



Government of Goa
Office of the Executive Engineer,
Electricity Department,
Division-VII, Curchorem-Goa Pin Code 403706



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“BY SPEED POST/HAND DELIVERY”

No.EE/Div.-VII/Tech-2/Quot- 20(19-20)/2189/2019-20

Date: 16/08/2019

Sub: - Quotation for Supply, erection, testing and commissioning for the work of providing 02 nos. of 33KV, 630A GOAB Switches on Waddem feeder at Sanguem Industrial Estate under the jurisdiction of Elect. Sub Division-III, Sanguem.

On Behalf of the Governor of Goa, quotation for the below mentioned work as per the Terms and Conditions depicted in Annexure-I, II & III is invited.

QUOTATION

Sl. no.	Description of work	Qty.
1.	Supply, erection, testing and commissioning for the work of providing 02 nos. of 33KV, 630A GOAB Switches on Waddem feeder at Sanguem Industrial Estate under the jurisdiction of Elect. Sub Division-III, Sanguem.	As per bidding schedule enclosed
E.M.D:Rs. 9, 259/- (Rupees Nine Thousand Two Hundred Fifty Nine only)		
Time allowed for completion of work : 30days		
Last date & time of receipt of quotation: 10/09/2019 upto 15.00hrs.		
Date & time of opening of quotation: 10/09/2019 at 15.30hrs.		
All other Rules & Regulations in force shall be applicable For more details please visit either Goa Govt. State portal or this office on any working day between 14:30 to 17:00hrs		

Sealed quotation alongwith attached Terms and Conditions duly signed & super scribed on the top of envelop as “Quotation for Supply, erection, testing and commissioning for the work of providing 02 nos. of 33KV, 630A GOAB Switches on Waddem feeder at Sanguem Industrial Estate under the jurisdiction of Elect. Sub Division-III, Sanguem” should be inserted in the quotation box on or before 10/09/2019 upto 15.00hrs.

Name:

Signature:

Stamp of the Contractor:

Encl: as above.

Sd/-
EXECUTIVE ENGINEER-VII

To,

Copy to:-

- 1) The Chief Electrical Engineer, Vidyut Bhavan, 3rd Floor, Panaji Goa.
- 2) The Superintending Engineer, Elect. Dept., Circle-I/II, Margao/Panaji.... For information.
- 2) The Executive Engineer, Elect. Dept, Div. Nos: I/II/III/IV/V/VI/VIII/IX/X/XI/XII/XIII/XIV/XV/XVI/ XVII /XVIII Panaji/Margao/Ponda/Bicholim/Mapusa/Tivim/Vasco/Xeldem/Corlim/Verna/Patto Plaza Panaji.....For information.
- 3) The Divisional Accountant, Accounts Section, Elect. Div-VII, Curchorem....He is directed to be present on the day of opening.
- 4) The Sub Divisional Engineer, Elect. Sub-Div-III, Sanguem.
- 5) The Director of Information Technology, IT HUB, 2nd Floor, Altinho, Panaji-Goa.... With a request to publish the quotation called by this office on Goa Govt. State portal by 21/08/2019. (E-mail sent to stateportal.goa@nic.in)

BIDDING SCHEDULE

FOR SUPPLY, ERECTION, TESTING AND COMMISSIONING FOR THE WORK OF PROVIDING 2 NOS OF 33KV,630A GOAB SWITCHES ON WADDEM FEEDER AT SANGUEM INDUSTRIAL ESTATE UNDER THE JURISDICTION OF ELECT. SUB DIVISION-III, SANGUEM.

SUPPLY OF MATERIALS CONFORMING TO THE DETAILED TECHNICAL SPECIFICATIONS ENCLOSED WITH THE QUOTATION

1) ALL RATES OF SUPPLY & ERECTION OF MATERIALS QUOTED SHALL INCLUDE GST & ALL OTHER TAXES APPLICABLE, DUTIES, TRANSPORTATION TO SITE, OTHER CHARGES ETC., AS SPECIFIED IN TERMS & CONDITIONS ENCLOSED WITH THE QUOTATION.

2) TEST CERTIFICATE FROM THE MANUFACTURE & ORIGINAL DELIVERY CHALLAN TO BE FURNISHED AS SPECIFIED IN QUOTATION

Sr. No	Description of materials/works	Unit	Qty	Cost of Material		Cost of Erection	
				Rate in figures & words inclusive of GST @18%	Amount in figures only	Rate in figures & words inclusive of GST @18%	Amount in figures only
1	Supply and Erection of 11 mts. long RCC poles by transporting to the pit points, digging pit of size 0.60mtsX0.60mtsX1.83 mts.deep in all types of soil laterite/hard rock, including refilling of soil,leveling, concreting and muffing 0.4mts above the ground & properly curved, disposal of extra soil supply and erection of poles as per the specification mentioned in Annexure-III.	Nos.	4				
2	Supply & laying of Cement Concrete 1:2:4 (1-cement: 2-sand :4-graded granite/basaltic aggregate 20mm nominal size) including the cost of centreing, shuttering & muffing 0.4mts above ground.Concreting as per the specification mentioned in Annexure-III.	Cu. Mtr	5.472			INCLUSIVE	
3	Supply and Providing of HDGI barbed wire/anticlimbing device (2mts. Length) along with suitable stay clamps & 2 pairs of HDGI nut & bolts. Supply and Providing as per the specification mentioned in Annexure-III.	Kgs.	4				
4	Supply and Fixing Enamelled danger board 33000Volts on above poles using necessary HDGI clamps & nut bolts.	Nos.	4				

5	Supply and Fixing of HDGI structure material Supply & fixing as per the specification mentioned in Annexure-III.	Kgs.	300				
6	Supply and providing of 33KV 630A GOAB switch. Supply & providing as per the specification mentioned in Annexure-III.	Sets	2				
7	Supply & providing of MCI metal parts, 3 bolted type suitable ACSR for RACOON conductor. Supply & fixing as per the specification mentioned in Annexure-III.	sets	12				
8	Supply & providing of 70KN disc insulator. Supply & Fixing as per the specification mentioned in Annexure-III.	Nos.	36				
9	Supply and fixing of HDGI stay clamps for 11mtr long RCC pole S.A. shall be hot dipped galvanized generally conorming to IS-2633/72. Supply & fixing as per the specification mentioned in Annexure-III.	pairs	4				
10	supply & providing of HDGI stay wire of size 7/10 SWG Supply & providing as per the specification mentioned in Annexure-III.	Kgs.	18.28				

11	Supply and fixing of HDGI X arm clamps S.A. for 11mtr long RCC pole shall be hot dipped galvanized generally conforming to IS-2633/72. Supply & fixing as per the specification mentioned in Annexure-III.	Nos.	4				
12	Supply & stringing of ACSR Racocon Conductor of size 6/1/4.09mm. Supply & stringing as per the specification mentioned in Annexure-III.	Kms.	0.100				
13	Supply & stringing of ACSR Weasel Conductor of size 6/1/2.59mm. Supply & stringing as per the specification mentioned in Annexure-III.	Kms.	0.030				
14	Removing & re-stringing of Racocon conductor	Kms.	0.600	Not Applicable			
15	Supply and fixing of HDGI nuts & bolts G.I. Hexagonal head and hexagonal nuts conforming to IS 1363 part 1 to 3 1992 as amended upto date. The bolts and nuts shall be hot dip galvanized as per IS: 2629-1985 as amended upto date. Supply & fixing as per the specification mentioned in Annexure-III.	Kgs.	10				
16	Supply,providing and connecting of earthing including alternate layers 30cm thick of charcoal salt (charcoal & salt-20kgs.each/pit) inclusive of excavation backfilling and spreading of excavated earth evenly. Supply providing and connecting as per the specification mentioned in Annexure-III. (Earthing pipe will be supplied by the department)	Sets	2				
	Total in Rs.						

	Add cost of erection						
	Grand Total Rs.						
	Say Rs.						
	(Rupees)						

1. I have understood that the whole contract is governed by all relevant clauses of CPWD Manual 2014. All the said terms & conditions mentioned therein shall be binding on me once the offer is accepted.

2. Submission of my offer shall be deemed to imply that I have made myself acquainted with the actual site conditions, etc. where the proposed works are to be carried out. The materials will be supplied as per the technical specifications indicated in Annexure-III.

Name of Contractor:-

Signature:-

Address:-

EXECUTIVE
ENGINEER-VII
CURCHOREM-
GOA.

ANNEXURE-I
ADDITIONAL TERMS & CONDITIONS

1. RATES:- The Rates quoted should be firm.
2. TAXES & DUTIES: - The rates quoted shall be inclusive of GST & The landing cost shall include the following:
 - a]. Cost of material / equipment
 - b] All applicable taxes and duties
 - c] Packing, forwarding, freight, clearing charges etc.
 - d] Cost of packets, containers, cases, etc.
 - e] Insurance and other similar charge
 - f] Freight charges upto destination and transportation charges upto the site or work place, loading, unloading, etc.
 - g] All incidentals up to testing commissioning, etc.
3. VALIDITY:- The Rates quoted should be valid for a period of 120 days from the date of opening of the quotation.
4. TIME ALLOWED FOR COMPLETION OF WORK: 30 days from the date of firm order.
5. EARNEST MONEY DEPOSIT:- An amount of Rs 9,259/- towards EMD shall be furnished in a separate envelope, sealed and superscribed as “EMD FOR QUOTATION“(ENVELOPE-A). (Quotation No, & detail of Quotation to be specified) EMD shall be in the form of Demand Draft drawn in the name of The Executive Engineer, Elect, Division VII, Curchorem, on any schedule Bank guaranteed by Reserve Bank of India and made payable at par on any Branches in Goa. EMD payment by cash, cheque, fixed & short term deposit shall not be entertained. Quotation unaccompanied by EMD as above will be summarily rejected. The quotations for the work shall remain open for a period of 30 days from the opening of quotations. The Government shall without prejudice to any other right or remedy, be at liberty to forfeit 50 % of the earnest money if any bidder withdraws his quotation before that date or makes any modifications in terms & conditions which are not acceptable to the Department, and to forfeit the whole of the earnest money if the bidder, whose quotation is accepted, fails to commence the work specified in NIQ (Along with changes in scope) in the prescribed time or abandons the work before its completion. The 2nd envelope superscribed as “Financial bid” (Quotation No, & detail of Quotation to be specified) shall contain Price bid / Bidding schedule, duly signed by the tenderer on each page over their official rubber stamp, on all pages alongwith the financial bid and other documents (ENVELOPE-B). The 3rd cover (ENVELOPE-C) pertaining to the tender shall be superscribed as detailed in quotation shall contain the other two envelopes (Envelope-A & Envelope-B) superscribed “EMD for quotation” and “Financial bid”. Name of the tenderer shall be written on the left hand side corner of the envelopes.
6. PERFORMANCE SECURITY: - In case of acceptance of the offer the performance security of 5% of the order value shall be deposited with this office within 15 days of acceptance letter and the same shall be refundable on completion of the work and recording of the work completion certificate.
7. SECURITY DEPOSIT: - Security deposit amounting to 2.5% of the ordered value will have to be paid or the same will be deducted from the bills adjusting the EMD paid. The security deposit will be retained in this office till expiry of guarantee period and thereafter the same will be refunded against an application in Form-28, subject to the condition that no defects are noticed and the service is to the entire satisfaction to the Engineer-in-charge and on recovery of any amount due to the Govt.
8. PAYMENT:-Payment will be only after completion of entire work. The contractor shall indicate Income Tax PAN No. & GSTIN registered with the Income Tax Department & Central Board of Excise & Customs in the invoices/receipts without which payment will not be released.
9. CONTRACT CONDITON: Orders will be governed by the conditions of P.W.D. agreement Form No.10.
10. THE RIGHT TO REJECT:-The right to reject any or all the quotations, without assigning any reasons, shall rest with the undersigned.
11. DATE OF RECEIPT & OPENING OF QUOTATION:-The quotation will be received up to 15:00 hours on 10/09/2019 & it will be opened at 15.30 hours on the same day.

EXECUTIVE ENGINEER,
DIVISION-VII, CURCHOREM

1. In case the contractor comes across any incorrect/missed out punctuations, typographical errors in spelling, leading incorrect impression or no meaning to the text, then they are advised to get the same clarified from the department. The interpretation of the Engineer-in-charge, in such cases shall be final.
2. The contractor shall furnish the attested copy of electrical contractor's license issued by the licensing board, Govt. Of Goa, to enable them to execute the work in the state of Goa.
3. The rates quoted by the contractor shall be firm, whether he has actually inspected the site or not. Any claim on the veracities of the site conditions at a later stage shall not be entertained.
4. The offer shall be valid for a minimum period of 120 days from the date of opening of the quotation.
5. It is not intend to specify completely herein all details of design and construction. However the work should conform in all respect to quotation of Engineering design and workmanship as per relevant applicable I.S. and shall be able to perform in continues commercial operation in a manner acceptable to the Engineer-in-charge, who will interpret the meaning of drawings and specifications and shall have the power to reject any work, which in his judgment, is not in accordance therewith.
6. The whole contract shall be governed by the agreement under CPWD form 10 for the contract for works. The contractor shall be responsible for arranging all tools and plants, instruments etc. required for erection, testing and commissioning of all the equipments and materials covered under this contract.
The work shall be supervised by the Engineer In-charge or by his authorized representatives. The work shall be carried out as per the tender terms and conditions, specifications, besides site directives if any.

7. **CONTRACTOR IS REQUESTED TO PAY DUE ATTENTION TO THIS ASPECT**

(a) QUANTITIES:

The quantities given under bidding schedule of this contract are tentative. The department reserves the right to finalize quantities for which the unit rates quoted in the bidding schedule by the contractor, shall be valid and binding irrespective of the quantities finalized by the Department

(b) COMPLETENESS OF THE CONTRACT:

Any fittings or accessories which may not have been specifically mentioned in the specifications but which are usual or necessary in the case of similar works or for efficient working of the same shall be deemed to be included in the contract and shall be provided by the contractor without extra charges. All works activities shall be completed in all details whether such details are mentioned in the specifications or not, within completion period.

(c) BIDDING:

The rates quoted against activities/ work in the bidding schedules shall be for the activity/work including GST as per the technical specifications in the bidding schedule and shall be complete in all respects.

8. STANDARD:

Unless otherwise specified all the work shall comply in all respects with the requirements of the specifications attached with this bidding schedule amended up to date and any revisions thereof that may be issued during the currency of the contract.

9. COMPLIANCE WITH THE REGULATIONS:

All the works shall be carried out in accordance with I.E. Act 2003 & I.E. Rules 1956 as amended up to date and all revision thereof that may be issued during the currency of the contract. The work shall also conform to Electricity Department rules/procedures within the said Acts & Rules.

10. PAYMENTS:

No advance payment shall be made along with the order. Payment will be made for the activities completed in all respects; payment will be made activity wise. No payment will be made unless the items in a particular activity are completed. No payment will be made for the purpose of storing of the

materials, transportation, freight and insurance charges, taxes and duty, etc. all of which are deemed to have been included in the quoted rates whether expressively specified or not. Final payment will be done only after completion of the entire work by the Contractor and submission of detailed reports in triplicate as stated in Technical specification.

Deductions: - The GST and income tax shall be deducted at source from the eligible payments to the contractor as applicable from the bill. Department shall issue necessary TDS certificate to the contractor.

11. AGREEMENT AND GOVERNMENTING CONDITIONS:

The contractor whose offer is accepted will have to enter in to an agreement in the C.P.W.D. Form-10

12. METHOD OF WORK

Before commencement of work, the line/apparatus should be made non live by taking proper Shutdown in the presence of departmental Engineer-in-charge. Necessary earthing should also be got done to the line at

the transformer center from the departmental Engineer-in-charge. All the Precautions should be taken in advance to avoid electrical & mechanical accidents.

13. CONDITION:

The proposed work should be executed in the presence of authorized departmental Electrical Engineer-in-charge only.

14. COMPARISON OF BIDDING:

The tenderer shall offer biddings in the prescribed bidding schedule attached with this quotation for all the activities mentioned therein.

15. INTERCHANGEABILITY: All the parts shall be made accurately to standard gauge wherever possible so as to facilitate replacement and requirement including the spare parts shall be interchangeable.

16. DEVIATIONS: Any deviation to these specifications if found necessary by the tenderer shall clearly be set forth in the separate schedule annexed to this quotation giving valid basis for such deviations. The advantage claimed if any to such deviation shall be clearly indicated.

17. GUARANTEE:-

17.1 The contractor shall warrant that the materials/equipments will be new and in accordance with the specification and that the equipment structures etc. will be free from defects in materials & workmanship. The contractor shall furnish performance guarantee for a period of 12 calendar months (Guarantee period) from the date of commissioning for the entire contracted work. Any defects in failure observed during the period of guarantee will be the duty of the contractor to attend and rectify it on priority basis when informed or noticed at his own cost.

17.2 Completion period: The time allowed for completion of all the activities covered under this contract shall be of 30 days.

17.3 Compensation for failure to complete the work within stipulated time period. The time allowed for carrying out the works as entered in the agreement shall be strictly observed by the contractor and shall be deemed to be of essence of the contractor on the part of the contractor date on which order to commence the work is issued to the contractor. Delay in the execution of the work as per clause 2 & 3 of CPWD 8 shall attract the compensation/penalty @1% of the value of work order per day for every day the work remains uncompleted or unfurnished after the stipulated completion date put to subject to total compensation not exceeding 10% on total cost of work as per work order.

NAME OF THE CONTRACTOR

EXECUTIVE ENGINEER
DIVISION VII, CURCHOREM.

ADDRESS/SEAL OF THE CONTRACTOR
SIGNATURE

ANNEXURE-III
TECHNICAL SPECIFICATION

SCOPE OF WORK: -

“Quotation for SETC for the work of providing 02 Nos of 33KV, 630A GOAB Switches on Waddem Feeder at Sanguem Industrial Estate under the jurisdiction of Elect. Sub Division-III, Sanguem.

The scope of work involved is as follows:

1. Supply & Providing of 33KV,630A GOAB switches.....02 sets
2. Removing & re-stringing of ACSR Racocon conductor.....0.200Kms

SECTION: GENERAL TECHNICAL REQUIREMENT

FOREWORD

The provisions under this section are intended to supplement general requirements for the materials, equipments and services covered under other sections of bidding documents and is not exhaustive. However in case of conflicts between the requirements specified in this section and requirements specified under other sections, the requirements specified under this sections shall prevail.

GENERAL REQUIREMENT

The bidders shall submit all the technical requirements, details and information as per the technical data provided in the bid documents.

The bidders shall furnish catalogues, engineering data, technical information, design documents, drawings etc. in full conformity with the technical specification.

It is recognized that the Bidder may have standardized on the use of certain components, materials, processes or procedures different from those specified herein. Alternate proposals offering similar equipment based on the manufacturer’s standard practice will also be considered provided such proposals meet the specified designs, standard and performance requirements and are acceptable to the Department. Unless brought out clearly, the Bidder shall be deemed to conform to the NIT specifications and the general technical requirements, scrupulously. All deviations from the specification shall be clearly brought out in the specific technical deviation Schedule A2 without which it will not be considered as valid deviation.

Whenever a material or article is specified or defined by the name of a particular brand, Manufacturer or Vendor, the specific name mentioned shall be understood as establishing type, function and quality and not as limiting competition.

Equipment furnished shall be complete in every respect with all mountings, fittings, fixtures and standard accessories normally provided with such equipment and/or needed for erection, completion and safe operation of the equipment as required by applicable standards / codes, though they may not have been specifically mentioned or detailed in the Technical Specifications. Materials and components not specifically stated in the specification but which are necessary for commissioning and satisfactory operation of the work, unless specifically excluded, shall be deemed to be included in the scope of the specification and shall be supplied without any extra cost. All similar standard components / parts of similar standard equipment provided shall be inter-changeable with one another.

STANDARDS

The works covered by the specification shall be designed, engineered, manufactured, built, tested and commissioned in accordance with the Acts, Rules, Laws and Regulations of India.

The equipment to be furnished under this specification shall conform to latest issue with all amendments of standards specified under Annexure-A of this section.

The Bidder shall note that standards mentioned in the specification are not mutually exclusive or complete in themselves, but intended to complement each other.

The Bidder shall also note that list of standards presented in this specification is not complete. Whenever necessary the list of standards shall be considered in conjunction with specific IS/IEC.

When the specific requirements stipulated in the specifications exceed or differ than those required by the applicable standards, the stipulation of the specification shall take precedence.

Other internationally accepted standards which ensure equivalent or better performance than that specified in the standards referred shall also be accepted. Copies of such standards shall be submitted by the bidder along with the bid.

In case governing standards for the equipment is different from IS or IEC, the salient points of difference shall be clearly brought out in additional information schedule along with English language version of standard or relevant extract of the same. The equipment conforming to standards other than IS/IEC shall be subject to Department's approval.

The bidder shall clearly indicate in his bid the specific standards in accordance with which the works will be carried out.

SERVICES TO BE PERFORMED BY THE EQUIPMENT BEING FURNISHED

All equipments shall perform satisfactorily under various other electrical, electromechanical and meteorological conditions of the site of installation.

All equipment shall be able to withstand all external and internal mechanical, thermal and electromechanical forces due to various factors like wind load, temperature variation, ice & Snow, (wherever applicable) short circuit etc. for the equipment.

ENGINEERING DATA AND DRAWINGS

The engineering data shall be furnished by the Bidder in accordance with the Schedule for each set of equipment as specified in the Technical Specifications.

The list of drawings/documents which are to be submitted to the department during detailed engineering shall be discussed and finalized at the time of award.

The Bidder shall necessarily submit all the drawings/documents unless anything is waived.

The Bidder shall submit 4 (Four) sets of drawings/design documents/data/test reports as may be required for the approval of the Department.

DRAWINGS

All drawings submitted by the Bidder including those submitted at the time of bid shall be in sufficient detail to indicate the type, size, arrangement, material description, Bill of Materials, weight of each component, break-up for packing and shipment, dimensions, internal & the external connections, fixing arrangement required and any other information specifically requested in the specifications.

Each drawing submitted by the Bidder shall be clearly marked with the name of the Department, the unit designation, the specifications title, the specification number and the name of the Project. If standard catalogue pages are submitted, the applicable items shall be indicated therein. All the dimensions should be in metric units.

Further work of the Bidder shall be in strict accordance with these drawings and no deviation shall be permitted without the written approval of the Department, if so required.

The review of these data by the Department will cover only general conformance of the data to the specifications and documents interfaces with the equipment provided under the specifications, external connections and of the dimensions which might affect substation layout. This review by the Department may not indicate a thorough review of all dimensions, quantities and details of the equipment, materials, any devices or items indicated or the accuracy of the information submitted. This review and/or approval by the Department shall not be considered by the Bidder, as limiting any of his responsibilities and liabilities for mistakes and deviations from the requirements, specified under these specifications and documents.

All manufacturing and fabrication work in connection with the equipment prior to the approval of the drawings shall be at the Bidder's risk. The Bidder may make any changes in the design which are necessary to make the equipment conform to the provisions and intent of the Contract and such changes will again be subject to approval by the Department. Approval of Bidder's drawing or work by the Department shall not relieve the Bidder of any of his responsibilities and liabilities under the Contract.

All engineering data submitted by the Bidder after final process including review and approval by the Department shall form part of the Contract Document and the entire works performed under these specifications shall be performed in strict conformity, unless otherwise expressly requested by the Department in writing.

MATERIAL/WORKMANSHIP

General Requirement

Where the specification does not contain references to workmanship, equipment, materials and components of the covered equipment, it is essential that the same must be new, of highest grade of the best quality of their kind, conforming to best engineering practice and suitable for the purpose for which they are intended.

In case where the equipment, materials or components are indicated in the specification as “similar” to any special standard, the Department shall decide upon the question of similarity. When required by the specification or when required by the Department the Bidder shall submit, for approval all the information concerning the materials or components to be used in manufacture. Machinery, equipment, materials and components supplied, installed or used, without such approval, shall run the risk of subsequent rejection; it being understood that the cost as well as the time delay associated with the rejection shall be borne by the Bidder.

All materials and equipment shall be installed in strict accordance with the manufacturer’s recommendation(s). Only first-class work in accordance with the best modern practices will be accepted. Installation shall be considered as being the erection of equipment at its permanent location. This, unless otherwise specified, shall include unpacking, cleaning and lifting into position, grouting, leveling, aligning, coupling of or bolting down to previously installed equipment bases/foundations, performing the alignment check and final adjustment prior to initial operation, testing and commissioning in accordance with the manufacturer’s tolerances, instructions and the specification All oil, grease and other consumables used in the Works/Equipment shall be purchased

in India unless the Bidder has any special requirement for the specific application of a type of oil or grease not available in India. If such is the case, he shall declare in the proposal where such oil or grease is available. He shall help Department in establishing equivalent Indian make and Indian supplier. The same shall be applicable to other consumables too.

Provisions for Exposure to Hot and Humid climate

Outdoor equipment supplied under the specification shall be suitable for service and storage under tropical conditions of high temperature, high humidity, heavy rainfall and environment favorable to the growth of fungus and mildew.

DESIGN IMPROVEMENTS/CO-ORDINATION

The Bidder shall note that the equipment offered by him in the bid only shall be accepted for supply. However, the Department or the Bidder may propose changes in the specification of the equipment or quality thereof and if the Department & Bidder agrees upon any such changes, the specification shall be modified accordingly.

If any such agreed upon change is such that it affects the price and schedule of completion, the parties shall agree in writing as to the extent of any change in the price and/or schedule of completion before the Bidder proceeds with the change. Following such agreement, the provision thereof, shall be deemed to have been amended accordingly.

The Bidder shall be responsible for the selection and design of appropriate equipment to provide best co-ordinate performance of the entire system. The basic design requirements are detailed out in this specification. The design of various components, sub-assemblies and assemblies shall be so done that it facilitates easy field assembly and maintenance.

The bidder has to co-ordinate designs and termination with the agencies (if any) who are Consultants for the department. The names of agencies shall be intimated to the successful bidder.

QUALITY ASSURANCE PROGRAMME

To ensure that the equipment 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 the purchasers site or at any other place of work are in accordance with the specifications, the Contractors shall adopt suitable quality assurance programme which shall be broadly outlined by the contractor and finalized after discussions before the award of contract. The detailed programme shall be submitted by the contractor after the award of contract and finally accepted by Electricity Department after discussion.

A quality assurance programme of the contractor shall generally cover the following:

- a) His organization structure for the management and implementation of the proposed quality assurance programme;
- b) Documentation control system;
- c) Qualification data for bidders key personnel;
- d) The procedure for purchases of materials, parts components and selection of sub-contractor's services including vendor analysis, source inspection, raw material inspection, verification of material purchases etc
- e) System for shop manufacturing and site erection controls including process controls and fabrication and assembly control;

- f) Control of non-conforming items and system for corrective actions;
- g) Inspection and test procedure both for manufacture and field activities.
- h) Control of calibration and testing of measuring instruments and field activities.
- i) System for indication and appraisal of inspection status;
- j) System for quality audits;
- k) System for authorizing release of manufactured product to the Purchaser.
- l) System for maintenance of records;
- m) System for handling storage and delivery; and
- n) A manufacturing quality plan detailing out the specific quality control measures and procedures adopted for controlling the quality characteristic relevant to each item of equipment furnished and / or services rendered.
- o) A field quality plan covering field activities

The manufacturing and field quality plans shall be mutually discussed and approved by the purchaser after incorporating necessary corrections by the contractor as may be required.

The purchaser or his duly authorized representative reserves the right to carry out quality audit and quality surveillance of the system and procedure of the contractor/ his vendors quality management and control activities

QUALITY ASSURANCE DOCUMENT

The contractor would be required to submit all the quality assurance documents as stipulated in the quality plan at the time of purchaser inspection of equipment/ material

TESTS

Pre-commissioning Test

On completion of erection of the equipment and before charging, each item of the equipment shall be thoroughly cleaned and then inspected jointly by the Department and the Bidder for correctness and completeness of installation and acceptability for charging, leading to initial pre-commissioning tests at site. The list of pre-commissioning tests to be performed is given in respective chapters and shall be included in the Bidder's quality assurance programme.

Commissioning Tests

The available instrumentation and control equipment will be used during such tests and the bidder will use all such measuring equipment and devices duly calibrated as far as practicable. However, immeasurable parameters shall be taken into account in a reasonable manner by the bidder for the requirement of these tests. The tests will be conducted at the specified load points and as near the specified cycle condition as practicable. The bidder will apply proper corrections in calculation, to take into account conditions which do not correspond to the specified conditions

Any special equipment, tools and tackles required for the successful completion of the Commissioning tests shall be provided by the Bidder, free of cost.

The specific tests to be conducted on equipment have been brought out in the respective chapters of the technical specification.

The Bidder shall be responsible for obtaining statutory clearances from the concerned authorities for commissioning of the equipment.

PACKAGING & PROTECTION

All the equipments shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site till the time of erection. On request of the Department, the Bidder shall also submit packing details/associated drawing for any equipment/material under his scope of supply, to facilitate the Department to repack any equipment/material at a later date, in case the need arises. While packing all the materials, the limitation from the point of view of availability of Railway wagon sizes in India should be taken into account. The Bidder shall be responsible for any loss or damage during transportation, handling and storage due to improper packing. Any demurrage, wharf age and other such charges claimed by the transporters, railways etc. shall be to the account of the Bidder. Department takes no responsibility of the availability of the wagons.

FINISHING OF METAL SURFACES

All metal surfaces shall be subjected to treatment for anti-corrosion protection. All ferrous surfaces for external use unless otherwise stated elsewhere in the specification or specifically agreed, shall be hot-dip galvanized after fabrication. High tensile steel nuts & bolts and spring washers shall be electro galvanized to service condition 4. All steel conductors including those used for earthing / grounding (above ground level) shall also be galvanized according to IS: 2629.

HOT DIP GALVANISING

The minimum weight of the zinc coating shall be 610 gm/sq.m and minimum thickness of coating shall be 85 microns for all items thicker than 6 mm. For items lower than 6mm thickness, requirement of coating thickness shall be as per relevant ASTM. For surface, which shall be embedded in concrete, the zinc coating shall be 610 gm/sq.m minimum.

The galvanized surfaces shall consist of a continuous and uniform thick coating of zinc, firmly adhering to the surface of steel. The finished surface shall be clean and smooth and shall be free from defects like discolored patches, bare spots, unevenness of coating, spelter which is loosely attached to the steel globules, spiky deposits, blistered surface, flaking or peeling off, etc. The presence of any of these defects noticed on visual or microscopic inspection shall render the material liable to rejection.

After galvanizing no drilling or welding shall be performed on the galvanized parts of the equipment excepting that nuts may be threaded after galvanizing. Sodium dichromate treatment shall be provided to avoid formation of white rust after hot dip galvanization.

The galvanized steel shall be subjected to six one minute dips in copper sulphate solution as per IS-2633.

Sharp edges with radii less than 2.5 mm shall be able to withstand four immersions of the Standard Presses test. All other coatings shall withstand six immersions. The following galvanizing tests should essentially be performed as per relevant Indian Standards.

- Coating thickness.
- Uniformity of zinc.
- Adhesion test.
- Mass of Zinc coating.

Galvanized material must be transported properly to ensure that galvanized surfaces are not damaged during transit. Application of zinc rich paint at site shall not be allowed. However cold galvanization spray of approved quality may be used to repair the damage, if any, to give the damaged surface equal protection as that of the hot dipped galvanized surface.

PAINTING

All sheet steel work shall be degreased, pickled, phosphated in accordance with the IS:6005 "Code of practice for phosphating iron and steel". All surfaces which will not be easily accessible after shop assembly shall beforehand be treated and protected for the life of the equipment. The surfaces which are to be finished painted after installation or require corrosion protection until installation, shall be shop painted with at least two coats of primer. Oil, grease, dirt and swarf shall be thoroughly removed by emulsion cleaning. Rust and scale shall be removed by pickling with dilute acid followed by washing with running water, rinsing with slightly alkaline hot water and drying.

After phosphating, thorough rinsing shall be carried out with clean water followed by final rinsing with dilute dichromate solution and oven drying. The phosphate coating shall be sealed with application of two coats of ready mixed, stoving type zinc chromate primer. The first coat may be "flash dried" while the second coat shall be stoved.

After application of the primer, two coats of finishing synthetic enamel paint shall be applied, each coat followed by stoving. The second finishing coat shall be applied after inspection of first coat of painting.

The exterior color of the paint shall be as per shade no. 697 of IS-5 and inside shall be glossy white for all equipment, marshalling boxes, junction boxes, control cabinets, panels etc. unless specifically mentioned under respective sections of the equipments. Each coat of primer and finishing paint shall be of slightly different shade to enable inspection of the painting. A small quantity of finishing paint shall be supplied for minor touching up required as site after installation of the equipments.

In case the Bidder proposes to follow his own standard surface finish and protection procedures or any other established painting procedure, like electrostatic painting etc., the procedures shall be submitted alongwith the Bids for Department's review & approval.

HANDLING, STORING AND INSTALLATION

In accordance with the specific installation instructions as shown on manufacture's drawings or as directed by the Department or his representative, the Bidder shall unload, store, erect, install, wire, test and place into commercial use all the equipment included in the contract. Equipment shall be installed in a neat, workmanlike manner so that it is level, plumb, and square and properly aligned and oriented. Commercial use of switchyard equipment means completion of all site tests specified and energization at rated voltage.

Bidder may engage manufacturer's Engineers to supervise the unloading, transportation to site, storing, testing and commissioning of the various equipment being procured by them separately. Bidder shall unload, transport, store, erect, test and commission the equipment as per instructions of the manufacturer's supervisory Engineer(s) and shall extend full cooperation to them.

In case of any doubt/misunderstanding as to the correct interpretation of manufacturer's drawings or instructions, necessary clarifications shall be obtained from the Department/ Manufacturer. Bidder shall be held responsible for any damage to the equipment consequent to not following manufacturer's drawings/instructions correctly.

Bidder shall be responsible for examining all the shipment and notify the Department immediately of any damage, shortage, discrepancy etc. for the purpose of Department's information only. The Bidder shall submit to the Department every week a report detailing all the receipts during the weeks. However, the Bidder shall be solely responsible for any shortages or damages in transit, handling and/or in storage and erection of the equipment at site. Any demurrage, wharf age and other such charges claimed by the transporters, railways etc. shall be to the account of the Bidder.

The Bidder shall be fully responsible for the equipment/material until the same is handed over to the Department in an operating condition after commissioning. Bidder shall be responsible for the maintenance of the equipment/material while in storage as well as after erection until taken over by Department, as well as protection of the same against theft, element of nature, corrosion, damages etc.

Where material/equipment is unloaded by Department before the Bidder arrives at site or even when he is at site, Department by right can hand over the same to Bidder and there upon it will be the responsibility of Bidder to store the material in an orderly and proper manner.

The Bidder shall be responsible for making suitable indoor storage facilities, to store all equipment which requires indoor storage.

The words 'erection' and installation used in the specification are synonymous. Similarly the words 'Equipment' and 'Materials' as also 'Bidder' and 'Contractor' 'owner' and Department used in the specifications are synonymous.

Exposed live parts shall be placed high enough above ground to meet the requirements of electrical and other statutory safety codes.

The design and workmanship shall be in accordance with the best engineering practices to ensure satisfactory performance throughout the service life. If at any stage during the execution of the Contract, it is observed that the erected equipment(s) do not meet the above minimum clearances, the Bidder shall immediately proceed to correct the discrepancy at his risks and cost.

TOOLS AND TACKLES

The Bidder shall supply with the equipment one complete set of all special tools and tackles for the erection, dis-assembly and maintenance of the equipment. However, these tools and tackles shall be separately, packed and brought on to Site.

The successful bidder shall supply 2 (two) copies of the above mentioned standards and codes, latest editions, and copies of any other standards/literature referred for design purpose, to the department within 30 days of placing of work order. The successful tenderer shall supply these copies free of cost to the Department.

1].RCC POLES 11MTRS LONG

11meters long R.C.C. Pole as per drawing approved by CEE and conforming to IS standards as amended upto date. The Component used for pole shall conform to following IS amended upto date.

Ordinary Port land cement 53 grade	IS 12269
Aggregate	IS 383-1970
Torsteel	IS 1786-7985
MS bar	IS 432 P 1&2-1982

The minimum ultimate transverse load of pole shall be 450Kg for 11mtr. RCC Pole respectively and factor of safety shall be 2.5. The pole shall be marked as per IS. The poles shall be tested as per IS 785 & 2905-1989 as amended upto date at the manufactures works in the presence of the departmental representative and test reports shall be furnished for acceptance. The poles will be accepted subject to passing of tests and verification of reinforcement and concrete after breaking one pole from each lot at cost of the manufacturer.

ERECTION OF POLES: -

The erection of pole includes excavation of the pole pit of size 60cm X 60cm X depth, where depth is equal to the 1/6th of the height of the respective pole in all types soil laterite/hard rock. The pole is to be erected in alignment with utmost care and the excavated earth should be back filled properly by ramming.

2) CEMENT CONCRETING

Ordinary Portland Cement of grade 43 in HDPE bags of 50 KGs conforming to IS 8112. Cement should be filled in bags as per IS Specification. All bags should have ISI mark. The cement supplied shall be fresh and shall not be more than one month old from the date of manufacture. Cement concrete in the ratio 1:2:4(1 cement: 2 Sand, 4 graded granite/basaltic, aggregate 20mm nominal size) including cost of centering, shuttering & mulling 0.4mts above the ground & properly curved.

3]. BARBED WIRE FOR ANTICLIMBING DEVICE

Hot dip galvanized steel barbed wire type 4 conforming to IS:278/1962 as amended upto date and galvanization conforming to IS:4826/1979as amended upto date.

Nominal diameter of line wire and point wire shall be 2.24mm each. Nominal distance between the two barbs shall be 150mm. The weight of the each coil shall be 25 to 35 kg exclusive of weight of the reel.

Tests as per IS shall be carried out at the manufacturer's work & test reports shall be furnished before supply of materials.

The department reserves the right to witness all the above tests.

4]. D.P. STRUCTURE MATERIAL:-

M.S. Angle of size 50 x 50 x 6 mm of minimum tensile strength 410 MPa conforming to IS 2062 as amended upto date.

The sectional weight of steel shall be 4.5kg/m.

The length of each piece shall be 4.5m to 6m.

The rolling and cutting tolerances for weight and dimensions of steel shall be as per IS 1852-1985.

Tests as per IS shall be carried out at the manufacturers works and test reports shall be furnished before supply of materials.

The Department reserves the right to witness all the above tests.

M.S. Channel 100 X 50 MM ISMC of minimum tensile strength 410 MPa conforming to IS 2062 as amended up to date.

The sectional weight of steel shall be 9.2kg/m for M.S. Channel 100x50x6 MM ISMC.

The sectional weight of steel shall be 7.14kg/m for M.S. Channel 75x40x6 MM ISMC

The length of each piece shall be 4.5m to 6m.

The rolling and cutting tolerances for weight and dimensions of steel shall be as per IS 1852-1985.

Tests as per IS shall be carried out at the manufacturers works and test reports shall be furnished before supply of materials.

The Department reserves the right to witness all the above tests.

5] METAL PARTS FOR 70 KN DISC INSULATOR FOR 3 BOLTED TYPE SUITABLE FOR ACSR RACOON CONDUCTOR

3-bolted type hardware fitting suitable for 33KV ball and socket type disc insulators of 16mm pin, failing load of 70KN and suitable for ACSR RACOON conductor. The metal parts shall be as per drg. No.CEE/E-482-Rev-2-B and conform to IS-2486 Part 1-1993, 2486 Part 2-1989 as amended upto date.

All iron parts should be hot dip galvanized as per IS:2629/1985 as amended upto date

Acceptance tests and routine tests shall be carried out by the manufacturer's works and test reports shall be furnished before supply of materials. Department reserves the right to witness the above testing.

6]. 70 KN DISC INSULATOR

70KN disc insulators ball and socket type, type 'A' porcelain brown glazed duly cemented at factory with MCI socket cap, forged steel ball pin and supplied with Phosphor bronze "W" split pin as per IS 731-1971 as amended upto date.

Minimum failing load. 70 KN.

Pin ball diameter 16 mm.

Minimum Creepage distance 320 mm.

Ferrous parts shall be galvanized as per relevant IS.

Insulator shall be marked as per IS.

Acceptance tests and routine tests shall be carried out as per IS by the manufacturer and test results shall be furnished by the manufacturer before supply of materials.

Department reserves the right to witness all the above tests.

7]. HDGI CLAMPS OF VARIOUS SIZES:

All clamps & suitable nut bolts shall be hot dipped galvanized generally conforming to IS - 2633/72 & shall be conforming to the drawings.

8]. ACSR WEASEL CONDUCTOR OF SIZE 6/1/2.59 MM

Hard drawn stranded aluminum conductor with galvanized steel wire reinforced conforming to IS: 398(Pt-II/96) amended upto date of the size. 6 +1 / 2.59 mm [Weasel]

Packing and marking of drum will be as per IS:

Conductor length shall be 1500 mtr. with tolerance of +/- 5%.

The maximum number of lengths on each drum shall be two.

Materials shall be supplied on non-returnable wooden drums.

The type tests and acceptance tests and routine tests shall be carried out at manufacturers works and test reports shall be furnished before supply of materials.

The Department reserves right to witness all the above tests.

STRINGING OF CONDUCTOR :-

Includes spreading of ACSR conductor without any damage and stringing with proper tension without any kinks/damage including binding of conductor at pin points, jumpering at cut points etc. The ground & line clearances at road crossings, along roads, Crossings & other crossings shall be as the relevant I.E. Rules. Tree cutting wherever required is to be carried out before stringing of the Conductor with prior permission of the Engineer in charge. The rates for Stringing of conductor in Schedule-II shall include cost of tree cutting as well.

9]. ACSR RACOON CONDUCTOR

Hard drawn stranded Raccoon aluminium conductor with galvanized steel wire reinforced conforming to IS: 398(Pt.-II/96) amended up to date of size 6 +1 / 4.09 mm

Packing and marking of drum will be as per IS:

Conductor length shall be 1500 mtr. With tolerance of +/- 5%.

The maximum number of lengths on each drum shall be two.

Materials shall be supplied on non-returnable wooden drums.

The type tests and acceptance tests and routine tests shall be carried out at manufacturer's works and test reports shall be furnished before supply of materials.

The Department reserves right to witness all the above tests.

STRINGING OF ACSR CONDUCTOR:-

Includes spreading of ACSR conductor without any damage and stringing with proper tension without any kinks/damage including binding of conductor at pin points, jumpering at cut points etc. The ground & line clearances at road crossings, along roads, Crossings & other crossings shall be as the relevant I.E. Rules. Tree cutting wherever required is to be carried out before stringing of the Conductor with prior permission of the Engineer in charge. The rates for Stringing of conductor in Schedule-II shall include cost of tree cutting as well

10].HDGI STAY WIRE OF SIZE 7/10 SWG:-

The Stay wire shall comply with the specific requirements of IS: 2141-1979, IS: 4826-1979 & IS: 6594-1974 or the latest versions thereof. The wires shall be of tensile grade 4 & having minimum tensile strength of 700 N/mm² conforming to IS: 2141. GI stay wire standard of size 7/3.15mm (7/10SWG) wire should conform to ISS-2141/68 grade I and hot dipped galvanized as per IS 4826/1968 with up to date amendments. All the GI materials shall conform to IS-226/75 with amendment No- 1 to 3 tested quality. The breaking load shall be 63KN min proof load (40% of breaking load shall be performed on all the stay sets. These figures have been taken from IS-16/74 with amendment No. Conforming to Drawing.

GI wire with tensile strength 32Kg/mm to 55Kg/mm soft quality 4.00mm dia 8SWG wire should conform to ISS-280/1972 and galvanized to heavy type as per ISS-4826/1968 with up to date amendments.

ERECTION OF STAY SET: -

Includes excavation of pit size 0.60x0.6x2mtr. in all kinds of soil laterite/hard rock and providing of stay set complete by using 7/10SWG HDGI stay wire, 15/8 KV break insulator, Turn buckle with I hook and fixing the same to pole with set of stay clamps with HDGI Bolts/nuts and embedding stay plate and rod by excavated soil with ramming. The stay rod with plate shall be hot dipped galvanized. The entire stay rod leaving the top 10cm. with plate should be embedded in the pit with an angle between 30 to 45 degrees of stay wire with the pole. The stay pit should be filled with PCC of ratio 1:2:4. The G.I. stay wire of size 7/10 SWG should be used with a break insulator of 15/8KV at a height of 5mtr above ground level with G.I. turn buckle. All the Nut bolts shall be hot dipped galvanized and of appropriate size with full thread.

11].HDGI NUT BOLTS

G.I. Hexagonal head bolts and hexagonal nuts conforming to IS 1363 part 1 to 3 1992 as amended upto date of following sizes.

Size of Bolts	Nominal Length	Threading Portion
M 12	50 mm	Full
M 12	65 mm	Full
M 16	40 mm	Full
M 16	50 mm	Full
M 16	65 mm	Full
M 16	75 mm	Full
M 16	100 mm	Full
M 16	150 mm	75 mm from end
M 16	175 mm	75 mm from end
M 16	200 mm	75 mm from end
M 16	260 mm	75 mm from end

The bolts and nuts shall be hot dip galvanized as per IS: 2629-1985 as amended upto date. Bolts and nuts shall be supplied in bags of 25 kgs each. The testing of galvanization of bolts and nuts shall be carried out by the manufacturer and test reports shall be furnished before supply of materials.

Department reserves the right to witness above testing.

12].EARTHING: -

The testing of galvanization as per IS shall be carried by the manufacturer and test reports shall be furnished before supply of materials.

The department reserves the right to witness all the above tests. Earthing pipe will be supplied by the department.

Earthing is to be provided with 40mm. diameter perforated G.I. pipe of class 'B' of length 2.5mts with alternate layers of charcoal & salted. Earthing with salt, charcoal, pipe etc. after digging of pit of size 0.6X0.6X2.5mts deep in all type of soil should be provided as per the relevant I.S. all the required points shall be connected to earth as per the relevant I.E. Rules by means of ACSR Weasel conductor.

13]. 33KV GOAB Switch

36KV, 630A A.C. isolator without earthing switch suitable for tapping / sectionalizing 33KV 50HZ line Isolator shall conform to IS9921 Part I to III and 4 as amended upto date. The post insulators shall conform to IS 2540-1973 as amended upto date.

The isolator shall be manually operated, outdoor type, triple poles, two/ three stacks per pole, center post rotating, gang operated, horizontal double break type, rated short time withstand current rating 25 KA (rms). The isolator shall be suitable for upright, horizontal mounting on Hot Dip Galvanized MS Channels with minimum of 1200mm phase to phase clearance complete with operating mechanism, arcing horns, & locking arrangement for both ON & OFF positions. Fixed and moving contacts shall be self aligning. All ferrous parts shall be hot dip galvanized as per relevant IS. The isolator shall be supplied along with 6 nos. of pad type bimetallic terminal connectors of 630A rating suitable for connecting ACSR conductor of diameter upto 21mm. Each isolator and control mechanism shall be provided with at least two number of terminals to connect grounding wires.

The routine tests of the isolators shall be carried out at the manufacturers works as per IS 9921 Part 4-1985 and test reports shall be furnished before supply of materials.

The isolator shall conform to enclosed specification.

The Department reserves the right to witness all the above tests.

1. CLIMATIC CONDITIONS:

The climatic conditions at site under which the equipment shall operate satisfactorily are as follows:

- | | |
|---|-------------------------|
| a) Maximum ambient temperature of the air | : 45°C |
| b) Maximum daily average ambient temperature | : 40°C |
| c) Maximum yearly average ambient temperature | : 35°C |
| d) Average number of thunder storm days per annum | : 33 |
| e) Maximum relative humidity | : 90% |
| f) Average annual rainfall | : 250cm. |
| g) Maximum wind pressure | : 100 kg/m ² |
| h) Height above seal level | : Not more than 1000M. |
| i) Degree of pollution | Heavy pollution |

The equipment shall be suitable for continuous operation at the full rated capacity under the above conditions.

2. a) The isolator shall be horizontally mounted double break, gang operated type and the blades shall rotate in a horizontal plane. The design shall be such that if required the isolators may be adopted for upright mounting in a field or converted for right or left hand control without excessive labour and with minimum replacement of parts.

The live parts shall be designed such that as far as possible sharp points, edges and other corona producing surfaces are eliminated. Live metal parts except for the isolators caps and bases shall be of non-ferrous. Bolts, screws and pin shall be provided with lock washers, keys or equivalent locking facilities and shall be galvanised.

- b) Each pole shall have two/three pedestal type insulator stacks. Necessary arrangement shall be provided for proper alignment of the contacts. Gang operated links shall be designed that all phase shall make and break simultaneously.

- c) The design of isolators shall provide for positive control of blades in all positions with minimum of mechanical stress to the insulators. The isolator blades shall be assembled so that proper seating of contacts shall be obtained when a blade is out of alignment even by 25mm in either direction. All movable parts which may be current path shall be shunted by flexible copper conductors of ample cross section and strength.

The isolator supplied shall be completed in all respects, shall include all fittings and accessories, which are essential for completeness of the equipment whether such details are mentioned in specification or not.

GALVANISING

All ferrous parts including mechanism housing shall be hot dip galvanized as per IS: 2629/1966 as amended upto date.

4. CONTACT

a) The isolators shall/ have heavy duty self aligning and high pressure contacts preferably of the type which apply pressure to the contact surface after the blades are fully closed and released the pressure before they start to open. High pressure type contacts shall be developed. The contact shall be self cleaning but shall be so designed that wiping action shall not cause scouring or abrasion of the contact surface. The wiping may be formed during the operation of the switches. The contacts shall be made of hard drawn electrolytic copper strip.

b) The contacts and other current carrying parts shall be so designed that their temperature under different conditions of operation shall not exceed the values stipulated. The temporary rise of temperature due to the passage of rated short circuit current for a period of 1 second shall not cause any annealing or welding of contacts.

c) Moving contacts shall be dimensioned to withstand the highest short circuit currents during service. The surface of contacts shall be rendered smooth and shall be silver plated.

d) Arcing contacts, where provided, shall close first and open last so that no damage due to arcing whatsoever shall be caused to the main contacts. You will give all details of such contacts alongwith necessary sketches/drawing.

e) The female contacts and its tensioning by a spring shall be such that there will be always a positive contact with adequate pressure to give enough contact surface for passing of current. The spring provided shall not go out of alignment or get entangled with male contact, during operation.

5. TERMINALS ADOPTERS AND EARTHING TERMINALS:

a) The isolators shall be provided with bimetallic pad type terminal connector conforming to IS: 5561/1970 with suitable size steel nuts, bolts conforming to IS: 1363 (Pt-3)/ 84 & IS: 1367/1967 and spring washers of continuous rating of 800 amps and short time of 25KA for 1 sec. and connecting end of the isolator shall be made out of tinned copper. The connector shall be suitable to connect ACSR conductor upto 21mm diameter.

b) Each isolator and control mechanism shall be provided with at least two nos. of grounding terminals for receiving connections.

6. MECHANICAL STRENGTH:

Isolators shall withstand the rated mechanical terminal load and electro magnetic forces without impairing their operation reliability or current properties.

7. OPERATING MECHANISM

The vertical operating rod shall comprise of 5m long 40mm galvanised steel tube medium class conforming to IS 1161. The operating handle shall be fixed 1m above ground level. Manual operating mechanism gang operated through hand operated lever.

Securing in position: Isolator inclusive of operating mechanism shall be such that they cannot come out of their open or closed positions by gravity, wind pressure, vibrations reasonable shocks or accidental touching of the connecting rods of operating mechanism. Isolator device shall be such as to permit locking in both the open and closed position.

8. INSULATORS:

The post insulators used for isolators shall be made of porcelain and shall comply with the requirements of IS: 2544-1973 as amended upto date. The porcelain and metal parts shall be assembled together with such material in such a manner that any thermal expansion of the metal and the porcelain parts throughout the range of operating temperatures shall not loosen the parts or create undue stress adversely affecting the mechanical and electrical strength. Minimum creepage distance of post insulators shall be 848mm. The insulator shall be cemented at the factory of the insulator and marked as per IS.

9. COMPLETENESS:

All fittings and accessories that might not have been mentioned specially in the specification but are usually necessary for equipment or similar plant shall be deemed to have included in the specification and shall be specified and furnished by the supplier with any extra charges. All plants and equipments shall be complete in all details whether or not such details are mentioned in the specification.

MATERIALS:-

All materials such as clamps, bolts & Nuts, cross arms, stay sets, top insulator fitting, metal parts for insulators, earthing sets etc. required for this work should be hot dip galvanized as per relevant I.S.S.

NOTE:

All the materials to be supplied by the contractor should be confirming to relevant I.S. standards as amended up-to-date & as per the approved designs of the department. Where such standard does not exist one should strictly confirmed to the drawings, specification & general standards mentioned/enclosed. The materials offered by the contractor shall be the makes approved by the department in the enclosed list.

LIST OF MAJOR ITEMS APPROVED BY THE DEPARTMENT

SR. NO	DESCRIPTION OF MATERIALS	REPUTED MAKES SUCH AS:
1.	33KV, 630Amp GOAB SWITCH	ULTIMA SWITCHGEAR, S & S SWITCHGEAR, G.R. POWER, SWITCH GEARS.
2.	HT INSULATORS	BHEL, WSI, ADITYA BIRLA, MODERN INSULATORS , HINDUSTAN CHEMICALS
3.	HARDWARE FOR 33KV DISC INSULATORS	MODERN MALLEABLES, /BURMA ,RASHTRA UDYOG,DHARAIA ENGINEERS FOUNDER,KONKAN MALLABLES
4.	GI STRUCTURAL MATERIALS	KEC, TRANSPower, L&T, SAE, JYOTI STRUCTURES, PANKAJ STRUCTUCTURALS,EAST COAST CONSTRUCTION, SHREEM ELETRIC.
5.	CONDUCTORS	TRACO/GUPTA/MAHAVIR/BHARAT/APAR/TUMKUR

Name of contractor:

Sign :

EXECUTIVE ENGINEER (DIV.VII)

Stamp of the contractor: