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## **TECHNICAL SPECIFICATION FOR MAINTENANCE OF EHV LINES FROM MISA TO KILLING**

### **1.0 SCOPE:**

The scope of works and services under this contract shall include maintenance of the transmission lines, the details of which is given below:

### **1.1 MAINTENANCE OF TRANSMISSION LINES:**

1.1 Routine and preventive maintenance works and rectification/repair works as per the Annexure -1 of the following lines:

- i) 220KV D/C transmission lines from Misa(PGCIL S/S) to Killing 220/132KV S/S:  
Length: 113.4 Km approx. (Support structures: lattice type structures, conductor: ACSR Panther).

### **1.2 MAJOR MAINTENANCE WORKS OF THE LINES ARISING OUT OF INCIDENTS OF UNPREDICTABLE NATURE:**

The scope of work shall also include carrying out of all maintenance/rectification works required for smooth flow of power through the transmission system but not included in clause No. 1.1 above. Such works include rectification works arising out of incidence of unpredictable nature for e.g. tower collapse, foundation failure etc. Immediately on occurrence of such incidents, the contractor shall report to site engineer and arrange for an immediate joint inspection to assess the rectification works to be carried out. On the basis of joint verification, the volume & cost of rectification works shall be calculated as per the basis detailed in clause No. 36.0 of Vol. – I, section – GCC. The completion schedule for such rectification work shall be decided mutually. In such case necessary construction materials, labour, transportation, any insurance, T&P etc. shall be arranged by the contractor.

The technical specification and standard of carrying out such type of work shall be as per Owner's technical specifications/design/drawings which shall be issued to the contractor before carrying out of the works and shall be as per relevant latest Indian & International Standards. As the quantity of these nature of unpredictable job cannot be quantified at this stage, the bid price shall be exclusive of the same and shall be finalized as per clause No. 36.0 of Vol. – I, section – GCC.

1.3 **The Owner however, reserves the right to delete any part or whole of the lines as mentioned in clause 1.1 & 1.2 above from the scope of the contract.**

1.4 The work under this scope shall be carried out strictly as per our specifications and terms & conditions furnished except as specially amended/modified later on, accordingly

deviations/exceptions and/or additional conditions/variations explicit/implicit contained in bidder's proposal and all other communications, if any, shall stand automatically withdrawn without any cost implications in so far as they are repugnant or inconstant to what has been stated in this specifications. For successful performance and completion of the work it shall be the contractor's responsibility to arrange for co-ordination with local or any authority/agencies, as required.

- 1.5 The contractor shall strictly adhere to the maintenance schedule as per **annexure – A** for lines as enclosed in Vol-III.
- 1.6 The contractor shall arrange all the tools & tackles necessary for carrying out the operation and maintenance works as specified in Annexure – A including arrangement of vehicles for the patrolling party, maintenance gang etc. and works as detailed in clause No. 1.2 above.
- 1.7 Arrangement of security for contractor's staff & materials owned or issued by the owner for performance of the contract shall be in the scope of the contractor without any extra cost to Owner.
- 1.8 Compliance with statutory requirement and obtaining clearances from statutory authorities, state government departments etc. including liasoning shall be in the scope of work.
- 1.9 Arrangement of electrical power for carrying out any work required under this contract and for contractor's office, store, residences etc. shall be the sole responsibility of the contractors with no extra cost.
- 1.10 In case of requirement, the spares shall be arranged or paid for by the owner.
- 1.11 In case service of expert Engineers of manufacturer is required for attending any defects, the charges for the same shall be borne by the owner. However, the engineer-in-charge shall be the sole authority on deciding whether or not the services of such experts are required.
- 1.12 The contractor shall make all necessary arrangement for carrying out the necessary documentation of the maintenance works as specified in Vol.-III.
- 1.13 In case major maintenance, if hiring of special T&Ps like crane, etc. are necessary, the charges for the same shall be borne by the owner or the equipment be arranged by the owner. The contractor may also arrange the same & hire charge if any shall be reimbursed to the contractor at actual.

## **2.0 PROJECT FEATURES AND SYSTEM DETAILS:**

- 2.1 Killing substation is located in Ri Bhoi district of Meghalaya and can be approached by road from Khanapara, in Assam.

2.2 The 220KV D/C Misa- Killing line, & 220/132KV Killing S/S have been constructed by PGCIL as turnkey job for the Owner. All the equipments of the above line are new & constructed recently.

### **3.0 ELIGIBILITY CRITERIA:**

3.1 The bidder should have sufficient experience & resources to carry out such type of work. For which detailed eligibility criteria has been elaborated in the section –SCC of Vol-IA.

3.2 All the formats as appended with this specification shall be duly filled in by the bidders. The bidder should possess all the tools & tackles and manpower/support required for execution of all the works and shall furnish the documentary evidence in support of the same.

3.3 The owner at his discretion may relax any of the above eligibility criteria in deserving cases.

### **4.0 STANDARDS:**

4.1 The work shall conform to the standard field quality plan and contractor shall arrange required testing & inspection as per relevant codes/standards and standard field quality plan.

### **5.0 GENERAL TECHNICAL CONDITIONS:**

5.1 This section covers technical requirements pursuant to the contract and will form an integral part of the contract. The contractor's proposal shall be based on the basis of equipments and materials complying fully with the requirements specified herein. It is recognized that contractor may have standardized on the use of certain standards, processes or procedures different than those specified herein. Unless brought out clearly, the bidder shall be deemed to conform to this specification scrupulously. All deviations from this specification shall be clearly brought out in the respective schedule of deviation. In case of any significant deviation from the specification and in case bid proposal sheet, data sheets or any other documents/information are not furnished along with the bid, the bid is likely to be rejected.

5.2 The 220KV double circuit line shall be inspected periodically as per the specification and as specified in Annexure-A for maintenance purposes to detect any faults which may lead to break down of electric supply and necessary repair should be done immediately.

5.3 Patrolling shall be carried out periodically, however, pre-monsoon and post-monsoon checks shall be treated as most important and should be very thorough. The frequency of patrolling shall be increased during monsoon period depending upon special prevailing condition of the lines.

5.4 The patrolling party shall be equipped with all necessary tools and tackles, instruments including and not limited to inspection book and formats, drawings, measuring taps, etc.

- 5.5 The main points that are to be noted while patrolling are as follows:
- 5.5.1 **Structures:** Seriously leaning structures, deformed/buckled members, missing fasteners and members, accessories removed, protective coating like galvanizing or paint disappeared, suspension and terrain attachment for insulator damaged.
  - 5.5.2 **Foundations:** Signs of external damage, settled or washed out soil below designed ground level over foundation within uplift frustum perimeters, tilted stubs, cracks or breaks in chimney top, slippage of stubs from encasing chimney concrete, uneven settlement of footings, damage/disappearance of tower footing protections, line revetment, retaining walls, abutments and breast walls etc.
  - 5.5.3 **Insulator & fittings:** Damage to insulators and string fittings, surface pollution of a bad nature, missing components like nuts, pins, washers, burnt out fittings, cracked insulator unit, bird droppings, dense spiders' webs etc.
  - 5.5.4 **Conductor & Earthwire jumper & fittings:** Strands cut and open up, loose jumpers gone out of shape and causing infringement of live metal clearance, fallen trees on its branches on conductor or earthwire, checking healthiness of mid-span joints, etc.
  - 5.5.5 **Earthings:** Damaged broken or missing earthing strip or wire of the tower footing, damaged broken or missing of copper bond connections etc.
  - 5.5.6 **Right of way & its clearances:** Shrubs & trees growing within right of way causing obstruction and infringement of line to ground faults.
- 5.6 Other Points:**
- 5.6.1 Any construction work near/below the lines causing infringement in line safety or electrical clearance, bird's nest on structure use of structure for permanent support or pull of other objects, huts, newly constructed underneath the lines, nearby river/nullah, embankment condition or its change of course/flowing patterns etc.
  - 5.6.2 A special patrolling/inspection of the line shall be carried out after severe wind/hail storm, quakes/landslides, sabotage, forest fire, folds heavy rains. The purpose of such inspection is to detect any damage or breakage on line and to affect the necessary repairs immediately in consultation with purchaser.
  - 5.6.3 When any line trips or faults very often, it shall be inspected to ascertain the nature of fault such as loose sag, tree branches touching the line etc. and to find out the amount of repair work involved with a view to avoid recurrence of such faults.
  - 5.6.4 The workers engaged by the contractor should be duly covered by proper insurance taking into account of workmen compensation acts, etc.

- 5.6.5 Handling of all materials, such as conductor, earthwire, insulators, hardware fittings and accessories, tower members etc. shall be as per owner's standards.
- 5.6.6 Shut down of transmission lines wherever required shall be arranged by engineer-in-charge well in advance and shall be intimated to the contractor before 24 hours of the scheduled maintenance work. In the event of cancellation of such shutdown due to system exigencies the schedule work may have to be rescheduled for which contractor shall be offered to carry other suitable maintenance works and no idling claim shall be entertained.
- 5.6.7 Patrolling schedule to be placed in advance and to be approved by owner. Report to be submitted on weekly basis or as decided by site engineer during finalisation of schedule.
- 5.6.8 No work whether shut down is required or not shall be carried by the contractor without prior intimation to site engineer of owner. In case shut down is required for any such work 'permit to work' shall be obtained from the owner by the contractor or his representative before proceeding to work.
- 5.6.9 Photograph of locations where jungle cutting/cleaning carried out in infringement areas are to be submitted along with the line patrolling report.

## **6.0 OWNER SUPPLY MATERIALS:**

- 6.1 Transmission line spare materials required for maintenance will be supplied free of cost by the owner. However, transportation(including loading & unloading) and distribution of store materials from owner's store at Byrnihat up to work site and transportation of damaged/ replaced/ unserviceable/unused materials(including loading& unloading) from work site back to store will be the responsibility of the contractor and owner will not pay any extra payment for this. All replaced materials, equipment, parts are to be deposited at owner's store at Byrnihat weekly and accounts to be furnished to the satisfaction of owner's store in-charge.

The contractor shall take over such spare equipments from owner's store after due inspection. The contractor shall take necessary responsibility of such equipments once taken over for safe transportation, erection, testing & commissioning at the sites. Any damage of the equipments due to improper handling, erection, commissioning shall be to the contractor's account.

- 6.2 Consumables such as jute, cleaning agent, emery paper, welding electrode, welding gas, sealing agent etc. required for day to day maintenance work shall be arranged by contractor at no extra cost to the owner.

6.3 Contractor shall take over the owner's supplied materials time to time from the owner's store. While taking over the materials, contractor shall carry out the inventory checks and inspection and inform the owner of his observations in the form of a report.

#### **7.0 ENGINEER'S SUPERVISION:**

(i) To eliminate delay and avoid disputes and adherence to quality assurance plan, the owner reserves the right to supervise any maintenance works carries out by the contractor. Necessary clearance shall be obtained by the contractor from the site engineers of owner for any completed job.

(ii) Supervise the quality assurance program implementation at all stages of the works.

#### **8.0 PLACEMENT OF LABOURS, T&P, VEHICLES ETC.**

Adequate manpower, T&P & inspection/transportation vehicles shall be placed at the following places.

i) Killing: for maintenance of 220KV D/C line from Misa(Assam) to Kiliing(Meghalaya).

#### **9.0 FACILITIES TO BE PROVIDED BY OWNER:**

9.1 Owner shall provide open space on as is where basis at Killing only for the contractor. Construction and maintenance of office/residence for contractor's workman, store for keeping the T&P, spares, materials & vehicles etc. shall be in the scope of the contractor.

9.2 Accommodation of personnel & storage of contractor's T&P, spare materials & vehicles etc. there shall be arranged, maintained by the contractor themselves at no extra cost.

#### **10.0 CO-ORDINATION WITH OTHER AGENCIES, CONTRACTORS:**

10.1 Necessary co-ordination shall be maintained with other agencies and contractor while maintaining the lines & substations.

10.2 Necessary co-ordination shall be maintained & permission shall be obtained with PGCIL during maintenance of 220KV D/C Misa – Killing line in the Misa substation of PGCIL. Similarly any other permission from any state government department, statutory bodies shall be obtained by the contractor.

#### **11.0 COMPLETENESS OF TENDER:**

The tender shall be complete in all respects and include all items, services, which may not be specifically mentioned in this specification by which are essential for the completeness of the works/services.

**12.0 SCHEDULE OF PRICE:**

The contractor shall submit their firm price as per the schedule of price (Vol -IB) indicating clearly the applicable taxes & duties.

**13.0 DEVIATION FROM SPECIFICATION:**

Deviation of this specification is not warranted. Should the bidder wish to depart from the provision of the specification with standard practice or increase of efficiency he must specifically mention all deviations from the specification as per format given as in schedule -3 of BPS, Vol -IB, in absence of which it will be presumed that the provision of the specifications are complied with by the bidder. The owner at his discretion may accept/reject such deviation and the decision shall be final.

**14.0 FORM NO. 1 TO 10:**

All the form as attached with this specification (Form- 1 to 10) shall be duly filled in by the contractor.

## 15.0 SCOPE OF SERVICES

### 1. ROUTINE & PREVENTIVE MAINTENANCE WORKS:

- (i) Routine patrolling of transmission lines at regular intervals as per norms as detailed in annexure –A of Volume-III.
- (ii) Visual inspection of jumpers.
- (iii) Visual inspection of insulators discs.
- (iv) Looping & chopping and bush clearance to maintain line clearance & avoid fault.
- (v) Inspection of foundations and completeness of tower members, cross arms, cross bracings, stay, earthing, anticlimbing devices, danger plates & signs wherever applicable.
- (vi) Replacement of missing/damaged tower members, pole locations on the basis of (v) above not requiring shut down.
- (vii) Minor repair of tower foundations.
- (viii) Pre & post monsoon inspections.
- (ix) Special patrolling on tripping of lines.

### 2. MINOR RECTIFICATION/REPAIR WORKS:

- (i) Repair of conductor.
- (ii) Punctured insulator detection in insulator failure prone stretches shall be carried out on need basis without availing shut down.
- (iii) Replacement of accessories like spacers, vibration dampers.
- (iv) Rectification in respect of conductor& earthwire snapping not involving tower collapse.
- (v) Replacement of tower members.

## LIST OF FORMS

Form No.	Description
1.	Financial status of applicant
2.	Experience record of applicant
3.	Manpower
4.	General experience
5.	Experience of similar contracts
6.	Details of completed similar contracts
7.	Experience record : Operation & maintenance of 220KV/132KV line.
8.	List of contractor's equipment, owned, hired or purchased.
9.	Proposed site organization.

**Form No. 1**

**FINANCIAL STATUS OF APPLICANT**

Fill in the blanks for each of the last five fiscal years, ending last day of the year, each to be certified by chartered or public accountant or chamber of commerce or banks.

	2005-06	2006-07	2007-08	2008-09	2009-10
1. Share capital					
	(Currency.....)				
2. Total current assets					
	(Currency.....)				
2.1 Total cash and deposits					
	(Currency.....)				
2.2 Deposits with bids or otherwise as guarantees(due within 90 days)					
	(Currency.....)				
2.3 Amount receivable from completed contracts ( due within 90 days)					
	(Currency.....)				
2.4 Amount receivable from incomplete contracts after deducting retention ( due within 90 days)					
	(Currency.....)				
2.5 Stocks and bonds and Market value					
	(Currency.....)				
2.6 Loans given at withdrawal value					
	(Currency.....)				
2.7 Other current assets (due within 90 days)					
	(Currency.....)				
3.0 Total current liabilities					
	(Currency.....)				

3.1 Notes payable( to banks for regular and certified checks and to others) 

--	--	--	--	--

(Currency.....)

3.2 Account payable 

--	--	--	--	--

(Currency.....)

3.3 Other current liabilities 

--	--	--	--	--

(Currency.....)

4.0 Total assets 

--	--	--	--	--

(Currency.....)

5.0 Total liabilities 

--	--	--	--	--

(Currency.....)

6.0 Current credit resources 

--	--	--	--	--

(Currency.....)

7.0 Net worth 

--	--	--	--	--

(Currency.....)

8.0 Total profit before tax 

--	--	--	--	--

(Currency.....)

9.0 Turnover in financial years 

--	--	--	--	--

(Currency.....)

10.0 Bank references and address: .....  
.....  
.....

11.0 Credit line: (List names of institutions and maximum credit lines, attach respective letters from sureties)

Institution

.....  
.....  
.....

Maximum amount in Rupees

.....  
.....  
.....

Remarks:

Item 1:

Item 6:

The amount for share capital shall be retained earnings.

The maximum current credit resources the applicant's bank(s) hold(s) available for fulfillment of the applicants obligations for the project if the applicant is awarded the contract shall be stated and certified by the bank.

.....  
(Place and date)

.....  
(The representative)

**Form No. 2**  
**EXPERIENCE RECORD OF APPLICANT**

1. Business experience of the applicant  
as a contractor under present business name ..... years
  
2. Experience of the applicant in  
maintenance of 220KV/132KV line :  
As principal contractor ..... years  
  
As sub-contractor ..... years
  
3. Experience of the applicant in  
maintenance of 220KV/132KV line:  
(Describe name and address of the project &  
executing agency, contract period, contract  
amount, member of joint venture/consortium)  
i) In the Indian republic .....  
.....  
ii) Elsewhere ( indicate name of the countries) .....  
.....
  
4. Number of persons engaged as key employees of the applicant

	Engineers personnel	Supervisory personnel
i) In the Indian republic	.....	.....
ii) Elsewhere ( indicate name of the countries)	.....	.....
  
5. Approximate value of operation & maintenance works completed in each year during the  
immediate past 5(five) years:  
2009-10 .....  
2008-09 .....  
2007-08 .....  
2006-07 .....  
2005-06 .....  
  
.....  
(Place and date) ..... (The representative)

**Form No. 3**

**MANPOWER**

Give detailed information of key personnel/ engineer/ supervisors/skilled persons/ labours to be deployed locationwise by the contractor in case of order. Fill in this form for each person:

- 1. Name .....
- 2. Date of birth .....
- 3. Nationality .....
- 4. Education and degrees .....
- 5. Speciality .....
- 6. Registration .....
- 7. Years of experience .....
- 8. Length of service with applicant  
From .....(month).....(year)  
To .....(month).....(year)
- 9. Operation and maintenance experience
  - i) Name of the project .....
  - ii) Name and address of the Owner .....
  - iii) Name and address of the Engineer  
(consultant) in-charge of supervision .....
  - iv) Indicate features of the project and  
any other particular interest connected  
with the project. ....
  - v) Position covered in this project .....
  - vi) Duration of the assignment in the project .....

.....  
(Place and date)

.....  
(The representative)

**Form No. 4**

**GENERAL EXPERIENCE**

Construction/O&M works successfully completed by the applicant in the past 5(five) years  
(Use as many copies as necessary)

- 1. Name of the project .....
- 2. Work performed by the applicant .....
- 3. Participation in percent (if not alone) .....
- 4. Contract amount .....
- 5. Final amount billed .....
- 6. Date of contract as per contract .....
- 7. Date of completion .....
- i) As per LOI/LOA/original contract .....
- ii) Actual .....
- 8. Name and address of the Owner .....
- 9. Name and address of the Engineer  
(consultant) in-charge of supervision of  
construction. ....
- 10. Source of finance .....
- 11. Name of Applicant's three senior  
personnel engaged on the project  
together with their title, function or  
responsibility .....
- 12. Brief description of the project,  
including any particular or special .....

.....  
(Place and date)

.....  
(The representative)

**Form No. 5**

**EXPERIENCE OF SIMILAR CONTRACTS**

On separate pages, using format for each applicant or partner of a joint venture/consortium is request to list all contracts of similar nature and complexity identical to the present one for which the applicants wishes to qualify. The particular experience should include the following:

- Construction/O&M of 220KV/132 KV line

Where the applicant proposes to be use named sub-contractors for the work, the information in these forms should also be supplied for each specialist sub-contractor.

Summary – completed contract of similar nature and complexity:

Sl. No.	Name of project	Country	Name of contract	Contract role	Contract value	Year of completion
1						
2						
3						
4						
5						

- N.B. : i) To attach data sheets for outstanding developments/significant achievements of the company.  
ii)To attached detailed data sheets wherever possible.

.....  
(Place and date)

.....  
(The representative)

**Form No. 6**

**DETAILS OF SIMILAR COMPLETED CONTRACTS**

Use a separate sheet for each contract. Copy of the taking over certificate in respect of each completed contract should be attached.

List all completed works similar to which the applicant wishes to qualify;

1	No. .... Name of the contract	Capacity
2	Nature of work	
3	Contract role (tick which is applicable) ( ) lead partner in a joint venture ( ) principal contractor ( ) sub-contractor ( ) partner in a joint venture	
4	Contract value	of which, applicant's share
5	Contract duration (year & months)	date of award

.....  
(Place and date)

.....  
(The representative)

**Form No. 7**

**EXPERIENCE RECORD: CONSTRUCTION/OPERATION AND MAINTENANCE OF 220KV/132 KV LINE**

Sl. No.	Country	Name of the work	Capacity	Duration of the contract	Whether hilly terrain/plain area

.....  
(Place and date)

.....  
(The representative)



**Form No. 8**

**LIST OF CONTRACTOR'S EQUIPMENT, T&P, TESTING & MEASURING  
INSTRUMENTS, OWNED, HIRED OR PURCHASED**

(Details of each T&P, equipments, testing & measuring equipments proposed to be placed in case of order to be furnished)

**Form No. 9**

**PROPOSED SITE ORGANISATION**

- 1. Preliminary site organization chart for each location .....
- 2. Narrative description of site organization chart .....
- .....
- .....
- 3. Description of relationship between head office and site management .....
- .....
- .....

Remarks :

- Item 1: Attach site organization chart for the item no.1 on a separate sheet.
- Item 2: In case of a joint venture or consortium, also attach a comprehensive site organization chart for joint venture or consortium.
- Item 3: Indicate which responsibility and what authority will be delegated to site management.

.....  
(Place and date)

.....  
(The representative)

**Form No. 10**

**FORMAT FOR EVIDENCE OF ACCESS TO OR AVAILABILITY OF  
CREDIT/FACILITIES  
BANK CERTIFICATE**

This is to certify that M/s. .... (full name & address) ..... who are submitting their bid to MeECL against their tender specification vide ref. No. .... & date ..... is our customer for the past ..... years.

Their financial transactions with our bank have been satisfactory. They enjoy the following fund based and non fund based limits including for guarantees, L/C and other credit facilities with us against which the extent of utilization as on date is also indicated below:

Sl. No.	Type of facility	Sanctioned limit as on date	Utilisation as on date .....

This letter is issued at the request of M/s.....

Sd/-

Name of bank .....

Name of authorised signatory .....

Designation .....

Phone No. ....

Address .....

SEAL OF THE BANK