

DISTRICT RURAL DEVELOPMENT AGENCY, KANDHAMAL

Tender Notice No.....4336..... Dated...17/09/18.....

TENDER CALL NOTICE

1. For and on behalf of Govt. of Odisha the undersigned invites sealed tenders in duplicate super scribing the tender notice No & Date from reputed firms having valid H.T. electrical license issued by ELBO, Bhubaneswar for Construction of 3-Phase power supply to Kasturba Gandhi Balika Vidyalaya Hostel Building at Phulbani, Raikia and Chakapad for the year 2016-17 in Kandhamal District as mentioned in the Tender schedule on turnkey contract basis.
2. The detail Tender Call Notice can be seen at www.kandhamal.nic.in
3. The authority reserves the right to reject any or all the bids without assigning any reason thereof.

By Orders of Collector,
Kandhamal.

Project Director, DRDA,
Kandhamal.

Memo.No.....4337..... Dated...17/09/18.....

Copy to DIO, NIC, Kandhamal, Phulbani for information and needful action on point No.2 of the Tender Notice.

Project Director,
DRDA, Kandhamal.

Memo.No.....4338..... Dated...17/09/18.....

Copy to the Editor, Sarbasadharana, The Dharitri, The Pragatibadi for information and needful action. The above tender notice may be published in single issue of his daily newspaper in economy space limiting to Rs.3000/- to 3500/-.

Project Director,
DRDA, Kandhamal.

Memo.No.....4339..... Dated...17/09/18.....

Copy to District Project Coordinator, RTE-SSA, Kandhamal for information and necessary action.

Project Director,
DRDA, Kandhamal.

COMMERICAL PRICE BID

TENDER NOTICE NO./DATE:-

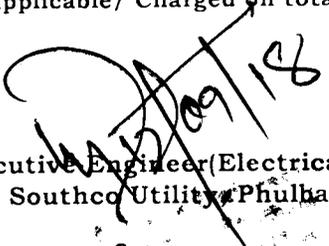
NAME OF THE AGENCY/FIRM:-

Quoted rate by the Executing Agency for Construction of 3-Phase power supply to Kasturba Gandhi Balika Vidyalaya hostel Building at Phulbani, Raikia and Chakapad and power supply can be released at 400 Volts at a single point after completion of the works under Kandhamal District:

Sl. No.	Description of Materials	Units	Quantity	Rate as per OERC (2016-17) in Rs.	Unit rates quoted by the executing agency.(Rupees in figures and wards)
1	Construction of 11 KV line 3ph 3w with 9mtr long PSC pole & 55 sq.mm AAAC (70 mtr span)	KM	1	228797.48	
2	Construction of Road crossing guarding (Span)	Span	1	4762.00	
3	Construction of 11/0.4 KV 25 KVA DPM S/S using 9 mtr long 300 KG PSC pole HO to southco(in No.)	No.	1	159417.71	
4	Construction of 3ph-4w LT line using 8 mtrs long 200 KG PSC Pole with 3x55+1x35 mmsq. AB cable (40 mtr span)	KM	1	270294.16	
	Service connection				
5	4 core 16mm.sq. PVC cable	Mtr	1	362.75	
6	8 SWG GI wire	Kg	1	101.48	
7	100 Amps Kitkat fuse	No.,	1	188.10	
8	40 mm G.I. S/C Bracket	No.	1	670.68	
9	Sundries	LS	1	500.00	

Total Rate offered by the Executing Agency for above items for Rupees.....)only

N.B:- The above rates /amounts are inclusive of charges Stock, Storage & Insurance Charges(3%), T&P Charges(2%), Contingency Charges(3%), Transportation Charges(7.5%), Erection Charges(10%) will be applicable/ Charged on total material cost and 6% supervision Charges.


Executive Engineer (Electrical)
PED, Southco Utility, Phulbani.

Seal and Signature of the Executive
Agency/ Firm


Project Director
D.R.D.A, Kandhamal



ଜିଲ୍ଲା ଗ୍ରାମ୍ୟ ଉନ୍ନୟନ ସଂସ୍ଥା, କନ୍ଧମାଳ

ପଞ୍ଚାୟତିରାଜ ଓ ପାନୀୟ ଜଳ ବିଭାଗ

ଓଡ଼ିଶା ସରକାର

DISTRICT RURAL DEVELOPMENT AGENCY, KANDHAMAL

Panchayati Raj & Drinking Water Department

Government of Odisha

DRDA, KANDHAMAL
Phulbani-762001

Tel: 06842 (STD Code)
253696 (Off), 253709 (Res)
255297, 253905 (Fax)
E-mail: ori-dphulbani@nic.in

Tender Notice No. _____ / Date: _____

1. For and on behalf of Govt. of Odisha the undersigned invites sealed tenders in duplicate super scribing the tender notice No & Date from reputed firms having valid H.T. electrical license issued by ELBO, Bhubaneswar for Construction of 3-Phase power supply to Kasturba Gandhi Balika Vidyalaya Hostel Building at Phulbani, Raikia and Chakapad for the year 2016-17 in Kandhamal District as mentioned in the Tender schedule on turnkey contract basis.
2. Bid:- Construction of 3-phase Power Supply to Kasturba Gandhi Balika Vidyalaya Hostel Building at Phulbani, Raikia and Chakapad and power supply can be released at 400 Volts at a single point after completion of the works under Kandhamal District, Odisha.
3. Brief Description of Works

Description of works	Total Estimated Cost (in Rs.)	Earnest Money Deposit (in Rs.)	Last Date/Time for submission of Bids	Date and Time of opening of Bid	Non refundable Cost of Bid document
(1)Construction of 11 KV line 3ph 3w with 9mtr long PSC pole & 55 sq.mm AAAC (70 mtr span)	18,00,000/-	18,000/-	04-10-2018 up to 5.00 PM	05-10-2018 at 3.30 PM	5,000/- In shape of Bank DD
(2) Construction of Road crossing guarding (Span)		DD			
(3) Construction of 11/0.4 KV 25 KVA DPM S/S using 9 mtr long 300 KG PSC pole HO to southco(in No.)					
(4) Construction of 3ph-4w LT line using 8 mtrs long 200 KG PSC Pole with 3x55+1x35 mmsq. AB cable (40 mtr span)					
Service connection:					
(5) 4 core 16mm.sq. PVC cable					
(6) 8 SWG GI wire					
(7) 100 Amps Kitkat fuse					
(8) 40 mm G.I. S/C Bracket					
(9) Sundries					

4. The detail Tender Call Notice can be seen at www.kandhamal.nic.in.
5. Bid documents consisting of specification, schedule of quantities and set of terms and condition of contract and other necessary documents should be downloaded from the District Website www.kandhamal.nic.in and applied through Postal/Courier to the office of the Project Director, DRDA, Kandhamal and enclosed the cost of the tender documents in demand draft drawn on any Nationalized Bank in favour of Project Director, DRDA, Kandhamal payable at Phulbani. The cost of tender paper is not refundable.
6. There shall be 2 stage bidding process- Technical & Commercial. The Technical bid along with the required documents must be placed in a sealed envelope superscripted as

“Technical Bid for the Tender on execution of Construction of 3-phase Power Supply to Kasturba Gandhi Balika Vidyalaya Hostel Building at Phulbani, Raikia and Chakapad works of Kandhamal district”. The Commercial Bid shall be placed separately in a sealed envelope super scribed as “Commercial Bid for the tender on Execution of Construction of 3-phase Power Supply to Kasturba Gandhi Balika Vidyalaya Hostel Building at Phulbani, Raikia and Chakapad works of Kandhamal district”. Those two envelopes shall be placed in a third bigger sealed envelope superscripted with “Tender Notice No. & Date for execution of Construction of 3-phase Power Supply to Kasturba Gandhi Balika Vidyalaya Hostel Building at Phulbani, Raikia and Chakapad works for 2016-17”.

7. Bids must be accompanied by EMD / bid security amount specified above in shape of demand draft drawn on any nationalized bank in favor of The Project Director, DRDA, Kandhamal “payable at Phulbani. The completed Bid documents shall be reached up to Date 04-10-2018 at 5.00 PM in Office of the Project Director, DRDA, Kandhamal by Postal or Courier.
8. The bidders must have annual turnover Rs.5.00 lakhs (Rupees Five lakhs) only or more in last two financial years (copy of documents to prove the same should be submitted with the Bid).
9. The technical bids will be opened on dated 5-10-2018 at 03.30 PM in the office of the undersigned in the presence of bidder or their authorized representatives who wish to attend.
10. The bidders are required to submit EMD and Tender document cost along with the self attested copies of valid registration certificate , ITCC, PAN card, TAN card, EPF certificate, and up to date GST clearance certificate, otherwise his/her bid shall be declared as non responsive and thus liable for rejection. The bidders registered in other state Govt. are required to produce non assessment certificate obtained from the sale Tax commissioner. Govt. of Odisha at the time of submission of tender.
11. The bidders are required to quote their rate both in words and figures. The bidders are required to put their signature in every page, without any over writing or any correction made in the bid rate. The bid filed in figures only but without mentioning in words shall be liable for rejection.
12. Less & Excess of the tender value of Block will be calculated as per the rate schedule of OERC, Bhubaneswar.
13. Period of completion of project is 1 month.
14. The authority reserves the right to reject any or all the bids without assigning any reason thereof.

TERMS AND CONDITIONS (GENERAL)

Due date:04-05-2018 at 5.00 PM

To be opened on date: 05-05-2018 at 3.30 PM.

The bidders are requested to submit the tender as per instructions given below.

The Tender should be furnished only in the prescribed form and all the columns are to be entered, failing which the offer will be rejected outright.

The tenders not quoted as per our terms detailed below will be rejected outright.

1. PRICE:

The price quoted should be firm and final. The rate (less of excess) should be entered in figures and words and any correction should be attested under the seals & signature of the Firm.

2. EARNEST MONEY:

- a. 1% of the estimated price should be paid as Earnest money.
- b. Earnest money shall be offered in shape of Bank Draft (From a Nationalized Bank).
- c. Earnest money offered in shape of bank Draft in favour of Project Director, DRDA, Kandhamal payable at Phulbani. Tenders without EMD will be rejected.
- d. Earnest money against previous tender, if any will not be adjusted towards EMD against this tender.
- e. Earnest money will be forfeited if the successful bidder fails to accept the order and/or letter of intent placed in its favour with in the validity period for the full/part quantity of the order.
- f. Earnest money will be refunded to the unsuccessful bidder only after the tender is finally decided. However, if any firm wants refund of earnest money before it is decided may be released to them but its offer will not be considered at the time of finalization of tender.

3. SECURITY DEPOSIT :

- a. 5% security deposit and 10% towards PBG from the Gross Bill will be deducted at the time of Bill payment.
- b. The security deposit paid by the successful bidder will be forfeited on cancellation of order due to failure to execute the order in full or in part within the stipulated period if the materials and workmanship are not as per the approved quality.
- c. The Security Deposit will be released only after satisfactory execution of the order & completion of guarantee period one year.

4. TERMS OF PAYMENT:

Payment shall be made after receipt of materials and execution of works and verification thereof.

5. PENALTY:

Penalty @1/2% per week up to a maximum of 5% of the total value of the purchase/work order will be imposed, if the work is delayed beyond schedule time for completion, without assigning the reason of delay.

6. FORCE MEASURE CONDITION:

The contract shall not be liable for any penalty for delay or failure to perform the contract for reasons of force measure such as acts of God, acts of public enemy. Acts of Govt., Fire, flood, epidemics, quarantine, restrictions strict, freights, embargo's and provided that the

contract shall within 10 days from the beginning of such delay notify the purchaser in writing the cause of delay, the purchase shall verify the facts and grant such extensions as facts justify.

7. GURANTEE:

The work should be guaranteed for satisfaction operation and trouble free service for a period of 12 months from the date of commissioning. Any defect noticed during this period shall be made good by the supplier free of cost provided such defects are attributed to faulty design, workmanship and bad materials used. In case of star rated transformer the Guarantee Period is 2 years or more.

8. MATERIALS AND WORKMANSHIP:

The materials should confirm to the latest I.S specifications and the workmanship should be of the best quality. The authorised dealership certificate, if any should be furnished along with tender.

9. TEST CERTIFICATE:

The test certificate from the manufacturers shall be furnished for scrutiny and approval well in advance of despatch of materials.

10. INSPECTION:

The Authorised Inspecting Officer after certifying the work, it will be treated as completed.

11. ACCEPTANCE:

The successful Bidder on receipt of the purchase order/letter of intent should intimate its acceptance with in 7 (seven) days of receipt of order, failing which the order will be automatically cancelled with forfeiture of earnest money deposit as applicable.

12. CANCELLATION OF THE TENDER:

Undersigned reserves the right to alter the tender quantity and reject / accept any or all tender or split the tender among the bidders without assigning any reason thereof.

13. JURDICTION OF THE COURT OF ODISHA:

Suits if any, rising out of the contract shall be filed by either parties in any court of Law to which the jurisdiction of the High Court of Odisha extends. The Bidder who does not adhere to these clauses will be rejected.

14. The bidders are required to put their signature in every page under the seals & signature of the Firm.

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ବିଦ୍ୟୁତ୍ କରଣ ଓ ବିଦ୍ୟୁତ୍ ସେବା ଯୋଗାଣ କାର୍ଯ୍ୟ ପାଇଁ ସଂପୂର୍ଣ୍ଣ ଫର୍ମ ମାନଙ୍କଠାରୁ
ଚେଷ୍ଟର ଆହ୍ୱାନ ସକାଶେ ବିଜ୍ଞାପନ ।

DECLARATION FORM

TENDER NOTICE NO......

NAME OF THE WORK.....

To

The Project Director, DRDA, Kandhamal
Phulbani-762001

Sir,

- (1) Having examined the above specification together with Tender conditions referred to therein, I /We the undersigned hereby offer to supply the materials and execute the work covered thereon complete in all respects as per the specification and general condition at the rate entered in the attached contract schedule in price in the Tender.
- (2) I/We hereby undertake to have the materials delivered and execute the work within the time specified in the tender.
- (3) I/We hereby guarantee the technical particulars given in the tender supported with necessary test reports from concerned authorities.
- (4) In the event of issue of work order being decided in my/our favour, I/We agreed to deduct the 5% Security Deposit and 10% towards PBG at the time of payment of work bill.

Signed this day of

Yours faithfully,

Signature with Designation and seal.

N.B.:- This form should be duly filled in by the bidder and submitted along with the original copy of tender.

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

- 01.00 SCOPE
This Specification covers Design, Engineering, Manufacture, testing, inspection before despatch, forwarding, packing, transportation to site, Insurance (both during transit & storage), Storage, Erection, Supervision, testing and commissioning of 11 KV) support. Poles, Cross Arms and Bolts & Nuts for use in the networks of PED (SOUTHCO UTILITY) , Odisha.
- 02.00 DESIGN REQUIREMENT
 - The wind pressures to be applied to the conductors, poles and cross arms are specified in IS 5613 (Part 1/ Section 1): 1995 and as stipulated in the Service Conditions.
- 03.00 PSC POLES
PSC Poles shall be of solid rectangular type with an overall length of 8.0 M & 9.0 M suitable for use in 11 KV overhead power lines and double pole & four pole structures associated with the lines and for 11/04 KV substations.
- 04.00 APPLICABLE STANDARDS
Except when they conflict with specific requirements in this Specification, the PSG poles shall comply with the relevant provisions made in the following Indian Standards or the latest versions thereof.
 - a) IS: 1678, Specification for prestressed concrete poles for overhead power, traction and telecommunication lines
 - b) IS: 2905, Method of test for concrete poles for overhead power and telecommunications lines.
 - c) IS: 732.1, Code of Practice for selection, handling and erection of concrete poles for overhead power and telecommunication lines
- 05.00 Application
- 06.00 8.0 M Poles (200 Kg)
These poles shall be used at tangent locations for 11 kv and L.T. lines in wind pressure zones of 1 00kg/M2 in accordance with REC Construction Standards No.A-5.
- 06.01 9.0 M Poles (300 Kg)
These poles shall be used for double pole structures of distribution transformer centers as per REC Construction Standards F-2 to F-4 and for special locations in 11 KV and L.T. Lines, such as road crossing etc.
- 07.00 Material
- 07.01 Cement

The cement used in the manufacture of prestressed concrete poles shall be ordinary or rapid hardening Portland cement conforming to IS:269-1976 (Specification for ordinary and low heat Portland cement) or IS: 8041 E-1978(Specification for rapid hardening Portland cement).
- 07.02 Aggregates
Aggregates used for the manufacture of pre-stressed concrete poles shall confirm to IS:383 (Specification for coarse and fine aggregates from natural sources for concrete). The nominal maximum size of aggregates shall in no case exceed 12mm.
- 07.03 Water
Water should be free from chlorides, sulphates, other salts and organic matter. Potable water will be generally suitable.

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

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

TECHNICAL SPECIFICATION FOR STEEL MATERIALS

100X50 MM MS CHANNEL
50X50X6 MM MS ANGLE

01.00 Scope:
This specification covers the manufacturing, testing before dispatch and delivery at destination at site stores in 12 Blocks and 3 ULBs of Kandhamal District.

100X50 MM MS CHANNEL
75X40 MM MS CHANNEL
50X50X6 MM MS ANGLE

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

Standards:

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

TECHNICAL SPECIFICATION FOR 11 KV INSULATORS

01.00 SCOPE
This Specification covers Design, Engineering, Manufacture, testing, inspection before dispatch, forwarding, packing, transportation to site, Insurance (both during transit & storage), Storage, Erection, Supervision, testing and commissioning of 11 KV Insulators for use in the networks of SOUTHCO UTILITY.

02.00 PIN INSULATORS

Nominal Voltage	11 KV
Visible discharge voltage	9 KV rms.
Wet power frequency one minute withstand voltage	35 KV rms.
Power frequency puncture voltage	105 KV rms.
Impulse withstand voltage peak	75 KV peak
Creepage distance	320 mm
Protected creepage distance	
Minimum failing load up to conductor size 100 mm ²	

Performance Characteristics

The insulators shall be suitable for use on the CESU distribution system with conditions as shown in the sections on Service Conditions and System Conditions.

They shall conform to IEC 720 or IS 731 and shall meet. the following performance criteria.

06.00 DISC INSULATOR

Performance Characteristics

Nominal Voltage	11KV
Minimum number of discs is string	1
Visible discharge voltage	9 KV rms.

Wet power frequency one minute withstand voltage	35 KV rms.
Power frequency puncture voltage	1.3 times the actual dry flashover voltage of the unit
Impulse withstand voltage peak	75 KV
Minimum creepage distance	320 mm
Minimum protected creepage distance	--
Minimum mechanical failing load for conductor sizes of 232 MM ² AAAC	120 KN
80 & 100 mm ²	90
55 mm ²	70

05.00

Tests

Type, acceptance and routine tests shall be carried out and results given alongwith certification as appropriate in the Technical Data Schedule and Test Certificates Schedule of this specification.

06.00

Type tests

The following type tests are required:

- Visible discharge test;
- Impulse voltage withstand test;
- Wet power frequency voltage withstand test
- Electro-mechanical failing load test for string insulator units (porcelain type)
- 24 hour mechanical strength test;

06.01

Acceptance Tests

The test samples having withstood the routine tests shall be subjected to the following tests according to the sampling procedure of IEC 383 clause 23:

- Verification of dimensions
- 24 hour mechanical strength test;
- Electro-mechanical failing load test for string insulator units (porcelain type)
- Puncture test;
- Porosity test (porcelain only);
- Test for galvanization of ferrous parts

06.02

Routine Tests

The following routine tests shall be conducted on each set and results are to be furnished for consideration:

- Visual examination;
- Tensile load test;
- Power frequency voltage test:

06.03

POST INSULATOR FOR PRIMARY SUBSTATIONS

06.04

Post Insulator (clamp top type)

Bidders may offer substation designs using post insulators of the clamp top type. The insulators shall be suitable for use in CESU primary substations with conditions as shown in the sections on Service Conditions and System Conditions.

They shall conform to IEC 273 or IS 2544 and shall meet the following performance criteria:

Normal Voltage	11KV
Visible discharge voltage	11KV
Wet and dry power frequency one	9 KV rms.

minute withstands voltage.	
Power frequency puncture withstand voltage	1.3 times the actual dry flashover voltage
Impulse withstand voltage peak	75 KV peak
Minimum creep age distance	380 mm
Minimum protected creep age distance	
Minimum failing load (bending)	12.5 KN
Minimum failing load (torsion)	1200 Nm*

07.00 STAY INSULATORS (11 KV)
 The Insulators shall be suitable for use on the PED SOUTHCO UTILITY distribution system with conditions as shown in the sections on Service Conditions and System Conditions' 11 KV Stay insulators shall be used on L.V stays.

07.01 Performance Characteristic shall be strictly as per relevant IS.

07.02 Materials

The insulators shall be brown glazed porcelain:

07.03 Design

The bidder shall guarantee that the dimensions and tolerance of the insulators offered are in accordance with the drawing which shall accompany the bid documents.

The insulators shall be used with 7/8 SWG (7/4.00 mm) steel stay wire, having an overall diameter of 12.2 mm and tensile strength of 70 kgf/sq. mm. The insulators shall be suitable for use having a minimum stay wire, hole diameter of 22 mm and be such that a straight stay wire can be passed through it.

TECHNICAL SPECIFICATION FOR 11 KV LINE FITTINGS

01.00 SCOPE

This Specification covers Design, Engineering, Manufacture, testing, inspection before despatch, forwarding, packing, transportation to site, Insurance (both during transit & storage), Storage, Erection, Supervision, testing and commissioning of 11 KV Line Fittings for use in the networks of SOUTHCO UTILITY, ODISHA.

02.00 Measurements and Tests for Stay Wire

<u>Description</u>	<u>Required Value (Grade-4)</u>
Nominal size of stay wire:	7/4.00 mm
Nominal Diameter of Individual Wires:	4.00 mm
Minimum Diameter of Individual Wires:	3.90 mm
Maximum Diameter of Individual Wires:	4.10 mm
Minimum ultimate tensile strength of individual wires:	700 N
Minimum percent elongation at rupture before stranding:	5%
Minimum percent elongation at rupture after stranding:	4.25%
Wrapping test for ductility:	8
Turns on and off its own diameter	
Lay ratio of finished strand	19 to 21
Minimum weight of zinc coating before	490 g / mm ²

stranding:	
Minimum weight of zinc coating after stranding:	475 g/ mm
Chemical test: Sulphur and phosphorus content:	Less than or equal to 0.060 % each

TECHNICAL SPECIFICATION FOR ALL ALUMINIUM ALLOY CONDUCTOR (AAAC)

01.00

SCOPE

This specification covers design, Engineering, Manufacture, Testing, Inspection before despatch, forwarding, packing, transportation to sites, Insurance (both during transit & storage), storage, erection, supervision testing & commissioning of all sizes of All Aluminum Alloy Conductors of the aluminum – magnesium- silicon type for use in the distribution overhead power lines of SOUTHCO UTILITY of ODISHA.

02.00

STANDARDS

Except where modified by the specification, the Aluminum Alloy Conductor shall be designed, manufactured and tested in accordance with latest editions of the following standards.

IES/ISO/ International Standard	Other is	Subject
IEC:1089		Round wire concentric lay overhead electrical standard conductors
	IS 398	Aluminum Alloy Stranded Conductors
	IS 9997	Aluminum Alloy redraw rods for electrical purposes
IEC 502 : 1994		Extruded solid dielectric insulated power cables for rated voltages 1.0 KV up to 30KV.
IEC 104		Aluminum Magnesium Silicon alloy wire for overhead line conductors
	IS 1778	Reels and drums of bare conductor.
BS : 6485-1971		PVC covered conductors for overhead power lines.

03.00

SPARE PARTS AND SPECIAL TOOLS

The Bidder shall provide a list of recommended spare parts, special erection and installation tools/ equipment together with their individual prices. This list shall identify all essential spares items for any recommended maintenance for a period of five years after commissioning.

The Project Manager may order all or any of the spare parts/erection/ installation tools listed at the time of contract award and the parts so ordered shall be supplied as part of the definite works. The Project Manager may order additional spares at any time during the contract period at the rates stated in the Contract Document.

A spare parts catalogue with price list shall be provided and this shall form part of the drawings and literature to be supplied.

The Bidder shall give an assurance that spare parts and consumable items will continue to be available through the life of the equipment, which shall be 25 years minimum. However, the Contractor shall give a minimum of 12 months

notice in the event that the Contractor or any sub-contractors plan to discontinue manufacture of any component used in this equipment.

Any spare apparatus, parts or tools shall be subject to the same specification, tests and conditions as similar material supplied under the Contract. They shall be strictly interchangeable and suitable for use in place of the corresponding parts supplied with the plant and must be suitably marked and numbered for identification.

Spare parts shall be delivered suitably packed and treated for long periods in storage. Each pack shall be clearly and indelibly marked with its contents, including a designation number corresponding to the spare parts list in the operation and maintenance instructions.

TECHNICAL SPECIFICATION FOR 11 KV 400 AMPS 3 POLE AS SWITCH

01.00 SCOPE:-

This specification covers manufacturing testing and supply of 11 KV 400 AMPS 50 Hz Air Break switches for out door installation in horizontal configuration. The switches are suitable for operation under off load conditions only and are intended for use on Distribution Sub- stations and tapping sectionalising points of 11 KV lines.

02.00 DESCRIPTION OF THE MATERIALS:-

The 11 KV A.B. Switch sets shall conform to the following parameters:-

- i) Number of poles 3
- ii) Number of Post insulator per pole 2 nos. 12 KV post insulator
- iii) Nominal system voltage 11 KV
- iv) Highest System Voltage 12 KV
- v) Rated frequency 50 Hz .
- vi) System earthing effectively earthed.
- vii) Rated nominal current 400 amps
- viii) Altitude of installation. Not exceeding 1000 M

03.00 STANDARDS:- The AB Switch Set shall conform to the following standards:-

- a) IS-9920 (Part-I to V.)
- b) IS-2544'/1973 (for porcelain post insulators)
- c) Is-2633, (for galvanization of ferrous parts.) or its latest amendments if any.

04.00 INSULATOR MAKE:-

1. 12 KV post Insulators complete with post and cap duly cemented to be used in the AB Switch Set conforming to IS-2544/1973.

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

05.00 TECHNICAL DETAILS:-

6.1 General:- The 11 KV A.B. Switch Set shall be the gang operated rotating single air break type having 2 post insulator per phase.. The operating mechanism shall be suitable for manual operation from the ground level and shall be so designed that all the three phases shall open or close simultaneously. The Switches shall be robust in construction, easy in operation and shall be protected against over travel or straining that might adversely effect any of its parts. The required base M.S. Channel (hot dip galvanized) phase coupling rod,

operating rod with intermediate guide braided with flexible electrolytic copper, tail piece of required current carrying capacity and operating mechanism with 'ON' & 'OFF' positions shall be provided. The operating rod shall be medium gage of 32mm diameter nominal bore G.I. pipe single length 6 meters. The phase coupling rod for gang operation shall be of medium gauge 25mm dia nominal bore G.I. Pipe. The Rotating post insulators shall be provided with suitable bearing mounted on a base channel with 8 mm dia thrust collar and 6mm split pin made out of stainless steel. The operating down rod shall be coupled to the spindle (minimum dia -32mm) for gang operation through another suitable bearing by two numbers 10mm dia stainless steel bolts with double nuts. All the bearings shall be provided with grease nipples. All metal (ferrous) parts shall be galvanized and polished. The pipe shall be galvanized in accordance with IS-4736/1968. The post insulators should be fixed with the base channel using Galvanized Nuts and Bolts.

06.00 Sample, Drawing & Literatures:-

Samples of each item 11 KV 400 amps. A.B. Switch shall be furnished and three copies of drawings item similar to the sample shall be furnished alongwith the tender.

The details of construction and materials of different parts of the A.B. Switch shall clearly be indicated in the tender and illustrative pamphlet literature for the same shall be submitted alongwith the tender.

07.00 TESTS & TEST CERTIFICATE

Type Test:- Certificates for the following type tests conducted within five years proceeding to the date of opening of tender) on a prototype set of A.B Switch in a Govt. Approved Testing Laboratory preferably at CPRI Bangalore shall have to be submitted for reference.

Dielectric Test (impulse and one minute wer5 power frequency withstand voltage test.)

- Temperature rise test (for contracts and terminals)
- Short Time current and peak withstand current test,
- Mainly active load breaking capacity test.
- Transformer off-load breaking capacity test
- Line charging breaking capacity test
- Cable charging breaking test
- Operation and mechanical endurance test
- Mechanic I strength test for post insulator, as per Is-2544/1973 shall be furnish.
- Test for galvanization of metal (ferrous) parts.

Routine Tests:- The following routine tests shall have to be conducted on each sets and results are to be furnished for consideration of deputing inspecting officer for inspection and conducting testing of the materials.

1. Power frequency voltage dry test.
2. Measurement of resistance of main circuit
3. Tests to prove satisfactory operation.
4. Dimension check
5. Galvanization test.

08.00 GURANTEED TECHNICAL PARTICULARS:-

The tenderer shall furnish the guaranteed technical particulars duly filled in the proforma along with the tender.

09.00 COMPLETENESS OF EQUIPMENT:-
All fittings, accessories or apparatus which may not have been specifically mentioned in this specification but which are usual or necessary in equipment of similar plant shall be deemed to be included in the specification and shall be supplied by the Tender without extra charge. All plant and equipment shall be completed in all details whether such details are mentioned in the specification or not.

10.00 INSPECTION:-
Routine tests shall be conducted at the place of manufacturer. The tenderers are requested to furnish details of equipment which will be used for testing alongwith tender. The tenderers of those manufacturers who do not have adequate testing facilities for conducting routine and acceptance test are liable for cancellation. The successful bidder has to furnish routine test certificate and guaranteed certificate for approval prior to offer of materials for inspection for each consignment of offer.

TECHNICAL SPECIFICATION FOR 11 KV 200 AMP THREE POLE H.G. FUSE SETS.

01.00 SCOPE:- This specification covers the manufacture, testing and supply of 11 KV, 200 Amps 3 pole, H.G. Fuse Sets.

02.00 (a) The 11 KV H.G. Fuses shall be suitable for out door operation in horizontal configuration under the climatic conditions specified. It shall be of the following ratings:-

1. Number of Poles	3
2. No. of insulator per pole	2 nos. 12 KV post insulators
3. Nominal system voltage	11 KV
4. Highest system voltage	12KV
5. Rated frequency	50 Hz
6. System Earthing.	Effectively earthed
7. Rated normal current	200 Amps
8. Altitude of installation	Not exceeding 1000 M.

03.00 STANDARDS:-

The H.G. Fuse set shall conform to the following standards.

IS-9385-1980 (for high voltage expulsion fuses and similar fuses)

IS-2544-1973 (for porcelain post insulators or its latest amendments if any)

IS-2633-1979 (for Galvanization of ferrous parts)

04.00 INSULATOR MAKE:- 12 KV post insulator complete with pedestal cap duly cemented to be used in 11 KV H.G. Fuse sets confirming to IS-2544/1973.

05.00 TECHNICAL DETAILS:- The H.G. Fuses shall have adjustable arcing horns made of solid copper rod having 1.62 mm dia. The horns shall be fitted with screwing devices with flynuts for fixing and tightening the fuse wire. It shall have robust terminal connector 5s of size 80mm x50 mm x 6 mm made of copper casting (95% minimum copper composition) duly silver plated with two numbers of 12mm dia brass bolts and double nuts with flat brass washers. The connector should be capable of connecting crimpable conductor up to 80 Sq.mm. size (ACSR/Alloy) with bimetallic solderless sockets. The H.G. Fuse Set shall suitable for horizontal mounting on sub-station structures. The minimum clearance between the adjacent phases of the fuse set shall be 760 mm and the centre to centre (distance between two post insulators of the same phase) shall be 410 mm. All metal (ferrous) parts shall be galvanized and polished. Only 12 KV post insulator (original cemented and not pin insulators shall be used for the H.G. Fuse Set.

06.00 TESTS & TEST CERTIFICATE:-

Certificate for the following type test conducted (within 5 years preceding to the date of opening of Tender) on a prototype set of H.G. Fuse set in a Govt. approved Testing Laboratory preferably at CPRI, Bangalore shall have to be submitted for reference and Scrutiny

1. Dielectric test (impulse & one minute wet power frequency withstand voltage test.)
2. Temperature rise test (for terminals).
3. Mechanical strength test for the post insulator as per IS-2544/1973.
4. Test for galvanization of metal (ferrous) parts.

TECHNICAL SPECIFICATION FOR 33 KV & 11 KV SURGE ARRESTOR

01.00

SCOPE

This Specification covers Design, Engineering, Manufacture, testing, inspection before despatch forwarding, packing, transportation to site, Insurance (both during transit & storage), Storage. Erection, Supervision, testing and commissioning of 11 KV Surge Arrestor (L.A.) for use in the networks of SOUTHCO UTILITY, ODISHA.

02.00

TECHNICAL

The Station Class Surge Arrestor shall be heavy duty, metal oxide, gapless type generally for installation on the 11 KV sides of 11 KV Primary substations and 11/0.4 KV Distribution Substation-

The performance requirements are as follows:

Performance Characteristics of Surge Arresters

Nominal System Voltage	11 KV
Class	Station Class
• Arrestor voltage rating	12 KV
• Rated frequency	50 Hz
• Continuous operating voltage, rms	9.6 KV
• Leakage current through arrester at Less than 1operating voltage	Less than 1 mA
• Long duration discharge class	Class 2
• Nominal 8/20us discharge current--peak.	10 kA
• Maximum Lightning impulse residual voltage with 8/20us discharge current peak	32KV(31 KV*)
• Maximum switching impusse residual voltage peak	28 KV (24 KV*)
• Maximum residual voltage with steep current peak	38 KV (34 KV*)
• High current impulse test value (4/10us wave)	100 KA
• Insulator housing impulse withstand voltage. 1.250us wave-peak	41.6 KV
• Insulator housing power frequency voltage withstand capability for one minute (wet) – peak.	29.68 KV
• Minimum creepage distance of insulator	380 mm
• Minimum protected creepage distance	Not Applicable

Figures shown in bracket are preferred ratings. Insulation withstand voltage of arrester housing shall be related to the residual voltages in accordance with clause 5.1 of IEC : 99.4.

GUARANTEED TECHNICAL PARTICULARS OF 11 KV 400 AMPS A.B. SWITCHES

Sl.No.	Particulars	11\ ~ KV 400 Amps A. B. Switches (desired value)	particulars as offered by the tender.
1	2	3	4
1.	Maker's name and country or origin.	To be specified by the By the tenderer. ,;	-
2.	Type of Switch	Rotating type only	-
3.	Suitable for mounting	Horizontal only	-
4.	Number of supporting post insulator per phase	2 nos.12 KV Post Insulator per phase as per ISS-2544/1973.	-
5.	Post Insulator.		
(a)	Maker's name & country of origin	To be specified By the tenderer	-
(b)	Type of cementing	To be quoted original cemented only.	-
(c)	One minute power frequency withstand voltage Dry	35 KV RMS.	-
(d)	One minute power frequency withstand voltage Wet.	35 KV RMS.	-
(e)	Visible discharge voltage	9 KV RMS.	-
(f)	Dry Flashover Voltage	To be specified by the tenderer	-
(g)	Power frequency puncture withstand voltage	1.3 times of actual dry flash over voltage.	-
(h)	Creepage distance	230 mm minimum. (actual creepage distance for which type test have been conducted is to be specified by the tenderer.	-
6.	Impulse withstand voltage for positive and negative polarity (1.2/50) micro second wave).		
a)	Across the isolating distance	85 KV (peak)	-

- b) To earth & between poles 75 KV (peak)
7. One minute power frequency Withstand voltage.
- (a) Across the isolating distance 32 KV (RMS)
- (b) To earth and between poles 28 KV (RMS)
8. Rated normal current and rated frequency 400 amps. 50 Hz
9. Rated short circuit making capacity. 25 KA (peak)
10. Rated short time current. 16 KA (RMS)
11. Rated peak withstand current 40 KA (RMS)
12. Rated mainly active load breaking capacity 10 A
13. Rated Transformer off load breaking capacity 6.3 A(rms)
14. Rated line charging breaking capacity 2.5 A (RMS)
15. Rated cable charging breaking capacity 10 A (rms)
16. Minimum clearance between adjacent phases
- (a) Switch Closed. 760 mm
(centre to centre)
- (b) Switch opened. 380 mm
(centre/edge of blade)
17. Temperature rise:
- (a) Temperature rise should not exceed to maximum limit as specified below at an ambient temperature not exceeding in 40⁰ C 65⁰ C
- Copper contacts silver
Terminal of switch
intended to be connected to external conductor by bolts or screw at an ambient temperature at 40⁰ C should not exceed. 50⁰ C

18. Vertical Clearance from top of insulator cap to mounting channel 254 mm (minimum)
19. Type of contact
- a) Self aligned. high pressure jaw type 0'1 fixed contacts of electrolytic copper of size 80 x 50 x 8 mm duly silver plated. Each contact should be revetted with three nos. Copper rivets with a . bunch (minimum 3 mm thick) consisting of copper foils, each 111ay vary - from 0.15 mm to 0.25 mm. These total thickness of copper foils per jaw should be 6 mm. Jaw assemblings are to be bolted through stainless steel bolts and nuts with stainless steel flat and spring washer.
- b) Solid rect Cuttack at blade type moving contact of electrolytic copper size 220 mm x 50 mm x 8 mm duly silver plated.
- c) Pressure spring to be used in jaw contacts shall be phosphorous bronze having 8 nos or turn x 28 mm high x 14.4 mm diameter with 14 SWG wire (minimum six nos springs shall be used.)
20. Connectors Terminal connectors for both movable and fixed should be of copper casting (minimum 95 % copper composition. The fixed connector shall of size 80 x 50 x 8 mm and the size of movable connector shall be si/:e 80 .X 50 x 8 mm with machine finishing duly silver plated with 2 nos. 12 mm dia holes provided with suitable brass bolts and double nuts with brass nat washers and 2 nos solderless biometallic shockets for each connector suitable up to 80 Sq.mm conductor.
21. Moving Contact Movable contact is to be supported by galvanized angle or 50 x 50 x 5 mm in each phase and the moving contact are to be bolted through 2 nos. stainless steel bolts and nuts with stainless steel nut and spring washers, suitable.
22. Galvanization
- a) Iron parts shall be not deep galvanized as per IS-2633/197
b) The pipe shall be galvanized as per IS-473.6/1968.
23. Details of phase :-
- (a) Coupling Rod 25 mm nominal bore G.I. pipe medium guage.
- (b) Operating Rod 32 mm nominal bore G.I. pipe medium guage single length 6 mtrs. 1-he detailed dimension of the G. I. pipe as per IS-1239 (Pt.I) arc mentioned below:-
- | Nominal | Outside | Diameter |
|---------|----------|-----------|
| Base | diameter | thickness |
| | Max. | Min. |

- | | | | | |
|---|---|---------|---------|---------|
| | 25 mm | 34.2 mm | 33.3 mm | 3.25 mm |
| | 32 mm | 42.9 mm | 42 mm | 3.25 mm |
| c) <u>Arcing Horn</u> | 10 mm dia G.I. Rod with spring assisted operation. | | | |
| d) <u>Force of fixcd</u> | contact spring 0100 be specified by the tenderer | | | |
| e) <u>Copper braided flexible topes</u> | 320 mm length 01' flexible electrolytic copper tape or braided chord (with tin coated) having minimum weight 450 gms. Per meter and both ends shall be crimped with copper shockets through brass bolts and nuts with brass flat washers two nos. of suitable copper shockets shall be used with both ends. The minimum no. of flexible wires should be 1536 of 36 SWG for each flexible chord. | | | |
| f) Quick break device | Lever mechanism | | | |
| g) Brdrings | 4 nos. self lubricant bearing to be provided with grease nipple : including 4 the bearing being a thrust bearing. | | | |
| h) Locking arrangement:- | Pad Locker & Key arrangement at both 'ON' & 'OFF' position. | | | |
| i) Earth Terminal :- | To be provided at base channels. | | | |
| 24. Supporting Channels | 75 mm x 40 mm M.S. Channel hot deep galvanized. | | | |
| 25. Weight of each pole complete:- | To be specified by the tender | | | |
- N.B. i) Ferrous parts shall be duly galvanized as per IS-2633/1972 & Non-ferrous parts shall be silver plated.
- ii) Certificate from a Govt. Approved Laboratory regarding composition of copper in electrolytic copper casting of materials should be submitted during inspection of materials at the cost of tender.

GUARANTEED TECHNICAL PARTICULARS FOR H.G.
FUSE SET 11 KV 200 AMPS, 3 POLE

Sl. No.	particulars	(Desired Value)	Values offered By the tender.
1	2	3	4
1.	Name of the manufacturer and country of origin.	To be specified by the By the tenderer.	-
2.	Operating voltage	11 K V	-
3.	Number of insulators per phase	2 nos.12 KV Post Insulator per phase	-
4.	Rated normal current and		

	normal frequency.	200 Amps.50 Hz	-
5.	Vertical clearance from top of insulator cap to mounting Channel.	254 mm (minimum)	-
6.	Height of the riser for carrying the horns.	150 mm from the cap (top) of insulator.	-
7.	Post Insulator.		
(a)	Name of the manufacturer & country of origin	To be specified By the tenderer	-
(b)	Type of cementing cemented only.	To be quoted original	
(c)	One minute power frequency withstand voltage Dry	35 KV RMS.	-
(d)	One minute power frequency withstand voltage Wet.	35 KV RMS.	-
(e)	Visible discharge voltage	9 KV (RMS)	
(f)	Dry Flashover Voltage	To be specified by the tenderer	-
(g)	Power frequency puncture withstand voltage	1.3 times of actual dry flash over voltage.	
(h)	Creepage distance	230 mm minimum. (actual creepage distance for which type test have been conducted is to be , specified by the tenderer.	
8.	Impulse withstand voltage (1.2/50 micro second wave positive & negative polarity.		
(a)	Across the isolating distance.	85 KV (peak)	
(b)	To earth & between poles	75 KV (peak)	
9.	One minute power frequency withstand voltage		
(a)	Across the isolating distance	32 KV (RMS)	-
(b)	To each and between poles	28 KV (RMS)	-
10.	Details of Arcing Horns Solid Copper rod having 7.62 mm dia silver plated provided with screwing arrangement on the fuse carrier made of copper casting for fixing fuse wire. (Total length 63 5mm). All the bolts, nuts		

and washers should be made out of brass.

11. Riser unit (150 mm total height).
- a) Riser cum connector made out or copper Casting (with minimum 95% copper composition) having riser size 50 mm height x 30mm width x 8 mm thickness and connector size 80x 50x 6 mm duly silver plated and machine finishing provided with 2 nos. 12 mm dia brass bolts & brass double nuts with flat brass washer and 2 nos. solder less bimetallic shockets per each connector suitable up to 80 mm sq. conductor.
- b) 100 mm height G.I. riser made of 19 mm nominal bore medium gauge G.I. pipe welded with 2 nos. G.I. flat of 30 x 5 mm at both ends fixed with 10 mm dia stainless steel, bolts and nuts with flat stainless steel spring washers.
12. Supporting Channels 75 x 40 x 6 mm M.S. Channel (galvanized)
13. Galvanisation All ferrous parts should be galvanized as per IS-2633/1972 & all non-ferrous parts should be duly electroplated with silver.
14. Weight of each pole (complete). To be specified by the tenderer.
- N.B. :- Certificate from a Govt. Approved Laboratory regarding composition of copper in electrolytic copper casting and galvanization as per ISS may be furnished during inspection of materials at the cost of tender. .

SINGLE PHASE AND THREE PHASE DISTRIBUTION TRANSFORMER

01.00 SCOPE OF WORK

This specification covers design, engineering, manufacture, inspection, testing at manufacturers works including type testing before dispatch, supply delivery at destination, storage at site, erection & commissioning distribution transformer of double wound, oil filled, naturally cooled, 50 Hz, outdoor type for use in rural electrification system.

01.01 APPLICABLE STANDARDS

Distribution transformers shall comply with the latest version of following standards along with the amendments. All the parameters and description of 10 KVA transformers shall be complying to this specification requirement. Standard to be referred for 10 KVA rating DTs shall be generally same as those, applicable for 16 KVA DTs, indicated in the standards.

- i) IS 1180 : Part-1- Outdoor type distribution transformers up to and including 100 KVA 11 KV: Part 1 Non-sealed.
- ii) IS 3347 : Dimensions for porcelain Transformer Bushings.
- iii) IS 335 : New insulating oils.
- iv) IS 2099 : Bushings for alternating voltages above 1000 Volts-
- v) IS 9335 : Cellulosic papers for electrical purposes.

- vi) IS 1576 : Solid pressboard for electrical purposes -specification.
- vii) REC Specification 2/1971. (Revised 1997).
- viii) IS / REC of update years for the above type transformers.

02.00

RATINGS AND TYPE

The KVA ratings and types of distribution transformer shall be as follows:

KVA Ratings	No. of Phases	Nominal System Voltage (Ph-Ph)	No Load Voltage Ration
10	Single Phase	11 KV	11 / 0.250 KV (Ph.E)
16	Single Phase	11 KV	11 / 0.250 KV (Ph.E)
25/63	Three Phase	11 KV	11 / 0.433 KV (Ph.Ph)

03.00

MAKE OF TRANSFORMERS

The detailed make i.e. the manufacturer of the transformer including details of company / firm should be mentioned for taking up the pre delivery inspection of the transformers as per work order making all type tests.

04.00

SINGLE PHASE AND THREE PHASE ENERGY METERS.

SCOPE

This specification covers design, engineering, manufacture, type testing inspection, testing, supply and delivery of single phase 2 wire fully static energy meter for single phase distribution transformer 'LT' side metering. The energy meter shall be operated through an external CT housed in LTDB as specified.

APPLICABLE STANDARDS

IS: 14697, IEC 61000-4-5 &6, IEC 62052-11 & IEC 62053-22, ANSI / IPC -A -610 are applicable for all purposes. Standard testing of various type test for procurement of Energy meters are to be taken up by 0.4 MR DISCOMS IS:14697 so also for acceptance and routine.

Accuracy test shall be performed first and at the end the acceptance test is specified for procurement of energy meters.

Project Director,
DRDA, Kandhamal.