

PRASAR BHARATI
(Broadcasting Corporation of India)
OFFICE OF THE CHIEF ENGINEER (SOUTH ZONE)
ALL INDIA RADIO & DOORDARSHAN
Swamy Sivananda Salai, Chennai - 600 005

No. CESZ/PUR-II/PSEA/06 /2011-12/

Date: 12.08-2011

SUB.: INVITING TENDER FOR THE SITC OF 11 KV, 3 PHASE, 630A, 500MVA, 4 PANEL, HT SWITCHGEAR at Doordarshan Kendra, Hyderabad, Andhra Pradesh.

Sir,

Please find enclosed herewith the tender for the Supply, Installation, Testing and Commissioning (SITC) of **11KV, 3PHASE, 630A, 500MVA, 4 PANEL, HT Switchgear for Doordarshan Kendra, Hyderabad, Andhra Pradesh.**

Tender documents can be downloaded from the web sites on free of cost:

www.cesairdd.org.in/tenders.html,
www.allindiaradio.org/tender.html,
www.tenders.gov.in

The tenders will be received at the Office of The Chief Engineer (SZ), AIR & DD, Swamy Sivananda Salai, Chennai-5, up to 12.00 Hrs on **02.09.2011**. The Technical bid and E.M.D. will be opened on the same day at 15.00 Hrs. The Commercial bid of technically qualified tenders will be opened at a later date that will be intimated to the qualified tenderers.

Yours faithfully,

(JOTHI VIJAYAKUMAR)
ASSISTANT ENGINEER
for Chief Engineer (SZ)

To:1. As per the Address list enclosed.
2. www.cesairdd.org.in/tenders.html,
3. www.allindiaradio.org/tender.html,
4. www.tenders.gov.in

PRASAR BHARATI
(BROADCASTING CORPORATION OF INDIA)
OFFICE OF THE CHIEF ENGINEER (SZ)
ALL INDIA RADIO & DOORDARSHAN
SWAMI SIVANANDA SALAI
CHENNAI 600 005

TENDER NO. CESZ/PUR-II/PSEA/06 /2011-12

Date:-12.08.2011.

FOR PROCUREMENT OF STORES / EQUIPMENT / SUPPLY, INSTALLATION,
TESTING & COMMISSIONING (SITC) / SUPPLY, ERECTION, TESTING &
COMMISSIONING (SETC)

FOR SITC OF 11 KV, 3 PHASE, 500 MVA,
630A, 4 PANEL, HT SWITCHGEAR FOR DOORDARSHAN KENDRA,
HYDERABAD.



PRASAR BHARATI
(BROADCASTING CORPORATION OF INDIA)
OFFICE OF THE CHIEF ENGINEER (SZ)
ALL INDIA RADIO & DOORDARSHAN
SWAMI SIVANANDA ALAI
CHENNAI 600 005

File No. **CESZ/PUR-II/PSEA/06 /2011-12**

Dated:- **12.08.2011**

To:

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.....

INVITATION TO BID

On behalf of the Prasar Bharti (B.C.I.), sealed tenders are invited by this Organisation in the prescribed Bid Forms at Appendices, 2 to 7 of "Instructions to Bidders" enclosed at Annexure-I. The details of tender are given in the schedule below:

1. Tender No. : **CESZ/PUR-II/PSEA/06/2011-12**
2. Description and quantity of stores : **SITC OF 11 KV,3 PHASE,500MVA, 630 A, 50 HZ, 4 PANEL, HT SWITCHGEAR FOR DOORDARSHAN KENDRA,HYDERABAD.**
3. Delivery Period: : **3 Months after the placement of Order.**
4. Tender Fee: : **NIL**
5. Earnest Money: : **Rs.42,000/-**
6. Bid Validity up to: : **180Days (One Hundred and Eighty) days from the date of opening of Technical Bid.**

NOTE: Tender documents may be downloaded from the following websites:
www.ceszaidd.org.in/tenders.html
www.allindiaradio.org/tender.html
www.tenders.gov.in

7. Warranty Required as per clause 11 of Annexure-II, General Terms & Conditions & as per Specs.
8. Performance Security Deposit : Required as per Annexure-II, (General Terms & Conditions).
- (i) Amount : 10% of the order value in form of Demand Draft / Bank Guarantee
- (ii) Validity : 60 (sixty) days beyond the date of expiry of Warranty / Guarantee
9. Correspondence Address: Dy .Director (Purchase)
O/o Chief Engineer (SZ)
All India Radio & Doordarshan
Chennai-600005
10. Paying Authority : Chief Engineer (South Zone)
All India Radio & Doordarshan
Chennai-600005.
11. Tender Opening Date: **02.09.2011 Time 15:00 hr**
12. Terms of Delivery : Delivery at Consignees' place.

**Deputy Director General(E)/Installation
officer,Doordarshan Kendra,
Ramanthapur,Hyderabad.**

13. Important Instructions:

Two Bid System shall be followed for this tender. Tenderers should take due care to submit tenders in accordance with requirement in sealed covers as specified in clause 2 of "**Instructions to Bidders**" (**Annexure-I**). Bid evaluation criteria at Annexure-III shall be the basis for evaluation of tenders.

The Technical & Commercial Bid should be submitted in Separate Sealed Cover.

The EMD should be enclosed with the Technical Bid. (see annexure-I SI.No-15)

The tenderer while submitting their bid, must adhere to the following instructions of Central Vigilance Commission, otherwise their offer is likely to be ignored.

1. One Agent / Dealer / Supplier shall not represent two manufacturers of quote on their behalf in a particular tender i.e. one bidder shall quote one type of equipment in a particular tender.

2. Tender documents submitted by the tenderer shall be neatly tied and each page numbered and signed and stamped by them.

NOTE: The following documents must be submitted along with the tender failing which the offer may be liable to rejection and no further correspondence will be entertained in this regard.

(a) Original Equipment Manufacturer's Authorisation for equipment quoted.

(b) Past Performance along with the user certificate in respect of timely and good quality supply of equipment / execution SITC / SETC (Especially, the equipments should be supplied and installed at RF fields like AIR/DD Transmitter sites.).

[.....]
Dy Director(Purchase)
for Chief Engineer(SZ)

TENDER

DESCRIPTION:

1. Sealed tenders are hereby invited for and on behalf of the President of India from reputed firms for the work of Supply, Installation, Testing and Commissioning (SITC) of **11KV, 3 Phase, 630 A, 500MVA, 4 Panel Indoor HT Switchgear** at Doordarshan Kendra, Hyderabad, Andhra Pradesh.

2. The tender shall consist of three parts (bids) namely:

(i) **EMD:** As per clause 9 of this tender document EMD should be enclosed in a separate sealed envelope. Technical / Commercial bids will be opened only of those tenderers who have submitted the required EMD.

(ii) **TECHNICAL BID:** Technical bid should contain the confirmation to the enclosed technical specifications. This should be submitted in a separate sealed envelope with "TECHNICAL BID" written on it.

SCHEDULE OF REQUIREMENTS FOR TECHNICAL BID

1. Complete details of Annexure III.

2. Diagram giving complete details of the layout of VCBs Busbars etc., of the HT switchboard.

3. Diagram giving the layout of the HT panel etc., in the substation room.

(iii) **COMMERCIAL BID:** The commercial bid should contain the price bid and acceptance of the commercial terms and conditions of this tender document. The price should be quoted for free supply of materials at **Doordarshan Kendra, Ramanthapur, Hyderabad**. This should be submitted in a separate sealed envelope with "COMMERCIAL BID" written on it.

3. The tenders will be submitted in sealed envelopes with the names of the material/work, date of opening and the bid enclosed written on the envelopes.

The above mentioned envelopes should be enclosed and submitted in another large size envelope duly sealed and marked with the name of work and date of opening. The envelope will be received at **The O/O Additional Director General (Engg.), (SZ) AIR & Doordarshan Swami Sivananda salai Chennai 600 005 up to 1200 Hrs on 02.09.2011**. The technical bid and the EMD will be opened on the same day at 1500 Hrs in the presence of bidder's representatives. Commercial bid of technically qualified tenders will be opened on a date which will be intimated later.

In case the tender opening date becomes holiday, the bids will be received and opened at the same specified time on next working day. Bids received late or submitted after the scheduled submission time on scheduled date will not be entertained and will be returned back unopened.

4. **PRE BID MEETING AT SITE:** Pre bid meeting will be held at **Doordarshan Kendra, Ramanthapur, Hyderabad on 23.08.2011 at 1130 Hrs**. Attending meeting is mandatory for participation in the Technical Bid / Commercial Bid as this work involves replacement of the existing HT switch gear system with a new system in a Kendra which cannot afford long power supply outages. **Tenders will be accepted only from the Bidders who attended the Pre Bid Meeting.** They may contact the Deputy Director General (Engg.), Doordarshan Kendra Hyderabad for further details regarding pre bid meeting.

5. VALIDITY

The tender shall be kept valid for 6 months from the date of opening.

6. PRICES

a) **PRICES:** The price should be quoted for the SITC of the HT Switchgear and the amount for the buy back of the existing Power supply distribution system should be quoted separately.

The prices quoted should be firm and for free delivery at site inclusive of transit insurance, excise duty and entry tax if any. Tenderers should quote in figures as well as in words the amounts tendered by them. In the case of illiterates, the rates or the amounts tendered should be attested by a witness.

b) **DUTIES AND TAXES:**

i) Excise Duty: the prices should contain an element of Excise Duty which should be indicated separately. Any statutory variation in the excise duty taking place after acceptance of tender within the delivery date will be adjusted by the purchaser on production of documentary proof.

ii) **SALES TAX :** The Prices should be exclusive of ST/CST. The prevailing rate of ST/CST should be clearly mentioned in the tender. The following certificates are to be submitted by the supplier along with the bills.

“ Certified that the goods on which the sales tax has been charged have not been exempted under central sales tax act of the rules made there under. The amount charged on account of sales tax on these goods is not more than what is payable under provision of the relevant Act or the rules made there under”.

“Certified that we are registered as dealers in the State under registration No. for the purpose of Sales Tax.”

Any statutory variation in ST/CST taking place after acceptance of tender, within the delivery date will be adjusted by the purchaser.

iii) **WORKS CONTRACT:** If work contract tax is leviable by the concerned State Government on works contracts, the same shall be clearly mentioned in the tender.

7. TERMS OF DELIVERY: - F.O.R. Destination (**Doordarshan Kendra, Ramanthapur, Hyderabad.**

8. DELIVERY PERIOD: - Tenderers may note that the entire work shall be completed **within three months** from the date of the work order. The tenderer shall furnish within one week of the award of work, the detailed time schedule and estimated completion time for various parts of work.

9. EARNEST MONEY DEPOSIT : Earnest Money amounting 2% of the estimated value in the form of Demand Draft on a Nationalised bank drawn in favour of Additional Director General (Engg.) (SZ), AIR & TV, Chennai – 5 should accompany the tender. **E.M.D by means of Bank guarantee or any other mode of payment other than DD shall not be accepted.** Tenders without E.M.D shall be summarily rejected and their commercial bid will not be opened at all.

EMD of all but the last three tenderers will be returned back within 10 days of opening of tenders. EMD of the remaining two tenderers other than that of the successful tenderer will be returned after finalizing the contract. EMD of the successful tenderer will be returned after expiry of Guarantee period.

10.. SECURITY DEPOSIT:

The contractor shall furnish the security deposit within 2 weeks of placement of order at the rate of 10% of the estimated value.

The Estimated Value is fixed as Rupees Twenty one Lakhs.

The security deposit shall be furnished in favour of Additional Director General (Engg.) (SZ), AIR &TV, Swami Sivananda Salai, Chennai .5 through a DD payable at Chennai or post office/National savings certificates. The security deposit will be returned to the firm after completion of the warranty period specified by the firm

11. IT CLEARANCE CERTIFICATE:

The bidder shall submit the latest financial standing details supported by Income tax clearance certificate along with the tender, without which the tender is liable to be rejected.

12. EXPERIENCE: The tenderer must have successfully executed a contract involving at least one of the similar works during last seven years ended last day of the month previous to the date of tender notice. The tenderer should give documentary proof for having successfully designed, fabricated, installed and commissioned similar type of work. They should also submit list of works, which are in hand at the time of submission of tender. The list shall contain the name of work, cost of work and present position of work.

13. AFTER SALES SERVICE: The tenderer should give full details of after sales service capability. The locations of service centres across the country shall be indicated. If there is no service centers at / near the location of the site the tender is likely to be rejected.

14. **TECHNICAL SPECIFICATIONS AND GENERAL TERMS AND CONDITIONS:** For technical specifications see Annexure – I and for other general terms and conditions see Annexure – II.

15. **ACCEPTANCE / REJECTION OF TENDER** : The acceptance of a tender will rest with the Additional Director General (Engg.) (SZ), AIR & Doordarshan, Chennai-5, who does not bind himself to accept the lowest tender and reserves to himself the authority to reject any or all of the tenders received without assigning any reason.

16. **GENERAL:** Canvassing in connection with tender is strictly prohibited and the tenders submitted by tenderers who resort to canvassing will be rejected.

Encl:

Annexure I (technical specifications)

Annexure II (General terms and conditions)

Annexure III (Information to be supplied by tenderer in duplicate for HT switch board)

TECHNICAL SPECIFICATION FOR 11KV SWITCH GEAR**1.0 GENERAL****1.1 Description of the Proposal**

This document is intended for the procurement of 11kV Switchgear. The design criteria, the required features and scope of supply of the 11kV Switchgear are dealt with in detail hereof.

2.0 Design criteria for proposed 11kV Switchgear**2.1 General**

This specification covers the technical requirements for the Supply installation testing and commissioning (SITC) of 11kV Switchgear required for the power distribution for the Project.

All items of equipment covered by these specifications will be complete with all accessories and devices, which are essential for trouble free operation of Equipment. The Switchgear shall conform to relevant IEC / Indian Standards stated elsewhere in the specification.

2.2 Design Criteria

The design criteria for the 11kV Switchgear shall be as given below

S.No	DESCRIPTION	UNIT	PARAMETERS
1	Rated Voltage	KV	11
2	No. of Phases		3
3	Frequency	Hz	50
4	Short Circuit Rating	KA	25
5	Duration of Short Circuit	sec	1
6	Applicable standards		Conforming to IEC 298 with latest amendment
7	Degree of Protection		IP4X
8	Bus bar Material		Copper
9	Type of breaker		Horizontal Draw out type Vacuum Circuit Breaker
10	Power Frequency withstand Voltage	KV	75 kV
11	Impulse Withstand Voltage	KV	28 KV
11	Operating duty		0-0.3 sec - CO - 3 min - CO
12	Closing method		Motor operated spring closing mechanism
13	Rated Voltage for motor		240V, Single phase, 50Hz
14	Coil Voltage for trip/closing		24V DC

3.0 Applicable Acts and Regulations

Equipment covered by these specifications shall be designed, manufactured and tested in accordance with the latest relevant standards and codes of practice, namely International Electro-Technical Commission (IEC), British Standards (BS) or Bureau of Indian Standards (BIS), as applicable.

S.No.	Description	Codes
1	High Voltage AC Circuit Breakers	IEC/IS : 7987
2	Metal Enclosed Switchgear	IS : 3427
3	Current Transformer	IS : 2705
4	Potential Transformer	IS : 3156
5	Arrangement for Switchgear Busbars, Main connection and Auxiliary Wiring	IS : 5578 IS : 11353
6	Degree of Protection	IS : 2147
7	Relays for power System Protection	IS : 3231
8	Electrical Indicating Instruments	IS : 1248
9	High Voltage Fuses	IS : 5792
10	AC Electricity Meters	IS : 772
11	Aluminium Busbars	IS : 5082

4.0 DETAILED SPECIFICATIONS

4.1 General Requirement

Equipment shall be suitable for operation on the voltage, frequency and system as defined within these specifications and shall have the full load, interrupting and making capacities as specified, for the stated ambient conditions.

Equipment shall be designed for indoor operation having front and back access, and shall have an enclosed construction for damp and dust protection and to prevent entry of vermin that may create electrical short-circuits or malfunction. The switchboard circuits shall have a degree protection conforming to IP4X

Equipment shall be designed to approved safety requirements and have all necessary interlock devices to ensure correct and safe operation. Safe access shall be provided in and around equipment for operating and maintenance functions. Warning signs shall be fitted to all hazardous parts of the equipment as required by Indian Regulations.

Equipment shall be designed for maximum interchangeability of components, with ease of replacement to minimise downtime.

4.2 Constructional Details

4.2.1 Switchboard

Each switchboard shall be of sheet steel construction of 2.5 mm thickness on all sides and 2 mm on rear side, constructed on the unit principle and shall be suitable for extension from either end.

The switchgear shall be of metal clad construction, totally enclosed, conforming to degree protection IP4X, self-supporting, having a continuous bus bar of rated current throughout the complete assembly.

The switchgear shall have Vacuum circuit breakers.

Each panel shall have separate enclosed chambers for bus bars, circuit breaker, power cable terminations, control cable terminations, controls, instruments and protection relays.

Control cables terminations shall be fully accessible without removal of covers, which expose live bus bars or terminals.

Power cable terminations shall be designed to accommodate the size, type and quantity of cables as scheduled. The cable chamber portion of panels, having the same ratings, shall be identical for ease of interchangeability.

Each panel shall have provision for earthing the frames and metal work of the switchgear to a common earth system.

All controls, indicators, relays and meters shall be located on the front of the panel. Control switches shall be close/neutral/trip with spring return to the neutral position, and local/remote, where required. Pad locking facilities shall be provided for all shutters and for locking the circuit breaker in the open and closed position.

The finish of the switchgear shall be painted as per manufacturer's standard.

Each switchboard assembly shall have an engraved label in English language fixed to the front of the assembly stating the switchboard title. Major components shall be clearly labelled to indicate their purpose and function. Manufacturer's name, date of manufacture and all rating details shall also be shown on the switchgear.

4.2.2 Busbars and Busbar Connections

Air insulated busbars shall be provided in the switchgear with high conductivity copper busbars having adequate section for the full load and short circuit rated requirements.

Provision shall be made, where necessary, for the expansion and contraction of busbars and connections caused by rating and ambient conditions.

An integral, suitably sized continuous earth busbar shall be provided throughout the length of each switchboard and located to provide access for bonding of cable sheaths and for use with earthing devices.

4.2.3 Circuit Breakers

Circuit breakers shall be of Vacuum circuit breakers and all the three poles linked suitably for simultaneous closing, spring closed operating mechanism, control device, auxiliary contacts, wiring, interlock devices, all mounted on a composite unit with free moving wheels.

The circuit breakers shall be rated for the circuit applications as specified and ambient conditions.

The circuit breakers shall be capable of making and breaking the specified fault current without affecting the reliability in operation of the circuit breaker and supporting structure.

The design of the Vacuum interruptor shall be of AMF (Axial magnetic Field) technology. A magnetic Field shall be applied along the axis of Vacuum interruptor contacts to maintain the Arc in diffuse mode even at high current values to ensure optimum distribution of energy over the contact surface thus avoiding localised hot Spots.

VCB shall confirm with highest Electrical endurance class - IEC 62271-100 Class E2

VCB shall confirm with highest Mechanical endurance class - IEC 62271-100 Class M2

The busbar spouts are individual for all the three phases and maintenance or replacement shall be simple and easy.

VCB Shall be mounted on a drawout truck rolling from ground. No separate Lifting Trolley / Tools shall be used for drawing out the VCB.

Type test certificates of a recognised independent testing authority shall be submitted to prove compliance of the making and breaking capacities, and load ratings.

All current carrying parts of the circuit breaker shall be adequately sized for the duty as indicated in the present system design.

The operating mechanism shall be either of the stored energy quick release type or solenoid closing and shall be non-pumping and trip free. The energy storing mechanism shall be hand and motor operated. Motor operation shall be from 240 V AC supply and solenoid closing through 24 V DC.

Requirement of power for closing through solenoid to be given.

The closing and shunt trip releases shall be suitable for operation on 24 V DC supply. Operation shall be achieved at all times for a variation between 75 and 110 percent of the DC supply voltage.

Mechanical indication shall be provided to show the position of the breaker in the open and closed position. In addition, indicating lamps shall be provided showing the condition of the circuit breaker in the open or closed position.

Where required, local/remote selector switches shall be provided.

Suitable means of access shall be provided for either the busbar side of selected circuits or the circuit side of feeders.

Each circuit breaker shall have a tripping supply indicating lamp, which shall indicate a healthy trip supply condition.

High rupturing capacity fuses shall protect all control circuits on the circuit breaker. Links shall be provided only on an earthed pole of the circuit.

All circuit breakers shall have a separate mechanically operated trip button, which shall release the tripping latch to open the circuit breakers independently of the tripping supply.

The design of the cubicle shall be such that it will be possible to close the front access door even when the breaker is pulled out to 'isolated' position. In the 'test' position the circuit breaker shall be capable of being tested for operation without energising the power circuit i.e. the control circuits shall remain undisturbed while the power circuits shall be disconnected.

The auxiliary contacts required for breaker normal operation and indication shall be mounted on the circuit breaker moving portion and be directly linked, with breaker operating mechanism to enable checking of indication and control circuitry in 'test' position. In addition to the above 3 No. of normally open (NO) and 3 No. of normally closed (NC) contacts rated for 2 Amp (inductive breaking) 24 V DC is required.

Anti pumping shall be mechanically achieved in the breaker and **separate anti pumping is not preferred.**

Safety Interlocks

The following safety interlocks shall be available in the VCB panel.

Breaker can be plugged only in OFF condition.

Breaker cannot be removed in ON condition.

There shall be three positions for the breaker viz, "isolated", "Test" and "service"

4.2.4 Auxiliary Switches

Each circuit breaker shall have minimum auxiliary switches for control, indication and interlocking circuits with provision for mounting additional switches. In addition to the breaker operation requirement, two separate potential free contacts operated through breaker are to be provided duly wired up to terminal block.

4.2.5 Current Transformers

Current transformers shall be supplied of a suitable ratio for the particular circuit rating, having a class of accuracy suitable for the specific requirements of metering and protection.

For protective relaying, current transformers shall maintain the ratio and accuracy up to 10 times the rated current.

Current transformers shall be cast resin insulated, mounted in a separate chamber on the cable connected side of the circuit breaker.

All current transformers shall be designed to withstand the fault currents of the system for a time equal to the short time rating of circuit breaker.

The secondary terminals of current transformers shall be brought out to terminals located in a chamber outside the busbar assembly.

4.2.6 Voltage Transformers

Voltage transformers shall be supplied for metering and protection for the specific circuits having a volt-ampere rating for the load requirements.

Voltage transformers shall be arranged for connecting to the busbar or incomer side of the switchgear as required having means of isolation by withdrawing the transformer from the circuit connections.

Voltage transformer connections shall be rated for the fault conditions specified, having primary fusing to protect the transformer windings.

Voltage transformers shall be of resin encapsulated type having means of horizontal isolation from the circuit connections.

Each transformer shall have primary fuses on the high voltage winding mounted within the transformer tank and secondary fuses in shrouded carriers mounted on the exterior of the tank. The fuses shall be cartridge type.

Earth continuity between the transformer unit and the switchgear unit shall be maintained by suitable means when in the service position. The transformer connections shall be automatically earthed when isolated.

The secondary voltage shall be 110 V between phases and wired out to terminals enclosed in a terminating chamber.

4.2.7 Indicating and Metering Equipment

All meters and indicating equipment shall comply with the latest editions of IEC and shall be rated for the secondary current rating of the metering current transformers and the secondary voltage of the voltage transformers.

Indicating meters shall be of the taut band long scale type, flush mounted switchboard pattern.

Indicating meters shall be capable of continuously carrying their rated full load current and voltage across their pressure coils, and shall not be damaged due to overload or fault currents occurring for the maximum permitted fault duration.

Accuracy of the meters shall be such that over the effective range of the meter the error, expressed as a percentage of the full-scale figure, shall not exceed 1%

Energy meters shall be multifunction digital meter with communication port and shall be suitable for 3 phase unbalanced system, flush mounting withdrawable type, where possible.

Rotary selector switches shall be provided on ammeters circuits for determining each line current and on voltmeter circuits for determining line-to-line voltages. The selector switches shall have an off position.

Indicating lamps shall be LED type to avoid unnecessary power consumption and also for bright indication. Lamps shall be low burden type and shall be mounted as an assembly incorporating lamp holder, lens and resistor. The lamps shall be accessible from the front of the cubicle.

The indicating lamps shall have the following colour requirements:

Equipment "ON" (e.g. circuit breaker closed)	--	RED
Equipment "OFF" (e.g. circuit breaker open)	--	GREEN
Normal function of equipment (e.g. trip circuit healthy)	--	WHITE
Abnormal function of equipment (e.g. circuit protection trip)	--	AMBER

4.2.8 Protection Relays

Each functional unit is equipped with a protection and control system adapted to the function required. The standard system incorporating Numerical relay range is described below. All over current & earth fault relays shall be numeric type and comply with **IEC 255**. The relays shall be tested for EMC as per latest standards and also for Siesmic test.

The operating temp for the relay shall be -25 to $+70$ Deg. C

The relay shall have failsafe mode and with watchdog supervision

The relay shall have universal aux supply range from 24V to 250V DC

The relay shall have minimum 10 Digital Inputs and 8 Digital Output for forming customized monitoring and control function.

The relay shall have facility to trip circuit supervision, wave form recording, event / alam recording (minimum 64), measure cumulative breaking current, no of operation of the breaker. Wave form record file shall be in compared format.

The display shall have at least 3 line backlight Alpha Numeric LCD display.

Over current feeder relays shall have negative sequence / unbalance current protection.

The Numerical relay combines, in a single unit, all control, protection and measurement functions:

The protection relays

The measurement indicators

Energy meters

Alarms and indication lamps

Control logic

Remote control interfaces.

Protection

The Numerical relay covers the entire range of protection functions required (current, voltage, directional, restricted earth fault) for all application: networks, busbars, transformers, motors,).

Each function allows for a wide range of protection curves and a wide adjustment range.

Measurement

The Numerical relay allows for dynamic measurement of current and voltage, as well as energy and power consumption (active and reactive).

It provides excellent measurement precision (below 1% for current measurement). Measurements are displayed on a LED screen mounted on the door of the LV compartment.

Information display

The display gives information on the status of alarms, as well as faults and changes of state.

Easy parameter setting

With the Numerical relay it is easy to consult or change parameter settings by using the software SFT. The software SFT gives access to the Numerical relay 's internal parameters and allows the user to consult the maintenance information.

4.2.9 Control Wiring

Control wiring shall be flexible stranded copper wire of minimum 2.5 mm² cross section, PVC insulated. Wiring for current transformer circuits shall be of minimum 2.5 mm² cross section.

Wiring shall be continuous between terminations with no joints and shall be neatly laid together in a suitable channel or conduit.

All wiring shall be identified by numbered ferrules at each termination point. The ferrules shall be securely located to the wire so that they cannot easily be disturbed.

Control connections shall be suitably grouped in each unit in a terminal block located in a terminal chamber.

Each terminal block shall have an identification label and shall be provided with 10% spare terminals.

4.2.10 Cable Terminations

The switchgear shall have suitable & adequate cable terminating arrangements to accommodate the size and quantity of cables as required.

Appropriate size of cable sockets shall be supplied for the power cables, complete with fixing bolts and washers. The cable sockets shall be suitably pre tinned or plated for the type of cable conductor and busbar material to prevent electrolysis between dissimilar materials.

All cable-connected terminations shall be suitable for the following preliminary size and type of power cable as follows:

3x3Core, 95 Sq mm stranded aluminium conductor, cross-linked polyethylene insulated 11 kV cables (suitable for non-effectively earthed systems).

Control cable terminations shall be suitable for multi core copper conductor, PVC insulated, steel wire armoured, and PVC sheathed, 650/1100 V cables.

Suitable blanking plates shall be fitted to predrilled gland plates and bolted covers fitted to flange terminations to prevent dirt and moisture entering the terminating chamber during transportation and storage.

Stand-Alone panels shall have cable boxes suitable to receive 2x3Core, 95 Sq mm XLPE, aluminium cable.

5.0 TRIPPING UNIT:

A self-contained tripping battery unit with trickle charger for providing 24 V D.C source for the tripping circuit of the VCB shall be included in the supply. The battery unit may, preferably, use Nickel Cadmium (Ni-Cd) maintenance free cells specifically meant for the purpose. The tripping battery unit shall be complete with its own trickle charger, suitable for working on 230 V, single phase 50 Hz supply. The unit shall be provided with necessary switches, fuses and meters to indicate the voltage and charging current of the battery. The entire unit shall be mounted in a steel cabinet with adequate protection and proper ventilation arrangements

6.0 INSPECTION AND TESTING

Type test and Routine tests shall be performed in accordance with IS 3424. Routine tests shall include, but not limited to:

Power frequency voltage dry test
Voltage test on auxiliary circuits
Mechanical operation test
Tests of the auxiliary electrical devices (No load operation test)

Verification of wiring (continuity of the wiring as per wiring diagram). Additionally, checking of protective measures and electrical continuity of the protective circuits.

BILL OF MATERIAL

11kV, 630A, 500MVA, 25kA, 4 Panel Indoor switchgear consisting of Vacuum circuit breaker motorized spring change operating mechanism (240V AC), Shunt trip / Close coils (24V DC), operation counter, Handle for manual spring charging.

- 1. 11KVA,630A,25 KA VCB with standard accessories - 4 Nos.**
- 2. Potential Transformer – 2 Nos. for both incoming feeders.**
- 3. Current Transformer (for each panel) - 3 nos.** resin cast current transformers with ratio 25/5 A and following characteristics. Core 1: 15VA class 1 (Metering), Core 2: 15VA class 5P20 (Protection),
- 4. Each Panel will have the following as a standard accessories:**
 - i. 1 No. Earth flat of copper
 - ii. 1 set of PVC sleeved Copper bus bars rated for 50 mm X 10 mm
 - iii. 1 No. Space heater with Thermostat
 - iv. 1 No. Plug point with switch (5A, 230V)
 - v. 1 No. Illumination lamp (40W, 240V AC)
 - vi. 1 No. Breaker control switch
 - vii. 2 Nos. AC/DC selector switches
 - viii. 1 set of push buttons for heater supply check
 - ix. 1 No. Auxiliary contactors for CB contact multiplication.
 - x. 1 set of Indicating lamps for ON/OFF/AUTO TRIP/TRIP CIRCUIT HEALTHY indication.
- 5. Each panel will have the following:**
 - i. 1 set of jumpers suitable for CT rating.
 - ii. 1 No. Numerical Protection relay should have the following features.

Protection	: IDMT 2 - O/C+ 1-E/F, (50,51,50 N,51 N) Phase Sequence
Metering	: Current in all three phases.
Control & monitoring	: Circuit breaker control.
Network Diagnosis	: Tripping Current I1, I2, I3, Io, Unbalance Ratio,Phase Sequence, current Ii, Disturbance Recording.
Switchgear Diagnosis	: Cumulative breaking current,
Self Diagnosis	:Watchdog.
 - iii. 1 No. Master Trip Relay
 - iv.
- 6. 1 No.Multifunction Meter for two panels (incoming feeder panels)**

WORKS

S.NO	Description of work	Charges
1	Installation and testing of HT panel VCB etc as per Bill of material including all civil modification for installation for the installation of the HT panel.	
2	Integration of this HT panel with already available 630 KVA HT transformers etc.	
3	Providing following Earthing arrangements 2 no of body earth for the HT panel (Earthing material namely copper plate, copper strip and GI pipe only will be provided by this office)	
4	*Removing the HT connection from the existing HT panel and also at the EB end	
5	Laying of the HT cable (3 nos of 95 Sqmm XLPE insulated armored HT cable) from EB HT pole structure to the Kendras HT room and connecting it to the new HT panel (for laying of the HT cable the firms may quote on per meter basis and payment be made as per actuals. The approximate length of cable route is 130 meters each. Cable will be provided by this office)	
6	*Connecting the new HT cable at the EB end	
7	Getting CEA approval and energizing for the new installation	
<p>* All these works may have to be carried out only after the close down of the transmission,. Mostly after mid night and the firm should ensure that the works are completed before 0500hs the following day and enable the Kendra to energize their power supply system for normal working.</p>		

BUY BACK OF EXISTING POWER SUPPLY DISTRIBUTION SYSTEM

S.No	Description	Qty
1	*750 KVA transformers (1 + 1 i.e, 2 nos) (make : ETE,The Thana Electric Supply Company Ltd, Hyderabad) as is where is basis	1 set
2	*HT switch board with SFU (1+1 i.e, 2 nos) and OCB (1 +1 i.e, 2 nos) (make : Southern Switchgear Ltd, Chennai) as is where is basis	1 set
<p>The firm will be allowed to dismantle the above materials only after the SITC of the HT power supply system.</p>		

GENERAL TERMS AND CONDITIONS

1. NAME OF PURCHASER : The President of India
2. PAYING AUTHORITY : The Additional Director General (Engg.) (SZ)
All India Radio & Doordarshan
Swamy Sivananda Salai
Chennai – 600 005
- CONSIGNEE : Superintending Engineer,
Doordarshan Kendra, Hyderabad

3. PAYMENT TERMS: 80% of the contract amount (Towards supply of material) will be paid on receipt of the HT switch gear equipment in good condition at site and remaining 20% contract amount for equipment and 100 % of installation charges on satisfactory completion of installation. Commissioning and handing over of the HT switch gear system..

4. BILLS: All the supplies shall be in conformity with the order and bill shall be prepared in triplicate in the same format as that of the order. The bill shall be submitted to the consignee for necessary certificates and onward transmission to the paying authority.

5. SECURITY DEPOSIT: The contractor shall furnish the security deposit within 2 weeks of placement of order at the rate of 10% of the contract value subject to a maximum of Rs. 5 lakhs.

The security deposit shall be furnished in favour of Additional Director General (Engg.) (SZ), AIR & Doordarshan, CHENNAI in the form of DD only from any nationalized bank payable at Chennai.

The EMD received will be returned after receipt of S.D. The security deposit shall be refunded in full on completion of successful guarantee/warranty.

6. DESPATCH INSTRUCTIONS: The packing and marking of goods shall be as laid down in clause-12 of general conditions of contract DGS & D69 (revised).

a) The contractor shall arrange to dispatch the goods duly insured direct to the consignee after prior intimation for delivery at site by whichever mode of transport he may choose, to ensure safe delivery of goods at site. Unloading shall be done at site at the contractor's expense. Only storage space will be provided by the consignee. The contractor will provide his own security like locking etc. and store the materials at his own risk.

b) The contractor must submit his challans in triplicate to the consignee sufficiently in advance of the actual arrival of the stores at the destination failing which he will be held responsible for any subsequent discrepancies between the actual receipt and the material detailed in the challan received later. The challans must also contain the following information.

1. Brief description of stores
2. Railway/Lorry receipt No. & Date
3. A/T No. & Date
4. Inspection note No. & date

c) The consignment received at site shall be opened and checked for shortages/damages by the contractor himself. He shall show all the materials received at site to the consignee to enable him to certify receipt of stores in good condition. However, in exceptional circumstances, the contractor may request the consignee to check the consignment on his behalf. In such cases the consignee shall notify

the contractor of the shortage/damages immediately on receipt of consignment at site. Expenses incurred, if any, in checking the consignments shall be debitable to the contractor's account.

7. INSPECTION.

A) SCOPE OF INSPECTION

i) PRE INSPECTION: Manufacturers/contractors must satisfy themselves that the stores are in accordance with the terms of the contract and fully conform to the required specification by carrying out thorough pre-inspection of each lot before actually tendering the same for inspection to the inspecting officer nominated under the terms of the contract. A declaration by the contractor the necessary pre-inspection has been carried out on the stores tendered shall be submitted along with the challan. The declaration will also indicate the method followed in carrying out pre-inspection showing the features checked, tested and will have the certificates attached to the challan/declaration. If the inspecting officer finds that pre-inspection of the consignment as required above has not been carried out the consignment is liable for rejection.

ii) INITIAL INSPECTION: All the supplies including fabricated items and bought out items shall be inspected before actual inspection. The place of inspection shall be as below. Also the installation at the site shall be inspected periodically during installation. If the inspecting officer finds initial inspection that the supplies are not according to specification, the suppliers are liable for rejection. The purchases may at his discretion waive initial inspection in respect of those supplies which bear ISI certificates or manufacturer's test certificates. The contractor shall approach the inspecting officer for inspection at least two weeks in advance of the actual date of inspection. All arrangements for inspection shall be made by the contractor. Any deviation in stores after initial acceptance by the Inspector and their receipt by the consignee shall be to the account of the contractor. The contractor shall forward the relevant copies of the inspection certificates of the stores to the consignee along with delivery challan.

iii) FINAL INSPECTION: The entire installation shall be inspected by the inspecting officer on completion of installation, commissioning.

B) INSPECTING OFFICER: Officer authorized by the Additional Director General (Engg.) (SZ) AIR & Doordarshan Chennai

C) PLACE OF INSPECTION

a) INITIAL INSPECTION

- i) Fabricated items at contractor's factory
- ii) Bought out items at sub-suppliers works or at project site.

b) FINAL INSPECTION: Complete work at the project site

8. INSURANCE: The contractor shall arrange for the insurance covering the risk during transit storage. All the charges for such insurance shall be borne by the contractor.

9. ADDITIONAL QUANTITIES The purchaser reserves the right to place order for additional quantity upto 100% of the ordered quantity at the same rates and terms and condition during the currency of the contract.

10. PENALTY FOR DELAY: If the contractor is unable to complete the supply within the stipulated time limit the purchaser may at his option allow such additional time as may be considered justified with/without penalty and without altering terms and conditions of the order. In the event of failure of

the contractor to complete the supply within the stipulated time or the extended time, the purchaser has the right to impose penalty of Rs. 350/- per week or part thereof for every Rs. 1,00,000/- of the contract price. The contractor's liability for delay, however, shall not exceed 5% of the total contract price.

11. GUARANTEE/WARRANTY: The contractor shall accept clause 18 of the Form No. DGS & D-71 with exception that his obligation shall be limited for a period of 24 months from the date of supply of goods. During the guarantee period, the contractor shall repair or replace free of charge any parts that will become defective due to faulty material design or workmanship.

12. CONDITIONS OF CONTRACT

DGS & D-68 (Revised) and DGS & D-71 as amended upto date. However, such of these conditions stipulated on this tender shall supercede corresponding conditions in DGS & D-71. The contractor shall sign a contract agreement form in triplicate in the prescribed proforma and submit the same along with Security Deposit within 15 days. The complete form with the purchaser's signature shall be sent back to the contractor. No supplies will be made and no work shall start unless the agreement is signed by the contractor and the purchaser.

13. SPECIAL CONDITIONS: In addition to the terms and conditions contained in the general conditions of contract DGS & D-68 (Revised) and DGS & D-71, the contract would also be governed by the following special conditions.

i) In case where only a portion of the stores ordered is tendered for inspection at the fag end of the delivery period the purchaser reserves the right to cancel the balance quantity not found acceptable after carrying out the inspection at the risk and expense of the contractor. If however, the stores tendered for inspection are found acceptable the purchaser may grant an extension of the delivery period subject to the following conditions:-

- a) That no increase in price on account of any statutory increase in or fresh imposition of customs duty, excise duty, sales tax or on account of any other tax or duty leviable in respect of the stores specified in the acceptance of tender shall be admissible on such of the stores as are delivered after the expiry of the delivery period stipulated in the A/T.
- b) That notwithstanding any stipulation in the contract for increase in price or any other grounds no such increase which takes place after the date of delivery stipulated in the A/T shall be admissible on such of the stores as are ordered after the expiry of the delivery period stipulated in the A/T.
- c) But, nevertheless the purchaser shall be entitled to the benefit of any decrease in price on account of reduction in or remission of customs duty, excise duty, sales tax on account of any other ground stipulated in the price variation clause which takes place after the expiry of the date of delivery stipulated in the A/T.
- d) The contractor shall not dispatch the stores till such time extension in delivery period is granted by the purchaser and accepted by the supplier before and extension letter as aforesaid is issued by the purchaser, the same are deemed to be subject to the conditions set out in preceding paragraph.

ii) In case where the entire quantity has not been tendered for inspection within the delivery period stipulated in the A/T and the purchaser chooses to grant an extension of delivery period, the same would be subject to conditions mentioned in (i) above.

iii) The contractor shall refund any advance/part payment issued to him in respect of the rejected stores within 14 days of the receipt of intimation from the consignee about the rejection of such prices. This is strictly without prejudice and in addition to the rights provided in the clause-17(8) of from DGS & D-67.

iv) The contractor is required to replace the rejected stores forthwith but in any event not later than a period of 14 days from the date of rejection and the contractor shall bear all the costs of such replacement including freight, if any, but without being entitled to any extra payment or any other account.

v) Where under the contract, price payable is fixed F.O.R. dispatching station, the contractor shall, if the stores are rejected at destination by the consignee, be able to, in addition to his other liabilities (including refund of price recoverable in respect of the stores rejected) to re-imburse to the purchaser the freight and all other expenses incurred by the purchaser in this regard.

14. ENFORCEMENT OF LABOUR LAWS:

While engaging labour for carrying out obligations under the contract the contractor shall satisfy the conditions laid down under contract labour (Regulation and Audition) Act 1970 and (Central) Rules 1971 as amended from time to time and observe all formalities required as per the said Act/Rules. The supplier shall also observe the provision under minimum wages act 1948(Central) Rules 1950 amended from time to time while engaging labour.

15. FORCE MAJURE

If any time during the continuance of the contract the performance in whole or in part by the contractor shall be prevented or delayed by reason of any war, hostility acts of the public enemy, Civil commotion, sabotage, fires, floods, explosions, epidemics, guarantee restrictions, strikes, lock-outs or acts of God (herein after restrictions refer to as events) and provided notice of happenings of any such eventuality is given by the contractor within 21 days from the date of occurrence thereof, the purchaser shall by reason of such event neither be entitled to cancel this order nor shall have any claim for damages against the contractor in respect of such non-performance or delay in performance and delivery shall be resumed as soon as practicable after such events have come to an end or ceased to exist.

Provided further that if the performance in whole or part or any obligation under this order is prevented or delayed by reasons of any such event for a period exceeding 180 days, the purchaser and the contractor shall meet to find a natural agreement to any effect resulting the reform or the purchaser may at his option cancel order provided also that if the order is cancelled under this clause, the purchaser shall be at liberty to take over from the contractor at order prices all unused, un-damaged and acceptable material bought out components and stores in course of manufacture in the possession of the supplier at the time of such cancellation or such portion thereof as the purchaser may deem fit accepting such material, bought out components and stores as the supplier may with the concurrence of the purchaser elect to retain.

16. TECHNCIAL MANUALS AND DRAWINGS

Contractor shall furnish six copies of comprehensive technical manuals for use by the operation staff. Such manuals shall contain instructions from the preventive as well as routine maintenance of the plant. The contractor shall also furnish copies of approved wiring diagrams, schematics, etc., for various items of equipment.

17. CANCELLATION:

The purchaser reserves the right to cancel the order in full or part in the event of non-performance or unsatisfactory performance and delay in execution of supply/work by the contractor and recover payment already made if any, along with losses/damages incurred.

TECHNICAL SPECIFICATION – 4 PANEL**GENERAL:**

The HT Switchgear shall generally conform to all provisions of IS-3427/1997 amended to date.

AMBIENT CONDITION:

The HT Switch gear covered by this specification shall be required to work at DDK, HYDERABAD Site under the ambient conditions as follows:

- (a) Ambient Temperature : 45 °C
- (b) Humidity : 95 % Non – condensing
- (c) Altitude : Less than 1000 M

TECHNICAL PARAMETERS:**1. HT Switch Gear:**

SI No	Description	DD Requirements	Tenderers offer
A)	Type	Indoor	
B)	Nos. of Panel	4	
C)	Nominal Operating Voltage	11KV	
D)	Rated Current	630A	
E)	Rated Capacity	500 MVA	
F)	Overall and detailed dimensions of the (i) Complete Switch board (ii) Individual panel	To be submitted by tenderer a.Width - b.Depth- c.Height-	
G)	Weight of each panel	To be submitted by tenderer a.Net b.Gross	
H)	Minimum clearance required from the walls	To be submitted by tenderer a.Front ___ mm b.Back ___ mm c.Side ___ mm	
I)	Minimum clearance required in front of the switchboard for drawing out the circuit breaker	To be submitted by tenderer a.Normal operation ___ mm b.Maintenance/ servicing ___ mm	
J)	Thickness of MS Sheet used for the board	2.5 mm	
K)	Type of interlock	To be submitted by tenderer	
L)	Make & Model	To be submitted by tenderer	

2. Vacuum Circuit Breaker:

Sl.No	Items	DD Requirements	Tenderers offer
A)	Number of poles	3	
B)	Rated Voltage	11KV	
C)	Rated Current	630A	
D)	Rated Capacity	500MVA	
E)	Rated Frequency	50 HZ	
F)	Rated insulation level	28 KV for 1 min. at Power Frequency. 75 KV lightning impulse withstand voltage	
G)	Rated short time with stand, capacity (3sec)	25KA	
H)	Rated Breaking Current	25 KA	
I)	Rated making current	62.5KA	
J)	Number of Break Contacts pole	To be furnished by tenderer	
K)	Type of main contacts	Silver	
L)	Type of arcing contacts and/or arc control devices	To be furnished by tenderer	
M)	Indication of Position of VCB	Service Isolated Test	
N)	Method of closing	Motor operated spring close mechanism	
O)	Normal voltage of shunt trip coils	24 volt wound spring loaded operation	
P)	Power Required at normal voltage	To be furnished by tenderer	
Q)	Weight of Circuit breaker complete with arc extinguishing medium and mechanism	To be furnished by tenderer	

3. Current Transformer

SNO	Items	DD Requirements	Tenderers Offer
A)	Rated voltage	11 KV	
B))	Transformer Ratio	100-50/5	
C))	Class of Accuracy	0.5	
D))	Short time thermal current & its duration	25 KA for 3 sec	
E))	Type	Epoxy Cast resin	
F)	Impulse with stand voltage for primary winding	75 KV Peak 28 KV rms	
G))	With stand voltage of secondary winding	2 KV rms	

H)	Rated output	To be furnished by Tenderer	
I)	Applicable Standard	IS:2705/1992 amended to date.	

4. Potential Transformer:

SNO	Items	DD Requirements	Tenderers Offer
A)	Ratio	11000/110	
B)	Rated Voltage	11 KV	
C)	No. of Phases	3	
D)	Insulation level: (iv) Primary (v) Secondary (vi) Impulse withstand	28 KV rms 3 KV rms 75 KV for 1 minute	
E)	Rated output	100 VA	
F)	Accuracy class	0.5	
G)	Type	Epoxy Cast resin	
H)	Type of fuses provided	Primary – HT fuse	
I)	Applicable standard	Is:3156:1992, amended to date	

5. Protection Relays:

S NO	Items	DD Requirements	Tenderers Offer
A)	Type of designation	IDMT	
B)	Time of operation at Max. Dial setting & 10 times the tap setting current	1.3 sec	
C)	Type of characteristic	IDMTL	
D)	Whether draw out	Yes	
E)	Applicable Standard	Is:3231/1987, amended to date	

6. Bus Bar:

S NO	ITEMS	DD Requirements	Tenderers Offer
A)	Main bus bar size (a) Size (b) Material	50mm x 10 mm Copper	

7. Indicating & Integrating Instruments:

The indicating and integrating instruments must be reputed manufacturer having valid ISO certificate

S NO	Items	DD Requirements	Tenderers Offer
A)	Digital Voltmeter (i)Range (ii)Class/Accuracy	0-15 KV 0.5	
B)	Digital Ampere meter (i)Range (ii)Class/Accuracy	0-100A 0.5	
C)	Digital KWH, KVAH & MDI Meters (i)Type designation (ii)Operating Voltage (iii)Wattage	TRIVECTOR 0.5 To be furnished by tenderer	
D)	Indicating lamp (i)Type designation (ii)Operating Collage Voltage (iii)Wattage	LED Type To be furnished by tenderer.	
E)	Applicable standard	IS:1248, IS:13779, IS: 231/1987, amended to date	

8. Interlocking:

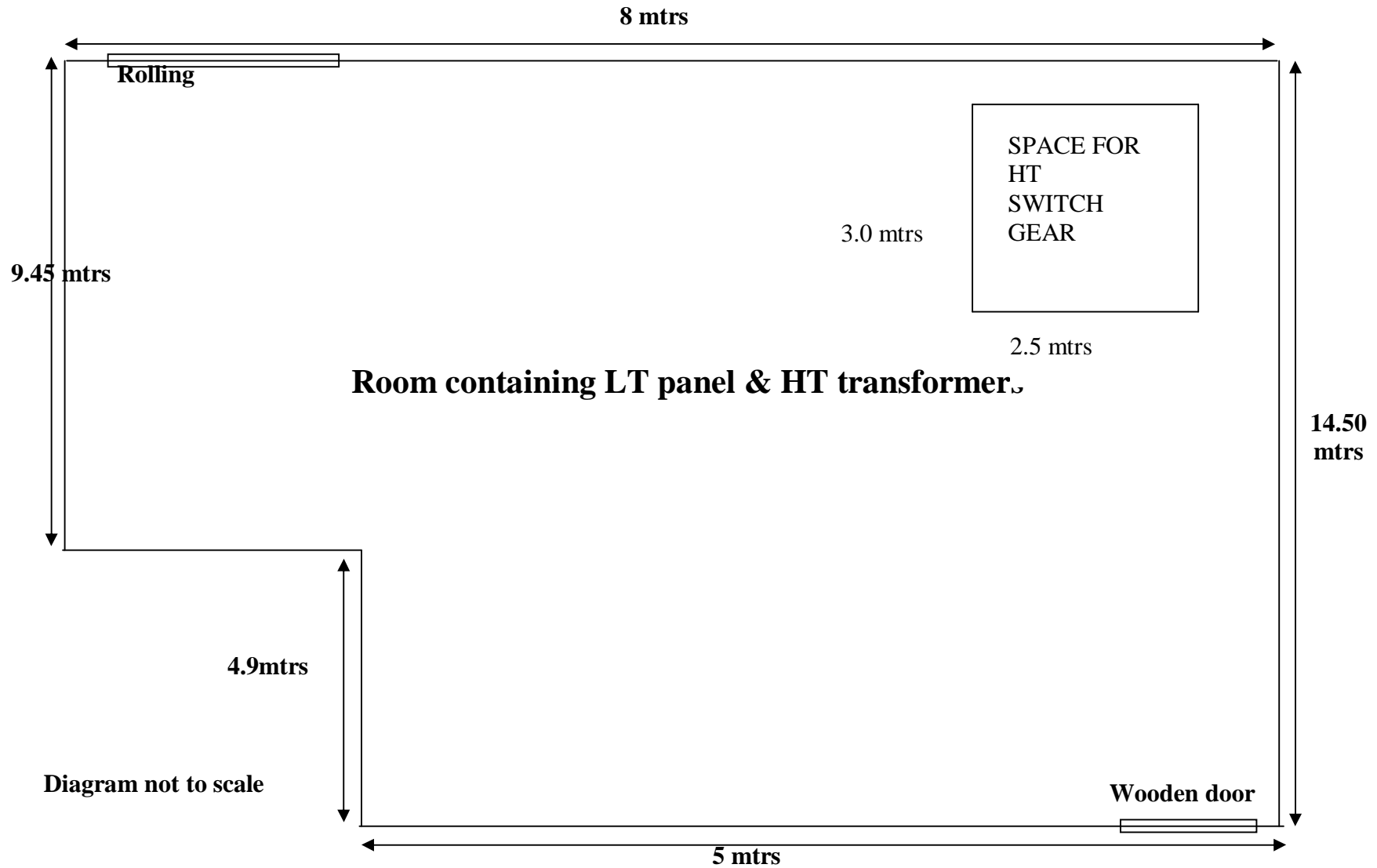
S NO	Items	DD Requirements	Tenderers Offer
A)	Electrical & Mechanical Interlocking of VCBs	To be furnished by tenderer	

9. Auxiliary Supply with Trickle Charger:

S NO	Items	DD Requirements	Tenderers Offer
A)	Tripping coil voltage	24V DC	
B)	Tripping coil ampere	To be furnished by Tenderer	
C)	Type of Tripping coil	Shunt trip	
D)	Type & No. Of batteries	To be furnished by Tenderer	
E)	Mechanical Dimension of Unit	To be furnished by Tenderer	

SCHEDULE OF REQUIREMENTS FOR TECHNICAL BID

- (i) Complete details of Annexure III.
- (ii) Diagram giving complete details of the layout of VCBs Busbars etc., of the HT switchboard
- (iii) Diagram giving the layout of the HT panel in the substation room (HT transformers, LT panel is already existing in the substation room at Doordarshan Kendra,Hyderabad)



HT PANEL INSTALLATION ROOM PLAN (DDK Hyderabad)(studio Premises)

DRAWING No:
CESZ/STV/ DDK HYD/HT/DIAG- 2/11

