

NEPAL ELECTRICITY AUTHORITY

(An Undertaking of Government of Nepal)
Project Management Directorate



MARSYANGDI CORRIDOR 220 KV TRANSMISSION LINE PROJECT

BIDDING DOCUMENT FOR

Procurement of Plant Design, Supply, Installation and Commissioning Of 220 kV Udipur Substation and New Bharatpur Substation

Single-Stage, Two-Envelope
Bidding Procedure

Issued on:	15th April 2019
Invitation for Bids No.:	ICB/PMD/MCTLP/019/20-01
ICB No.:	ICB/PMD/MCTLP/019/20-01
Employer:	Nepal Electricity Authority
Country:	Nepal

VOLUME –III OF III

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Marsyangdi Corridor 220 kV Transmission Line Project
Project Management Directorate
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NEPAL ELECTRICITY AUTHORITY
PROJECT MANAGEMENT DIRECTORATE
MARSYANGDI CORRIDOR 220 kV TRANSMISSION LINE PROJECT

(I) 220/132/33kV Udipur (new) GIS Substation and (II) 220/132kV Bharatpur (220 kV New GIS & 132 kV AIS Extn) Substation

Schedule No.1: Plant and Equipment including Mandatory Spares to be supplied from abroad

Item No.	Item description	Country of origin	Estimated		CIP Project Site including insurance, clearing, forwarding and transportaion to site (Excluding Taxes and Duties applicable in Nepal)			Total Amount (Excluding Taxes and Duties)
			Unit	Quantity	Currency	Unit Rate	Amount	
1	2	3	4	5	6	7	8=(5) x(7)	9=8
I-A	220/132/33kV Udipur (new) GIS Substation							
Part-A :	EMPLOYER ASSESSED QUANTITIES							
A.1	POWER TRANSFORMER							
A1.1	POWER TRANSFORMER							
a)	53.33MVA , 220/132/33 KV, 1-phase Autotransformer (Excluding insulating oil) fitted with RIP bushings as per TS		Nos.	4				
b)	Insulating oil for 53.33MVA , 220/132/33 KV, 1-phase Autotransformer (* 1Lot = Oil for 1Autotransformers)		Lot*	4				
c)	33kV Current transformer (NCT) for autotransformer		No	1				
A1.2	POWER TRANSFORMER							
a)	50 MVA , 132/33 KV, 3-phase Autotransformer (Excluding insulating oil) fitted with RIP bushing as per TS		Nos.	1				
b)	Insulating oil for 50 MVA , 132/33 KV, 3-phase Autotransformer (* 1Lot = Oil for 1Autotransformers)		Lot*	1				
A1.3	Testing & Maintenance Equipments							
a)	Oil Storage Tank		No.	1				
b)	Transformer Oil Filtration plant (6KLPH)		No	1				
A2	LT TRANSFORMER							
1.01	630 kVA,33/0.400kV		Nos	2				
B	245 kV equipment							
B1	245KV GIS Equipment							
1.01	245kV, SF6 GIS Bus Bars Module [Module description as per Technical specification and Section Project Specific Requirement]		Set	2				
1.02	245kV, SF6 GIS ICT bay Module [Module description as per Technical specification and Section Project Specific Requirement]		Set	1				
1.03	245kV, 2400A SF6 GIS Line bay Module [Module description as per Technical specification and Section Project Specific Requirement]		Set	4				
1.04	245kV, SF6 GIS Bus Coupler bay Module [Module description as per Technical specification and Section Project Specific Requirement]		Set	1				

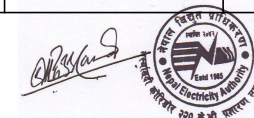
Item No.	Item description	Country of origin	Estimated		CIP Project Site including insurance, clearing, forwarding and transportaion to site (Excluding Taxes and Duties applicable in Nepal)			Total Amount (Excluding Taxes and Duties)
			Unit	Quantity	Currency	Unit Rate	Amount	FC
1	2	3	4	5	6	7	8=(5) x(7)	9=8
1.05	245 kV Auxiliary Bus to connect spare unit of Transformer [Module description as per Technical specification and Section Project Specific Requirement]		Set	1				
1.06	245kV, 1600A,40kA SF6/Air Bushing for Connecting GIS to AIS alongwith support structure		Nos	4				
1.07	245kV, 2400A,40kA SF6/Air Bushing for Connecting GIS to AIS alongwith support structure (Single Phase) suitable for HTLS Conductor-ACCC Drake		Nos	12				
1.08	245kV, 1600A, 1phase SF6 GIS Bus duct alongwith support structure		Mtr	150				
1.09	245kV, 2400A, 1phase SF6 GIS Bus duct alongwith support structure		Mtr	600				
B2	245KV Outdoor Equipment							
1.01	216 KV Surge Arrester (1-phase)		Nos.	16				
1.02	245kV BPI		Nos.	16				
C	145KV Equipment							
C1	145KV GIS Equipment							
1.01	145kV, SF6 GIS Bus Bars Module [Module description as per Technical specification and Section Project Specific Requirement]		Set	2				
1.02	145kV, SF6 GIS Transformer bay Module [Module description as per Technical specification and Section Project Specific Requirement]		Set	1				
1.03	145kV, SF6 GIS Transformer bay Module [Module description as per Technical specification and Section Project Specific Requirement]		Set	1				
1.04	145kV, SF6 GIS Line bay Module [Module description as per Technical specification and Section Project Specific Requirement]		Set	7				
1.05	145kV, SF6 GIS Bus Coupler bay Module [Module description as per Technical specification and Section Project Specific Requirement]		Set	1				
1.06	145 kV Auxiliary Bus to connect spare unit of Transformer [Module description as per Technical specification and Section Project Specific Requirement]		Set	1				
C2	132 kV Cu condctor, XLPE cable and accessories							
1.01	132 kV, 1C x 1200 sq.mm Copper, XLPE cable as per Technical specification		Mtr	1500				
1.02	132 kV, 1C x 500 sq.mm Copper, XLPE cable as per Technical specification		Mtr	600				
1.03	132 kV, 1C x 300 sq.mm Copper, XLPE cable as per Technical specification		Mtr	300				
1.04	132 KV Termination kit suitable for 132KV, 1CX 1200 sq.mm XLPE Cable alongwith with support Structure for EHV Cable		Nos	21				
1.05	132 KV Termination kit suitable for 132KV, 1CX 500 sq.mm XLPE Cable alongwith with support Structure for EHV Cable		Nos	4				
1.06	132 KV Termination kit suitable for 132KV, 1CX300 sq.mm XLPE Cable alongwith with support Structure for EHV Cable		Nos	3				

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1	2	3	4	5	6	7	8=(5) x(7)	9=8
C3	145KV Outdoor Equipment							
1.01	120KV Surge Arrester (1-phase)		Nos.	28				
1.02	145kV BPI		Nos.	28				
D	36KV Equipment							
D1	36KV GIS Equipment							
1.01	Indoor switchgear panels (GIS type) IP1 type		Set	2				
1.02	Indoor Switchgear Panels (GIS type) IP 2 type		Set	6				
1.03	Indoor switchgear panels (GIS type) IP3 type		Set	1				
1.04	Indoor switchgear panels (GIS type) IP4 Type		Set	1				
D2	36kV XLPE cable and its termination for connection of 33 kV side of 132/33 kV Transformer to 36kV GIS bay and line bays							
(i)	33kV, 1C x 400 sq.mm Copper, XLPE cable as per Technical specification		Mtr	2000				
(ii)	33KV Termination kit suitable for 1C x 400 sq.mm Copper, XLPE cable alongwith with support Structure		Nos	24				
D3	36 KV XLPE 1-Ph cable and its termination for connection of 33 kV side of 630 kVA, 33/0.400KV LT Transformer from available HT external supply							
(i)	36 KV XLPE 3C, 120sqmm Copper, XLPE cable as per Technical Specification		Mtr	500				
(ii)	33KV, 3 Phase termination kit suitable for above cable		Set	9				
D4	36 kV Equipments for LT Transformer							
1.0	36 kV Isolator (3-phase)-HDB							
(i)	1250A, 25 KA, Isolator		No	8				
2.0	30 kV Surge Arrestors (1-Phase)		Nos	39				
3.0	36kV Horn Gap Fuse (3-Phase)		No	2				
4.0	36 kV BPI		Nos	39				
E	72.5kV EQUIPMENT							
1.01	72.5 kV, 1250A, 31.5kA Circuit Breaker (3-phase) with support structure		No.	1				
1.02	72.5 kV, 1250A,31.5kA Isolators with earth switch (3-phase, DBR type)		No.	1				
1.03	72.5kV, 1250A, 31.5 kA with 120% extended rating CT.		Nos.	3				
1.04	72.5kV PT.(1-phase)		Nos.	3				
1.05	72.5 kV BPI (1-phase)		Nos.	6				
F	RELAY PANELS (WITH AUTOMATION)							
F1	PANELS							
1.0	220 kV							
a	Circuit Breaker Relay Panel							

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1	2	3	4	5	6	7	8=(5) x(7)	9=8
i	With Auto Reclose line		Set	4				
ii	With out Auto Reclose		Set	2				
b	Line Protection Panel							
i	For 220 kV Marsyangdi (Markichowk) line		Set	2				
ii	For 220 kV Khudi (Udipur) line bay		Set	2				
iii	Current Differential Relay for other end(Khudi) of line		Nos	2				
d	Transformer Protection Panel (For both HV & MV side)		Set	1				
e	Bus Bar Protection Panel		Set	1				
2.0	132 kV							
a	Circuit Breaker Relay Panel							
i	With Auto Reclose		Set	7				
ii	With out Auto Reclose		Set	3				
b	Line Protection Panel		Set	7				
d	Transformer Protection Panel (For both HV & MV side)		Set	1				
e	Bus Bar Protection Panel		Set	1				
F2	COMMON EQUIPMENTS							
1.0	Relay Test tool kit as per TS *		Set	1				
2.0	Time synchronisation equipment as per TS**		No.	1				
G	COMMON GIS PLUS SUBSTATION TESTING AND MAINTENANCE EQUIPMENT							
G.1	Testing & Maintenance Equipment for GIS							
(i)	SF6 Gas filling & evacuating plant							
	For 245kV, 145kV & 36kV GIS		Set	1				
(ii)	Partial Discharge Monitoring System for GIS as per Technical Specification							
	For 245kV, 145kV & 36kV GIS		Set	1				
(iii)	Dew Point meter							
	For 245kV, 145kV & 36kV GIS		Set	1				
(iv)	SF6 Gas Leak Detector							
	For 245kV, 145kV & 36kV GIS		Set	1				
(v)	EOT crane for 245kV GIS Hall		Set	1				
(vi)	EOT crane for 145kV GIS Hall		Set	1				
(vii)	SF6 Gas Analyser		Set	1				
G.2	Substation Testing and Maintenace Equipment							
(i)	Multifunctional Transformer and Substation Test System- Tan Delta, CT/VT, Transformer, relays testing, CB testing etc including software as per the specification		Set	1				
(ii)	Swift Frequency Response Analyser (SFRA) as per specification		Set	1				
(iii)	10 kV, DC Insulation Resistance tester as per specification		Set	5				
(iv)	Micro Ohmmeter-0.1 m600 A with Dual Ground as per spefication		Set	1				

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(v)	Three Phase Relay test set with Secondary current Injector Source as per specification		Set	1				
(vi)	Battery powered(Rechargeable)-Transformer oil BDV Tester as per specification O/P voltage max. 100 kV as per specification		Set	1				
(vii)	Four Pole Earth Resistance tester as per specification		Set	4				
(viii)	Digital Clamp on Meter up to 600 VAC/1000 A		Set	6				
(viii)	Infrared Thermometer (-30 to +500 degree Celcius) as per specification		Set	3				
(ix)	Thermal Imaging device (320 X 240 pixel) as per specification		Set	1				
(x)	Digital Rebound Hammer (10-130 N/mm2) as per specification		Set	1				
(xi)	Battery Impedance Test Kit		Set	1				
(xii)	Potable Cable Fault Location System-0-12 kV Minimum TDR range 7.5 km with battery/mains operation as per specification		Set	1				
(xii)	Laser equipment intended to measure the Sag of conductor as per TS		Set	1				
H	SUBSTATION AUTOMATION SYSTEM (SAS)							
H.1	Complete Substation Automation System (SAS) for substation including hardware and software for the substation & remote control stations along with associated equipment for the following bays as per Technical Specification							
a	Main bays to be automated							
i	220 kV system		Bay Nos	6				
ii	132 kV system		Bay Nos	10				
ii	33 kV system		Bay Nos	9				
v)	BCU for controlling & monitoring of Auxilary System		Set	1				
I	TELE-PROTECTION & COMMUNICATION EQUIPMENT							
1.0	Digital Protection Coupler (Only for 132 kV, for both adjoining s/s of 220 kV, DPC quantity has been considered in other packages)		Nos	7				
2.0	Digital Protection Coupler (for other ends)		Nos	7				
3.0	PBAX with following configuration as per TS		Set	1				
i)	2 wire subscriber interface card with capacity 32 local subscribers (along with 32 nos. Instruments)							
ii)	4 wire E & M interface card with capacity 8 nos. trunks (For PLCC)							
iii)	E-1 interface with 2 trunks G-703							
iv)	2 wire interface with 1 trunk (For PSTN)							
4.0	Testing & Maintenance equipment (print test kit only)		Set	1				
5.0	4 wire telephone equipment		No	1				
J	LT Switchgear (As per Technical specification)							
a	415V Main switchboard		Set	1				
b	415V ACDB		Set	1				
c	415V MLDB		Set	1				
d	415V Emergency LDB		Set	1				
e	220V DCDB		Sets	2				
f	48V DCDB		Sets	2				

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K	Batteries,Chargers, DG Sets with Control Panel and Fire Protection System							
K1	Battery							
a	220V							
i	600 AH		Nos	2				
b	48V							
i	600 AH		Nos	2				
K2	Float Cum Boost Battery Charger							
a	220V Float Cum Boost Battery Charger							
i	80A/80A		Nos	2				
b	48V Float Cum Boost Battery Charger							
ii	80A/80A		Nos	2				
K3	Diesel Generator Silent type with Canopy & control Panel							
a	100 kVA		Set	1				
L	Fire Protection System							
a	Portable /Trolley/Wheel mounted extinguishers							
i	9 litre water type		Nos	5				
ii	50 litre foam type		Nos	2				
iii	4.5 kg CO ₂ type		Nos	13				
iv	4.5 kg Dry Chemical Powder (DCP) type		Nos	5				
b	Smoke detection system		Set	1				
c	Fire detection and Alarm System		Set	1				
M	Cables along with clamps, glands, lugs and straight joints etc.							
(a)	Power Cables - (1.1kV grade)							
i	3.5Cx300 sqmm (XLPE) cable for filter Machine along with termination arrangement as per TS		KM	1				
N	Air conditioning System for Control room cum administrative building							
a	High wall type split AC unit of 2 TR capacity		Nos	35				
O	Fabrication, galvanising and supply of following Steel Structures including nuts, bolts, all types of washers, packplates, step bolts and gusset plates including foundation bolts.							
(a)	Lattice Structure including Foundation Bolts		MT	180				
(b)	Pipe Structure including Foundation Bolts .		MT	20				
(c)	Fastners and step bolts.(Nuts,Bolts & Washers)		MT	10				
P	Telecom							



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P.1	SDH Equipment (STM-4 MADM upto 3 MSP protected directions)							
(i)	Base Equipment (Common cards, Cross Connect/control cards, optical base cards, power supply cards, power cabling, other hardware and accessories including sub racks, patch cord, DDF etc fully equiped excluding (ii) & (iii) below		Nos.	1				
(ii)	Optical Interface Cards/SFP#							
a	S4.1 SFP		Nos.	2				
b	L4.1 SFP		Nos.	2				
c	L4.2 SFP*		Nos.	0				
(iii)	Tributary cards							
a	E1 Interface card (Min.16 interfaces per card)		Nos.	2				
b	Ethernet Interface 10/100 Base T with Layer-2 switching (Min 4 Interfaces per card)		Nos.	2				
P.2	Equipment Cabinets		No.	1				
P.3	Network Manager System - Craft Terminal							
a	Hardware		Set	1				
b	Software		Set	1				
P.4	VOIP telephone instrument with one common switch (min. 4 port) including hardware and software as per specification		Set	1				
a	Hardware		Set					
b	Software		Set					
Q	PRE-ENGINEERED BUILDINGS							
1.0	Control Room Building and Panel Rooms including all supply materials from abroad except civil works and for civil works refer schedule 4(a)		Sq. M.	750				
2.0	220 kV GIS Hall including all supply materials from abroad except civil works and for civil works refer schedule 4(a)							
(a)	220 kV GIS Hall		Sq. M.	525				
(b)	AHU / Panel Room		Sq. M.	75				
3.0	132 kV GIS Hall and Panel Rooms including all supply materials from abroad except civil works and for civil works refer schedule 4(a)							
(a)	132 kV GIS Hall		Sq. M.	550				
(b)	AHU / Panel Room		Sq. M.	100				
4.0	33 kV GIS Hall and Panel Rooms including all supply materials from abroad except civil works and for civil works refer schedule 4(a)							
(a)	33 kV GIS Hall		Sq. M.	90				
(b)	AHU / Panel Room		Sq. M.	20				

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R	Miscellaneous Items							
(a)	Supply of steel rails with all accessories to fix it on transformer foundation		MT	45				
(b)	WALKIE-TALKIE Set: Water, shock, vibration & impact proof Walky-Talky with required working frequency (Finalised after taking permission with concerned authority of GoN) with 16 Channel Capacity and having Battery backup of 10 to 12 Hrs (preferably Li-Ion Battery) as per TS		Set	10				
(c)	A0 Plotter as per the TS		Nos	1				
(d)	55 " Smart TV of latest version for Control Room as per TS		Nos	3				
(e)	Supply of Safty accessories							
i)	Safety Helmets		Nos.	100				
ii)	Safety Boots		Pairs	100				
iii)	Hand safety Gloves		Pairs	100				
iv)	Protective eye goggles		Nos.	100				
v)	Construction Life Jackets with trousers		Pairs	100				
vi)	Primary health kit		Set	100				
vii)	Raincoat		Set	100				
viii)	Site Bag		Set	100				
(f)	DSLR Camera suitable for still and long movie shooting with required accessories as per TS		Set	2				
S	Vehicle-4WD with 5 door for rugged terrain as per TS		Nos.	1				
	Sub-Total Part-A							
Note:-	# :Optical interface/SFP can be provided with Optical base card or Control card with the condition that control card and Optical base card shall not be equipped with more than two Optical interface/SFP. However main and protection channel shall be terminated on separate cards. \$: Set shall include all required hardware/software for complete TMN –Craft Terminal system as specified in technical specifications.							

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	Part-B: VENDOR ASSESSED QUANTITIES							
A	Erection Hardware							
	Insulator strings, Disc Insulators, Hardware, conductor, Al tube, bus-bar materials, cable trays, clamps, spacers, connectors (HTLS-ACCC Drake) including equipment connectors (suitable for HTLS Conductor- ACCC Drake), Junction box, earthwire, buried cable trenches/pipe equipment & lighting, all accessories etc. for the following:							
a	245kV GIS Termination Arrangement:							
i	Line Bay		Set	4				
ii	Transformer Bay (including 220 kV AIS connection for spare unit with GIS auxiliary bus module)		Set	1				
b	145kV GIS Termination Arrangement:							
i	Line Bay		Set	7				
ii	Transformer Bay (including 132 kV AIS connection for spare unit with GIS auxiliary bus module)		Set	1				
ii	Transformer Bay		Set	1				
c	For spare unit of 220/132/36 kV auto transformer connection through auxiliary buses (tertiary & Neutral auxiliary buses only), Neutral formation and delta formation (for one bank): Required 72.5 kV BPI for tertiary auxiliary bus & delta formation, 36 kV BPI for Neutral formation & Neutral auxiliary bus including Al tube, bus-bar materials, clamps, spacers, connectors, including equipment connectors, support structures , Earthing of spare unit as per technical specification.		Set	1				
d	Erection Hardware etc for 72.5kV equipments & LT Transformers connections		Set	1				
e	33kV LT Transformer connection		Set	1				
f	33kV Transformer bay		Set	1				
g	33kV Line bays		Set	6				
A1	Earthing and lightning protection including necesaary connectors/connections, risers etc. complete in all respect(but excluding LM structures for Lightning protection)							
i	Earth Conductor (copper)		LS	1				
ii	Earth Rod (copper clad steel)		LS	1				
iii	Equipment for lightning protection		LS	1				
B	Fire Protection System							

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a	Pumping arrangement for HVW system & hydrant system, complete with all piping, valves, fittings,etc. inside pump house							
i	220/132kV (New) Substation		Set	1				
b	Hydrant system, complete U/G piping and accessories etc. outside the Pump House.							
i	220/132kV (New) Substation		Set	1				
c	HVW spray system, Hydrant system and complete U/G & O/G piping and accessories etc. out side the pump house for Transformer :							
c.1	Transformer							
i	53.33MVA , 220/132/33 KV, 1-phase Autotransformer		Sets	4				
ii	50 MVA , 132/33 KV, 3-phase transformer		Sets	1				
C	Illumination System							
a	Control room cum administrative building illumination		LS	1				
b	Fire fighting building illumination		LS	1				
c	Switchyard lighting		LS	1				
d	Street lighting		LS	1				
e	Transit Camp illumination		LS	1				
f	245kV, 145 kV and 33 kV GIS Buildings including panel rooms		LS	1				
g	Township quarter (B-Type, 4 nos)		LS	1				
h	Township quarter (C-Type, 4 nos)		LS	1				
i	Township quarter (D-Type, 1 nos)		LS	1				
j	Car parkings		LS	1				
k	Recreation hall for staff community hall		LS	1				
D	Air conditioning & ventilation System							
D.1	Air conditioning system							
(i)	Panel room in 245kV GIS Hall		LS	1				
(ii)	Panel room in 145kV GIS Hall		LS	1				
(iii)	Panel room in 36kV GIS Hall		LS	1				
D.2	Ventilation system							
(i)	245KV GIS hall		LS	1				
(ii)	145KV GIS hall		LS	1				
(iii)	36KV GIS hall		LS	1				
E	POWER & CONTROL CABLES							
a	Power Cables(PVC)- (1.1kV grade)		LS	1				
b	Power Cables (XLPE)(excluding 3.5Cx300 sqmm (XLPE) cable for filter Machine)-(1.1kV grade)		LS	1				
c	Control Cable (PVC)- (1.1kV grade)		LS	1				
d	Cable glands, lugs & straight through joints for Power & Control cables		LS	1				

SCHEDULE - 1; PAGE 11 OF 33

Item No.	Item description	Country of origin	Estimated		CIP Project Site including insurance, clearing, forwarding and transportaion to site (Excluding Taxes and Duties applicable in Nepal)			Total Amount (Excluding Taxes and Duties)
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	Sub-Total Part-B							

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	Part-C: Mandatory Spares							
(I)	Mandatory Spare List for Transformer							
(i)	For 53.33MVA , 220/132/33 KV, 1-phase Autotransformer							
a)	Bushing of each rating with metal parts & gaskets and lifting tools-Resin Impregnated Paper (RIP) bushing		Set	1				
b)	Cooler fan with Motor		No.	1				
c)	Buchholz Relay(Main Tank) complete with floats and contacts		Set	1				
d)	Local and Remote WTI with sensing device and contact (each)		Set	1				
e)	Magnetic oil level gauge		No.	1				
f)	Strarters, contactors,switches & Relays for Electrical control panels(One set of each type)		Set	1				
g)	Remote Tap postion Indiator		No.	1				
h)	Spare insulating oil to be handed over to Owner after commisioning for O&M requirement		KL	10				
(ii)	For 50 MVA , 132/33 KV, 3-phase transformer							
a)	RIP Bushing of each rating with metal parts & gaskets and lifting tools		Set	1				
b)	Cooler fan with Motor		No.	1				
c)	Buchholz Relay(Main Tank) complete with floats and contacts		Set	1				
d)	Local and Remote WTI with sensing device and contact(each)		Set	1				
e)	Magnetic oil level gauge		No.	1				
f)	Strarters, contactors,switches & Relays for Electrical control panels(One ste of each type)		Set	1				
g)	Remote Tap postion Indiator		No.	1				
(II)	SPARES FOR 245kV GIS							
A)	General							
a.	Bus Bar Sections including Bus Bar Interconnection Modules, Bus Ducts Sections, Compensators/ expansion joints/bellows, Bends, end covers along with enclosure of each type. For each of the above module/enclosure all active parts such as conductor, conductor joints, corona shield etc of each type.		Set	1				
b.	SF6 gas Pressure Relief Device assembly of each type		Set	1				
c.	SF6 Pressure gauge cum switch / Density monitors and pressure switch as applicable, of each type		Set	5				
d.	Coupling device for pressure gauge cum switch for connecting Gas handling plant of each type		Set	2				
e.	Rubber Gaskets, "O" Rings and Seals for SF6 gas of each type		Set	5				
f.	Molecular filter for SF6 gas with filter bags (10 % of total weight)		Set	1				
g.	Control Valves for SF6 gas of each type		Set	3				
h.	SF6 gas (20 % of total gas quantity)		Set	1				
i.	Pipe length (Copper or Steel as applicable) for SF6 Circuit of each type (if applicable)		Set	2				

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			Unit	Quantity	Currency	Unit Rate	Amount	FC
1	2	3	4	5	6	7	8=(5) x(7)	9=8
j.	Locking device to keep the Dis-connectors (Isolators) and Earthing/Fast Earthing switches in close or open position in case of removal of the driving Mechanism		set	2				
j.1	UHF PD Sensors of each type along with BNC Connector		Nos.	5				
j.2	Support Insulators of each type		Set.	10				
k	Gas Barriers of each type		Set	1				
l	SF6 to air bushing of each type & rating complete in all respect		Set	2				
B)	245 KV SF6 CIRCUIT BREAKER:							
a.	Complete (3-Ph or 3X1-phase, as applicable)Circuit Breaker without PIR complete with interrupter, main circuit, enclosure and Marshalling Box with operating mechanism to enable replacement of all applicable type/rating of CB by spare .		Nos.	1				
b.	Rubber gaskets, 'O' rings and seals for SF6 gas (1 No. of each type)		Sets	1				
c.	Trip coil assembly with resistor as applicable		Sets	1				
d.	Closing coil assembly with resistor as applicable .		Sets	1				
e.	Relays, Power contactors, push buttons, timers & MCBs etc (1 No. of each type & rating)		Sets	1				
f.	Closing coil assembly (including valve, if applicable)		Sets	1				
g.	Trip coil assembly (including valve, if applicable)		Sets	1				
h.	Auxiliary switch assembly of each type		Sets	1				
C)	245 KV ISOLATORS :							
a.	Complete set of 3-phase dis-connector of each type including main circuit, enclosure, driving mechanism and support Insulator etc to enable complete replacement of all applicable type/rating of Isolator by spare		Sets	1				
b.	Single Phase/ 3-phase Earthing switch including main circuit, enclosure, driving mechanism.		Sets	1				
c.	Copper contact fingers for dis-connector male & female contact for one complete (3-phase) dis-connector of each type and rating		Sets	1				
d.	Copper contact fingers for earthing switch male & female contacts, for one complete(3-phase) earthing switch of each type and rating		Sets	1				
e.	Open / Close contactor assembly, timers, key interlock for one complete (3 phase) dis-connector and (3 phase) earthing switch (1 No. of each type and rating)		Sets	1				
f.	Push button switch - (1 No. of each type & rating) as applicable		Sets	1				
g.	Limit switch and Aux. Switches for complete 3 phase equipment							
g.1	For isolator		Sets	1				
g.2	For earth switch		Sets	1				
D)	245 KV CURRENT TRANSFORMER							
a.	Gas insulated complete CT of each type and rating with enclosure.		Nos.	1				

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1	2	3	4	5	6	7	8=(5) x(7)	9=8
b.	Secondary bushing of each type		Sets	1				
E)	245 kV VOLTAGE TRANSFORMER							
a.	Gas insulated complete PT of each type and rating with enclosure.		Nos.	1				
(III)	SPARES FOR 145kV GIS							
A)	General							
a.	Bus Bar Sections including Bus Bar Interconnection Modules, Bus Ducts Sections, Compensators/ expansion joints/bellows, Bends, end covers along with enclosure of each type. For each of the above module/enclosure all active parts such as conductor, conductor joints, corona shield etc of each type.		Set	1				
b.	SF6 gas Pressure Relief Device assembly of each type		Set	1				
c.	SF6 Pressure gauge cum switch / Density monitors and pressure switch as applicable, of each type		Set	5				
d.	Coupling device for pressure gauge cum switch for connecting Gas handling plant of each type		Set	2				
e.	Rubber Gaskets, "O" Rings and Seals for SF6 gas of each type		Set	5				
f.	Molecular filter for SF6 gas with filter bags (10 % of total weight)		Set	1				
g.	Control Valves for SF6 gas of each type		Set	3				
h.	SF6 gas (20 % of total gas quantity)		Set	1				
i.	Pipe length (Copper or Steel as applicable) for SF6 Circuit of each type (if applicable)		Set	2				
j.	Locking device to keep the Dis-connectors (Isolators) and Earthing/Fast Earthing switches in close or open position in case of removal of the driving Mechanism		set	2				
j.1	UHF PD Sensors of each type along with BNC Connector		Nos.	5				
j.2	Support Insulators of each type		Set.	10				
k	Gas Barriers of each type		Set	1				
l	SF6 to air bushing of each type & rating complete in all respect		Set	2				
B)	145 KV SF6 CIRCUIT BREAKER:							
a.	Complete (3-Ph or 3X1-phase, as applicable)Circuit Breaker without PIR complete with interrupter, main circuit, enclosure and Marshalling Box with operating mechanism to enable replacement of all applicable type/rating of CB by spare .		Nos.	1				
b.	Rubber gaskets, 'O' rings and seals for SF6 gas (1 No. of each type)		Sets	1				
c.	Trip coil assembly with resistor as applicable		Sets	1				
d.	Relays, Power contactors, push buttons, timers & MCBs etc (1 No. of each type & rating)		Sets	1				
e.	Relays, Power contactors, push buttons, timers & MCBs etc (1 No. of each type & rating)		Sets	1				
f.	Closing coil assembly (including valve, if applicable)		Sets	1				

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1	2	3	4	5	6	7	8=(5) x(7)	9=8
g.	Trip coil assembly (including valve, if applicable)		Sets	1				
h.	Auxiliary switch assembly of each type		Sets	1				
C)	145 KV ISOLATORS :							
a.	Complete set of 3-phase dis-connector of each type including main circuit, enclosure, driving mechanism and support Insulator etc to enable complete replacement of all applicable type/rating of Isolator by spare		Sets	1				
b.	Single Phase/ 3-phase Earthing switch including main circuit, enclosure, driving mechanism.		Sets	1				
c.	Copper contact fingers for dis-connector male & female contact for one complete (3-phase) dis-connector of each type and rating		Sets	1				
d.	Copper contact fingers for earthing switch male & female contacts, for one complete(3-phase) earthing switch of each type and rating		Sets	1				
e.	Open / Close contactor assembly, timers, key interlock for one complete (3 phase) dis-connector and (3 phase) earthing switch (1 No. of each type and rating)		Sets	1				
f.	Push button switch - (1 No. of each type & rating) as applicable		Sets	1				
g.	Limit switch and Aux. Switches for complete 3 phase equipment							
g.1	For isolator		Sets	1				
g.2	For earth switch		Sets	1				
D)	145 KV CURRENT TRANSFORMER							
a.	Gas insulated complete CT of each type and rating with enclosure.		Nos.	1				
b.	Secondary bushing of each type		Sets	1				
E)	145 kV VOLTAGE TRANSFORMER							
a.	Gas insulated complete PT of each type and rating with enclosure.		Nos.	1				
(IV)	SPARES FOR 36kV GIS							
A)	General							
a.	SF6 gas Pressure Relief Devices, 1Nos. of each type		Set	1				
b.	SF6 Pressure gauge cum switch OR Density monitors and pressure switch as applicable (1 no. of each type)		Set	1				
c.	Coupling device for pressure gauge cum switch for connecting Gas handling plant		Set	1				
d.	Rubber Gaskets, "O" Rings and Seals for SF6 gas of each type		Set	1				
e.	Molecular filter for SF6 gas with filter bags(20% of total weight)		Set	1				
f.	All types of Control Valves for SF6 gas of each type		Set	1				
g.	SF6 gas (20 % of total gas quantity)		Set	1				
h.	All types of coupling for SF6 gas (1 no. of each type)		Set	1				
i.	Pipe length (Copper or Steel as applicable) for SF6 Circuit of each type		Set	1				

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1	2	3	4	5	6	7	8=(5) x(7)	9=8
j.	Covers with all accessories necessary to close a compartment in case of dismantling of any part of the Enclosure to ensure the sealing of this compartment							
j.1	For 3 Phase Enclosure if applicable		Nos.	1				
j.2	For Single phase enclosure if applicable		Nos.	1				
k	Locking device to keep the Dis-connectors (Isolators) and Earthing switches in close or open position in case of removal of the driving Mechanism		Sets	1				
l	Bus Support insulator of each type for 3 phase/single phase enclosure.		Nos.	1				
B)	36 KV SF6 CIRCUIT BREAKER:							
a.	Complete Circuit Breaker pole of each type & rating complete with interrupter, main circuit enclosure and Marshalling Box with operating mechanism		Nos.	1				
b.	Rubber gaskets, 'O' rings and seals for SF6 gas (1 No. of each type)		Sets	1				
c.	Trip coil assembly with resistor as applicable		Sets	1				
d.	Closing coil assembly with resistor as applicable .		Sets	1				
e.	Relays, Power contactors, push buttons, timers & MCBs etc (1 No. of each type & rating)		Sets	1				
f.	Closing coil assembly (including valve, if applicable)		Sets	1				
g.	Trip coil assembly (including valve, if applicable)		Sets	1				
h.	Auxiliary switch assembly of each type		Sets	1				
C)	36KV ISOLATORS :							
a.	Complete set of 3-phase dis-connector including main circuit, enclosure, driving mechanism		Sets	1				
b.	Single Phase/ 3-phase Earthing switch including main circuit, enclosure, driving mechanism.		Sets	1				
c.	Copper contact fingers for dis-connector male & female contact for one complete (3-phase) dis-connector of each type and rating		Sets	1				
d.	Copper contact fingers for earthing switch male & female contacts, for one complete(3-phase) earthing switch of each type and rating		Sets	1				
e.	Open / Close contactor assembly, timers, key interlock for one complete (3 phase) dis-connector and (3 phase) earthing switch (1 No. of each type and rating)		Sets	1				
f.	Push button switch - (1 No. of each type & rating) as applicable		Sets	1				
g.	Limit switch and Aux. Switches for complete 3 phase equipment							
g.1	For isolator		Sets	1				
g.2	For earth switch		Sets	1				
D)	36 KV CURRENT TRANSFORMER							
a.	Gas insulated complete CT of each type and rating with enclosure.		Nos.	1				
b.	Secondary bushing of each type		Sets	1				

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1	2	3	4	5	6	7	8=(5) x(7)	9=8
E)	36 kV VOLTAGE TRANSFORMER							
a.	Gas insulated complete PT of each type and rating with enclosure.		Nos.	1				
(V)	SPARES FOR AIS EQUIPMENTS							
(A)	72.5 kV CB							
i)	Complete Pole of circuit breaker including pole column, interrupter, with driving mechanism and Marshaling Box but without support structure for 1250A, 31.5 KA (No. of Pole)		No.	1				
ii)	Rubber gaskets, 'O' rings and seals (for complete replacement of one pole of CB)		Set	1				
iii)	Trip coils with resistor		Nos.	2				
iv)	Closing coils with resistor		Nos.	1				
v)	Terminal Pads & connectors		Nos.	2				
vi)	Molecular filter		Nos.	2				
vii)	Relays, Power contactors, switch fuse units, limit switches, push buttons, timers & MCB etc. (1 no. of each type)		Set	1				
viii)	Pressure switches / Density monitor (1 no. of each type)		Set	1				
ix)	Auxiliary switch assembly (for one pole of CB)		Set	1				
(B)	72.5kV Isolator							
i)	One complete pole including support Insulator, MANUAL operating mechanism with box but excluding structure 1250A, 31.5KA, 1 E/S (no. of pole)		No.	1				
ii)	Copper contact fingers for male & female contacts (for one pole of Isolator)		Set	2				
iii)	Open/Close contactor assembly, timers, key interlock push button switch & auxilliary switches (for one pole of Isolator)		Set	1				
iv)	Limit Switch		Nos.	2				
v)	Terminal Pads & Connectors		Nos.	3				
(C)	CT(72.5 kV,1250A with 120% extended current rating)		No.	1				
(D)	72.5kV PT		No.	1				
(E)	216 SA							
i)	Complete LA		No.	1				
ii)	Surge counter/monitor		Nos.	5				
(F)	120kV SA							
i)	Complete LA		No.	1				
ii)	Surge counter/monitor		Nos.	5				
(VI)	C&R PANELS							
i)	Transformer protection panel :							
a)	Transformer differential protection		No.	1				
b)	REF protection relay with non-linear resistor		No.	1				

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1	2	3	4	5	6	7	8=(5) x(7)	9=8
c)	Directional over current & E/F Protection Relay		No.	1				
ii)	Line protection panel :							
a)	Distance Protection relay- Main-1		No.	1				
b)	Current differential Protection relay- Main-2		No.	1				
iii)	Breaker Relay panel:							
a)	Breaker failure relay		No.	1				
b)	Trip circuit supervision relay		Nos.	2				
c)	Self reset trip relay (relay of each type)		Set	1				
d)	Hand reset trip relay(relay of each type)		Set	1				
e)	Timer relay(relay of each type)		Set	1				
f)	DC supervision relay(relay of each type)		Set	1				
g)	Flag relays(relay of each type)		Set	1				
h)	Auxiliary relays(relay of each type)		Set	1				
(VII)	Teleprotection Equipments							
i)	Set of prints for protection coupler(digital)		Set	1				
(VIII)	SAS							
i)	Bay Control Unit (IED) of each type		Set	1				
ii)	Ethernet Switch of each type		Set	1				
(IX)	BATTERY CHARGER							
1.0	220 Volt							
i)	Set of control cards		Set	1				
ii)	Set of relays		Set	1				
iii)	Rectifier transformer		No.	1				
iv)	Thyristor/diode		Set	1				
v)	Fuses of Thyristor with indicators		Set	6				
2.0	48 Volt							
i)	Set of control cards		Set	1				
ii)	Set of relays		Set	1				
iii)	Rectifier transformer		No.	1				
iv)	Thyristor/diode		Set	1				
v)	Fuses of Thyristor with indicators		Set	6				
(X)	Fire protection System							
a.	Deluge Valve of each type		Set	1				
(XI)	DG SETS :							
a.	Self starter assembly		No.	1				

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1	2	3	4	5	6	7	8=(5) x (7)	9=8
b.	AVR (Auto Voltage Regulator)/ AVR card		set	1				
(XII)	COMMON SPARES							
i)	Bay unit Module		No.	1				
ii)	2 wire local subscriber interface card for PABX		No.	1				
iii)	E1 Interface card for PABX		No.	1				
(XIII)	SDH Equipment (STM-4 MADM upto 3 MSP protected directions)							
(i)	Common cards, Cross-connect/control cards, Optical base card, Power supply cards, power cabling, other hardware & accessories (each).		Set	1				
(ii)	Optical Interface Cards/SFP#							
a	S4.1 SFP		Nos.	1				
b	L4.1 SFP		Nos.	1				
c	L4.2 SFP		Nos.	0				
(iii)	Tributary cards							
a	E1 Interface card (Min.16 interfaces)		Nos.	1				
b	Ethernet Interface 10/100 Base T with Layer-2 switching (Min 4 Interfaces per card)		Nos.	1				
(XIV)	VOIP telephone instrument		Nos.	1				
(XV)	Pre Connectorized Optical Fiber Patch Cords(10 Mtrs) – Pack of six Patch cords		Set	1				
	Sub-Total Part-C							
	Total of Part A+Part B + Part C for Udipur Substation							
Note\$: One Set means one of each type of module/unit card etc Note**: Suitable Optical Interface Card(s) or any other solution such as SDH equipment with optical amplifier, wavelength translator or higher aggregate bit rate SDH equipment may be offered for the length to meet the link budget requirements without repeater								

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1	2	3	4	5	6	7	8=(5) x(7)	9=8
I-A	220kV Bharatpur (new) GIS Substation							
	Part-A : EMPLOYER ASSESSED QUANTITIES							
A.1	POWER TRANSFORMER							
A1.1	POWER TRANSFORMER							
a)	160MVA , 220/132/33 KV, 3-phase Autotransformer (Excluding insulating oil)- Resin Impregnated Paper (RIP) Bushings		Nos.	2				
b)	Insulating oil for 160MVA , 220/132 KV, 3-phase Autotransformers		Lot*	2				
A1.2	Testing & Maintenance Equipments							
a)	Oil Storage Tank		No.	1				
b)	Transformer Oil Filtration plant (6KLPH)		No	1				
A2	LT TRANSFORMER							
1.01	630 kVA,33/0.400kV		Nos	1				
B	245 kV equipment							
B1	245KV GIS Equipment							
1.01	245kV, SF6 GIS Bus Bars Module [Module description as per Technical specification and Section Project Specific Requirement]		Set	2				
1.02	245kV, SF6 GIS ICT bay Module [Module description as per Technical specification and Section Project Specific Requirement]		Set	2				
1.03	245kV, 1600A, SF6 GIS Line bay Module [Module description as per Technical specification and Section Project Specific Requirement]		Set	6				
1.04	245kV, 2400A, SF6 GIS Line bay Module [Module description as per Technical specification and Section Project Specific Requirement]		Set	4				
1.05	245kV, SF6 GIS Bus Coupler bay Module [Module description as per Technical specification and Section Project Specific Requirement]		Set	1				
1.06	245kV, 1600A,40kA SF6/Air Bushing for Connecting GIS to AIS alongwith support structure (Single Phase)		Nos	24				
1.07	245kV, 2400A,40kA SF6/Air Bushing for Connecting GIS to AIS alongwith support structure (Single Phase) suitable for conneting HTLS Conductor-ACCC Drake		Nos	12				
1.08	245kV, 1600A, 1phase SF6 GIS Bus duct alongwith support structure		Mtr	900				
1.09	245kV, 2400A, 1phase SF6 GIS Bus duct alongwith support structure		Mtr	500				
B2	245KV Outdoor Equipment							
1.01	216 KV Surge Arrester (1-phase)		Nos.	36				
1.02	245kV BPI		Nos.	36				
B2.1	Connection of one 132 kV side of 3-Ph, 160 MVA, 220/132 kV Transformer on 132kV Bay: 132 kV cable (with Copper conductor) of suitable current rating for all three phases along with cable termination kit (both end i.e.Transformer 132 kV end and 132 bay end) for 132 kV side of Transformer connection on 132kV Bay connection as per specification for							

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1	2	3	4	5	6	7	8=(5) x(7)	9=8
i	Cable route length (Each mtr should include cables for three phases and required burried cable treanch)		Mtr	200				
ii	cable termination kit alongwith support structures (Each Set Comprises cable termination for all three phases at both end i.e. for 3-Ph Transformer 132 kV end and 132 bay end)		Set	2				
C	145KV Equipment							
C1	145KV Outdoor Equipment							
1.01	145 kV Circuit Breaker (3-Phase) with support structure							
	1250A, 31.5 kA		Nos	2				
1.02	145kV Isolator (3-phase)-HDB							
a	1250A, 31.5 KA, Isolator with one E/S		Nos	4				
b	1250A, 31.5 KA, Tandem Isolator without E/S		Nos	2				
1.03	145 kV Current Transformer (1- Phase)							
a	800A, 31.5 kA with 120% extended rating		Nos	6				
1.4	120KV Surge Arrester (1-phase)		Nos	6				
1.2	145kV BPI		Nos	12				
D	72.5kV EQUIPMENT							
1.01	72.5 kV, 1250A, 31.5kA Circuit Breaker (3-phase) with support structure		No.	1				
1.02	72.5 kV, 1250A,31.5kA Isolators with earth switch (3-phase, DBR type)		No.	1				
1.03	72.5kV, 1250A, 31.5 kA with 120% extended rating CT.		Nos.	3				
1.04	72.5kV PT.(1-phase)		Nos.	3				
1.05	72.5 kV BPI (1-phase)		Nos.	6				
E	RELAY PANELS (WITH AUTOMATION)							
E1	PANELS							
1.0	220 kV							
a	Circuit Breaker Relay Panel							
i	With Auto Reclose		Set	10				
ii	With out Auto Reclose		Set	3				
b	Line Protection Panel							
i)	Markichowk to Bharatpur 220 kV D/C line (<i>without differential relay since the differential relays shall be provided by the MKTLP</i>)		Set	2				
ii)	For 220 kV Damauli line		Set	2				
iii)	For 220 kV Hetauda line		Set	2				
iv)	For 220 kV New Butwal line		Set	2				
v)	For Future spare 220 kV line		Set	2				
vi)	Current Differential Relay for other end (Damauli) of line		Nos	2				

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1	2	3	4	5	6	7	8=(5) x(7)	9=8
c	Transformer Protection Panel (For both HV & MV side)		Set	2				
d	Bus Bar Protection Panel		Set	1				
2.0	132 kV							
a	Circuit Breaker Relay Panel							
i	With out Auto Reclose		Set	2				
E2	COMMON EQUIPMENTS							
a	Relay Test tool kit as per TS *		Set	1				
b	Time synchronisation equipment as per TS**		No.	1				
F	COMMON GIS PLUS SUBSTATION TESTING AND MAINTENANCE EQUIPMENT							
F.1	Testing & Maintenance Equipment for GIS							
(i)	SF6 Gas filling & evacuating plant							
	For 245kV GIS		Set	1				
(ii)	Partial Discharge Monitoring System for GIS as per Technical Specification							
	For 245kV GIS		Set	1				
(iii)	Dew Point meter							
	For 245kV GIS		Set	1				
(iv)	SF6 Gas Leak Detector							
	For 245kV GIS		Set	1				
(v)	EOT crane for 245kV GIS Hall		Set	1				
(vii)	SF6 Gas Analyser		Set	1				
F.2	Substation Testing and Maintenace Equipment							
(i)	Swift Frequency Response Analyser (SFRA) as per specification		Set	1				
(ii)	10 kV, DC Insulation Resistance tester as per specification		Set	2				
(iii)	Four Pole Earth Resistance tester as per specification		Set	1				
(iv)	Digital Clamp on Meter up to 600 VAC/1000 A		Set	2				

Item No.	Item description	Country of origin	Estimated		CIP Project Site including insurance, clearing, forwarding and transportaion to site (Excluding Taxes and Duties applicable in Nepal)			Total Amount (Excluding Taxes and Duties)
			Unit	Quantity	Currency	Unit Rate	Amount	FC
1	2	3	4	5	6	7	8=(5) x(7)	9=8
(v)	Infrared Thermometer (-30 to +500 degree Celcius) as per spefication		Set	1				
(vi)	Digital Rebound Hammer (10-130 N/mm2) as per spefication		Set	1				
(vii)	Laser equipment intended to measure the Sag of conductor as per TS		Set	1				
G	SUBSTATION AUTOMATION SYSTEM (SAS)							
G.1	Complete Substation Automation System (SAS) for substation including hardware and software for the substation & remote control stations along with associated equipment for the following bays as per Technical Specification							
a	Main bays to be automated							
i	220 kV system		Bay Nos	13				
ii	132 kV system		Bay Nos	9				
iii)	(7 Existing bays+2 Tranformer bay under present scope)							
	BCU for controlling & monitoring of Auxilary System		Set	1				
H	TELE-PROTECTION & COMMUNICATION EQUIPMENT							
H.1	Digital Protection Coupler		Nos	6				
H.2	Digital Protection Coupler(for other end)**		Nos	6				
H.3	PBAX with following configuration as per TS including following items:		Set	1				
i)	2 wire subscriber interface card with capacity 32 local subscribers (along with 32 nos. Instruments)							
ii)	4 wire E & M interface card with capacity 8 nos. trunks (For PLCC)							
iii)	E-1 interface with 2 trunks G-703							
iv)	2 wire interface with 1 trunk (For PSTN)							
H.4	Testing & Maintenance equipment (print test kit only)		Set	1				
H.5	4 wire telephone equipment		No	1				
I	LT Switchgear (As per Technical specification)							
a	415V Main switchboard		Set	1				
b	415V ACDB		Set	1				
c	415V MLDB		Set	1				
d	415V Emergency LDB		Set	1				
e	220V DCDB		Sets	2				
J	Batteries,Chargers, DG Sets with Control Panel and Fire Protection System							
J.1	Batteries							
a	220V							
i	600 AH		Nos	2				

Item No.	Item description	Country of origin	Estimated		CIP Project Site including insurance, clearing, forwarding and transportaion to site (Excluding Taxes and Duties applicable in Nepal)			Total Amount (Excluding Taxes and Duties)
			Unit	Quantity	Currency	Unit Rate	Amount	FC
1	2	3	4	5	6	7	8=(5) x(7)	9=8
J.2	Float Cum Boost Battery Charger							
a	220V Float Cum Boost Battery Charger							
i	80A/80A		Nos	2				
J.3	Diesel Generator Silent type with Canopy & control Panel							
a	100 kVA		Set	1				
K	Fire Protection System							
a	Portable /Trolley/Wheel mounted extinguishers							
i	9 litre water type		Nos	5				
ii	50 litre foam type		Nos	2				
iii	4.5 kg CO ₂ type		Nos	13				
iv	4.5 kg Dry Chemical Powder (DCP) type		Nos	5				
b	Smoke detection system		Set	1				
c	Fire detection and Alarm System		Set	1				
L	Cables along with clamps, glands, lugs and straight joints etc.							
(a)	Power Cables - (1.1kV grade)							
i	3.5Cx300 sqmm (XLPE) cable for filter Machine along with termination arrangement as per TS		KM	1				
M	Air conditioning System for Control room cum administrative building							
a	High wall type split AC unit of 2 TR capacity		Nos	25				
N	Fabrication, galvanising and supply of following Steel Structures including nuts, bolts, all types of washers, packplates, step bolts and gusset plates including foundation bolts.							
(a)	Lattice Structure including Foundation Bolts		MT	180				
(b)	Pipe Structure including Foundation Bolts .		MT	20				
(c)	Fastners and step bolts.(Nuts,Bolts & Washers)		MT	10				
O	Telecom							
O.1	SDH Equipment (STM-4 MADM upto 3 MSP protected directions)							
(i)	Base Equipment (Common cards, Cross Connect/control cards, optical base cards, power supply cards, power cabling, other hardware and accessories including sub racks, patch cord, DDF etc fully equiped excluding (ii) & (iii) below		Nos.	1				
(ii)	Optical Interface Cards/SFP#							
a	L4.1 SFP**		Nos.	4				
b	L4.2 SFP		Nos.	0				

Item No.	Item description	Country of origin	Estimated		CIP Project Site including insurance, clearing, forwarding and transportaion to site (Excluding Taxes and Duties applicable in Nepal)			Total Amount (Excluding Taxes and Duties)
			Unit	Quantity	Currency	Unit Rate	Amount	FC
1	2	3	4	5	6	7	8=(5) x(7)	9=8
(iii)	Tributary cards							
a	E1 Interface card (Min.16 interfaces per card)		Nos.	2				
b	Ethernet Interface 10/100 Base T with Layer-2 switching (Min 4 Interfaces per card)		Nos.	2				
O.2	Equipment Cabinets		No.	1				
O.3	Network Manager System - Craft Terminal \$							
a	Hardware		Set	1				
b	Software		Set	1				
O.4	VOIP telephone instrument with one common switch (min. 4 port) including hardware and software as per specification		Set	1				
a	Hardware		Set					
b	Software		Set					
P	PRE-ENGINEERED BUILDINGS							
1.0	220 kV GIS Hall including all supply materials from abroad except civil works and for civil works refer schedule 4(a)							
(a)	220 kV GIS Hall		Sq. M.	525				
(b)	AHU / Panel Room		Sq. M.	75				
Q	Miscellaneous Items							
(a)	Supply of steel rails with all accessories to fix it on transformer foundation		MT	45				
	Sub-Total Part-A							
Note:-	# :Optical interface/SFP can be provided with Optical base card or Control card with the condition that control card and Optical base card shall not be equipped with more than two Optical interface/SFP. However main and protection channel shall be terminated on separate cards. \$: Set shall include all required hardware/software for complete TMN –Craft Terminal system as specified in technical specifications.							

Item No.	Item description	Country of origin	Estimated		CIP Project Site including insurance, clearing, forwarding and transportaion to site (Excluding Taxes and Duties applicable in Nepal)			Total Amount (Excluding Taxes and Duties)
			Unit	Quantity	Currency	Unit Rate	Amount	FC
1	2	3	4	5	6	7	8=(5) x(7)	9=8
	Part-B: VENDOR ASSESSED QUANTITIES							
A	Erection Hardware							
	Insulator strings, Disc Insulators, Hardware, conductor suitable for HTLS (ACCC Drake) and ACSR Bison Conductor, Al tube, bus-bar materials, cable trays, clamps, spacers, connectors including equipment connectors, Junction box, earthwire, buried cable trenches/pipe equipment & lighting, all accessories etc. for the following:							
a	245kV GIS Termination Arrangement:							
i	Line Bay		Set	10				
ii	Transformer Bay		Set	2				
b	145kV bays							
i	Transformer Bay		Set	2				
c	For spare unit of 220/132/36 kV auto transformer connection through auxiliary buses (tertiary & Neutral auxiliary buses only), Neutral formation and delta formation (for one bank): Required 72.5 kV BPI for tertiary auxiliary bus & delta formation, 36 kV BPI for Neutral formation & Neutral auxiliary bus including Al tube, bus-bar materials, clamps, spacers, connectors, including equipment connectors, support structures , Earthing of spare unit as per technical specification.		Set	1				
d	Erection Hardware etc for 72.5kV equipment & LT Transformers connections		Set	1				
A1	Earthing and lightning protection including necesaary connectors/connections, risers etc. complete in all respect(but excluding LM structures for Lightning protection)							
i	Earth Conductor (copper)		LS	1				
ii	Earth Rod (copper clad steel)		LS	1				
iii	Equipment for lightning protection		LS	1				
B	Fire Protection System							
a	Pumping arrangement for HVW system & hydrant system, complete with all piping, valves, fittings,etc. inside pump house							
i	220/132kV (New) Substation		Set	1				
b	Hydrant system, complete U/G piping and accessories etc. outside the Pump House.							
i	220/132kV (New) Substation		Set	1				
c	Transformer							
i	160 MVA , 220/132/33 KV, 3-phase Autotransformer		Sets	2				
C	Illumination System							

SCHEDULE - 1; PAGE 27 OF 33

Item No.	Item description	Country of origin	Estimated		CIP Project Site including insurance, clearing, forwarding and transportaion to site (Excluding Taxes and Duties applicable in Nepal)			Total Amount (Excluding Taxes and Duties)
			Unit	Quantity	Currency	Unit Rate	Amount	FC
1	2	3	4	5	6	7	8=(5) x(7)	9=8
a	Fire fighting building illumination		LS	1				
b	Switchyard lighting		LS	1				
c	Street lighting		LS	1				
d	Transit Camp illumination		LS	1				
e	245kV GIS Building including panel room		LS	1				
f	Township quarter (C-Type, 4 nos)		LS	1				
g	Car parkings		LS	1				
D	Air conditioning & ventilation System							
D.1	Air conditioning system							
(i)	Panel room in 245kV GIS Hall		LS	1				
D.2	Ventilation system							
(i)	245KV GIS hall		LS	1				
E	POWER & CONTROL CABLES							
a	Power Cables(PVC)- (1.1kV grade)		LS	1				
b	Power Cables (XLPE)(excluding 3.5Cx300 sqmm (XLPE) cable for filter Machine)- (1.1kV grade)		LS	1				
c	Control Cable (PVC)- (1.1kV grade)		LS	1				
d	Cable glands, lugs & straight through joints for Power & Control cables		LS	1				
	Sub-Total Part-B							

Item No.	Item description	Country of origin	Estimated		CIP Project Site including insurance, clearing, forwarding and transportaion to site (Excluding Taxes and Duties applicable in Nepal)			Total Amount (Excluding Taxes and Duties)
			Unit	Quantity	Currency	Unit Rate	Amount	FC
1	2	3	4	5	6	7	8=(5) x(7)	9=8
	Part-C: Mandatory Spares							
(I)	Mandatory Spare List for Transformer							
(i)	For 160 MVA , 220/132/33 KV, 1-phase Autotransformer							
a)	Bushing of each rating with metal parts & gaskets and lifting tools-RIP		Set	1				
b)	Cooler fan with Motor		No.	1				
c)	Buchholz Relay(Main Tank) complete with floats and contacts		Set	1				
d)	Local and Remote WTI with sensing device and contact (each)		Set	1				
e)	Magnetic oil level gauge		No.	1				
f)	Strarters, contactors,switches & Relays for Electrical control panels(One set of each type)		Set	1				
g)	Remote Tap postion Indiator		No.	1				
h)	Spare insulating oil to be handed over to Owner after commisioning for O&M requirement		KL	10				
(II)	SPARES FOR 245kV GIS							
A)	General							
a.	Bus Bar Sections including Bus Bar Interconnection Modules, Bus Ducts Sections, Compensators/ expansion joints/bellows, Bends, end covers along with enclosure of each type. For each of the above module/enclosure all active parts such as conductor, conductor joints, corona shield etc of each type.		Set	1				
b.	SF6 gas Pressure Relief Device assembly of each type		Set	1				
c.	SF6 Pressure gauge cum switch / Density monitors and pressure switch as applicable, of each type		Set	5				
d.	Coupling device for pressure gauge cum switch for connecting Gas handling plant of each type		Set	2				
e.	Rubber Gaskets, "O" Rings and Seals for SF6 gas of each type		Set	5				
f.	Molecular filter for SF6 gas with filter bags (10 % of total weight)		Set	1				
g.	Control Valves for SF6 gas of each type		Set	3				
h.	SF6 gas (20 % of total gas quantity)		Set	1				
i.	Pipe length (Copper or Steel as applicable) for SF6 Circuit of each type (if applicable)		Set	2				
j.	Locking device to keep the Dis-connectors (Isolators) and Earthing/Fast Earthing switches in close or open position in case of removal of the driving Mechanism		set	2				
j.1	UHF PD Sensors of each type along with BNC Connector		Nos.	5				
j.2	Support Insulators of each type		Set.	10				
k	Gas Barriers of each type		Set	1				
l	SF6 to air bushing of each type & rating complete in all respect		Set	2				
B)	245 KV SF6 CIRCUIT BREAKER:							

Item No.	Item description	Country of origin	Estimated		CIP Project Site including insurance, clearing, forwarding and transportaion to site (Excluding Taxes and Duties applicable in Nepal)			Total Amount (Excluding Taxes and Duties)
			Unit	Quantity	Currency	Unit Rate	Amount	FC
1	2	3	4	5	6	7	8=(5) x(7)	9=8
a.	Complete (3-Ph or 3X1-phase, as applicable)Circuit Breaker without PIR complete with interrupter, main circuit, enclosure and Marshalling Box with operating mechanism to enable replacement of all applicable type/rating of CB by spare .		Nos.	1				
b.	Rubber gaskets, 'O' rings and seals for SF6 gas (1 No. of each type)		Sets	1				
c.	Trip coil assembly with resistor as applicable		Sets	1				
d.	Closing coil assembly with resistor as applicable .		Sets	1				
e.	Relays, Power contactors, push buttons, timers & MCBs etc (1 No. of each type & rating)		Sets	1				
f.	Closing coil assembly (including valve, if applicable)		Sets	1				
g.	Trip coil assembly (including valve, if applicable)		Sets	1				
h.	Auxiliary switch assembly of each type		Sets	1				
C)	245 KV ISOLATORS :							
a.	Complete set of 3-phase dis-connector of each type including main circuit, enclosure, driving mechanism and support Insulator etc to enable complete replacement of all applicable type/rating of Isolator by spare		Sets	1				
b.	Single Phase/ 3-phase Earthing switch including main circuit, enclosure, driving mechanism.		Sets	1				
c.	Copper contact fingers for dis-connector male & female contact for one complete (3-phase) dis-connector of each type and rating		Sets	1				
d.	Copper contact fingers for earthing switch male & female contacts, for one complete(3-phase) earthing switch of each type and rating		Sets	1				
e.	Open / Close contactor assembly, timers, key interlock for one complete (3 phase) dis-connector and (3 phase) earthing switch (1 No. of each type and rating)		Sets	1				
f.	Push button switch - (1 No. of each type & rating) as applicable		Sets	1				
g.	Limit switch and Aux. Switches for complete 3 phase equipment							
g.1	For isolator		Sets	1				
g.2	For earth switch		Sets	1				
D)	245 KV CURRENT TRANSFORMER							
a.	Gas insulated complete CT of each type and rating with enclosure.		Nos.	1				
b.	Secondary bushing of each type		Sets	1				
E)	245 kV VOLTAGE TRANSFORMER							
a.	Gas insulated complete PT of each type and rating with enclosure.		Nos.	1				
(III)	SPARES FOR AIS EQUIPMENTS							
(A)	145kV CB							
i)	Complete Pole of circuit breaker including pole column, interrupter, with driving mechanism and Marshaling Box but without support structure for 1250A, 31.5 KA (No. of Pole)		No.	1				

Item No.	Item description	Country of origin	Estimated		CIP Project Site including insurance, clearing, forwarding and transportaion to site (Excluding Taxes and Duties applicable in Nepal)			Total Amount (Excluding Taxes and Duties)
			Unit	Quantity	Currency	Unit Rate	Amount	FC
1	2	3	4	5	6	7	8=(5) x(7)	9=8
ii)	Rubber gaskets, 'O' rings and seals (for complete replacement of one pole of CB)		Set	1				
iii)	Trip coils with resistor		Nos.	2				
iv)	Closing coils with resistor		Nos.	1				
v)	Terminal Pads & connectors		Nos.	2				
vi)	Molecular filter		Nos.	2				
vii)	Relays, Power contactors, switch fuse units, limit switches, push buttons, timers & MCB etc. (1 no. of each type)		Set	1				
viii)	Pressure switches / Density monitor (1 no. of each type)		Set	1				
ix)	Auxiliary switch assembly (for one pole of CB)		Set	1				
(B)	72.5 kV CB							
i)	Complete Pole of circuit breaker including pole column, interrupter, with driving mechanism and Marshaling Box but without support structure for 1250A, 31.5 KA (No. of Pole)		No.	1				
ii)	Rubber gaskets, 'O' rings and seals (for complete replacement of one pole of CB)		Set	1				
iii)	Trip coils with resistor		Nos.	2				
iv)	Closing coils with resistor		Nos.	1				
v)	Terminal Pads & connectors		Nos.	2				
vi)	Molecular filter		Nos.	2				
vii)	Relays, Power contactors, switch fuse units, limit switches, push buttons, timers & MCB etc. (1 no. of each type)		Set	1				
viii)	Pressure switches / Density monitor (1 no. of each type)		Set	1				
ix)	Auxiliary switch assembly (for one pole of CB)		Set	1				
(C)	145kV Isolator							
i)	One complete pole including support Insulator, motor operating mechanism (MOM) with box but excluding structure 1250A, 31.5 KA, 1 E/S (no. of pole)		No.	1				
ii)	Copper contact fingers for male & female contacts		Set	2				
iii)	Open/Close contactor assembly, timers, key interlock push button switch & auxilliary switches		Set	1				
iv)	Limit Switch		Set	2				
v)	Terminal Pads & Connectors		Nos.	3				
(D)	72.5kV Isolator							
i)	One complete pole including support Insulator, MANUAL operating mechanism with box but excluding structure 1250A, 31.5KA, 1 E/S (no. of pole)		No.	1				
ii)	Copper contact fingers for male & female contacts (for one pole of Isolator)		Set	2				
iii)	Open/Close contactor assembly, timers, key interlock push button switch & auxilliary switches (for one pole of Isolator)		Set	1				
iv)	Limit Switch		Nos.	2				

Item No.	Item description	Country of origin	Estimated		CIP Project Site including insurance, clearing, forwarding and transportaion to site (Excluding Taxes and Duties applicable in Nepal)			Total Amount (Excluding Taxes and Duties)
			Unit	Quantity	Currency	Unit Rate	Amount	FC
1	2	3	4	5	6	7	8=(5) x(7)	9=8
v)	Terminal Pads & Connectors		Nos.	3				
(E)	145kV CT							
i	800A, 31.5 kA with 120% extended rating		No.	1				
(F)	CT(72.5 kV,1250A with 120% extended current rating)		No.	1				
(G)	CVT (245 kV,4400 pF)		No.	1				
(H)	CVT (145 kV,4400 pF)		No.	1				
(I)	72.5kV PT		No.	1				
(J)	216 SA							
i)	Complete LA		No.	1				
ii)	Surge counter/monitor		Nos.	5				
(K)	120kV SA							
i)	Complete LA		No.	1				
ii)	Surge counter/monitor		Nos.	5				
(IV)	C&R PANELS							
i)	Transformer protection panel :							
a)	Transformer differential protection		No.	1				
b)	REF protection relay with non-linear resistor		No.	1				
c)	Directional over current & E/F Protection Relay		No.	1				
ii)	Line protection panel :							
a)	Distance Protection relay- Main-1		No.	1				
b)	Current differential Protection relay- Main-2		No.	1				
iii)	Breaker Relay panel:							
a)	Breaker failure relay		No.	1				
b)	Trip circuit supervision relay		Nos.	2				
c)	Self reset trip relay (relay of each type)		Set	1				
d)	Hand reset trip relay(relay of each type)		Set	1				
e)	Timer relay(relay of each type)		Set	1				
f)	DC supervision relay(relay of each type)		Set	1				
g)	Flag relays(relay of each type)		Set	1				
h)	Auxiliary relays(relay of each type)		Set	1				
(V)	Teleprotection Equipments							
i)	Set of prints for protection coupler(digital)		Set	1				
(VI)	SAS							
i)	Bay Control Unit (IED) of each type		Set	1				
ii)	Ethernet Switch of each type		Set	1				

Item No.	Item description	Country of origin	Estimated		CIP Project Site including insurance, clearing, forwarding and transportation to site (Excluding Taxes and Duties applicable in Nepal)			Total Amount (Excluding Taxes and Duties)
			Unit	Quantity	Currency	Unit Rate	Amount	FC
1	2	3	4	5	6	7	8=(5) x(7)	9=8
(VII)	BATTERY CHARGER							
	220 Volt							
i)	Set of control cards		Set	1				
ii)	Set of relays		Set	1				
iii)	Rectifier transformer		No.	1				
iv)	Thyristor/diode		Set	1				
v)	Fuses of Thyristor with indicators		Set	6				
(VIII)	Fire protection System							
a.	Deluge Valve of each type		Set	1				
(IX)	DG SETS :							
a.	Self starter assembly		No.	1				
b.	AVR (Auto Voltage Regulator)/ AVR card		set	1				
(X)	COMMON SPARES							
i)	Bay unit Module		No.	1				
ii)	2 wire local subscriber interface card for PABX		No.	1				
iii)	E1 Interface card for PABX		No.	1				
(XI)	SDH Equipment (STM-4 MADM upto 3 MSP protected directions)							
(i)	Common cards, Cross-connect/control cards, Optical base card, Power supply cards, power cabling, other hardware & accessories (each).		Set	1				
(ii)	Optical Interface Cards/SFP#							
a	S4.1 SFP		Nos.	1				
b	L4.1 SFP		Nos.	1				
c	L4.2 SFP		Nos.	1				
(iii)	Tributary cards							
a	E1 Interface card (Min.16 interfaces)		Nos.	1				
b	Ethernet Interface 10/100 Base T with Layer-2 switching (Min 4 Interfaces per card)		Nos.	1				
(XII)	VOIP telephone instrument with one common switch (min. 4 port) including hardware and software as per specification		Nos.	1				
(XIII)	Pre Connectorized Optical Fiber Patch Cords(10 Mtrs) – Pack of six Patch cords		Set	1				
	Sub-Total Part-C							

SCHEDULE - 1; PAGE 33 OF 33

Item No.	Item description	Country of origin	Estimated		CIP Project Site including insurance, clearing, forwarding and transportaion to site (Excluding Taxes and Duties applicable in Nepal)			Total Amount (Excluding Taxes and Duties)
			Unit	Quantity	Currency	Unit Rate	Amount	FC
1	2	3	4	5	6	7	8=(5) x(7)	9=8
	Total of Part A+PartB+PartC for Bharatpur Substation							
	Total Udipur and Bharatpur Substation (Total of column 9 to be carried forward to Schedule No. 5, Grand Summary)							

:Optical interface/SFP can be provided with Optical base card or Control card with the condition that control card and Optical base card shall not be equipped with more than two Optical interface/SFP.

However main and protection channel shall be terminated on separate cards.

Note:- \$: Set shall include all required hardware/software for complete TMN –Craft Terminal system as specified in technical specifications.

\$\$: One Set means one of each type of module/unit card etc

Note** : Suitable Optical Interface Card(s) or any other solution such as SDH equipment with optical amplifier, wavelength translator or higher aggregate bit rate SDH equipment may be offered for the length to

Name of Bidder:

Signature of Bidder:

(Designation)

(Common Seal)



NEPAL ELECTRICITY AUTHORITY
PROJECT MANAGEMENT DIRECTORATE
MARSYANGDI CORRIDOR 220 kV TRANSMISSION LINE PROJECT

(I) 220/132/33kV Udipur (new) GIS Substation and (II)220/132kV Bharatpur (220 kV New GIS & 132 kV AIS Extn)Substation

Schedule No.2: Plant and Equipment including Mandatory Spares Parts to be supplied from within Nepal

Item No.	Item description	Unit	Quantity	Ex Factory Price (Excluding VAT)		Inland transportation to site including insurance		Total Amount (Excluding Taxes)
				Unit Rate	Amount	Unit Rate	Amount	
1	2	3	4	5	6=(4)x(5)	7	8=(4)x(7)	9=(6)+(8)
I-A	220/132/33kV Udipur (new) GIS Substation							
Part-A :	EMPLOYER ASSESSED QUANTITIES							
A.1	POWER TRANSFORMER							
A1.1	POWER TRANSFORMER							
a)	53.33MVA , 220/132/33 KV, 1-phase Autotransformer (Excluding insulating oil) fitted with RIP bushings as per TS	Nos.	4					
b)	Insulating oil for 53.33MVA , 220/132/33 KV, 1-phase Autotransformer (* 1Lot = Oil for 1Autotransformers)	Lot*	4					
c)	33kV Current transformer (NCT) for autotransformer	No	1					
A1.2	POWER TRANSFORMER							
a)	50 MVA , 132/33 KV, 3-phase Autotransformer (Excluding insulating oil) fitted with RIP bushing as per TS	Nos.	1					
b)	Insulating oil for 50 MVA , 132/33 KV, 3-phase Autotransformer (* 1Lot = Oil for 1Autotransformers)	Lot*	1					
A1.3	Testing & Maintenance Equipments							
a)	Oil Storage Tank	No.	1					
b)	Transformer Oil Filtration plant (6KLPH)	No	1					
A2	LT TRANSFORMER							
1.01	630 kVA,33/0.400kV	Nos	2					
B	245 kV equipment							
B1	245KV GIS Equipment							
1.01	245kV, SF6 GIS Bus Bars Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	2					
1.02	245kV, SF6 GIS ICT bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	1					
1.03	245kV, 2400A, SF6 GIS Line bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	4					

1.04	245kV, SF6 GIS Bus Coupler bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	1					
1.05	245 kV Auxiliary Bus to connect spare unit of Transformer [Module description as per Technical specification and Section Project Specific Requirement]	Set	1					
1.06	245kV, 1600A,40kA SF6/Air Bushing for Connecting GIS to AIS alongwith support structure	Nos	4					
1.07	245kV, 2400A,40kA SF6/Air Bushing for Connecting GIS to AIS alongwith support structure (Single Phase) suitable for HTLS Conductor-ACCC Drake	Nos	12					
1.08	245kV, 1600A, 1phase SF6 GIS Bus duct alongwith support structure	Mtr	150					
1.09	245kV, 2400A, 1phase SF6 GIS Bus duct alongwith support structure	Mtr	600					
B2	245KV Outdoor Equipment							
1.01	216 KV Surge Arrester (1-phase)	Nos.	16					
1.02	245kV BPI	Nos.	16					
C	145KV Equipment							
C1	145KV GIS Equipment							
1.01	145kV, SF6 GIS Bus Bars Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	2					
1.02	145kV, SF6 GIS Transformer bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	1					
1.03	145kV, SF6 GIS Transformer bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	1					
1.04	145kV, SF6 GIS Line bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	7					
1.05	145kV, SF6 GIS Bus Coupler bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	1					
1.06	145 kV Auxiliary Bus to connect spare unit of Transformer [Module description as per Technical specification and Section Project Specific Requirement]	Set	1					
C2	132 kV Cu conductor, XLPE cable and accessories							
1.01	132 kV, 1C x 1200 sq.mm Copper, XLPE cable as per Technical specification	Mtr	1500					
1.02	132 kV, 1C x 500 sq.mm Copper, XLPE cable as per Technical specification	Mtr	600					
1.03	132 kV, 1C x 300 sq.mm Copper, XLPE cable as per Technical specification	Mtr	300					
1.04	132 KV Termination kit suitable for 132KV, 1CX 1200 sq.mm XLPE Cable alongwith with support Structure for EHV Cable	Nos	21					
1.05	132 KV Termination kit suitable for 132KV, 1CX 500 sq.mm XLPE Cable alongwith with support Structure for EHV Cable	Nos	4					

1.06	132 KV Termination kit suitable for 132KV, 1CX300 sq.mm XLPE Cable alongwith with support Structure for EHV Cable	Nos	3					
C3	145KV Outdoor Equipment							
1.01	120KV Surge Arrester (1-phase)	Nos.	28					
1.02	145kV BPI	Nos.	28					
D	36KV Equipment							
D1	36KV GIS Equipment							
1.01	Indoor switchgear panels (GIS type) IP1 type	Set	2					
1.02	Indoor Switchgear Panels (GIS type) IP 2 type	Set	6					
1.03	Indoor switchgear panels (GIS type) IP3 type	Set	1					
1.04	Indoor switchgear panels (GIS type) IP4 Type	Set	1					
D2	36kV XLPE cable and its termination for connection of 33 kV side of 132/33 kV Transformer to 36kV GIS bay and line bays							
(i)	33kV, 1C x 400 sq.mm Copper, XLPE cable as per Technical specification	Mtr	2000					
(ii)	33KV Termination kit suitable for 1C x 400 sq.mm Copper, XLPE cable alongwith with support Structure	Nos	24					
D3	36 KV XLPE 1-Ph cable and its termination for connection of 33 kV side of 630 kVA, 33/0.400KV LT Transformer from available HT external supply							
(i)	36 KV XLPE 3C, 120sqmm Copper, XLPE cable as per Technical Specification	Mtr	500					
(ii)	33KV, 3 Phase termination kit suitable for above cable	Set	9					
D4	36 kV Equipments for LT Transformer							
1.0	36 kV Isolator (3-phase)-HDB							
(i)	1250A, 25 KA, Isolator	No	8					
2.0	30 kV Surge Arrestors (1-Phase)	Nos	39					
3.0	36kV Horn Gap Fuse (3-Phase)	No	2					
4.0	36 kV BPI	Nos	39					
E	72.5kV EQUIPMENT							
1.01	72.5 kV, 1250A, 31.5kA Circuit Breaker (3-phase) with support structure	No.	1					
1.02	72.5 kV, 1250A,31.5kA Isolators with earth switch (3-phase, DBR type)	No.	1					
1.03	72.5kV, 1250A, 31.5 kA with 120% extended rating CT.	Nos.	3					
1.04	72.5kV PT.(1-phase)	Nos.	3					
1.05	72.5 kV BPI (1-phase)	Nos.	6					

F	RELAY PANELS (WITH AUTOMATION)						
F1	PANELS						
1.0	220 kV						
a	Circuit Breaker Relay Panel						
i	With Auto Reclose line	Set	4				
ii	With out Auto Reclose	Set	2				
b	Line Protection Panel						
i	For 220 kV Marsyangdi (Markichowk) line	Set	2				
ii	For 220 kV Khudi (Udipur) line bay	Set	2				
iii	Current Differential Relay for other end(Khudi) of line	Nos	2				
d	Transformer Protection Panel (For both HV & MV side)	Set	1				
e	Bus Bar Protection Panel	Set	1				
2.0	132 kV						
a	Circuit Breaker Relay Panel						
i	With Auto Reclose	Set	7				
ii	With out Auto Reclose	Set	3				
b	Line Protection Panel	Set	7				
d	Transformer Protection Panel (For both HV & MV side)	Set	1				
e	Bus Bar Protection Panel	Set	1				
F2	COMMON EQUIPMENTS						
1.0	Relay Test tool kit as per TS *	Set	1				
2.0	Time synchronisation equipment as per TS**	No.	1				
G	COMMON GIS PLUS SUBSTATION TESTING AND MAINTENANCE EQUIPMENT						
G.1	Testing & Maintenance Equipment for GIS						
(i)	SF6 Gas filling & evacuating plant						
	For 245kV, 145kV & 36kV GIS	Set	1				
(ii)	Partial Discharge Monitoring System for GIS as per Technical Specification						
	For 245kV, 145kV & 36kV GIS	Set	1				
(iii)	Dew Point meter						
	For 245kV, 145kV & 36kV GIS	Set	1				
(iv)	SF6 Gas Leak Detector						
	For 245kV, 145kV & 36kV GIS	Set	1				
(v)	EOT crane for 245kV GIS Hall	Set	1				
(vi)	EOT crane for 145kV GIS Hall	Set	1				
(vii)	SF6 Gas Analyser	Set	1				
G.2	Substation Testing and Maintenance Equipment						

(i)	Multifunctional Transformer and Substation Test System- Tan Delta, CT/VT, Transformer, relays testing, CB testing etc including software as per the specification	Set	1					
(ii)	Swift Frequency Response Analyser (SFRA) as per specification	Set	1					
(iii)	10 kV, DC Insulation Resistance tester as per specification	Set	5					
(iv)	Micro Ohmmeter-0.1 m600 A with Dual Ground as per specification	Set	1					
(v)	Three Phase Relay test set with Secondary current Injector Source as per specification	Set	1					
(vi)	Battery powered(Rechargeable)-Transformer oil BDV Tester as per specification O/P voltage max. 100 kV as per specification	Set	1					
(vii)	Four Pole Earth Resistance tester as per specification	Set	4					
(viii)	Digital Clamp on Meter up to 600 VAC/1000 A	Set	6					
(viii)	Infrared Thermometer (-30 to +500 degree Celcius) as per specification	Set	3					
(ix)	Thermal Imaging device (320 X 240 pixel) as per specification	Set	1					
(x)	Digital Rebound Hammer (10-130 N/mm2) as per specification	Set	1					
(xi)	Battery Impedance Test Kit	Set	1					
(xii)	Potable Cable Fault Location System-0-12 kV Minimum TDR range 7.5 km with battery/mains operation as per specification	Set	1					
(xii)	Laser equipment intended to measure the Sag of conductor as per TS	Set	1					
H	SUBSTATION AUTOMATION SYSTEM (SAS)							
H.1	Complete Substation Automation System (SAS) for substation including hardware and software for the substation & remote control stations along with associated equipment for the following bays as per Technical Specification							
a	Main bays to be automated							
i	220 kV system	Bay Nos	6					
ii	132 kV system	Bay Nos	10					
ii	33 kV system	Bay Nos	9					
v)	BCU for controlling & monitoring of Auxiliary System	Set	1					
I	TELE-PROTECTION & COMMUNICATION EQUIPMENT							
1.0	Digital Protection Coupler (Only for 132 kV, for both adjoining s/s of 220 kV, DPC quantity has been considered in other packages)	Nos	7					
2.0	Digital Protection Coupler (for other ends)	Nos	7					
3.0	PBAX with following configuration as per TS	Set	1					
i)	2 wire subscriber interface card with capacity 32 local subscribers (along with 32 nos. Instruments)							
ii)	4 wire E & M interface card with capacity 8 nos. trunks (For PLCC)							
iii)	E-1 interface with 2 trunks G-703							
iv)	2 wire interface with 1 trunk (For PSTN)							
4.0	Testing & Maintenance equipment (print test kit only)	Set	1					
5.0	4 wire telephone equipment	No	1					

J	LT Switchgear (As per Technical specification)						
a	415V Main switchboard	Set	1				
b	415V ACDB	Set	1				
c	415V MLDB	Set	1				
d	415V Emergency LDB	Set	1				
e	220V DCDB	Sets	2				
f	48V DCDB	Sets	2				
K	Batteries,Chargers, DG Sets with Control Panel and Fire Protection System						
K1	Battery						
a	220V						
i	600 AH	Nos	2				
b	48V						
i	600 AH	Nos	2				
K2	Float Cum Boost Battery Charger						
a	220V Float Cum Boost Battery Charger						
i	80A/80A	Nos	2				
b	48V Float Cum Boost Battery Charger						
ii	80A/80A	Nos	2				
K3	Diesel Generator Silent type with Canopy & control Panel						
a	100 kVA	Set	1				
L	Fire Protection System						
a	Portable /Trolley/Wheel mounted extinguishers						
i	9 litre water type	Nos	5				
ii	50 litre foam type	Nos	2				
iii	4.5 kg CO ₂ type	Nos	13				
iv	4.5 kg Dry Chemical Powder (DCP) type	Nos	5				
b	Smoke detection system	Set	1				
c	Fire detection and Alarm System	Set	1				
M	Cables along with clamps, glands, lugs and straight joints etc.						
(a)	Power Cables - (1.1kV grade)						
i	3.5Cx300 sqmm (XLPE) cable for filter Machine along with termination arrangement as per TS	KM	1				
N	Air conditioning System for Control room cum administrative building						
a	High wall type split AC unit of 2 TR capacity	Nos	35				

O	Fabrication, galvanising and supply of following Steel Structures including nuts, bolts, all types of washers, packplates, step bolts and gusset plates including foundation bolts.							
(a)	Lattice Structure including Foundation Bolts	MT	180					
(b)	Pipe Structure including Foundation Bolts .	MT	20					
(c)	Fastners and step bolts.(Nuts,Bolts & Washers)	MT	10					
P	Telecom							
P.1	SDH Equipment (STM-4 MADM upto 3 MSP protected directions)							
(i)	Base Equipment (Common cards, Cross Connect/control cards, optical base cards, power supply cards, power cabling, other hardware and accessories including sub racks, patch cord, DDF etc fully equiped excluding (ii) & (iii) below	Nos.	1					
(ii)	Optical Interface Cards/SFP#							
a	S4.1 SFP	Nos.	2					
b	L4.1 SFP	Nos.	2					
c	L4.2 SFP*	Nos.	0					
(iii)	Tributary cards							
a	E1 Interface card (Min.16 interfaces per card)	Nos.	2					
b	Ethernet Interface 10/100 Base T with Layer-2 switching (Min 4 Interfaces per card)	Nos.	2					
P.2	Equipment Cabinets	No.	1					
P.3	Network Manager System - Craft Terminal							
a	Hardware	Set	1					
b	Software	Set	1					
P.4	VOIP telephone instrument with one common switch (min. 4 port) including hardware and software as per specification	Set	1					
a	Hardware	Set						
b	Software	Set						
Q	PRE-ENGINEERED BUILDINGS							
1.0	Control Room Building and Panel Rooms including all supply materials from abroad except civil works and for civil works refer schedule 4(a)	Sq. M.	750					
2.0	220 kV GIS Hall including all supply materials from abroad except civil works and for civil works refer schedule 4(a)							
(a)	220 kV GIS Hall	Sq. M.	525					
(b)	AHU / Panel Room	Sq. M.	75					

3.0	132 kV GIS Hall and Panel Rooms including all supply materials from abroad except civil works and for civil works refer schedule 4(a)							
(a)	132 kV GIS Hall	Sq. M.	550					
(b)	AHU / Panel Room	Sq. M.	100					
4.0	33 kV GIS Hall and Panel Rooms including all supply materials from abroad except civil works and for civil works refer schedule 4(a)							
(a)	33 kV GIS Hall	Sq. M.	90					
(b)	AHU / Panel Room	Sq. M.	20					
R	Miscellaneous Items							
(a)	Supply of steel rails with all accessories to fix it on transformer foundation	MT	45					
(b)	WALKIE-TALKIE Set: Water, shock, vibration & impact proof Walky-Talky with required working frequency (Finalised after taking permission with concerned authority of GoN) with 16 Channel Capacity and having Battery backup of 10 to 12 Hrs (preferably Li-Ion Battery) as per TS	Set	10					
(c)	A0 Plotter as per the TS	Nos	1					
(d)	55 " Smart TV of latest version for Control Room as per TS	Nos	3					
(e)	Supply of Sfty accessories							
i)	Safety Helmets	Nos.	100					
ii)	Safety Boots	Pairs	100					
iii)	Hand safety Gloves	Pairs	100					
iv)	Protective eye goggles	Nos.	100					
v)	Construction Life Jackets with trousers	Pairs	100					
vi)	Primary health kit	Set	100					
vii)	Raincoat	Set	100					
viii)	Site Bag	Set	100					
(f)	DSLR Camera suitable for still and long movie shooting with required accessories as per TS	Set	2					
S	Vehicle-4WD with 5 door for rugged terrain as per TS	Nos.	1					
	Sub-Total Part-A							
Note:-	# :Optical interface/SFP can be provided with Optical base card or Control card with the condition that control card and Optical base card shall not be equipped with more than two Optical interface/SFP. However main and protection channel shall be terminated on separate cards. \$: Set shall include all required hardware/software for complete TMN –Craft Terminal system as specified in technical specifications.							

Part-B: VENDOR ASSESSED QUANTITIES								
A	Erection Hardware							
	Insulator strings, Disc Insulators, Hardware, conductor, Al tube, bus-bar materials, cable trays, clamps, spacers, connectors (HTLS-ACCC Drake) including equipment connectors (suitable for HTLS Conductor-ACCC Drake), Junction box, earthwire, buried cable trenches/pipe equipment & lighting, all accessories etc. for the following:							
a	245kV GIS Termination Arrangement:							
i	Line Bay	Set	4					
ii	Transformer Bay (including 220 kV AIS connection for spare unit with GIS auxiliary bus module)	Set	1					
b	145kV GIS Termination Arrangement:							
i	Line Bay	Set	7					
ii	Transformer Bay (including 132 kV AIS connection for spare unit with GIS auxiliary bus module)	Set	1					
ii	Transformer Bay	Set	1					
c	For spare unit of 220/132/36 kV auto transformer connection through auxiliary buses (tertiary & Neutral auxiliary buses only), Neutral formation and delta formation (for one bank): Required 72.5 kV BPI for tertiary auxiliary bus & delta formation, 36 kV BPI for Neutral formation & Neutral auxiliary bus including Al tube, bus-bar materials, clamps, spacers, connectors, including equipment connectors, support structures , Earthing of spare unit as per technical specification.	Set	1					
d	Erection Hardware etc for 72.5kV equipments & LT Transformers connections	Set	1					
e	33kV LT Transformer connection	Set	1					
f	33kV Transformer bay	Set	1					
g	33kV Line bays	Set	6					
A1	Earthing and lightning protection including necessary connectors/connections, risers etc. complete in all respect(but excluding LM structures for Lightning protection)							
i	Earth Conductor (copper)	LS	1					
ii	Earth Rod (copper clad steel)	LS	1					
iii	Equipment for lightning protection	LS	1					
B	Fire Protection System							
a	Pumping arrangement for HVW system & hydrant system, complete with all piping, valves, fittings,etc. inside pump house							

i	220/132kV (New) Substation	Set	1					
b	Hydrant system, complete U/G piping and accessories etc. outside the Pump House.							
i	220/132kV (New) Substation	Set	1					
c	HVV spray system, Hydrant system and complete U/G & O/G piping and accessories etc. out side the pump house for Transformer :							
c.1	Transformer							
i	53.33MVA , 220/132/33 KV, 1-phase Autotransformer	Sets	4					
ii	50 MVA , 132/33 KV, 3-phase transformer	Sets	1					
C	Illumination System							
a	Control room cum administrative building illumination	LS	1					
b	Fire fighting building illumination	LS	1					
c	Switchyard lighting	LS	1					
d	Street lighting	LS	1					
e	Transit Camp illumination	LS	1					
f	245kV, 145 kV and 33 kV GIS Buildings including panel rooms	LS	1					
g	Township quarter (B-Type, 4 nos)	LS	1					
h	Township quarter (C-Type, 4 nos)	LS	1					
i	Township quarter (D-Type, 1 nos)	LS	1					
j	Car parkings	LS	1					
k	Recreation hall for staff community hall	LS	1					
D	Air conditioning & ventilation System							
D.1	Air conditioning system							
(i)	Panel room in 245kV GIS Hall	LS	1					
(ii)	Panel room in 145kV GIS Hall	LS	1					
(iii)	Panel room in 36kV GIS Hall	LS	1					
D.2	Ventilation system							
(i)	245KV GIS hall	LS	1					
(ii)	145KV GIS hall	LS	1					
(iii)	36KV GIS hall	LS	1					
E	POWER & CONTROL CABLES							
a	Power Cables(PVC)- (1.1kV grade)	LS	1					
b	Power Cables (XLPE)(excluding 3.5Cx300 sqmm (XLPE) cable for filter Machine)- (1.1kV grade)	LS	1					
c	Control Cable (PVC)- (1.1kV grade)	LS	1					
d	Cable glands, lugs & straight through joints for Power & Control cables	LS	1					
	Sub-Total Part-B							

Part-C: Mandatory Spares							
(I)	Mandatory Spare List for Transformer						
(i)	For 53.33MVA , 220/132/33 KV, 1-phase Autotransformer						
a)	Bushing of each rating with metal parts & gaskets and lifting tools-Resin Impregnated Paper (RIP) bushing	Set	1				
b)	Cooler fan with Motor	No.	1				
c)	Buchholz Relay(Main Tank) complete with floats and contacts	Set	1				
d)	Local and Remote WTI with sensing device and contact (each)	Set	1				
e)	Magnetic oil level gauge	No.	1				
f)	Strarters, contactors,switches & Relays for Electrical control panels(One set of each type)	Set	1				
g)	Remote Tap postion Indiacator	No.	1				
h)	Spare insulating oil to be handed over to Owner after commisioning for O&M requirement	KL	10				
(ii)	For 50 MVA , 132/33 KV, 3-phase transformer						
a)	RIP Bushing of each rating with metal parts & gaskets and lifting tools	Set	1				
b)	Cooler fan with Motor	No.	1				
c)	Buchholz Relay(Main Tank) complete with floats and contacts	Set	1				
d)	Local and Remote WTI with sensing device and contact(each)	Set	1				
e)	Magnetic oil level gauge	No.	1				
f)	Strarters, contactors,switches & Relays for Electrical control panels(One ste of each type)	Set	1				
g)	Remote Tap postion Indiacator	No.	1				
(II)	SPARES FOR 245kV GIS						
A)	General						
a.	Bus Bar Sections including Bus Bar Interconnection Modules, Bus Ducts Sections, Compensators/ expansion joints/bellows, Bends, end covers along with enclosure of each type. For each of the above module/enclosure all active parts such as conductor, conductor joints, corona shield etc of each type.	Set	1				
b.	SF6 gas Pressure Relief Device assembly of each type	Set	1				
c.	SF6 Pressure gauge cum switch / Density monitors and pressure switch as applicable, of each type	Set	5				
d.	Coupling device for pressure gauge cum switch for connecting Gas handling plant of each type	Set	2				
e.	Rubber Gaskets, "O" Rings and Seals for SF6 gas of each type	Set	5				
f.	Molecular filter for SF6 gas with filter bags (10 % of total weight)	Set	1				
g.	Control Valves for SF6 gas of each type	Set	3				
h.	SF6 gas (20 % of total gas quantity)	Set	1				
i.	Pipe length (Copper or Steel as applicable) for SF6 Circuit of each type (if applicable)	Set	2				

j.	Locking device to keep the Dis-connectors (Isolators) and Earthing/Fast Earthing switches in close or open position in case of removal of the driving Mechanism	set	2					
j.1	UHF PD Sensors of each type along with BNC Connector	Nos.	5					
j.2	Support Insulators of each type	Set.	10					
k	Gas Barriers of each type	Set	1					
l	SF6 to air bushing of each type & rating complete in all respect	Set	2					
B)	245 KV SF6 CIRCUIT BREAKER:							
a.	Complete (3-Ph or 3X1-phase, as applicable)Circuit Breaker without PIR complete with interrupter, main circuit, enclosure and Marshalling Box with operating mechanism to enable replacement of all applicable type/rating of CB by spare .	Nos.	1					
b.	Rubber gaskets, 'O' rings and seals for SF6 gas (1 No. of each type)	Sets	1					
c.	Trip coil assembly with resistor as applicable	Sets	1					
d.	Closing coil assembly with resistor as applicable .	Sets	1					
e.	Relays, Power contactors, push buttons, timers & MCBs etc (1 No. of each type & rating)	Sets	1					
f.	Closing coil assembly (including valve, if applicable)	Sets	1					
g.	Trip coil assembly (including valve, if applicable)	Sets	1					
h.	Auxiliary switch assembly of each type	Sets	1					
C)	245 KV ISOLATORS :							
a.	Complete set of 3-phase dis-connector of each type including main circuit, enclosure, driving mechanism and support Insulator etc to enable complete replacement of all applicable type/rating of Isolator by spare	Sets	1					
b.	Single Phase/ 3-phase Earthing switch including main circuit, enclosure, driving mechanism.	Sets	1					
c.	Copper contact fingers for dis-connector male & female contact for one complete (3-phase) dis-connector of each type and rating	Sets	1					
d.	Copper contact fingers for earthing switch male & female contacts, for one complete(3-phase) earthing switch of each type and rating	Sets	1					
e.	Open / Close contactor assembly, timers, key interlock for one complete (3 phase) dis-connector and (3 phase) earthing switch (1 No. of each type and rating)	Sets	1					
f.	Push button switch - (1 No. of each type & rating) as applicable	Sets	1					
g.	Limit switch and Aux. Switches for complete 3 phase equipment							
g.1	For isolator	Sets	1					
g.2	For earth switch	Sets	1					
D)	245 KV CURRENT TRANSFORMER							
a.	Gas insulated complete CT of each type and rating with enclosure.	Nos.	1					

b.	Secondary bushing of each type	Sets	1					
E)	245 kV VOLTAGE TRANSFORMER							
a.	Gas insulated complete PT of each type and rating with enclosure.	Nos.	1					
(III)	SPARES FOR 145kV GIS							
A)	General							
a.	Bus Bar Sections including Bus Bar Interconnection Modules, Bus Ducts Sections, Compensators/ expansion joints/bellows, Bends, end covers along with enclosure of each type. For each of the above module/enclosure all active parts such as conductor, conductor joints, corona shield etc of each type.	Set	1					
b.	SF6 gas Pressure Relief Device assembly of each type	Set	1					
c.	SF6 Pressure gauge cum switch / Density monitors and pressure switch as applicable, of each type	Set	5					
d.	Coupling device for pressure gauge cum switch for connecting Gas handling plant of each type	Set	2					
e.	Rubber Gaskets, "O" Rings and Seals for SF6 gas of each type	Set	5					
f.	Molecular filter for SF6 gas with filter bags (10 % of total weight)	Set	1					
g.	Control Valves for SF6 gas of each type	Set	3					
h.	SF6 gas (20 % of total gas quantity)	Set	1					
i.	Pipe length (Copper or Steel as applicable) for SF6 Circuit of each type (if applicable)	Set	2					
j.	Locking device to keep the Dis-connectors (Isolators) and Earthing/Fast Earthing switches in close or open position in case of removal of the driving Mechanism	set	2					
j.1	UHF PD Sensors of each type along with BNC Connector	Nos.	5					
j.2	Support Insulators of each type	Set.	10					
k	Gas Barriers of each type	Set	1					
l	SF6 to air bushing of each type & rating complete in all respect	Set	2					
B)	145 KV SF6 CIRCUIT BREAKER:							
a.	Complete (3-Ph or 3X1-phase, as applicable)Circuit Breaker without PIR complete with interrupter, main circuit, enclosure and Marshalling Box with operating mechanism to enable replacement of all applicable type/rating of CB by spare .	Nos.	1					
b.	Rubber gaskets, 'O' rings and seals for SF6 gas (1 No. of each type)	Sets	1					
c.	Trip coil assembly with resistor as applicable	Sets	1					
d.	Relays, Power contactors, push buttons, timers & MCBs etc (1 No. of each type & rating)	Sets	1					
e.	Relays, Power contactors, push buttons, timers & MCBs etc (1 No. of each type & rating)	Sets	1					
f.	Closing coil assembly (including valve, if applicable)	Sets	1					

g.	Trip coil assembly (including valve, if applicable)	Sets	1					
h.	Auxiliary switch assembly of each type	Sets	1					
C)	145 KV ISOLATORS :							
a.	Complete set of 3-phase dis-connector of each type including main circuit, enclosure, driving mechanism and support Insulator etc to enable complete replacement of all applicable type/rating of Isolator by spare	Sets	1					
b.	Single Phase/ 3-phase Earthing switch including main circuit, enclosure, driving mechanism.	Sets	1					
c.	Copper contact fingers for dis-connector male & female contact for one complete (3-phase) dis-connector of each type and rating	Sets	1					
d.	Copper contact fingers for earthing switch male & female contacts, for one complete(3-phase) earthing switch of each type and rating	Sets	1					
e.	Open / Close contactor assembly, timers, key interlock for one complete (3 phase) dis-connector and (3 phase) earthing switch (1 No. of each type and rating)	Sets	1					
f.	Push button switch - (1 No. of each type & rating) as applicable	Sets	1					
g.	Limit switch and Aux. Switches for complete 3 phase equipment							
g.1	For isolator	Sets	1					
g.2	For earth switch	Sets	1					
D)	145 KV CURRENT TRANSFORMER							
a.	Gas insulated complete CT of each type and rating with enclosure.	Nos.	1					
b.	Secondary bushing of each type	Sets	1					
E)	145 KV VOLTAGE TRANSFORMER							
a.	Gas insulated complete PT of each type and rating with enclosure.	Nos.	1					
(IV)	SPARES FOR 36kV GIS							
A)	General							
a.	SF6 gas Pressure Relief Devices, 1Nos. of each type	Set	1					
b.	SF6 Pressure gauge cum switch OR Density monitors and pressure switch as applicable (1 no. of each type)	Set	1					
c.	Coupling device for pressure gauge cum switch for connecting Gas handling plant	Set	1					
d.	Rubber Gaskets, "O" Rings and Seals for SF6 gas of each type	Set	1					
e.	Molecular filter for SF6 gas with filter bags(20% of total weight)	Set	1					
f.	All types of Control Valves for SF6 gas of each type	Set	1					
g.	SF6 gas (20 % of total gas quantity)	Set	1					
h.	All types of coupling for SF6 gas (1 no. of each type)	Set	1					
i.	Pipe length (Copper or Steel as applicable) for SF6 Circuit of each type	Set	1					

j.	Covers with all accessories necessary to close a compartment in case of dismantling of any part of the Enclosure to ensure the sealing of this compartment							
j.1	For 3 Phase Enclosure if applicable	Nos.	1					
j.2	For Single phase enclosure if applicable	Nos.	1					
k	Locking device to keep the Dis-connectors (Isolators) and Earthing switches in close or open position in case of removal of the driving Mechanism	Sets	1					
l	Bus Support insulator of each type for 3 phase/single phase enclosure.	Nos.	1					
B)	36 KV SF6 CIRCUIT BREAKER:							
a.	Complete Circuit Breaker pole of each type & rating complete with interrupter, main circuit enclosure and Marshalling Box with operating mechanism	Nos.	1					
b.	Rubber gaskets, 'O' rings and seals for SF6 gas (1 No. of each type)	Sets	1					
c.	Trip coil assembly with resistor as applicable	Sets	1					
d.	Closing coil assembly with resistor as applicable .	Sets	1					
e.	Relays, Power contactors, push buttons, timers & MCBs etc (1 No. of each type & rating)	Sets	1					
f.	Closing coil assembly (including valve, if applicable)	Sets	1					
g.	Trip coil assembly (including valve, if applicable)	Sets	1					
h.	Auxiliary switch assembly of each type	Sets	1					

C)	36KV ISOLATORS :							
a.	Complete set of 3-phase dis-connector including main circuit, enclosure, driving mechanism	Sets	1					
b.	Single Phase/ 3-phase Earthing switch including main circuit, enclosure, driving mechanism.	Sets	1					
c.	Copper contact fingers for dis-connector male & female contact for one complete (3-phase) dis-connector of each type and rating	Sets	1					
d.	Copper contact fingers for earthing switch male & female contacts, for one complete(3-phase) earthing switch of each type and rating	Sets	1					
e.	Open / Close contactor assembly, timers, key interlock for one complete (3 phase) dis-connector and (3 phase) earthing switch (1 No. of each type and rating)	Sets	1					
f.	Push button switch - (1 No. of each type & rating) as applicable	Sets	1					
g.	Limit switch and Aux. Switches for complete 3 phase equipment							
g.1	For isolator	Sets	1					
g.2	For earth switch	Sets	1					
D)	36 KV CURRENT TRANSFORMER							
a.	Gas insulated complete CT of each type and rating with enclosure.	Nos.	1					
b.	Secondary bushing of each type	Sets	1					
E)	36 kV VOLTAGE TRANSFORMER							
a.	Gas insulated complete PT of each type and rating with enclosure.	Nos.	1					
(V)	SPARES FOR AIS EQUIPMENTS							
(A)	72.5 kV CB							
i)	Complete Pole of circuit breaker including pole column, interrupter, with driving mechanism and Marshaling Box but without support structure for 1250A, 31.5 KA (No. of Pole)	No.	1					
ii)	Rubber gaskets, 'O' rings and seals (for complete replacement of one pole of CB)	Set	1					
iii)	Trip coils with resistor	Nos.	2					
iv)	Closing coils with resistor	Nos.	1					
v)	Terminal Pads & connectors	Nos.	2					
vi)	Molecular filter	Nos.	2					
vii)	Relays, Power contactors, switch fuse units, limit switches, push buttons, timers & MCB etc. (1 no. of each type)	Set	1					
viii)	Pressure switches / Density monitor (1 no. of each type)	Set	1					
ix)	Auxiliary switch assembly (for one pole of CB)	Set	1					
(B)	72.5kV Isolator							

i)	One complete pole including support Insulator, MANUAL operating mechanism with box but excluding structure 1250A, 31.5KA, 1 E/S (no. of pole)	No.	1					
ii)	Copper contact fingers for male & female contacts (for one pole of Isolator)	Set	2					
iii)	Open/Close contactor assembly, timers, key interlock push button switch & auxilliary switches (for one pole of Isolator)	Set	1					
iv)	Limit Switch	Nos.	2					
v)	Terminal Pads & Connectors	Nos.	3					
(C)	CT(72.5 kV,1250A with 120% extended current rating)	No.	1					
(D)	72.5kV PT	No.	1					
(E)	216 SA							
i)	Complete LA	No.	1					
ii)	Surge counter/monitor	Nos.	5					
(F)	120kV SA							
i)	Complete LA	No.	1					
ii)	Surge counter/monitor	Nos.	5					
(VI)	C&R PANELS							
i)	Transformer protection panel :							
a)	Transformer differential protection	No.	1					
b)	REF protection relay with non-linear resistor	No.	1					
c)	Directional over current & E/F Protection Relay	No.	1					
ii)	Line protection panel :							
a)	Distance Protection relay- Main-1	No.	1					
b)	Current differential Protection relay- Main-2	No.	1					
iii)	Breaker Relay panel:							
a)	Breaker failure relay	No.	1					
b)	Trip circuit supervision relay	Nos.	2					
c)	Self reset trip relay (relay of each type)	Set	1					
d)	Hand reset trip relay(relay of each type)	Set	1					
e)	Timer relay(relay of each type)	Set	1					
f)	DC supervision relay(relay of each type)	Set	1					
g)	Flag relays(relay of each type)	Set	1					
h)	Auxiliary relays(relay of each type)	Set	1					
(VII)	Teleprotection Equipments							
i)	Set of prints for protection coupler(digital)	Set	1					
(VIII)	SAS							

i)	Bay Control Unit (IED) of each type	Set	1					
ii)	Ethernet Switch of each type	Set	1					
(IX)	BATTERY CHARGER							
1.0	220 Volt							
i)	Set of control cards	Set	1					
ii)	Set of relays	Set	1					
iii)	Rectifier transformer	No.	1					
iv)	Thyristor/diode	Set	1					
v)	Fuses of Thyristor with indicators	Set	6					
2.0	48 Volt							
i)	Set of control cards	Set	1					
ii)	Set of relays	Set	1					
iii)	Rectifier transformer	No.	1					
iv)	Thyristor/diode	Set	1					
v)	Fuses of Thyristor with indicators	Set	6					
(X)	Fire protection System							
a.	Deluge Valve of each type	Set	1					
(XI)	DG SETS :							
a.	Self starter assembly	No.	1					
b.	AVR (Auto Voltage Regulator)/ AVR card	set	1					
(XII)	COMMON SPARES							
i)	Bay unit Module	No.	1					
ii)	2 wire local subscriber interface card for PABX	No.	1					
iii)	E1 Interface card for PABX	No.	1					
(XIII)	SDH Equipment (STM-4 MADM upto 3 MSP protected directions)							
(i)	Common cards, Cross-connect/control cards, Optical base card, Power supply cards, power cabling, other hardware & accessories (each).	Set	1					
(ii)	Optical Interface Cards/SFP#							
a	S4.1 SFP	Nos.	1					
b	L4.1 SFP	Nos.	1					
c	L4.2 SFP	Nos.	0					
(iii)	Tributary cards							
a	E1 Interface card (Min.16 interfaces)	Nos.	1					

b	Ethernet Interface 10/100 Base T with Layer-2 switching (Min 4 Interfaces per card)	Nos.	1					
(XIV)	VOIP telephone instrument	Nos.	1					
(XV)	Pre Connectorized Optical Fiber Patch Cords(10 Mtrs) – Pack of six Patch cords	Set	1					
	Sub-Total Part-C							
	Total of Part A+Part B + Part C for Udipur Substation							

Note\$: One Set means one of each type of module/unit card etc

Note**: Suitable Optical Interface Card(s) or any other solution such as SDH equipment with optical amplifier, wavelength translator or higher aggregate bit rate SDH equipment may be offered for the length to meet the link budget requirements without repeater

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I-A	220kV Bharatpur (new) GIS Substation							
	Part-A : EMPLOYER ASSESSED QUANTITIES							
A.1	POWER TRANSFORMER							
A1.1	POWER TRANSFORMER							
a)	160MVA , 220/132/33 KV, 3-phase Autotransformer (Excluding insulating oil)-Resin Impregnated Paper (RIP) Bushings	Nos.	2					
b)	Insulating oil for 160MVA , 220/132 KV, 3-phase Autotransformers	Lot*	2					
A1.2	Testing & Maintenance Equipments							
a)	Oil Storage Tank	No.	1					
b)	Transformer Oil Filtration plant (6KLPH)	No	1					
A2	LT TRANSFORMER							
1.01	630 kVA,33/0.400kV	Nos	1					
B	245 kV equipment							
B1	245KV GIS Equipment							
1.01	245kV, SF6 GIS Bus Bars Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	2					
1.02	245kV, SF6 GIS ICT bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	2					
1.03	245kV, 1600A, SF6 GIS Line bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	6					
1.04	245kV, 2400A, SF6 GIS Line bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	4					
1.05	245kV, SF6 GIS Bus Coupler bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	1					
1.06	245kV, 1600A,40kA SF6/Air Bushing for Connecting GIS to AIS alongwith support structure (Single Phase)	Nos	24					
1.07	245kV, 2400A,40kA SF6/Air Bushing for Connecting GIS to AIS alongwith support structure (Single Phase) suitable for conneting HTLS Conductor-ACCC Drake	Nos	12					
1.08	245kV, 1600A, 1phase SF6 GIS Bus duct alongwith support structure	Mtr	900					
1.09	245kV, 2400A, 1phase SF6 GIS Bus duct alongwith support structure	Mtr	500					
B2	245KV Outdoor Equipment							
1.01	216 KV Surge Arrester (1-phase)	Nos.	36					
1.02	245kV BPI	Nos.	36					

B2.1	Connection of one 132 kV side of 3-Ph, 160 MVA, 220/132 kV Transformer on 132kV Bay: 132 kV cable (with Copper conductor) of suitable current rating for all three phases along with cable termination kit (both end i.e. Transformer 132 kV end and 132 bay end) for 132 kV side of Transformer connection on 132kV Bay connection as per specification for							
i	Cable route length (Each mtr should include cables for three phases and required burried cable trench)	Mtr	200					
ii	cable termination kit alongwith support structures (Each Set Comprises cable termination for all three phases at both end i.e. for 3-Ph Transformer 132 kV end and 132 bay end)	Set	2					
C	145KV Equipment							
C1	145KV Outdoor Equipment							
1.01	145 kV Circuit Breaker (3-Phase) with support structure							
	1250A, 31.5 kA	Nos	2					
1.02	145kV Isolator (3-phase)-HDB							
a	1250A, 31.5 KA, Isolator with one E/S	Nos	4					
b	1250A, 31.5 KA, Tandem Isolator without E/S	Nos	2					
1.03	145 kV Current Transformer (1- Phase)							
a	800A, 31.5 kA with 120% extended rating	Nos	6					
1.4	120KV Surge Arrester (1-phase)	Nos	6					
1.2	145kV BPI	Nos	12					
D	72.5kV EQUIPMENT							
1.01	72.5 kV, 1250A, 31.5kA Circuit Breaker (3-phase) with support structure	No.	1					
1.02	72.5 kV, 1250A,31.5kA Isolators with earth switch (3-phase, DBR type)	No.	1					
1.03	72.5kV, 1250A, 31.5 kA with 120% extended rating CT.	Nos.	3					
1.04	72.5kV PT.(1-phase)	Nos.	3					
1.05	72.5 kV BPI (1-phase)	Nos.	6					
E	RELAY PANELS (WITH AUTOMATION)							
E1	PANELS							
1.0	220 kV							
a	Circuit Breaker Relay Panel							
i	With Auto Reclose	Set	10					
ii	With out Auto Reclose	Set	3					
b	Line Protection Panel							

i)	Markichowk to Bharatpur 220 kV D/C line (without differential relay since the differential relays shall be provided by the MKTLP)	Set	2				
ii)	For 220 kV Damauli line	Set	2				
iii)	For 220 kV Hetauda line	Set	2				
iv)	For 220 kV New Butwal line	Set	2				
v)	For Future spare 220 kV line	Set	2				
vi)	Current Differential Relay for other end (Damauli) of line	Nos	2				
c	Transformer Protection Panel (For both HV & MV side)	Set	2				
d	Bus Bar Protection Panel	Set	1				
2.0	132 kV						
a	Circuit Breaker Relay Panel						
i	With out Auto Reclose	Set	2				
E2	COMMON EQUIPMENTS						
a	Relay Test tool kit as per TS *	Set	1				
b	Time synchronisation equipment as per TS**	No.	1				
F	COMMON GIS PLUS SUBSTATION TESTING AND MAINTENANCE EQUIPMENT						
F.1	Testing & Maintenance Equipment for GIS						
(i)	SF6 Gas filling & evacuating plant For 245kV GIS	Set	1				
(ii)	Partial Discharge Monitoring System for GIS as per Technical Specification For 245kV GIS	Set	1				
(iii)	Dew Point meter For 245kV GIS	Set	1				
(iv)	SF6 Gas Leak Detector For 245kV GIS	Set	1				
(v)	EOT crane for 245kV GIS Hall	Set	1				
(vii)	SF6 Gas Analyser	Set	1				
F.2	Substation Testing and Maintenance Equipment						
(i)	Swift Frequency Response Analyser (SFRA) as per specification	Set	1				
(ii)	10 kV, DC Insulation Resistance tester as per specification	Set	2				
(iii)	Four Pole Earth Resistance tester as per specification	Set	1				
(iv)	Digital Clamp on Meter up to 600 VAC/1000 A	Set	2				
(v)	Infrared Thermometer (-30 to +500 degree Celcius) as per specification	Set	1				
(vi)	Digital Rebound Hammer (10-130 N/mm2) as per specification	Set	1				
(vii)	Laser equipment intended to measure the Sag of conductor as per TS	Set	1				
G	SUBSTATION AUTOMATION SYSTEM (SAS)						

G.1	Complete Substation Automation System (SAS) for substation including hardware and software for the substation & remote control stations along with associated equipment for the following bays as per Technical Specification							
a	Main bays to be automated							
i	220 kV system	Bay Nos	13					
ii	132 kV system (7 Existing bays+2 Tranformer bay under present scope)	Bay Nos	9					
iii)	BCU for controlling & monitoring of Auxilary System	Set	1					
H	TELE-PROTECTION & COMMUNICATION EQUIPMENT							
H.1	Digital Protection Coupler	Nos	6					
H.2	Digital Protection Coupler(for other end)**	Nos	6					
H.3	PBAX with following configuration as per TS including following items:	Set	1					
i)	2 wire subscriber interface card with capacity 32 local subscribers (along with 32 nos. Instruments)							
ii)	4 wire E & M interface card with capacity 8 nos. trunks (For PLCC)							
iii)	E-1 interface with 2 trunks G-703							
iv)	2 wire interface with 1 trunk (For PSTN)							
H.4	Testing & Maintenance equipment (print test kit only)	Set	1					
H.5	4 wire telephone equipment	No	1					
I	LT Switchgear (As per Technical specification)							
a	415V Main switchboard	Set	1					
b	415V ACDB	Set	1					
c	415V MLDB	Set	1					
d	415V Emergency LDB	Set	1					
e	220V DCDB	Sets	2					
J	Batteries,Chargers, DG Sets with Control Panel and Fire Protection System							
J.1	Batteries							
a	220V							
i	600 AH	Nos	2					
J.2	Float Cum Boost Battery Charger							
a	220V Float Cum Boost Battery Charger							
i	80A/80A	Nos	2					
J.3	Diesel Generator Silent type with Canopy & control Panel							
a	100 kVA	Set	1					
K	Fire Protection System							

a	Portable /Trolley/Wheel mounted extinguishers						
i	9 litre water type	Nos	5				
ii	50 litre foam type	Nos	2				
iii	4.5 kg CO ₂ type	Nos	13				
iv	4.5 kg Dry Chemical Powder (DCP) type	Nos	5				
b	Smoke detection system	Set	1				
c	Fire detection and Alarm System	Set	1				
L	Cables along with clamps, glands, lugs and straight joints etc.						
(a)	Power Cables - (1.1kV grade)						
i	3.5Cx300 sqmm (XLPE) cable for filter Machine along with termination arrangement as per TS	KM	1				
M	Air conditioning System for Control room cum administrative building						
a	High wall type split AC unit of 2 TR capacity	Nos	25				
N	Fabrication, galvanising and supply of following Steel Structures including nuts, bolts, all types of washers, packplates, step bolts and gusset plates including foundation bolts.						
(a)	Lattice Structure including Foundation Bolts	MT	180				
(b)	Pipe Structure including Foundation Bolts .	MT	20				
(c)	Fastners and step bolts.(Nuts,Bolts & Washers)	MT	10				
O	Telecom						
O.1	SDH Equipment (STM-4 MADM upto 3 MSP protected directions)						
(i)	Base Equipment (Common cards, Cross Connect/control cards, optical base cards, power supply cards, power cabling, other hardware and accessories including sub racks, patch cord, DDF etc fully equiped excluding (ii) & (iii) below	Nos.	1				
(ii)	Optical Interface Cards/SFP#						
a	L4.1 SFP**	Nos.	4				
b	L4.2 SFP	Nos.	0				
(iii)	Tributary cards						
a	E1 Interface card (Min.16 interfaces per card)	Nos.	2				
b	Ethernet Interface 10/100 Base T with Layer-2 switching (Min 4 Interfaces per card)	Nos.	2				
O.2	Equipment Cabinets	No.	1				
O.3	Network Manager System - Craft Terminal \$						
a	Hardware	Set	1				

b	Software	Set	1					
O.4	VOIP telephone instrument with one common switch (min. 4 port) including hardware and software as per specification	Set	1					
a	Hardware	Set						
b	Software	Set						
P	PRE-ENGINEERED BUILDINGS							
1.0	220 kV GIS Hall including all supply materials from abroad except civil works and for civil works refer schedule 4(a)							
(a)	220 kV GIS Hall	Sq. M.	525					
(b)	AHU / Panel Room	Sq. M.	75					
Q	Miscellaneous Items							
(a)	Supply of steel rails with all accessories to fix it on transformer foundation	MT	45					
	Sub-Total Part-A							
Note:-	# :Optical interface/SFP can be provided with Optical base card or Control card with the condition that control card and Optical base card shall not be equipped with more than two Optical interface/SFP. However main and protection channel shall be terminated on separate cards. \$: Set shall include all required hardware/software for complete TMN –Craft Terminal system as specified in technical specifications.							
	Part-B: VENDOR ASSESSED QUANTITIES							
A	Erection Hardware							
	Insulator strings, Disc Insulators, Hardware, conductor suitable for HTLS (ACCC Drake) and ACSR Bison Conductor, Al tube, bus-bar materials, cable trays, clamps, spacers, connectors including equipment connectors, Junction box, earthwire, buried cable trenches/pipe equipment & lighting, all accessories etc. for the following:							
a	245kV GIS Termination Arrangement:							
i	Line Bay	Set	10					
ii	Transformer Bay	Set	2					
b	145kV bays							
i	Transformer Bay	Set	2					

c	For spare unit of 220/132/36 kV auto transformer connection through auxiliary buses (tertiary & Neutral auxiliary buses only), Neutral formation and delta formation (for one bank): Required 72.5 kV BPI for tertiary auxiliary bus & delta formation, 36 kV BPI for Neutral formation & Neutral auxiliary bus including Al tube, bus-bar materials, clamps, spacers, connectors, including equipment connectors, support structures , Earthing of spare unit as per technical specification.	Set	1					
d	Erection Hardware etc for 72.5kV equipment & LT Transformers connections	Set	1					
A1	Earthing and lightning protection including necessary connectors/connections, risers etc. complete in all respect(but excluding LM structures for Lightning protection)							
i	Earth Conductor (copper)	LS	1					
ii	Earth Rod (copper clad steel)	LS	1					
iii	Equipment for lightning protection	LS	1					
B	Fire Protection System							
a	Pumping arrangement for HVW system & hydrant system, complete with all piping, valves, fittings,etc. inside pump house							
i	220/132kV (New) Substation	Set	1					
b	Hydrant system, complete U/G piping and accessories etc. outside the Pump House.							
i	220/132kV (New) Substation	Set	1					
c	Transformer							
i	160 MVA , 220/132/33 KV, 3-phase Autotransformer	Sets	2					
C	Illumination System							
a	Fire fighting building illumination	LS	1					
b	Switchyard lighting	LS	1					
c	Street lighting	LS	1					
d	Transit Camp illumination	LS	1					
e	245kV GIS Building including panel room	LS	1					
f	Township quarter (C-Type, 4 nos)	LS	1					
g	Car parkings	LS	1					
D	Air conditioning & ventilation System							
D.1	Air conditioning system							
(i)	Panel room in 245kV GIS Hall	LS	1					
D.2	Ventilation system							
(i)	245KV GIS hall	LS	1					

E	POWER & CONTROL CABLES							
a	Power Cables(PVC)- (1.1kV grade)	LS	1					
b	Power Cables (XLPE)(excluding 3.5Cx300 sqmm (XLPE) cable for filter Machine)- (1.1kV grade)	LS	1					
c	Control Cable (PVC)- (1.1kV grade)	LS	1					
d	Cable glands, lugs & straight through joints for Power & Control cables	LS	1					
	Sub-Total Part-B							

Part-C: Mandatory Spares								
(I)	Mandatory Spare List for Transformer							
(i)	For 160 MVA , 220/132/33 KV, 1-phase Autotransformer							
a)	Bushing of each rating with metal parts & gaskets and lifting tools-RIP	Set	1					
b)	Cooler fan with Motor	No.	1					
c)	Buchholz Relay(Main Tank) complete with floats and contacts	Set	1					
d)	Local and Remote WTI with sensing device and contact (each)	Set	1					
e)	Magnetic oil level gauge	No.	1					
f)	Strarters, contactors,switches & Relays for Electrical control panels(One set of each type)	Set	1					
g)	Remote Tap position Indicator	No.	1					
h)	Spare insulating oil to be handed over to Owner after commisioning for O&M requirement	KL	10					
(II)	SPARES FOR 245kV GIS							
A)	General							
a.	Bus Bar Sections including Bus Bar Interconnection Modules, Bus Ducts Sections, Compensators/ expansion joints/bellows, Bends, end covers along with enclosure of each type. For each of the above module/enclosure all active parts such as conductor, conductor joints, corona shield etc of each type.	Set	1					
b.	SF6 gas Pressure Relief Device assembly of each type	Set	1					
c.	SF6 Pressure gauge cum switch / Density monitors and pressure switch as applicable, of each type	Set	5					
d.	Coupling device for pressure gauge cum switch for connecting Gas handling plant of each type	Set	2					
e.	Rubber Gaskets, "O" Rings and Seals for SF6 gas of each type	Set	5					
f.	Molecular filter for SF6 gas with filter bags (10 % of total weight)	Set	1					
g.	Control Valves for SF6 gas of each type	Set	3					
h.	SF6 gas (20 % of total gas quantity)	Set	1					
i.	Pipe length (Copper or Steel as applicable) for SF6 Circuit of each type (if applicable)	Set	2					
j.	Locking device to keep the Dis-connectors (Isolators) and Earthing/Fast Earthing switches in close or open position in case of removal of the driving Mechanism	set	2					
j.1	UHF PD Sensors of each type along with BNC Connector	Nos.	5					
j.2	Support Insulators of each type	Set.	10					
k	Gas Barriers of each type	Set	1					
l	SF6 to air bushing of each type & rating complete in all respect	Set	2					
B)	245 KV SF6 CIRCUIT BREAKER:							

a.	Complete (3-Ph or 3X1-phase, as applicable)Circuit Breaker without PIR complete with interrupter, main circuit, enclosure and Marshalling Box with operating mechanism to enable replacement of all applicable type/rating of CB by spare .	Nos.	1					
b.	Rubber gaskets, 'O' rings and seals for SF6 gas (1 No. of each type)	Sets	1					
c.	Trip coil assembly with resistor as applicable	Sets	1					
d.	Closing coil assembly with resistor as applicable .	Sets	1					
e.	Relays, Power contactors, push buttons, timers & MCBs etc (1 No. of each type & rating)	Sets	1					
f.	Closing coil assembly (including valve, if applicable)	Sets	1					
g.	Trip coil assembly (including valve, if applicable)	Sets	1					
h.	Auxiliary switch assembly of each type	Sets	1					
C)	245 KV ISOLATORS :							
a.	Complete set of 3-phase dis-connector of each type including main circuit, enclosure, driving mechanism and support Insulator etc to enable complete replacement of all applicable type/rating of Isolator by spare	Sets	1					
b.	Single Phase/ 3-phase Earthing switch including main circuit, enclosure, driving mechanism.	Sets	1					
c.	Copper contact fingers for dis-connector male & female contact for one complete (3-phase) dis-connector of each type and rating	Sets	1					
d.	Copper contact fingers for earthing switch male & female contacts, for one complete(3-phase) earthing switch of each type and rating	Sets	1					
e.	Open / Close contactor assembly, timers, key interlock for one complete (3 phase) dis-connector and (3 phase) earthing switch (1 No. of each type and rating)	Sets	1					
f.	Push button switch - (1 No. of each type & rating) as applicable	Sets	1					
g.	Limit switch and Aux. Switches for complete 3 phase equipment							
g.1	For isolator	Sets	1					
g.2	For earth switch	Sets	1					
D)	245 KV CURRENT TRANSFORMER							
a.	Gas insulated complete CT of each type and rating with enclosure.	Nos.	1					
b.	Secondary bushing of each type	Sets	1					
E)	245 kV VOLTAGE TRANSFORMER							
a.	Gas insulated complete PT of each type and rating with enclosure.	Nos.	1					
(III)	SPARES FOR AIS EQUIPMENTS							
(A)	145kV CB							
i)	Complete Pole of circuit breaker including pole column, interrupter, with driving mechanism and Marshaling Box but without support structure for							

	1250A, 31.5 KA (No. of Pole)	No.	1					
ii)	Rubber gaskets, 'O' rings and seals (for complete replacement of one pole of CB)	Set	1					
iii)	Trip coils with resistor	Nos.	2					
iv)	Closing coils with resistor	Nos.	1					
v)	Terminal Pads & connectors	Nos.	2					
vi)	Molecular filter	Nos.	2					
vii)	Relays, Power contactors, switch fuse units, limit switches, push buttons, timers & MCB etc. (1 no. of each type)	Set	1					
viii)	Pressure switches / Density monitor (1 no. of each type)	Set	1					
ix)	Auxiliary switch assembly (for one pole of CB)	Set	1					
(B)	72.5 kV CB							
i)	Complete Pole of circuit breaker including pole column, interrupter, with driving mechanism and Marshaling Box but without support structure for							
	1250A, 31.5 KA (No. of Pole)	No.	1					
ii)	Rubber gaskets, 'O' rings and seals (for complete replacement of one pole of CB)	Set	1					
iii)	Trip coils with resistor	Nos.	2					
iv)	Closing coils with resistor	Nos.	1					
v)	Terminal Pads & connectors	Nos.	2					
vi)	Molecular filter	Nos.	2					
vii)	Relays, Power contactors, switch fuse units, limit switches, push buttons, timers & MCB etc. (1 no. of each type)	Set	1					
viii)	Pressure switches / Density monitor (1 no. of each type)	Set	1					
ix)	Auxiliary switch assembly (for one pole of CB)	Set	1					
(C)	145kV Isolator							
i)	One complete pole including support Insulator, motor operating mechanism (MOM) with box but excluding structure							
	1250A, 31.5 KA, 1 E/S (no. of pole)	No.	1					
ii)	Copper contact fingers for male & female contacts	Set	2					
iii)	Open/Close contactor assembly, timers, key interlock push button switch & auxilliary switches	Set	1					
iv)	Limit Switch	Set	2					
v)	Terminal Pads & Connectors	Nos.	3					
(D)	72.5kV Isolator							
i)	One complete pole including support Insulator, MANUAL operating mechanism with box but excluding structure							
	1250A, 31.5KA, 1 E/S (no. of pole)	No.	1					
ii)	Copper contact fingers for male & female contacts (for one pole of Isolator)	Set	2					

iii)	Open/Close contactor assembly, timers, key interlock push button switch & auxilliary switches (for one pole of Isolator)	Set	1					
iv)	Limit Switch	Nos.	2					
v)	Terminal Pads & Connectors	Nos.	3					
(E)	145kV CT							
i	800A, 31.5 kA with 120% extended rating	No.	1					
(F)	CT(72.5 kV,1250A with 120% extended current rating)	No.	1					
(G)	CVT (245 kV,4400 pF)	No.	1					
(H)	CVT (145 kV,4400 pF)	No.	1					
(I)	72.5kV PT	No.	1					
(J)	216 SA							
i)	Complete LA	No.	1					
ii)	Surge counter/monitor	Nos.	5					
(K)	120kV SA							
i)	Complete LA	No.	1					
ii)	Surge counter/monitor	Nos.	5					
(IV)	C&R PANELS							
i)	Transformer protection panel :							
a)	Transformer differential protection	No.	1					
b)	REF protection relay with non-linear resistor	No.	1					
c)	Directional over current & E/F Protection Relay	No.	1					
ii)	Line protection panel :							
a)	Distance Protection relay- Main-1	No.	1					
b)	Current differential Protection relay- Main-2	No.	1					
iii)	Breaker Relay panel:							
a)	Breaker failure relay	No.	1					
b)	Trip circuit supervision relay	Nos.	2					
c)	Self reset trip relay (relay of each type)	Set	1					
d)	Hand reset trip relay(relay of each type)	Set	1					
e)	Timer relay(relay of each type)	Set	1					
f)	DC supervision relay(relay of each type)	Set	1					
g)	Flag relays(relay of each type)	Set	1					
h)	Auxiliary relays(relay of each type)	Set	1					
(V)	Teleprotection Equipments							
i)	Set of prints for protection coupler(digital)	Set	1					
(VI)	SAS							

i)	Bay Control Unit (IED) of each type	Set	1					
ii)	Ethernet Switch of each type	Set	1					
(VII)	BATTERY CHARGER							
	220 Volt							
i)	Set of control cards	Set	1					
ii)	Set of relays	Set	1					
iii)	Rectifier transformer	No.	1					
iv)	Thyristor/diode	Set	1					
v)	Fuses of Thyristor with indicators	Set	6					
(VIII)	Fire protection System							
a.	Deluge Valve of each type	Set	1					
(IX)	DG SETS :							
a.	Self starter assembly	No.	1					
b.	AVR (Auto Voltage Regulator)/ AVR card	set	1					
(X)	COMMON SPARES							
i)	Bay unit Module	No.	1					
ii)	2 wire local subscriber interface card for PABX	No.	1					
iii)	E1 Interface card for PABX	No.	1					
(XI)	SDH Equipment (STM-4 MADM upto 3 MSP protected directions)							
(i)	Common cards, Cross-connect/control cards, Optical base card, Power supply cards, power cabling, other hardware & accessories (each).	Set	1					
(ii)	Optical Interface Cards/SFP#							
a	S4.1 SFP	Nos.	1					
b	L4.1 SFP	Nos.	1					
c	L4.2 SFP	Nos.	1					
(iii)	Tributary cards							
a	E1 Interface card (Min.16 interfaces)	Nos.	1					
b	Ethernet Interface 10/100 Base T with Layer-2 switching (Min 4 Interfaces per card)	Nos.	1					
(XII)	VOIP telephone instrument with one common switch (min. 4 port) including hardware and software as per specification	Nos.	1					
(XIII)	Pre Connectorized Optical Fiber Patch Cords(10 Mtrs) – Pack of six Patch cords	Set	1					

	Sub-Total Part-C							
	Total of Part A+PartB+PartC for Bharatpur Substation							
	Total Udipur and Bharatpur Substation (Total of column 9 to be carried forward to Schedule No. 5, Grand Summary)							

Note:-

: Optical interface/SFP can be provided with Optical base card or Control card with the condition that control card and Optical base card shall not be equipped with more than two Optical interface/SFP. However main and protection channel shall be terminated on separate cards.

\$: Set shall include all required hardware/software for complete TMN –Craft Terminal system as specified in technical specifications.

\$\$: One Set means one of each type of module/unit card etc

Note** : Suitable Optical Interface Card(s) or any other solution such as SDH equipment with optical amplifier, wavelength translator or higher aggregate bit rate SDH equipment may be offered for the length to meet the link budget requirements without repeater

Name of Bidder:

Signature of Bidder:

(Printed Name)

(Designation)

(Common Seal)



NEPAL ELECTRICITY AUTHORITY
PROJECT MANAGEMENT DIRECTORATE
MARSYANGDI CORRIDOR 220 kV TRANSMISSION LINE PROJECT

(I) 220/132/33kV Udipur (new) GIS Substation and (II) 220/132kV Bharatpur (220 kV New GIS & 132 kV AIS Extn) Substation

Schedule A-3: Design Services

Item No.	Item Description	Estimated		Unit Prices		Total Prices	
				Local Currency Portion	Foreign Currency Portion		
		Quantity	Unit	NRs	Currency	LC	FC
1	2	3	4	5	6	7=3x5	8=3x6
1.0	Detail Design of Udipur 220 kV GIS/ AIS substation Complete	1	Lot	Included in Schedule 1			
2.0	Detail Design of New Bharatpur 220 kV GIS/ AIS substation Complete	1	Lot				
Total							

Name of Bidder:

Signature of Bidder:

(Printed Name)

(Designation)

(Common Seal)

NEPAL ELECTRICITY AUTHORITY
PROJECT MANAGEMENT DIRECTORATE
MARSYANGDI CORRIDOR 220 kV TRANSMISSION LINE PROJECT

(I) 220/132/33kV Udiapur (new) GIS Substation and (II)220/132kV Bharatpur (220 kV New GIS & 132 kV AIS Extn)Substation

Schedule No. 4 : Installation and Other Services

(a): Installation and Construction Charges

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
I-A	220/132/33kV Udiapur (new) GIS Substation						
Part-A :	EMPLOYER ASSESSED QUANTITIES						
A.1	POWER TRANSFORMER						
A1.1	POWER TRANSFORMER						
a)	53.33MVA , 220/132/33 KV, 1-phase Autotransformer (Excluding insulating oil) fitted with RIP bushings as per TS	Nos.	4				
b)	Insulating oil for 53.33MVA , 220/132/33 KV, 1-phase Autotransformer (* 1Lot = Oil for 1Autotransformers)	Lot*	4				
c)	33kV Current transformer (NCT) for autotrasnformer	No	1				
A1.2	POWER TRANSFORMER						
a)	50 MVA , 132/33 KV, 3-phase Autotransformer (Excluding insulating oil) fitted with RIP bushing as per TS	Nos.	1				
b)	Insulating oil for 50 MVA , 132/33 KV, 3-phase Autotransformer (* 1Lot = Oil for 1Autotransformers)	Lot*	1				
A1.3	Testing & Maintenance Equipments						
a)	Oil Storage Tank	No.	1				
b)	Transformer Oil Filtration plant (6KLPH)	No	1				
A2	LT TRANSFORMER						
1.01	630 kVA,33/0.400kV	Nos	2				
B	245 kV equipment						
B1	245KV GIS Equipment						

SCHEDULE - 4 (a); PAGE 2 OF 32

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
1.01	245kV, SF6 GIS Bus Bars Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	2				
1.02	245kV, SF6 GIS ICT bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	1				
1.03	245kV, 2400A, SF6 GIS Line bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	4				
1.04	245kV, SF6 GIS Bus Coupler bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	1				
1.05	245 kV Auxiliary Bus to connect spare unit of Transformer [Module description as per Technical specification and Section Project Specific Requirement]	Set	1				
1.06	245kV, 1600A,40kA SF6/Air Bushing for Connecting GIS to AIS alongwith support structure	Nos	4				
1.07	245kV, 2400A,40kA SF6/Air Bushing for Connecting GIS to AIS alongwith support structure (Single Phase) suitable for HTLS Conductor-ACCC Drake	Nos	12				
1.08	245kV, 1600A, 1phase SF6 GIS Bus duct alongwith support structure	Mtr	150				
1.09	245kV, 2400A, 1phase SF6 GIS Bus duct alongwith support structure	Mtr	600				
B2	245KV Outdoor Equipment						
1.1	216 KV Surge Arrester (1-phase)	Nos.	16				
1.2	245kV BPI	Nos.	16				

SCHEDULE - 4 (a); PAGE 3 OF 32

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
C	145KV Equipment						
C1	145KV GIS Equipment						
1.01	145kV, SF6 GIS Bus Bars Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	2				
1.02	145kV, SF6 GIS Transformer bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	1				
1.03	145kV, SF6 GIS Transformer bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	1				
1.04	145kV, SF6 GIS Line bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	7				
1.05	145kV, SF6 GIS Bus Coupler bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	1				
1.06	145 kV Auxiliary Bus to connect spare unit of Transformer [Module description as per Technical specification and Section Project Specific Requirement]	Set	1				
1.07	Construction of buried cable trench along with excavation, PCC, RCC, back filling, restoration (as per requirement) etc. as per technical specification (for six single core, 132kV, copper cable)(sand filled)	Mtr	180				
1.08	Construction of buried cable trench along with excavation, PCC, RCC, back filling, restoration (as per requirement) etc. as per technical specification (for Seven single core, 132kV, copper cable)(sand filled)	Mtr	80				
1.09	Construction of buried cable trench along with excavation, PCC, HDPE pipe back filling, restoration (as per requirement) etc. as per technical specification (for Six single core, 132kVcopper cable) (PCC trench)	Mtr	50				
1.10	Construction of buried cable trench along with excavation, PCC, HDPE pipe back filling, restoration (as per requirement) etc. as per technical specification (for seven single core, 132kVcopper cable) (PCC trench)	Mtr	50				

SCHEDULE - 4 (a); PAGE 4 OF 32

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
1.11	Construction of buried cable trench along with excavation, PCC, RCC, back filling, restoration (as per requirement) etc. as per technical specification (for three single core, 132kV, copper cable)(sand filled)	Mtr	100				
1.12	Construction of buried cable trench along with excavation, PCC, HDPE pipe back filling, restoration (as per requirement) etc. as per technical specification (for three single core, 132kVcopper cable) (PCC trench)	Mtr	50				
C2	132 kV Cu condctor, XLPE cable and accessories						
1.01	132 kV, 1C x 1200 sq.mm Copper, XLPE cable as per Technical specification	Mtr	1500				
1.02	132 kV, 1C x 500 sq.mm Copper, XLPE cable as per Technical specification	Mtr	600				
1.03	132 kV, 1C x 300 sq.mm Copper, XLPE cable as per Technical specification	Mtr	300				
1.04	132 KV Termination kit suitable for 132KV, 1CX 1200 sq.mm XLPE Cable alongwith with support Structure for EHV Cable	Nos	21				
1.05	132 KV Termination kit suitable for 132KV, 1CX 500 sq.mm XLPE Cable alongwith with support Structure for EHV Cable	Nos	4				
1.06	132 KV Termination kit suitable for 132KV, 1CX300 sq.mm XLPE Cable alongwith with support Structure for EHV Cable	Nos	3				
					-		
C3	145KV Outdoor Equipment						
1.01	120KV Surge Arrester (1-phase)	Nos.	28				
1.02	145kV BPI	Nos.	28				

SCHEDULE - 4 (a); PAGE 5 OF 32

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
D	36KV Equipment						
D1	36KV GIS Equipment						
1.01	Indoor switchgear panels (GIS type) IP1 type	Set	2				
1.02	Indoor Switchgear Panels (GIS type) IP 2 type	Set	6				
1.03	Indoor switchgear panels (GIS type) IP3 type	Set	1				
1.04	Indoor switchgear panels (GIS type) IP4 Type	Set	1				
D2	36kV XLPE cable and its termination for connection of 33 kV side of 132/33 kV Transformer to 36kV GIS bay and line bays						
(i)	33kV, 1C x 400 sq.mm Copper, XLPE cable as per Technical specification	Mtr	2000				
(ii)	33KV Termination kit suitable for 1C x 400 sq.mm Copper, XLPE cable alongwith with support Structure	Nos	24				
D3	36 KV XLPE 1-Ph cable and its termination for connection of 33 kV side of 630 kVA, 33/0.400KV LT Transformer from available HT external supply						
(i)	36 KV XLPE 3C, 120sqmm Copper, XLPE cable as per Technical Specification	Mtr	500				
(ii)	33KV, 3 Phase termination kit suitable for above cable	Set	9				
D4	36 kV Equipments for LT Transformer						
1.0	36 kV Isolator (3-phase)-HDB						
(i)	1250A, 25 KA, Isolator	No	8				
2.0	30 kV Surge Arrestors (1-Phase)	Nos	39				
3.0	36kV Horn Gap Fuse (3-Phase)	No	2				
4.0	36 kV BPI	Nos	39				

SCHEDULE - 4 (a); PAGE 6 OF 32

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
E	72.5kV EQUIPMENT						
1.1	72.5 kV, 1250A, 31.5kA Circuit Breaker (3-phase) with support structure	No.	1				
1.2	72.5 kV, 1250A,31.5kA Isolators with earth switch (3-phase, DBR type)	No.	1				
1.3	72.5kV, 1250A, 31.5 kA with 120% extended rating CT.	Nos.	3				
1.4	72.5kV PT.(1-phase)	Nos.	3				
1.5	72.5 kV BPI (1-phase)	Nos.	6				
F	RELAY PANELS (WITH AUTOMATION)						
F1	PANELS						
1.0	220 kV						
a	Circuit Breaker Relay Panel						
i	With Auto Reclose line	Set	4				
ii	With out Auto Reclose	Set	2				
b	Line Protection Panel						
i	For 220 kV Marsyangdi (Markichowk) line	Set	2				
ii	For 220 kV Khudi (Udipur) line bay	Set	2				
iii	Current Differential Relay for other end(Khudi) of line	Nos	2				
c	Transformer Protection Panel (For both HV & MV side)	Set	1				
d	Bus Bar Protection Panel	Set	1				
2.0	132 kV						
a	Circuit Breaker Relay Panel						
i	With Auto Reclose	Set	7				
ii	With out Auto Reclose	Set	3				
b	Line Protection Panel	Set	7				
c	Transformer Protection Panel (For both HV & MV side)	Set	1				
d	Bus Bar Protection Panel	Set	1				
F2	COMMON EQUIPMENTS						
1.0	Time synchronisation equipment as per TS**	No.	1				

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
G	COMMON GIS PLUS SUBSTATION TESTING AND MAINTENANCE EQUIPMENT						
G.1	Testing & Maintenance Equipment for GIS						
(i)	SF6 Gas filling & evacuating plant						
	For 245kV, 145kV & 36kV GIS	Set	1				
(ii)	Partial Discharge Monitoring System for GIS as per Technical Specification						
	For 245kV, 145kV & 36kV GIS	Set	1				
(iii)	Dew Point meter						
	For 245kV, 145kV & 36kV GIS	Set	1				
(iv)	SF6 Gas Leak Detector						
	For 245kV, 145kV & 36kV GIS	Set	1				
(v)	EOT crane for 245kV GIS Hall	Set	1				
(vi)	EOT crane for 145kV GIS Hall	Set	1				
(vii)	SF6 Gas Analyser	Set	1				
H	SUBSTATION AUTOMATION SYSTEM (SAS)						
H.1	Complete Substation Automation System (SAS) for substation including hardware and software for the substation & remote control stations along with associated equipment for the following bays as per Technical Specification						
a	Main bays to be automated						
i	220 kV system	Bay Nos	6				
ii	132 kV system	Bay Nos	10				
iii)	33 kV system	Bay Nos	9				
iv)	BCU for controlling & monitoring of Auxilary System	Set	1				
I	TELE-PROTECTION & COMMUNICATION EQUIPMENT						
I.1	Digital Protection Coupler	Nos	7				
I.2	Digital Protection Coupler (for other ends) Khudi 220 kV DC and Dordi 132 kV DC	Nos	7				
I.3	PBAX with following configuration as per TS	Set	1				

SCHEDULE - 4 (a); PAGE 8 OF 32

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
i)	2 wire subscriber interface card with capacity 32 local subscribers (along with 32 nos. Instruments)						
ii)	4 wire E & M interface card with capacity 8 nos. trunks (For PLCC)						
iii)	E-1 interface with 2 trunks G-703						
iv)	2 wire interface with 1 trunk (For PSTN)						
I.4	Testing & Maintenance equipment (print test kit only)	Set	1				
I.5	4 wire telephone equipment	No	1				
J	LT Switchgear (As per Technical specification)						
a	415V Main switchboard	Set	1				
b	415V ACDB	Set	1				
c	415V MLDB	Set	1				
d	415V Emergency LDB	Set	1				
e	220V DCDB	Sets	2				
f	48V DCDB	Sets	2				
K	Batteries,Chargers, DG Sets with Control Panel and Fire Protection System						
a	220V						
i	600 AH	Nos	2				
b	48V						
i	600 AH	Nos	2				
L	Float Cum Boost Battery Charger						
a	220V Float Cum Boost Battery Charger						
i	80A/80A	Nos	2				
b	48V Float Cum Boost Battery Charger						
ii	80A/80A	Nos	2				
M	Diesel Generator Silent type with Canopy & control Panel						
a	100 kVA	Set	1				
N	Fire Protection System						
a	Portable /Trolley/Wheel mounted extinguishers						
i	9 litre water type	Nos	5				

SCHEDULE - 4 (a); PAGE 9 OF 32

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
ii	50 litre foam type	Nos	2				
iii	4.5 kg CO ₂ type	Nos	13				
iv	4.5 kg Dry Chemical Powder (DCP) type	Nos	5				
b	Smoke detection system	Set	1				
c	Fire detection and Alarm System	Set	1				
O	Cables along with clamps, glands, lugs and straight joints etc.						
(a)	Power Cables - (1.1kV grade)						
i	3.5Cx300 sqmm (XLPE) cable for filter Machine along with termination arrangement as per TS	KM	1				
P	Air conditioning System for Control room cum administrative building						
a	High wall type split AC unit of 2 TR capacity	Nos	35				
Q	Erection of following Steel Structures including nuts, bolts, all types of washers, packplates, step bolts and gusset plates including foundation bolts						
(a)	Lattice Structure including Foundation Bolts	MT	180				
(b)	Pipe Structure including Foundation Bolts .	MT	20				
(c)	Fastners and step bolts.(Nuts,Bolts & Washers)	MT	10				
R	Telecom						
R.1	SDH Equipment (STM-4 MADM upto 3 MSP protected directions)						
(i)	Base Equipment (Common cards, Cross Connect/control cards, optical base cards, power supply cards, power cabling, other hardware and accessories including sub racks, patch cord, DDF etc fully equipped excluding (ii) & (iii) below	Nos.	1				
(ii)	Optical Interface Cards/SFP#						
a	S4.1 SFP	Nos.	2				
b	L4.1 SFP	Nos.	2				
c	L4.2 SFP*	Nos.	0				

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
(iii)	Tributary cards						
a	E1 Interface card (Min.16 interfaces per card)	Nos.	2				
b	Ethernet Interface 10/100 Base T with Layer-2 switching (Min 4 Interfaces per card)	Nos.	2				
R.2	Equipment Cabinets	No.	1				
R.3	Network Manager System - Craft Terminal						
a	Hardware	Set	1				
b	Software	Set	1				
R.4	VOIP telephone instrument with one common switch (min. 4 port) including hardware and software as per specification	Set	1				
S	Services required for Vehicle						
<i>i</i>	Driver for Vehicle-4WD for rugged terrain (Manang, Khudi ,Udipur & Chitwan) for contract period (This includes salary, overtime, insurance, health benefits, Travel and Daily allowance etc.)	No.	4				
<i>ii</i>	Maintenance of vehicle mentioned in Sch-1 for contract period including consumables, lubricants, parts etc.	Lot.	1				
	Sub-Total Part-A						
Note:-	<p># :Optical interface/SFP can be provided with Optical base card or Control card with the condition that control card and Optical base card shall not be equipped with more than two Optical interface/SFP. However main and protection channel shall be terminated on separate cards.</p> <p>\$: Set shall include all required hardware/software for complete TMN –Craft Terminal system as specified in technical specifications.</p>						

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
	Part-B: VENDOR ASSESSED QUANTITIES						
A	Erection Hardware						
	Insulator strings, Disc Insulators, Hardware, conductor, Al tube, bus-bar materials, cable trays, clamps, spacers, connectors (HTLS-ACCC Drake) including equipment connectors (suitable for HTLS Conductor-ACCC Drake), Junction box, earthwire, buried cable trenches/pipe equipment & lighting, all accessories etc. for the following:						
a	245kV GIS Termination Arrangement:						
i	Line Bay	Set	4				
ii	Transformer Bay (including 220 kV AIS connection for spare unit with GIS auxiliary bus module)	Set	1				
b	145kV GIS Termination Arrangement:						
i	Line Bay	Set	7				
ii	Transformer Bay (including 132 kV AIS connection for spare unit with GIS auxiliary bus module)	Set	1				
ii	Transformer Bay	Set	1				
c	For spare unit of 220/132/36 kV auto transformer connection through auxiliary buses (tertiary & Neutral auxiliary buses only), Neutral formation and delta formation (for one bank): Required 72.5 kV BPI for tertiary auxiliary bus & delta formation, 36 kV BPI for Neutral formation & Neutral auxiliary bus including Al tube, bus-bar materials, clamps, spacers, connectors, including equipment connectors, support structures , Earthing of spare unit as per technical specification.	Set	1				
d	Erection Hardware etc for 72.5kV equipments & LT Transformers connections	Set	1				
e	33kV LT Transformer connection	Set	1				
f	33kV Transformer bay	Set	1				
g	33kV Line bays	Set	6				

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
A1	Earthing and lightning protection including necessary connectors/connections, risers etc. complete in all respect(but excluding LM structures for Lightning protection)						
i	Earth Conductor (copper)	LS	1				
ii	Earth Rod (copper clad steel)	LS	1				
iii	Equipment for lightning protection	LS	1				
B	Fire Protection System						
a	Pumping arrangement for HVW system & hydrant system, complete with all piping, valves, fittings,etc. inside pump house						
i	220/132kV (New) Substation	Set	1				
b	Hydrant system, complete U/G piping and accessories etc. outside the Pump House.						
i	220/132kV (New) Substation	Set	1				
c	HVW spray system, Hydrant system and complete U/G & O/G piping and accessories etc. out side the pump house for Transformer :						
c.1	Transformer						
i	53.33MVA , 220/132/33 KV, 1-phase Autotransformer	Sets	4				
ii	50 MVA , 132/33 KV, 3-phase transformer	Sets	1				
C	Illumination System						
a	Control room cum administrative building illumination	LS	1				
b	Fire fighting building illumination	LS	1				
c	Switchyard lighting	LS	1				
d	Street lighting	LS	1				
e	Transit Camp illumination	LS	1				
f	245kV, 145 kV and 33 kV GIS Buildings including panel rooms	LS	1				
g	Township quarter (B-Type, 4 nos)	LS	1				
h	Township quarter (C-Type, 4 nos)	LS	1				
i	Township quarter (D-Type, 1 nos)	LS	1				
j	Car parkings	LS	1				
k	Recreation hall for staff community hall	LS	1				
D	Air conditioning & ventilation System						

SCHEDULE - 4 (a); PAGE 13 OF 32

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
D.1	Air conditioning system						
(i)	Panel room in 245kV GIS Hall	LS	1				
(ii)	Panel room in 145kV GIS Hall	LS	1				
(iii)	Panel room in 36kV GIS Hall	LS	1				
D.2	Ventilation system						
(i)	245KV GIS hall	LS	1				
(ii)	145KV GIS hall	LS	1				
(iii)	36KV GIS hall	LS	1				
E	POWER & CONTROL CABLES						
a	Power Cables(PVC)- (1.1kV grade)	LS	1				
b	Power Cables (XLPE)(excluding 3.5Cx300 sqmm (XLPE) cable for filter Machine)- (1.1kV grade)	LS	1				
c	Control Cable (PVC)- (1.1kV grade)	LS	1				
d	Cable glands, lugs & straight through joints for Power & Control cables	LS	1				
F	Integration of SDH Equipment with LDC's NMS system	LS	1				
	Sub-Total Part-B						
	Note\$\$: One Set means one of each type of module/unit card etc						

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
	Part-C: Civil Works (As per Technical Specifications)						
1.0	Excavation in all types of soil and rock including backfilling disposal etc. for all leads and lifts	Cu.M	25,000				
2.0	Providing and laying of Plain Cement Concrete (PCC) (1:4:8)	Cu.M	2000				
3.0	Providing and laying of Plain Cement Concrete (PCC) (1:2:4)	Cu.M	750				
4.0	Providing and laying of Reinforced Cement Concrete Design Mix M25 including pre cast, shuttering, Grouting of pockets & underpinning but excluding steel reinforcement	Cu.M	7500				
5.0	Providing and laying Plain Cement Concrete 1:5:10 (1 cement : 5 sand : 10 Stone aggregate)	Cu.M	2500				
6.0	Steel Reinforcement (Fe 500)	MT	883				
7.0	Stone filling (40 mm size) over grating of transformer/ reactor foundation	Cu.M	150				
8.0	Misc. Structural steel including embedments, edge protection angles, gratings etc. but excluding the reinforcement steel and steel for lattice and pipe structures except rails and its accessories.	MT	65				
9.0	Stone spreading including antiweed treatment in switchyard excluding PCC	Sq. M.	30000				
10.0	All architectural (Architectural design of all buildings and land scaping works for Substation and staff quarter area from highly qualified and professional architecteture) and civil works including internal as well as external finishing for following buildings as per technical specification and approved drawings excavation, PCC, RCC and reinforcement steel (Fe-500), which shall be measured and paid seperately under respective items of BPS :						
(i)	Fire fighting pump house building (excluding external finish)	Sq. M.	98				
(ii)	Water Tank (excluding external finish)	LS	1				
(iii)	Township (Quarters)						
(a)	B Type	Sq. M.	500				
(b)	C Type	Sq. M.	600				
(c)	D Type	Sq. M.	210				
(iv)	Transit Camp	Sq. M.	420				
(v)	Parking Shed for (10) cars as per TS	Sq. M.	350				

SCHEDULE - 4 (a); PAGE 15 OF 32

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
(vi)	Furnishing of Township Quarters B,C,D and transit camp as per TS refer...	LS	1				
(vii)-a	Recreation hall & Gym hall for staff community as per TS refer	Sq. M.	240				
(vii)-b	Gym Equipment as per TS	LS	1				
(viii)	Valley ball court as per TS refer...	LS	1				
(ix)	Badminton court as per TS refer...	LS	1				
11.0	PRE ENGINEERED BUILDINGS						
i)	CONTROL ROOM BUILDING						
	All civil works related to pre-engineered control building to be supplied as per schedule 1 including foundation, internal cable trench, excavation, PCC, RCC and reinforcement steel etc. complete to erect the building as per approved drawings and Technical Specification	Sq. M.	750				
ii)	220 KV GIS HALL All civil works related to pre-engineered 220 kV GIS Hall to be supplied as per schedule 1 including foundation, internal cable trench, excavation, PCC, RCC and reinforcement steel etc. complete to erect the building as per approved drawings and Technical Specification						
(a)	GIS Hall	Sq. M.	525				
(b)	AHU/ Panel Room	Sq. M.	75				
iii)	132 KV GIS HALL All civil works related to pre-engineered 132 kV GIS Hall to be supplied as per schedule 1 including foundation, internal cable trench, excavation, PCC, RCC and reinforcement steel etc. complete to erect the building as per approved drawings and Technical Specification						
(a)	GIS Hall	Sq. M.	550				
(b)	AHU/ Panel Room	Sq. M.	100				

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
iv)	33 KV GIS HALL All civil works related to pre-engineered 33 kV GIS Hall to be supplied as per schedule 1 including foundation, internal cable trench, excavation, PCC, RCC and reinforcement steel etc. complete to erect the building as per approved drawings and Technical Specification						
(a)	GIS Hall	Sq. M.	90				
(b)	AHU/ Panel Room	Sq. M.	20				
13.0	Store Building All other items including electrification ,finishings, steel grils, windows, shutter etc to complete the building complete as per technical specification excluding excavation, PCC, RCC and reinforcement steel which shall be measured and paid seperately under respective items of BPS.						
(a)	Semi closed type	Sq. M.	150				
(b)	Closed Type	Sq. M.	150				
14.0	Concrete road as per drawing except reinforcement & concrete						
(a)	Road 3.75m wide	Sq.M.	2625				
(b)	Road 5.5m wide	Sq.M.	550				
15.0	Construction of rail cum road as per drawing including all items such as excavation, compaction, rolling, watering, WBM etc but excluding concrete, reinforcement and structural steel.						
(a)	Section having two rails	Sq.M.	750				
16.0	Chain link fencing as per technical sepcification and approved drawing excluding concrete	RM	600				
17.0	Switchyard Gate excluding Concrete	Nos.	2				
18.0	Septic tank and soak pit (for 50 users) complete as per technical specification and approved drawing excluding concrete & reinforcment which shall be measured and paid seperately under respective items of BPS .	Lot	3				
19.0	Supplying & laying hume pipe of grade (NP-3) excluding concrete and reinforcement						

SCHEDULE - 4 (a); PAGE 17 OF 32

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
(a)	250mm dia	RM	150				
(b)	300mm dia	RM	120				
(c)	450mm dia	RM	80				
(d)	600mm dia	RM	40				
(e)	900mm dia	RM	15				
20.0	Supplying and erecting dewatering pumps						
(a)	5 HP	Nos.	2				
(b)	0.5 HP	Nos.	5				
21.0	Drains Excluding Concrete						
(a)	Section A-A (300 mm wide X depth up to 600mm)	RM	300				
(b)	Section B-B (450 mm wideX depth from 600 mm to 900 mm)	RM	300				
(c)	Section C-C (600 mm wide X depth from 900 mm to 1200 mm)	RM	300				
(d)	Section D-D (750 mm wide X depth from 1200 mm to 1500mm)	RM	300				
23.0	External water supply from borewell to Fire water Tank, control room building.						
(i)	80 mm Dia GI pipe	RM	100				
(ii)	50 mm Dia GI pipe	RM	80				
(iii)	40mm Dia GI pipe	RM	60				
(iv)	25mm Dia GI pipe	RM	40				
24.0	External sewerage system including all item such as excavation, piping, pipe fittings, manholes, gali trap, gali chamber etc.						
(i)	250 mm Dia.	RM	50				
(ii)	150 mm Dia.	RM	50				
25.0	All civil works for Boundary wall including excavation, concrete, reinforcement steel ,structural steel, plaster, painting, barbed wire and concertina coil etc all complete as per technical specification (2.5 m high brick masonry wall and 0.5 m high angle support on top).	RM	1200				
26.0	Main boundary wall Gate (Steel) including all works complete as per technical specification	LS	2				
27.0	Site levelling						

SCHEDULE - 4 (a); PAGE 18 OF 32

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
i	Earth work in excavation and filling in all types of soils including soft/disintegrated rock with all leads and lifts within sub station boundary	Cu. M	20000				
ii	Earth work in filling with borrowed earth with all leads and lifts including royalty,taxes etc	Cu. M	11200				
28.0	All civil works for security room as per TS including septic tank and soak pit. Internal and external finish, sanitary and plumbing works, plinth protection etc. to complete the building are included in the item.	Sq. m.	20				
29.0	Construction of retaining wall with random rubble masonry in cement sand mortar (1:6) including levelling up with cement concrete (1:6:12), providing weep holes of PVC pipes (150 mm dia) with necessary filter material at the mouth of weep holes, 50 mm thick cement concrete (1:2:4) copping on the top of wall, 100 mm thick PCC (1:4:8) below RR masonry work, excavation of foundation for all lifts up to 3m above lower level. Item of excavation, PCC (1:2:4 & 1:4:8) shall be measured and paid seperately under respective items of BPS	Cu. M	500				
30.0	Soil Investigation as per TS	LS	1				
31.0	Supplying,providing stone work packed in steel wire crats as per design and drawing to be developed by the contractor for all leads and lifts along the boundary wall and other places as required.	Cu. M	100				
32.0	Local sand filling around and under DG set foundation and other foundations as applicable.	Cu. M	400				
33.0	Stone soling below foundations wherever specified in approved drawings during detailed engineering.	Cu. M	200				
	Total of Part C for Udipur Substation						
	Total of Part A+Part B + Part C for Udipur Substation						

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
I-A	220kV Bharatpur (new) GIS Substation						
	Part-A : EMPLOYER ASSESSED QUANTITIES						
A.1	POWER TRANSFORMER						
A1.1	POWER TRANSFORMER						
a)	160MVA , 220/132/33 KV, 3-phase Autotransformer (Excluding insulating oil)-Resin Impregnated Paper (RIP) Bushings	Nos.	2				
b)	Insulating oil for 160MVA , 220/132 KV, 3-phase Autotransformers	Lot*	2				
A2	LT TRANSFORMER						
1.01	630 kVA,33/0.400kV	Nos	1				
B	245 kV equipment						
B1	245KV GIS Equipment						
1.01	245kV, SF6 GIS Bus Bars Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	2				
1.02	245kV, SF6 GIS ICT bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	2				
1.03	245kV, 1600A, SF6 GIS Line bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	6				
1.04	245kV, 2400A, SF6 GIS Line bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	4				
1.05	245kV, SF6 GIS Bus Coupler bay Module [Module description as per Technical specification and Section Project Specific Requirement]	Set	1				
1.06	245kV, 1600A,40kA SF6/Air Bushing for Connecting GIS to AIS alongwith support structure (Single Phase)	Nos	24				
1.07	245kV, 2400A,40kA SF6/Air Bushing for Connecting GIS to AIS alongwith support structure (Single Phase) suitable for conneting HTLS Conductor-ACCC Drake	Nos	12				
1.08	245kV, 1600A, 1phase SF6 GIS Bus duct alongwith support structure	Mtr	900				

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
1.09	245kV, 2400A, 1phase SF6 GIS Bus duct alongwith support structure	Mtr	500				
B2	245KV Outdoor Equipment						
1.1	216 KV Surge Arrester (1-phase)	Nos.	36				
1.2	245kV BPI	Nos.	36				
B2.1	Connection of one 132 kV side of 3-Ph, 160 MVA, 220/132 kV Transformer on 132kV Bay: 132 kV cable (with Copper conductor) of suitable current rating for all three phases along with cable termination kit (both end i.e. Transformer 132 kV end and 132 bay end) for 132 kV side of Transfome connection on 132kV Bay connection as per specification for						
i	Cable route length (Each mtr should include cables for three phases and required burried cable treanch)	Mtr	200				
ii	cable termination kit alongwith support structures (Each Set Comprises cable termination for all three phases at both end i.e. for 3-Ph Transformer 132 kV end and 132 bay end)	Set	2				
C	145KV Equipment						
C1	145KV Outdoor Equipment						
1.01	145 kV Circuit Breaker (3-Phase) with support structure						
	1250A, 31.5 kA	Nos	2				
	145kV Isolator (3-phase)-HDB						
a	1250A, 31.5 KA, Isolator with one E/S	Nos	4				
b	1250A, 31.5 KA, Tandem Isolator without E/S	Nos	2				
1.3	145 kV Current Transformer (1- Phase)						
a	800A, 31.5 kA with 120% extended rating	Nos	6				
1.4	120KV Surge Arrester (1-phase)	Nos	6				
1.2	145kV BPI	Nos	12				
E	72.5kV EQUIPMENT						
1.01	72.5 kV, 1250A, 31.5kA Circuit Breaker (3-phase) with support structure	No.	1				
1.02	72.5 kV, 1250A,31.5kA Isolators with earth switch (3-phase, DBR type)	No.	1				

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
1.03	72.5kV, 1250A, 31.5 kA with 120% extended rating CT.	Nos.	3				
1.04	72.5kV PT.(1-phase)	Nos.	3				
1.05	72.5 kV BPI (1-phase)	Nos.	6				
F1	RELAY PANELS (WITH AUTOMATION)						
1.0	220 kV						
a	Circuit Breaker Relay Panel						
i	With Auto Reclose	Set	10				
ii	With out Auto Reclose	Set	3				
b	Line Protection Panel						
i)	Markichowk to Bharatpur 220 kV D/C line (<i>without differential relay since the differential relays shall be provided by the MKTLP</i>)	Set	2				
ii)	For 220 kV Damauli line	Set	2				
iii)	For 220 kV Hetauda line	Set	2				
iv)	For 220 kV New Butwal line	Set	2				
v)	For Future spare 220 kV line	Set	2				
vi)	Current Differential Relay for other end (Damauli) of line	Nos	2				
c	Transformer Protection Panel (For both HV & MV side)	Set	2				
d	Bus Bar Protection Panel	Set	1				
2.0	132 kV						
a	Circuit Breaker Relay Panel						
i	With out Auto Reclose	Set	2				

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
F2	COMMON EQUIPMENTS						
2.0	Time synchronisation equipment as per TS**	No.	1				
G	COMMON GIS PLUS SUBSTATION TESTING AND MAINTENANCE EQUIPMENT						
G.1	Testing & Maintenance Equipment for GIS						
(i)	SF6 Gas filling & evacuating plant						
	For 245kV GIS	Set	1				
(ii)	Partial Discharge Monitoring System for GIS as per Technical Specification						
	For 245kV GIS	Set	1				
(iii)	Dew Point meter						
	For 245kV GIS	Set	1				
(iv)	SF6 Gas Leak Detector						
	For 245kV GIS	Set	1				
(v)	EOT crane for 245kV GIS Hall	Set	1				
(vii)	SF6 Gas Analyser	Set	1				
H	SUBSTATION AUTOMATION SYSTEM (SAS)						
H.1	Complete Substation Automation System (SAS) for substation including hardware and software for the substation & remote control stations along with associated equipment for the following bays as per Technical Specification						
a	Main bays to be automated						
i	220 kV system	Bay Nos	13				
ii	132 kV system (7 Existing bays+2 Tranformer bay under present scope)	Bay Nos	9				
iii)	BCU for controlling & monitoring of Auxilary System	Set	1				

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
I	TELE-PROTECTION & COMMUNICATION EQUIPMENT						
I.1	Digital Protection Coupler	Nos	6				
I.2	Digital Protection Coupler(for other end)**	Nos	6				
I.3	PBAX with following configuration as per TS	Set	1				
i)	2 wire subscriber interface card with capacity 32 local subscribers (along with 32 nos. Instruments)						
ii)	4 wire E & M interface card with capacity 8 nos. trunks (For PLCC)						
iii)	E-1 interface with 2 trunks G-703						
iv)	2 wire interface with 1 trunk (For PSTN)						
I.4	Testing & Maintenance equipment (print test kit only)	Set	1				
I.5	4 wire telephone equipment	No	1				
J	LT Switchgear (As per Technical specification)						
a	415V Main switchboard	Set	1				
b	415V ACDB	Set	1				
c	415V MLDB	Set	1				
d	415V Emergency LDB	Set	1				
e	220V DCDB	Sets	2				
L	Float Cum Boost Battery Charger						
M	Batteries						
a	220V						
i	600 AH	Nos	2				
N	Float Cum Boost Battery Charger						
a	220V Float Cum Boost Battery Charger						
i	80A/80A	Nos	2				
M	Diesel Generator Silent type with Canopy & control Panel						
a	100 kVA	Set	1				
N	Fire Protection System						
a	Portable /Trolley/Wheel mounted extinguishers						
i	9 litre water type	Nos	5				

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
ii	50 litre foam type	Nos	2				
iii	4.5 kg CO ₂ type	Nos	13				
iv	4.5 kg Dry Chemical Powder (DCP) type	Nos	5				
b	Smoke detection system	Set	1				
c	Fire detection and Alarm System	Set	1				
O	Cables along with clamps, glands, lugs and straight joints etc.						
(a)	Power Cables - (1.1kV grade)						
i	3.5Cx300 sqmm (XLPE) cable for filter Machine along with termination arrangement as per TS	KM	1				
P	Air conditioning System for Control room cum administrative building						
a	High wall type split AC unit of 2 TR capacity	Nos	25				
Q	Fabrication, galvanising and supply of following Steel Structures including nuts, bolts, all types of washers, packplates, step bolts and gusset plates including foundation bolts.						
(a)	Lattice Structure including Foundation Bolts	MT	180				
(b)	Pipe Structure including Foundation Bolts .	MT	20				
(c)	Fastners and step bolts.(Nuts,Bolts & Washers)	MT	10				
R	Telecom						
R.1	SDH Equipment (STM-4 MADM upto 3 MSP protected directions)						
(i)	Base Equipment (Common cards, Cross Connect/control cards, optical base cards, power supply cards, power cabling, other hardware and accessories including sub racks, patch cord, DDF etc fully equiped excluding (ii) & (iii) below	Nos.	1				
(ii)	Optical Interface Cards/SFP#						
a	L4.1 SFP**	Nos.	4				
b	L4.2 SFP	Nos.	0				

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
(iii)	Tributary cards						
a	E1 Interface card (Min.16 interfaces per card)	Nos.	2				
b	Ethernet Interface 10/100 Base T with Layer-2 switching (Min 4 Interfaces per card)	Nos.	2				
R.2	Equipment Cabinets	No.	1				
2.0	Network Manager System - Craft Terminal \$						
a	VOIP telephone instrument with one common switch (min. 4 port)	Set	1				
b	Software	Set	1				
3.0	VOIP telephone instrument with one common switch (min. 4 port) including hardware and software as per specification	Set	1				
	Sub-Total Part-A						
Note:-	# :Optical interface/SFP can be provided with Optical base card or Control card with the condition that control card and Optical base card shall not be equipped with more than two Optical interface/SFP. However main and protection channel shall be terminated on separate cards. \$: Set shall include all required hardware/software for complete TMN –Craft Terminal system as specified in technical specifications.						

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
Part-B: VENDOR ASSESSED QUANTITIES							
A	Erection Hardware						
	Insulator strings, Disc Insulators, Hardware, conductor suitable for HTLS (ACCC Drake) and ACSR Bison Conductor, Al tube, bus-bar materials, cable trays, clamps, spacers, connectors including equipment connectors, Junction box, earthwire, buried cable trenches/pipe equipment & lighting, all accessories etc. for the following:						
a	245kV GIS Termination Arrangement:						
i	Line Bay	Set	10				
ii	Transformer Bay	Set	2				
b	145kV bays						
i	Transformer Bay	Set	2				
c	Erection Hardware etc for 72.5kV equipment & LT Transformers connections	Set	1				
A1	Earthing and lightning protection including necessary connectors/connections, risers etc. complete in all respect(but excluding LM structures for Lightning protection)						
i	Earth Conductor (copper)	LS	1				
ii	Earth Rod (copper clad steel)	LS	1				
iii	Equipment for lightning protection	LS	1				
B	Fire Protection System						
a	Pumping arrangement for HVW system & hydrant system, complete with all piping, valves, fittings,etc. inside pump house						
i	220/132kV (New) Substation	Set	1				
b	Hydrant system, complete U/G piping and accessories etc. outside the Pump House.						
i	220/132kV (New) Substation	Set	1				
c	HVW spray system, Hydrant system and complete U/G & O/G piping and accessories etc. out side the pump house for Transformer :						
c.1	Transformer						
i	160 MVA , 220/132/33 KV, 3-phase Autotransformer	Sets	2				

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
C	Illumination System						
a	Fire fighting building illumination	LS	1				
b	Switchyard lighting	LS	1				
c	Street lighting	LS	1				
d	Transit Camp illumination	LS	1				
e	245kV GIS Building including panel room	LS	1				
f	Township quarter (C-Type, 4 nos)	LS	1				
g	Car parkings	LS	1				
D	Air conditioning & ventilation System						
D.1	Air conditioning system						
(i)	Panel room in 245kV GIS Hall	LS	1				
D.2	Ventilation system						
(i)	245KV GIS hall	LS	1				
E	POWER & CONTROL CABLES						
a	Power Cables(PVC)- (1.1kV grade)	LS	1				
b	Power Cables (XLPE)(excluding 3.5Cx300 sqmm (XLPE) cable for filter Machine)- (1.1kV grade)	LS	1				
c	Control Cable (PVC)- (1.1kV grade)	LS	1				
d	Cable glands, lugs & straight through joints for Power & Control cables	LS	1				
F	Integration of SDH Equipment with LDC's NMS system	LS	1				
	Sub-Total Part-B						

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
Part-C: Civil Works (As per Technical Specifications)							
1	Excavation in all types of soil and rock including backfilling disposal etc. for all leads and lifts	Cu.M	20000				
2	Providing and laying of Plain Cement Concrete (PCC) (1:4:8)	Cu.M	1500				
3	Providing and laying of Plain Cement Concrete (PCC) (1:2:4)	Cu.M	500				
4	Providing and laying of Reinforced Cement Concrete Design Mix M25 including pre cast, shuttering, Grouting of pockets & underpinning but excluding steel reinforcement	Cu.M	4000				
5	Providing and laying Plain Cement Concrete 1:5:10 (1 cement : 5 sand : 10 Stone aggregate)	Cu.M	1800				
6	Steel Reinforcement (Fe 500)	MT	471				
7	Stone filling (40 mm size) over grating of transformer/ reactor foundation	Cu.M	20				
8	Misc. Structural steel including rails, embedments, edge protection angles, gratings etc. but excluding the reinforcement steel and steel for lattice and pipe structures.	MT	25				
9	Stone spreading including antiweed treatment in switchyard excluding PCC	Sq. M.	25000				
10	All architectural (Architectural design of all buildings and land scaping works for Substation and staff quarter area from highly qualified and professional architecteture) and civil works including internal as well as external finishing for following buildings as per technical specification and approved drawings excavation, PCC, RCC and reinforcement steel (Fe-500), which shall be measured and paid seperately under respective items of BPS :						
(i)	Fire fighting pump house building (excluding external finish)	Sq. M.	98				
(ii)	Water Tank (excluding external finish)	LS	1				
(iii)	Township (Quarters)						
(a)	C Type	Sq. M.	600				
(iv)	Transit Camp	Sq. M.	420				
(v)	Parking Shed for (10) cars as per TS	Sq. M.	350				
(vi)	Furnishing of Township Quarters C type transit camp, GIS hall & Control Building as per TS refer...	LS	1				
(vii)	Valley ball court and badminton court as per TS refer...	LS	1				
11	External finish as per specification for following buildings:						
(i)	Fire fighting pump house building (excluding external finish)	Sq. M.	98				

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
(ii)	Water Tank (excluding external finish)	LS	1				
(iii)	Township (Quarters)						
(a)	C Type	Sq. M.	600				
(iv)	Transit Camp	Sq. M.	420				
12	PRE ENGINEERED BUILDINGS						
i)	All civil works related to pre-engineered 220 kV GIS Hall to be supplied as per schedule 1 including foundation, internal cable trench, excavation, PCC, RCC and reinforcement steel etc. complete to erect the building as per approved drawings and Technical Specification						
(a)	GIS Hall	Sq. M.	550				
(b)	AHU/ Panel Room	Sq. M.	100				
13	Store Building All other items including electrification ,finishings, steel grils, windows, shutter etc to complete the building complete as per technical specification excluding excavation, PCC, RCC and reinforcement steel which shall be measured and paid seperately under respective items of BPS.						
(a)	Closed Type	Sq. M.	150				
14	Concrete road as per drawing except reinforcement & concrete						
(a)	Road 3.75m wide	Sq.M.	1880				
(b)	Road 5.5m wide	Sq.M.	550				
15	Construction of rail cum road as per drawing including all items such as excavation, compaction, rolling, watering, WBM etc but excluding concrete, reinforcement and structural steel.						
(a)	Section having two rails	Sq.M.	100				
16	Chain link fencing as per technical sepcification and approved drawing excluding concrete	RM	600				
17	Switchyard Gate excluding Concrete	Nos.	2				
18	Septic tank and soak pit (for 50 users) complete as per technical specification and approved drawing excluding concrete & reinforcment which shall be measured and paid seperately under respective items of BPS .	Lot	3				
19	Supplying & laying hume pipe of grade (NP-3) excluding concrete and reinforcement						
(a)	250mm dia	RM	150				

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
(b)	300mm dia	RM	120				
(c)	450mm dia	RM	80				
(d)	600mm dia	RM	40				
(e)	900mm dia	RM	15				
20	Supplying and erecting dewatering pumps						
(a)	5 HP	Nos.	2				
(b)	0.5 HP	Nos.	3				
21	Drains Excluding Concrete						
(a)	Section A-A (300 mm wide X depth up to 600mm)	RM	300				
(b)	Section B-B (450 mm wideX depth from 600 mm to 900 mm)	RM	300				
(c)	Section C-C (600 mm wide X depth from 900 mm to 1200 mm)	RM	300				
(d)	Section D-D (750 mm wide X depth from 1200 mm to 1500mm)	RM	300				
23	External water supply from borewell to Fire water Tank, control room building.						
(i)	80 mm Dia GI pipe	RM	100				
(ii)	50 mm Dia GI pipe	RM	80				
(iii)	40mm Dia GI pipe	RM	60				
(iv)	25mm Dia GI pipe	RM	40				
24	External sewerage system including all item such as excavation, piping, pipe fittings, manholes, gali trap, gali chamber etc.						
(i)	250 mm Dia.	RM	50				
(ii)	150 mm Dia.	RM	50				
27	Site levelling						
i	Earth work in excavation and filling in all types of soils including soft/disintegrated rock with all leads and lifts within sub station boundary	Cu. M	17500				
ii	Earth work in filling with borrowed earth with all leads and lifts including royalty,taxes etc	Cu. M	12500				

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate USD	Total Charges	Unit Rate	Total Charges
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8
28	Construction of retaining wall with random rubble masonry in cement sand mortar (1:6) including levelling up with cement concrete (1:6:12), providing weep holes of PVC pipes (150 mm dia) with necessary filter material at the mouth of weep holes, 50 mm thick cement concrete (1:2:4) copping on the top of wall, 100 mm thick PCC (1:4:8) below RR masonry work, excavation of foundation for all lifts up to 3m above lower level. Item of excavation, PCC (1:2:4 & 1:4:8) shall be measured and paid seperately under respective items of BPS	Cu. M	500				
29	Soil Investigation as per TS	LS	1				
30	Supplying,providing stone work packed in steel wire crats as per design and drawing to be developed by the contractor for all leads and lifts along the boundary wall and other places as required.	Cu. M	100				
31	Local sand filling around and under DG set foundation and other foundations as applicable.	Cu. M	300				
33	Stone soling below foundations wherever specified in approved drawings during detailed engineering.	Cu. M	200				
	Total of Part C for Bharatpur Substation						
	Total of Part A+PartB+PartC for Bharatpur Substation						
	Total Udipur and Bharatpur Substation (Total of column 7 and 9 to be carried forward to Schedule No. 5)						

SCHEDULE - 4 (a); PAGE 32 OF 32

Sl. No.	Item Description	Unit	Quantity	Portion in Foreign Currency		Portion in Nepalese Currency (in	
				Unit Rate	Total Charges	Unit Rate	Total Charges
				USD			
(1)	(2)	(4)	(5)	(6)	7=4x6	(8)	(9)=4x8

Note:-

:Optical interface/SFP can be provided with Optical base card or Control card with the condition that control card and Optical base card shall not be

\$\$: One Set means one of each type of module/unit card etc

Name of Bidder:

Signature of Bidder:

(Printed Name)

(Designation)

(Common Seal)



NEPAL ELECTRICITY AUTHORITY
PROJECT MANAGEMENT DIRECTORATE
MARSYANGDI CORRIDOR 220 kV TRANSMISSION LINE PROJECT

(I) 220/132/33kV Udipur (new) GIS Substation and (II)220/132kV Bharatpur (220 kV New GIS & 132 kV AIS Extn)Substation

Schedule No. 4 : Installation and Other Services

(b):Training Charges for training to be imparted abroad

Sl. No.	Description	Item for which training is to be imparted.	Country where training is to be imparted	Nos. of Trainee	Training duration in days	Total Training Charges		
						Currency	Unit rate per trainee per day	Total Training Charges
1	2	3	4	5	6	7	8	9 = (8)x(6)x(5)
A	Training to Owners personnel on testing , Operation and Maintenance aspect as per Section Project, Technical Specification at manufacturer's works	i) Substation Automation System		6	7			
		ii) Switchyard Equipment (GIS and AIS)- GIS equipment, CB, Instrument Transformers, LA, Relays and Control & Protection Schemes, Metering Instruments, Switching Devices, Insulators, etc.		6	7			
		iii) Telecommunication Equipment (SDH ,MUX & NMS (Craft Terminal)) and PLCC and SCADA		4	5			
		iv) Transformers including OLTC		6	7			
B	Accounting and Finance Training focusing on Transmission Line Project	Book Keeping, Inventory etc shall be decided during Contract negotiation		2	7			
C	Administrative and Human Resource Training focusing on Transmission Line Project	Administration Human Resources etc shall be decided during Contract negotiation		2	7			
	Total for Training Charges (total of coulumn 9 to be carried forward to Schedule 5: Grand summary)							

Note:- The above price includes Daily Allowance of USD 300 per Trainee, to and fro air fare, transporatation and accomodation charges

Name of Bidder:

Signature of Bidder:

(Printed Name)

(Designation)

(Common Seal)

NEPAL ELECTRICITY AUTHORITY
PROJECT MANAGEMENT DIRECTORATE
MARSYANGDI CORRIDOR 220 kV TRANSMISSION LINE PROJECT

(I) 220/132/33kV Udipur (new) GIS Substation and (II)220/132kV Bharatpur (220 kV New GIS & 132 kV AIS Extn)Substation

Schedule No. 4 : Installation and Other Services

(c):Training Charges for training to be imparted to Employer's Personnel by Bidder's Instructor in Nepal

Sl. No.	Description of the Test	Item for which training is to be imparted.	No. of Trainees	Training duration in days	Training Charges for Contractors Trainers	
					Unit rate (NPR)	Total Training Charges
1	2	3	5	4	6	7 = (4)x (5)x(6)
a)	On Job training on operation, maintenance and testing & commissioning aspect at each substation as per section Project, Technical Specification	i) Control & Protection	8	5		
		ii) Substation Automation System including integration aspect of existing SCADA (of Siemens suppliedSINAUT Spectrum Software) at Load Dispatch Center	8	5		
		iii) Switchyard Equipment (GIS & AIS) for Udipur and Bharatpur substation- operation and maintenance of GIS & AIS equipment	8	5		
		iv) Telecommunication Equipment (SDH ,MUX & NMS (Craft Terminal)) and PLCC	6	5		
		v) Transformers from procurement prospective including aspect of design	6	7		
b)	On Job training on design of Structures and Foundation for Electrical Engineers	Design of Structures and Foundation using conventional methods as well as PLS-Tower	6	14		
c)	On Job Training on AutoGrid Pro Software for Earthing Design	Design of Earthing for EHV Stations as per IEEE Standard 80- 2013 and IS 3043	8	12		
d)	On job training on Advance Ms-Word, Advance Ms-Excel and Primavera at site office	Advance Microsoft Word, Excel and Project	14	21		
	Total for Training Charges (Total of column 7 to be carried forward to Schedule 5: Grand Summary)					

REMARKS:

- On Job Training in Nepal: The traveling and living expenses of Owner's personnel for the training programme conducted in Nepal shall be borne by the Employer.
- To and fro charges and accommodation for the Instructor (Trainer) and Training material for the Trainees shall be included in the prices quoted by the bidder. However, arrangements for trainees and premises for conducting the training shall be arranged by OWNER.

Name of Bidder:

Signature of Bidder:

(Printed Name)

(Designation)

(Common Seal)



**NEPAL ELECTRICITY AUTHORITY
PROJECT MANAGEMENT DIRECTORATE**

MARSYANGDI CORRIDOR 220 kV TRANSMISSION LINE PROJECT

(I) 220/132/33kV Udipur (new) GIS Substation and (II)220/132kV Bharatpur (220 kV New GIS & 132 kV AIS Extn)Substation

Schedule No. 4 : Installation and Other Services

(d): Maintenance Charges

SI No	Description	Unit	Qty.	Total Maintenance Charges	
				Currency	Total Maintenance Charges
1	None	Year			
2	None	Year			
	Total Maintenance Charges (To be carried forward to Schedule 5: Grand Summary)				

Name of Bidder:

Signature of Bidder:

(Printed Name)

(Designation)

(Common Seal)

220 kV Udipur and New Bharatpur SS



NEPAL ELECTRICITY AUTHORITY
PROJECT MANAGEMENT DIRECTORATE
MARSYANGDI CORRIDOR 220 kV TRANSMISSION LINE PROJECT

(I) 220/132/33kV Udupur (new) GIS Substation and (II)220/132kV Bharatpur (220 kV New GIS & 132 kV AIS Extn)Substation

Schedule No. 4(e)

Type Test Charges for Type Tests to be conducted abroad

Sl. No.	Description of Tests		Testing Location	TEST CHARGES	
				Currency #	Amount
1	2		3	4	5
A	220/132/33kV 1-Ph , 53.33 MVA Auto Transformer				
1	220/132/33kV, 53.33 MVA, 1-Ph Auto Transformer	Temperature rise test			
2		Measurement of harmonic level in no load current			
3		Measurement of acoustic noise level			
4		Measurement of Zero seq. reactance			
5		Measurement of power taken by fans and oil pumps			
6		Dynamic Short Circuit Test for only 1-Ph Auto Transformer			
B	220/132/33kV, 160 MVA, 3-Ph Auto Transformer				
1	220/132/33kV, 160 MVA, 3-Ph Auto Transformer	Temperature rise test			
2		Measurement of harmonic level in no load current			
3		Measurement of acoustic noise level			
4		Measurement of Zero seq. reactance			
5		Measurement of power taken by fans and oil pumps			
6		Dynamic Short Circuit Test for only One number of three phase Auto Transformer			
C	132/33kV,50 MVA, 3-Ph Auto Transformer				
1	132/33kV,50 MVA, 3-Ph Auto Transformer	Temperature rise test			
2		Measurement of harmonic level in no load current			
3		Measurement of acoustic noise level			
4		Measurement of Zero seq. reactance			
5		Measurement of power taken by fans and oil pumps			
D					
1	GIS Equipment	For all ratings tests to be conducted as per relevant IEC			
2	Instrument Transformers	For all ratings tests to be conducted as per IEC:60044-1 & IEC-60358			
3	Lightening Arrestor	For all ratings tests to be conducted as per IEC: 60099-4			
4	Insulators	For all type of Insulators including RIP insulators of different ratings			

NEPAL ELECTRICITY AUTHORITY
PROJECT MANAGEMENT DIRECTORATE
MARSYANGDI CORRIDOR 220 kV TRANSMISSION LINE PROJECT

(I) 220/132/33kV Udipur (new) GIS Substation and (II)220/132kV Bharatpur (220 kV New GIS & 132 kV AIS Extn)Substation

Schedule No. 4(e)

Type Test Charges for Type Tests to be conducted abroad

Sl. No.	Description of Tests		Testing Location	TEST CHARGES	
				Currency #	Amount
1	2		3	4	5
	Total of Type Tests charges (Total of column 5 to be carried forward to Schedule 5: Grand Summary)				

Name of Bidder:

Signature of Bidder:

(Printed Name)

(Designation)

(Common Seal)

220 kV Udipur and New Bharatpur SS



**NEPAL ELECTRICITY AUTHORITY
PROJECT MANAGEMENT DIRECTORATE
MARSYANGDI CORRIDOR 220 kV TRANSMISSION LINE PROJECT**

(I) 220/132/33kV Udipur (new) GIS Substation and (II) 220/132kV Bharatpur (220 kV New GIS & 132 kV AIS Extn) Substation

Schedule No. 4(f)

Type Test Charges for Type Tests to be conducted in Nepal.

Sl. No.	Description of Tests		Testing Location	TEST CHARGES	
				Currency #	Amount
1	2		3	4	5
A	220/132/33kV 1-Ph , 53.33 MVA Auto Transformer				
1	220/132/33kV, 53.33 MVA, 1-Ph Auto Transformer	Temperature rise test		NPR	
2		Measurement of harmonic level in no load current		NPR	
3		Measurement of acoustic noise level		NPR	
4		Measurement of Zero seq. reactance		NPR	
5		Measurement of power taken by fans and oil pumps		NPR	
6		Dynamic Short Circuit Test for only 1-Ph Auto Transformer		NPR	
B	220/132/33kV, 160 MVA, 3-Ph Auto Transformer				
1	220/132/33kV, 160 MVA, 3-Ph Auto Transformer	Temperature rise test		NPR	
2		Measurement of harmonic level in no load current		NPR	
3		Measurement of acoustic noise level		NPR	
4		Measurement of Zero seq. reactance		NPR	
5		Measurement of power taken by fans and oil pumps		NPR	
6		Dynamic Short Circuit Test for only One number of three phase Auto Transformer		NPR	
C	132/33kV, 50 MVA, 3-Ph Auto Transformer				
1	132/33kV, 50 MVA, 3-Ph Auto Transformer	Temperature rise test		NPR	
2		Measurement of harmonic level in no load current		NPR	
3		Measurement of acoustic noise level		NPR	
4		Measurement of Zero seq. reactance		NPR	
5		Measurement of power taken by fans and oil pumps		NPR	

Schedule No. 4(f)

Type Test Charges for Type Tests to be conducted in Nepal.

Sl. No.	Description of Tests		Testing Location	TEST CHARGES	
				Currency #	Amount
1	2		3	4	5
D					
1	GIS Equipment	For all ratings tests to be conducted as per relevant IEC		NPR	
2	Instrument Transformers	For all ratings tests to be conducted as per IEC:60044-1 & IEC-60358		NPR	
3	Lightening Arrestor	For all ratings tests to be conducted as per IEC: 60099-4		NPR	
4	Insulators	For all type of Insulators		NPR	
	Total of Type Tests charges (Total of column 5 to be carried forward to Schedule 5: Grand Summary)				

Name of Bidder:

Signature of Bidder:

(Printed Name)

(Designation)

(Common Seal)

**NEPAL ELECTRICITY AUTHORITY
PROJECT MANAGEMENT DIRECTORATE**

MARSYANGDI CORRIDOR 220 kV TRANSMISSION LINE PROJECT

Design, Supply and Installation Testing and Commissioning of Udipur Substation and New Bharatpur 220 kV GIS Substations

(I) 220/132/33kV Udipur (new) GIS Substation and (II)220/132kV Bharatpur (220 kV New GIS & 132 kV AIS Extn)Substation

Schedule No. 5: Grand Summary

Sl. No.	Description	Total Price Foreign (Currency:)	Total Price Local (NPR)
1	TOTAL SCHEDULE NO. 1		
	Plant and Equipment including Mandatory Spares to be supplied from abroad		
2	TOTAL SCHEDULE NO. 2		
	Plant and Equipment including Mandatory Spares Parts to be supplied from within Nepal		
3	TOTAL SCHEDULE NO. 3		
	Design Services		
4	TOTAL SCHEDULE NO. 4		
	(a) Installation and construction charges		
	(b) Training charges for training to be imparted abroad		
	(c) Training charges for training to be imparted in Nepal		
	(d) Maintenance charges		
	(e) Type Tests charges for type Tests to be conducted abroad		
	(f) Type Tests charges for type Tests to be conducted in Nepal		
5	GRAND TOTAL IN USD & NPR [1+2+3+4]		



Schedule No. 5: Grand Summary

Sl. No.	Description	Total Price Foreign (Currency:)	Total Price Local (NPR)
6	Grand Total [1+2+3+4] <i>(Equivalent in respective currency)</i>		
7	Customs @ 1% of Schedule No: 1 on imported material		
8	VAT @ 13 % of local portion		
9	GRAND TOTAL INCLUDING CUSTOM DUTIES AND 13% VAT		

Name of Bidder:

Signature of Bidder:

(Printed Name)

(Designation)

(Common Seal)



**NEPAL ELECTRICITY AUTHORITY
PROJECT MANAGEMENT DIRECTORATE
MARSYANGDI CORRIDOR 220 kV TRANSMISSION LINE PROJECT**

(I) 220/132/33kV Udipur (new) GIS Substation and (II)220/132kV Bharatpur (220 kV New GIS & 132 kV AIS Extn)Substation

Schedule No. 6: Recommended Availability/Optional Spares Parts and recommended Test Equipment in line with technical Specifications

Item No.	Name & Description of Parts	Name of Original Manufacturer	Part No.	Number of Units in each set	Total No. of Sets to be provided	Unit Price	Total Price	Remarks

Name of Bidder: _____

Signature of Bidder: _____

(Printed Name) _____

(Designation) _____

(Common Seal) _____

220 kV Udipur and New Bharatpur SS

