

ODISHA POWER TRANSMISSION CORPORATION LIMITED



Lifeline of Orissa

**OFFICE OF THE
GENERAL MANAGER (ELECTRICAL)
E.H.T. CONSTRUCTION CIRCLE , SAMBALPUR
AT: 132/33 KV GRID SUB-STATION
GANESH NAGAR, BOHIDAR NUAPALI
P.O. SANKARMA, VIA : REMED
DIST. SAMBALPUR, PIN – 768 006 (ORISSA)
FAX : 0663 – 2540974**

**TENDER SPECIFICATION
NO. EHT (C) / T / 03 / 20013-14 Dated 04.07.2013**

FOR

**BID DOCUMENT
FOR**

procurement of 4 coreX 2.5 sq.mm PVC insulated Unarmoured control cable

START OF SALE OF TENDER SPECIFICATION : 05.07.2013
LAST DATE OF SALE OF TENDER SPECIFICATION : Upto 1.00 P.M. of 19.07.2013
LAST DATE OF SUBMISSION OF TENDER : Upto 3.00 P.M. of 19.07.2013
DATE & TIME OF OPENING OF TENDER : At 4.00 P.M. of 19.07.2013

PRICE : Rs.420/-



ODISHA POWER TRANSMISSION CORPORATION LIMITED
(A Government of Orissa Undertaking)
OFFICE OF THE GENERAL MANAGER, ELECTRICAL
E.H.T. CONSTRUCTION CIRCLE, SAMBALPUR
At: 132/33 KV Grid Sub-station, Ganesh Nagar, Bohidar Nuapali
P.O. Sankarma, Via: Remed, Dist. Sambalpur-768006
Phone / Fax : 0663 - 2540974

TENDER CALL NOTICE No. EHT(C)/ T / 03 / 2013-14

For and on behalf of the Orissa Power Transmission Corporation Limited, G.M. EHT(C) circle, Sambalpur invites sealed tender from the Manufacturers/Authorised Dealers/ Reputed Registered Firms having Excise registration Certificate for manufacturers/ Sales Tax registration Certificate/ PAN/ VAT clearance and experience for supply of “4 CORE X 2.5 SQ.MM PVC INSULATED UNARMoured CONTROL CABLE”. Tender papers shall be sold from 05.07.2013 to 19.07.2013. Interested firms may visit OPTCL’s official website <http://www.optcl.co.in> for detail specifications.

Sd /

General Manager, Elec.
EHT (Constn.) Circle, Sambalpur



ODISHA POWER TRANSMISSION CORPORATION LIMITED
OFFICE OF THE GENERAL MANAGER (ELECTRICAL)
E.H.T. CONSTRUCTION CIRCLE, SAMBALPUR
AT: 132/33 KV GRID SUB-STATION, GANESH NAGAR, BOHIDAR NUAPALI,
P.O. : SANKARMA, VIA : REMED, DIST: SAMBALPUR – 768 006

Tender Specification No. EHT (C) / T / 03 / 2013-14 Dated: 04.07.2013

Contents:

1. SECTION – I : Instruction to Tenderers.
2. SECTION – II: General Conditions of Contract.
3. SECTION –III: Technical Specification
4. ANNEXURES : I to VII

No. _____ / dated, Sambalpur the

Issued to: M/s.....
.....
.....

**General Manager, Elec.
EHT (Constn.) Circle, Sambalpur**

SECTION – I

INSTRUCTION TO TENDERERS

1. Sealed quotations in duplicate (each complete with all details in the manner here-in-after specified) with drawings, descriptive literature, if any, tender form duly signed along with the tender and in doubled sealed covers superscribed on each of the cover with Tender Specification No. EHT(C)/T/03/2013-14 due to be received on 19.07.2013 are invited from reputed manufacturers / suppliers by the General Manager, E.H.T. Construction Circle, Sambalpur up to 3.00 PM in accordance with Tender Specification No. EHT(C)/T/03/2013-14 : which can be obtained from the office of the General Manager, EHT Construction Circle, Sambalpur on payment of Rs.400/- plus 5% VAT thereon amounting to Rs 420/-(Rupees Four hundred Twenty) only by Cash upto 1.00 PM.
2. The purchaser may alter the quantities of material at the time of placing order.
3. Tenders will be opened in the office of the General Manager, EHT Construction Circle, At: 132/33 KV Grid Sub-station, Ganesh Nagar, Bohidar Nuapali, P.O.: Sankarma, Via: Remed, Dist.: Sambalpur-768006 at 4.00 PM on date prescribed in the Tender Call Notice in the presence of the tenderers or their authorised representatives who may be required to produce their letter of Authorization, failing which they may not be allowed.
4. Only those who have purchased the relevant specification can only submit their tenders, failing which the tenders submitted will be rejected.
5. The purchaser reserves the right to accept or reject any or all the tenders without assigning any reason whatsoever.
6. A) Tenders shall be submitted in person or by Registered post with A.D or by Courier Service. Any other means of delivery shall not be accepted. When submitted by post / Courier Service, postal delay shall not be entertained. When delivery in person, the tenders shall be received by a responsible officer of the office of the purchaser who shall officially acknowledge the receipt of the same. Tenders received after due date & time shall be returned un-opened.
B) Telegraphic tenders will not be entertained
7. i) The tender shall be accompanied with 1% of the tendered value as Earnest Money in shape of Bank draft / Bank Guarantee drawn in any Nationalized Bank at Sambalpur payable to “**E.H.T. Construction Circle, OPTCL, Sambalpur**” failing which the tenders will be summerarily rejected.
ii) Small Scale Industries within the State of Orissa holding permanent Registration Certificate issued by Director Export Promotion and Marketing, Govt. of Orissa are exempted from payment of Earnest money deposit, if documentary proof of registration with Director of E.P.M. for manufacturer of materials include in the specification accompanies the tender documents and registration is valid on the date of opening. On specific recommendation of the Director Industries, Orissa Small Scale Industries registered with Director of Industries may also be exempted from payment of Earnest Money.

The tender will be rejected REPEAT REJECTED if the authenticated proof of registration is not furnished.

Authenticated proof used in the above clause means Photostat copy of registration or copy of registration attested by the District Industries Officer. This should specifically show that they are registered to manufacture the item covered in the specification as the end product.

iii) Firms registered under D.G.S and D for the materials covered in the specification are exempted from payment of earnest money provided authenticated proof of such registration accompanies the tender documents and the registration is valid on the date of opening.

The Tender will be rejected REPEAT REJECTED if the proof of registration is not furnished.

Authenticated proof used in this clause means Photostat copy of registration only.

iv) The self-employed entrepreneurs registered with (N.S.I.C.) National Small Industries Corporation and who are in receipt of assistance either from the Government or Nationalized Banks or Institutions under the administrative control of the Govt. are exempted from payment of earnest money on submission of following documents alongwith their tenders.

a) Photostat copy of the valid N.S.I.C Certificate of Registration, which should cover the item of which they submit tender.

b) Documentary proof of assistance received by a self-employed entrepreneur from the authorities concerned.

v) All Government undertakings are exempted from payment of earnest money deposit. They should submit authentic proof in support of the same.

vi) In the case of unsuccessful tenderer, the Earnest Money will be refunded only after the tender is decided. In the case of the successful tenderer the Earnest Money will be taken into account in arriving at the Security Money referred to in clause (9) of Section - II General Condition of Contract.

vii) Earnest Money will be forfeited if the tenderer fails to execute the purchase order issued in his favour for the quantities decided in his favour in full or part.

8. The tenders should be valid for a period of 120 days from the date of opening of the tender, failing which the tenders will be summarily, rejected REPEAT REJECTED.

9. Tenderers are expected to be fully conversant with the meaning of all the clauses of the specification before submitting their tenders. In case of doubt regarding the meaning of any clause the tenderer may ask for clarification from the General Manager, EHT Construction Circle, Sambalpur. This should be done before the due date fixed for receipt of tender.

10. Tenderers are required to submit the tender in duplicate in separate sealed covers superscribed as "Tender Specification No" EHT(C)/T/03/2013-14.

The above two sealed covers should be placed in an outer sealed cover duly superscribed as tender Specification No EHT(C)/T/03/2013-14 due to be opened on date **19.07.2013** at 4.00 PM.

The tender shall contain the following documents.

- i) Declaration Form duly filled-in. (Annexure-I)
- ii) Abstract of terms & conditions in the prescribed proforma. (Annexure-II)
- iii) Data on Experience (Annexure-III)
- iv) Bio-data of bidders. (Annexure-IV)
- v) **Schedule of Quantity duly Priced. (Annexure-V)**
- vi) Earnest Money / Documents in support of exemption from Earnest Money deposit, if any.
- vii) Technical Specification duly signed in each page.
- viii) Photostat copy of Type Test certificate of material offered (Conducted within last 5 years from any Govt. of India approved laboratory. Xerox copy of the proof of this should be furnished along with the tender).
- ix) General Terms and Conditions of offer duly signed in each page.
- x) Excise registration Certificate for manufacturers, Sales Tax registration Certificate/TIN, PAN, Valid VAT clearance certificate as on date of opening of tender.

11. Overwriting shall be avoided and each page of tender document shall be signed and sealed with official rubber stamp by the tenderer.

SECTION –II
GENERAL TERMS & CONDITIONS OF CONTRACT.

1. **Scope:** The specification covers for the item mentioned in the tender notice and covers the design, manufacturer, testing of materials before despatch and delivery at Destination within Orissa State (Place will be mentioned in the Purchase order).
2. **Drawings & Descriptive Literatures:** Out line drawings and descriptive literatures of materials should accompany the tender giving full details of the stores from where materials are to be supplied.
3. **Test Certificates :** Test Certificates of the material shall accompany the tender other wise the tender is liable to be rejected. The tenderer is required to furnish a Xerox copy showing list of similar orders executed earlier and the current orders in hand for execution.
4. **Standard :** The materials shall confirm to the latest publications of relevant I.S.S.
5. **Guarantee :** The stores covered by this specification should be guaranteed for satisfactory operation for period of at least 18 months from the date of supply or 12 months from the date of use which ever is earlier. Any defect noticed during the period should be rectified by the supplier free of cost provided such defects traced out due to faulty design, bad workmanship or bad materials used.
The tenderer should guarantee the following among other things.
 - i) Quality and strength of materials used.
 - ii) Safe mechanical and electrical strength of all parts of materials as required under relevant I.S.S.
 - iii) Satisfactory operation during guarantee period.
6. **Price:** The Quoted price should be firm for delivery at **132/33 KV Grid Sub station, Sambalpur** including Packaging & forwarding and excluding freight and insurance charges and applicable taxes if any. However the tenderer shall also furnish the break up prices, giving ex-factory price, packing and forwarding charges, excise duty, Railway freight assumed, Insurance premiums assumed and other charges so that in case the tender has assumed any in-correct figures regarding freight etc. the same can be suitably altered for a further comparison of his offer with other offers. The rate of Sales Tax (C.S.T. or VAT/O.S.T.) payable at concessional rate should be clearly indicated.
Any price other than F.O.R. destination price as described above shall not be considered.
7. **Terms of Payment :**The terms of payment for the stores covered by the specification are :- 90% of the total contract value of the material delivered with the Sales Tax and other Taxes shall be paid within one month after receipt of materials with relevant documents at site in good condition. Balance 10% payment will be made after due approval of Guarantee Certificate and Test Certificates.

8. **Delivery and Penalty :** Delivery of materials covered under this specification shall be completed within 15 (Fifteen) days from the date of issue of purchase order.
- a) If the delivery is delayed beyond the stipulated period as incorporated in purchase order, penalty @ half percent of the contract value per week subject to a maximum of 5% of the contract price shall be levied.
 - b) The supplier shall give notice to the consignee of his intention of making delivery of materials and on the materials being accepted at destination a receipt shall be issued by the consignee. No materials should be considered as delivered until issue of a receipt to that effect.
 - c) On completion of the delivery of materials, the supplier shall be furnished with a certificate to that effect. But the delivery will not be considered complete until the supplier removed all rejected materials from site after replacement.
9. **Security Deposit :** The successful tenderers will be required to deposit a sum amounting to 10% of the contract value in any of the approved forms viz: Cash / Bank Draft / Bank Guarantee / State Government Securities, Security Deposit offered in shape of Bank Draft and should be made payable to the “ Asst.General Manager, EHT Construction Division, OPTCL, Jharsuguda” and Security Deposit offered in cash and other forms of securities should be paid in favour of **E.H.T. Construction Division, OPTCL, Jharsuguda.**
- Small scale Industries of Orissa registered with the Director of E.P.M. Orissa shall be exempted from payment of Security Deposit.
- All Government undertakings whether of Central or State shall be exempted from Security Deposit.
10. No interest is payable either in case of Earnest Money or Security Deposit. Security Deposit will be forfeited if the successful, tenderer fails to execute the order placed on him.
11. **Test Report:** The supplier shall conduct all tests as required under relevant I.S.S. in his factory. If the purchaser has reasons to doubt the adequacy of the suppliers testing facilities, the test may be conducted at any other test house approved by the purchaser, test reports shall be furnished in triplicate for approval of the purchaser.
12. **Insurance:** The Insurance of stores covered by this specification should normally be done with your own insurance. The responsibility of delivery of the Stores at destination in good condition rests with the suppliers. Any claim with the insurance company or Railway authorities arising due to loss or damage in transit has to be settled by the supplier. The Supplier shall undertake free replacement of materials damaged or lost which shall be reported by the consignee within 30 (thirty) days of receipt of the materials at destination.
13. **Inspection :** The Stores will be inspected by the Inspecting Officer authorised by this office from time to time prior to their despatch to destination. Intimation about readiness to despatch of Stores should be sent at least 15 days in advance. The supplier shall offer all facilities to the Inspecting Officer for such inspection at their works.

14. **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.
15. **Sales and Income Tax Clearance:** PAN, VAT, Sales Tax and Income Tax Clearance Certificates valid on the opening date of tender should be enclosed with the tender.
16. **Right to Reject /Accept any Tender:** The purchaser reserves the right either to reject or accept any or all tenders. The purchaser has exclusive right to alter the quantities of material at the time of placing final purchase order. After placing of order the purchaser may defer the delivery of materials. It may be clearly understood by the tenderer, that the purchaser need not assign any reasons for the above actions.
17. **Suppliers Responsibility :** Notwithstanding any thing mentioned in the specification or subsequent approval or acceptance of the purchase, the ultimate responsibility of the design materials used and satisfactory performance shall rest with the tenderer.
18. The Suppliers shall treat the details of the specification and other tender documents as private and confidential and they shall not be reproduced without the written authorization of the purchaser.
19. **Cancellation:** In case the supply is delayed partly or fully by more than 4(Four) weeks, the purchaser shall have right to cancel the purchase order without further notice to the supplier and the supplier shall have no claim to compensation in any ground.
20. **Consignee:** Sub-Divisional Officer, EHT(Constn.) Sub-Division, Sambalpur will be informed through purchase order.
21. **Despatch Instruction:** The materials shall be despatched to the Consignee only with proper packing as per I.S.S. as per despatch instruction mentioned in the purchase order.
22. **Paying Officer:** Bills in triplicate cleared marked as “**Original**”, “**Duplicate**”, “**Triplicate**” shall be furnished to the paying Officer, whose address will be informed through Purchase Order.

SECTION – III
TECHNICAL SPECIFICATION FOR CONTROL CABLE

PART 1 : SCOPE AND CONDITIONS

1. SCOPE

This specification covers the supply of power and Control cables to OPTCL.

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

The control cables shall conform in all respects to highest standards of engineering, design, workmanship, this specification and the latest revisions of relevant standards at the time of offer and OPTCL shall have the power to reject any work or material, which, in its judgment, is not in full accordance therewith.

2. STANDARDS

Except where modified by this specification, the control cables shall be designed, manufactured and tested in accordance with the latest editions of the following standards.

IEC / ISO	Indian Standard	Title
IEC 811	IS-18-10810:1982	Testing cables
IEC 502	IS-7098:1985 (part 2)	LT and 3.3 - 33kVXLPE cables
IEC 502	IS - 1554:1988 (part 1)	PVC Cables 1.IkV
IEC 227	IS - 5819:1970	Short circuit ratings for PVC cables
IEC 228	IS-8130:1984	Conductors for insulated cables
IEC 502	IS - 6474: 1984	XLPE Cables
IEC 502		Extruded solid dielectric insulated power cables for rated voltages from 1kV to 30kV
IEC 540	IS - 5831: 1984	Test Methods for insulation and sheaths of electric cables and cords
IEC 287		Calculation of the continuous current rating of cables.
IS - 3975: 1979		Mild steel wires, strips and tapes for armouring of cables

3. SERVICE CONDITIONS

The service conditions shall be as follows:

• maximum altitude above sea level -	11,000m
• maximum ambient air temperature -	50°C
• maximum daily average ambient air temperature	35°C
<input type="checkbox"/> minimum ambient air temperature	0°C
<input type="checkbox"/> maximum temperature attainable by an object exposed to the sun	60°C
<input type="checkbox"/> maximum yearly weighted average ambient temperature	32°C
<input type="checkbox"/> maximum relative humidity	100%
<input type="checkbox"/> average number of thunderstorm days per annum (isokeraunic level)	70
<input type="checkbox"/> average number of rainy days per annum	120
<input type="checkbox"/> average annual rainfall	150cm
<input type="checkbox"/> wind pressures as per IS 802 (Part I/ Sect.1) : 1995	

4. SYSTEM CONDITIONS WHERE THE CABLES SHALL BE USED

The equipment shall be suitable for installation in supply systems of the following characteristics:

• Frequency -		50Hz
• Nominal system voltages:-	440 KV/220 KV/132 KV/33kV/ 11 kV//	400/230V
• Maximum system voltages: 33kV System -		36.3kV
11 kV System -		12.1kV
LV System -		476V
• Minimum LV voltage -		340V
• Nominal short circuit levels: 33kV System -		25kA
11 kV System -		12.5kA
• Insulation Levels:		
1 .2/50 (j.s impulse withstand voltage		
(positive and negative polarity): 33kV System -		170kV
11 kV System -		75kV
• Power frequency one minute withstand		
voltage (wet and dry) rms	33kV System -	70kV
	11 kV System -	28kV
	LV System -	3kV
• Neutral earthing arrangements: 33kV System		solidly earthed
	11 kV System -	solidly earthed
	LV System -	solidly earthed

PART 2 : TECHNICAL

All control cables to be used in the OPTCL system shall be of polyvinyl chloride (PVC) insulated with PVC sheathing types.

5. 1.1KV POLYVINYL CHLORIDE (PVC) INSULATED CABLES

5.1. RATED VOLTAGE AND TEMPERATURE

The rated voltage of the cable shall be 1.1 kV and the maximum operating voltage shall not exceed 110% of the rated voltage.

These cables are suitable for use where the combination of ambient temperature and temperature rise due to load results in a conductor temperature shall not exceeding 70°C* under normal operation and 160°C under short circuit conditions.

*See 13.2.4 for heat resisting and general-purpose applications.

5.2. CABLE DESIGN

The cable offered shall be single-core, four core or multi-core armoured or unarmoured PVC insulated, PVC sheathed to meet the following requirements:

5.2.1. Conductor

• L.V System Cables

The conductor shall be of compacted round shape in single core cables and sector shaped in 3.5 or 4 core cables, made up from stranded aluminium wires complying with IS -8130:1984 / IEC 228. Cables with reduced neutral conductors shall comply with the crosssections shown in the table below.

• Control Cables

The conductor shall be of round stranded plain copper wires complying with IS - 8130:1984/IEC 228.

The conductors shall be of Flexibility Class 2 as per IS - 8130 : 1984.

5.2.2. Cross-Sectional area of reduced Neutral Conductors:

Nominal cross sectional area of main conductor (mm ²)	Cross-sectional area of reduced neutral conductor (mm ²)
25	16
35	16
50	25
70	35
95	50
120	70
150	70
185	95
240	120
300	150
400	185
500	240
630	300

5.2.3. Conductor Screening Not required

5.2.4. Insulation

The insulation shall be of Polyvinyl Chloride (PVC) compound. The 'General Purpose' Type A shall be used for the LV cables and 'Heat Resisting' Type C for the Control and Panel Wiring cables. Both shall conform to the requirements of IS - 5831: 1984.

Type of Insulation	Normal Continuous Operation	Short Circuit Operation
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General Purpose	70°C	160°C
Heat Resisting	85°C	160°C

The PVC insulation shall be applied by extrusion and the average thickness of insulation shall not be less than the specified nominal value and the maximum value not more than 0.1mm plus 0.1 of nominal and as specified in IS - 1554(part 1): 1988. The insulation shall be applied so that it fits closely on to the conductor and it shall be possible to remove it without damage to the conductor.

5.2.5. Insulation Screening Not required

5.2.6. Core Identification and Laying Up of Cores 3.5 and 4 core cables shall be identified by colouring of the PVC insulation and multi core by numbers as per IS- 1 554 (part 1): 1988

In multi-core cables, the cores shall be laid up together with a suitable lay as recommended in IS - 1554 (Part 1): 1988. The layers shall have successive right and left hand lays with the outermost layer having a right hand lay.

5.2.7. Inner Sheath

The laid up cores of the 3.5, 4 and multi core cables shall be covered with an inner sheath made of thermoplastic material (PVC) applied by extrusion. The thickness of the sheath shall conform to IEC 502/IS - 1554: 1988. Single core cables shall have no inner sheath.

5.2.8. Armouring Only the 3.5 and 4 core LV cables will be armoured. The armour shall be applied helically in a layer of steel wires over the inner sheath of the cable. The armour shall consist of round or flat steel wires and comply with the requirements of IEC 502/IS - 1554: 1988. The steel wires shall comply with IS - 3975:

5.2.9. Outer Sheath

An outer sheath of polyvinyl chloride (PVC) shall be applied over the armour wires (where fitted). The sheath shall be embossed at regular intervals as per the Cable Identification clause of this specification and the minimum thickness and properties shall comply with the requirements of IEC 502/IS - 1554: 1988. The outer sheath for cables with general purpose insulation shall be of the

type ST1 PVC compound and for cables with heat resisting insulation type ST2 PVC compound conforming to the requirements of IEC 502/IS - 5831: 1984. The outer serving shall incorporate an effective anti-termite barrier and shall be capable of withstanding a 10kV DC test voltage for five minutes after installation and annually thereafter.

Cables shall be installed as a single four core cable or three single phase cables plus neutral in a close trefoil formation.

Current ratings shall be calculated in accordance with IEC 287 "Calculation of the continuous current rating of cables with 100% load factor".

5.2.10. Conductor Sizes

- The following conductor sizes will be used on the Employer's LV distribution system: 300, 120 and 50 mm² single core, 300 mm² three and a half core and 120 mm² four core.

5.2.11. Cable Drum Length

The cable shall be supplied in 500metre lengths.

Technical Specification for Power and Control Cables

6.0 CABLE IDENTIFICATION

The manufacturer's and Employer's name or trade mark, the voltage grade, cable designation and year of manufacture shall be indented or embossed along the whole length of the cable. The indentation or embossing shall only done on the outer sheath. The alphanumeric character size shall be not less than 20% of the circumference of the cable and be legible.

The following code shall be used to designate cables:

Constituent	Code Letter
Aluminium conductor	A
XLPE insulation	2X
PVC insulation	Y
Steel round wire Armour	W
Non-magnetic round wire Armour	Wa
Steel strip Armour	F
Non-magnetic strip Armour	Fa
Double steel round wire Armour	WW
Double steel strip Armour	FF
PVC outer sheath	Y

Note: No code letter is required for copper conductor

7.0. SAMPLING OF CABLES

7.1. Lot

In any consignment the cables of the same size manufactured under essentially similar conditions of production shall be grouped together to constitute a lot.

7.2. Scale of Sampling

Samples shall be taken and tested from each lot to ascertain the conformity of the lot to specification. The samples shall be taken at random. In order to achieve random selection the procedure for selection detailed in IS - 4905: 1968 shall be followed.

8.0 . NUMBER OF TESTS AND CRITERION FOR CONFORMITY

Suitable lengths of test samples shall be taken from each of the selected drums. These samples shall be subjected to each of the acceptance tests. A test sample shall be classed as defective if it fails any of the acceptance tests. If the number of defective samples is less than or equal to the corresponding number given in 8.3 the lot shall be declared as conforming to the requirements of acceptance test.

9.0. TESTS ON 1.1 KV PVC INSULATED CABLES

9.1. Type Tests

Certification of type tests already completed by independent test laboratories shall be presented with the bid for each cable type. These tests shall be carried out in accordance with the requirements of IS -8130:1984/IEC 502, IS - 5831:1984/IEC 540 and IEC 811 unless otherwise specified.

Type testing of 1.1 kV cables shall include the following:

Test	Requirement Reference	Test Method as a Part of IS-10810/IEC 811
(a) Tests on conductor		
Annealing test (copper)	IS-8130: 1984/IEC 502	1
Tensile test (aluminium)	IS-8130: 1984/IEC 502	2
Wrapping test (aluminium)	IS-8130: 1984/IEC 502	3
Resistance test	IS-8130: 1984/IEC 502	5
(b) Tests for Armour wires/strips IS - 3975: 1979/IEC 502		
		36 - 42
(c) Tests for thickness of insulation and sheath IS-5831:1984/IEC 540		
		6
(d) Physical tests for Insulation		
Tensile strength and elongation at break	IS-5831:1984/IEC 540	7
Ageing in air oven	IS-5831:1984/IEC 540	11
Hot test	IS-5831:1984/IEC 540	30
Shrinkage test	IS-5831:1984/IEC 540	12
Water absorption (gravimatic)	IS-5831:1984/IEC 540	33
(e) Physical tests for outer sheath		
Tensile strength and elongation at break	IS-5831: 1984/IEC 540	7
Ageing in air oven	IS-5 831: 1984/IEC 540	11
Shrinkage test	IS-5831: 1984/IEC 540	12
Hot deformation	IS-5831: 1984/IEC 540	15
Test	Requirement Reference	Test Method as a Part of IS-10810/IEC811
Loss of mass in air oven	IS-5831: 1984/IEC540	10
Heat shock	IS-5831: 1984/IEC540	14
Thermal stability	IS-5831: 1984/IEC540	IS-5831: 1984 Appendix B
(f) Partial discharge test (11 and 33kV only)	Section 13.2 of this specification	46
(g) Bending test (11 and 33kV only)	Section 13.2 of this specification	50
(h) Dielectric power factor test (11 and 33kV only)	Section 13. 4 of this specification	48
As a function of voltage		
As a function of temperature		
(j) Insulation resistance (volume resistivity) test	IS-8130: 1984/IEC502	43
(k) Heating cycle test (11 and 33kV only)	Section 13.5 of this specification	49
(l) Impulse withstand test (11 and 33kV only)	Section 13.6 of this specification	47
(m) High voltage test	Section 13.7 of this specification	45
(n) Flammability test	Section 13.8 of this specification	53
Tests (g), (h), (j), (l) and (m) are only applicable to screened cables.		

Notwithstanding the conditions of the above paragraph the following tests on screened 11 and 33kV cables shall be performed successively on the same test Sample of completed cable.

1. Partial discharge test
2. Bending test followed by partial discharge test
3. Dielectric power factor as a function of voltage
4. Dielectric power factor as a function of temperature
5. Heating cycle test followed by dielectric power factor as a function of voltage and partial discharge tests
6. Impulse withstand test
7. High voltage test

If a sample fails in test number 7, one more sample shall be taken for this test, preceded by tests 2 and 5.

9.2. Acceptance Tests

The following shall constitute acceptance tests:

- Tensile test (aluminium)
- Annealing test (copper)
- Wrapping test
- Conductor resistance test
- Test for thickness of insulation and sheath
- Hot set test for insulation*
- Tensile strength and elongation at break test for insulation and outer sheath
- Partial discharge test (for screened cables only)**
- High voltage test
- Insulation resistance (volume resistivity) test.
- XLPE insulation only

** test to be completed on full drum of cable

9.3. Routine Tests

Routine tests shall be carried out on all of the cable on a particular order. These tests shall be carried out in accordance with the requirements of IS - 8130: 1984/IEC 502 and IS - 5831:1984/IEC 540 unless otherwise specified. The following shall constitute routine tests.

- Conductor resistance test
- Partial discharge test (for 11kV and 33kV screened cables only)*
- High voltage test

* test to be completed on full drum of cable

9.4. Optional Test

Cold impact test for outer sheath (IS - 5831 - 1984), which shall be completed at the discretion of the Project Manager and at the same time as test at low temperature for PVC as stipulated in the section on special tests.

9.5. Special tests

Special tests shall be carried out at the Project Manager's discretion on a number of cable samples selected by the Project Manager from the contract consignment. The test shall be carried out on 10% of the production lengths of a production batch of the same cable type, but at least one production length. Special tests shall be carried out in accordance with the requirements of IEC 502 and IEC 540 unless otherwise specified. The following special tests shall be included:

- Conductor Examination (IEC-228)
- Check of Dimensions
- 4-Hour High Voltage Test for 11 kV and 33kV Cables only
- Hot set test for XLPE Insulation
- Test at low temperature for PVC

10. DETAILS OF TESTS

10.1. General

Unless otherwise stated, the tests shall be carried out in accordance with the appropriate part of IS -10810/IEC 502: 1994 and the additional requirements as detailed in this specification.

10.2. Partial Discharge Test

Partial discharge tests shall only be made on cables insulated with XLPE of rated voltages above 1.9/3.3kV.

For multicore cables, the test shall be carried out on all insulated cores, the voltage being applied between each conductor and the metallic screen. The magnitude of the partial discharge at a test voltage equal to 1.5U₀ shall not exceed 20pC for XLPE and 40pC for PVC, where U₀ is the power frequency voltage between the conductor and earth or J metallic screen.

10.3. Bending Test

The diameter of the test cylinder shall be $20 (d + D) \pm 5\%$ for single core cables and $15 (d + D) \pm 5\%$ for multicores, where D is the overall diameter of the completed cable in millimetres and d is the diameter of the conductor. After completing the bending operations, the test samples shall be subjected to partial discharge measurements in accordance with the requirements of this specification.

10.4. Dielectric Power Factor Test

10.4.1. Tan δ as a Function of Voltage

For cables of rated voltage 11/1 kV and above

The measured value of tan δ at U₀ shall not exceed 0.004 and the increment of tan δ between 0.5 U₀ and 2 U₀ shall not be more than 0.002.

10.4.2. Tan δ as a Function of Temperature

For cables of rated voltage 11/1 kV and above the measured value of tan δ shall not exceed 0.004 at ambient temperature and 0.008 at 90°C for XLPE cables.

10.5. Heating Cycle Test

The sample which has been subjected to previous tests shall be laid out on the floor of the test room and subjected to heating cycles by passing alternating current through the conductor until the conductor reaches a steady temperature 10°C above the maximum rated temperature of the insulation in normal operation. After the third cycle the sample shall be subjected to a dielectric power factor as a function of voltage and partial discharge test

10.6. High Voltage Test

10.6.1. Type/Acceptance Test

The cable shall withstand, without breakdown, at ambient temperature, an ac voltage equal to 3U₀, when applied to the sample between the conductor and screen/armour (and between conductors in the case of unscreened cable). The voltage shall be gradually increased to the specified value and maintained for a period of 4 hours. If while testing, interruption occurs during the 4 hour period the test shall be prolonged by the same extent. If the interruption period exceeds 30 minutes the test shall be repeated.

10.6.2. Routine Test

Single core screened cables, shall withstand, without any failure, the test voltages given in this specification for a period of five minutes between the conductor and metallic screen. Single core unscreened cables shall be immersed in water at room temperature for one hour and the test voltage then applied for 5 minutes between the conductor and water. Multicore cables with individually screened cores, the test voltage shall be applied for 5 minutes between each conductor and the metallic screen or covering.

Multicore cables without individually screened cores, the test voltage shall be applied for 5 minutes in succession between each insulated conductor and all the other conductors and metallic coverings, if any.

10.6.3. Test Voltages

The power frequency test voltage shall be $2.5 U_0 + 2\text{kV}$ for cables at rated voltages, up to and including 3.8/6.6kV, and $2.5 U_0$ for cables at higher rated voltages.

Values of single phase test voltage for the standard rated voltages are as given in the following table:

Voltage Grade kV	Test Voltage	
	Between conductors and screen/armour kV(rms)	Between conductors kV(rms)
0.65/1.1	3	3

If, for three core cables, the voltage test is carried out with a three phase transformer, the test voltage between the phases shall be 1.732 times the values given in the above table.

When a DC voltage is used, the applied voltage shall be 2.4 times the power frequency test voltage. In all instances no breakdown of the insulation shall occur.

10.7. Flammability Test

The period for which the cable shall burn after the removal of the flame shall not exceed 60 seconds and the unaffected portion (uncharred) from the lower edge of the top clamp shall be at least 50mm.

11.0. CABLE ACCESSORIES

The accessories are for the following types of cable:

LV (650 - 1100V) PVC, single, three and a half and four core round or sector shaped stranded plain aluminium grade H4 conductor, PVC insulation, inner PVC sheath, steel wire armour for three phase cables and P.V.C. outer sheath.

11.1. JOINTS AND TERMINATIONS

Joints and terminations shall be supplied in complete kit form with all materials and components required to complete the installation. A complete set of instructions for the joint or termination shall also be included in each kit. All components shall be capable of being stored without damage or deterioration at temperatures up to 50°C. The material expiry date shall be marked on all packages, where appropriate. Details of all equipment, tools and protective clothing required to complete the joint or termination shall be included with each joint or termination kit. Components shall not be adversely affected in any manner by contact with other materials normally used in the construction of cable joints or terminations and shall not increase the rate of corrosion of any metals with which they may come into contact. Components supplied with adhesive coatings shall have means to prevent the coated surfaces from adhering to each other. Joints and terminations for armoured or screened cables shall include all items needed for wire or tape clamping. Rings shall be provided for such application. The recovered thickness of insulation over the connector shall be uniform and equal to or greater than the cable insulation thickness as given in IEC 502/IS - 1554/IS - 7098.

The protection provided by the galvanised steel wire armouring shall be reinstated over the joint (s). Electric field stress control shall be provided on all of the High Voltage joints and terminations.

Joints shall provide waterproofing, mechanical and electrical protection, and be completely sealed from cable jacket to cable jacket. Joints shall accommodate crossing of the cores.

Where required 33kV, 11kV and 1.1 kV cable joints shall be straight through joints only.

Terminations shall be designed to provide a complete moisture seal, including the crotch area of multi-core cables and complete re-jacketing of the individual cores, conforming to Class 1 terminations as per IEEE 48.

They shall be generally suitable for indoor and outdoor installation, be resistant to ultra violet radiation and chemical attack.

Minimum creepage distance for outdoor terminations shall not be less than:

Adhesives used shall have a softening temperature of not less than 90° C, be compatible with other components and after curing shall not flow at temperatures of normal service.

1.1 kV, terminations shall be designed so that no insulating or semiconducting tapes shall be required. Reinstallation of the insulation and semi-conducting cover shall be achieved with the use of multiple layers of heat shrinkable tubes possessing high dielectric strength and thermal stability.

Phase identification colours shall be marked on the cable box, cable tail ends and single core cables at all connecting points and/or any positions the engineer in charge may determine. Cable boxes shall be provided with suitable labels indicating the purpose of the supply where such supply is not obvious or where the Project Manager may determine.

All cables shall be identified and shall have phase colours marked at their termination.

11.2. CONNECTORS/TERMINALS

Connectors and terminals shall perform without distress under normal loading, cyclic loading and fault conditions, and shall not limit the rating of the cables, which they joint.

33kV connections shall be compressed by hydraulically operated tools and 11 kV /LV connectors by hand operated tools. The range of connectors/terminals should be kept to a minimum so as limit the the range of dies which may required and the use of die-less compression tools of the tension or non-tension type shall be permitted. Only approved and proven compression tools supplied by a reputable manufacturer shall be used.

The ends of connectors/terminals shall be suitably chamfered or coned to facilitate insertion of the conductors. Connectors shall have a solid central barrier to facilitate the insertion of the conductor to the correct depth. The following items of information shall be clearly stamped on each connector/terminal:

- Manufacturer's name or trade mark.
- The conductor size (metric) for which the connector/terminal is suitable.
- The die number or size suitable for compressing the connector/terminal.
- The part of the connector/terminal surface to be compressed.
- The sequence of die action from the starting point and finishing point.

Compounds or greases for improving contact between the connector/terminal and the conductor are permitted. They must, however, be chemically neutral to the connector/terminal and conductor materials and must be present in position in the delivered connectors/terminals.

Cable connectors/terminals shall be able to accommodate typical variations in dimensions of cables supplied by different manufacturers.

Connector/terminal material shall not react chemically with the cable conductors to which they are connected.

Size and type of connectors required:

Straight through connectors for the following conductors:

- 300 - 300 mm² stranded round plain aluminium
- 185-185 mm² stranded round plain aluminium
- 120-120 stranded sector shaped plain aluminium Termination lugs for the following conductors:
- 300 mm² stranded round and sector shaped plain aluminium

- 185 mm² stranded round plain aluminium
- 150 mm² stranded sector shaped plain aluminium for the neutral of the 3.5 core 300 mm² cable.
- 120 mm² stranded round and sector shaped plain aluminium
- 70 mm² stranded round plain aluminium
- 50 mm² stranded round plain aluminium

Termination lugs shall be suitable for bi-metallic connections.

Terminals for pole top terminations of 33kV and 1 IkV cables shall be of the post type capable of accepting a tap off connector. Appropriate tap off connectors shall be provided for making connections from the cable to the line conductors.

PART 3 : GENERAL PARTICULARS AND GUARANTEES

12.0 COMPLIANCE WITH SPECIFICATION

The power and control cables shall comply in all respects with the requirements of this specification. However, any minor departure from the provisions of the specification shall be disclosed at the time of bidding in the Non Compliance Schedule in this document. The mass and dimensions of any item of equipment shall not exceed the figures stated in the schedules.

13.0 COMPLIANCE WITH REGULATIONS

All the equipment shall comply in all respects with the Indian Regulations and Acts in force. The equipment and connections shall be designed and arranged to minimise the risk of fire and any damage which might be caused in the event of fire.

14.0 QUALITY ASSURANCE, INSPECTION AND TESTING

14.1. General

To ensure that the supply and services under the scope of this Contract, whether manufactured or performed within the Contractor's works or at his sub-contractor's premises or at any other place of work are in accordance with the Specification, with the regulations and with relevant authorised international or Indian Standards, the Contractor shall adopt suitable Quality Assurance Programmes and Procedures to ensure that all activities are being controlled as necessary. The quality assurance arrangements shall conform to the relevant requirements of ISO 9001 or ISO 9002 as appropriate.

The systems and procedures which the Contractor will use to ensure that the Plant complies with the Contract requirements shall be defined in the Contractor's Quality Plan for the Works. The Contractor shall operate systems which implement the following:

Hold Point:- "A stage in the material procurement or workmanship process beyond which work shall not proceed without the documented approval of designated individuals or organisations."

The Project Manager's written approval is required to authorise work to progress beyond the Hold Points indicated in approved Quality Plans.

Notification Point:- "A stage in material procurement or workmanship process for which advance notice of the activity is required to facilitate witness." If the Project Manager does not attend after receiving documented notification in accordance with the agreed procedures and with the correct period of notice then work may proceed.

14.2. Quality Assurance Programme

Unless the Contractor's Quality Assurance System has been audited and approved by the Project Manager, a Quality Assurance Programme for the Works shall be submitted to the Project Manager for approval a minimum of one month from contract award, or such other period as shall be agreed with the Project Manager. The Quality Assurance Programme shall give a description of the Quality System for the Works and shall, unless advised otherwise, include details of the following:

- The structure of the organisation;
- The duties and responsibilities assigned to staff ensuring quality of work;
- The system for purchasing, taking delivery and verification of materials;
- The system for ensuring quality of workmanship;
- The system for control of documentation;
- The system for the retention of records;
- The arrangements for the Contractor's internal auditing;
- A list of the administration and work procedures required to achieve and verify Contract's quality requirements. These procedures shall be made readily available to the Project Manager for inspection on request.

14.3. Quality Plans

The Contractor shall draw up for each section of the work Quality Plans which shall be submitted to the Project Manager for approval at least two weeks prior to the commencement of work on the particular section. Each Quality Plan shall set out the activities in a logical sequence and, unless advised otherwise, shall include the following:

- An outline of the proposed work and programme sequence;
- The structure of the Contractor's organisation for the Contract;
- The duties and responsibilities assigned to staff ensuring quality of work for the contract;
- Hold and Notification Points;
- Submission of engineering documents required by the specification;
- The inspection of materials and components on receipt;
- Reference to the Contractor's Work Procedures appropriate to each activity;
- Inspection during fabrication/construction;
- Final inspection and test.

14.4. Non-conforming product

The Project Manager shall retain responsibility for decisions regarding acceptance, modification or rejection of non-conforming items.

14.5. Sub-contractors

The Contractor shall ensure that the Quality Assurance requirements of this specification are followed by any sub-contractors appointed by him under the Contract.

The Contractor shall assess the sub-contractor's Quality Assurance arrangements prior to his appointment to ensure compliance with the appropriate ISO 9000 standard and the specification.

Auditing of the sub-contractor's Quality Assurance arrangements shall be carried out by the Contractor and recorded in such a manner that demonstrates to the Project Manager the extent of the audits and their effectiveness.

14.6. Inspection and testing

The Project Manager shall have free entry at all times, while work on the contract is being performed, to all parts of the manufacturer's works which concern the processing of the equipment ordered. The manufacturer shall afford the Project Manager without charge, all reasonable facilities to assure that the equipment being furnished is in accordance with this specification.

The equipment shall successfully pass all the type tests, acceptance tests and routine tests referred to in the section on Tests and those listed in the most recent edition of the standards given in this specification.

The Project Manager reserves the right to reject an item of equipment if the test results do not comply with the values specified or with the data given in the technical data schedule.

Type tests shall be carried out at an independent testing laboratory or be witnessed by a representative of such laboratory or some other representative acceptable to the Project Manager. Routine and acceptance tests shall be carried out by the Contractor at no extra charge at the manufacturer's works.

Type Test certificates shall be submitted with the bid for evaluation. The requirement for additional type tests will be at the discretion of the Project Manager. The Project Manager may witness routine, acceptance and type tests. In order to facilitate this, the Contractor shall give the Project Manager a minimum of four weeks notice that the material is ready for testing. If the Project Manager does not indicate his intention to participate in the testing, the manufacturer may proceed with the tests and shall furnish the results thereof to the Project Manager. Full details of the proposed methods of testing, including connection diagrams, shall be submitted to the Project Manager by the Contractor for approval, at least one month before testing.

All costs in connection with the testing, including any necessary re-testing, shall be borne by the Contractor, who shall provide the Project Manager with all the test facilities which the latter may require, free of charge. The Project Manager shall have the right to select the samples for test and shall also have the right to assure that the testing apparatus is correct.

Measuring apparatus for routine tests shall be calibrated at the expense of the Contractor at an approved laboratory and shall be approved by the Project Manager.

The Contractor shall be responsible for the proper testing of the materials supplied by sub-contractors to the same extent as if the materials were completed or supplied by the Contractor. Any cost incurred by the Project Manager in connection with inspection and re-testing as a result of failure of the equipment under test or damage

during transport or off-loading shall be to the account of the Contractor. The Contractor shall submit to the Project Manager five signed copies of the test certificates, giving the results of the tests as required. No materials shall be dispatched until the test certificates have been received by the Project Manager and the Contractor has been informed that they are acceptable.

The test certificates must show the actual values obtained from the tests, in the units used in this specification, and not merely confirm that the requirements have been met. In the case of components for which specific type tests or routine tests are not given in this specification, the Contractor shall include a list of the tests normally required for these components. All materials used in the Contract shall withstand and shall be certified to have satisfactorily passed such tests.

No inspection or lack of inspection or passing by the Project Manager's Representative of equipment or materials whether supplied by the Contractor or sub-contractor, shall relieve the Contractor from his liability to complete the contract works in accordance with the contract or exonerate him from any of his guarantees.

14.7. Guarantee

The Contractor shall guarantee the following :

- Quality and strength of materials used;
- Satisfactory operation during the guarantee period of one year from the date of commissioning, or 18 months from the date of acceptance of the equipment by the Project Manager following delivery, whichever is the earlier;
- Performance figures as supplied by the Bidder in the schedule of guaranteed reticular.

15.1. Packing

The cable shall be wound on strong drums or reels capable of withstanding all normal transportation and handling. Each length of cable shall be durably sealed before shipment to prevent ingress of moisture. The drums, reels or coils shall be lagged or covered with suitable material to provide physical protection for the cable during transit and during storage and handling operations.

In the case of steel drums adequate precautions shall be taken to prevent damage being caused by direct contact between the cable sheath and the steel. These precautions shall be subject to the approval of the Project Manager.

If wooden drums are used then the wood shall be treated to prevent deterioration from attack by termites and fungi. Each drum or reel shall carry or be marked with the following information:

- Individual serial number
- Employer's name
- Destination
- Contract Number
- Manufacturer's Name
- Year of Manufacture
- Cable Size and Type
- Length of Conductor (metres)
- Net and Gross Mass of Conductor (kg)
- All necessary slinging and stacking instructions.
- Destination;
- Contractor's name;
- Name and address of Contractor's agent in Orissa;
- Country of origin;

The direction of rolling as indicated by an arrow shall be marked on a flange.

15.2. Storage

The site selected for the storage of cable drums shall be well drained and preferably have a concrete/firm surface which will prevent the drums sinking into the ground or being subjected to excess water thus causing flange rot.

All drums shall be stood on battens, in the upright position, and in such a manner to allow sufficient space between them for adequate air circulation. During storage the drums shall be rotated 90° every three months. In no instances shall the drums be stored "flat" on their flanges or one on top of each other.

15.3. Shipping

The Contractor shall be responsible for the shipping of all cables, drums and reels supplied from abroad to the ports of entry and for the transport of all goods to the various specified destinations including customs clearance, offloading, warehousing and insurance.

16. SURFACE TREATMENT

Where galvanised steel armour wire is used then the Contractor shall indicate his galvanising process utilised and its conformance with this specification

16.1. Galvanising

All galvanising shall be carried out by the hot dip process, in accordance with Specification ISO 1460 or IS 2629. However, high tensile steel nuts, bolts and spring washers shall be electro galvanised to Service Condition.

4. The zinc coating shall be smooth, continuous and uniform. It shall be free from acid spots and shall not scale, blister or be removable by handling or packing. There shall be no impurities in the zinc or additives to the galvanic bath which could have a detrimental effect on the durability of the zinc coating.

Before pickling, all welding, drilling, cutting, grinding and other finishing operations must be completed and all grease, paint, varnish, oil, welding slag and other foreign matter completely removed. All protuberances which would affect the life of galvanising shall also be removed.

The weight of zinc deposited shall be in accordance with that stated in Standard BS 729, ISO 1460 or IS 2629 and shall be not less than 0.61kg/m² with a minimum thickness of 86 microns for items of thickness more than 5mm, 0.46 kg/m² (64 microns) for items of thickness between 2mm and 5mm and 0.33 kg/m² (47 microns) for items less than 2mm thick.

Parts shall not be galvanised if their shapes are such that the pickling solution cannot be removed with certainty or if galvanising would be unsatisfactory or if their mechanical strength would be reduced. Surfaces in contact with oil shall not be galvanised unless they are subsequently coated with an oil resistant varnish or paint.

In the event of damage to the galvanising the method used for repair shall be subject to the approval of the Project Manager or that of his representative. Repair of galvanising on site will generally not be permitted.

The threads of all galvanised bolts and screwed rods shall be cleared of shelter by spinning or brushing. A die shall not be used for cleaning the threads unless specifically approved by the Project Manager. All nuts shall be galvanised. The threads of nuts shall be cleaned with a tap and the threads oiled.

Partial immersion of the work shall not be permitted and the galvanising tank must therefore be sufficiently large to permit galvanising to be carried out by one immersion.

After galvanising no drilling or welding shall be performed on the galvanised parts of the equipment excepting that nuts may be threaded after galvanising. To avoid the formation of white rust, galvanised material shall be stacked during transport and stored in such a manner as to permit adequate ventilation. Sodium dichromate treatment shall be provided to avoid formation of white rust after hot dip galvanisation. The galvanised steel shall be subjected to test as per IS-2633.

17. COMPLETENESS OF CONTRACT

All fittings or accessories, although not specifically mentioned herein, but necessary or usual for similar equipment and their efficient performance shall be provided by the Contractor without extra charges. The bid shall clearly indicate if any additional equipment or parts would be necessary to give a complete offer and if so, the details and the prices shall be included in the bid.

1100V Cable Schedule

REMARKS: The required 4CX2.5Sq.mm Control Cable shall be PVC insulated Unarmoured Cables.

Tenderers are advised to meet the AGM, EHT(Constn.) Division, Jharsuguda and collect the samples of the above items to clear the doubts and acquaint themselves with materials before tendering.

ANNEXURE – I

DECLARATION FORM

SPECIFICATION No. EHT(C)/T/03/2013-14 Date: 04.07.2013

To

The General Manager,
E.H.T. Construction Circle,
OPTC Ltd., Sambalpur.

Sir,

After careful examination of the above specification together with the general conditions referred therein we hereby offer to supply the material
.....
.....

Covered there on complete in all respect as per the specification and general conditions, at the rate quoted in attached schedule of price in the tender. Our offer is valid upto 120 days from the date of opening of tender.

2. We hereby undertake to have the materials delivered within the time specified in the tender and to adhere to the quantity to be supplied at destinations to be prescribed.
3. We hereby guarantee the technical particulars given in the tender, supported with necessary test reports from concerned authorities.
4. We certify to have purchased a copy of the tender papers by remitting Rs 400/- plus VAT @ 5% thereon amounting to Rs 420/- (Rupees Four hundred Twenty only) by cash and this has been acknowledged by you in your receipt No..... Dated
5. In the event of Purchased Order being decided in my/our favour, I/we agree to furnish the security deposit in the manner acceptable to Odisha Power Corporation Limited and the sum as applicable shall be deposited with in 07 days of issue of purchase order failing which I/we clearly understand that the said purchase order will be liable to be withdrawn by the purchaser..

Signed this _____ day of _____ 20 _____

Date:

Yours faithfully,

Signature of tenderer :
With Seal of the Company.

Note: The form should be duly filled by the tenderer and returned to the General Manager, E.H.T. Construction Circle, OPTC Ltd., Sambalpur alongwith tender.

16. Whether agreed to furnish 10% composite Bank Guarantee _____
(In case of out State firms / 8.5% of contract value in case his tender becomes successful.
17. Whether Guaranteed Technical particulars are furnished ? _____
18. Whether dimensional design drawing furnished or not ? _____
19. Whether recent type test certificate from any Government approved laboratory furnished within 5 years ? _____
20. Whether material bear I.S.I marks _____
21. Manufacture's Names & it's Trade Mark. _____
22. Whether registered under Orissa Sales Tax Act. _____
1947/Central Tax Act

Place:

Signature of Tenderer

Date:

Name :

Designation (Seal)

ANNEXURE-III

DATA ON EXPERIENCE

[a] Name of the manufacturer.

[b] Standing of the firm as manufacturer of equipment quoted.

[c] Description of material during the last two years with the name of the organizations to whom supply was made.

[d] Details as to where installed etc.

[e] Testing facilities at manufacturer's works.

[f] If the manufacturer is having collaboration with another firm, details regarding the same and present status.

[g] A list of purchase orders, executed during last three years.

User's full complete postal address/fax/phone must be indicated.

Place:

Date:

Signature of tenderer

Name, Designation, Seal

Place :

Signature :

Date:

Name:

Designation:

(Seal)

ANNEXURE - IV
BIO-DATA OF THE BIDDER

1. Name of the Schedule (s) :
(for which quotation being submitted)
2. Specification No. :
3. Name of Firm :
4. Address of Registered Office :
5. Fax No. :
6. Name of sister concern of :
Associated company if any
7. Status of the Firm : Manufacturers/Dealer/Distributor / (
in case of dealer or distributor : Stockist / General Order Supplier /
furnish the certificate) Importer.
8. In case of Manufacturer furnish the following details.
 - a) Factory Address :
 - b) Details of Plant & Machineries :
installed.
 - c) Production capacity per month :
 - d) Number of Employees :
9. Sales Tax Registration No. :
10. I.T. Account Number :
11. Name of Banker :
12. Details of hypothecation :
13. Sales as per last Financial Year's record :
14. Name of the Important Customer :
(Enclose a Photostat of P.O. received :
from the mentioned customer recently)
15. Are you capable of supplying the total package. :
16. In case you intend to supply a part of the package name the items for which you are submitting your offers. :
17. Maximum time required for delivery of total package offered quantities in case order is placed on you. :
18. Details of Certificate/ Membership Awards /: Letter of appreciation etc., if any received by you.
19. Have you received any P.O. from OSEB/ :
GRIDCO / OPTCL earlier. (If yes, mention Order No(s).)
20. Mention the brand name of quoted item :
21. Special features of the offered product, if any :

**Signature of the Tenderer
with Seal & Date:**

Annexure-V

SCHEDULE OF QUANTITY

DETAIL LIST CONTROL CABLE AND DELIVERY SCHEDULE

Sl. No.	Description of Materials.	Unit	Quantity.	Delivery Schedule	Quoted Price by Bidder
1	4CX 2.5 Sq.mm control cable	Km	1.5	Within 15 days from the date of placement of the Order	

**Signature of the Tenderer
with Seal & Date:**

SCHEDULE OF PRICE.

TENDER SPECIFICATION NO. _____

Item No.	Description	Qty.	Unit Ex-factory Price	Unit Packing & Forwarding	Unit Freight	Unit Insurance	Unit Landing Cost at Destination Store Excluding S.T., E.D., and Octroi	Unit E.D	Unit S.T	Unit Entry Tax	Unit any other Tax.	Unit Landing Cost including All Taxes & Duties	Total Landing Cost including All Taxes & Duties
1	2	3	4	5	6	7	8	9	10	11	12	13=(8+9+10+11+12)	14=(3x13)

Place :

Signature of Tenderer

Date :

With Seal of the Company

N.B. :

The Tenderers should fill up this schedule properly & in full. The tender may be rejected if the schedule of price is submitted in incomplete form. No post tender correspondence will be entertained on break up of prices. No columns should be left blank. It has either to be filled up with specific figures or N.A. or Nil.

In case where F&I components are not specifically indicated in this schedule, 5% of the Ex-works price shall be taken towards F&I components for the purpose of comparison of price.

The Tenderer has to certify in the Price Bid that MODVAT benefit, if any, has been fully passed on to the Purchaser while quoting the tender price.

Conditional offers will not be acceptable.

The Bidders are to clearly, indicate the period up to which the Tax Holidays are available to them.

Price Bid in any other format will not be acceptable and the offer will be rejected.

ANNEXURE – VI
PROFORMA FOR BANK GUARANTEE FORM FOR EARNEST
MONEY DEPOSIT

Ref _____ Date _____ Bank Guarantee No: _____

- 1 In accordance with invitation to Bid No. Dated of ORISSA POWER TRANSMISSION CORPORATION LTD. [OPTCL][herein after referred to as the OPTCL for the purchase of _____
Messers _____
Address _____

_____ wish/wished to

participate

in the said tender and as a Bank Guarantee for the sum of

Rs. _____ [Rupees _____

Valid for a period of 240 days [Two hundred forty days] is required to be submitted by the Tenderer. We the

_____ [Indicate the

the

Name of the Bank]

[Hereinafter referred to as 'the Bank'] at the request of M/S

_____ [Herein after referred to as supplier (s)] do hereby unequivocally and unconditionally guarantee and undertake to pay during the above said period, on written request by the Sr. General Manager [CPC] ORISSA POWER TRANSMISSION CORPORATION LTD. _____

[Indicate designation of the purchaser]

an amount not exceeding Rs. _____ to the OPTCL, without any reservation.

The guarantee would remain valid up to 4.00 PM of _____

[date] and if any further extension to this is required, the same will be extended on

receiving instructions from the _____ on whose behalf this guarantee has been issued.

2. We the _____ do hereby, further undertake

[Indicate the name of the bank]

to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the OPTCL stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the OPTCL by reason of any breach by the said supplier [s] of any of the terms or conditions or failure to perform the said Bid . Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding

Rs. _____

3. We undertake to pay the OPTCL any money so demanded notwithstanding any dispute or disputes so raised by the contractor [s] in any suit or proceeding instituted/pending before any Court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the supplier(s) shall have no claim against us for making such payment.

4. We, the _____ further agree that the guarantee

[Indicate the Name of the Bank]

herein contained shall remain in full force and effect during the aforesaid period of 240 days [two hundred forty days] and it shall continue to be so enforceable till all the dues of the OPTCL under or by virtue of the said Bid have been fully paid and its claims satisfied or discharged or till Managing Director, ORISSA POWER TRANSMISSION CORPORATION LTD. certifies that the terms and conditions of the said Bid have been fully and properly carried out by the said Supplier [s] and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the _____

we shall be discharged from all liability under this guarantee thereafter.

5. We, the _____ further agree with the OPTCL that
[Indicate the name of the Bank]
the OPTCL 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 Bid or to extend time of performance by the said Supplier [s] from time to time or to postpone for any time or from time to time any of the powers exercisable by the OPTCL against the said supplier [s] and to forbear or enforce any of the terms and conditions relating to the said bid and we shall not be relieved from our liability by reason of any such variation, postponement or extension being granted to the said Supplier [s] or for any forbearance act or omission on the part of the OPTCL or any indulgence by the OPTCL to the said Supplier[s] or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.
1. This guarantee will not be discharged due to the change in the name, style and constitution of the Bank or the supplier [s].
2. We, _____ lastly undertake not revoke this
[Indicate the name of the Bank]
Guarantee during its currency except with the previous consent of the OPTCL in writing.
8. We the _____ Bank further agree that this guarantee shall also be invokable at our place of business at _____, of Bhubaneswar in the state of Orissa. [Indicate the name of the Bank]
'Notwithstanding anything contained herein above'
- a) Our liability under the bank guarantee shall not exceed Rs. _____ (In words Rupees _____).
- b) This bank Guarantee shall be valid upto _____.
- c) We are liable to pay guaranteed amount or any part thereof under this bank guarantee only if you serve upon us at _____ branch of Bhubaneswar in the state of Odisha a written claim or demand on or before _____ (date of expiry of guarantee).

Dated _____ Day of _____

For _____
[Indicate the name of Bank]

Witness ((Signature, names & address)

- 1.
- 2.

ANNEXURE – VII
PROFORMA FOR COMPOSITE BANK GUARANTEE FOR
SECURITY DEPOSIT PAYMENT AND PERFORMANCE

This Guarantee Bond is executed this _____ day
of _____ 2013 by us the
_____ Bank at _____
P.O. _____ P.S. _____
District _____ State _____

1. WHEREAS the ORISSA POWER TRANSMISSION CORPORATION LTD., a body corporate constituted under the Electricity Act, 2003 [hereinafter called "the OPTCL" which shall include its successors and assigns has placed orders No. _____ Date _____ [hereinafter called "The Agreement"] on M/s. _____ [hereinafter called "The Supplier"] which shall include its successors & assigns for supply of materials.
AND WHERE AS the supplier has agreed to supply materials to the OPTCL in terms of the said agreement AND
WHEREAS the OPTCL has agreed [1] to exempt the supplier from making payment of Security [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 Supplier to the OPTCL, a Composite bank Guarantee of the value of 10 % [ten percent] of the contract price of the said agreement.
NOW THEREFORE, in consideration of the OPTCL having agreed [1] to exempt the Supplier from making payment of Security [2] releasing 100% payment to the Supplier and [3] to exempt from furnishing performance guarantee in terms of the said agreement as aforesaid, we, the _____ [Bank] [hereinafter referred to as 'the Bank'] do hereby undertake to pay to the OPTCL an amount _____ not exceeding Rs. _____ [Rupees _____] against any loss or damage caused to or suffered by or would be caused to or suffered by the OPTCL by reason of any breach by the said Supplier [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 this guarantee without any demur, merely on demand from the OPTCL stating that the amount claimed is due by way of loss or damage caused to or suffered by the OPTCL by reason of any breach by the said Supplier [s] of any of the terms or conditions, contained in the said agreement or by reason of the supplier'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 _____].
3. We the _____ Bank} also undertake to pay to the OPTCL any money so demanded not withstanding any dispute or disputes raised by the supplier [s] in any suit or proceeding instituted/pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

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

4 We, (_____ Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to do so enforceable till all the dues of the OPTCL under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Managing Director, ORISSA POWER TRANSMISSION CORPORATION LTD. certifies that the terms and conditions of the said agreement have been fully and properly carried out by the said Supplier [s] and accordingly discharges this Guarantee.

Unless a demand or claim under this guarantee is made on us in writing on or before the [Date _____], we shall be discharged from all liability under this guarantee thereafter.

5. We, (_____ Bank) further agree that the OPTCL 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 Supplier [s] and we shall not be relieved from our liability by reason of any such variations or extension being granted to the said supplier [s] or for any forbearance, act or omission on the part of the OPTCL or any indulgence by the OPTCL to the said Supplier [s] or by any such matter or thing whatsoever which under the law relating to sureties would but these provisions have effect of so relieving us.

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

7. We, [_____ Bank] lastly undertake not to revoke this guarantee during its currency except with the previous consent of the OPTCL in writing.

8. We the _____ Bank further agree that this guarantee shall also be invocable at our place of business at _____ of Bhubaneswar in the state of Odisha. [Indicate the name of the Bank]

‘Notwithstanding anything contained herein above’

a) Our liability under the bank guarantee shall not exceed Rs. _____ (In words Rupees _____).

b) This bank Guarantee shall be valid up to _____ .

c) We are liable to pay guaranteed amount or any part thereof under this bank guarantee only if you serve upon us at _____ branch of Bhubaneswar in the state of Odisha a written claim or demand on or before _____ (date of expiry of guarantee).

Date at _____ the, _____ day of 201 _____

For _____
[Indicate the name of Bank]

Witness (Name, Signature & Address)

- 1.
- 2.

