance shall be less than the number and capacity requirement indicated in Qualifying Requirements for Bidder.

Materials :

The Bidder should have assured access to supply Earthwire, hardware fittings and Conductor & Earthwire accessories from Qualified manufacturers. Type test certificate from CPRI / Govt. testing laboratory should be attached with the offer.

a) Earthwire :-

Galvanized steel ground wire wire of size 7/3.15 mm or above from any reputed manufacturer.

b) Hardware Fittings

90KN /100KN Hard ware fittings of reputed manufacturer. Type and load test certificates from CPRI / Govt. testing laboratory.

c) Insulator String Hardware (As may be applicable)

- (i) Anchor shackle
- (ii) Chain Link
- (iii) Ball Clevis
- (iv) Arcing horn holding plate
- (v) Yoke plate
- (vi) Socket clevis
- (vii) Arcing horns
- (viii) Corona control ring/grading ring
- (ix) Clevis Eye
- (x) Free center type/ Armour grip suspension clamp for suspension strings.
- (xi) Compression type dead end clamp.
- (xii) Sag adjuster.
- (xiii) Balancing weight

d) Accessories for Conductor & Earth wire (As may be applicable)

- (i) Perfomed Armour rods
- (ii) Mid Span compression joint
- (iii) Repair Sleeves
- (iv) Flexible copper bonds
- (v) Bundle spacers
- (vi) Vibration dampers
- (vii) Rigid Spacer
- (viii) Suspension clamp for earth wire.
- (ix) Tension clamp for earth wire

e) Service Conditions :

Equipment/ material to be supplied against this specification shall be suitable for satisfactory continuous operation under tropical conditions as specified below :

Maximum ambient temperature (Degree Celsius)	:	50
Minimum ambient temperature (Degree Celsius)	:	0
Relative humidity (% range)	:	10 – 100
Wind zone (as per IS : 875)	:	49 m/sec
Maximum altitude above mean sea level (Meter)	:	Upto 1000m
Isoceraunic level (days/years)	:	50

Moderately hot and humid tropical climate conducive to rust and fungus growth. Climate varies from moderately hot and humid tropical climate to cold climate.

General Climatic Conditions :

Climatic conditions shall be of tropical nature having summer period for 8 months and winter period for 4 months in a year. The maximum temperature during summer be of the order of 50 Deg. C and the minimum temperature in the winter shall be of the order 40 C. Normal every day temperature is 320 C.

Working Seasons :

Working season shall be approximately 9 months/year and balance 3 months shall be monsoon period. For this particular work two working seasons shall be allowed to the contractor.

Guaranteed Technical Particulars

The Guaranteed Technical Particulars of the various items shall be furnished by the Bidders in one original and one duplicate along with the techno-commercial Bid documents. The Bidder shall also furnish any other information as in their opinion is needed to give full description and details to judge the item(s) offered by them.

The data furnished in Guaranteed Technical Particulars should be the minimum or maximum value (which ever is ruling condition as per the requirement of the specification) required. A Bidder may guarantee a value more stringent than the specification requirement. However, for testing purpose or from performance point of view, the material shall be considered performed successfully if it achieves the minimum/ maximum value required, which ever is ruling condition, as per the technical specification. No preference what so ever shall be given to the bidder offering better/more stringent values than those required as per specification except where stated otherwise.

Access to the Line and Right of Way:

Right of way and way leave clearance shall be arranged by the Contractor in accordance with work schedules. Owner will secure way leave and Right of way in the Forest area but the contractor shall maintain the same for the entire period of the contract.

(d) River Crossings

In case of major river crossing towers shall be of suspension type and the anchor towers on either side of the main river crossing shall be OC+6 type tower or some special type towers which shall be designed by the contractor. Clearance shall be reckoned with respect to highest flood level (HFL).

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 tree cutting shall be the responsibility of the Owner except for that required during survey. However, the Contractor shall count, mark and put proper numbers with suitable quality of paint at his own cost on all the trees that are to be cut by the Owner at the time of actual execution of the work as detailed below. Contractor may please note that Owner shall not pay any compensation for any loss or damage to the properties or for tree cutting due to Contractor's work.

DEVIATION SCHEDULE :-

On this schedule the bidder shall provide a list of deviations with this specification, documenting the effects that such deviations are likely to have on the equipment's life and operating characteristics. Each non compliance shall refer to the relevant clause of the specification.

Where there are no deviations from specifications, the bidder shall so indicate by stating "No deviations" in this schedule, this will presume that bidder have agreed to all technical and commercial terms.

Technical & Commercial	Non Compliance

SECTION – IV

PRICE SCHEDULE

(Construction of over head line in River Devi on Turnkey)

Spn. No. CESU / 170 / 2010 – 2011

Sl No	Description of works.	Gross lump sum price of item including all taxes and duties. (Rs)
1	Construction of pile foundation by DMC method with tie beam and capping at location-1 (one) as per the design drawing enclosed and standards and scope of tower foundation (Page-16) mentioned in the specification and including supply of all materials, labour, T&P complete. (Excavation and back filling is part of the job.)	
2	Construction of pile foundation by DMC method with tie beam and capping at location-2 (Two) as per the design drawing enclosed and standards and scope of tower foundation (Page-16) mentioned in the specification and including supply of all materials, labour, T&P complete. (Excavation and back filling is part of the job.)	
3	Supply and Erection of OC+6 tower (Approved 220 KV D/C Tower of OPTCL. Lattice Type Galvanized structure with stub & cleats) at location -1 with 02 Nos pipe earthing complete with G.I flat connection (As per I.E rule) as per specification including labour, T&P complete.	
4	Supply and Erection of OC+6 tower (Approved 220 KV D/C Tower of OPTCL. Lattice Type Galvanized structure with stub & cleats) at location -2 with 02 Nos pipe earthing complete with G.I flat connection (As per I.E rule) as per specification including labour, T&P complete.	
5	Supply and Construction of Anchor DP at Location - 1 in 150 x 150 mm RS Joist 13mtr. Long with two Nos H.T stay complete including fabrication, erection, padding, mass concreting with coil earthing, stay fixing and concreting fitting of top channel, double angle cross bracing with installation of 33KV. AB Switch (3Pole, 400Amp, 1 set) and 33KV L.A 03 Nos (30KV, 10KA heavy duty) including supply of all materials, painting of Iron materials with redoxide & allumn. paints etc. as per IE Rule / REC specification and standard complete.	
6	Supply and Construction of Anchor DP at Location - 2 in 150 x 150 mm RS Joist 13mtr. Long with two Nos H.T stay complete including fabrication, erection, padding, mass concreting with coil earthing, stay fixing and concreting fitting of top channel, double angle cross bracing with installation of 33KV L.A 03 Nos (30KV, 10KA heavy duty) including supply of all materials, painting of Iron materials with redoxide & allumn. paints etc. as per IE Rule / REC specification and standard complete.	
7	Stringing of 148mm ² AAAC from D.P to D.P through OC+6 towers and drwal of earth wire (7/3.15mm G.I) on the towers as per Span lengths mentioned in the profile plotting including supply of conductor, 33KV hard ware fittings (Double tension -06 sets, Single tension - 12 sets) & insulators (90KN) , accessories like vibration dampers, anti climbing device, danger board etc and all materials , labour, T&P in complete shape as per IE Rule, specification and standard.	

Signature of Tenderer
With Company Seal

Place :

Date:

(This form should be duly filled up by the Tenderer & submitted in duplicate in separate envelopes super-scribing “PART – II PRICE BID”)

**SECTION – V
ANNEXURES**



CENTRAL ELECTRICITY SUPPLY UTILITY OF ORISSA
IDCO TOWERS (II nd Floor) , Janapath ,Bhubaneswar-751 022
Phone : 2545681 , 2542895 , 2541727 , Fax : 0674- 2543125
Web Site : www . cescoorissa . com .

ANNEXURE – I

ABSTRACT OF GENERAL TERMS AND CONDITIONS

(Construction of over head line over River Devi on Turnkey)

- | | | |
|--|--|----------|
| 1 – Earnest Money Furnished :-
(Pl. mark √ where applicable) | A) Yes | B) No |
| 2 – Manufacturer’s supply experience
Including user’s certificate furnished or not | : - | Yes / No |
| 3 – Deviation to the specification , if any
(List enclosed or not) | :- | Yes / No |
| 4 – Work completion
a) Date of commencement :-
b) Rate of completion per month :-
(to indicate No. of units) | | |
| 5 – Guarantee :-Whether agreeable to CESU terms | :- | Yes / No |
| 6 – Validity :-Whether agreeable to CESU terms | :- | Yes / No |
| 7 – Whether agreeable to furnish Bank Guarantee :-
(against contract execution) | | Yes / No |
| 8 – Terms of Payment:-
Whether agreeable to CESU’s
terms of payment or not | : - | Yes / No |
| 9 – Single / Joint venture | :- (pl. specify) | |
| 10- Qualifying criteria :- | (separate sheet to be attached with this sheet) | |

Signature of the Tenderer
With seal of company

N.B :- This form is to be duly filled up and attached with a separate sheet showing qualifying criteria should be submitted by the Bidder along with the original copy of the Tender

CENTRAL ELECTRICITY SUPPLY UTILITY OF ORISSA
IDCO TOWERS (II nd Floor) , Janapath ,Bhubaneswar -751 022
Phone : 2545681 , 2542895 , 2541727 , Fax : 0674- 2543125
Web Site : www . cescoorissa . com .

ANNEXURE – II

DECLARATION FORM

To

The Sr. General Manager (EI)
APDRP & Contracts Cell , CESU
IDCO Towers (II nd Floor) , Bhubaneswar - 751 022

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 supply the materials 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 the materials delivered 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 CESU & for the sum as applicable to me / us as per clause No.13 of Annexure -V of this specification within fifteen days of issue of Letter of intent / Purchase Order , in the event of purchase order being decided in my / us favour , failing which I / We clearly understand that the said LOI / P.O. shall be liable to be withdrawn by the purchaser

Signed this.....Day of.....2007

Yours faithfully

(Signature of Tenderer with Seal
of Company)

(This form should be duly filled up by the Tenderer & submitted along with the original copy of the Tender)

ANNEXURE – III

PROFORMA FOR CONTRACT PERFORMANCE BANK GUARANTEE

This Guarantee Bond is executed this ____ day of _____ 2007 by us the _____ Bank at _____
P.O. _____ P.S. _____ Dist _____ State _____

(indicate designation of purchaser)

Whereas the CENTRAL ELECTRICITY SUPPLY UTILITY OF ORISSA , Head Office - IDCO Tower (II nd Floor) , Bhubaneswar – 751 022 a Body corporate , constituted under the Electricity Act, 2003 (here in after called “the CESU”) has placed Purchase Order No. _____ Dt. _____ (hereinafter called “the Agreement”) with M/s _____ (hereinafter called “the Contractor”) for supply of _____ (name of the material) and whereas CESU has agreed (1) to exempt the Contractor from making payment of security deposit, (2) to release 100% payment of the cost of materials as per the said agreement and (3) to exempt from performance guarantee on furnishing by the Contractor to the CESU a composite Bank Guarantee of the value of 10% (ten percent) of the Contract price of the said Agreement.

1. Now, therefore, in consideration of the CESU 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 CESU an amount not exceeding Rs. _____ (Rupees _____) only against any loss or damage caused to or suffered by the CESU by reason of any breach by the said Contractor(s) of any of the terms or conditions contained in the said Agreement.

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

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

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 affect during the period that would be taken for the performance of the said Agreement and it shall continue to remain in force endorsable till all the dues of the CESU under by virtue of the said Agreement have been fully paid and its claim satisfied or discharged or till CENTRAL ELECTRICITY SUPPLY UTILITY OF ORISSA 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 _____
_____ (Local Bank Name, address and code No.)

_____, Bhubaneswar / Cuttack in writing on or before _____ (date) we shall be discharged from all liability under this guarantee thereafter.

5. We, the _____ Bank further agree that the CESU shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said Contractor(s) and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said Contractor(s) or for any forbearance act or omission on part of the CESU or any indulgence by the CESU 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 CESU in writing.

Dated _____ the _____ day of Two thousand _____ .

Not withstanding anything contained herein above.

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

The Bank Guarantee shall be valid up to _____ only.

We or our Bank at Bhubaneswar / Cuttack (Name & Address of the Local Bank) are 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 or our local Bank at Bhubaneswar / Cuttack a written claim or demand and received by us or by Local Branch at Bhubaneswar / Cuttack 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 purchase order/ agreement:

(3) Amount of P.O. :

(4) Name of Materials :

(5) Name of the Bank:

(6) Amount of the Bank Guarantee:

(7) Name, Address and Code No. of the Local Branch:

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

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

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

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

**PROFORMA OF BANK GUARANTEE FOR ADVANCE PAYMENT
(To be stamped in accordance with Stamp Act)**

Ref.....

Bank Guarantee No.....

Date

Sr. General Manager (A&C)
Central Electricity Supply Utility of Orissa
Electrical Circle, Paradeep
Dist-Jagatsinghpur

Dear Sir,

In consideration of Central Electricity Supply Utility of Orissa (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 upto @ 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 Owner 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 an other matter or thing, whatsoever, which under law would, but for this provision have the effect of relieving the Bank.

The 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” liabilities.

Notwithstanding anything contained hereinabove our liability under this guarantee is limited to and it shall remain in force upto and including@ and shall be extended from time to time for such period (not exceeding one year), as may be desired by M/s. on whose behalf this guarantee has been given.

We or our Bank at Bhubaneswar / Cuttack (Name & Address of the Local Bank) are 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 or our local Bank at Bhubaneswar / Cuttack a written claim or demand and received by us or by Local Branch at Bhubaneswar / Cuttack on or before Dt. _____ otherwise bank shall be discharged of all liabilities under this guarantee thereafter.

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 date of completion of the Contract.

NOTE : The non-judicial stamp papers of appropriate value shall be purchased in the same of Bank which issues the Bank Guarantee.