TENDER DOCUMENT

for

Renovation & Up-gradation of Protection Systems of 132kV Sub-Stations in Mizoram under PSDF

(Miscellaneous items & Civil works)

Office of the Executive Engineer, Meter Relay & Testing Division,
P&E Department, Government of Mizoram
Mizoram: Aizawl

November - 2017

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SECTION I:

SCOPE OF WORK

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SCOPE OF WORK

This NIT is divided into 9(Nine) packages and the scope of work under each package is shown below:

Pack-age	Particulars	Unit	Provisional Qty.
A	**All Sub-Station 8 Nos**		
	(i) AC system	No	46
	(ii) Control Room and Switchyard Lighting	Lot	8
B	**Bairabi Sub-Station**		
	(i) PCC Base Switchyard (75mm thick)	Sq.m	3,600
	(ii) Gravelling/Stone Spreading(100mm thick)	Sq.m	3,600
	(iii) Improvement of Earthing System		
	(a) Addition of Earth Mat	Rm	2016
	(b) Pipe Earthing	No	12
	(c) Rod Earthing	No	18
C	**Bawktlang/Kolasib Sub-Station**		
	(i) PCC Base Switchyard	Sqm	5,672
	(ii) Gravelling/Stone Spreading	Sqm	5,672
	(iii) Improvement of Earthing System		
	(a) Addition of Earth Mat	Rm	3145
	(b) Pipe Earthing	No	12
	(c) Rod Earthing	No	28
	(iv) Fire Fighting Wall (33kV Sub-station)	No	1
D	**Luangmual Sub-Station**		
	(i) PCC Base Switchyard	Sqm	3,835
	(ii) Gravelling/Stone Spreading	Sqm	3,835
	(iii) Improvement of Earthing System		
	(a) Addition of Earth Mat	Rm	2145
	(b) Pipe Earthing	No	12
	(c) Rod Earthing	No	28
	(iv) Fire Fighting Wall(33kV Sub-station)	No	1
E	**Zuangtui Sub-Station**		
	(i) PCC Base Switchyard	Sqm	2,710
	(ii) Gravelling/Stone Spreading	Sqm	2,710
	(iii) Improvement of Earthing System		
	(a) Addition of Earth Mat	Rm	1,911
	(b) Pipe Earthing	No	8
	(c) Rod Earthing	No	32
	(iv) Fire Fighting Wall (132kV Sub-station)	No	1
Pack-age	**Particulars**	**Unit**	**Provisional Qty.**
F	**Saitual Sub-Station**		
	(i) PCC Base Switchyard	Sqm	4,000

	(ii) Gravelling/Stone Spreading	Sqm	4,000
	(iii) Improvement of Earthing System		
	(a) Addition of Earth Mat	Rm	1955
	(b) Pipe Earthing	No	4
	(c) Rod Earthing	No	33
G	**Khawzawl Sub-Station**		
	(i) PCC Base Switchyard	Sqm	1874
	(ii) Gravelling/Stone Spreading	Sqm	2960
	(iii) Improvement of Earthing System		
	(a) Addition of Earth Mat	Rm	1874
	(b) Pipe Earthing	No	4
	(c) Rod Earthing	No	18
H	**Bukpui Sub-Station**		
	(i) PCC Base Switchyard	Sqm	4,600
	(ii) Gravelling/Stone Spreading	Sqm	4,600
	(iii) Improvement of Earthing System		
	(a) Addition of Earth Mat	Rm	2562
	(b) Pipe Earthing	No	8
	(c) Rod Earthing	No	32
	(iv) Fire Fighting Wall (132 &33kV Sub-stn)	No	1+1
I	**Khawiva Sub-Station**		
	(i) PCC Base Switchyard	Sqm	4,500
	(ii) Gravelling/Stone Spreading	Sqm	4,500
	(iii) Improvement of Earthing System		
	(a) Addition of Earth Mat	Rm	2194
	(b) Pipe Earthing	No	8
	(c) Rod Earthing	No	32

The **Package** "**A"** is covering all 8(eight) Sub-Stations in Mizoram and is therefore further explained as follows:

i) Air Conditioning System: The provisional quantity of Air Conditioning System earmarked for different 8(eight) Sub-Stations are as follows:

Sl. No	Name of Sub-Station	Provisional Qty
1	Bairabi	6
2	Kolasib	9
3	Luangmual	9
4	Zuangtui	6
5	Saitual	4
6	Khawzawl	4
7	Bukpui	4
8	Khawiva	4
	Total	46

ii) Control Room and Switchyard Lighting: The following lighting and fixtures will be used at control room and switchyard:

Sl. No.	Name of Lighting & Fixtures/Support	Provisional Qty per S/S.	Location of Requirements
1	18 W LED AC Down Lights	14	Control Room, Battery Room etc.
2	5W LED Bulb Type 110V DC for emergency.	7	Control Room, Battery Room etc.
3	100 W LED Streetlights	14	Switchyard and Roads etc.
4	120 W LED Flood Lights	7	Switchyard and Roads etc.
5	Galvanized Steel Tubular Poles(SP-10) of 8m High for mounting Flood Light.	7	Switchyard and Roads etc.
6	Galvanized Steel Tubular Poles (SP-1) of 7m High for mounting Street Light.	14	Switchyard and Roads etc.

The other **Packages** from **'B'** to **'I'** are for each sub-station and the following works are contained in the packages:

Sl. No.	Description of Works	unit	Provisional qty. of works at each of the following package as below:							
			B	C	D	E	F	G	H	I
1	Pipe Earthing using 40mm dia. GI Pipe as per specification.	No	12	12	12	8	4	4	8	8
2	Rod Earthing using 32mm dia. MS Rod as per specification.	No	18	28	28	32	33	18	32	32
3	MS Flat Earthing using MS Flat 50X8mm at 0.6 Meter depth @3m interval forming a network of Earth-mesh.	Lot	1	1	1	1	1	1	1	1
4	Plain Cement Concrete (1:4:8) 75mm thick at base layer @2X2meter block with 25mm spacing all over the switchyard area and extend 2m from steel structures.	cum	229.5	361.56	244.50	195	255.03	189.35	287.03	326

5	Gravelling / Stone spreading of aggregate size 40mm with 100mm thick all over the PCC area.	cum	360	567.20	383.50	172.78	400	296	460	450
6	Half brick masonry 4" high along the perimeter of PCC and cable trenches to prevent stone aggregate scattering.	Lot	1	1	1	1	1	1	1	1

Fire Protection Wall: Two type of fire protection wall are to be erected at the following sub-stations:

Sl. No	Name of Sub-Station	132/33 Fire Protection Wall	33/11 Fire Protection Wall
1	Bukpui	1	1
2	Zuangtui	1	0
3	Luangmual	0	1
4	Bawktlang	0	1
	Total	2	3

SECTION II:

INSTRUCTION TO TENDERERS (ITT)

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INSTRUCTIONS TO BIDDERS/TENDERERS

1.0. GENERAL INSTRUCTION

1.1. The Tenderers shall be required to submit the bids in two envelopes.

a) **Envelope-1**:- Techno-commercial bid which shall comprise all tender requirements to be furnished by the tenderer, viz, Bid Form, Bid security, bidders' eligibility and qualifications, etc as stipulated in this tender document.
b) **Envelope-2**:- Financial bid which shall comprise Price Schedules in accordance with this tender document

2.0. **ELIGIBILITY OF BIDDER**

2.1 The Bidder should be a holder of valid license under **Mizoram Electrical Licensing Board.** (For Package A to I).

2.2 **Package-A**

2.2.1 The Bidder for should be a manufacturers/Original Equipment Manufacturer (OEM)/authorised representative or dealer. In case of none of the above, valid authorization certificate should be produced.

2.2.2 The manufacturers/OEMs/authorized representatives or dealers should comply with all relevant technical standards/specifications and experiences in manufacturing of the equipments and experiences in supplying and commissioning directly or through their authorized representatives supported by documents showing past experiences.

2.2.3 The Bidder should be able to provide maintenance support for the equipment as and when required by the department.

2.3 **Package-B to I**

2.3.1 The Bidder should produce valid test report of stone quarry (if any) from which they are to obtain stone boulders.

2.3.2 The Bidder should clearly indicate name quarry(ies) from which they are to obtain stone boulders and agreement/authority to utilize stone from the quarry.

3.0 EARNEST MONEY

The Tenderers may submit bid for all packages or any package mentioned in the requirement using bid proposal sheet and shall have to furnish Earnest Money separately for each of the package as below in the form of Bank Draft from a Nationalized Bank pledged in favour of the Executive Engineer, Meter Relay and Testing Division, Power & Electricity Department, Aizawl in a separate covers super-scribing the tender specification, item, reference number and date of opening failing which the tender will not be opened. Tribal tenderers are allowed to submit Earnest Money for half the amount. Manufacturers registered with NSIC, DGS&D and also SSI unit under Government of Mizoram is exempted for payment of earnest money provided registration certificate is enclosed.

Break-up of **Earnest Money** is shown in the following:

Package	Particulars	Unit	Provi-sional Qty.	Estimated Cost (In INR)	Earnest Money (In INR)
A	All Sub-Station				
	(i) AC system	No	46	26,55,861.00	
	(ii) Control Room and Switchyard Lighting	Lot	8	88,65,616	**2,30,430.00**
			Sub-Total:	**1,15,21,477.00**	
B	Bairabi Sub-Station				
	(i) PCC Base Switchyard (75mm thick)	cum	229.5	13,30,092	
	(ii) Gravelling (100mm thick)	cum	360	5,69,196	
	(iii) Improvement of Earthing System				**69,440.00**
	(a) Addition of Earth Mat	Rm	2016		
	(b) Pipe Earthing	No	12	15,72,524.00	
	(c) Rod Earthing	No	18		
			Sub-Total:	**34,71,812.00**	
C	Bawktlang/Kolasib Sub-Station				
	(i) PCC Base Switchyard	cum	361.56	20,95,464.00	
	(ii) Gravelling	cum	567.2	8,87,441.00	
	(iii) Improvement of Earthing System				
	(a) Addition of Earth Mat	Rm	3145		**1,08,020.00**
	(b) Pipe Earthing	No	12	2368,517.00	

	(c) Rod Earthing	No	28		
	(iv) Fire Fighting Wall (33kV S/S)	No	1	49,494.00	
			Sub-Total:	**54,00,916.00**	
Package	Particulars	Unit	Provi-sional Qty.	Estimated Cost (In lakh)	Earnest Money (In lakh)
D	Luangmual Sub-Station				
	(i) PCC Base Switchyard	cum	244.50	14,16,994.00	**74,580.00**
	(ii) Gravelling/Stone Spreading	cum	383.50	6,05,431.00	
	(iii) Improvement of Earthing System				
	(a) Addition of Earth Mat	Rm	2145	1657130.00	
	(b) Pipe Earthing	No	12		
	(c) Rod Earthing	No	28		
	(iv) Fire Fighting Wall(33kV S/S)	No	1	49,494.00	
			Sub-Total:	**37,29,049.00**	
E	Zuangtui Sub-Station				
	(i) PCC Base Switchyard	cum	195	10,01,399.00	**58,890.00**
	(ii) Gravelling/Stone Spreading	cum	172.78	4,31,811.00	
	(iii) Improvement of Earthing System				
	(a) Addition of Earth Mat	Rm	1,911	1461980.00	
	(b) Pipe Earthing	No	8		
	(c) Rod Earthing	No	32		
	(iv) Fire Fighting Wall (132kV S/S)	No	1	49,494.00	
			Sub-Total:	**29,44684.00**	
F	Saitual Sub-Station				
	(i) PCC Base Switchyard	cum	255.03	14,78,040.00	**71,220.00**
	(ii) Gravelling/Stone Spreading	cum	400	6,30,960.00	
	(iii) Improvement of Earthing System				
	(a) Addition of Earth Mat	Rm	1955	1451950.00	
	(b) Pipe Earthing	No	4		
	(c) Rod Earthing	No	33		
			Sub-Total:	3560950.00	
G	Khawzawl Sub-Station				
	(i) PCC Base Switchyard	cum	189.35	11,35,782.00	**60,680.00**
	(ii) Gravelling/Stone Spreading	cum	296	4,88,548.00	
	(iii) Improvement of Earthing System				
	(a) Addition of Earth Mat	Rm	1874	14,09,791.00	
	(b) Pipe Earthing	No	4		
	(c) Rod Earthing	No	18		
			Sub-Total:	**30,34,121.00**	

Package	Particulars	Unit	Provi-sional Qty.	Estimated Cost (In INR)	Earnest Money (In INR)
H	Bukpui Sub-Station				
	(i) PCC Base Switchyard	cum	287.03	17,33,364.00	**88,040.00**
	(ii) Gravelling/Stone Spreading	cum	460	7,37,443.00	
	(iii) Improvement of Earthing System				
	(a) Addition of Earth Mat	Rm	2562	18,23,010.00	
	(b) Pipe Earthing	No	8		
	(c) Rod Earthing	No	32		
	(iv) Fire Fighting Wall (132&33kV S/S)	No	2	1,08,152.00	
			Sub-Total:	**44,01,970.00**	
I	Khawiva Sub-Station				
	(i) PCC Base Switchyard	cum	326	17,38,305.00	**83,010.00**
	(ii) Gravelling/Stone Spreading	cum	450	7,39,755.00	
	(iii) Improvement of Earthing System				
	(a) Addition of Earth Mat	Rm	2194	16,72,518.00	
	(b) Pipe Earthing	No	8		
	(c) Rod Earthing	No	32		
	Sub-Total:			**41,50,578.00**	

4.0 VALIDITY

Tender should be kept valid for a period of minimum 365 (three hundred sixty five) Calendar days from the date of opening of Tenders. Validity less than 365 (three hundred sixty five) days will be liable for rejection.

5.0 EXAMINATION OF THE DOCUMENT

5.1 The Bidder shall examine Conditions of Contract and Technical Specifications to satisfy himself/herself about all the Terms & Conditions and circumstances affecting the Contract Price. He shall quote price(s) according to his own views on these matters and understand that no additional allowances except as otherwise provided therein will be levied.

5.2 The Purchaser shall not be responsible for any misunderstanding or incorrect information obtained by the contractor other than information given to the contractor in writing by the Purchaser.

5.3 The Tenderer shall give his/her signature with seal in each and every page of the Tender Document as an indication of his/her acceptance of the Terms and Conditions of the Tender.

5.4 In the Tender, no overwriting is allowed. Any corrections, if any, should be initialed and seal stamped by the Tenderer. Rates should be quoted both in figures and in words as far as practicable.

Non-Tribal Tenderers should submit the following along with their Tenders:

1) Valid license from MELB.
2) Authorized dealer must submit an authorized dealership certificate issued by manufacturers(if any).
3) ISI/BIS/ISO Certificate(if any).
4) Documents showing past experience (if any).
5) GST Registration Certificate/No.

Tribal Tenderers should submit the following along with their Tenders:

1) Valid license from MELB.
2) House Tax Payee Certificate
3) Authorized dealer must submit an authorized dealership certificate issued by manufacturers(if any).
4) ISI/BIS/ISO Certificate(if any).
5) Documents showing past experience (if any).
6) GST Registration Certificate/No.

6.0 PATENT RIGHTS, ETC.

The Contractor shall indemnify the Purchaser against all Claims, Actions, Suits and Proceedings for the infringement or alleged infringement of any patent design or copy right protected either in the Country of origin or in India by the use of any equipment supplied by the Contractor, but such indemnity shall not cover any use of equipment other than for the purpose indicated by or reasonably to be inferred from the specifications.

7.0 RESERVATION

The Purchaser reserves the right to accept or reject the bid partly or wholly without assigning any reason thereof. Further, the Owner is not bound to select the lowest Tenderer to execute the work. Tenderers who do not accept General Terms will be automatically rejected.

8.0 VARIATIONS - ADDITIONS AND OMISSION

i) The Contractor shall not modify the materials and equipment except directed in writing by the Purchaser.

ii) The quantity stated in the tender is only provisional quantity. Purchaser/ Employer shall have the right to alter, amend, omit or vary the equipment by notice in writing to the Contractor.

iii) Within a period of thirty (30) working days from the date of issue of LOI, the contractor shall submit field survey report as to quantify work parameters. During the field survey, the contractor and Engineer-in-Charge of the department shall jointly conduct the survey work at the cost of successful tenderer to finalize work parameter. LOA shall be issued as per site requirement as mutually agreed upon.

iv) During the execution of the contract, the Purchaser/Employer reserves the right to increase or decrease the quantities of items under the Contract but without any change in unit price or other terms and conditions.

9.0 EVALUATION OF TENDER:

Evaluation of tender shall be done in package-wise of this tender; therefore, a tenderer is required to offer/submit quotations for all items of the particular package, he/she is going to participate, but he/she is not bound to participate in all the tender packages.

10.0 TENDER DOCUMENT:

10.1 Tender documents shall be sold to the intending Tenderers, on receipt of Rs.1,000.00 (Rupees One thousand) only (non-refundable) in the shape of demand draft/Banker's cheque payable at any branch of State Bank of India within Aizawl in favour of the Executive Engineer, Meter Relay and Testing, Power& Electricity Department, Zuangtui.

10.2 The sealed envelopes addressed to The Executive Engineer ; Meter Relay & Testing Division; Zuangtui, Aizawl– 796 014 are to be submitted to the office of Executive Engineer, Meter Relay & Testing Division.

10.3 Late/delayed tenders due to any reason whatsoever will not be accepted under any circumstances.

10.4 At any time prior to date of submission of tender, Tender Inviting Authority may, for any reason, or decision, modify the terms & conditions of the tender document by a corrigendum and extend the date and time for submission of tenders.

11.0 DISPUTE RESOLUTION & JURISDICTION OF CONTRACT:

All disputes shall be subject to exclusive jurisdiction of the Court at Aizawl and Writ jurisdiction of Guwahati High Court of Aizawl Bench.

12.0 LIQUIDATED DAMAGES:

12.1 If the contractor fails to successfully complete the work/ commissioning within the scheduled time fixed under the contract, the contractor shall pay to the Employer/Purchaser as liquidated damages and not as penalty, a sum specified for each specified period of delays.

12.2 The total amount of Liquidated Damages (LD) for delay under the contract will be @ ½% (half percent) of the contract value of the material supplied beyond scheduled date, per month or part thereof. However, the value of LD shall be limited to a maximum of 5% of the total material price not supplied within scheduled completion date as per LOA/ contract agreement.

13.0 FIELD/SITE VERIFICATION:

13.1 Before submitting the Tender, the Tenderer shall at their own cost and expenses visit the site, examine and satisfy as to the nature of the existing roads, means of communications, the character of the soil, state of land and of the excavations etc.

13.2 The correct dimensions of the work facilities for procuring various construction and other material and their availability, and shall obtain information on all matters and conditions as they may feel necessary for the execution of the works as intended by the Owners and shall also satisfy of the availability of suitable water for construction of civil works and for drinking purpose and power required for fabrication work etc.

13.3 Tenderer, whose tender may be accepted and with whom the contract is entered into shall not be eligible and be able to make any claim on any of the said counts in what so ever manner for what so ever reasons at any point of time and such a claim shall not be raised as a dispute and shall not be arbitrable.

13.4 The contractor shall make all arrangements at his own cost to transport the required materials outside and inside the working places and leaving the premises in a neat and tidy condition after completion of the job to the satisfaction of Owner. All materials except those agreed to be supplied by the Owner shall be supplied by the contractor at his own cost and the rates quoted by the Contractor should be inclusive of all royalties, rents, taxes, duties, octroi, statutory levies, if any, etc.

14.0 **Address:** All correspondences with regard to the above may be made to the following address :

The Executive Engineer
Meter Relay & Testing Division
Power & Electricity Department Mizoram
Zuangtui; Aizawl Pin -796014.

SECTION III:

CONDITIONS OF CONTRACT (CC)

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CONDITIONS OF CONTRACT (CC)

PART A. INTRODUCTION

1.0 DEFINITION OF TERMS:

1.01 '**The Contract**' means the agreement entered into between Employer/Purchaser and Contractors as per the contract agreement signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.

1.02 '**Owner**' shall mean **Power & Electricity Department, Govt. of Mizoram** and shall include their legal representatives, successors and assigns.

1.03 '**Contractor**' shall mean the Firms to whom the Project execution work is awarded by **Power & Electricity Department, Govt. of Mizoram** and shall include such Firms' legal representatives, successors and permitted assignees.

1.04 '**Employer/Purchaser**' shall mean the Executive Engineer, Meter Relay and Testing Division, Power and Electricity Department, Aizawl, Mizoram and shall include his legal representatives, successors and permitted assigns of such person.

1.05 '**Engineer-in-Charge**' shall mean the officer appointed in writing by the Employer/Purchaser to act as Engineer from time to time for the purpose of the contract or concerned **Sub-Divisional Officer** if not specifically mentioned.

1.06 The terms '**Equipment**', '**Stores**' and '**Materials**' shall mean and include equipment, stores and materials to be provided by the contractor under the contract.

1.07 '**Works**' shall mean and include the furnishing of equipment, labour and services, as per the specifications and complete erection, testing and putting into satisfactory operation including all transportation, handling, unloading and storage at the site as defined in the contract.

1.08 '**Specifications**' shall mean the specifications forming a part of the contract and such other schedules and drawings as may be mutually agreed upon.

1.09 '**Site**' shall mean and include the sub-station and other places on, into or through which the work and the related facilities are to be erected or installed or used by the Employer/Purchaser or contractor in the performance of the contract.

1.10 The term "**Contract Price**" shall mean the lump-sum firm price components with taxes and duties etc..of the entire works awarded to the Contractor with additions and/or deletions as may be agreed and incorporated in the letter of award, for the entire scope of the work.

1.11 **'Letter of Intent' (LOI)** shall mean the official notice issued by the Employer/ Purchaser notifying the contractor that the Employer/Purchaser are intending to award the works but requires certain issues for finalization of award of the works.

1.12 '**Notification of Award of Contract**'/**Letter of Award**' (**LOA**) shall mean the official notice issued by the Employer/Purchaser notifying the contractor that they are awarded the works.

1.13 '**Test on Completion**' shall mean such tests as prescribed in the contract to be performed by the contractor before the work is taken over by the Employer/Purchaser.

1.14 '**Performance and Guarantee Test**' shall mean all operational checks and tests required to determine and demonstrate capacity, efficiency and operating characteristics as specified in the contract documents.

1.15 The term '**Final Acceptance/Taking Over**' shall mean the Employer/Purchaser's written acceptance of the works performed under the contract, after successful commissioning/ completion of performance and guarantee tests, as specified in the accompanying technical specification or otherwise agreed in the contract.

1.16 '**Warranty Period**', '**Guarantee Period**' '**Maintenance Period**'/ '**Defect Liability Period**' shall mean the period during which the contractor shall remain liable for repair or replacement of any defective part of the works performed under the contract.

1.17 '**Latent Defects**' shall mean such defects caused by faulty design, material or workmanship which cannot be detected during inspection, testing etc, based on the technology available for carrying out such tests.

2.0 LANGUAGE AND MEASURES:

All documents pertaining to the contract including specification, schedules, notices, correspondence, operating and maintenance instruction, drawings or any other writing shall be written in English language. The Metric System of measurement shall be used exclusively in the contract.

3.0 CONTRACT DOCUMENTS:

3.1 The term "**Contract Documents**" shall mean and include the following, which shall be deemed to form an integral part of the contract:

a) General terms and conditions of contract, General Technical Condition, Erection conditions of contract and all other documents included under and the special conditions of contract and various other sections.

b) Specifications of the equipment to be furnished and erected under the contract as brought out in the accompanying technical specification.

c) All the materials, literature, data and information of any sort given by the contractor subject to the approval of the owner/ consultant.

d) Letter of award and any agreed variations of the conditions of the documents and special terms and conditions of contract if any.

3.2 In the event of any conflict between the above-mentioned documents, the matter shall be referred to the Employer/Purchaser whose decision shall be considered as final and binding upon the parties.

4.0 JURISDICTION OF CONTRACT:

4.1 The laws applicable to the contract shall be the laws in force in India. The courts of **Mizoram** only shall have exclusive jurisdiction in all matters arising under this contract.

5.0 COMPLETION OF CONTRACT:

5.1 Unless otherwise terminated under the provisions of any other relevant clause, this contract shall be deemed to have been completed on the expiry of the guarantee period as provided for under the clause entitled "**Guarantee**' in this section of specification.

PART B. GUARANTEE & LIABILITIES

6.0 TIME – THE ESSENCE OF CONTRACT:

6.1 The time and date of completion of the contract as stipulated in the contract by the Employer/Purchaser without or with modifications, if any, and so incorporated in the letter of award, shall be deemed to be the essence of the contract. The contractor shall so organize his resources and perform his work as to complete it not later than the date agreed to.

7.0 LIQUIDATED DAMAGES:

7.1 If the contractor fails to successfully complete commissioning within the scheduled time fixed under the contract, the contractor shall pay to the Employer/Purchaser as liquidated damages and not as penalty, a sum specified for each specified period of delays. Liquidated damages for not meeting specified performance shall be assessed and recovered from the Contractor. Such liquidated damages shall be calculated at rate of 0.5% (Half percent) of the Contract Value for each calendar week of delay, which will be limited to 5% (Five percent) of the Contract Value.

7.2 Equipment and materials will be deemed to have been delivered only when all its components, parts are also delivered. If certain components are not delivered in time, the equipment and materials will be considered as delayed until such time the missing parts are also delivered.

8.0 GUARANTEE:

8.1 The contractor shall warrant that the equipment will be new, unused and in accordance with the contract documents and free from defects in material and workmanship for a period of twelve (12) calendar months from the date of commissioning. The contractor's liability shall be limited to the replacement of any defective parts in the equipment of his own manufacture under normal use and arising solely from faulty design, materials and/or workmanship provided always that such defective parts are repairable at the site and are not in meantime essential in the commercial use of the equipment. Such replaced/defective parts shall be returned to the contractor unless otherwise arranged. No repairs or replacement shall normally be carried out by the Engineer when the equipment is under the supervision of the contractor's supervisory Engineer.

8.2 In the event of any emergency, where in the judgment of the engineer, delay would cause serious loss or damages, repairs or adjustment may be made by the engineer or a third party chosen by the engineer without advance notice to the

contractor and the cost of such work shall be paid by the contractor. In the event such action is taken by the engineer, the contractor will be notified promptly and he shall assist wherever possible in making necessary corrections. This shall not relieve the contractor of his liabilities under the terms and conditions of the contract.

8.3 If it becomes necessary for the contractor to replace or renew any defective portions of the works, the provision of this clause shall apply to portion of the works so replaced or renewed until the expiry of twelve (12) months from the date of such replacement or renewal. If any defects are not remedied within a reasonable time, the engineer may proceed to do the work at the contractor's risk and cost, but without prejudice to any other rights, which the owner may have against the contractor in respect of such defects.

8.4 The repaired or new parts will be furnished and erected free of cost by the contractor. If any repair is carried out on his behalf at the site, the contractor shall bear the cost of such repairs.

8.5 The cost of any special or general overhaul rendered necessary during the maintenance period due to defects in the equipment or defective work carried out by the contractor, the same shall be borne by the contractor.

8.6 The acceptance of the equipment by the engineer shall in no way relieve the contractor of his obligation under this clause.

8.7 In the case of those defective parts, which are not repairable at site but are essential for the commercial operation of the equipment, the contractor and the engineer shall mutually agree to a programme of replacement or renewal, which will minimize interruption to the maximum extent in the operation of the equipment.

9.0 TAXES, PERMITS & LICENCES:

The contractor shall be liable and pay all taxes, duties, levies lawfully assessed against the owner or the contractor in pursuance of the contract.

10.0 REPLACEMENT OF DEFECTIVE PARTS AND MATERIALS:

10.1 If during the performance of the contract, the engineer shall decide and inform in writing to the contractor that the contractor has manufactured any equipment, material or part of equipment unsound and imperfect or has furnished any equipment inferior to the quality specified, the contractor on receiving details of such defects or deficiencies shall at his own expense within seven (7) days of his receiving the notice, or otherwise, within such time as may be reasonably necessary for making it good, proceed to alter, reconstruct or remove such works

and furnish fresh equipment/materials up to the standards of the specifications. In case, the contractor fails to do so, the engineer may on giving the contractor seven (7) days notice in writing of his intentions to do so, proceed to remove the portion of the works so complained of and at the cost of the contractor perform all such work or furnish all such equipment / materials provided that nothing in this clause shall be deemed to deprive the owner of or affect any rights under the contract which the owner may otherwise have in respect of such defects and deficiencies.

10.2 The Contractors cannot claim any extra payment for replacement of any defective equipment/ materials after commissioning during guarantee period. They are fully liable to replace these to their own cost.

11.0 PATENT RIGHTS AND ROYALTIES:

Royalties and fees for patents covering materials, articles, apparatus, devices, equipment or processes used in the works shall be deemed to have been included in the contract price. The contractor shall satisfy all demands that may be made at any time for such royalties or fees and he alone shall be liable for any damages or claims for patent infringements and shall keep the owner indemnified in that regard. Whenever forest produces like sand, stone, timbers etc are used in the work the contractor have to furnish documentary proof that requisite royalty on such produces has been paid to the concerned Department. Final payment to the contractor by the owner will not be made while any such suit or claim remains unsettled.

12.0 DEFENCE OF SUITS:

If any action in court is brought against the owner or engineer or an officer or agent of the owner, for the failure, omission or neglect on the part of the contractor to perform any acts, matters, covenants or things under the contract, or for damage or injury caused by the alleged omission or negligence on the part of the contractor, his agents, representatives or in connection with any claim based on lawful demands of workmen, suppliers or employees, the contractor shall in all such cases indemnify and keep the owner, and the engineer and/or his representative, harmless from all losses, damages, expenses or decrees arising of such action.

13.0 RELEASE OF PERFORMANCE BG:

The release of Performance Bank Guantee by the owner in pursuance of the contract shall mean the release of the contractor from all his liabilities under the contract. Release of Performance Bank Guarantee by the owner shall be made

only at the end of the Guarantee/Warranty Period, and till such time as the contractual liabilities and responsibilities of the contractor, shall prevail.

14.0 ENGINEER'S DECISION:

14.1 In respect of all matters which are left to the decision of the engineer including the granting or withholding of the certificates, the engineer shall, if required to do so by the contractor, give in writing a decision thereon.

14.2 If, in the opinion of the contractor, a decision made by the engineer is not in accordance with the meaning and intent of the contract, the contractor may file with the engineer, within fifteen (15) days after receipt of the decision, a written objection to the decision. Failure to file an objection within the allotted time will be considered as an acceptance of the engineer's decision and the decision shall become final and binding.

14.3 The Engineer's decision and the filing of the written objection thereto shall be a condition precedent to the right to request arbitration. It is the intent of the agreement that there shall be no delay in the execution of the works and the decision of the engineer as rendered shall be promptly observed.

15.0 POWER TO VARY OR OMIT WORK:

15.1 No alteration, amendments, omissions, suspensions or variations of the works (hereinafter referred to as **'variation'**) under the contract as detailed in the contract document, shall be made by the contractor except as directed in writing by the Engineer, but the Engineer shall have full powers subject to the provisions hereinafter contained, from time to time during the execution of the contract, by notice in writing to instruct the contractor to make such variation without prejudice to the contract. The contractor should carry out such variation and be bound by the same conditions as far as applicable as though the said variations occurred in the contract documents. If any suggested variations would, in the opinion of the contractor, if carried out, prevent him from fulfilling any of his obligations or guarantees under the contract, he shall notify the engineer thereof in writing and the engineer shall decide forthwith whether or not, the same shall be carried out and if the engineer confirm his instructions, the contractor's obligations and guarantees shall be modified to such an extent as may be mutually agreed. Any agreed difference in cost occasioned by any such variation shall be added to or deducted from the contract price as the case may be.

15.2 In all the above cases, in the event of a disagreement as to the reasonableness of the said sum, the decision of the Engineer shall prevail.

15.3 Notwithstanding anything stated above in this clause, the Engineer shall have the full power to instruct the contractor, in writing, during the execution of the

contract to vary the quantities of the items or groups of items in accordance with the provisions of clause entitled **'change of Quantity'** in clause 17.0 of this section. The contractor shall carry out such variations and be bound by the same conditions as though the said variations occurred in the contract documents. However, the contract price shall be adjusted at the rates and the prices provided for the original quantities in the contract.

16.0 ASSIGNMENT AND SUB-LETTING OF CONTRACT:

16.1 No Subletting/Sub-Contract is allowed.

17.0 CHANGE OF QUANTITY:

17.1 During the execution of the contract, the Purchaser/Employer reserves the right to increase or decrease the quantities of items under the Contract but without any change in unit price or other terms and conditions. However, in order to avoid slippage from completion period and to prevent from complexity of the contract, the successful tenderer, at the aegis of Engineer-in-Charge, shall make appropriate steps to avoid occurrence of change of quantity during execution. Within a period of thirty (30) working days from the date of issue of LOI, the contractor shall submit field survey report as to quantify work parameters. During the field survey, the contractor and Engineer-in-Charge of the department shall jointly conduct the survey work at the cost of successful tenderer to finalize work parameter. LOA shall be issued as per site requirement as mutually agreed upon.

17.2 The Contract price shall accordingly be adjusted based on the unit rates available in the Contract for the change in quantities as above. The base unit rates, as identified in the Contract shall however remain constant during the currency of the Contract, except as provided for in clause 33.0 below. In case, the unit rates are not available for the change in quantity, the same shall be subjected to analysis of rates to be approved by the Engineer in charge.

18.0 CO-OPERATION WITH OTHER CONTRACTORS AND CONSULTING ENGINEERS:

The Contractor shall agree to cooperate with the Owner's other Contractors and Consulting Engineers and freely exchange with them such technical information, as is necessary to obtain the most efficient and economical design and to avoid unnecessary duplication of efforts. The Engineer shall be provided with three copies of all correspondence addressed by the contractor to

the other contractors and consulting Engineers of the owner in respect of such exchange of technical information.

19.0 PROGRESS REPORTS:

During the various stages of the work in the pursuance of the contract, the contractor shall at his own cost submit periodic progress reports as may be reasonably required by the Engineer with such materials as, charts, net-works, photographs, test certificates, etc. Such progress reports shall be in the form and size may be required by the Engineer and shall be submitted in at least three (3) copies.

20.0 TAKING OVER:

Upon successful completion of all the tests to be performed at site on equipment furnished and erected by the contractor, the Engineer shall issue to the contractor a '***Taking over Certificate'*** as a proof of the final acceptance of the equipment. Such certificate shall not unreasonably be withheld nor will the engineer delay the issuance thereof on account of minor omissions or defects, which do not affect the commercial operation and/or cause any serious risk to the equipment. Such certificate shall not relieve the Contractor of any of his obligations which otherwise survive, by the terms and conditions of the Contract after issue of such certificate.

PART C. CONTRACT SECURITY AND PAYMENTS

21.0 CONTRACT PERFORMANCE GUARANTEE:

The Contractor shall furnish contract performance guarantee(s) for the proper fulfillment of the Contract in the prescribed form within 45 days of "Letter of Award of Contract". The performance guarantee (s) shall be 5% (Five percent) of the contract amount which will initially be valid for a period of 18 months and which may be extended as per requirement till the expiry of guarantee period.

22.0 CONTRACT PRICE :

All the prices/ price components of the contract shall remain firm and no variation of price shall be applicable during the period of contract. The price quoted should be inclusive of all taxes, duties, levies, freight etc. and no extra claim will be entertained by the owner.

23.0 PAYMENT TERMS:

23.1. No advance/Mobilization advance shall be made in this contract.

23.2. Final payment shall be released to the contractor only after final acceptance by Power & Electricity Department and submission of Performance Security Bank Guarantee.

23.3. No claim for interest shall be entertained by Power & Electricity Department in respect of any money or balance which may be in Power & Electricity Department's hands owing to any dispute or difference or misunderstanding between the contractor and the Power & Electricity Department or due to the reason beyond the control of Power & Electricity Department.

23.4. Payment is subject to availability of specific fund and-

(a) Package A: (i) 30% payment against complete delivery of materials at site.
(ii) Balance 70% after installation and commissioning at site and operational acceptance and taking over by the purchaser/ employer.

(b) Package B to I: 100% payment after completion of erection/construction at site and operational acceptance and taking over by the purchaser/ employer.

23.5. The quantities may vary as per site requirements. Actual work done quantities will be measured after completion of work and will be paid as per certification by Engineer-in-charge.

23.6. Bill will be submitted to the concerned Sub-Divisional Officer and passed by the concerned Executive Engineer which will be routed through respective Superintending Engineer and Chief Engineer, and Payment will be made through PFMS system at Nodal Officer(PSDF) /Engineer-in-Chief Office.

24.0 DEDUCTION FROM CONTRACT PRICE:

All costs, damages or expenses which the Purchaser/Employer may have paid, for which under the Contract, the contractor is liable, will be claimed by the Purchaser/Employer. All such claims shall be billed by the Purchaser/Employer to the Contractor regularly as and when they fall due. Such bills shall be supported by appropriate and certified vouchers or explanations, to enable the contractor to properly identify such claims. Such claims shall be paid by the Contractor within thirty (30) days of the receipt of the corresponding bills and if not paid by the Contractor within the said period, the Purchaser/Employer may then deduct the amount, from any amount due or becoming due by him to the contractor under the Contract or may be recovered by sections of Law or otherwise.

25.0 TRANSFER OF THE TITLE:

25.1 Transfer of the title in respect of equipment and materials supplied by the contractor to Power & Electricity Department, Mizoram pursuant to the terms of the contract shall pass on to Power & Electricity Department, Mizoram with ex-works dispatch and negotiation of dispatch documents.

25.2 This Transfer of Title shall not be construed to mean the acceptance and the consequent “Taking Over” of equipment and materials. The contractor shall continue to be responsible for the quality and performance of such equipment and materials and for their compliance with the specifications until “Taking Over” and the fulfillment of guarantee provisions of this Contract.

25.3 This Transfer of Title shall not relieve the Contractor from the responsibility for all risks of loss or damage to the equipment and materials as specified under the clause entitled “Insurance” of this Section.

26.0 INSURANCE:

26.1 The Contractor at his cost shall arrange, secure and maintain all insurance as may be pertinent to the works and obligatory in terms of law to protect his interest and interests of the Purchaser/Employer against all perils detailed herein. The form and the limit of such insurance as defined herein together with the under-writer in each case shall be acceptable to the Purchaser/Employer.

26.2 Any loss or damage to the equipment during handling, transportation, storage, erection, putting into satisfactory operation and all activities to be performed till the successful completion of commissioning of the equipment shall be to the account of Contractor.

PART D. FORCE MAJEURE

27.0 FORCE MAJEURE:

27.1 Force majeure is herein defined as any cause which is beyond the control of the contractor or the Purchaser/Employer as the case may be, which they could not foresee or with a reasonable amount of diligence could not have foreseen and which substantially affects the performance of the Contract, such as:

a) Natural phenomena, including but not limit to floods, droughts, earthquakes and epidemics;

b) Acts of any Government, domestic or foreign, including but not limited to war, declared or undeclared, priorities, quarantines, embargoes.

Provided either party shall within fifteen (15) days from the occurrence of such a cause notify the other in writing of such causes.

27.2 The Contractor or the Purchaser/Employer shall not be liable for delays in performing his obligations resulting from any force-majeure cause as referred to and/or defined above.

The date of completion will, subject to hereinafter provided, be extended by a reasonable time even though such cause may occur after contractor's performance of obligation has been delayed to other causes.

28.0 SUSPENSION OF WORK:

28.1 The Purchaser/Employer reserve the right to suspend and reinstate execution of the whole or any part of the works without invalidating the provisions of the contract. Orders for suspension or reinstatement of the works will be issued by the Engineer to the contractor in writing. The time for completion of the works will be extended for a period equal to the duration of the suspension.

28.2 Any necessary and demonstrable cost incurred by the contractor as a result of such suspension of the works will be paid by the Purchaser/Employer, provided such costs are substantiated to the satisfaction of the Engineer. The Purchaser/Employer shall not be responsible for any liabilities, if suspension or delay is due to some default on the part of the contractor.

29.0 CONTRACTOR'S DEFAULT:

29.1 If the Contractor shall neglect to execute the works with due diligence and expertise or shall refuse or neglect to comply with any reasonable order given to him, in the contract by the Engineer in connection with the works or shall contravene the provisions of the contract, the Purchaser/Employer may give notice in writing to the contractor to make good the failure, neglect or contravention complained of. Should the contractor fail to comply with the notice within thirty (30) days from the date of serving the notice, then and in such case the Purchaser/Employer shall be at liberty to employ other workmen and forthwith execute such part of the works as the Contractor, may have neglected to do or if the Purchaser/Employer shall think fit, without prejudice to any other right he may have under the Contract to take the work wholly or in part out of the contractor's hands and re-contract with any other person or persons to complete the works or any part thereof and in that event the Purchaser/Employer shall have free use of all Contractor's equipment that may have been at the time on the site in connection with the works without being responsible to the Contractor for fair wear and tear thereof and to the exclusion of any right of the contractor over the same, and the Purchaser/Employer shall be entitled to retain and apply any balance which may otherwise be due on the Contract by him to the contractor, or such part thereof as may be necessary, to the payment of the cost of executing the said part of the work or of completing the Works as the case may be. If the cost of completing of Works or executing a part thereof as aforesaid shall exceed the balance due to the contractor, the contractor shall pay such excess. Such payment of excess amount shall be independent of the liquidated damages for delay which the contractor shall have to pay if the completion of works is delayed.

29.2 In addition, such action by the Purchaser/Employer as aforesaid shall not relieve the contractor of his liability to pay liquidated damages for delay in completion of works as defined in clause 7.0 of this Section.

Such action by the Purchaser/Employer as aforesaid, the termination of the Contract under this clause shall neither entitle the contractor to reduce the value of the contract Performance Guarantee nor the time thereof. The contract Performance Guarantee shall be valid for the full value and for the full period of the contract including guarantee period.

30.0 TERMINATION OF CONTRACT ON PURCHASER/EMPLOYER'S INITIATIVE:

30.1 The Purchaser/Employer reserves the right to terminate the Contract either in part or in full due to reasons other than those mentioned under clause entitled

"Contractor's Default." The Purchaser/Employer shall in such an event give fifteen (15) days notice in writing to the Contractor of his decision to do so.

30.2 The Contractor upon receipt of such notice shall discontinue the work on the date and to the extent specified in the notice, make all reasonable efforts to obtain cancellation of all orders and contracts to the extent they are related to the work terminated and terms satisfactory to the Purchaser/Employer, stop all further purchasing activity related to the work terminated, and assist the Purchaser/Employer in maintenance, protection, and disposition of the Works acquired under the Contract by the Purchaser/Employer.

30.3 In the event of such a termination, the Contractor shall be paid compensation, equitable and reasonable, dictated by the circumstances prevalent at the time of termination.

30.4 If the Contractor is an individual or a proprietary concern and the individual or the proprietor dies and if the contractor is a partnership concern and one of the partners dies then unless the Purchaser/Employer is satisfied that the legal representatives of the individual contractor or of the proprietor of propriety concern and in the case of partnership, the surviving partners, are capable of carrying out and completing the Contract, the Purchaser/Employer shall be entitled to cancel the Contract as to its uncompleted part without being in any way liable to payment of any compensation to the estate of deceased Contractor and/or to surviving partners of the contractor's firm on account of the cancellation of the contract. The decision of the Purchaser/Employer that the legal representatives of the deceased contractor or surviving partners of the contractor's firm cannot carry out and complete the contract shall be final and binding on the parties. In the event of such cancellation, the Purchaser/Employer shall not hold the estate of the deceased Contractor and/or the surviving partner of the Contractor's firm liable to damages for not completing the Contract.

PART E. RESOLUTION OF DISPUTES

31.0 SETTLEMENT OF DISPUTES:

31.1 Any dispute(s) or difference(s) arising out of or in connection with the Contract shall, to the extent possible, be settled amicably between the parties.

31.2 If any dispute or difference of any kind whatsoever shall arise between the Purchaser/Employer and the Contractor, arising out of the contract for the performance of the works whether during the progress of the Works or after its completion or whether before or after the termination, abandonment or breach of the Contract, it shall, in the first place, be referred to and settled by the Engineer, who, within a period of thirty (30) days after being requested by either party to do so, shall give written notice of his decision to the Purchaser/Employer and the Contractor.

31.3 Save as hereinafter provided, such decision in respect of every matters so referred shall be final and binding upon the parties until the completion of the Works and shall forthwith be given effect to by the contractor who shall proceed with the works with all due diligence, whether he or the Purchaser/Employer requires arbitration as hereinafter provided or not.

31.4 If after the Engineer has given written notice of his decision to the parties, no claim to arbitration has been communicated to him by either party within thirty (30) days from the receipt of such notice, the said decision shall become final and binding on the parties.

31.5 In the event of the Engineer failing to notify his decision as aforesaid within thirty (30) days after being requested as aforesaid, or in the event of either the Purchaser/Employer or the Contractor being dissatisfied with any such decision, or within (30) days, after the expiry of the first mentioned period of thirty (30) days, as the case may be, either party may require that the matters in dispute be referred to arbitration as hereinafter provided.

32.0 ARBITRATION:

32.1 All disputes or differences in respect of which the decision, if any, of the Engineer has not become final or binding as aforesaid shall be settled by arbitration in the manner hereinafter provided.

32.2 The arbitration shall be conducted by three arbitrators, one each to be nominated by the Contractor and the Purchaser/Employer and third to be appointed as an umpire by both the arbitrators in accordance with the Arbitration & Conciliation Act. If either of the parties fails to appoint its arbitrator within sixty (60) days after receipt of a notice from the other party invoking the Arbitration clause, the

arbitrator appointed by the party invoking the arbitration clause shall become the sole arbitrator to conduct the arbitration.

32.3 The arbitration shall be conducted in accordance with the provisions of the Arbitration & Conciliation Act, 1996 or any statutory modification thereof. The venue of arbitration shall be **Mizoram** only.

32.4 The decision of the majority of the arbitrators shall be final and binding upon the parties. The arbitrators may, from time to time with the consent of all the parties enlarge the time for making the award. In the event of any of the aforesaid arbitrators dying, neglecting, resigning or being unable to act for any reason, it will be lawful for the party concerned to nominate another arbitrator in place of the outgoing arbitrator.

32.5 The arbitrator shall have full powers to review and/or revise any decision, opinion, direction, certification or valuation of the Engineer in accordance with the Contract, and neither party shall be limited in the proceedings before such arbitrators to the contents or arguments out before the Engineer for the purpose of obtaining the said decision.

32.6 No decision given by the Engineer in accordance with the foregoing provisions shall disqualify him as being called as a witness for giving evidence before the arbitrators on any matter whatsoever relevant to the dispute or difference referred to the arbitrators as aforesaid.

32.7 During settlement of disputes and arbitration proceedings, both parties shall be obliged to carry out their respective obligations under the Contract.

ANNEXURES

Annexure I: PROFORMA OF BANK GUARANTEE FOR CONTRACT PERFORMANCE

Annexure II: PROFORMA OF EXTENSION OF BANK GUARANTEE

Annexure III: TENDER REQUIREMENT

Annexure-I

PROFORMA OF BANK GUARANTEE FOR CONTRACT PERFORMANCE
(To be stamped in accordance with Stamp Act)

Ref..... **Bank Guarantee No.....**

Date.....

To

……

Dear Sirs,

In consideration of Power & Electricity Department, Govt. of Mizoram., (herein after referred to as the "Owner" which expression shall unless repugnant to the context or meaning thereof include its successors, administrators and assigns) having awarded to M/s.....with registered/Head office at.....(hereinafter referred to as "Contractor" which expression shall unless repugnant to the context or meaning thereof include its successors, administrators, executors and assigns), a Contract issued by Purchaser/Employer's Letter of Award No.....dated..... for……(scope of work) and the same having been acknowledged by the Contractor, resulting in a Contract bearing No.....dated …… Contractor having agreed to provide a Contract Performance Guarantee for the faithful performance of the entire Contract equivalent to Rs..... being (5%) (Five Percent) of the said value of the Contract to the Purchaser/Employer.

We..... ... (Name & Address) having its Head Office at.....(hereinafter referred to as the "Bank", which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the Purchaser/Employer, on demand any or all monies payable by the Contractor to the extent of Rs.....as aforesaid at any time up to..... day/month/year) without any demur, reservation, contest, recourse or protest and/or without any reference to this Contractor.

Any such demand made by the Purchaser/Employer on the bank shall be conclusive and binding notwithstanding any difference between the Purchaser/Employer and the Contractor or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. The Bank undertakes not to revoke this guarantee during its currency without previous consent of the Purchaser/Employer and further agrees that the guarantee herein contained shall continue to be enforceable till the Purchaser/Employer discharges this guarantee.

The Purchaser/Employer shall have the fullest liberty without affecting in any way the liability of the Bank under the guarantee from time to time to extend the time for performance or the Contract by the Contractor. The Purchaser/Employer shall have the fullest liberty, without affecting this guarantee, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the

Contractor and to exercise the same at any time in any manner and either to enforce or to for bear to enforce any covenants, contained or implied in the Contract between the Purchaser/Employer and the Contractor or any other course or remedy or security available to the Purchaser/Employer. The Bank shall not be relieved of its obligations under these presents by any exercise by the Purchaser/Employer of its liberty with reference to the matters aforesaid or any of them or by reason of any other act of omission or commission on the part of the Purchaser/Employer or any other indulgences shown by the Purchaser/Employer or by any other matter or thing whatsoever which under law would, but for this provision have the effect of relieving the Bank.

The Bank also agrees that the Purchaser/Employer at its option shall be entitled to enforce this guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and not withstanding any security or other guarantee the Purchaser/Employer may have in relation to the Contractor's liabilities.

Notwithstanding anything contained herein above our liability under this guarantee is restricted to Rs.....and it shall remain in force upto and including .....** (day/month/year) and shall be extended from time to time for such period as may be desired M/s.....on whose behalf this guarantee has been given. Unless a demand or claim is lodged on us within and including ……..*(day/month/year) we shall be discharged from all liabilities thereafter.

Dated this.....day of.....20.....at.....

WITNESS

(Signature)
(Name)
(Official Address)

(Signature)
(Name)
(Designation with Bank Stamp)
Attorney as per Power
Of Attorney No.....
Date.....

Notes:

1. The sum shall be 5% (Five percent) of the contract price for Contract Performance Guarantee.
2. The date will be ninety (90) days after the end of Warranty Period as specified in the contract.

Note: The stamp paper of appropriate value shall be purchased in the name of issuing Bank.

Annexure-II

PROFORMA OF EXTENSION OF BANK GUARANTEE

Ref..... Date.....

To

……

Dear Sirs,

Sub: Extension of Bank Guarantee No.....for Rs..... favoring yourselves, expiring on.....on account of M/s.....in respect of Contract No.....dated..... (hereinafter called original Bank Guarantee).

At the request of M/s....., We.....Bank, branch office at.....and having its Head Office at.....do hereby extend our liability under the above mentioned Bank Guarantee No..... dated..... for a further period of.....(Years/Months) from.....to expire on..... Expect as provided above, all other terms and conditions of the original bank guarantee No.....dated.....shall remain unaltered and binding.

Please treat this as an integral part of the original bank guarantee to which it would be attached.

Yours Faithfully,

For.....
Manager/Agent/Accountant.....
Power of Attorney No.....
Dated.....

SEAL OF BANK

NOTE: The non-judicial stamp paper of appropriate value shall be purchased in the name of the bank who has issued the Bank Guarantee.

Annexure- III

TENDER REQUIREMENTS (TO BE FURNISHED)

Sl.no.	Description	Response (Yes / No)
1.	Sales Tax clearance/ HTPC	
2.	Authorized Dealership Certificate	
3.	ISI / BIS / ISO Certificate	
4.	Past experience	
5.	Whether agreed to all terms and conditions of the Contract (otherwise state conditions)	

Signature & Stamp of bidder

SECTION-IV

ERECTION CONDITIONS OF CONTRACT (ECC)

SECTION IV:
ERECTION CONDITION OF CONTRACT (ECC)

1.0 GENERAL:

1.1 The Contractor upon signing of the Contract shall, in addition to a Project Coordinator, nominate another responsible officer as his representative at Site suitably designated for the purpose of overall responsibility and co-ordination of the works to be performed at Site. Such person shall function from the Site Office of the Contractor during the pendency of Contract.

2.0 REGULATION OF LOCAL AUTHORITIES AND STATUTES:

2.1 The Contractor shall comply with all the rules and regulations of local authorities during the performance of his field activities.

2.2 All registration and statutory inspection fees, if any, in respect of his work pursuant to this Contract shall be to the account of the Contractor.

3.0 ACCESS TO SITE AND WORKS ON SITE:

3.0 Suitable access to the Site shall be afforded to the Contractor by the Owner/Employer in reasonable time.

3.1 In the execution of the works, no person other than the Contractor or his duly appointed representative, workmen, shall be allowed to do work on the Site, except by the special permission, in writing of the Engineer or his representative.

4.0 CONTRACTORS SITE OFFICE ESTABLISHMENT:

The Contractor shall establish a Site Office at the Site and keep posted an authorized representative for the purpose of the Contract. Any written order or instruction of the Engineer or his duly authorized representative shall be communicated to the said authorized resident representative of the Contractor and the same shall be deemed to have been communicated to the Contractor at his legal address.

5.0 DISCIPLINE OF WORKMEN:

The contractor shall adhere to the disciplinary procedure set by the Engineer in respect of his employees and workmen at Site. The Engineer shall be at liberty to object to the presence of any representative or employee of the Contractor at the Site, if in the opinion of the Engineer such employee has misconduct himself or is incompetent or negligent or otherwise undesirable and then the Contractor shall

remove such a person objected to and provide in his place a competent replacement.

6.0 PROTECTION OF WORK:

The Contractor shall have total responsibility for protecting his works till it is finally taken over by the Engineer. No claim will be entertained by the Purchaser/Employer or by the Engineer for any damage or loss to the Contractor's works and the Contractor shall be responsible for complete restoration of the damaged works to original conditions to comply with the specification and drawings, should any such damage to the contractor's works occur because of any other party not being under his supervision or control

7.0 FACILITIES TO BE PROVIDED BY THE PURCHASER/EMPLOYER:

7.1 **Space for storage of materials:**

The Engineer shall at his discretion and for the duration of execution of the Contract make available at site, space for storage of materials required for execution of the Contract. Any construction of temporary roads, offices, workshop etc. as per plan approved by the Engineer shall be done by the Contractor at his cost.

7.2 **Electricity:**

Power supply required for construction purpose shall be provided by the Purchase/Employer which shall be charges at the prevailing tariff of domestic category. Power supply requirement for all testing and commissioning of the equipment shall be free of cost. The supply may be withdrawn if it is used for the purposes other than for the work of the project and the Contractor shall not be entitled to any claim whatsoever on account of any such action taken by the Engineer.

7.3 **Water:**

Water supply required for execution of Work and other related work is the responsibility of the Contractor. Purchaser/Employer is not responsible for supply of water.

8.0 FACILITIES TO BE PROVIDED BY THE CONTRACTOR:

8.1 **Tools, Tackles and Scaffoldings:**

The Contractor shall provide all the construction equipments, tools, tackles and scaffoldings required for pre-assembly, erection, testing and commissioning of the equipment covered under the Contract. He shall submit a list of all such materials to the Engineer before the commencement of pre-assembly at Site. These tools

and tackles shall not be removed from the Site without the written permission of the Engineer.

9.0 SECURITY:

The contractor shall have total responsibility for all equipment and materials in his custody/stores, loose, semi-assembled and/or erected by him at Site. The contractor shall make suitable security arrangements including employment of security personnel to ensure the protection of all materials, equipment and works from theft, fire, pilferage and any other damages and loss. All materials of the contractor shall enter and leave the project site only with the written permission of the Engineer in the prescribed manner.

10.0 PRE-COMMISSIONING TRIALS AND INITIAL OPERATIONS:

The pre-commissioning trials and initial operations of the equipment furnished and erected by the contractor shall be the responsibility of the contractor as detailed in relevant clauses in Technical Specifications. The contractor shall provide, in addition, test instruments, calibrating devices, etc. and labour required for successful performance of these trials. If it is anticipated that the above test may prolong for a long time, the contractor's workmen required for the above test shall always be present at site during such trials.

11.0 CONSTRUCTION MANAGEMENT:

11.1 The field activities of the contractors working at Site will be coordinated by the Engineer and the Engineer's decision shall be final in resolving any disputes or conflicts between the contractor and other contractors and tradesmen of the Purchaser/Employer regarding scheduling and co-ordination of work. Such decision by the Engineer shall not be a cause for extra compensation or extension of time for the Contractor.

11.2 The Engineer may call for meeting either with individual contractors or with selected number of contractors and in such a case the contractor if called, will also attend such meetings.

11.3 Time is the essence of the Contract and the contractor shall be responsible for performance of his works in accordance with the specified construction schedule. If at any time, the contractor is falling behind the schedule, he shall take necessary action to make good for such delays be increasing his work force or by working overtime or otherwise accelerate the progress of the work to comply with the schedule and shall communicate such actions in writing to the Engineer, satisfying that his action will compensate for the delay. The contractor shall not be allowed any extra compensation for such action.

11.4 The Engineer shall, however, not be responsible for provision of additional labour and/or materials or supply or any other services to the contractor except for the coordination work between various contractors as set out earlier.

12.0 PROTECTION OF PROPERTY AND CONTRACTOR'S LIABILITY:

12.1 The Contractor shall be responsible for any damage resulting from his operations. He shall also be responsible for protection of all persons including members of public and employees of the Purchaser/Employer and the employees of other contractors and all public and private property including structures, building, other plants and equipment and utilities either above or below the ground.

12.2 The Contractor will ensure provision of necessary safety equipment such as barriers, sign-boards, warning lights and alarms, etc., to provide adequate protection to persons and property. The Contractors shall be responsible to give reasonable notice to the Engineer and the Purchaser/Employer of public or private property and utilities when such property and utilities are likely to get damaged or injured during the performance of his works and shall make all necessary arrangements with such Purchaser/Employers, related to removal and/or replacement or protection of such property and utilities.

13.0 WORK & SAFETY REGULATIONS:

13.1 The Contractor shall ensure proper safety of all the workmen, materials plant and equipment belonging to him or to Employer/Owner or to others, working at the Site. The Contractor shall also be responsible for provision of all safety notices and safety equipment required both by the relevant legislations and the Engineer as he may deem necessary.

13.2 The Contractor shall not interfere or disturb electric fuses, wiring and other electrical equipment belonging to the Purchaser/Employer or other contractor under any circumstances, whatsoever, unless expressly permitted in writing by Engineer to handle such fuses, wiring or electrical equipment.

13.3 No electric cable in use by the Contractor/Purchaser/Employer will be disturbed without prior permission. No weight of any description will be imposed on any cable and no ladder or similar equipment will rest against or attached to it.

13.4 No repair work shall be carried out on any live equipment. The equipment must be declared safe by the Engineer and a permit to work shall be issued by the Engineer before any repair work is carried out by the Contractor. While working on electric lines/equipment whether live or dead, suitable type and sufficient quantity of tools will have to be provided by Contractor to electricians/workmen/officers.

13.5 The Contractors shall employ necessary number of **qualified**, full time electricians/Electrical Supervisors to maintain his temporary electrical installations.

13.6 In case any accident occurs during the construction/erection or other associated activities undertaken by the Contractor thereby causing any minor or major or fatal injury to his employees due to any reason, whatsoever, it shall be the responsibility of the Contractor to promptly inform the same to the Engineer in prescribed form and also to all the authorities envisaged under the applicable laws.

13.7 It is mandatory for the Contractor to observe during the execution of the works, requirements of safety rules which would generally include but not limited to following:

Safety Rules:

a) Each employee shall be provided with initial indoctrination regarding safety by the Contractor, so as to enable him to conduct his work in a safe manner.

b) No employee shall be given a new assignment of work unfamiliar to him without proper introduction as to the hazards incident thereto, both to himself and his fellow employees.

c) Under no circumstances shall an employee hurry or take unnecessary chance when working under hazardous conditions.

d) Employees must not leave naked fires unattended. Smoking shall not be permitted around fire prone areas and adequate firefighting equipment shall be provided at crucial locations.

e) Employees under the influence of any intoxicating substance, even to the slightest degree shall not be permitted to remain at work.

f) There shall be a suitable arrangement at every work site for rendering prompt and sufficient first aid to the injured.

g) The staircases and passage ways shall be adequately lighted.

h) The employees when working around moving machinery must not be permitted to wear loose garments. Safety shoes are recommended when working in shops or places where materials or tools are likely to fall. Only experienced workers shall be permitted to go behind guard rails or to clean around energized or moving equipment.

i) The employees must use the standard protection equipment intended for each job. Each piece of equipment shall be inspected before and after it is used.

13.8 The Contractor shall follow and comply with all State Safety Rules, relevant provisions of applicable laws pertaining to the safety of workmen, employees, plant and equipment as may be prescribed from time to time without any demur, protest or contest or reservation. In case of any discrepancy between statutory requirement and State Safety Rules referred above, the later shall be binding on the Contractor unless the statutory provisions are more stringent.

13.9 If the Contractor fails in providing safe working environment as per State Safety Rules or continues the work even after being instructed to stop work by the Engineer as above, the Contractor shall promptly pay to Engineer on demand by the Purchaser/Employer compensation at the rate of Rs. 5000/- per day or part thereof till the instructions are so complied with and so certified by the Engineer. However, in case of accident taking place causing injury, to any individual, the provisions contained in para 13.10 shall also apply in addition to compensation mentioned in this para.

13.10 If the Contractor does not take all safety precautions and/or fails to comply with the Safety Rules as prescribed by the company or under the applicable law for the safety of the equipment and plant and for the safety of personnel and the Contractor does not prevent hazardous conditions which cause injury to his own employees or employees of other contractors, or Purchaser/Employer's Employees or any other person who are at site or adjacent thereto, the Contractors shall be responsible for payment of compensation to members as per the following schedule:

a	Fatal injury or accident causing death	Rs.1,00,000/- per person	This is applicable for death/injury to any person whosoever.
b	Major injuries or Accident causing 25% or more permanent disablement to workmen or employees	Rs.20,000/- per Person	

Permanent disablement shall have same meaning as indicated in Workmen's Compensation Act. The compensation mentioned above shall be in addition to the compensation payable to the workmen/employees under the relevant provisions of the Workmen's Compensation Act and rules framed hereunder or any other applicable laws as applicable from time to time. In case the Purchaser/Employer is made to pay such compensation then the Contractor is liable to reimburse the Purchaser/Employer such amount in addition to the compensation indicated above.

SECTION V:

TECHNICAL SPECIFICATIONS (TS)

TECHNICAL SPECIFICATION FOR PACKAGE A
(FOR DIFFERENT 8NOS 132/33KV SUBSTATIONS IN MIZORAM)

PART-I:

AIR- CONDITIONER SYSTEM OF SUB-STATIONS CONTROL ROOM

1.0 SCOPE:

a) This section of the specification covers supply, delivery at site, installation, testing and commisioning at sites to the satisfaction of Engineer for supply and commissioning of Air-conditioning equipment **(1.5 Ton, 5- Star rating of BEE).**

b) The scope of supply shall include all components/parts, accessories etc which are necessary for assembly, operation and maintenance of air-conditioning equipment even though not individually or specifically stated or enumerated.

c) The scope of work by the Contractor shall also include the following:

i) To supply at site all required materials in order to execute incidental works at site associated with air-conditioning plant/ system specified under this technical specification.

ii) Supply of commissioning spares as may be required during erection, start up and initial operation of all the units/ systems till successful completion of commissioning. The price for the commissioning spares shall be deemed to be included in the contract price for the offered systems.

iii) Supply of recommended spares for two years normal operation of the Air Conditioning systems with item-wise price break up. The price for the two years spares shall be deemed to be included in the contract price for the offered systems.

iv) Supply of special tools and tackles required for maintenance of the Air conditioning systems.

v) Minor civil work like breaking of wall /floor /roof to make duct / pipe / cable passage and adjustment to civil foundations as required for erection and finishing and making good of the same after erection work including painting thereof. Fixing of anchor fastener on wall and ceiling for duct and pipe support is included.

vi) Any other item /nature of work which is specifically not appearing in the technical specification but directly associated with the efficient working / completion of th e system covered in the specifications.

2.0 TENDERER`S REPONSIBILITY.

2.1 The Tenderer must note that completeness of the system for safe, smooth and trouble free operation is the sole responsibility of the Air-conditioning Contractor i.e., the successful Tenderer. With this objective in mind, the Tenderer should include all the items essential for the efficient operation of the systems and other items which are required to complete the erection and fool proof commissioning of air-conditioning systems in all respects. Whether the items are mentioned in the specification or not, all such items are treated/ considered to be included in the specifications.

2.2 Air-conditioning Contractor i.e., the successful Tenderer shall be solely responsible to provide all the above items at site without any extra cost implication to Client.

3.0 WORK BY PURCHASER.

3.1 Providing space for installation of Air Conditioning systems.

3.2 Except for the works mentioned above which are in the scope of the Purchaser, rest of all works directly or indirectly associated with completion of Air Conditioning systems shall be within the scope of Successful Tenderer.

4.0 QUANTITY OF AIR CONDITIONER TO BE INSTALLED:

The provisional quantity of Air Conditioner, 1.5 ton capacity to be installed at different 132kV substations are as below:

Sl No	Name of 132kV Sub-Stations	Provisional Qnty	Remarks
1.	Luangmual Substation	9Nos	*The quantity is provisional only and may be change/alter depending on site requirement on actual execution.*
2	Bukpui Substation	4Nos	
3.	Saitual Substation	4Nos	
4	Khawiva substation	4Nos	
5	Bairabi Substation	6Nos	
6	Khawzawl	4Nos	
7	Zuangtui Substation	6Nos	
8	Bawktlang substation	9Nos	
	TOTAL	46Nos	

5.0 INSTRUCTIONS TO TENDERER

5.1 General Instructions to Tenderer

5.2 The technical specification inclusive of instructions/special instructions to Tenderer shall be read along-with General Conditions of Contract (GCC)/Bid proposals for the supply and erection of part, machinery, and equipment.

5.3 All items of equipment in this specification shall be compete in all respect including mechanical and electrical equipment as specified including fasteners, bolts and nuts, gaskets, base frames, stiffeners, supports etc. and any item not covered in this specification but essential for superior design, operation and guaranteed performance of the system shall be included by the Tenderer.

5.4 The equipment shall be designed, manufactured and tested in accordance with the relevant standards prescribed by the Indian Standard Institution (Bureau of Indian Standard) wherever possible.

5.5 The equipment offered shall be suitable for continuous, smooth, efficient and trouble free services in the climate prevailing at various 132kV substation sites in Mizoram.

5.6 The Contractor shall take full responsibilities for the guaranteed operation and achieving rated out-put and performance of the systems offered as per relevant clause of specifications.

5.7 The Contractor has to indicate the final KW and frame size for the motors.

6.0 NOISE LEVEL

Noise level generated by the equipment supplied shall not exceed the permissible limit of 65-dB (A) within the air-conditioned served premises. In the A/C plant premises, maximum allowable noise level shall be 85-dB (A) at 1 m of equipment.

6.1 System of Units

Metric system of units shall be followed in design, manufacture and supply of all units. Name plates of equipment as well as operating/maintenance instructions shall be in English language.

7.0 MAINTENANCE AND GUARANTEE

i) The Contractor shall guarantee the satisfactory performance of the equipment/systems supplied by them all through the year.

ii) The Contractor shall arrange for attending fault replacement of components etc. during commissioning of the system till handing over of plant to the Client.

iii) The Contractor shall ensure the items supplied are properly packed to protect against transit damage, rusting etc. Packing list and despatch document shall be also included along with packing.

8.0 APPLICATION CODES AND STANDARDS

The execution of the work covered under this specification should conform to the latest Indian Standards specification where the same are available, or the reputed standards acceptable to the Owner.

The following reputed/ accepted publications, norms/ guidelines, standards, acts and rules etc. shall be followed for execution of the works:-

a) B.I.S Publications

b) Indian Electricity Rules and statutory requirements of Central Govt. and State

c) I.S.O Publications

d) VDI stipulation for vibration level

e) Occupational safety and health act (USA)

In the cases where norms/ standards/ guidelines other than those listed above are followed, the Contractor shall furnish a copy of such document (s) in support for the Purchaser's perusal and acceptance. Wherever a contradiction is found between different documents being followed, the decision of the Purchaser will be final and binding.

9.0 DESIGN CRITERIA

9.1 General Criteria

The selection/ design and manufacture of plant and equipment shall be suitable for the intended service and the atmospheric/environmental conditions prevailing at the plant site.

9.1.2 Design and selection of equipment shall be made with the following also in view:

a) Safety of personnel

b) Uninterrupted operation

c) Long life of equipment

d) Easy maintenance at low cost

e) Lowest operating cost

f) Spares shall be easily available

9.1.3 All working parts shall be arranged/located for convenience of operation, inspection, lubrication, ease of repair, replacement and maintenance of parts and sub-assemblies with minimum downtime, without dismantling other equipment/components/structures.

9.1.4 Components shall be designed to meet the specified mechanical properties like hardness, strength, rigidity, wear resistance, heat resistance, resistance to vibration, etc.

9.1.5 The equipment shall be suitable to operate satisfactorily under variations of load, pressure and climatic conditions as may occur during working.

9.1.6 All materials used shall be free from surface defects, rusts, cracks and deformations.

9.1.7 While designing the equipment and systems, the following maintenance aspects shall be taken into consideration: -

- Sufficient space for maintenance in the layout.
- Access to the equipment.
- Inspection and maintenance doors for equipment.

9.1.8 Air Conditioning systems shall be designed to operate continuously round the clock, twenty four (24) hours a day for all seasons of the year while maintaining the guaranteed indoor conditions.

10.0 DETAILS SPECIFICATION FOR 1. 5 TONS SPLIT TYPE CONDITIONER

10.1 Split type Air Conditioners conforming to IS: 1391 (Part-2)-1992 with Amendment No. 1 to 4 with Rotary compressor using HCFC Refrigerant (R-22) suitable for wall mounting.

10.2 Air Conditioners suitable for 230V, 50Hz single Phase AC supply shall be capable of performing the functions as cooling, dehumidifying, air circulation and filtering. The air conditioner shall be complete with automatic temperature control and cut-in and cut- out etc. for temperature range 16 to 30 degree C. The differential of the thermostat for cut-in and cut-out shall not be greater than +/- 1.75 degree C.

The Air Conditioner may either be provided with adjustable step less type mechanical thermostat or electrical thermostat as per IS: 1138:1985. The ECO friendly Air Conditioners shall have ECO MARK from Bureau of Indian Standard.

10.3 Outdoor unit of the Air Conditioners shall be fitted discharge cooled type rotary compressor operating on Refrigerant R-22 (or non CFC refrigerant R-410 in case of ECO friendly Split Type Air Conditioner) with suitable rated capacitor start electrical motor. It shall be equipped with overload protection and shall be mounted on resilient mounting quite operation.

10.4 Detail Specification and Requirement:

Sl No	Description	Requirement
1	Cooling Capacity Normal (Kcal/Hrs)	Better than 6000 Kcal/Hrs
2	Star Rating	5 Star
3	Power Supply (Indoor/Outdoor) V/Hz/Ph	220-240 V, 50Hz, Single Phase
4	Capacity in Ton	1.5

5	Refrigerant	R-22 / R-410
6	Noise Level(indoor) should be better than High	50dB(A) Mid - 45dB(A) Low - 42dB(A)
7	Servicing	Free servicing shall be provided for 12 month from the date of installation of AC units.
8	Fins (Condenser)	To be specified by the Tenderer
9	Fins (Evaporator)	To be specified by the Tenderer
10	Connecting Tube	Copper Tube
11	Connecting Tube & Drain Tube length (Minimum should be 06 meters)	To be specified by the Tenderer
12	Connecting Tube Dimension	To be specified by the Tenderer
13	Power Supply Cable (Minimum should be 06 Metre)	To be specified by the Tenderer
14	Power supply Cable Rating	Indoor & outdoor unit should be specified by Tenderer
15	Remote	More than 10 meter remote control
16	Indoor unit & Outdoor unit Dimension	To be specified by the Tenderer
17	Galvanised / High quality Plastic outdoor unit Anti Corrosion	To be specified by the Tenderer
18	Flat Panel for easy cleaning, washable plastic filter and Horizontal auto lower	To be specified by the Tenderer
19	**INSTALLATION**: - The installation work at site shall include the following works: i)Mounting/Fitting of indoor and outdoor unit including brackets at the respective locations as per instruction of Engineer-in-Charge. ii) Laying refrigerant pipe of 06 meter/ more length and connecting the both units after drilling hole in the wall,if required the thickness of copper tubing should not be less than 0.70mm. iii) Insulating the suction pipe with expanded polyethylene foam (thermocole) of 5mm thick tubing. iv) Laying 15mm Drain pipe of 6 meter/ more length to drain out the condensate water being formed in the indoor unit. v)Leak testing of the entire system.	To be specified by the Tenderer

	vi)Charging of Refrigerant gas in theunit. vii) Suitable electrical wiring between indoor and outdoor unit and from indoor unit to 06 meter or up to Switch.Switches/ Sockets/Plugs are not included in the scope of supply.	
20	For stabilizer Voltage range - 120 Volt to 300Volt Rated KVA - 5	If in-built not required, otherwise should be specified and provided.

11.0 DOCUMENTS TO BE SUBMITTED AFTER COMMISSIONING

After supply, erection, testing and commissioning of the air-conditioning units, the bidder shall submit the following documents in triplicate:

a) Drawing of the air-conditioning system.
b) Instruction manual for operation and maintenance of the air-conditioning system.
c) Guarantee certificate as per relevant Clause of General Condition of Contract.

PART –II

TECHNICAL SPECIFICATION OF SUB-STATION LIGHTING

1.0 SCOPE :

a) The specification covers supply, delivery, erection, and commissioning of illumination system for switchyard, all rooms of control room building and its surroundings, the approach roads from main gate within the switchyard campus, DG set room, etc at various 132/33kV substations in Mizoram; namely i) Luangmual ii) Zuangtui iii) Bawktlang iv) Bairabi v) Saitual vi) Bukpui vii) Khawiva and viii) Khawzawl.

b) This also includes supply, erection and commissioning of all associated parts and accessories of lighting fixtures complete with lamps, complete fitting and accessories.

c) The scope also include conduit internal wirings by appropriate size of copper wires including all accessories; switchboard, switches etc for these

lighting fixtures ***as per items and quantity in provisional estimate*** and these wirings will go along with the DC emergency lighting ,Air conditioning system and switchyard lighting fixtures etc.

d) There shall be provision for DC emergency lighting system in strategic locations including corridors, control rooms, battery charger room, , toilets, so that the operating personnel can safely find their way even during emergency due to total AC failure. These lights will be normally 'OFF' and will be switched 'ON' automatically when under voltage or total AC failure occurs in the main AC system.

e) **The Break-up of works for Substation lighting shall consist of the followings:**

i) Internal wiring of control room with AC distribution board and 32Amp AC contactor 3nos N/O *(Open the auxiliary contacts when supply coil is energized)* the coil supply of which shall be connected to AC mains and 110V DC supply from DCDB shall be connected to the auxiliary contacts routed to the DC emergency lighting fixtures.

ii) Control room lighting with AC LED light fixtures and DC LED light fixtures as per quantity mentioned below for emergency lighting.

iii) Switchyard lighting as per quantity mentioned below with necessary supports and structures by steel tabular poles. Wiring or laying PVC insulated wires/ cables from lighting panel/AC DB to each outdoor lighting fixture with necessary fittings etc shall also be included.

2.0 STANDARDS :

a) The equipments and materials to be furnished under this specification shall be designed, manufactured and tested in accordance with the latest revision of relevant Indian Standards, IS : 3646

b) The electrical installations shall meet the requirement of Indian Electricity Act - 1910 and Indian Electricity Rules 1956 as amended up-to-date.

c) IEC: 364-5-54, Electrical Installation of buildings.

3.0 DESIGN CRITERIA:

a) A.C. lights will be connected to A.C. lighting panels/63 Amp, 4 Pole MCB. There shall be main lighting system for full illumination in different area under normal AC supply condition and that will be connected to main lighting distribution boards (MLDB).

b) ***A.C. Emergency lighting*** – There will be a changeover switch to change over to DG set power supply in time of Grid failure which is also incorporated in the provisional estimate.

c) ***D.C. Emergency lighting***--There shall be minimum lighting system in the strategic locations including battery charger room, DG set buildings, control room building and other important places during total failure of AC supply with the help of 110 V +/- 10% DC supply from battery/DCDB for safe movement of operating personnel. These lights will be normally 'OFF' and will be switched 'ON' automatically when under voltage occurs in the AC main lighting distribution board.

d) The main lighting system shall operate through a separate lighting distribution board/12 way MCB Distribution board 63amp, which shall receive power from the Sub-station L.T A.C switchboard installed in the control room building.

e) The lighting distribution board shall be designed for operation in a 415V, 3 phase, 4 wire, 50 Hz. neutral grounded system with a fault level of 15 KA at 415V. The emergency lighting system operating from 110 V +/- 10% DC system shall be automatically placed into service in the event of loss of AC main supply.

4.0 The successful bidder shall carried out supply , fittings and fixing of L.E.D lighting inside control room building and switchyard with all the associated internal wirings inside control room and wiring for switchyard lighting etc as per the required with the specified type and quantity.

5.0 The following Indoor Lighting of control room building are required for each substation of the 8 nos 132/33kV in Mizoram.

Sl No	Description of LED Ceiling Light	Where to be Fitted	Qnty
1	18 Watts LED AC Down Light	Main Room of Control Room.	8nos
2	18 Watts LED AC Down Light	Bathroom, Battery Room and DG set Room 2no each	6nos
3	5W LED Bulb with Holder	Main Room-4nos	7nos

	suitable for 110V DC for Emergency Lighting System	Bathroom-1no Battery Room-1no DG Set Room-1no	

6.0 The following Outdoor Lighting of substation switchyards and approach road near to switchyards are required for each substation of the 8 nos 132/33kV in Mizoram.

Sl No	Description of LED streetlight	Where to be fitted	Qnty
1	100 Watts LED Streetlight with Complete Fittings and Fixings.	Switchyard	14Nos
2.	120Watts LED Flood Lights with Complete Fittings and Fixings.	Approach Road to Switchyard-4 Nos, Main Gate-1 No, and Switchyard-2 Nos.	7nos

7.0 LIGHTING FIXTURE FOR CONTROL ROOM LIGHTING:

a) The lighting fixtures shall be designed for use in 230 V A.C. ± 10% V, 50Hz, AC system with frequency variation ± 5% and combined voltage and frequency variation of ± 10%.
b) The emergency lighting fixtures shall be designed for use in 110 V ±10% DC system.
c) Temperature rise of different components shall be limited to the specified value as per relevant standard over an ambient temperature of 40 deg C. All equipments and accessories shall be suitable for continuous operation.
d) All lighting fixtures complete with lamps, required fixtures and accessories shall be within the scope of the bidder.
e) Each lighting fixture shall be provided with an earthing terminal suitable for connection to 16 SWG GI earthing conductors.
f) All fixtures shall be designed for minimum glare. The finish of the fixture shall be such that no bright spots are produced either by direct light source or by reflection.

8.0 LAMPS :

a) LED lamp shall be fitted inside main control room, toilet, battery room,

and DG set room.

b) LED streetlight with all fittings and accessories shall be use for switchyard and LED flood light with all fittings and accessories etc shall be used for approach road, main gate lighting and some portion of switchyard.

9.0 LIGHTING POLES:

9.1 Lighting Poles for Flood Light and Street Light shall be modified version of Steel Tubular Poles of type SP-10 and SP-01 respectively with the following modifications:

a) The steel pole shall be hot dip galvanized as per IS 2629/IS 2633/IS 4759 standards with average coating of 80 micron and the galvanizing shall be done in single dipping.

b) The pole shall be strengthen 500mm from the bottom by welding four nos 6mm tapered plate as shown in the tender drawing Sheet- I & Sheet II which shall be welded at the rigid circular base plate of 220X12mm.

c) The circular base plate of 220X12mm shall be fillet welded to the pole at two locations i.e, from inside and outside.

d) The pole shall be bolted on a pre-cast RCC foundation as per the drawing with four set of 20mm foundation bolts.

e) The pole shall have door of approximate 300mm length at the elevation of 1000mm from the base plate. The door shall be vandal resistance and shall be weather proof to ensure safety of inside connections .The door shall be flush with the exterior surface and shall have suitable locking arrangement. The pole shall be adequately strengthened at the location of door to compensate for the loss in section.

f) Lighting poles shall be complete with fixing bracket as shown in the drawing by mounting suitable bracket at 45^0 inclination at the top of the pole for fixing the luminaires.

g) The galvanized junction box shall be conforming to IP: 55 and provided with HRC fuse mantled fuse carrier and fuse base assembly. The terminal shall be stud type and suitable for 2nos 10 sq.mm cable.

h) Wiring from junction box at the bottom of the pole to the fixture at the top of the pole shall be done through PVC 2.5 sq.mm. twin core Cu, wire.

9.2 The spacing/distance between two poles and location of Flood Light and Street

Light shall depend on the area covers by each and as per the direction and instruction of the Engineer in charge.

10.0 LIGHTING WIRES & CABLES

10.1 The wiring used for lighting shall be of 1100V grade, PVC insulated cable of standard products of reputed manufacturers. The conductor sizes for wires used beyond lighting panels (3-ph 63A, 4 poles MCB) in control room upto main junction box shall be 8(eight) core 6mm^2 insulated copper wires which shall be laid along the cable trenches as far as practicable and shall be buried elsewhere. Interconnection between junction box of the individual pole and lighting fixures shall be done in loop-in loop out system with 1.5sqmm insulated copper wires.Two core each will used for Flood light and Street light and balance four core as spares.

10.2 Lighting fixtures for Streetlight/Floodlights

Flood lights/streetlights shall be mounted on steel base facing the tentative direction .Fixing holes shall be provided with slot to turn the fixture by approximately 5 degrees on both sides. Bolts shall be finally tightened with spring washer. The Contractor shall supply and install the steel base,channels, angles etc. for fixing the street/flood light on the streetlight Poles. Terminal connection to the street/ flood light shall be through flexible conduits, and these flexible conduits shall be included in the installation rate of fixture itself. The scope of Contractor shall include the supply of necessary brackets and sundry material, for installation of lighting fixtures

11.0 GROUNDING

All junction boxes, fixtures, conduits etc. shall be grounded in compliance with the provision of I.E. Rules Ground connections shall be made from nearest available station ground grid. All connections to ground grid shall be done by arc welding. .All lighting poles shall be earthed as per standard. 16 SWG GI wire shall be taken up to junction box from the lighting fixture.

12.0 GUARANTEE:

Electrical characteristics shall be guaranteed by the bidder. In case of failure of materials to meet the guarantee, P&E Deptt .Mizoram shall have right to reject the material.

13.0 TEST :

All tests as required for successful commissioning as well as per relevant IS's shall be carried out by the Contractor at site in presence of the site Engineers of P&E Deptt Mizoram. P&E Deptt Mizoram reserves the right to reject any equipment / auxiliaries if not found to comply with the requirement of relevant IS/Test and specification.

TECHNICAL SPECIFICATION FOR PACKAGE B to I

(FOR DIFFERENT 8NOS 132/33KV SUBSTATIONS IN MIZORAM)

PART-I: IMPROVEMENT OF EARTHING SYSTEM.

PART II: PCC BASE SWITCHYARD AND STONE AGGREGATE GRAVELLING

PART III: FIRE PROTECTION WALLS/ BARRIERS IN EXISTING POWER SUBSTATIONS

PART –I

TECHNICAL SPECIFICATION FOR IMPROVEMENT OF EARTHING SYSTEM

(Improvement of Existing Sub-Station Earthings)

1. SCOPE OF WORK:

1.1 Typical installations of pipe earth electrode is shown in drawing of pipe earthing vide, Sheet III of tender drawing. Earth pit should be 1.5mtr x1.5mtrx 2.8mtr (Length x Breadth x Depth) below the top of earth pipe. There will be a provision of chamber of area 0.3x0.3 with RCC top cover for access of watering to the earth-pit during dry season/period. Typical installation of Rod electrode is shown in the drawing of rod earthing vide, Sheet IV of tender drawing. Work should be executed as per drawing and technical specification.

1.2 This works covers supply, erection and testing of additional earthings to improve the existing earthing system of different 132kV substation within Mizoram by making earth pits using earth electrodes of perforated 40 mm dia. hot dip G.I. pipe (Medium duty) and 32 mm dia mild steel rod of length 2.5 mtr. and

constructed in a manner as specified in sec 1.1 above for pipe electrode. In addition to these G.I pipe and MS rod earthing, an earth mesh of MS Flat 50x8 mm buried 0.6mtr depth and span 3 mtr apart and welded to the new earth pipe and MS rod earthing and also connected to the existing earthmesh. The detail drawings of earthmesh by GI Flat is shown under ***Sheet V*** of tender drawing. Work shall be done as per the drawings . These G.I electrodes , MS rods earthings and MS Flat earthmesh the quantity which are different for respective Substations shall be placed at convenient locations near to existing earth mesh and connected to it by 50 X 8 mm size MS. flat to make the existing earthing system healthier . All joints of MS. flat shall be welded and painted with anti-corrosive paint.

1.3 In the G.I pipe earthing,the perforated pipe shall be buried in earth/soil mixed with alternate layer of charcoal and bentonite powder as shown in the drawing .

1.4 The MS rod earthing should be such that a 32mm dia MS rod of length 2.5Mtr fabricated for earth electrode should be buried by hammering to the required depth.

1.5 The earth mesh of 50 X 8mm MS flat shall be connected with 3 mtr. long 40 mm.dia. Perforated GI. Pipe and 32 mm dia MS Rod of length 2.5mtr serving as earth electrodes and also with the existing earth mesh by welding process. The G.I pipe earth electrodes shall suitably be constructed with layers of bentonite powder. The earthing shall be carried out as designed drawings .

1.6 Quantity and requirements of earthing materials with activities for improvement/strengthening of existing earthing system in different 132/33kV substations in Mizoram are as below:

Sl No	Items	Quantity required							
		Luangmual (Package-D)	Zuangtui (Package-E)	Bawktlang (Package-C)	Bairabi (Package-B)	Saitual (Package-F)	Khawzawl (Package-G)	Bukpui (Package-H)	Khawiva (Package-I)

1	Rod electrode earthing including earthworks;supply and burying of ms rod 32mm dia. of depth 2.5mtr	28	32	28	18	33	18	32	32
2	Pipe electrode earthing including earthworks supply and burying of GI pipe of 40mm dia. with earth resistance reducing materials such as Bentonite Powder and charcoal buried with GI pipe in alternate layer with mud/soil.	12	8	12	12	4	4	8	8
3	MS Flat earthing by supply and burying of Ms Flat 50x8mm 0.6M deep forming a network of earth-mesh	1Lot	1Lot	1Lot	1Lot	1Lot	1Lot	1Lot	1Lot

PART-II

TECHNICAL SPECIFICATION FOR PCC BASE SWITCHYARD AND STONE AGGREGATE GRAVELLING OF SUBSTATION

1.0 SCOPE OF WORK:

1.1 P&E Department Mizoram is intending to replaced the existing and now degraded gravelling in various 132kV substations in Mizoram to improve the step and touch potential as well as to enable easy and convenient pacing over the gravelling by spreading stone aggregates above Plain Cement Concrete which is mentioned here as PCC base switchyard gravelling system.

1.2 The Contractor shall provide all labour, equipment and materials required to complete the work in accordance with the drawings, specifications and direction of the Employer in line with provisional estimate.

1.3 The Plain Cement Concrete layer shall cover the switchyard, the area of which extends up to 2 meter from the steel structures. Stone spreading over Plain Cement Concrete layer shall be done under the present scope of work.

2.0 General Requirement:

2.1 The material required for site surfacing/stone filling shall be free from all types of organic materials and shall be of standard quality, and as approved by the Employer.

2.2 The material to be used for stone spreading /site surfacing shall be stone aggregate of 40mm nominal size (ungraded single size) conforming to Table 2 of IS:383 – 1970. Hardness, flakiness shall be as required for wearing courses are given below:

(a) Sieve Analysis limits (Gradation): (IS : 383 – Table – 2)
Sieve Size % passing by weight
63mm 100
40mm 85-100
20mm 0-20
10mm 0-5
"One Test" shall be conducted for every 500 Cum.

(b) Hardness :
Abrasion value (IS:2386 Part-IV) – not more than 40%
Impact value (IS: 2386 Part-IV) – not more than 30% and frequency shall be one test per 500 Cum with a minimum of one test per source.

(c) Flakiness Index:
One test shall be conducted for every 500 Cum of aggregate as per IS: 2386 Part – I and maximum value is 25%.

2.3 The stone aggregates 40mm nominal size may be obtained from the following Quarries or any other Quarries approved by Quality Control Division Mizoram PWD in different parts of Mizoram as below:

Sl no.	Location of Works	Name of nearby Quarries
(i)	Bairabi Sub-Station	Ramzaua Quarry, Kawnpui
(ii)	Bawktlang Sub-Station	Ramzaua Quarry, Kawnpui
(iii)	Luangmual Sub-Station	Hlimen,Chite,Bungbangla Quarry

(iv)	Zuangtui Sub-Station	Hlimen,Chite,Bungbangla Quarry
(v)	Bukpui Sub-Station	Sentezel,Zawngek Kham Quarry.
(vi)	Khawiva Sub-Station	Murray Quarry,Lungpuizawl
(vii)	Saitual Sub-Station	KV Stone 43km from Seling.
(viii)	Khawzawl Sub-Station	Lalthanpuii Quarry,Chalkawr.

2.4 **The above test shall be conducted at PWD Central Laboratory; Zuangtui Aizawl.**

2.5 Removing of existing gravelling, giving anti-weed treatment, PCC concreting and placing of stone aggregates over the concrete shall be done in such a manner so as to cause least or no power interruption. Sectionalizing of areas of the works to be covered in a day may be made and execute them accordingly. No step or touch potential should be degraded to the extend for which it possess danger for the operators or the workers in the switchyard while the above mentioned works are done.

2.6 In areas that are considered by the Engineer-in-Charge to be too congested with foundations and structures for proper rolling of the site surfacing material by normal rolling equipments, the material shall be compacted by hand rammer. Due care shall be exercised so as not to damage any foundation structures or equipment during rolling / compaction.

2.7 The sub grade shall be in moist condition at the time the cement concrete is placed. If necessary, it should be saturated with water for not less than 6 hours but not exceeding 20 hours before placing of cement concrete. If it becomes dry prior to the actual placing of cement concrete, it shall be sprinkled with water and it shall be ensured that no pools of water or soft patches are formed on the surface.

2.8 Over the prepared sub grade, 75mm thick base layer of Plain Cement Concrete in 1:4:8 (1 cement: 4 fine/coarse sand: 8 stone aggregate 40mm nominal size) shall be provided into discrete blocks, the area of each block shall form an area of 2.0x2.0 sq meter (***the size may vary depending on the existing structure foundations***) with a slope of 1:100 for easy drainage of water to the un-concreted earth in between the nearby block/blocks. These edge lines about 25mm wide, separating each concrete block shall act as a medium for seepage of water into the earth/soil.The concrete area shall be excluding roads, drains, cable trenches as per instruction of site engineer of P&E Department and based on provisional estimate prepared by P&E Department Mizoram.

2.9 **A final layer of 100mm thickness of stone aggregate of 40mm nominal size (conforming to clause 2.2) shall be spread uniformly over cement concrete plaster layer blocks including un-concreted narrow portion of edge line (25mm) separating each blocks.** This stone spreading should be done only after curing is completed. No stone from existing gravelling should be re-used failing which no measurement for the re used stone will be taken and hence no payment shall be made for the stone from the earlier gravelling.

2.10 Bordering by half brick masonry 4 inches high shall be made all along the outer perimeter of switchyard cement concrete and also along the cable trenches to prevent scattering of stone aggregates at the edges.

2.11 The area of the Sub-Station switchyard to be covered by PCC Base, Aggregate Gravelling/Stone Spreading and Improvement of Existing Earthing System of different 132kV Sub-Stations in Mizoram are as tabulated below:

Sl No	Name of Substation	Area (Sq.m)
1.	Luangmual	3835
2.	Zuangtui	2710
3	Bawktlang	5672
4	Bairabi	3600
5	Bukpui	4600
6	Khawiva	4500
7	Saitual	4000
8	Khawzawl	2960

2.14. Drawing showing the stone spreading for 132 kV sub station is attached under Sheet VI of the tender drawing.

PART –III

TECHNICAL SPECIFICATION OF FIRE PROTECTION WALLS/ BARRIERS IN EXISTING POWER SUBSTATIONS

SCOPE OF WORK

1.0 As it is very much essential that fire, as and when broke out, may be isolated so as to avoid spreading of fire to the nearby equipments in the substations. Hence, fire barrier/fire protection walls between two power transformers are proposed in different 132kV substations in Mizoram.

1.1 Fire Protection Wall should be 350 mm thick, with dimension of 3.0 MX 3.0 M or as per requirement at site for walls between 132/33kV Transformers and should be 250 thick with dimension of 2.5Mx2.5M for wall between 33/11kV Transformers. The wall should be constructed with R.C.C. (M20 grade) in between two Power Transformers including TMT Bar (steel). Plastering, centering & shuttering etc. should also be done as per direction of Engineer-in-charge.

1.2 Fire Protection Wall should be at a distance of about 2.0 M from the Equipment / Transformer or as per convenient distance according to site requirement and arrangement of Power Transformers in different 132kV Substation in Mizoram.

1.3 Fire Protection Wall should be designed so as to enable to withstand fire at least 3 hours duration.

1.4 The Fire Protection Walls should be painted with post office red colour (shade 538 of IS -5).

1.5 ***The Fire Protection Walls for 132/33kV Transformer and 33/11kV Transformer should be constructed in line with tender drawing furnished under Sheet VII & Sheet VIII respectively.***

1.6 Different 132kV substations in Mizoram where Fire Protection Walls are proposed is tabulated below:

Sl.No	Name of Sub-Station	132/33kV Transformer	33/11kV Transformer
1.	Luangmual	0	1
2	Zuangtui	1	0
3	Bawktlang	0	1
4	Bairabi	0	0
5	Bukpui	1	1
6	Khawiva	0	0
7	Saitual	0	0
8	Khawzawl	0	0
TOTAL		**2 Nos**	**3 Nos**

SECTION VI:

BID PROPOSAL SHEETS (BPS)/ PRICE SCHEDULES

CONTENTS

PART – I
BID FORMS

Bid Form (Bid Envelope)

Bid Proposal Ref. No.: ..... Date: ……..

To

The Executive Engineer,
Meter Relay and Testing Division
Power & Electricity Department,
Mizoram, Aizawl - 796001

Subject: R&U of Protection Systems of 132kV Sub Stations in Mizoram under PSDF

Sir,

1.0 Having examined the Bidding Documents ..... dated…….. the receipt of which is hereby acknowledged, I/we the undersigned, offer to design, manufacture, test, deliver, install and commission (including carrying out trial operation, performance & Guarantee Test as per the provision of Technical Specification) the facilities under the above-named package in full conformity with the said Bidding Documents. We hereby submit our Bid, in envelope 1 and envelope 2.

2.0 Attachments to the Bid Form (Bid Envelope) : In line with the requirement of the Bidding Documents, we enclose herewith the following attachments:

(a) **Attachment 1**: Bid Security, in a separate envelope, in the form of Bank Draft/ Pay Order/Banks certified Cheque for a sum of ..... …….. (Details of Earnest Money shall be mentioned in a separate sheet showing the items to which bid is submitted)

(b) **Attachment 2**: Manufacturer's Authorisation Forms - registered/notarized

(c) **Attachment 3**:Work Completion Schedule

(d) **Attachment 4**: Guarantee Declaration.

(e) **Attachment 5**:Declaration for tax exemptions, reductions, allowances or benefits

(f) **Attachment 6**: Declaration

3.0 We are aware that the Price Schedules do not generally give a full description of the Work to be performed under each item and we shall be deemed to have read the Technical Specifications and other sections of the Bidding Documents to ascertain the full scope of Work included in each item while filling-in the rates

and prices in price schedule.

3.1 We declare that prices quoted by us in the Price Schedules shall be fixed and firm during the execution of Contract.

4.0 We confirm that except as otherwise specifically provided our bid prices quoted includes all taxes, duties, levies and other charges which may be assessed on us by all municipal, state or national government authorities in and outside India.

4.1 Service Tax, if applicable, for the services to be rendered by us, the same is included in our bid price quoted.

5.0 We have read all the provisions and clauses in the GCC, SCC, ECC & GTC and confirm that they were acceptable to us. Further we understand that deviation taken in any of the above clauses by us may make our bid non-responsive as per provision of bidding documents and be rejected by you.

6.0 We undertake, if our bid is accepted, to commence the work immediately upon your Notification of Award to us, and to achieve the delivery of goods and related services within the time stated in the Bidding Documents.

7.0 If our bid is accepted, we undertake to provide a Performance Security(ies) in the form and amounts, and within the times specified in the Bidding Documents.

8.0 We agree to abide by this bid for a period of twelve (12) months from the date fixed for opening of bids, and it shall remain binding upon us and may be accepted by you at any time before the expiration of that period.

9.0 Until a formal Contract is prepared and executed between us, this bid, together with your written acceptance thereof in the form of your Notification of Award shall constitute a binding contract between us.

10.0 We understand that you are not bound to accept the lowest or any bid you may receive.

11.0 We, hereby, declare that only the persons or firms interested in this proposal as principals are named here and that no other persons or firms other than those mentioned herein have any interest in this proposal or in the Contract to be entered into, if the award is made on us, that this proposal is made without any connection with any other person, firm or party likewise submitting a proposal is in all respects for and in good faith, without collusion or fraud.

Yours Sincerely,

For and on behalf of the [Name of the Bidder]
(Signature) .....
(Printed Name) .....
(Designation) .....
(Common Seal) .....
.Business Address:

Attachment-2

(Manufacturer's Authorization Form)
(On Manufacturers Letterhead)

To:

The Executive Engineer,
Meter Relay and Testing Division
Power & Electricity Department,

Dear Sir,

WE [*Insert: name of Manufacturer*] who are established and reputable manufacturers of [*insert" name and/or description of the plant & equipment*] having production facilities at [*insert: address of factory*] do hereby authorize [*insert: name & address of Bidder*] (hereinafter, the "Bidder") to submit a bid, and subsequently negotiate and sign the Contract with you against NIT [*Insert: title and reference number of NIT*] including the above plant & equipment or other goods produced by us.

We hereby extend our full guarantee and warranty for the above specified plant & equipment materials or other goods offered supporting the supply, installation and achieving of Operational Acceptance of the plant by the Bidder against these Bidding Documents, and duly authorize said Bidder to act on our behalf in fulfilling these guarantee and warranty obligations. We also hereby declare that we and ...., [*Insert: name of the Bidder*] have entered into a formal relationship in which, during the duration of the Contract (including warranty / defects liability) we, the Manufacturer or Producer, will make our technical and engineering staff fully available to the technical and engineering staff of the successful Bidder to assist that Bidder, on a reasonable and best effort basis, in the performance of all its obligations to the Purchaser under the Contract.

For and on behalf of the Manufacturer
Signed:

Date:

In the capacity of *[Insert.' title of position or other appropriate designation*] and this should be signed by a person having the power of attorney to legal bind the manufacturer.

Date: ....
Place: ....

(Signature) .....
(Printed Name)..... .... ..
Designation) ....
(Common Seal)

Note 1. The letter of Undertaking should be on the letterhead of the Manufacturer and should be signed by a person competent and having Power of Attorney to legally bind the Manufacturer. It shall be included by the bidder in its bids

Attachment-3

(Work Completion Schedule)

Bidder's Name and Address:

To:

The Executive Engineer,
Meter Relay and Testing Division
Power & Electricity Department,
Mizoram, Aizawl - 796001

Dear Sir,

We hereby declare that the following Work Completion Schedule shall be followed by us in furnishing and installation of the subject Package for the period commencing from the effective date of Contract to us:

Sl. No.	Description of work	Period in months from the effective date of Contract
1	Procurement of equipments components & assembly a) commencement b) completion	
2	Establishment of site office Installation at Site a) commencement b) completion	
3	Erection a) commencement b) completion	

Date: ....

Place: ....

(Signature)
.....
(Printed Name).....
(Designation).....
(Common Seal).....

Note: Bidders to enclose a detailed network covering all the activities to be undertaken for completion of the project indicating key dates for various milestones for each work.

Attachment-4

(Guarantee Declaration)

Bidder's Name and Address:

To:

The Executive Engineer,
Meter Relay and Testing Division
Power & Electricity Department,
Mizoram, Aizawl - 796001

Dear Sir,

We hereby declare that this Attachment of "Guarantee Declaration" is furnished by us in First Envelope of bid.

Date: ....
Place: ....

(Signature) ....
(Printed Name) .....
(Designation) .....
(Common Seal) .....

Attachment- 5

(Declaration for tax exemptions, reductions, allowances or benefits)

Bidder's Name and Address:

To:

The Executive Engineer,
Meter Relay and Testing Division
Power & Electricity Department,
Mizoram, Aizawl - 796001

Dear Sirs,

We confirm that we are solely responsible for obtaining following tax exemptions, reductions, allowances or benefits in respect of supplies under the subject package, in case of award. We further confirm that we have considered the same in our bid thereby passing on the benefit to _____ (Name of Employer/Purchaser) while quoting our prices. In case of our failure to receive such benefits, partly or fully, for any reason whatsoever, the Employer will not compensate us.

We are furnishing the following information required by the Employer for issue of requisite certificate if and as permitted in terms of the applicable Govt. of India policies/procedures (in case of award):

Applicable Act, Notification No. and Clause Ref. No.	Sl.No.	Description of item on which applicable	Country of origin	Remarks, if any

(The requirements listed above are as per current Notification of Govt. of India indicated above. These may be modified, if necessary, in terms of the Notifications.)

Date: ....
Place: ....

Signature) .....
(Printed Name) .....
(Designation) .....
(Common Seal) .....

Attachment-6

(Declaration)

Bidder's Name and Address:

To:

The Executive Engineer,
Meter Relay and Testing Division
Power & Electricity Department,
Mizoram, Aizawl - 796001

Dear Sir,

We confirm that Bid Forms and Price Schedules in the Second Envelope have been filled up by us as per the provisions of the Instruction to Bidders. Further, we have noted that the same shall be evaluated as per the provisions of the Bidding Documents.

Further, we hereby confirm that:

(i) there are no discrepancies/inconsistencies and deviations/omissions/reservations to the Bidding Documents, in the Second Envelope bid;
(ii) the description of items and the unit thereof in the price schedules in the Second Envelope bid are in conformity with those indicated in the price schedule of the Bidding Documents without any deviation to the specified scope of work.

We also confirm that in case any discrepancies/ inconsistencies and deviations/omissions/reservations, as referred to in para (i) and (ii) above, is observed in the Second Envelope, the same shall be deemed as withdrawn/rectified without any financial implication, whatsoever to _____(Name of Employer/purchaser).

Date:..... .... ..
Place: .....

(Signature) : .....
(Printed Name): _____
(Common Seal): _____

PART-II
PRICE SCHEDULE

PACKAGE-A
FOR 8(EIGHT) 132kV SUB-STATION

S/No	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
A	**CONTROL ROOM LIGHTING SYSTEM:**				
	(i) 20W LED Down Light				
1	20W LED Down Light (14 Nos per sub-station)	No	112		
2	**LIGHT POINT,CEILING FAN POINT,ETC (MODULAR TYPE)** Wiring in loop system with PVC wire sheathed standard copper conductor as per IS:694 and HFFR 1100V graded 1.5 Sqmm copper running inside PVC casing and capping (Gr-I) 20mm dia surface on the wall/ceiling as per convenience including junction box having numbers of ways from control switch to the light point as required.				
	Light point:Very Short Point (modular)	Per point	40		
	Light point:Short Point (modular)	Per point	40		
	Light point:Medium Point (modular)	Per point	32		
3	**SUPPLY AND FIXING OF SWITCHBOARD(MODULAR TYPE)** Supplying and fixing of Modular switch board of the following sizes/modules on surface including PVC boxes, modular plate and necessary switches,plug/socket and fan regulators etc with necessary painting if necessary:				
	Three modules Switch Board(Modular)				
	3S	each	16		
	Four modules Switch Board(Modular)				
	4S	each	8		
	2S+1Soc	each	16		
4	**LIGHTING FIXTURES(SURFACE/RECESS)**				

	Supplying,fitting and fixing Batten Holder including connection etc,., as required.	each	112		
5	**DISTRIBUTION BOARD** **MCB DISTRIBUTION BOARD** Supplying,fitting & fixing of 4-ways MCB DB single door in steel sheet,phosphatised powder painted MCB DBs with Bus Bar etc conforms to IS:13032,IS:8623,BS:5486 240Volts 50Hz etc.,				
	4-ways MCB DB SP&N DD acrylic door	each	8		
	Sub-Total of A(i):				
	(ii) 5W LED Bulb for 110VDC for emergency light.				
1	5W LED Down Light (7 Nos per sub-station)	No	56		
2	Wiring in loop system with PVC wire sheathed standard copper conductor as per IS:694 and HFFR 1100V graded 1.5 Sqmm copper running inside PVC casing and capping (Gr-I) 20mm dia surface on the wall/ceiling as per convenience including junction box having numbers of ways from control switch to the light point as required.				
	Light point:Very Short Point (modular)	**Per point**	16		
	Light point:Short Point (modular)	**Per point**	24		
	Light point:Medium Point (modular)	**Per point**	16		
3	**SUPPLY AND FIXING OF SWITCHBOARD(MODULAR TYPE)** Supplying and fixing of Modular switch board of the following sizes/modules on surface including PVC boxes, modular plate and necessary switches,plug/socket and fan regulators etc with necessary painting if necessary: ***One modules Switch Board(Modular)***				
	1S	each	40		
	One modules Switch Board(Modular)				
	2S	each	8.00		
4	**LIGHTING FIXTURES(SURFACE/RECESS)**				
	Supplying,fitting and fixing Batten Holder including connection etc,., as required.	each	56		
	Sub-Total of A(ii):				
	Total of A:				

B **AIR CONDITIONING SYSTEM:**

1.5 Ton 5-Star Air Condition

1	1.5 Ton 5-Star Air Condition	No	46		
2	POWER PLUG/SOCKET 20/32 AMPERES (MODULAR TYPE) Wiring in loop system with PVC wire sheathed standard copper conductor as per IS:694 and HFFR 1100V graded 6 Sqmm copper running inside PVC casing and capping (Gr-I) 20mm dia surface on the wall/ceiling as per convenience including junction box having numbers of ways from control switch to the light point as required.				
	Plug point 20/32A:Very Short Point(modular)	**Per point**	20		
	Plug point 20/32A:Short Point(modular)	**Per point**	16		
	Plug point 20/32A:Medium Point(modular)	**Per point**	10		
3	**SUPPLY AND FIXING OF SWITCHBOARD(MODULAR TYPE)** Supplying and fixing of Modular switch board of the following sizes/modules on surface including PVC boxes, modular plate and necessary switches,plug/socket and fan regulators etc with necessary painting if necessary:				
	Four modules Switch Board(Modular)				
	1S 16A(2M) with indicator+1SOC 16/6A	each	46		
4	**LIGHTING FIXTURES(SURFACE/RECESS)**				
	Installation of Air Conditioner Split type 1.5/2.0 TR in the existing wall including fixing the hook in the wall by standard size of sleeves Nuts and Bolts or standard screws upto commissioning etc..	each	46		
5	**LOAD LINE DISTRIBUTION BOARDS WITH MCCBs** Supplying,fitting & fixing of 4-Ways,Loadline MCB,DB,TP&N,vertical suitable for G-frame MCCB design for multiphase outgoing,single door MCB DBs with Bus Bar,Neutral link,earth bar etc conforms to IS:13032,IS:8623 BS:5486 240 Volts 50Hz etc.,				

	4-Ways MCB DB TP &N Loadline SD vertical suitable for G-frame MCCB (with 125A 16kA MCCB & 63A TP MCB)	each	8		
	Total of B:				
C	**SWITCHYARD LIGHTING SYSTEM:**				
1	100W LED Street Light (14 Nos per sub-station)	No	112		
2	120W LED Flood Light (7 Nos per sub-station)	No	56		
3	**DISTRIBUTION BOARD** **MCB DISTRIBUTION BOARD** Supplying,fitting & fixing of 4-ways MCB DB single door in steel sheet,phosphatised powder painted MCB DBs with Bus Bar etc conforms to IS:13032,IS:8623,BS:5486 240Volts 50Hz etc.,				
4	8-ways MCB DB SP&N DD acrylic door for Flood Light and Street Light.	each	8		
5	6Sqmm 8-core copper cable for connection to the junction boxes of street lights and Flood light at sub-station premises.	Rm	2800		
6	100W LED Street Light Pole(14 Nos per Sub-Station)Fabricated from SP-1 as per Drawing including junction box.	No	112		
7	120W LED Flood Light Pole(7 Nos per Sub-Station)Fabricated from SP-10 as per Drawing including junction box.	No	56		
	Sub-Total (1 to 7):				
8	**FOUNDATION FOR FLOOD LIGHT AND STREET LIGHT.**				
	Earthwork in excavation in foundation trenches or drains etc. (not exceeding 1.5m in width or 10sqm on plan) including dressing of sides and ramming of bottoms, lift upto 1.5m including getting out excavated soil and disposal of surplus excavated soil as directed within a lead of 50 metres.	cum	0.43		
	Providing and laying in position reinforced cement concrete excluding cost of centering and shuttering , finishing and reinforcement in -	cum	0.18		

	a) 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20mm nominal size)				
	Centering and shuttering including strutting,propping etd. And removal of form for: a) Foundations, footings, bases of columns etc. for mass concrete.	sqm	2.10		
	Steel reinforcement for RCC work including straighthening, cutting, bending, placing in position and binding all complete. f) Thermo-Mechanically Treated bars.	kg	9.24		
	20mm cement plaster 1 : 3 (1 cement : 3 fine sand).	sqm	0.49		
	Cost of 1(one) Foundation:				
	Foundation for Flood Light and Street Light(112+56):	**No**	**168**		
	Total of C:				
	Grand Total of Package A:				

PRICE SCHEDULE OF PACKAGE-B

BAIRABI 132kV SUB-STATION

S/No	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
A	**IMPROVEMENT OF EARTHING SYSTEM**				
	(i) Rennovation and addition of earthmat.				
1	Earthwork in excavation in foundation trenches etc. not exceeding 2meters depth including dressing of bottom and sides of trenches and subsrquent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of all surplus soil as directed within alead of 30 metres.	cum	604.80		
2	Providing and laying of MS Flat 50x8mm in position under a depth of 0.6M with bentonite powder 2kg/M and welded and jointing with earth electrodes(G.I pipes and rod earthing) and also with existing earthmesh wherever possible..	kg	6330.24		
3	Providing bentonite powder coating MS Flat	kg	4032.00		
4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	Cum	604 .80		
	Sub-Total of i:				
	(ii)Pipe earthing:				
1	Earthwork in excavation in foundation trenches etc. not exceeding 2 meters depth including dressing of bottom and sides of trenches and subsequent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of all surplus soil as directed within a lead of 30 metres.	cum	81.00		
2	Providing and planting G.I. Pipes 40mm dia. fabricated for earthing electrode.	Rm	36.0		

3	Fabrication of clamps & water inlet & cover etc.	Lot	12.0		
4	Providing bentonide powder, coating earthing electrodes	kgs	1200.0		
5	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	cum	81.00		
	Sub-Total of ii:				

(iii)Rod earthing:

1	Providing and planting G.I. Rods 32mm dia. fabricated for earthing electrode.(2.5m)	kgs	283.95		
2	Welding or jointing into the earthmesh at convenient location and hammering the rod to the required depth.	Lot	18.0		
	Sub-Total of iii:				
	Sub-Total of A:				

B PLAIN CEMENT CONCRETE BLOCK OF SUB-STATION:

1	Removing of mortar from and cleaning stones and concrete articles (net quantity of stacks of cleaned materials will be measured)	cum	360.00		
2	Filling available excavated earth(excluding rock) in trenches, plinth, sides of foundation etc, in layers not exceeding 20cm depth, consolidating each deposited layers etc.	cum	720.00		
3	Providing and laying in position cement concrete of specified grade excluding cost of centering and shutering. All works upto plinth level(PCC Block shall be 2X2m where applicable).	cum	229.50		
4	Providing shuttering and cost of centering with wooden planks for 2X2m PCC Block and per block requirement is assumed as 1/16th of wooden plank.	No	56		
	Sub-Total of B:				

C GRAVELLING OF SUB-STATION:

1	Half brick masonry with first class brick in foundation and plinth in (at the perimeter of the switchyard to prevent scattering of boulders)	m^2	24.0		
2	12mm cement plaster 1:3 (1 cement : 3 fine sand)	m^2	24.0		
3	Filling the area of the switchyard/above the PCC with stone boulder/aggregate of nominal size 40mm	cum	360.0		
	Sub-Total of C:				
	Grand-Total of (A+B+C):				

PRICE SCHEDULE OF PACKAGE-C

BAWKTLANG 132kV SUB-STATION

S/No	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
A	**IMPROVEMENT OF EARTHING SYSTEM**				
	(i) Rennovation and addition of earthmat.				
1	Earthwork in excavation in foundation trenches etc. not exceeding 2meters depth including dressing of bottom and sides of trenches and subsrquent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of all surplus soil as directed within alead of 30 metres.	cum	943.50		
2	Providing and laying of MS Flat 50x8mm in position under a depth of 0.6M with bentonite powder 2kg/M and welded and jointing with earth electrodes(G.I pipes and rod earthing) and also with existing earthmesh wherever possible..	kg	9875.00		
3	Providing bentonite powder coating MS Flat	Kg	6290.00		
4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	cum	943.50		
	Sub-Total of i:				
	(ii)Pipe earthing:				
1	Earthwork in excavation in foundation trenches etc. not exceeding 2 meters depth including dressing of bottom and sides of trenches and subsequent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of all surplus soil as directed within a lead of 30 metres.	cum	81.00		

2	Providing and planting G.I. Pipes 40mm dia. fabricated for earthing electrode.	Rm	36.0		
3	Fabrication of clamps & water inlet & cover etc.	Lot	12.0		
4	Providing bentonide powder, coating earthing electrodes	kgs	1200.0		
5	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	cum	81.00		
	Sub-Total of ii:				

(iii)Rod earthing:

1	Providing and planting G.I. Rods 32mm dia. fabricated for earthing electrode.(2.5m)	kgs	441.70		
2	Welding or jointing into the earthmesh at convenient location and hammering the rod to the required depth.	Lot	28.0		
	Sub-Total of iii:				
	Sub-Total of A:				

B PLAIN CEMENT CONCRETE BLOCK OF SUB-STATION:

1	Removing of mortar from and cleaning stones and concrete articles (net quantity of stacks of cleaned materials will be measured)	cum	250.00		
2	Filling available excavated earth(excluding rock) in trenches, plinth, sides of foundation etc, in layers not exceeding 20cm depth, consolidating each deposited layers etc.	cum	500.00		
3	Providing and laying in position cement concrete of specified grade excluding cost of centering and shutering. All works upto plinth level(PCC Block shall be 2X2m where applicable).	cum	361.56		
4	Providing shuttering and cost of centering with wooden planks for 2X2m PCC Block and per block requirement is assumed as 1/16th of wooden plank.	No	39		
	Sub-Total of B:				

C GRAVELLING OF SUB-STATION:

1	Half brick masonry with first class brick in foundation and plinth in (at the perimeter of the switchyard to prevent scattering of boulders)	m^2	20.0		
2	12mm cement plaster 1:3 (1 cement : 3 fine sand)	m^2	20.0		
3	Filling the area of the switchyard/above the PCC with stone boulder/aggregate of nominal size 40mm	cum	250.0		
	Sub-Total of C:				

D1 FIRE PREVENTION WALL AT 33kV SUB-STATION:

1	Earthwork in excavation in foundation trenches or drains etc. (not exceeding 1.5m in width or 10sqm on plan) including dressing of sides and ramming of bottoms, lift upto 1.5m including getting out excavated soil and disposal of surplus excavated soil as directed within a lead of 50 metres.	cum	1.35		
2	Providing and laying in position cement concrete of specified grade excluding cost of centering and shuttering - All work upto plinth level: a) 1:3:6(1 cement :3 course sand :6 stone aggregate 20mm nominal size)	cum	0.11		
3	Providing and laying in position reinforced cement concrete excluding cost of centering and shuttering , finishing and reinforcement in - a) 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20mm nominal size)	cum	0.23		
4	Reinforced cement concrete work in walls including attached pillasters, columns, pillers, posts, piers, abutments, return walls, retaining walls, struts, buttresses, string or lacing courses, fillets etc. upto floor five level excluding cost of centering shuttering etc complete. a) 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20mm nominal size) (Column and RCC wall)	cum	1.56		
5	Reinforce cement concrete work in beams,	cum	0.16		

	suspended floors, roofs having slope upto 15° landings, balconies, shelves, chajjas, lintels, bands, window sills, stair cases, spiral stair cases, cantilevers upto floor five level excluding cost of centering shuttering etc complete. with 1:2:4(1cement : 2 coarse sand :4 stone aggregate 20mm) (Beam)				
6	Centering and shuttering including strutting,propping etd. And removal of form for:				
	a) Foundations, footings, bases of columns etc. for mass concrete.	sqm	0.90		
	b) Walls including attached pillasters, buttresses, string courses, etc.	sqm	13.75		
	c) Columns, pillars, piers, abutments, posts and struts.	sqm	8.40		
	d) Lintels, beams, plinth beams, girders, bressumers and cantilevers, etc.	sqm	1.88		
7	Steel reinforcement for RCC work including straighthening, cutting, bending, placing in position and binding all complete. f) Thermo-Mechanically Treated bars.	kg	193.30		
8	20mm cement plaster 1 : 3 (1 cement : 3 fine sand).	sqm	19.50		
	Sub-Total of D1:				
	GRAND TOTAL:				

PRICE SCHEDULE OF PACKAGE-D

LUANGMUAL 132kV SUB-STATION

S/No	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
A	**IMPROVEMENT OF EARTHING SYSTEM**				
	(i) Rennovation and addition of earthmat.				
1	Earthwork in excavation in foundation trenches etc. not exceeding 2meters depth including dressing of bottom and sides of trenches and subsrquent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of all surplus soil as directed within alead of 30 metres.	cum	643.50		
2	Providing and laying of MS Flat 50x8mm in position under a depth of 0.6M with bentonite powder 2kg/M and welded and jointing with earth electrodes(G.I pipes and rod earthing) and also with existing earthmesh wherever possible..	kg	6735.30		
4	Providing bentonite powder coating MS Flat	Kg	4290		
3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	cum	643.30		
	Sub-Total of i:				
	(ii)Pipe earthing:				
1	Earthwork in excavation in foundation trenches etc. not exceeding 2 meters depth including dressing of bottom and sides of trenches and subsequent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of all surplus soil as directed within a lead of 30 metres.	cum	81.00		

2	Providing and planting G.I. Pipes 40mm dia. fabricated for earthing electrode.	Rm	36.0		
3	Fabrication of clamps & water inlet & cover etc.	Lot	12.0		
4	Providing bentonide powder, coating earthing electrodes	kgs	1200.0		
5	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	cum	81.00		
	Sub-Total of ii:				

(iii)Rod earthing:

1	Providing and planting G.I. Rods 32mm dia. fabricated for earthing electrode.(2.5m)	kgs	441.70		
2	Welding or jointing into the earthmesh at convenient location and hammering the rod to the required depth.	Lot	28.0		
	Sub-Total of iii:				
	Sub-Total of A:				
B	**PLAIN CEMENT CONCRETE BLOCK OF SUB-STATION:**				
1	Removing of mortar from and cleaning stones and concrete articles (net quantity of stacks of cleaned materials will be measured)	cum	383.53		
2	Filling available excavated earth(excluding rock) in trenches, plinth, sides of foundation etc, in layers not exceeding 20cm depth, consolidating each deposited layers etc.	cum	767.06		
3	Providing and laying in position cement concrete of specified grade excluding cost of centering and shutering. All works upto plinth level(PCC Block shall be 2X2m where applicable).	cum	244.50		
4	Providing shuttering and cost of centering with wooden planks for 2X2m PCC Block and per block requirement is assumed as 1/16th of wooden plank.	No	48		
	Sub-Total of B:				

C GRAVELLING OF SUB-STATION:

1	Half brick masonry with first class brick in foundation and plinth in (at the perimeter of the switchyard to prevent scattering of boulders)	m^2	22.1		
2	12mm cement plaster 1:3 (1 cement : 3 fine sand)	m^2	22.1		
3	Filling the area of the switchyard/above the PCC with stone boulder/aggregate of nominal size 40mm	cum	306.5		
	Sub-Total of C:				

D1 FIRE PREVENTION WALL AT 33kV SUB-STATION:

1	Earthwork in excavation in foundation trenches or drains etc. (not exceeding 1.5m in width or 10sqm on plan) including dressing of sides and ramming of bottoms, lift upto 1.5m including getting out excavated soil and disposal of surplus excavated soil as directed within a lead of 50 metres.	cum	1.35		
2	Providing and laying in position cement concrete of specified grade excluding cost of centering and shuttering - All work upto plinth level: a) 1:3:6(1 cement :3 course sand :6 stone aggregate 20mm nominal size)	cum	0.11		
3	Providing and laying in position reinforced cement concrete excluding cost of centering and shuttering , finishing and reinforcement in a) 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20mm nominal size)	cum	0.23		
4	Reinforced cement concrete work in walls including attached pillasters, columns, pillers, posts, piers, abutments, return walls, retaining walls, struts, buttresses, string or lacing courses, fillets etc. upto floor five level excluding cost of centering shuttering etc complete. a) 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20mm nominal size) (Column and RCC wall)	cum	1.56		

5	Reinforce cement concrete work in beams, suspended floors, roofs having slope upto 15° landings, balconies, shelves, chajjas, lintels, bands, window sills, stair cases, spiral stair cases, cantilevers upto floor five level excluding cost of centering shuttering etc complete. with 1:2:4(1cement : 2 coarse sand :4 stone aggregate 20mm) (Beam)	cum	0.16		
6	Centering and shuttering including strutting,propping etd. And removal of form for:				
	a) Foundations, footings, bases of columns etc. for mass concrete.	sqm	0.90		
	b) Walls including attached pillasters, buttresses, string courses, etc.	sqm	13.75		
	c) Columns, pillars, piers, abutments, posts and struts.	sqm	8.40		
	d) Lintels, beams, plinth beams, girders, bressumers and cantilevers, etc.	sqm	1.88		
7	Steel reinforcement for RCC work including straighthening, cutting, bending, placing in position and binding all complete. f) Thermo-Mechanically Treated bars.	kg	193.30		
8	20mm cement plaster 1 : 3 (1 cement : 3 fine sand).	sqm	19.50		
	Sub-Total of D1:				
	GRAND TOTAL:				

PRICE SCHEDULE OF PACKAGE-E

ZUANGTUI 132kV SUB-STATION

S/No	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
A	**IMPROVEMENT OF EARTHING SYSTEM**				
	(i) Rennovation and addition of earthmat.				
1	Earthwork in excavation in foundation trenches etc. not exceeding 2meters depth including dressing of bottom and sides of trenches and subsrquent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of all surplus soil as directed within alead of 30 metres.	cum	573.30		
2	Providing and laying of MS Flat 50x8mm in position under a depth of 0.6M with bentonite powder 2kg/M and welded and jointing with earth electrodes(G.I pipes and rod earthing) and also with existing earthmesh wherever possible..	kg	3822.00		
3	Providing bentonite powder coating MS Flat	Kg	6000		
4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	cum	573.30		
	Sub-Total of i:				
	(ii)Pipe earthing:				
1	Earthwork in excavation in foundation trenches etc. not exceeding 2 meters depth including dressing of bottom and sides of trenches and subsequent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of all surplus soil as directed within a lead of 30 metres.	cum	54.00		

2	Providing and planting G.I. Pipes 40mm dia. fabricated for earthing electrode.	Rm	24.0		
3	Fabrication of clamps & water inlet & cover etc.	Lot	8.0		
4	Providing bentonide powder, coating earthing electrodes	kgs	800.0		
5	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	cum	54.00		
	Sub-Total of ii:				

(iii)Rod earthing:

1	Providing and planting G.I. Rods 32mm dia. fabricated for earthing electrode.(2.5m)	kgs	504.80		
2	Welding or jointing into the earthmesh at convenient location and hammering the rod to the required depth.	Lot	32.0		
	Sub-Total of iii:				
	Sub-Total of A:				

B PLAIN CEMENT CONCRETE BLOCK OF SUB-STATION:

1	Removing of mortar from and cleaning stones and concrete articles (net quantity of stacks of cleaned materials will be measured)	cum	271.02		
2	Filling available excavated earth(excluding rock) in trenches, plinth, sides of foundation etc, in layers not exceeding 20cm depth, consolidating each deposited layers etc.	cum	542		
3	Providing and laying in position cement concrete of specified grade excluding cost of centering and shutering. All works upto plinth level(PCC Block shall be 2X2m where applicable).	cum	172.78		
4	Providing shuttering and cost of centering with wooden planks for 2X2m PCC Block and per block requirement is assumed as 1/16th of wooden plank.	No	64		
	Sub-Total of B:				

C GRAVELLING OF SUB-STATION:

1	Half brick masonry with first class brick in foundation and plinth in (at the perimeter of the switchyard to prevent scattering of boulders)	m^2	25.5		
2	12mm cement plaster 1:3 (1 cement : 3 fine sand)	m^2	25.5		
3	Filling the area of the switchyard/above the PCC with stone boulder/aggregate of nominal size 40mm	cum	406.5		
	Sub-Total of C:				
	Grand-Total of (A+B+C):				

D1 FIRE PREVENTION WALL AT 33kV SUB-STATION:

1	Earthwork in excavation in foundation trenches or drains etc. (not exceeding 1.5m in width or 10sqm on plan) including dressing of sides and ramming of bottoms, lift upto 1.5m including getting out excavated soil and disposal of surplus excavated soil as directed within a lead of 50 metres.	cum	1.35		
2	Providing and laying in position cement concrete of specified grade excluding cost of centering and shuttering - All work upto plinth level: a) 1:3:6(1 cement :3 course sand :6 stone aggregate 20mm nominal size)	cum	0.11		
3	Providing and laying in position reinforced cement concrete excluding cost of centering and shuttering , finishing and reinforcement in a) 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20mm nominal size)	cum	0.23		
4	Reinforced cement concrete work in walls including attached pillasters, columns, pillers, posts, piers, abutments, return walls, retaining walls, struts, buttresses, string or lacing courses, fillets etc. upto floor five level excluding cost of centering shuttering etc complete. a) 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20mm nominal size) (Column and RCC wall)	cum	1.56		

5	Reinforce cement concrete work in beams, suspended floors, roofs having slope upto 15° landings, balconies, shelves, chajjas, lintels, bands, window sills, stair cases, spiral stair cases, cantilevers upto floor five level excluding cost of centering shuttering etc complete. with 1:2:4(1cement : 2 coarse sand :4 stone aggregate 20mm) (Beam)	cum	0.16		
6	Centering and shuttering including strutting,propping etd. And removal of form for:				
	a) Foundations, footings, bases of columns etc. for mass concrete.	sqm	0.90		
	b) Walls including attached pillasters, buttresses, string courses, etc.	sqm	13.75		
	c) Columns, pillars, piers, abutments, posts and struts.	sqm	8.40		
	d) Lintels, beams, plinth beams, girders, bressumers and cantilevers, etc.	sqm	1.88		
7	Steel reinforcement for RCC work including straighthening, cutting, bending, placing in position and binding all complete. f) Thermo-Mechanically Treated bars.	kg	193.30		
8	20mm cement plaster 1 : 3 (1 cement : 3 fine sand).	sqm	19.50		
	Sub-Total of D1:				
	GRAND TOTAL:				

PRICE SCHEDULE OF PACKAGE-F

SAITUAL 132kV SUB-STATION

S/No	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
A	**IMPROVEMENT OF EARTHING SYSTEM**				
	(i) Rennovation and addition of earthmat.				
1	Earthwork in excavation in foundation trenches etc. not exceeding 2meters depth including dressing of bottom and sides of trenches and subsrquent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of all surplus soil as directed within alead of 30 metres.	cum	586.50		
2	Providing and laying of MS Flat 50x8mm in position under a depth of 0.6M with bentonite powder 2kg/M and welded and jointing with earth electrodes(G.I pipes and rod earthing) and also with existing earthmesh wherever possible..	kg	6138.70		
3	Providing bentonite powder coating MS Flat	Kg	3910.00		
4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	cum	586.50		
	Sub-Total of i:				
	(ii)Pipe earthing:				
1	Earthwork in excavation in foundation trenches etc. not exceeding 2 meters depth including dressing of bottom and sides of trenches and subsequent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of all surplus soil as directed within a lead of 30 metres.	cum	27.00		

2	Providing and planting G.I. Pipes 40mm dia. fabricated for earthing electrode.	Rm	12.0		
3	Fabrication of clamps & water inlet & cover etc.	Lot	4.0		
4	Providing bentonide powder, coating earthing electrodes	kgs	400.0		
5	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	cum	27.00		
	Sub-Total of ii:				

(iii)Rod earthing:

1	Providing and planting G.I. Rods 32mm dia. fabricated for earthing electrode.(2.5m)	kgs	520.58		
2	Welding or jointing into the earthmesh at convenient location and hammering the rod to the required depth.	Lot	33.0		
	Sub-Total of iii:				
	Sub-Total of A:				

B PLAIN CEMENT CONCRETE BLOCK OF SUB-STATION:

1	Removing of mortar from and cleaning stones and concrete articles (net quantity of stacks of cleaned materials will be measured)	cum	400		
2	Filling available excavated earth(excluding rock) in trenches, plinth, sides of foundation etc, in layers not exceeding 20cm depth, consolidating each deposited layers etc.	cum	800		
3	Providing and laying in position cement concrete of specified grade excluding cost of centering and shutering. All works upto plinth level(PCC Block shall be 2X2m where applicable).	cum	255.03		
4	Providing shuttering and cost of centering with wooden planks for 2X2m PCC Block and per block requirement is assumed as 1/16th of wooden plank.	No	24		
	Sub-Total of B:				

C GRAVELLING OF SUB-STATION:

1	Half brick masonry with first class brick in foundation and plinth in (at the perimeter of the switchyard to prevent scattering of boulders)	m^2	15.7		
2	12mm cement plaster 1:3 (1 cement : 3 fine sand)	m^2	15.7		
3	Filling the area of the switchyard/above the PCC with stone boulder/aggregate of nominal size 40mm	cum	154.0		
	Sub-Total of C:				
	Grand-Total of (A+B+C):				

PRICE SCHEDULE OF PACKAGE-G

KHAWZAWL 132kV SUB-STATION

S/No	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
A	**IMPROVEMENT OF EARTHING SYSTEM**				
	(i) Rennovation and addition of earthmat.				
1	Earthwork in excavation in foundation trenches etc. not exceeding 2meters depth including dressing of bottom and sides of trenches and subsrquent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of all surplus soil as directed within alead of 30 metres.	cum	562.2		
2	Providing and laying of MS Flat 50x8mm in position under a depth of 0.6M with bentonite powder 2kg/M and welded and jointing with earth electrodes(G.I pipes and rod earthing) and also with existing earthmesh wherever possible	kg	5884		
3	Providing bentonite powder coating MS Flat	kg	3748		
4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	cum	562.2		
	Sub-Total of i:				
	(ii)Pipe earthing:				
1	Earthwork in excavation in foundation trenches etc. not exceeding 2 meters depth including dressing of bottom and sides of trenches and subsequent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of	cum	27.00		

	all surplus soil as directed within a lead of 30 metres.				
2	Providing and planting G.I. Pipes 40mm dia. fabricated for earthing electrode.	Rm	12.0		
3	Fabrication of clamps & water inlet & cover etc.	Lot	4.0		
4	Providing bentonide powder, coating earthing electrodes	kgs	400.0		
5	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	cum	27.00		
	Sub-Total of ii:				

(iii)Rod earthing:

1	Providing and planting G.I. Rods 32mm dia. fabricated for earthing electrode.(2.5m)	kgs	283.95		
2	Welding or jointing into the earthmesh at convenient location and hammering the rod to the required depth.	Lot	18.0		
	Sub-Total of iii:				
	Sub-Total of A:				

B PLAIN CEMENT CONCRETE BLOCK OF SUB-STATION:

1	Removing of mortar from and cleaning stones and concrete articles (net quantity of stacks of cleaned materials will be measured)	cum	297		
2	Filling available excavated earth(excluding rock) in trenches, plinth, sides of foundation etc, in layers not exceeding 20cm depth, consolidating each deposited layers etc.	cum	594		
3	Providing and laying in position cement concrete of specified grade excluding cost of centering and shutering. All works upto plinth level(PCC Block shall be 2X2m where applicable).	cum	183.35		

4	Providing shuttering and cost of centering with wooden planks for 2X2m PCC Block and per block requirement is assumed as 1/16th of wooden plank.	No	46		
	Sub-Total of B:				

C GRAVELLING OF SUB-STATION:

1	Half brick masonry with first class brick in foundation and plinth in (at the perimeter of the switchyard to prevent scattering of boulders)	m^2	21.8		
2	12mm cement plaster 1:3 (1 cement : 3 fine sand)	m^2	21.8		
3	Filling the area of the switchyard/above the PCC with stone boulder/aggregate of nominal size 40mm	cum	296.0		
	Sub-Total of C:				
	Grand-Total of (A+B+C):				

PRICE SCHEDULE OF PACKAGE-H

BUKPUI 132kV SUB-STATION

S/No	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
A	**IMPROVEMENT OF EARTHING SYSTEM**				
	(i) Rennovation and addition of earthmat.				
1	Earthwork in excavation in foundation trenches etc. not exceeding 2meters depth including dressing of bottom and sides of trenches and subsrquent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of all surplus soil as directed within alead of 30 metres.	cum	768.6		
2	Providing and laying of MS Flat 50x8mm in position under a depth of 0.6M with bentonite powder 2kg/M and welded and jointing with earth electrodes(G.I pipes and rod earthing) and also with existing earthmesh wherever possible	kg	8044		
3	Providing bentonite powder coating MS Flat	Kg	5124		
4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	cum	768.6		
	Sub-Total of i:				

(ii)Pipe earthing:

1	Earthwork in excavation in foundation trenches etc. not exceeding 2 meters depth including dressing of bottom and sides of trenches and subsequent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of all surplus soil as directed within a lead of 30 metres.	cum	54.00		
2	Providing and planting G.I. Pipes 40mm dia. fabricated for earthing electrode.	Rm	24.0		
3	Fabrication of clamps & water inlet & cover etc.	Lot	8.0		
4	Providing bentonide powder, coating earthing electrodes	kgs	800.0		
5	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	cum	54.00		
	Sub-Total of ii:				

(iii)Rod earthing:

1	Providing and planting G.I. Rods 32mm dia. fabricated for earthing electrode.(2.5m)	kgs	504.80		
2	Welding or jointing into the earthmesh at convenient location and hammering the rod to the required depth.	Lot	32.0		
	Sub-Total of iii:				
	Sub-Total of A:				

B PLAIN CEMENT CONCRETE BLOCK OF SUB-STATION:

1	Removing of mortar from and cleaning stones and concrete articles (net quantity of stacks of cleaned materials will be measured)	cum	360.00		
2	Filling available excavated earth(excluding rock) in trenches, plinth, sides of foundation etc, in layers not exceeding 20cm depth, consolidating each deposited layers etc.	cum	720.00		
3	Providing and laying in position cement concrete of specified grade excluding cost of centering and shutering. All works upto plinth level(PCC Block shall be 2X2m where	cum	229.50		

	applicable).				
4	Providing shuttering and cost of centering with wooden planks for 2X2m PCC Block and per block requirement is assumed as 1/16th of wooden plank.	No	56		
	Sub-Total of B:				

C GRAVELLING OF SUB-STATION:

1	Half brick masonry with first class brick in foundation and plinth in (at the perimeter of the switchyard to prevent scattering of boulders)	m^2	24.0		
2	12mm cement plaster 1:3 (1 cement : 3 fine sand)	m^2	24.0		
3	Filling the area of the switchyard/above the PCC with stone boulder/aggregate of nominal size 40mm	cum	360.0		
	Sub-Total of C:				

D1 FIRE PREVENTION WALL AT 33kV SUB-STATION:

1	Earthwork in excavation in foundation trenches or drains etc. (not exceeding 1.5m in width or 10sqm on plan) including dressing of sides and ramming of bottoms, lift upto 1.5m including getting out excavated soil and disposal of surplus excavated soil as directed within a lead of 50 metres.	cum	459.96		
2	Providing and laying in position cement concrete of specified grade excluding cost of centering and shuttering - All work upto plinth level: a) 1:4:8(1 cement :4 course sand :8 stone aggregate 20mm nominal size)	cum	293.22		
3	Providing and laying in position reinforced cement concrete excluding cost of centering and shuttering , finishing and reinforcement in - a) 1:1.5:3 (1 cement : 1.5 coarse sand : 3	cum	0.23		

	graded stone aggregate 20mm nominal size)				
4	Reinforced cement concrete work in walls including attached pillasters, columns, pillers, posts, piers, abutments, return walls, retaining walls, struts, buttresses, string or lacing courses, fillets etc. upto floor five level excluding cost of centering shuttering etc complete. a) 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20mm nominal size) (Column and RCC wall)	cum	1.56		
5	Reinforce cement concrete work in beams, suspended floors, roofs having slope upto 15° landings, balconies, shelves, chajjas, lintels, bands, window sills, stair cases, spiral stair cases, cantilevers upto floor five level excluding cost of centering shuttering etc complete. with 1:2:4(1cement : 2 coarse sand :4 stone aggregate 20mm) (Beam)	cum	0.16		
6	Centering and shuttering including strutting,propping etd. And removal of form for:				
	a) Foundations, footings, bases of columns etc. for mass concrete.	sqm	0.90		
	b) Walls including attached pillasters, buttresses, string courses, etc.	sqm	13.75		
	c) Columns, pillars, piers, abutments, posts and struts.	sqm	8.40		
	d) Lintels, beams, plinth beams, girders, bressumers and cantilevers, etc.	sqm	1.88		
7	Steel reinforcement for RCC work including straighthening, cutting, bending, placing in position and binding all complete. f) Thermo-Mechanically Treated bars.	kg	193.30		
8	20mm cement plaster 1 : 3 (1 cement : 3 fine sand).	sqm	19.50		
	Sub-Total of D1:				
D2	**FIRE PREVENTION WALL AT 132kV SUB-STATION:**				
1	Earthwork in excavation in foundation trenches or drains etc. (not exceeding 1.5m in width or 10sqm on plan) including dressing of	cum	1.35		

	sides and ramming of bottoms, lift upto 1.5m including getting out excavated soil and disposal of surplus excavated soil as directed within a lead of 50 metres.				
2	Providing and laying in position cement concrete of specified grade excluding cost of centering and shuttering - All work upto plinth level:	cum	0.11		
3	Providing and laying in position reinforced cement concrete excluding cost of centering and shuttering , finishing and reinforcement in - a) 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20mm nominal size)	cum	0.23		
4	Reinforced cement concrete work in walls including attached pillasters, columns, pillers, posts, piers, abutments, return walls, retaining walls, struts, buttresses, string or lacing courses, fillets etc. upto floor five level excluding cost of centering shuttering etc complete. a) 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20mm nominal size)	cum	1.84		
5	Reinforce cement concrete work in beams, suspended floors, roofs having slope upto 15° landings, balconies, shelves, chajjas, lintels, bands, window sills, stair cases, spiral stair cases, cantilevers upto floor five level excluding cost of centering shuttering etc complete. with 1:2:4(1cement : 2 coarse sand :4 stone aggregate 20mm) (Beam)	cum	0.16		
6	Centering and shuttering including strutting,propping etd. And removal of form for:				
	a) Foundations, footings, bases of columns etc. for mass concrete.	sqm	0.90		
	b) Walls including attached pillasters, buttresses, string courses, etc.(RCC Wall)	sqm	16.25		
	c) Columns, pillars, piers, abutments, posts and struts.	sqm	10.00		
	d) Lintels, beams, plinth beams, girders, bressumers and cantilevers, etc. (Beam)	sqm	1.88		

7	Steel reinforcement for RCC work including straighthening, cutting, bending, placing in position and binding all complete. f) Thermo-Mechanically Treated bars.	kg	217.2		
8	20mm cement plaster 1 : 3 (1 cement : 3 fine sand).	sqm	22.75		
	Sub-Total of D2:				
	GRAND TOTAL:				

PRICE SCHEDULE OF PACKAGE-I

KHAWIVA 132kV SUB-STATION

S/No	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
A	**IMPROVEMENT OF EARTHING SYSTEM** **(i) Rennovation and addition of earthmat.**				
1	Earthwork in excavation in foundation trenches etc. not exceeding 2meters depth including dressing of bottom and sides of trenches and subsrquent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of all surplus soil as directed within alead of 30 metres.	cum	658		
2	Providing and laying of MS Flat 50x8mm in position under a depth of 0.6M with bentonite powder 2kg/M and welded and jointing with earth electrodes(G.I pipes and rod earthing) and also with existing earthmesh wherever possible	kg	6889		
3	Providing bentonite powder coating MS Flat	Kg	4388		

4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	cum	658		
	Sub-Total of i:				

(ii)Pipe earthing:

1	Earthwork in excavation in foundation trenches etc. not exceeding 2 meters depth including dressing of bottom and sides of trenches and subsequent filling and compaction in 15cm layers as in column foundations, fence posts, etc. and disposal of all surplus soil as directed within a lead of 30 metres.	cum	54.00		
2	Providing and planting G.I. Pipes 40mm dia. fabricated for earthing electrode.	Rm	24.0		
3	Fabrication of clamps & water inlet & cover etc.	Lot	8.0		
4	Providing bentonide powder, coating earthing electrodes	kgs	800.0		
5	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift upto 1.5m.	cum	54.00		
	Sub-Total of ii:				

(iii)Rod earthing:

1	Providing and planting G.I. Rods 32mm dia. fabricated for earthing electrode.(2.5m)	kgs	504.80		
2	Welding or jointing into the earthmesh at convenient location and hammering the rod to the required depth.	Lot	32.0		
	Sub-Total of iii:				
	Sub-Total of A:				

B PLAIN CEMENT CONCRETE BLOCK OF SUB-STATION:

1	Removing of mortar from and cleaning stones and concrete articles (net quantity of stacks of cleaned materials will be measured)	cum	360.00		

2	Filling available excavated earth(excluding rock) in trenches, plinth, sides of foundation etc, in layers not exceeding 20cm depth, consolidating each deposited layers etc.	cum	720.00		
3	Providing and laying in position cement concrete of specified grade excluding cost of centering and shutering. All works upto plinth level(PCC Block shall be 2X2m where applicable).	cum	229.50		
4	Providing shuttering and cost of centering with wooden planks for 2X2m PCC Block and per block requirement is assumed as 1/16th of wooden plank.	No	56		
	Sub-Total of B:				

C GRAVELLING OF SUB-STATION:

1	Half brick masonry with first class brick in foundation and plinth in (at the perimeter of the switchyard to prevent scattering of boulders)	m^2	24.0		
2	12mm cement plaster 1:3 (1 cement : 3 fine sand)	m^2	24.0		
3	Filling the area of the switchyard/above the PCC with stone boulder/aggregate of nominal size 40mm	cum	360.0		
	Sub-Total of C:				
	Grand-Total of (A+B+C):				