THE REPUBLIC OF ECUADOR

C R M

Centro de Rehabilitación de Manabí

WATER TRANSBASIN PROJECT FOR CHONE - PORTOVIEJO RIVER BASINS

TENDER DOCUMENTS
FOR
MECHANICAL AND ELECTRICAL EQUIPMENT
FOR
SEVERINO PUMPING STATION, CONGUILLO INLET AND POZA HONDA INLET

PACKAGE 3

VOLUME - II

[illegible]

[illegible]

MARCH 1995

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VOLUME - II

- PRESENTATION AND COMMITMENT LETTER
- FORMS OF TENDER

MARCH 1995

REPUBLIC OF ECUADOR

OECF LOAN No._____

CENTRO DE REHABILITACIÓN DE MANABÍ

C R M

WATER TRANSBASIN PROJECT FOR CHONE-PORTOVIEJO RIVER BASINS

INTERNATIONAL TENDERING No. _____

TENDER DOCUMENTS
FOR
MECHANICAL AND ELECTRICAL EQUIPMENT
FOR
SEVERINO PUMPING STATION, CONGUILLO INLET AND POZA HONDA INLET
(CONTRACT PACKAGE-3)

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REPUBLIC OF ECUADOR

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VOLUME -II

- PRESENTATION AND COMMITMENT LETTER
- FORMS OF TENDER

1. FORM OF PRESENTATION AND COMMITMENT LETTER

PRESENTATION AND COMMITMENT LETTER

TO: Gentlemen,
Contracting Committee of the Centro
de Rehabilitación de Manabí (CRM),
Portoviejo, Manabi Province,
The Republic of Ecuador

REF.: PRESENTATION AND COMMITMENT LETTER

The subscribed _____
(Name of the Legal or Sole Representative)

Representative of _____
(Name of the Firm or Association Constituted)

Domiciled in _____

interested to participate in the Tendering No. _____, and presents the required documentation, according to the instructions contained in the Tender Documents received from CRM, in order to participate in the Tendering for the Supply and Installation of Mechanical and Electrical Equipment for Severino Pumping Station, Conguillo Inlet and Poza Honda Inlet (Contract Package-3) of the Water Transbasin Project for Chone-Portoviejo River Basins.

The subscribed representative, acting for and on behalf of

_____
(Denomination of the Firm or Association)

a. Declared to have thourougly examined the Tender documents, and accepts to obey to the requirements and other conditions of these documents.

b. Guarantees the truthfulness and accuracy of all the declarations and answers done in the attached documents.,

c. Authorizes CRM or to whom it may delegate, to carry out investigations to prove the truthfulness of the declarations and documents submitted and for obtaining explanations and information about the technical and economical conditions of this Firm or Association.

d. Accepts unconditionally CRM's decision about the Tendering and waives to any claim, as tenderer when submitting this tender and in case to result as granted will sign the Contract in the date when the term is due for the revision of the report provided in the Law presenting for the celebration of the Contract the Bonds required by Law.

e. Waives expressly the right to utilize the diplomatic ways, for any matter related to the Tendering.

f. Besides manifests that has visited the Project sites and that has verified the natural conditions, the existing access roads, and the other factors that could influence the costs of the tender, and, that knows and becomes subject to the prevailing Laws of Ecuador.

The address and domicile of the tenderer in Ecuador, for matters related with this tender, to which CRM can send its correspondence, is as follows:

In case of an Association, include the following paragraphs:

Address:
Postal:
Cable:
Telex:
Fax:
Telephone:

The Association that presents the documentation attached herewith is composed of the following firms:

a.
b.
c.
d.

Accepts that the responsbility of each one of the member Firms of the Association will be indivisible and solidary, and is subject to the prevailing Laws of Ecuador.

_____ _____

Place and Date Legal Representative

2. FORM OF TENDER BOND

TENDER BOND

WHEREAS _____
(from hereinafter called "The Tenderer") has presented his tender dated _____ for the supply and Installation of Mechanical and Electrical Equipment for Severino Pumping Station, Conguillo Inlet and Poza Honda Inlet (Contract Package-3) of the Water Transbasin Project for Chone-Portoviejo River Basins (from hereinafter called "the Tender") BY THE PRESENT we leave on record that _____
_____ of
_____
with legal domicile in _____ (from hereinafter called "The Bank") has committed in an obligation with the Centro de Rehabilitación de Manabí (from hereinafter called "CRM") for the amount of _____ whose payment in due form will be made to CRM by The Bank to its successors or cesionaries, in accordance with this document.

Issued and signed with the seal of this Bank on the _____ of _____ of 199__.

The present obligation is subject to the following conditions:

1. If the tenderer withdraws its tender during the stipulated validity period in the Tender Form; or

2. If the tenderer, after being notified of the acceptance of his tender by CRM during the validity period of the same.

   a) Does not sign the contract
   b) Does not provide the performance bond, in accordance with the instructions to the denderers.

We, the subscribed, are obliged to pay to CRM up to the total amount indicated on delivery of its first requirement by writing, without CRM having to justify such requirement: CRM will have to notify that the amount required is the amount owed, by reason of one or both of the conditions specified before and will indicate expressly the condition that has been complied.

This bond will stay in force up to thirty (30) days after the validity period of the Tender, and all requirement related to it must be received by the Bank at the latest on that date.

_____

Signature of the Bank

_____

Signature of the Witness

Name of the Witness _____

Address of the Witness _____

3. FORM OF SUMMARY OF THE TENDER

SUMMARY OF THE TENDER

TO: Gentlemen,
Contracting Committee of the Centro
de Rehabilitación de Manabí (CRM),
Portoviejo, Manabi Province,
The Republic of Ecuador

REF.: SUMMARY OF THE TENDER

The subscribed _____
(Name of the Legal or Sole Representative)

Legal Representative of _____
(Name of the Firm or Association Constituted)

declares that the value of this tender, in accordance with the Tendering No. _____, Tender Documents for the Supply and Installation of Mechanical and Electrical Equipment for Severino Pumping Station, Conguillo Inlet and Poza Honda Inlet (Contract Package-3) of the Project, and with the total tender prices for the Works are of _____ _____ Sucres, plus _____ (indicate the type of currency).

The period of completion of the works will be of ____ months, from the day that the commencement order is issued.

If our tender is accepted, we will contract a bond for an amount not less than 5% of the total price of the Contract so to assure the performance of the Contract.

We agree to maintain the validity of this tender for a period of 180 calendar days from the date established for the opening of the Envelopes.

The subscribed has verified carefully the figures and information submitted with this tender, and states that CRM will not assume responsibility for any error or omission by the commitments that the tenderer might have acquired for the preparation of the tender.

This tender, jointly with its acceptation by writing included in the awarding notification, constitutes a Obligatory Commitment until the preparation and signing of the Formal Contract.

_____ _____
Place and Date Legal Representative

4. FORM OF ADDENDA RECEIPT

TO: Gentlemen,
Contracting Committee of the Centro
de Rehabilitación de Manabí (CRM),
Portoviejo, Manabi Province,
The Republic of Ecuador

We, the undersigned hereby acknowledge that the revision, and/or supplemental information and explanation set forth in this addendum has been incorporated into preparation of our Tender and shall be deemed to form part of the Tender/Contract Documents.

Addendum No._____ dated _____

Addendum No._____ dated _____

Addendum No._____ dated _____

Note : _____

_____

_____

FOR AND ON BEHALF OF (TENDERER'S NAME)

_____

Date and place :
Tenderer :
Signature :

5. FORM OF VALUED SCHEDULE

VALUED SCHEDULE

TENDERER: _____ WORK AMOUNT: _____

PERIOD OF COMPLETION: _____ STARTING DATE: _____

WORK DESCRIPTION	TOTAL PRICE	% OF TOTAL COST	MONTHLY VALUES PER ITEM IN SUCRES AND FOREIGN CURRENCY (MONTHS ACCOUNTED FROM THE COMMENCEMENT ORDER)																	
TOTAL COST																				
TOTAL PROGRESS (% ACCUMULATED)																				
ACCUMMULATED INVESTMENTS IN THOUSAND SUCRES																				

NOTES: 1. All the registered items must be idem to those in the Summary of Tender Prices.

2. Months to be up to issuance of the Total Provisional Reception Certificate.

_____ _____

Place and Date Legal Representative

6. Schedule I-A : SUMMARY OF TENDER PRICES

Item No.	Sub-section	Particulars	Plant Supply				Inland Transport		Erection		Total	
			Total FOB	Ocean Insurance	Freight of Goods to Port of Destination	Total CIF Price (a)+(b)+(c)	Foreign Portion	Local Portion	Foreign Portion	Local Portion	Foreign Portion (d)+(e)+(g)	Local Portion (f)+(h)
			¥ or US$	¥ or US$	¥ or US$	¥ or US$	¥ or US$	S/	¥ or US$	S/	¥ or US$	S/
			(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(k)
SECTION-I	SEVERINO PUMPING STATION											
1	A	Main Pumps and valves										
2	B	Electric motors										
3	C	Transformers										
4	D	Static condensers										
5	E	Switchgear and control equipment										
6	F	Ancillary equipment										
7	G	Miscellaneous materials										
8	H	13.8 kV distribution lines and receiving facilities										
9	I	138 KV Transmission lines										
10	J	Power line carrier equipment										
11	K	Intake trashracks and rake										
12	L	Intake gates and gantry crane										
13	M	Discharge penstocks										
SECTION-II	CONGUILLO INLET											
14	N	Outlet facilities										
SECTION-III	POZA HONDA INLET											
15	O	Outlet facilities										
16	SUPPLY GS.10.1	Mandatory maintenance tools (Schedule III-A)										
17		Sub-total										
18	GS.11.4	Employer's shop inspection (Schedule-IV)										
19	GS.1.5	Instruction to project staff (Schedule-V)										
20		Provisional sums										
21		Grand Total										
22	SUPPLY GS.10.1 GS.10.2	Recommended maintenance tools (Schedule III-B) and spare parts (Schedule II-B)										

Note: (1) Conversion rate of currencies: _____

(2) Sucres equivalent : _____

Date and Place : _____

Tenderer : _____

Signature : _____

6. Schedule I-B : ITEMIZED TENDER PRICES (Continued)

Item No.	Particulars	Q'ty	Plant Supply				Inland Transport		Erection		Total	
			Total FOB	Ocean Insurance	Freight of Goods to Port of Destination	Total CIF Price (a)+(b)+(c)	Foreign Portion	Local Portion	Foreign Portion	Local Portion	Foreign Portion (d)+(e)+(g)	Local Portion (f)+(h)
			¥ or US$	¥ or US$	¥ or US$	¥ or US$	¥ or US$	S/	¥ or US$	S/	¥ or US$	S/
			(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(k)
SECTION-1	SEVERINO PUMPING STATION											
1.	Main Pumps and Valves (Subsection-A)											
1 (a)	3.2 m3/s volute type main pump with short pipe and accessories	6 sets										
1 (b)	Non-return valve	6 sets										
1 (c)	Guard valve	6 sets										
1 (d)	Mandatory spare parts *1	1 lot										
	Sub-total Item-1											
2.	Electric Motors (Subsection-B)											
2 (a)	Electric motors with accessories	6 sets										
2 (b)	Mandatory spare parts *1	1 lot										
	Sub-total Item-2											
3.	Transformers (Subsection-C)											
3 (a)	10,000 kVA, 138/4.16 kV three-phase transformers	2 sets										
3 (b)	1,000 kVA, 4.16/13.8 kv three-phase transformer	1 set										
3 (c)	300 kVA, 13.8 kV/220-127 kV three-phase transformer	1 set										
3 (d)	Mandatory spare parts *1	1 lot										
	Sub-total Item-3											

Note: *1 Mandatory spare parts included in this Tender Price are detailed in Schedule II-A

6. Schedule I-B : ITEMIZED TENDER PRICES (Continued)

Item No.	Particulars	Q'ty	Plant Supply				Inland Transport		Erection		Total	
			Total FOB	Ocean Insurance	Freight of Goods to Port of Destination	Total CIF Price (a)+(b)+(c)	Foreign Portion	Local Portion	Foreign Portion	Local Portion	Foreign Portion (d)+(e)+(g)	Local Portion (f)+(h)
			¥ or US$	¥ or US$	¥ or US$	¥ or US$	¥ or US$	S/	¥ or US$	S/	¥ or US$	S/
			(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(k)
4.	Static Condensers (Subsection-D)											
4 (a)	800 kVA static condenser sets	4 sets										
	Sub-total Item-4											
5.	Switchgear Equipment and Control Equipment (Subsection-E)											
5 (a)	138 kV switchgear *2	1 lot										
5 (b)	13.8 KV switchgear	1 lot										
5 (c)	4.16 KV switchgear	1 lot										
5 (d)	Low tension switchgear	1 lot										
5 (e)	Control switchboards *2	1 lot										
5 (f)	Water level and flow indicators	1 lot										
5 (g)	Mandatory spare parts *1	1 lot										
	Sub-total Item-5											
6.	Ancillary Equipment (Subsection-F)											
6 (a)	Overhead traveling cranes	2 sets										
6 (b)	Drainage pumps	1 lot										
6 (c)	Machines and tools for repair shop	1 lot										
6 (d)	Storage battery set	1 set										
6 (e)	Oil handling and purifying equipment	1 set										
6 (f)	Diesel engine generating set	1 set										
6 (g)	Mandatory spare parts *1	1 lot										
	Sub-total Item-6											

Note: *1 Mandatory spare parts included in this Tender Price are detailed in Schedule II-A
*2 For details, see Schedule I-C.

6. Schedule I-B : ITEMIZED TENDER PRICES (Continued)

Item No.	Particulars	Q'ty	Plant Supply				Inland Transport		Erection		Total	
			Total FOB	Ocean Insurance	Freight of Goods to Port of Destination	Total CIF Price (a)+(b)+(c)	Foreign Portion	Local Portion	Foreign Portion	Local Portion	Foreign Portion (d)+(e)+(g)	Local Portion (f)+(h)
			¥ or US$	¥ or US$	¥ or US$	¥ or US$	¥ or US$	S/	¥ or US$	S/	¥ or US$	S/
			(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(k)
7.	Miscellaneous Materials *2 (Subsection-G)											
7 (a)	Electrical conductors and fitting	1 lot										
7 (b)	Insulators and fittings	1 lot										
7 (c)	Steel structures and towers	1 lot										
7 (d)	Other materials	1 lot										
	Sub-total Item-7											
8.	13.8 kV Distribution Lines and Receiving Facilities (Subsection-H)											
8 (a)	Distribution Line	1 lot										
8 (b)	Receiving Facilities	1 lot										
8 (c)	Mandatory spare parts *1											
	Sub-total Item-8											
9.	138 kV Transmission Lines (Subsection-I)											
9 (a)	Tower design test *2	1 lot										
9 (b)	Material supply for 138 KV transmission line *2	1 lot										
9 (c)	Erection work for 138 KV transmission line *2	1 lot										
9 (d)	Mandatory spare parts *1	1 lot										
	Sub-total Item-9											
10	Power Line Carrier Telephone System (Subsection-J)											
10 (a)	Power line carrier terminal equipment *2	2 sets										
10 (b)	Line trap *2	2 sets										
10 (c)	Coupling Capacitor Potencial Device *2	2 sets										

Note: *1 Mandatory spare parts included in this Tender Price are detailed in Schedule II-A
*2 For details, see Schedule I-C.

6. Schedule I-B : ITEMIZED TENDER PRICES (Continued)

Item No.	Particulars	Q'ty	Plant Supply				Inland Transport		Erection		Total	
			Total FOB	Ocean Insurance	Freight of Goods to Port of Destination	Total CIF Price (a)+(b)+(c)	Foreign Portion	Local Portion	Foreign Portion	Local Portion	Foreign Portion (d)+(e)+(g)	Local Portion (f)+(h)
			¥ or US$	¥ or US$	¥ or US$	¥ or US$	¥ or US$	S/	¥ or US$	S/	¥ or US$	S/
			(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(k)
10 (d)	Coupling Device *2	2 sets										
10 (e)	Power supply equipment *2	2 sets										
10 (f)	Mandatory spare parts *1	1 lot										
	Sub-total Item-10											
11.	Intake Trashracks and Rake (Subsection-K)											
11 (a)	Intake trashracks	6 sets										
11 (b)	Trash rake	1 set										
11 (c)	Embedded guide frames for rake	6 sets										
11 (d)	Mandatory spare parts *1	1 lot										
	Sub-total Item-11											
12.	Intake Gates and Gantry Crane (Subsection-L)											
12 (a)	Gate leaf	2 set										
12 (b)	Embedded guide frame	6 sets										
12 (c)	Gantry crane	1 set										
12 (d)	Lifting beam	1 set										
12 (e)	Dogging device	2 set										
12 (f)	Mandatory spare parts *1	1 lot										
	Sub-total Item-12											
13.	Discharge Penstocks (Subsection-M)											
13 (a)	Discharge penstocks	2 lanes										

Note: *1 Mandatory spare parts included in this Tender Price are detailed in Schedule II-A
*2 For details, see Schedule I-C.

6. Schedule I-B : ITEMIZED TENDER PRICES (Continued)

Item No.	Particulars	Q'ty	Plant Supply				Inland Transport		Erection		Total	
			Total FOB	Ocean Insurance	Freight of Goods to Port of Destination	Total CIF Price (a)+(b)+(c)	Foreign Portion	Local Portion	Foreign Portion	Local Portion	Foreign Portion (d)+(e)+(g)	Local Portion (f)+(h)
			¥ or US$	¥ or US$	¥ or US$	¥ or US$	¥ or US$	S/	¥ or US$	S/	¥ or US$	S/
			(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(k)
13 (b)	Mandatory spare parts *1	1 lot										
	Sub-total Item-13											
SECTION-2 14.	CONGUILLO INLET Outlet Facilities (Subsection-N)											
14 (a)	Sleeve valves (dia. 1,400 mm)	2 sets										
14 (b)	Butterfly valves (4N x 1,400 mm, 2N x 800 mm)	1 lot										
14 (c)	Steel pipes (2N x 1,400 mm, 1N x 800 mm)	1 lot										
14 (d)	Drain pump	1 set										
14 (e)	Water level detector	2 sets										
14 (f)	Portable generator set	1 set										
14 (g)	Mandatory spare parts *1	1 lot										
	Sub-total Item-14											
SECTION-3 15.	POZA HONDA INLET Outlet Facilities (Subsection-O)											
15 (a)	Fixed trashrack	1 set										
15 (b)	Sleeve valve (dia. 900 mm)	2 sets										
15 (c)	Butterfly valve (dia. 900 mm)	2 sets										
15 (d)	Steel pipe (dia. 900 mm)	2 lanes										
15 (e)	Drain pump	1 set										
15 (f)	Water level detector	2 sets										

Note: *1 Mandatory spare parts included in this Tender Price are detailed in Schedule II-A

6. Schedule I-B : ITEMIZED TENDER PRICES (Continued)

Item No.	Particulars	Q'ty	Plant Supply				Inland Transport		Erection		Total	
			Total FOB	Ocean Insurance	Freight of Goods to Port of Destination	Total CIF Price (a)+(b)+(c)	Foreign Portion	Local Portion	Foreign Portion	Local Portion	Foreign Portion (d)+(e)+(g)	Local Portion (f)+(h)
			¥ or US$	¥ or US$	¥ or US$	¥ or US$	¥ or US$	S/	¥ or US$	S/	¥ or US$	S/
			(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(k)
15 (g)	Portable generator set	1 set										
15 (h)	Mandatory spare parts *1	1 lot										
	Sub-total Item-15											
16.	SUPPLY Mandatory maintenance tools *2	1 lot										
	Sub-total Item-16											

22.	SUPPLY											
22 (a)	Recommended spare parts (Schedule II-B)	1 lot										
22 (b)	Recommended maintenance tools (Schedule III-B)	1 lot										
	Sub-total Item-17											

Date and Place: _____

Tenderer : _____

Signature : _____

Note: *1 Mandatory spare parts included in this Tender Price are detailed in Schedule II-A
*2 For details of mandatory maintenance tools, see Schedule III-A.

6. SCHEDULE I-C

BREAKDOWN OF TENDER PRICES FOR 138 KV SWITCHGEAR, 138 kV TRANSMISSION LINE, POWER-LINE CARRIER TELEPHONE SYSTEM AND OTHERS

Tender prices for 138 kV switchgear, 138 kV transmission line, power-line carrier telephone system and others shall be broken down as follows:-
(* denotes J. Yen or U.S$ currency. **means both foreign and local currencies for item 9 (c) only.

	Description	Q'ty	PRICE Unit Price (*)	PRICE Total (FOB) (*)
5 (a)	132 kV SWITCHGEAR			
5 (a)- A	Circuit Breakers			
	Daule Peripa 138 kV switchgear			
	(1) Circuit breakers for transmission line circuit	1 set	_____	_____
	Severino 138 kV switchgear			
	(2) Circuit breakers for transmission line circuit	1 set	_____	_____
	(3) Circuit breaker for main transformer circuits	2 sets	_____	_____
	Sub-total of 5(a)-A:			_____
5 (a)- B	Disconnector and Earthing Switches			
	Daule Peripa 138 kV switchgear			
	(1) Disconnectors with earthing switches for transmission line	1 set	_____	_____
	(2) Disconnectors for connecting with existing buses	2 sets	_____	_____
	(3) Disconnectors for transmission line circuit	2 sets	_____	_____
	Severino 138 kV switchgear			
	(4) Disconnectors with earthing switches for transmission line	1 set	_____	_____

	Description	Q'ty	PRICE Unit Price (*)	PRICE Total (FOB) (*)
	(5) Disconnectors for main transformer circuits	2 sets	_____	_____
	Sub-total of 5(a)-B:			_____
5 (a)- C	Current Transformer			
	(1) Current transformers for Daule Peripa 138 kV switchgear	3 sets	_____	_____
	(2) Current transformers for Severino 138 kV switchgear	3 sets	_____	_____
	Sub-total of 5(a)-C:			_____
5(a)- D	Capacitor Voltage Transformers			
	(1) Capacitor voltage transformer for Daule Peripa 138 kV switchgear	2 sets	_____	_____
	(2) Capacitor voltage transformer for Severino 138 kV switchgear	2 sets	_____	_____
	Sub-total of 5(a)-D:			_____
5(a)- E	Lightning Arresters			
	<u>Daule Peripa 138 kV switchgear</u>			
	(1) Lightning arresters for transmission line circuit	3 sets	_____	_____
	<u>Severino 138 kV switchgear</u>			
	(2) Lightning arresters for transmission line circuit	3 sets	_____	_____
	(3) Lightning arresters for main transformer circuits	6 sets	_____	_____
	Sub-total of 5(a)-E:			_____
	<u>Total of Item 5(a):</u>			_____

	Description	Q'ty	PRICE Unit Price (*)	PRICE Total (FOB) (*)
5(e)	CONTROL SWITCHBOARD			
5(e)- A	(Main control switchboard for Severino Pumping Station	7 panels	_____	_____
	(2) Main control switchboard for Daule Peripa'power station	1 panel	_____	_____
5(e)- B	Semi-graphics Supervisory control switchboard for Severin pumping station	1 set	_____	_____
5(e)- C	Sub-control switchboard for Severino pumping station	3 panels	_____	_____
5(e)- D	Battery cherger pannel for Severino pumpimg station	1 panel	_____	_____
5(e)- E	Repair shop pannel	1 panel	_____	_____
	Total of Item 5(e):		_____	_____
7	MISCELLANEOUS MATERIALS			
7 (a)	Electrical Conductors and Fittings			
	Severino Pumpin Station			
	(1) Power cables and fittings	1 lot	_____	_____
	(2) Control cables	1 lot	_____	_____
	(3) Insulated wires	1 lot	_____	_____
	(4) Aluminum conductors steel reinforced and fittings	1 lot	_____	_____
	(5) Galvanized steel wires and fittings	1 lot	_____	_____
	(6) Bare soft annealed copper conductors and fittings	1 lot	_____	_____

Description	Q'ty	PRICE Unit Price (*)	PRICE Total (FOB) (*)
Daule Peripa Power			
(7) Power cables and fittings	1 lot	_____	_____
(8) Control cables	1 lot	_____	_____
(9) Insulator wires	1 lot	_____	_____
(10) Aluminum conductors steel reinforced and fittings	1 lot	_____	_____
(11) Galvanized steel wires and fittings	1 lot	_____	_____
(12) Bare soft annealed copper conductors and fittings	1 lot	_____	_____
Sub-total of 7 (a):			_____
7 (b) Insulators and Fittings			
Severino Pumping			
(1) Insulator units	1 lot	_____	_____
(2) Fittings	1 lot	_____	_____
Daule Peripa Power Station			
(3) Insulator units	1 lot	_____	_____
(4) Fittings	1 lot	_____	_____
Sub-total of 7 (b):			_____
7 (c) Steel Structures			
Daule Peripa Power Station			
(1) Main steel structure	1 lot	_____	_____
(2) Steel tower	1 lot	_____	_____
(3) Switchgear supporting structure	1 lot	_____	_____
Severino Pumping Station			
(4) Main steel structure	1 lot	_____	_____
(5) Switchgear supporting structure	1 lot	_____	_____
Sub-total of 7 (c):			_____

	Description	Q'ty	PRICE Unit Price (*)	PRICE Total (FOB) (*)
7 (d)	Other Materials			
	(1) Other materials for Severino pumping Station	1 lot	_____	_____
	(2) Other materials for Daule Peripa power Station	1 lot	_____	_____
	Sub-total of 7 (d):			_____
	Total of Item 7:			_____

9 138 kV TRANSMISSION LINES

Special Notes

(1) The present quantities entered in the Schedules are provisional only. The final quantities of the various items will be established after the selection of support positions had been made on completion of the check survey of the routes.

(2) Where a nil quantity is shown a rate shall nevertheless be entered.

(3) The price entered under main support items shall be for the complete structures including jumper cross-arms and jumper insulators if used, anti-climbing guards with gates, danger, circuit, number, aerial number and phase plates, insulator hangers where necessary and all nuts, bolts and washers.

(4) The price entered under foundations shall include all stub steelwork, concrete, excavation, normal pumping, timbering, reinforcing if required, setting out and use of template.

(5) All structure extra-over items shall be assuemd applicable to complete structures in any type of ground.

(6) Prices for conductors and overhead earthwires shall include for all mid-span joints and jumpers, etc.

(7) Prices entered for insulator sets shall include for line clamps, and for extension links (where necessary).

(8) Maintenance works entered on item 9(c) (E) shall be carried out during maintenance period.

Description	Q'ty	PRICE Unit Price (*)	PRICE Total (FOB) (*)
9 (a) Tower Design Test			
(1) Tower type SS±0	1 set	_____	_____
(2) Tower type LA±0	1 set	_____	_____
(3) Additional cost of destruction test for tower type SS±0	1 set	_____	_____
(4) Additional cost of destruction test for tower type LA±0	1 set	_____	_____
Total of item 9 (a):			_____
9 (b) Material Supply for 138 kV Transmission Line			
(A) Conductors, Overhead Earthwire			
(1) Conductor ACSR ORILE (including midspan joints)	105 km	_____	_____
(2) Overhead earthwire (including midspan joints)	36 km	_____	_____
(3) Conductor repair sleeve	10 nos	_____	_____
(4) Vibration damper for conductor	546 nos	_____	_____
(5) Vibration damper for earthwire	182 nos	_____	_____
(6) Preformed armour rod for power conductor	153 nos	_____	_____
Sub-total of item 9 (b). (A):			_____
(B) Insulator and Earthwire Sets			
(1) Suspension type insulator set with arc horn	153 sets	_____	_____
(2) Tension type insulator set with arc horn	228 sets	_____	_____
(3) Light duty tension type insulator set	6 sets	_____	_____
(4) Overhead earthwire suspension type set with earthing bond	51 sets	_____	_____

Description	Q'ty	PRICE Unit Price (*)	PRICE Total (FOB) (*)
(5) Overhead earthwire tension type (including 2 tension clamp etc.)	40 sets	_____	_____
(6) Overhead earthwire tension set for switchgerar	4 sets	_____	_____
Sub-total of item 9 (b). (B):			_____
(C) Tower Material			
(1) Foundation stubs type SS tower	51 sets	_____	_____
(2) Foundation stubs type LA tower	32 sets	_____	_____
(3) Foundation stubs type MA tower	4 sets	_____	_____
(4) Foundation stubs type HA tower	1 set	_____	_____
(5) Foundation stubs type TA	2 sets	_____	_____
(6) Auxiliary cross arm	4 sets	_____	_____
(7) Danger plate with fixing facilities	82 sets	_____	_____
(8) Number plate with fixing facilities	90 sets	_____	_____
(9) Anti-climbing devices	90 sets	_____	_____
(10) Earthing system consisting rods, copper stands, terminals etc.	90 sets	_____	_____
(11) Counterpoise wire set	30 sets	_____	_____
(12) Tower superstructure type SS-3	18 sets	_____	_____
(13) Tower superstructure type SS±0	10 sets	_____	_____
(14) Tower superstructure type SS+3	9 sets	_____	_____
(15) Tower superstructure type SS+6	5 sets	_____	_____
(16) Tower superstructure type SS+9	9 sets	_____	_____
(17) Tower superstructure type LA-3	5 sets	_____	_____
(18) Tower superstructure type LA±0	12 sets	_____	_____

Description	Q'ty	PRICE Unit Price (*)	PRICE Total (FOB) (*)
(19) Tower superstructure type LA+3	3 sets	_____	_____
(20) Tower superstructure type LA+6	4 sets	_____	_____
(21) Tower superstructure type LA+9	8 sets	_____	_____
(22) Tower superstructure type MA-3	1 set	_____	_____
(23) Tower superstructure type MA±0	2 set	_____	_____
(24) Tower superstructure type MA+3	0 set	_____	_____
(25) Tower superstructure type MA+6	0 set	_____	_____
(26) Tower superstructure type MA+9	1 set	_____	_____
(27) Tower superstructure type HA-3	1 set	_____	_____
(28) Tower superstructure type HA±0	0 sets	_____	_____
(29) Tower superstructure type HA+3	0 set	_____	_____
(30) Tower susperstructure type HA+6	0 set	_____	_____
(31) Tower superstructure type HA+9	0 set	_____	_____
(32) Tower superstructure type TA-3	1 set	_____	_____
(33) Tower superstructure type TA±0	1 set	_____	_____
(34) Tower superstructure type TA+3	0 set	_____	_____
(35) Tower superstructure type TA+6	0 set	_____	_____
(36) Tower superstructure type TA+9	0 set	_____	_____
Sub-total of item 9 (b). (C):			_____
(D) Total of Item 9 (b):			_____

Description	Q'ty	PRICE Unit Price (**)	PRICE Total (**)
9 (c) Erection Works for 138 kV Transmission Line			
(A) Survey Works			
(1) Check survey works	35 km	_____	_____
(2) Additional profile and plan survey	5 km	_____	_____
(3) Route checking including tree cutting	35 km	_____	_____
(4) Additional soil investigation	10 place	_____	_____
Sub-total of item 9 (c). (A):			_____
(B) Foundation Works			
(1) Light concrete foundation for tower type SS	40 sets	_____	_____
(2) Medium concrete foundation for tower type SS	11 sets	_____	_____
(3) Heavy concrete foundation for tower type SS	0 set	_____	_____
(4) Light concrete foudnation for tower type LA	28 sets	_____	_____
(5) Medium concrete foudnation for tower type LA	4 sets	_____	_____
(6) Heavy concrete foundation for tower type LA	0 set	_____	_____
(7) Light concrete foudnation for tower type MA	3 sets	_____	_____
(8) Medium concrete foundation for tower type MA	1 set	_____	_____
(9) Heavy concarete foundtion for tower type MA	0 set	_____	_____
(10) Light concrete foundation for tower type HA	1 set	_____	_____
(11) Medium concrete foundation for tower type HA	0 set	_____	_____
(12) Heavy concrete foundation for tower type HA	0 set	_____	_____
(13) Light concrete foundation for tower type TA	1 set	_____	_____
(14) Medium concrete foundation for tower type TA	1 set	_____	_____
(15) Heavy concrete foundation for tower type TA	0 set	_____	_____

Description	Q'ty	PRICE Unit Price (**)	PRICE Total (**)
(16) Additional excavation including close timber or sheeting and backfilling	80 cu.m		
(17) Additional concrete works	80 cu.m		
(18) Additional waste concrete	20 cu.m		
(19) Terracing works	50 cu.m		
(20) Revetment works	50 cu.m		
Sub-total of item 9 (c). (B):			
(C) Tower Erection Works			
(1) Type SS-3 tower	18 sets		
(2) Type SS±0 tower	10 sets		
(3) Type SS+3 tower	9 sets		
(4) Type SS+6 tower	5 sets		
(5) Type SS+9 tower	9 sets		
(6) Type LA-3 tower	5 sets		
(7) Type LA±0 tower	12 sets		
(8) Type LA+3 tower	3 sets		
(9) Type LA+6 tower	4 sets		
(10) Type LA+9 tower	8 sets		
(11) Type MA-3 tower	1 sets		
(12) Type MA±0 tower	2 sets		
(13) Type MA+3 tower	0 set		
(14) Type MA+6 tower	0 set		
(15) Type MA+9 tower	0 set		
(16) Type HA-3 tower	1 set		
(17) Type HA±0 tower	0 set		
(18) Type HA+3 tower	0 set		
(19) Type HA+6 tower	0 set		
(20) Type HA+9 tower	0 set		
(21) Type TA-3 tower	1 set		
(22) Type TA±0 tower	1 set		
(23) Type TA+3 tower	0 set		
(24) Type TA+6 tower	0 set		
(25) Type TA+9 tower	0 set		
(26) Addtional steel works	10 ton		
(27) Extra galvenized steel work	10 ton		
(28) Paint on lower part of tower	15 towers		
(29) Installation of earthing set	90 sets		
(30) Installation of counterpoise wire set	30 sets		

Description	Q'ty	PRICE Unit Price (**)	PRICE Total (**)
Sub-total of item 9 (c). (C):			_____
(D) Stringing Works			
(1) Installation of susspension type insulator set	153 sets	_____	_____
(2) Installation of tension insulator set (including jumper set)	228 sets	_____	_____
(3) Installation of light duty tension insulator set	6 sets	_____	_____
(4) Instalaltion of overhead earthwire suspension set	51 sets	_____	_____
(5) Installation of overhead earthwire tension set	40 sets	_____	_____
(6) Installation of overhead earthwire tension set for switchyard	4 sets	_____	_____
(7) Paying of conductor	105 km	_____	_____
(8) Paying out of overhead earthwire	36 km	_____	_____
(9) Tension of conductor incldung connection	105 km	_____	_____
(10) Tensioning of overhead earthwire including connection	36 km	_____	_____
Sub-total of item 9 (c). (D):			_____
(E) Maintenance Works			
(1) Route clearing	35 km	_____	_____
(2) Maintenance of access road	35 km	_____	_____
Sub-total of item 9 (c). (E):			_____
(F) Total of item 9 (c):			_____

Description	Q'ty	PRICE Unit Price (*)	PRICE Total (FOB) (*)
10 POWER - LINE CARRIER TELEPHONE SYSTEM			
10 (a) (1) Power - line carrier terminal equipement for Severino pumping station	1 set	_____	_____
(2) Power - line carrier terminal equipment for Daule Peripa power station	1 set	_____	_____
Sub-total of item 10 (a):			_____
10 (b) (1) Line trap for Severino pumping station	1 set	_____	_____
(2) Line trap for Daule Peripa power station	1 set	_____	_____
Sub-total of item 10 (b):			_____
10 (c) (1) Coupling capacitor potencial devices for Severino pumping station	1 set	_____	_____
(2) Coupling capacitor potencial devices for Daule Peripa power station	1 set	_____	_____
Sub-total of item 10 (c):			_____
10 (d) (1) Coupling device for Severino pumping station	1 set	_____	_____
(2) Coupling device for Daule Peripa power station	1 set	_____	_____
Sub-total of item 10 (d):			_____
10 (e) (1) Power supply unit for Severino pumping station	1 set	_____	_____
(2) Power supply unit for Daule Peripa power station	1 set	_____	_____
Sub-total of item 10 (e):			_____

7. SCHEDULE II-A

TENDER PRICE OF MANDATORY SPARE PARTS

Where one of the tendered prices is for a number of parts the Tenders shall attach hereto a list of such parts.

Notes: (1) Tenderer shall fill up lists for Breakdown of Mandatory Spare Parts, vide Clause I.1.23 of Instructions to Tenderers and GS.10.2 of General Specifications.
(2) Designate the blank with "NA" or "NIL" where the price to be filled in is not applicable.
(3) * denotes J. Yen or US$ currency. ** means both foreign and local currencies for Item 9 (c) only.

1. Main Pumps and Valves (Subsection-A)
Prices for spare parts as described in Clause A.2.12, A.3.5 and A.4.4.

		Unit Price (*)	Total (FOB) (*)
1. Main Pumps:			
(1)	Six (6) sets of gland packings or seals for shaft	_____	_____
(2)	Two (2) sets of pump bearings	_____	_____
(3)	Six (6) sets of gasket of each type	_____	_____
(4)	A quantity equivalent to 20% of all fasteners, bolts, nuts and washers over 25mm in diameter	_____	_____
(5)	Two (2) sets of pressure gauges	_____	_____
(6)	Two (2) sets of temperature detectors for pump bearing metal	_____	_____
(7)	Two (2) sets of temperature detectors for pump bearing oil	_____	_____
(8)	Two (2) sets of oil level indicators for pump bearing	_____	_____
(9)	Two (2) sets of cooling water flow switches	_____	_____
(10)	Two (2) sets of wearing rings and sleeves, wherever existed	_____	_____
(11)	One (1) impeller	_____	_____

		Unit Price (*)	Total (FOB) (*)
2. Non-Return Valves:			
(1)	Two (2) sets of spindle with main and by-pass valve leaf	_____	_____
(2)	Three (3) sets of gaskets	_____	_____
3. Guard Valves:			
(1)	100 % of limit switches	_____	_____
(2)	Two (2) sets of torque switch	_____	_____
(3)	Two (2) grease nipples and/or caps of each type and size used.	_____	_____
(4)	One (1) set of fixed and moving contact for relays and switches, etc.	_____	_____
(5)	One (1) set of seal with clamping and fixing screws and plate for each valve	_____	_____
Total tender price for spare parts: Item 1 (d):			_____

II. Electric Motors (Subsection-B)
Price for Spare parts as described in Clause B.7.

1. Electric Motors:			
(1)	Two (2) sets of brush slip ring and holders	_____	_____
(2)	Two (2) sets of upper and lower guide bearing metals	_____	_____
(3)	Two (2) sets of thrust bearing metals	_____	_____
(4)	Two (2) sets of each type of oil level indicator	_____	_____
(5)	Two (2) sets of each type of temperature detector	_____	_____
(6)	Two (2) sets of each type of cooling water flow switch	_____	_____

		Unit Price (*)	Total (FOB) (*)
(7)	Three (3) sets of packings of each type for cooling water pipe	_____	_____
(8)	Two (2) sets of limit switches, float switches and relays for liquid rheostat	_____	_____
(9)	One (1) set secondary short-circuit contactor	_____	_____
(10)	One (1) set of electrolyte circulating pump	_____	_____
(11)	One (1) set of relays and fuses for each of protection system	_____	_____
	Total tender price for spare parts: Item 2 (b):		_____

III. Transformers (Subsection-C)

1 10,000kVA Transformers:
Prices or spare parts as described in Clause C.2.15.

(1)	One (1) set of gaskets	_____	_____
(2)	Two (2) bursting plates	_____	_____
(3)	One (1) dial type thermometer	_____	_____
(4)	One (1) oil level gauge	_____	_____

2. 1,000 kVA Transformer:
Prices for spare parts as described in Clause C.3.11.

(1)	One (1) set of gaskets	_____	_____
	Total tender price for spare parts: Item 3 (d):		_____

IV. Switchgear and Control Equipment (Subsectio-E)

1. 138 kV Circuit Breaker:
Prices for spare parts as described in Clause E.2.2.(6).

(1)	One (1) set of closing coil	_____	_____
(2)	One (1) set of tripping coil	_____	_____

		Unit Price (*)	Total (FOB) (*)
(3)	One (1) set of gaskets of each type	_____	_____
(4)	300% of actual use of signal lamps and fuses	_____	_____

2. 138 kV Disconnecting Switches:
Prices for spare parts as described in Clause E.2.3.(4).

(1)	300% of actual use of lamps of each type	_____	_____

3. 13.8 kV Circuit Breakers:
Prices for spare parts as described in Clause E.3.3.(8).

(1)	One (1) set of moving and fixed contacts for 3-phases of each rating	_____	_____
(2)	One (1) set of closing coil	_____	_____
(3)	One (1) set of tripping coil	_____	_____

4. 4.16 kV Circuit Breakers:
Prices for spare parts as described in Clause E.4.3.(8).

(1)	One (1) set of moving and fixed contacts for 3-phses of each rating	_____	_____
(2)	One (1) set of closing coil	_____	_____
(3)	One (1) set of tripping coil	_____	_____

5. 4.16 kV Load Break Switch:
Prices for spare parts as described in Clause E.4.4. (4)

(1)	300% of ordering lamps	_____	_____

6. 4.16 kV Power Fuses:
Prices for spare parts as described in Clause E.4.5.(4)

(1)	300% of fuse elements	_____	_____

7. Low Tension Switchgear:
Prices for spare parts as described in Clause E.5.8.

		Unit Price (*)	Total (FOB) (*)
(1)	One (1) set of fixed and moving contacts of circuit breaker of each rating	_____	_____
(2)	One (1) set of closing coils of circuit breaker	_____	_____
(3)	One (1) set of tripping coils of circuit breaker	_____	_____
(4)	One (1) set of gaskets of circuit breaker	_____	_____
(5)	300% of indicating lamps	_____	_____
(6)	200% of control and other fuses	_____	_____

8. Control Switchboards:
Prices for spare parts as described in Clause E.6.22.

(1)	300% of switchboard indicating lamps of each type	_____	_____
(2)	Ten (10) colour caps of each colour for indicating lamps	_____	_____
(3)	200% of fuses of each type and rating used	_____	_____
(4)	One (1) set of No-fuse breakers of each rating	_____	_____
(5)	Twenty (20) resistors for indicating lamps	_____	_____
(6)	One (1) set of complete assembly of each type of switches,timers, rheostats, rectifier and other especial devices	_____	_____

Total tender price or spare parts: Item 5(g): _____

V. Ancillary Equipment (Subsection-F)
Prices for spare parts as described in Clause F.2.6, F.3.4, F.5.4, F.6.7 and F.7.6.

1. Overhead Traveling Cranes:

(1)	Insulators for traveling trolley wires for each one (1) line	_____	_____
(2)	100% of various bearings used for each crane	_____	_____

		Unit Price (*)	Total (FOB) (*)
(3)	Two (2) grease nipples for each type or size used for each crane	_____	_____
(4)	100% of carbon brush holders, fuses and lamps used for each crane	_____	_____
(5)	100% of various moving and fixed contacts for switches, contactors, relays, etc. used for each crane	_____	_____
(6)	100% of fingertip and segment for controller used for each crane	_____	_____
(7)	200% of various carbon brushes for motors for each crane	_____	_____
2. Drainage Pumping Systems:			
(1)	Two (2) pump impellers	_____	_____
(2)	One (1) pump bearing set	_____	_____
3. Storage Battery:			
(1)	30% of diluted sulfuric acid	_____	_____
(2)	30% of distilled water	_____	_____
4. Oil Purifying Equipment:			
(1)	One (1) set of various seals and gaskets used for pumps and valves of the oil purifier and pump	_____	_____
(2)	One (1) set of various bearings or bushings for each size and type used in the pumps, motors, wheels or other rotating component of the equipment	_____	_____
(3)	One (1) set of various electrical parts such as contactors, relays, valve springs and sets, thermostat and pressure switch serving element, etc.	_____	_____

	Unit Price (*)	Total (FOB) (*)

5. Diesel Engine Generator Set:

(1)	100% of packings and gaskets for each type	_____	_____
(2)	100% of brushes for slip ring	_____	_____
(3)	200% of filter element for fuel oil, lubricating oil and air system	_____	_____
(4)	Electrical spare parts	_____	_____
	Total tender price for spare parts: Item 6 (g):		_____

VI. 13.8 kV Distribution Lines and Receiving Facilities (Subsection-H)
Price for spare parts as described in Clause H.4.3.

1. Switchgear:

(1)	Fifteen (15) pieces of fuse element for disconnecting fuse switches	_____	_____
	Total tender price for spare parts: Item 8 (c):		_____

VII. 138 kV Tramission Line (Subsection-I)

(A)	Towers		
	(1) Non-fabricated galvanized steel angle in 6m length (sizes to be detemrined later), 1 ton	_____	_____
	(2) Non-fabricated galvanized steel (sizes to be determined later), 0.3 ton	_____	_____
	(3) Galvanized steel bolts and nuts (size to be determined later), 0.3 ton	_____	_____
	Sub-total of item (A):		_____
(B)	Power Codnuctor and Overhead earthwire		
	(1) Power conductor ACSR ORIOLE, 3 km	_____	_____
	(2) Overhead earthwire GSW 55 mm2, 1 km	_____	_____
	(3) Mid-span joint for ACSR ORIOLE, 20 pcs	_____	_____

		Unit Price (*)	Total (FOB) (*)
(4)	Mid-span joint for GSW 55 mm2, 10 pcs	_____	_____
(5)	Vibration damper for ACSR ORIOLE, 20 pcs	_____	_____
(5)	Vibration damper for overhead earthwire, 10 pcs	_____	_____
(7)	Repair sleeve for ACSR ORIOLE, 10 pcs	_____	_____
(8)	Preformed armour rod for ACSR ORIOLE, 10 pcs	_____	_____
	Sub-total of item (B):		_____
(C)	Insulators and Fittings		
(1)	Suspension type insulator set with a clamp, 5 sets	_____	_____
(2)	Tension type insulator set with a clamp, 5 sets	_____	_____
(3)	Overhead earthwire suspension set, 5 sets	_____	_____
(4)	Overhead earthwire tension set with 2 clamps, 5 sets	_____	_____
(5)	Insulator disc, 50 pcs	_____	_____
(6)	Suspension clamp for ACSR ORIOLE, 10 pcs	_____	_____
(7)	Deadend clamp for ACSR ORIOLE, 10 pcs	_____	_____
	Sub-total of item (C):		_____
Total tender price for spare parts: Item 9 (d):			_____

	Unit Price (*)	Total (FOB) (*)

VIII. Power Line Carrier Telephone System (Subsection-J)
Prices for spare parts as described in Clause J.2.5, J.3.4, J.5.4 and J.6.3

Power Line Carrier Telephone Terminal

(a)	One spare module of power line carrier terminal equipment of each type	_____	_____
(b)	Spare parts such as crystal resonators, thermisters, plus (600 ohms and 75 ohms), test cords, relays, lamps, fuses and vacuum tube arrester etc. for 5 years operation	_____	_____

Line Traps

(a)	Two (2) sets of lighting arrester	_____	_____
(b)	One (1) set of each tuning unit	_____	_____

Feeder Cable and Cord

(a)	One (1) set of connector of each cable and cord to surge protective device	_____	_____
(b)	One (1) set of connector of the cord to carrier equipment	_____	_____
(c)	One (1) set of connector of the cable to coupling equipment	_____	_____

Power Supply Unit

(a)	20% of electrolyte of all cells	_____	_____
(b)	20% of distilled water of all cells	_____	_____
(c)	300% of actual use of signal - lamps and fuse element	_____	_____

Total tender price for spare parts: Item 10 (g): _____

	Unit Price (*)	Total (FOB) (*)
IX. Intake Trash Racks and Rake (Subsection-K)		
(1) One (1) set of rake prong	_____	_____
Total tender price for spare parts: Item 11 (d):		_____
X. Intake Gates and Gantry Crane (Subsection-L)		
(1) One (1) set of gate seal rubbers (undrilled)	_____	_____
(2) One (1) grease nipples and/or cups of each type and size used	_____	_____
(3) 100% of indicating lamps and fuses	_____	_____
(4) One (1) set of fixed and moving contacts for switches, relays, etc.	_____	_____
Total tender price for spare parts: Item 12 (f):		_____
XI. Discharge penstocks (Subsection-M)		
(1) 100% of packing for expansion joints and manholes	_____	_____
Total tender price for spare parts: Item 13 (b):		_____
XII. Conguillo Inlet, Outlet Facilities (Subsection-N)		
1. Outlet Valves:		
(1) Two (2) grease nipples and/or cups of each type and size used	_____	_____
(2) One (1) set of fixed and moving contacts for switches, relays, etc.	_____	_____
(3) 100% of limit and torque switches	_____	_____
2. Guard Valves:		
(1) Two (2) grease nipples and/or cups of each type and size used	_____	_____

	Unit Price (*)	Total (FOB) (*)
(2) One (1) set of seal with clamping and fixing screws and plate for each valve	_____	_____
3. Connecting Pipe, Loose Flange and Flexible Joint:		
(1) One (1) set of gasket of each type for pipe connections	_____	_____
Total tender price for spare parts: Item 14 (g):		_____

XIII. Poza Honda Inlet: Outlet Facilities (Subsection-O)

1. Outlet Valves:		
(1) Two (2) grease nipples and/or cups of each type and size used	_____	_____
(2) One (1) set of fixed and moving contacts for switches, relays, etc.	_____	_____
(3) 100% of limit and torque switches	_____	_____
2. Guard Valves:		
(1) Two (2) grease nipples and/or cups of each type and size used	_____	_____
(2) One (1) set of seal with clamping and fixing screws and plate for each valve	_____	_____
3. Connecting Pipe, Loose Flange and Flexible Joint:		
(1) One (1) set of gasket of each type for pipe connections	_____	_____
Total tender price for spare parts: Item 15 (h):		_____

7. SCHEDULE II-B

TENDER PRICE OF RECOMMENDED SPARE PARTS

Notes: (1) Refer to Clause GS.10.2 of General Specifications.
(2) Use as many pages as necessary to give and complete details (up to total CIF and inland transportation prices).
(3) Spare parts recommended herein are not used for tender evaluation purposes, but for contract negotiation, vide Clause I.1.23 of Instructions to Tenderers.
(4) * denotes J. Yen or US$ currency. ** means both foreign and local currencies for Item 9 (c) only.

Particulars	Unit Price (*)	Total (FOB) (*)
1. Main Pumps and Valves (Subsection-A) Ref. Clauses A.2.12, A.3.5 & A.4.4 Total:		
2. Electric Motors (Subsection-B) Ref. Clause B.7 Total:		
3. Transformers (Subsection-C) Ref. Clauses C.2.15, C.3.11 & C.4.8 Total:		
4. Static Condenser (Subsection-D) Ref. Clauses D.2.7 Total:		
5. Switchgear and Control Equipment (Subsection-E) Ref. Clauses E.2.2.(6), E.3.3.(8), E.4.3.(8), E.4.4.(4), E.5.8, E.6.22 & E.7.6 Total:		
6. Ancillary Equipment (Subsection-F) Ref. Clauses F.2.6, F.3.4, F.5.4, F.6.7 & F.7.6 Total:		
7. 13.8 kV Distribution Lines and Receiving facilities (Subsection-H) Ref. Clause H.4.3 Total:		
8. 138 kV Transmission Line (Subsection-I) Total:		
9. Power Line Carrier Telephone System (Subsection-J) Ref. Clause J.2.5 Total:		
10. Intake Trash Racks and Rake (Subsection-K) Ref. Clause K.5 Total:		
11. Intake Gates and Gantry Crane (Subsection-L) Ref. Clause L.7 Total:		

Particulars	Unit Price (*)	Total (FOB) (*)
12. Discharge Penstocks (Subsection-M) Ref. Clause M.4 Total:		
13. Conguillo Inlet, Outlet Facilities (Subsection-N) Ref. Clauses N.2.5, N.3.5, N.4.5, N.5.3 & N.6.6. Total:		
14. Poza Honda Inlet, Outlet facilities (Subsection-O) Ref. Clauses O.2.4, O.3.5, O.4.5, O.5.5, O.6.3 & O.7.3. Total:		
15. Grand Total - Item No.22 (a):		

Date and Place : _____

Tenderer: _____

Signature: _____

8. SCHEDULE - III-A

TENDER PRICE OF MANDATORY MAINTENANCE TOOLS

(Refer to Clauses 1.1.23 of Instructions to Tenders and GS.10.1 of General Specifications)

Item No.	Description	Q'ty	Tender Price Unit Price (*)	Total (FOB) (*)

Grand total Item No.16:

Notes: (1) Use as many pages as necessary to give full and complete details.

(2) * denotes J.Yen or US$ currency. ** means both foreign and local currencies for Item 9 (c) only.

Date and place : ____________________

Tenderer : ____________________

Signature : ____________________

8. SCHEDULE - III-B

TENDER PRICE OF RECOMMENDED MAINTENANCE TOOLS

(Refer to Clauses I.1.23 of Instructions to Tenderes and GS.10.1 of General Specifications)

Item No.	Description	Q'ty	Tender Price	
			Unit Price (*)	Total (FOB) (*)
			Grand total Item No. 22 (b):	

Notes:
(1) Use as many pages as necessary to give full and complete details (up to total CIF and inland transportation prices).
(2) Maintenance tools recommended herein are not used for tender evaluation purposes, but for contract negotiation.
(3) * denotes J.Yen or US$ currency. ** means both foreign and local currencies for Item 9 (c) only.

Date and place : _____
Tenderer : _____
Signature : _____

9. SCHEDULE - IV

TENDER PRICE OF EMPLOYER'S SHOP INSPECTION

(Refer to Clause GS.11.4 of General Specifications)

The following breakdown shall be filled by the Tenderer with respective tender prices.

Particulars	Explanation/1	Tender Price
- Name & place of factory		
- International round trip air ticket charge		
- Accommodation charges		
- Domestic travel charges including inspection trips		
- Personal expenses at the rate equivalent to _____ per day (_____/ day)		
- Other necessary charges, if any		
- Total		

Note: /1 : Use as many pages as necessary to give full and complete details.

Date and place : _____

Tenderer : _____

Signature : _____

10. SCHEDULE - V

TENDER PRICE OF INSTRUCTION TO PROJECT STAFF

(Refer to Clause GS.1.5 of General Specifications)

The following breakdown shall be filled by the Tenderer with respective tender prices.

Particulars	Explanation /1	Tender Price
- Remuneration (15 M/M)		
- International round trip air ticket charge		
- Accommodation charges		
- Mobilization cost		
- Other necessary charges, if any		
- Total		

Note: /1 : Use as many pages as necessary to give full and complete details.

Date and place : _____

Tenderer : _____

Signature : _____

11. SCHEDULE-VI

PERFORMANCE GUARANTEES

The Contractor shall prove satisfactorily the following entries for Performance Guarantees of the equipment in accordance with Clause GS.11 of the General Specifications.

SUBSECTION-A: MAIN PUMPS AND VALVES

1. MAIN PUMPS

(1) Normal discharge at 60 meters rated total head _____ m3/sec.

(2) Normal speed _____ r.p.m.

(3) Efficiency:
- (a) 120% discharge _____ %
- (b) 100% " _____ %
- (c) 80% " _____ %

(4) Total head:
- (a) 120% discharge _____ %
- (b) 100% " _____ %
- (c) 80% " _____ %

(5) Shaft power:
- (a) 120% discharge _____ %
- (b) 100% " _____ %
- (c) 80% " _____ %

(6) NPSH required at:
- (a) Rated head 60 meters _____
- (b) Minimum head _____
- (c) Low water level in suction pondage _____

2. NON-RETURN VALVES

(1) Closing time _____ sec.

(2) Max. working pressure _____ kgf/cm2

(3) Water leakage under maximum pressure _____ lit./min.

3. GUARD VALVES

(1) Operating time _____ sec.
(2) Max. working pressure _____ kgf/cm2
(3) Water leakage under maximum pressure _____ lit./min.

SUBSECION-B: ELECTRIC MOTORS

(1) Continuous rated output (shaft output) 2,400 KW
(2) No-load current _____ A
(3) Synchronous speed _____ r.p.m.
(4) Speed at rated output _____ r.p.m.
(5) Power factor at rated output _____ %
(6) Starting torque _____ kg-m
(7) Breakdown torque _____ kg-m
(8) Starting current _____ A
(9) Efficiency:
  (a) 100% load _____ %
  (b) 80% " _____ %
  (c) 60% " _____ %
  (d) 40% " _____ %
(10) Flywheel effect of motor (GD2) _____ ton-sq.m
(11) Maximum temperature rise at continuous full load current:
  (a) Stator by resistance _____ °C
  (b) Rotor by resistance _____ °C
  (c) Bearings _____ °C

SUBSECTION-C: TRANSFORMERS

1. 10,000 kVA MAIN TRANSFORMERS

(1) Continuous rated output _____ KVA

(2) No-load loss at rated frequency, rated voltage and nominal tap _____ kW

(3) Load loss at 75° C, rated frequency and output:

(a) At nominal tap _____ kW

(b) At maximum tap _____ kW

(c) At minimum tap _____ kW

(4) Per cent impedance drop at 75° C, 10,000 kVA and rated frequency:

(a) At nominal tap _____ %

(b) At maximum tap _____ %

(c) At minimum tap _____ %

(5) Inherent voltage regulation at 75° C, 10,000 kVA and rated frequency

(a) At 1.0 P.F. _____ %

(b) At 0.8 P.F. lagging _____ %

(6) Maximum temperature rise at rated output:

(a) Oil by thermometer _____ °C

(b) Winding by resistance measurement _____ °C

(7) Dry withstand voltage of each bushing _____ kV

(8) Wet withstand voltage of each bushing _____ kV

(9) Positive impulse voltage of each bushing:

(a) Wave form 1.2x50 micro-sec.

(b) Flashover voltage _____ kV

(c) Withstand voltage _____ kV

(10) Exciting current at nominal tap and rated voltage _____ A

2. <u>1,000 kVA TRANSFORMER</u>

(1) No-load loss at rated voltage and frequency _____ kW

(2) Load loss at rated output (75° C) _____ kW

(3) Maximum temperature rise at rated output:

(a) Oil by thermometer _____ °C

(b) Winding by resistance measurement _____ °C

(4) Dry withstand voltage of each bushing _____ kV

(5) Wet withstand voltage of each bushing _____ kV

(6) Positive impulse voltage of each bushing:
(a) Wave form 1.2x50 micro-sec.
(b) Flashover voltage _____ kV
(c) Withstand voltage _____ kV

(7) Per cent impedance drop at 75° C, 1,000 kVA nominal tap and rated frequency _____ %

(8) Inherent voltage regulation (75° C):
(a) At 1.0 P.F. _____ %
(b) At 0.8 P.F. lagging _____ %

(9) Exciting current at nominal tap at rated voltage _____ A

3. 300 kVA TRANSFORMER

(1) No-load loss at rated voltage and frequency _____ kW

(2) Load loss at rated output (75° C) _____ kW

(3) Maximum temperature rise at rated output:
(a) Winding by resistance measurement _____ °C

(4) Dry withstand voltage of each bushing _____ kV

(5) Positive impulse voltage of each bushing:
(a) Wave form 1.2x50 micro-sec.
(b) Flashover voltage _____ kV
(c) Withstand voltage _____ kV

(6) Per cent impedance drop at 75° C, 300 kVA nominal tap and rated frequency _____ %

(7) Inherent voltage regulation (75° C):
(a) At 1.0 P.F. _____ %
(b) At 0.8 P.F. lagging _____ %

(8) Exciting current at nominal tap at rated voltage _____ A

SUBSECTION-D: STATIC CONDENSERS

1. STATIC CONDENSERS

(1) Maximum temperature rise at rated voltage, at 40° C ambient temp. _____ °C

(2) Maximum withstand voltage (dry) _____ kV

(3) Positive impulse withstand voltage (dry) _____ kV

(4) Dielectric loss at normal voltage _____ kW

2. SERIES REACTORS

(1) Reactance _____ % (ohms)

(2) Maximum temperature rise at rated current _____ °C

(3) Maximum withstand voltage (dry) _____ kV

(4) Positive impulse withstand voltage (dry) _____ kV

(5) Loss _____ kW

3. DISCHARGE REACTORS

(1) Maximum temperature rise at rated voltage _____ °C

(2) Maximum withstand voltage (dry) _____ kV

(3) Maximum withstand voltage by induced method _____ kV

(4) Positive impulse withstand voltage (dry) _____ kV

SUBSECTION-E: SWITCHGEAR AND CONTROL EQUIPMENT
138 kV, 13.8 kV, 4.16 kV and 220/127 V circuits (as far as the apply)

1. CIRCUIT BREAKERS (for each type)

(1) Rupturing capacity (symmetrical) _____ MVA

(2) Opening time _____ C/S

(3) Closing time _____ C/S

(4) Maximum withstand voltage (dry) _____ kV

(5) Maximum withstand voltage (wet) _____ kV

(6) Positive impulse withstand voltage (dry) _____ kV

2. DISCONNECTING SWITCHES (for each type)

(1) Maximum withstand voltage (dry) _____ kV

(2) Maximum withstand voltage (wet) _____ kV

(3) Positive impulse withstand voltage (dry) _____ kV

3. LOAD BREAK SWITCH

(1) Maximum withstand voltage (dry) _____ kV

(2) Positive impulse withstand voltage (dry) _____ kV

4. POWER FUSES

(1) Rupturing capacity (symmetrical) _____ MVA

(2) Maximum withstand voltage (dry) _____ kV

(3) Positive impulse withstand voltage (dry) _____ kV

5. CURRENT TRANSFORMERS (for each type)

(1) Accuracy _____

(2) Overcurrent strength for 1 sec. _____ time of the rated primary current

(3) Maximum withstand voltage (dry) _____ kV

(4) Maximum withstand voltage (wet) _____ kV

(5) Positive impulse withstand voltage (dry) _____ kV

6. CAPACITANCE POTENTIAL TRANSFORMERS
(for each type)

(1) Accuracy _____

(2) Maximum withstand voltage (dry) _____ kV

(3) Maximum withstand voltage (wet) _____ kV

(4) Positive impulse withstand voltage (dry) _____ kV

7. LIGHTNING ARRESTERS (for each type)

(1) Minimum power frequency sparkover voltage (dry) _____ kV

(2) Power frequency flashover voltage (wet) _____ kV

(3) Impulse sparkover voltage (100%, dry) _____ kV

(4) Impulse sparkover voltage (100%, wet) _____ kV

(5) Maximum discharge voltage at 10 kA discharge _____ kV

(6) Nominal discharge current _____ A

(7) Maximum permissible line to ground voltage _____ kV

SUBSECTION-F: ANCILLARY EQUIPMENT

1. OVERHEAD TRAVELING CRANES

(1) Hoisting capacity;

(a) Main hoist _____ tons

(b) Auxiliary hoist _____ tons

(2) Speed:

(a) Lifting speed of main hoist _____ m/min.

(b) Lifting speed of auxiliary hoist _____ m/min.

(c) Traverse speed of crab _____ m/min.

(d) Travel speed of crane girder _____ m/min.

2. DRAINAGE PUMPS

(1) Normal discharge at 30 meters rated total head _____ m3/min.

(2) Efficiency at 100% discharge _____ %

3. STORAGE BATTERY

Capacity at 10 hour rating _____ AH

4. DIESEL ENGINE GENERATOR SET

(1) Diesel engine:

(a) Fuel oil consumption at 100% load at gen. terminal _____ liters/kW/hr

(b) Speed regulation with generator for instantaneous loading _____ %

(c) Speed regulation with generator for steady rate of loading _____ %

(2) Generator:

(a) Rated output _____ kW

(b) Rated capacity _____ kVA

(c) Maximum temperature rise of stator winding at full load current _____ °C

(d) Efficiency at 1.0 P.F. and 0.8 P.F. (75° C) at 100% load _____ %

(e) Maximum steady voltage regulation under voltage and speed control equipment in operation at 1.0 P.F. and 0.8 P.F. _____ %

SUBSECTION-H: 13.8 kV DISTRIBUTION LINE AND RECEIVING FACILITIES

1. 100 KVA TRANSFORMER

(1) No-load loss at rated voltage and frequency _____ kW

(2) Load loss at rated output (75° C) _____ kW

(3) Maximum temperature rise at rated output:
(a) Winding by resistance measurement _____ °C

(4) Dry withstand voltage of each bushing _____ kV

(5) Positive impulse voltage of each bushing:
(a) Wave form 1.2x50 micro-sec.
(b) Flashover voltage _____ kV
(c) Withstand voltage _____ kV

(6) Per cent impedance drop at 75° C, 100 kVA nominal tap and rated frequency _____ %

(7) Inherent voltage regulation (75° C):
   (a) At 1.0 P.F. _____ %
   (b) At 0.8 P.F. lagging _____ %

(8) Exciting current at nominal tap at rated voltage _____ A

2. 50 KVA TRANSFORMER

(1) No-load loss at rated voltage and frequency _____ kW

(2) Load loss at rated output (75° C) _____ kW

(3) Maximum temperature rise at rated output:
   (a) Winding by resistance measurement _____ °C

(4) Dry withstand voltage of each bushing _____ kV

(5) Positive impulse voltage of each bushing:
   (a) Wave form 1.2x50 micro-sec.
   (b) Flashover voltage _____ kV
   (c) Withstand voltage _____ kV

(6) Per cent impedance drop at 75° C, 50 kVA nominal tap and rated frequency _____ %

(7) Inherent voltage regulation (75° C):
   (a) At 1.0 P.F. _____ %
   (b) At 0.8 P.F. lagging _____ %

(8) Exciting current at nominal tap at rated voltage _____ A

SUBSECTION-I: 138 kV TRANSMISSISON LINE

(1) Loading and Temperatures
   (a) Assumed wind loadings:
   Wind pressure on conductors, insulators and overhead earthwire (on full projected area), 39 kg/m2 _____
   Wind pressure on lattice steel supports (on the projected area), 80 kg/m2 _____

(b) Assumed wind pressure on insulator sets (on the project area):

Minimum tempeerature, 5 ° C _____

Everyday temperature, 25 ° C _____

Maximum temperature, 60 ° C _____

(2) Conductor and Earthwire

(a) ACSR Conductors, ORIOLE:

Ultimate strength _____ kg

Max. Resistance per km at 20 ° C _____ ohms

(b) Galvanized steel earthwire, 7/3.20 mm:

Ultimate strength _____ kg

Max. Resistance per km at 20 ° C _____ ohms

(3) Insulators and Fittings

<u>183 kV lines, ORIOLE</u>

(a) Minimum failing load for complete:

Single suspension sets _____ kg

Jumper suspension sets _____ kg

Single tension sets _____ kg

Light duty tension sets _____ kg

(b) Positive wave impulse withstand voltage for:

Single suspension sets _____ kV

Jumper suspension sets _____ kV

Single tension sets _____ kV

Light duty tension sets _____ kV

(4) Minimum Factors of Safety

(a) Conductors and earthwires at maximum working tension based on ultimate strength, 2.5 _____

(b) Conductors and earthwires at everyday temperature still air tension, based on ultimate strength, 5.0 _____

(c) Deadend clamps and mid-span joints, based on ultimate strength of conductor and earthwire, 0.95 _____

(d) Insulator strings and fittings at maximum working tension based on failing load, 3.0 _____

(e) Straight line supports and foundations under normal working loads _____

(f) Angle, section and terminal supports and foundations under normal working loads, 2.5 _____

(g) Towers under broken wire loads, 1.25 _____

(h) Foundations under broken wire loads, 1.5 _____

SUBSECTION-J: POWER LINE CARRIER TELEPHONE SYSTEM

Telephone Terminal Equipment

(1) Output power of transmitter (R.E.P) _____ dBm

(2) Basic carrier frequency band _____ kHz

(3) Carrier frequency stability _____ dB

(4) Minimum sensitivity _____ dB

(5) Impedance:

(a) Carrier frequency circuit, 75 ohms _____

(b) Voice frequency circuit, 600 ohms _____

(6) Spurious emission _____

(7) Power source voltage, 48 V _____

Coupling Filter

(1) Coupling arrangement _____

(2) Frequency range _____ kHz

(3) Return loss _____ dB

Line Trap

(1) Continuous current, 600 A _____

(2) Short-time current (for one second), 25 kV _____

(3) Tapping loss, less than 2.6 dB _____

(4) Temperature rise _____ dec.C

(5) Lighting arrester:

(a) Rated voltage _____ kV
(b) AC spark over voltage _____ kV
(c) Impulse spark over voltage _____ kV

(6) Impulse withstand voltage _____ kV

Surge Protective Device

(1) Rated voltage, AC 100 V _____

(2) Rated current, AC 2, A _____

(3) Rated short-time current, AC 10 A _____

Coaxial Cable

(1) Dielectric strength, AC 6,000 V _____

(2) Insulation resistance _____ km-ohm

(3) Nominal impedance at 300 kHz _____ ohm

Coupling Capacitor Potential Device

(1) Power frequency withstand voltage (dry), 275 kV

(2) Power frequency withstand voltage (wet) _____ kV

(3) Impulse withstand voltage, 650 kV _____

(4) Accuracy _____ Class

SUBSECTION-K: RAKE

(1) Rated capacity of rake _____ kgf

(2) Effective width of raque _____ m

(3) Operation speed
(a) Hoisting _____ m/min.
(b) Lowering _____ m/min.

SUBSECTION-L: INTAKE GATES AND GANTRY CRANE

(1) Rated hoisting capacity _____ ton

(2) Operation speed
  (a) Raising _____ m/min.
  (b) Lowering _____ m/min.
  (c) Crane travelling _____ m/min.

SUBSECTION-M: DISCHARGE PENSTOCKS

(1) Max. internal pressure _____ kgf/cm2

(2) Max. external pressure _____ kgf/cm2

(3) Nominal diameter _____ m

(4) Max. discharge per lane _____ m3/sec.

SUBSECTION-N: CONGUILLO INLET, OUTLET FACILITIES

(1) Diameter of outlet/guard valves _____ m

(2) Discharge	Max. desing head	Min. desing head
(a) Max. discharge	_____ m3/sec	_____ m3/sec
(b) Min. discharge	_____ m3/sec.	_____ m3/sec

(3) Rated out put of motor-drive actuators _____ kW

(4) Capacity of drain pump _____ m3/min.

(5) Rated output and revolution of diesel engine generator set _____ KW _____ rpm

SUBSECTION-O: POZA HONDA INLET, OUTLET FACILITIES

(1) Diameter of outlet/guard valves _____ m

(2) Discharge	Max. design head	Min. design head
(a) Max. discharge	_____ m3/sec.	_____ m3/sec
(b) Min. discharge	_____ m3/sec.	_____ m3/sec

(3) Rated out put of motor-drive actuators _____ kW

(4) Capacity of drain pump _____ m3/min.

(5) Rated output and revolution of diesel engine generator set. _____ kW _____ rpm

Date and Place: _____
Tenderer: _____
Signature: _____

12. SCHEDULE-VII

TECHNICAL PARTICULARS

The following schedule of Technical Particulars shall be filled in by the Tenderer. These technical particulars will be binding on the Tenderer/Contractor and no change shall allow without the prior written permission of CRM.

SUBSECTION-A. MAIN PUMPS AND VALVES

1. MAIN PUMPS

(1) Manufacturer's name		
(2) Number	6	nos.
(3) Type		
(4) Direction of rotation viewed from above	Clockwise	
(5) Critical cavitation factor		
(6) Cooling water for bearing		lit./min.
(7) Maximum temperature rise of main bearing at cooling water temperature of 30° C		° C
(8) Volume of lubricating oil for bearings		liters
(9) Grade of oil to be used		
(10) Quantity of necessary grease		kg/day
(11) Impeller :		
(a) Material		
(b) Diameter		mm
(c) Number of Blades		nos.
(12) Main shaft :		
(a) Material		
(b) Diameter		mm
(c) Diameter of flange at motor shaft coupling		mm
(13) Casing :		
(a) Material		
(b) Inlet diameter		mm
(c) Outlet diameter		mm
(d) Overall dimensions	x	mm
(14) Specific speed (Ns)		
(15) Weight of impeller and shaft assembly		kgs
(16) Weight of casing		kgs
(17) Vertical height of the longest assembly to be lifted with impeller and shaft		mm
(18) Suction pipe :		
(a) Material		
(b) Type of construction		
(c) Minimum thickness of pipe shell		mm
(d) Number of section for delivery		
(e) Safety factor against external pressure		

2. NON-RETURN VALVES

(1) Manufacturer's name		
(2) Number	6	nos.
(3) Type	Check valve	
(4) Diameter		mm
(5) Design pressure		kgf/cm2
(6) Working pressure		kgf/cm2
(7) Operating method		
(8) Materials		
(a) Body		
(b) Leaf		
(c) Seating		
(d) Spindle		
(9) Weight per unit		kgs
(10) Dimensions		mm

3. GUARD VALVES

(1) Manufacturer's name		
(2) Number	6	nos.
(3) Type		
(4) Diameter		mm
(5) Design pressure		kgf/cm2
(6) Working pressure		kgf/cm2
(7) Operating method	Motor driven	
(8) Electric motor :		
(a) Type		
(b) Output		kW
(c) Rated voltage		V
(d) Rated frequency		Hz
(9) Materials		
(a) Body		
(b) Leaf		
(c) Seating		
(d) Spindle		
(10) Diameter of manual handle		mm
(11) Weight per unit		kgs
(12) Dimensions :		
(a) Height		mm
(b) Width		mm

SUBSECTION-B. ELECTRIC MOTORS

(1) Manufacturer's name		
(2) Number	6	nos.
(3) Type		
(4) Direction of rotation viewed from above	Clockwise	
(5) Rated voltage		kV
(6) Rated frequency		Hz
(7) Stator :		
(a) Number of section (if need)		nos.
(b) Dimension for shipment		mm
(c) Weight for shipment		kgs
(d) Outside dimensions of stator frame		mm
(e) Inside diameter of stator core		mm
(8) Rotor :		
(a) Type of pole damper windings		
(b) Maximum diameter		mm
(c) Weight for shipment		kgs
(9) Main shaft :		
(a) Material		
(b) Diameter		mm
(10) Vertical height of the longest assembly to be lifted		mm
(11) Type of bearings		
(12) Air coolers :		
(a) Number of unit cooler		nos.
(b) Material of tubes		
(c) Cooling water required at rated output (cooling water temperature of 25° C)		lit./min.
(d) Pressure drops of water through air cooler at rated output		kgf/cm2
(13) Insulation class		
(14) Material of insulation :		
(a) Stator conductors in core		
(b) Stator and windings		
(c) Stator core plates		
(d) Field windings		
(15) Weight per unit :		
(a) Air cooler		kgs
(b) Complete rotor with shaft		kgs
(c) Complete stator		kgs
(d) Heaviest single or assembled part for crane lift		kgs
(16) Largest package :		
(a) Item		
(b) Weight		kgs
(c) Dimensions		mm
(17) Heaviest package :		
(a) Item		
(b) Weight		kgs

(c) Dimensions _____ mm

(18) Total weight per unit _____ kgs

(19) Local control panel :

(a) Manufacturer's name _____

(b) Number _____ nos.

(c) Type _____

(d) Name of panel _____

(e) Weight _____ kgs

(f) Dimensions _____ mm

(g) Contents in panel _____

(20) Supplying method of cooling water _____

SUBSECTION-C. TRANSFORMERS

1. 10,000 kVA MAIN TRANSFORMERS

(1) Manufacturer's name		
(2) Number	2	
(3) Rated voltage :		
(a) H.V. (no load)	138	kV
(b) L.V. (no load)	4.16	kV
(4) Number of phase	3	
(5) Rated frequency	60	Hz
(6) Percent reactance drop at full load (75° C) :		
(a) At nominal ratio tap		%
(b) At maximum tap		%
(c) At minimum tap		%
(7) Percent resistance drop at full load (75° C) :		
(a) At nominal ratio tap		%
(b) At maximum tap		%
(c) At minimum tap		%
(8) Exciting current at nominal tap :		
(a) At rated voltage		amp.
(b) At 105% of rated voltage		amp.
(c) At 110% of rated voltage		amp.
(9) Maximum flux density		gausses
(10) Maximum current density :		
(a) In primary winding		amp/sq.mm
(b) In secondary winding		amp/sq.mm
(11) Minimum clearance to ground of :		
(a) Primary winding		mm
(b) Secondary winding		mm
(12) No-load tap changer :		
(a) Type		
(b) Number of taps		
(c) Volt per step		
(d) Tapping range	±	% of 138 kV
(e) Current rating		
(13) Nature of insulation of lamination		
(14) Type and construction of oil conservator		
(15) Construction type of core		
(16) Type of bushing		
(17) Tightening method for core		
(18) Supposed partial discharge at high voltage side (maximum voltage x 1.3)		pc
(19) Volume of insulation oil		liters
(20) Number of radiators		nos.
(21) Weight and dimensions :		
(a) Core and coils		kgs
(b) Tank and fittings		kgs
(c) Oil		kgs
(d) Total weight		kgs
(e) Height to top of bushing		mm

(f) Length		mm
(g) Breadth		mm
(h) Maximum height of lifting during assembly or maintenance		mm
(22) Largest package :		
(a) Item		
(b) Weight		kgs
(c) Dimensions		mm
(23) Heaviest package :		
(a) Item		
(b) Weight		kgs
(c) Dimensions		mm
(24) Type of insulating oil		

2. <u>1,000 kVA TRANSFORMER</u>

(1) Manufacturer's name		
(2) Number	1	
(3) Continuous maximum rated output	1,000	kVA
(4) Rated voltage under no-load :		
(a) Primary	4.16	kV
(b) Secondary	13.8	kV
(5) Number of phase	3	phase
(6) Rated frequency	60	Hz
(7) Maximum flux density		gausses
(8) Maximum current density :		
(a) Primary winding		amp/sq.mm
(b) Secondary winding		amp/sq.mm
(9) Minimum clearance to ground of :		
(a) Primary winding		mm
(b) Secondary winding		mm
(10) Nature of insulation of lamination		
(11) Type and construction of oil conservator		
(12) Construction type of core		
(13) Type of bushing		
(14) Volume of insulation oil		liters
(15) Number of radiators		nos.
(16) Weight and dimensions :		
(a) Core and coils		kgs
(b) Tank and fittings		kgs
(c) Oil		kgs
(d) Total weight		kgs
(e) Length		mm
(f) Height to top of bushing		mm
(g) Maximum height of lifting during assembly or maintenance		mm
(17) Largest package :		
(a) Item		
(b) Weight		kgs
(c) Dimensions		mm

(18) Heaviest package :

(a)	Item	
(b)	Weight	kgs
(c)	Dimensions	mm

3. 300 kVA TRANSFORMER

(1)	Manufacturer's name	
(2)	Number	1
(3)	Continuous maximum rated output	300 kVA
(4)	Rated voltage under no-load :	
(a)	Primary	4.16 kV
(b)	Secondary	220/127 V
(5)	Number of phase	3 phase
(6)	Rated frequency	60 Hz
(7)	Maximum flux density	gausses
(8)	Maximum current density :	
(a)	Primary winding	amp/sq.m
(b)	Secondary winding	amp/sq.m
(9)	Minimum clearance to ground of :	
(a)	Primary winding	mm
(b)	Secondary winding	mm
(10)	Nature of insulation of lamination	
(11)	Type of core	
(15)	Type of bushing	
(13)	Weight and dimensions :	
(a)	Total weight	kgs
(b)	Length	mm
(c)	Breadth	mm
(d)	Height to top of bushing	mm

SUBSECTION-D. STATIC CONDENSERS

1. STATIC CONDENSERS

(1) Manufacturer's name _____
(2) Number _____
(3) Type _____
(4) Rated capacity _____ kVA
(5) Rated normal voltage _____ kV
(6) Quantity of oil _____ liters
(7) Weight per unit _____ kgs
(8) Loss-temperature characteristic _____

2. SERIES REACTORS

(1) Manufacturer's name _____
(2) Number _____
(3) Type _____
(4) Rated capacity _____ kVA
(5) Rated terminal voltage _____ V
(6) Rated current _____ A
(7) Quantity of oil _____ liters
(8) Weight _____ kgs
(9) Dimensions _____ mm

3. DISCHARGE COILS

(1) Manufacturer's name _____
(2) Number _____
(3) Type _____
(4) Rated voltage :
1stly _____ kV
2ndly _____ kV
(5) Quantity of oil _____ liters
(6) Weight _____ kgs
(7) Dimensions _____ mm

SUBSECTION-E. SWITCHGEAR AND CONTROL EQUIPMENT
138 kV, 13.8 kV, 4.16 kV and 220/127 V circuits (as far as they apply)

1. CIRCUIT BREAKERS (for each type)

(a)	Manufacturer's name	_____	
(b)	Number	_____	
(c)	Type	_____	
(d)	Rated voltage	_____	kV
(e)	Rated current	_____	amp.
(f)	Length of stroke	_____	mm
(g)	Length of each break	_____	mm
(h)	Minimum distance of live parts to earth	_____	mm
(i)	Center to center between phase	_____	mm
(j)	Current taken by closing coil (DC 125 V)	_____	amp.
(k)	Current taken by trip coil (DC 125 V)	_____	amp.
(l)	Pressure of air	_____	kgf/sq.cm.
(m)	Air consumption by one cycle C-0	_____	liters
(n)	Maximum shock load imposed in floor or foundation when opening under fault conditions	_____	
(o)	Weight	_____	kgs
(p)	Over all dimensions	_____	mm

2. DISCONNECTING SWITCHES (for each type)

(1)	Manufacturer's name	_____	
(2)	Number	_____	
(3)	Type	_____	
(4)	Rated voltage	_____	kV
(5)	Rated current	_____	amp.
(6)	Type of operating mechanism	_____	
(7)	Exciting current breaking capacity	_____	amp.
(8)	Overall height	_____	mm
(9)	Center to center between phases	_____	mm
(10)	Total weight	_____	kgs
(11)	Dimensions	_____	mm

3. CURRENT TRANSFORMERS (for each type)

(1)	Manufacturer's name	_____	
(2)	Number	_____	
(3)	Type	_____	
(4)	Current ratio	_____	
(5)	Rated voltage	_____	kV
(6)	Rated burden	_____	VA
(7)	Quantity of oil	_____	liters
(8)	Weight including oil	_____	kgs
(9)	Dimensions	_____	mm

4. CAPACITANCE POTENTIAL DEVICE AND POTENTIAL TRANSFORMERS

(for each type)

(1) Manufacturer's name _____
(2) Number _____
(3) Type _____
(4) Voltage ratio _____
(5) Rated burden _____ VA
(6) Quantity of oil _____
(7) Weight including oil _____ kgs
(8) Dimensions _____ mm

5. LIGHTNING ARRESTERS

(for each type)

(1) Manufacturer's name _____
(2) Number _____
(3) Type _____
(4) System voltage _____ kV
(5) Weight _____ kgs
(6) Dimensions _____ mm

6. NEUTRAL GROUNDING RESISTOR

(1) Manufacturer's name _____
(2) Number of set 1
(3) Type _____
(4) Number of unit _____
(5) Rated voltage _____ kV
(6) Rating _____ amp. _____ sec
(7) Maximum temperature rise _____ °C
(8) Value of resistance _____ ohm
(9) Dimensions of each unit _____ mm
(10) Dimensions of overall construction _____ mm
(11) Total weight _____ kgs

7. CUBICLES

(for each type)

(1) Manufacturer's name _____
(2) Type _____
(3) Name of cubicle _____
(4) Weight _____ kgs
(5) Dimensions _____ mm
(6) Type, construction and characteristics of instruments _____
(7) Type, construction and characteristics of relays _____

8. CONTROL SWITCHBOARD

(1) Manufacturer's name _____

(2) Type _____

(3) Name of panel _____

(4) Weight _____ kgs

(5) Dimensions _____ mm

(6) Type, construction and characteristics of instrument _____

(7) Type, construction and characteristics of relays _____

9. BATTERY CHARGER

(1) Manufacturer's name _____

(2) Type of rectifier _____

(3) Maximum current for rectifier _____

(4) Number of rectifier _____

(5) Dimension of cubicle _____ mm

10. WATER LEVEL AND FLOW INDICATORS (for each type)

(1) Manufacturer's name _____

(2) Name of equipment _____

(3) Type construction and characteristics of equipment _____

(4) Weight _____ kgs

(5) Dimensions _____ mm

SUBSECTION-F. ANCILLARY EQUIPMENT

1. OVERHEAD TRAVELLING CRANES

(1)	Manufacturer's name	
(2)	Number	nos.
(3)	Span (center to center of rails)	10.0 and 10.5 m
(4)	Lifting height	m
(5)	Power source	A.C. 220/127 V, 3-phase, 4 wire, 60 Hz
(6)	Electric motor's capacity :	
	(a) For travelling of crane girder	kW
	(b) For traversing of crab	kW
	(c) For hoisting of main hoist	kW
	(d) For hoisting of auxiliary hoist	kW
(7)	Steel material used and its strength	
(8)	Size of travelling rails	kgs/m
(9)	List of major electrical equipment	
(10)	Weight per unit :	
	(a) Crane structure	kgs
	(b) Travel mechanism	kgs
	(c) Crab frame	kgs
	(d) Main hoist	kgs
	(e) Auxiliary hoist	kgs
(11)	Largest package :	
	(a) Item	
	(b) Weight	kgs
	(c) Dimensions	mm
(12)	Heaviest package :	
	(a) Item	
	(b) Weight	kgs
	(c) Dimensions	mm
(13)	Total weight	kgs

2. DRAINAGE PUMPING SYSTEMS

(1)	Manufacturer's name	
(2)	Number of pumps	nos.
(3)	Type of pump	
(4)	Bore of pump	mm
(5)	Driving method	Electric motor driven
(6)	Material of casing and impeller	
(7)	Weight of pump motor unit	kgs
(8)	Electric motor :	
	(a) Manufacturer's name	
	(b) Output	kW
	(c) Rated voltage	220 V
	(d) Frequency	60 Hz
	(e) Speed	r.p.m.
	(f) Insulation	Class E

(9) Control facilities :
- (a) Manufacturer's name _____
- (b) Control method _____
- (c) Weight _____ kgs
- (d) Contents in control panel _____

(10) Drain discharge pipes :
- (a) Number of pipeline _____ nos.
- (b) Material _____
- (c) Diameter _____ mm

(11) Drain Pipes :
- (a) Number of pipes _____ nos.
- (b) Material _____
- (c) Diameter _____ mm

3. STORAGE BATTERY
- (1) Manufacturer's name _____
- (2) Number of sets 1
- (3) Number of cell _____ nos.
- (4) Rated voltage 125 V
- (5) Type _____
- (6) Dimensions of each cell _____ mm
- (7) Dimensions of overall construction _____ mm
- (8) Volume of sulphuric acid _____ liters
- (9) Total weight _____ kgs

4. OIL PURIFYING EQUIPMENT
(1) Oil purifier :
- (a) Manufacturer's name _____
- (b) Number 1
- (c) Capacity _____ lit./min.
- (d) Technical data
  - i) Power required _____ mm
    _____ V
    _____ kW
  - ii) Weight _____ kgs
  - iii) Dimensions _____ mm

(2) Oil filter :
- (a) Manufacturer's name _____
- (b) Number _____
- (c) Pressure _____ kgf/cm2
- (d) Capacity at an oil viscosity of _____ SUs and a temperature _____ °C _____ lit./min.
- (e) Filter element and opening size _____

(SUs means Saybolts Universal Seconds)

(3) Oil transfer pump :
- (a) Manufacturer's name _____
- (b) Type _____
- (c) Pressure _____ kgf/cm2

(d)	Capacity at an oil viscosity of _____ SUs and a temperature _____° C	_____	lit./min.
(e)	Motor rating	_____	v
		_____	kW

(4) Oil transfer pump, strainer and cart assembled :

(a)	Weight	_____	kgs
(b)	Dimensions	_____	mm

(5) Oil tester :

(a)	Manufacturer's name	_____	
(b)	Number	_____	
(c)	Maximum testing voltage	50	kV
(d)	Capacity	5	kVA
(e)	Weight	_____	kgs
(f)	Dimensions	_____	mm

5. <u>DIESEL ENGINE GENERATOR SET</u>

(1) Diesel engine :

(a)	Manufacturer's name	_____	
(b)	Number	1	
(c)	Normal speed	_____	r.p.m.
(d)	Rated output	_____	HP
(e)	Lubricating oil consumption at 100% load at generator terminal	_____	lit./kW/hr.
(f)	Volume of cooling water at 100% load at generator terminal	_____	lit./hr.
(g)	Fuel oil specification	_____	
(h)	Lubrication oil specification	_____	
(i)	Piston overhauling height from mounting surface	_____	mm
(j)	Output of starting motor	_____	kW
(k)	Capacity of the oil daily tank	_____	liters
(l)	Total weight of engine	_____	kgs
(m)	Maximum weight of one package	_____	kgs
(n)	Dimensions	_____	mm

(2) Generator :

(a)	Manufacturer's name	_____	
(b)	Number	_____	
(c)	Normal speed	_____	r.p.m.
(d)	Rated voltage	220/127	V
(e)	Rated frequency	60	Hz
(f)	Rated power factor (lagging)	0.8	
(g)	Rated field current at normal conditions	_____	A
(h)	Inherent voltage regulation at 1.0 p.f. (75° C)	_____	%
(i)	Inherent voltage regulation at 0.8 p.f. (75° C)	_____	%
(j)	Total weight of generator	_____	kgs
(k)	Maximum weight of one package	_____	kgs
(l)	Dimensions	_____	mm

SUBSECTION-G MISCELANEOUS MATERIALS

1. ALUMINUM CONDUCTOR STEEL REINFORCED

(1) Manufacturer's name _____

(2) Total cable length estimated by the Tenderer

(a) Severino P.S. _____ m

(b) Doule Peripa HP.S. _____ m

(3) Highest system voltage _____ kV

(4) Nominal cross-section of conductor _____ mm2

(5) Overall diameter _____ mm

(6) Approx. weight per meter _____ kgs

(7) D.C. conductor resistance at 20° C _____ ohm/km

(8) Electrostatic capacitance at 20° C _____ micro.F/km

(9) Insulation resistance at 20° C _____ M.ohm-km

(10) Maximum permissible temperature at an ambient temperature of not exceeding 40° C _____ °C

2. INSULATOR UNITS

(1) Manufacturer's name _____

(2) Minimum failing load _____ kgs

(3) Nominal diameter _____ mm

(4) Nominal spacing of units _____ mm

(5) Withstand voltage

(a) 60 Hz, wet, 1 min. _____ kV

(b) 60 Hz, dry, 1 min. _____ kV

(c) Impulse _____ kV

(6) Minimum puncture voltage in oil _____ kV

(7) Nominal weight _____ kgs.

3. INSULATOR SET COMPLETE

(1) Number of units per string _____

(2) Overall length or height _____ mm

(3) Minimum failing load

(a) Tension _____ kgs

(b) Bending _____ kgs

(4) Withstanding voltage

(a) 60 Hz, wet, 1 min. _____ kV

(b) 60 Hz, dry, 1 min. _____ kV

(c) Impulse _____ kV

(5) Weight _____ kgs

4. GALVANIZED STEEL WIRES

(1) Manufacturer's name _____

(2) Stranded conductor

(a) Number and diameter of steel wire _____

(b) Overall diameter _____ mm

(c) Cross-section _____ mm2

(d) Weight _____ kg/km
(e) Calculated breaking load _____ kgs
(f) Modulus of elasticity _____ kg/mm2
(g) Coefficient of linear expansion _____ °C
(h) Length of one drum _____ m
(i) Approximate net weight on one drum _____ kgs
(j) Approximate gross weight on one drum _____ kgs
(k) Dimension of drum
(diameter x thickness) _____ m x m

(3) Individual wires
(a) Tolerance of diameter _____ mm
(b) Minimum tensile strength _____ kg/mm2
(c) Minimum elongation in 250 mm _____ %
(d) Galvanizing
Min. quantity of zinc coating _____ g/m2
Min. number of uniformity
(min. x time) _____
Min. diameter of wrapping _____ mm

5. STEEL STRUCTURE DESIGN
(1) Maximum ratio of unsupported length of steel composition members to their least radius of gyration :
(a) Main member _____
(b) Bracings _____
(c) Redundants _____
(2) Ultimate stress in tension members _____ kg/mm2
(3) Ultimate stress in compression members (expressed as function L/R) _____ kg/mm2
(4) Formula for calculation for ultimate stress in compression _____

SUBSECTION-H. 13.8 kV DISTRIBUTION LINE AND RECEIVING FACILITIES

1. 100 kVA TRANSFORMER

(1) Manufacturer's name		
(2) Number	1	
(3) Continuous maximum rated output	100	kVA
(4) Rated voltage under no-load :		
(a) Primary	13.8	kV
(b) Secondary	220/127	V
(5) Number of phase	3	phase
(6) Rated frequency	60	Hz
(7) Maximum flux density		gausses
(8) Maximum current density :		
(a) Primary winding		amp/sq.m
(b) Secondary winding		amp/sq.m
(9) Minimum clearance to ground of :		
(a) Primary winding		mm
(b) Secondary winding		mm
(10) Nature of insulation of lamination		
(11) Type of core		
(12) Type of bushing		
(13) Weight and dimensions :		
(a) Total weight		kgs
(b) Length		mm
(c) Breadth		mm
(d) Height to top of bushing		mm

2. 50 kVA TRANSFORMER

(1) Manufacturer's name		
(2) Number	1	
(3) Continuous maximum rated output	50	kVA
(4) Rated voltage under no-load :		
(a) Primary	13.8	kV
(b) Secondary	220/127	V
(5) Number of phase	3	phase
(6) Rated frequency	60	Hz
(7) Maximum flux density		gausses
(8) Maximum current density :		
(a) Primary winding		amp/sq.m
(b) secondary winding		amp/sq.m
(9) Minimum clearance to ground of :		
(a) Primary winding		mm
(b) Secondary winding		mm
(10) Nature of insulation of lamination		
(11) Type of core		
(12) Type of bushing		
(13) Weight and dimensions :		
(a) Total weight		kgs
(b) Length		mm

(c) Breadth _____ mm

(d) Height to top of bushing _____ mm

Particulars	Unit	Required Conductor	Required Earthwire	Proposed Conductor	Proposed Earthwire
1. STRANDED CONDUCTORS AND EARTHWIRES					
(1) Number and diameter of:	nos./mm	30/2.69	-		
(a) Aluminium wire	nos./mm	7/2.69	7/3.2		
(b) Steel wire	mm	-	-		
(2) Overall diameter					
(3) Cross-section of:					
(a) Aluminium wire	mm2	-	-		
(b) Steel wire	mm2	-	-		
(4) Weight per 1,000 m	kg	-	-		
(5) Calculated breaking load	kN	-	-		
(6) Maximum resistance at 20° C per 1,000 m	ohm	0.1599	-		
(7) Modulus of elasticity	kg/mm2	-	-		
(8) Coefficient of linear expansion	1/° C	-	-		
(9) Utmost layer	-	Z-lay	Z-lay		
(10) Minimum weight of grease	kg/km	-	-		
(11) Length on one drum	m	Not less than 2,000	Not less than 2,000		
(12) Approximate net weight on one drum	kg	-	-		
(13) Approximate gross weight on drum	kg	-	-		
(14) Dimension of drum (diameter x thickness)	mm x mm	-	-		
2. INDIVIDUAL WIRES BEFORE STRANDING					
(1) Tolerance of diameter of:					
(a) Aluminium wire	%	±1.0	-		
(b) Steel wire	%	±2.0	0.08		
(2) Minimum tensile strength:					
(a) Aluminium wire	kg/mm2	16.5	-		
(b) Steel wire	kg/mm2	130.0	125.0		
(3) Elongation:					
(a) Aluminium wire	%	1.7	-		
(b) Steel wire	%	4.5	4.0		
(4) Conductivity:	%	-	-		
(5) Minimum twisting number of steelwire:					
(a) 100 x diameter (length)	nos.	18	14		
(6) Galvanizing:					
(a) Min. quantity of zinc coating	g/m2	245	230		
(b) Min. number of uniformity 1 minute	times	4	2.5		
3. CONDUCTOR ACCESSORIES					
(1) Tension Joint					
(a) Type	-	Compression	Compression		
(b) Materials	-	Aluminium & Steel	Steel		
(c) Length	mm	-	-		
(d) Ultimate breaking load	kg	95% of cond.	95% of g. wire		
(2) Vibration Dampers					
(a) Type	-	Stockbridge	Stockbridge		
(b) Weight	kg	4.5 (10 lb)	1.81 (4 lb)		
(c) Galvanizing					
- Min. quantity coating	g/m2	400	400		
- Min. number of uniformity 1 minute	times	-	-		
(3) Preformed Armoured Rod					
(a) Number of individual wires	nos.	-	-		
(b) Diameter of individual wires	mm	-	-		
(c) Length wires	mm	-	-		

Particulars	Unit	Required Conductor	Required Earthwire	Proposed Conductor	Proposed Earthwire
4. INSULATOR UNITS					
(1) Minimum mechanical failing load	kg	12,000			
(2) Nominal diameter of the insulating part	mm	254			
(3) Nominal spacing of insulator units	mm	146			
(4) Nominal weight per unit	kg	-			
(5) Withstand voltage:					
- 60 Hz, wet	kV	40			
- 60 Hz, dry	kV	70			
- Impulse, 1.2 x 50 micro sec.	kV	110			
(6) Puncture voltage, 60 Hz Galvanizing:	kV	110			
- Min. quantity of zinc coating	g/m2	-			
- Min. number of uniformity 1 minute	times	-			
5. INSULATOR SETS					
(1) Number of units per set	nos.	1 x 9	1 x 9	1 x 10	
(2) Length of set when stretched	mm	-	-	-	
(3) Minimum mechanical failing load (except suspension clamps)	kg	7,000	7,000	12,000	
(4) Net weight of set	kg	-	-	-	
(5) Horn gap length	mm	-	-	-	
(6) Withstand voltage:					
- 60 Hz, wet	kV	-	-	-	
- 60 Hz, dry	kV	-	-	-	
- 50% impulse withstand voltage - 1.2 x 50 micro-sec.	kV	530	530	575	
6. FITTINGS					
(1) Clamp for Conductor					
(a) Type	-	Trunnion	Compression		
(b) Material of clamp	-	Al. alloy	Aluminium		
(c) Length of clamp	mm	-	-		
(d) Ultimate breaking load	kg	min. 7,000	min. 12,000		
(e) Approx. slipping load	kg	-	-		
(2) Clamp for Earthwire					
(a) Type	-	Trunnion	Bolted		
(b) Materials	-	Malleable iron or ductile iron	Malleable iron		
(c) Type of catalogue number	-	-	-		
(d) Length of clamp	mm	-	-		
(e) Ultimate breaking load	kg	min. 4,000	min. 5,000		
(f) Approx. slipping load	kg	-	-		

Particulars	Unit	Required	Proposed
7. TOWERS AND FOUNDATIONS			
(1) Minimum clearance from live metal for suspension type towers :			
(a) From still air to 20 deg. swing of insulator	mm	1,270	
(b) From 20 deg. to 40 deg. swing of insulator	mm	1,270	
(c) From 40 deg. to 60 deg. swing of insulator	mm	900	
(d) Over 60 deg. swing of insulator	mm	350	
(2) Minimum Clearance from live metal to earthed metal for tension type towers :			
(a) From still air to 20 deg. swing of insulat eg. swing of jumper loop	mm	1,400	
(b) From 20 deg. to 40 deg. swing of insulat . swing of jumper loop	mm	1,400	
(c) From 40 deg. to 60 deg. swing of insulat . swing of jumper loop	mm	900	
(d) Over 60 deg. swing of jumper loop		350	
(3) Maximum ratio of unsupported length of steel compression members to their least radius of gyration (L/R) :			
(a) Main members	-	150	
(b) Bracings	-	200	
(c) Redundants	-	250	
(d) Bracings loaded in tension only	-	350	
(4) Steel to JIS G3106, SM400A or BS-4360 Grade 43A :			
(a) Ultimate stress in tension members	kg/sq.mm	-	
(b) Ultimate stress in compression members (expressed as function of L/R)	kg/sq.mm	-	
(5) Steel to JIS G3106, SM490B orBS-4360 Grade 50C :			
(a) Ultimate stress in tension members	kg/sq.mm	-	
(b) Ultimate stress in compression members (expressed as function of L/R)	kg/sq.mm	-	
(6) Ultimate shear stress on bolts	kg/sq.mm	-	
(7) Ultimate tensile strength of bolts	kg/sq.mm	-	
(8) Ultimate plain concrete bearing stress	kg/sq.cm	180	
(9) Ultimate adhesion value between galvanized steel and concrete including factor o	kg/sq.cm	-	
(10) Minimum portion of stub loads to be allowed for in design of cleats	-	50%	
(11) Basic span length	m	350	
(12) Approximate final sag of power conductor in still air at maximum temperature for basic span	m	-	
(13) Approximate final sag of power conductor in still air at everyday temperature for basic span	m	-	
(14) Maximum working tension of power conductor for tower design purpose	kg	-	
(15) Maximum working tension of overhead earthwire for tower design purpose	kg	-	
(16) Minimum clearances of the lowest conductor to :			
(a) ground in general terrain	m	6.8	
(b) surface of main roads	m	9.0	
(c) other power lines	m	4.0	
(d) telephone lines	m	4.0	
(e) surface of railways	m	9.0	
(17) Height of the lowest power conductor crossarms of standard suspension type tower above ground	m	-	
(18) Height of the lowest power conductor crossarms of standard tension type tower above ground	m	-	

Particulars	Units	Type-SS	Type-LA	Type-MA	Type-HA	Type-HS	Type-TA
8. DIMENSION AND WEIGHT OF TOWERS							
(1) Overall height of standard tower (+0m)	m						
(2) Length of top conductor crossarm	m						
(3) Length of bottom conductor crossarm	m						
(4) Vertical spacing of crossarm							
(a) Groundwire and top conductor	m						
(b) Top conductor and bottom conductors	m						
(5) Width of tower body at:							
(a) Top of tower	m						
(b) Lowest crossarm	m						
(c) Ground level of standard tower (+0m)	m						
(6) Weight of towers:							
(a) -3 m body extension	kg						
(b) +0 m body extension	kg						
(c) +3 m body extension	kg						
(d) +6 m body extension	kg						
(7) LOAD ON FOUNDATION FROM TOWERS							
(8) Compression Load							
(a) -3 m body extension	kg						
(b) +0 m body extension	kg						
(c) +3 m body extension	kg						
(d) +6 m body extension	kg						
(9) Uplifting Load							
(a) -3 m body extension	kg						
(b) +0 m body extension	kg						
(c) +3 m body extension	kg						
(d) +6 m body extension	kg						
9. CONCRETE PAD FOUNDATION AND STUB LENGTH (TYPE-L FOUNDATION)							
(1) Depth of Foundations:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(2) Width of Base Pad:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						

Particulars	Units	Type-SS	Type-LA	Type-MA	Type-HA	Type-HS	Type-TA
(3) Thickness of Based Pad:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(4) Top Width of Chimney:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(5) Bottom Width of Chimney:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(6) Volume of Excavation:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(7) Volume of Concrete:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(8) Length of Stubs: (stub length x cleat)							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
10. CONCRETE PAD FOUNDATION AND STUB LENGTH (TYPE-M FOUNDATION)							
(1) Depth of foundations:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(2) Width of Base Pad:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						

Particulars	Units	Type-SS	Type-LA	Type-MA	Type-HA	Type-HS	Type-TA
(3) Thickness of Base Pad.							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(4) Top Width of Chimney:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(5) Bottom Width of Chimney:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(6) Volume of Excavation:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(7) Volume of Concrete:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(8) Length of Stubs: (stub length x cleat)							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
11. CONCRETE PAD FOUNDATION AND STUB LENGTH (TYPE-H FOUNDATION)							
(1) Depth of foundations:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(2) Width of Base Pad:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						

Particulars	Units	Type-SS	Type-LA	Type-MA	Type-HA	Type-HS	Type-TA
(3) Thickness of Base Pad.							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(4) Top Width of Chimney:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(5) Bottom Width of Chimney:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(6) Volume of Excavation:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(7) Volume of Concrete:							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						
(8) Length of Stubs: (stub length x cleat)							
(a) -3 m body extension	mm						
(b) +0 m body extension	mm						
(c) +3 m body extension	mm						
(d) +6 m body extension	mm						

SUBSECTION-J: POWER LINE CARRIER TELEPHONE SYSTEM

1. TELEPHONE TERMINAL EQUIPMENT:

(1) Name of manufacturer		
(2) Number	2	Nos.
(3) Applied standard		
(4) Transmission system, AM, SSB		
(5) Communication system, Full duplex		
(6) Number of channel	1	
(7) Carrier frequency range		kHz
(8) Signalling system and frequency		Hz
(9) Synchronizing system		
(10) Equipment noise, less than 50		dBm
(11) Frequency accuracy		Hz
(12) Speech levels		
- 4-wire transmit, 0		dBm
- 4-wire receive, -8		dBm
- 2-wire transmit, 0 to -17		dBm
- 2-wire receive, -3.5 to +8		dBm
(13) Crosstalk		
(14) Compandor		
- Ratios, 1/2 and 2		
- Range of operating level		dBm
(15) Weight		kg
(16) Dimensions as per the drawings No.		

2. COUPLING CAPACITOR POTENTIAL DEVICES

(1) Name of Manufacturer		
(2) Number		
- CCPD	2	set
(3) Applied standard		
(4) Type		
(5) Rated voltage		kV
(6) Rated capacitance, 4400		
(7) Rated ratio of PD, 138 kV $/\sqrt{3}$		
110 V $/\sqrt{3}$		
(8) Rated burden of PD, 200		VA
(9) Weight		
- CCPD		kg
(10) Dimensions as per drawing attached		

3. COUPLING FILTER:

(1) Name of Manufacturer		
(2) Number	2	sets
(3) Applied standard		
(4) AC sparkover voltage of arrester		V
(5) Impulse withstand voltage		kV
(6) AC withstand voltage, AC 6		kV
(7) Weight		kg
(8) Dimensions as per the drawing attached		

4. LINE TRAP:

(1) Name of Manufacturer		
(2) Number	2	sets
(3) Applied standard		
(4) Type		
(5) Continuous current rating at 60 Hz, 600		A
(6) Inductance, 0.2		mH
(7) Resistive impedance over the bandwidth Resistive, 400		ohm
(8) Kind of main coil conductor		
(9) Ultimate tensile strength		kg
(10) Method of mounting, CCPD top mounted		
(11) Weight		kg
(12) Dimensions as per the drawing attached		

5. SURGE PROTECTIVE DEVICE

(1) Name of Manufacturer		
(2) Number	2	sets
(3) Applied standard		
(4) AC and impulse protection characteristics		
(5) Weight		kg
(6) Dimensions as per the drawing attached		

6. COAXIAL CABLE

(1) Name of Manufacturer		
(2) Number		sets
(3) Applied standard		
(4) Kind of conductor		
(5) Size of conductor element and number of standard		No./mm
(6) Attenuation loss at 300 kHz		dB/km

7. POWER SUPPLY UNIT

(1) Storage battery		
- Name of Manufacturer		
- Number of cell		Nos.
- Rated voltage, 48		V
- Capacity at 5 hour discharge rate		AH
(2) Battery charger		
- Name of Manufacturer		
- Type of rectifier		
- Maximum current of rectifier		A
- AC input voltage		V
- DC output voltage		
Rated		V
Floating		V
Equalizing		V
- DC output of rectifier		W

SUBSECTION-K: INTAKE TRASHRACKS AND RAKE

1. GENERAL

(1) Type		Fixed trashrack	
(2) Design head		Water head of m	
(3) Clear span			m
(4) Vertical height			m
(5) Bar pitch			mm
(6) Quantity	Trashrack	Sets/Rake	set
(7) Corrosion Allowance			mm

(8) Heaviest and largest parts to be transported to Site :

Heaviest part

(a) Name of part		
(b) Length		m
(c) Width		m
(d) Height		m
(e) Weight		ton

Largest part

(a) Name of part		
(b) Length		m
(c) Width		m
(d) Height		m
(e) Weight		ton

2. TRASHRACK DETAILS

(1) Grade and specifications of materials		
(a) Bar elements		
(b) Supporting beams		
(c) Fixing bolts and nuts		
(d) Tie bolts and nuts		
(e) Spacers		
(2) Design specifications		
(a) Sectional dimension of bar element		
-Width		mm
-Thickness		mm
(b) Sectional dimensions of main supporting beam		
-Height of beam		mm
-Width of flange		mm
-Thickness of flange and web plates T1 and T2	T1= , T2=	mm
(3) Complete trashrack weight per set		ton

3. RAKE DETAILS

(1) Type		
(2) Rated capacity of rake	kgs/ m of rake width	
(3) Effective width of rake		m
(4) Operation speed		
(a) Hoisting/lowering speed	m/min. ±10%	

(5) Operation _____

(6) Grade and Specifications of materials

- Prong _____
- Roller _____

(7) Lifting height of rake _____ m

(8) Electric motor for hoisting

- Output (kW) and speed (rpm) _____
- Rating and insulation class _____
- Name of manufacture _____

(9) Rake weight _____ ton

SUBSECTION-L: INTAKE GATES AND GANTRY CRANE

1. GENERAL

(1) Type _____

(2) Quantity

(a) Gate leaf _____ sets
(b) Guide frame _____ sets
(c) Gantry crane and hoist _____ sets
(d) Local control cabinet _____ sets
(e) Distribution panel _____ sets

(3) Design data

(a) Clear span _____ mm
(b) Clear height _____ mm
(c) Design head _____ m
(d) Operating head
- Opening _____
- Closing _____

(4) Water seal _____

(5) Dimension of gantry crane

(a) Length x width x height _____ m

(6) Size of travelling rails _____ kgs/m.

(7) Type of gantry crane hoist

(a) Hoisting equipment _____
(b) Travelling equipment _____

(8) Performance of gantry crane

(a) Hoisting height _____ m
(b) Travelling length _____ m
(c) Operating speed
- Hoisting _____ m/min.
- Lowering _____ m/min.
- Travelling _____ m/min.

(9) Heaviest and largest parts to be transported to Site

Heaviest part

(a) Name of part _____
(b) Length _____ m
(c) Width _____ m
(d) Height _____ m

(e) Weight _____ ton

Largest part

(a) Name of part _____

(b) Length _____ m

(c) Width _____ m

(d) Height _____ m

(e) Weight _____ ton

2. GATE LEAF DETAILS

(1) Grade and specifications of materials

(a) Skin plate _____

(b) Main horizontal beams _____

(c) Vertical beams _____

(d) Other structural members _____

(e) Main wheels _____

(f) Main wheels shafts _____

(g) Sheaves _____

(h) Sheave shafts _____

(i) Side rollers _____

(j) Side roller shaft _____

(k) Bearing for main wheels _____

(l) Bushings for sheaves and side rollers _____

(m) Rubber seals _____

(n) Bolts, nuts and washers for clamping gate seals _____

(2) Design specifications

(a) Thickness of skin plate _____ mm

(b) Numbers of main horizontal beams _____

(c) Sectional dimensions of largest two main horizontal beams

- Height of beam H _____ , _____ mm
- Width of flange plate W _____ , _____ mm
- Thickness of flange and web plate T1 and T2 _____ , _____ mm

(d) Wheel assemblies

Type _____

Number of wheels on gate leaf :

- Diameter of wheel _____ mm
- Width of wheel _____ mm
- Diameter of wheel shaft _____ mm

(e) Sheaves

Numbers of sheaves on gate leaf _____

Nominal diameter of sheave _____ mm

(f) Side roller

Numbers of side roller on one gate leaf _____

Diameter of roller _____ mm

Width of roller _____ mm

(g) Shape of top and side seal rubbers _____

3. GUIDE FRAME DETAILS

(1) Grade and specifications of materials

(a) Guide frames _____

(b) Sealing plate _____

(c) Surface of track frames _____

(2) Design specifications

(a) Width and thickness of side sealing plate W and T W= , T= mm

(b) Width and thickness of lintel sealing plate W and T W= , T= mm

(c) Width and thickness of sill sealing plates W and T W= , T= mm

(d) Width and thickness of surface of track frames W and T W= , T= mm

(e) Sectional dimensions of track frames

Height of frames _____ mm

Width of flange _____ mm

Thickness of flange and web plates T1 and T2 T1= , T2= mm

4. HOISTING EQUIPMENT

(Show those for travelling equipment in parentheses where appropriate)

(1) Grade and specifications of materials

(a) Wire drum _____ ( )

(b) Spur gears _____ ( )

(c) Pinion gears _____ ( )

(d) Torque shaft _____ ( )

(e) Structural frame work _____ ( )

(f) Wire rope _____ ( )

(2) Design specifications

(a) Maximum normal hoisting load _____ ( )

(b) Electric motor

Output (kW) and speed (rpm) _____ ( )

Rating and insulation class _____ ( )

Name of manufacturer _____ ( )

(c) Wire rope

Number of rope falls _____ ( )

Nominal diameter _____ ( ) mm

Breaking strength _____ ( ) kgf

Safety factor to the maximum normal hoisting load _____ ( )

(d) Gear reducer

Type _____ ( )

Reduction ratio _____ ( )

Name of manufacturer _____ ( )

(e) Nominal diameter of wire drum _____ ( ) mm

(f) Sheaves

Number of sheaves _____ ( )

Nominal diameter of sheaves _____ ( ) mm

5. WEIGHT
   (1) Gate leaf _____ ton
   (2) Guide frame _____ ton
   (3) Gantry crane and hoist _____ ton

SUBSECTION-M: DISCHARGE PENSTOCKS

1. GENERAL
   (1) Design head
      (a) Internal pressure _____ kgf/cm2
      (b) External pressure due to groundwater _____ kgf/cm2
      (c) External pressure due to encasing in concrete _____ kgf/cm2
   (2) Heaviest and largest parts to be transported to Site
      Heaviest part :
      (a) Name of part _____
      (b) Length _____ m
      (c) Width _____ m
      (d) Height _____ m
      (e) Weight _____ ton
      Largest part :
      (f) Name of part _____
      (g) Length _____ m
      (h) Width _____ m
      (i) Height _____ m
      (j) Weight _____ ton
   (3) Heaviest and largest parts to be handled at Site in erection work
      Heaviest part :
      (a) Name of part _____
      (b) Length _____ m
      (c) Width _____ m
      (d) Height _____ m
      (e) Weight _____ ton
      Largest part :
      (f) Name of part _____
      (g) Length _____ m
      (h) Width _____ m
      (i) Height _____ m
      (j) Weight _____ ton
   (4) Place of manufacturing _____
   (5) Make and type of machine used for shop welding _____
   (6) Type of electrodes used for welding _____
   (7) Total weight of discharge penstocks including appurtenances _____ ton
   (8) Maximum and average electricity demands for site welding _____

2. DISCHARGE PENSTOCKS

(1) Grade and specification of material for pipe shell _____

(2) Thickness of pipe shell _____ mm

(3) Type of longitudinal joint _____

(4) Type of circumferential joint _____

(5) Length and weight of each erection section (unit price) _____ mm, _____ tons

3. APPURTENANCES

(1) Size and spacing of stiffener rings where used _____ mm

(2) Grade and specification of steel for expansion joints _____

(3) Grade and specification of steel for ring girder supports _____

(4) Size and interval of ring girder supports _____

(5) Bearing shoe material for ring girder supports _____

(6) Type and size of manhole covers _____ mm

(7) Total weight of manhole covers _____ kgs

(8) Grade and specification of steel for surge tanks _____

(9) Size and structure of surge tanks _____

(10) Type of flow meter _____

SUBSECTION-N: CONGUILLO INLET, OUTLET FACILITIES

1. OUTLET VALVES

(1) Manufacturer's name _____

(2) Type and model Cone sleeve valve,

(3) Diameter 2N x 1,400 mm

(4) Design pressure _____ kgf/cm2

(5) Test pressure _____ kgf/cm2

(6) Discharge coefficient at full open _____

(7) Water leakage under design pressure _____ cc/min

(8) Motor output _____ kW

(9) Operating time _____ min.

(10) Materials

(a) Inlet elbow _____

(b) Riser pipe _____

(c) Valve body _____

(d) Inner sleeve _____

(e) Valve seat _____

(f) Base _____

(g) Spindle _____

(11) Total weight _____ kgs

2. GUARD VALVES

(1) Manufacturer's name _____

(2) Type and model	Butterfly valve,	
(3) Diameter	4N x 1,400 and 2N x 800	mm
(4) Design pressure		kgf/cm2
(5) Test pressure		kgf/cm2
(6) Water leakage under design pressure		cc/min
(7) Operation method		
(8) Operating time		min.
(9) Materials		
(a) Valve disc		
(b) Valve casing		
(c) Spindle		
(d) Valve seat		
(10) Total weight		kgs

3. CONNECTING PIPE, LOOSE FLANGE AND FLEXIBLE JOINT

(1) Manufacturer's name		
(a) Pipe		
(b) Loose flange		
(2) Materials		
(a) Pipe		
(b) Rubber ring of loose flange		
(3) Total weight		kgs

4. DRAIN PUMP AND WATER LEVEL INDICATOR

	Drain pump	Water level indicator
(1) Manufacturer's name		
(2) Type and model		
(3) Diameter		
(4) Discharge (m3/min) vs Head (Haq.)		N/A
(5) Measuring range and accuracy	N/A	m, ± %
(6) Motor output (kW)		N/A
(7) Total weight (kgs.)		

5. PORTABLE GENERATOR SET DETAILS

(1) Type	Trailer mounted diesel engine generator	
(2) Rated capacity		
(3) Voltage	AC / V	
(4) Phase and wire	-phase, -wire	
(5) Power factor	0.8 lagging	
(6) Frequency		Hz
(7) Engine output		
(8) Name of manufacturer		
(9) Dimensions		
Length		m
Width		m
Height		m
(10) Rated speed		rpm
(11) Oil tank capacity		lit.
(12) Rated current of generator		A

(13) Insulation of generator		
(14) Fuel oil consumption		l/hr
(15) Number of cylinder		
(16) Starting system		
(17) Capacity of battery		
(18) Total weight		kgs.

SUBSECTION-O: POZA HONDA INLET, OUTLET FACILITIES

1. FIXED TRASHRACK

(1) Type	Fixed trashrack	
(2) Design head	Water head of	m
(3) Vertical height		m
(4) Clear span		m
(5) Bar pitch		mm
(6) Quantity		set
(7) Grade and specifications of materials		
(8) Total weight		kgs

2. OUTLET VALVES

(1) Manufacturer's name		
(2) Type and model	Cone sleeve valve,	
(3) Diameter	2N x 900	mm
(4) Design pressure		kgf/cm2
(5) Test pressure		kgf/cm2
(6) Discharge coefficient at full open		
(7) Water leakage under design pressure		cc/min
(8) Motor output		kW
(9) Operating time		min.
(10) Materials		
(a) Inlet elbow		
(b) Riser pipe		
(c) Valve body		
(d) Inner sleeve		
(e) Valve seat		
(f) Base		
(g) Spindle		
(11) Total weight		kgs

3. GUARD VALVES

(1) Manufacturer's name		
(2) Type and model	Butterfly valve,	
(3) Diameter	2N x 900	mm
(4) Design pressure		kgf/cm2
(5) Test pressure		kgf/cm2
(6) Water leakage under design pressure		cc/min
(7) Operation method		
(8) Operating time		min.

(9) Materials
(a) Valve disc _____
(b) Valve casing _____
(c) Spindle _____
(d) Valve seat _____
(10) Total weight _____ kgs

4. CONNECTING PIPE, LOOSE FLANGE AND FLEXIBLE JOINT
(1) Manufacturer's name _____
(a) Pipe _____
(b) Loose flange _____
(2) Materials _____
(a) Pipe _____
(b) Rubber ring of loose flange _____
(3) Total weight _____ kgs

5. DRAIN PUMP AND WATER LEVEL INDICATOR

	Drain pump	Water level indicator
(1) Manufacturer's name		
(2) Type and model		
(3) Diameter		
(4) Discharge (m3/min) vs Head (Haq.)		N/A
(5) Measuring range and accuracy	N/A	m, ± %
(6) Motor output kW)		N/A
(7) Total weight (kgs.)		

6. PORTABLE GENERATOR SET DETAILS
(1) Type: Trailer mounted diesel engine generator
(2) Rated capacity _____
(3) Voltage: AC / V
(4) Phase and wire: -phase, -wire
(5) Power factor: 0.8 lagging
(6) Frequency _____ Hz
(7) Engine output _____
(8) Name of manufacturer _____
(9) Demensions
Length _____ m
Width _____ m
Height _____ m
(10) Rated speed _____ rpm
(11) Oil tank capacity _____ lit.
(12) Rated current of generator _____ A
(13) Insulation of enerator _____
(14) Fuel oil consumption _____ l/hr
(15) Number of cylinder _____

(16) Starting system _____

(17) Capacity of battery _____

(18) Total weight _____ kgs.

Date and Place : _____

Tenderer : _____

Signature : _____

: _____

13. SCHEDULE - VIII

PROPOSED MINOR DEVIATIONS FROM THE SPECIFICATIONS

(Refer to Clause I.1.21 of Instructions to Tenderers)

No.	Section, Subsection and Clause Number of the applicable Specifications	Detail of Deviation	Reason for Deviation

Note : Use as many pages as necessary to give full and complete details.

Date and place : _____

Tenderer : _____

Signature : _____

14. SCHEDULE - IX

PROPOSED ALTERNATIVES

(Refer to Clause I.1.22 of Instructions of Tenderers)

No.	Section, Subsection and Clause Number of the Applicable Specifications	Details of Proposed Alternatives	Reason of Alternatives	Price Increase or Decrease from Main Tender: USA Dollar Currency (US$)	Price Increase or Decrease from Main Tender: Local Currency (S/.)

Note : Use as many pages as necessary to give full and complete details.

Date and place : _____

Tenderer : _____

Signature : _____

15. SCHEDULE - X

INFORMATION ON QUALIFICATION (1/5)
(Refer to Clause I.1.9 of Instructions to Tenderers)

1. Main Pumps and Motors (Vertical Shaft-single stage volute pump) * 2

Item No.	Country	Name of Owner*1	Name of Project	Inlet Diameter "D" (m)*2	Design Head H(m)*2	"D"x"H"1/2 Value*2	Motor Output (KW)*2	Erection Period (Month)	Date of Completion	Name of Manufacturer and/or Sub-contractor

Note: *1:Certificates of Owners shall be attached.
*2 Refer to Clause I.1.9 of Instructions to Tenderers

Date and place : _____
Tenderer : _____
Signature : _____

15. SCHEDULE - X (Continued)

INFORMATION ON QUALIFICATION (2/5)

(Refer to Clause I.1.9 of Instructions to Tenderers)

2. Intake Gates and Gantry Crane

Item No.	Country	Name of Owner *1	Name of Project	Gate Size span (m)	Gate Size height (m)	"Area" *2 A(m^2)	"Design Head" H(m)*2	"AxH" value *2	Hoist Capacity (ton x KW)	Erection Period (Month)	Date of Completion

Note: *1:Certificates of Owners shall be attached.
*2 Refer to Clause I.1.9 of Instructions to Tenderers.

Date and place : _____

Tenderer : _____

Signature : _____

15. SCHEDULE - X (Continued)

INFORMATION ON QUALIFICATION (3/5)
(Refer to Clause I.1.9 of Instructions to Tenderers)

3. Transformers

Item No.	Country	Name of *1 Owner	Name of Project	Capacity *2 (KVA)	Q'ty (Nos.)	Erection Period (Month)	Date of Completion	Name of Manufacturer and/or Sub-contractor

Note: *1:Certificates of Owners shall be attached.
*2 Refer to Clause I.1.9 of Instructions to Tenderers.

Date and place : _____
Tenderer : _____
Signature : _____

15 SCHEDULE - X (Continued)

INFORMATION ON QUALIFICATION (4/5)

(Refer to Clause I.1.9 of Instructions to Tenderers)

4. 138 KV Transmission Line

Item No.	Country	Name of Owner/Engineer	Name of Project	Voltage*2 (KV)	ACSR Conductor*2 (sq.mm)	Length*2 (Km)	Erection Period (Month)	Date of Completion	Name of Manufacturer and/or Sub-contractor

Note: *1:Certificates of Owners shall be attached.
*2 Refer to Clause I.1.9 of Instructions to Tenderers.

Date and place : _____

Tenderer : _____

Signature : _____

15. SCHEDULE - X (Continued)

INFORMATION ON QUALIFICATION (5/5)

(Refer to Clause I.1.10 of Instructions to Tenderers)

5. Balance Sheets

The Tenderer shall provide the balance sheets and value of work underway or committed of the Tenderer for the last three (3) successive years in a form authorized in the country of the Tenderer with an authorized verification.

Date and place : _____

Tenderer : _____

Signature : _____

16 SCHEDULE - XI

SITE ERECTION FORCE (1/2)

(Refer to Clause II.2.3 of the General Dispositions)

1. Total Monthly Site Force

Trade Classification or Designation	Calendar Month * 1
a) Ecuadorian site labour	
Total	
b) Contractor's own supervisory personnel	
Total	
c) Other site employers	
Total	
Grand Total : -	

*1: From commencement of works in Ecuador/Site up to its completion

16. SCHEDULE - XI (Continued)

SITE ERECTION FORCE (2/2)

(Refer to Clause II.2.3 of General Dispositions)

2. Details of Three Most Senior Persons to be continuously engaged at the Site

	1	2	3
Name			
Designation			
Age			
Education and Qualifications			
Length of Service with Tenderer and Other employees			
Erection experience in details to cover the past 15 years showing job titles responsibility held etc. (use as many pages as necessary to give full and complete details)			

Note: Entries shall not be changed without prior written approval of CRM.

Date and Place : _____

Tenderer : _____

Signature : _____

17. SCHEDULE - XII

LIST OF CONTRACTOR'S EQUIPMENT
(Refer to Clause II.1.18 of the Draft Contract)

No.	Description	Specifications	Quantity (pcs.)

Note: (1) Those to be re-exported after completion of the Works shall be given asterisk(*) marks thereto.
(2) Use as many pages as necessary to give full and complete details.

Date and place : _____
Tenderer : _____
Signature : _____

18. SCHEDULE - XIII

ERECTION PROCEDURE AND METHOD

Item	Erection procedure and Method	Remarks

"Tenderer" shall clearly mention the proposed erection procedure and method for major Plant on this schedule. Especially, the following shall be mentioned in details with illustration.

a. Procedures and methods of transportation, assembly and erection.
b. Overall construction time schedule.
c. Contractor's wok areas for camp, field shop, office, stock yard, store house, etc., vide Clause II.3.2 of the Special Conditions of Volume - I.
d. Layout of temporary construction roads with type, grade and curvatures if specially required at his account by he Tenderer.

Note: (1) Use as many pages as necessary to give full and complete details.

Date and place : _____
Tenderer : _____
Signature : _____

19. SCHEDULE - XIV

LIST OF SUBCONTRACTOR

(Refer to Clause I.1.10 of Instructions to Tenders and Clause II.1.12 of Draft Contract)

Legal name of firm _____

Post office box address _____

Street address _____

City _____

Country _____

Telephone No. _____

Facsimile No. _____

Person to contact _____

Title _____

Note: Use as many pages as necessary to give full details.

Date and place : _____

Tenderer : _____

Signature : _____

20. SCHEDULE - XV

NAME AND PLACE OF MANUFACTURERS

The Tenderer shall prepare and submit the following list of the manufacturers for the major equipment and parts to be supplied under this Contract.

Equipment	Name and Place of Manufacturer	Place of Manufacture
Place of Test and Inspection		

Note: Use as many pages as necessary to give full details.

Date and place : _____

Tenderer : _____

Signature : _____

21. SCHEDULE - XVI

INFORMATION PREPARED FOR AND SUBMITTED WITH TENDER

(Refer to Clause I.1.16 of Instructions to Tenderers)

Specification, and Subsection applicable	Drawing No. of Reference	Description	Remarks

Note: Use as many pages as necessary to give full details.

Date and place : _____

Tenderer : _____

Signature : _____