

NEPAL ELECTRICITY AUTHORITY

(An Undertaking of Government of Nepal)

Project Management Directorate



BORANG - NAUBISE (RATMATE) 220 kV TRANSMISSION LINE PROJECT

*A Component of
Electricity Grid Modernization Project*

BIDDING DOCUMENT FOR

**Design, Supply, Installation, Testing and Commissioning of 132 kV Borang - Lapang
and 220 kV Lapang - Naubise (Ratmate) 220 kV Transmission Line and Associated
Substations**

(Procurement of Plant)

**Single Stage, Two - Envelope
Bidding Procedure (OCB)**

Issued on:	03rd March, 2021
Invitation for Bids No.:	PMD/EGMP/BNRTLSS-077/78-01
OCB No.:	PMD/EGMP/BNRTLSS-077/78-01
Employer:	Nepal Electricity Authority
Country:	Nepal

VOLUME:- III OF III

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**Borang - Naubise (Ratmate) 220 kV Transmission Line Project
Project Management Directorate
Kharipati, Bhaktapur, Nepal
Telephone: +977-01-6620421
Email address: bn220kv@nea.org.np**

Preface

This Bidding Document for Procurement of Plant – Design, Supply, and Installation, has been prepared by Nepal Electricity Authority and is based on the Standard Bidding Document for Procurement of Plant – Design, Supply, and Installation (SBD Plant) issued by the Asian Development Bank dated June 2018.

ADB's SBD Plant has the structure and the provisions of the Master Procurement Document entitled "Procurement of Plant – Design, Supply, and Installation", prepared by multilateral development banks and other public international financial institutions except where ADB-specific considerations have required a change.

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PMD/EGMP/BNRTLSS-077/78-01:Design, Supply, Installation ,Testing and Commissioning of Borang - Naubise (Ratmate) 220 kV Transmission Line and Associated Substations

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

S.N.	Description					Cost Estimate(Including Local Transportation and Insurance Upto Final destination) (Excluding Taxes and Duties applicable in Nepal)	Remarks	
		Unit	Quantity			Unit Rate(USD)		Amount(USD)
			For Construction	Spares	Total			
1	2	3	4	5	6	7	8=6x7	
Part I-A: Borang - Naubise (Ratmate) 220 kV Transmission Line								
1.0	132 kV TOWER PARTS (132 kV Double Circuit BEAR Tower for Borang-Lapang Biharthok Section)							
1.1	Fabrication, galvanising & supply of various types of towers & tower parts, tower/leg extensions (complete) excluding stubs but including bolts and nuts, step bolts, hangers, D-shackles, pack plates, pack washers							
1.1.1	High Tensile Steel	MT	436.31	25.91	462.22			
1.1.2	Mild Steel	MT	111.58	6.48	118.06			
1.2	Fabrication, galvanising & supply of stub for various types of towers with pack washers including supply of bolts and nuts							
1.2.1	High Tensile Steel	MT	22.73	1.22	23.95			

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		Unit	Quantity			Unit Rate(USD)	Amount(USD)	
			For Construction	Spares	Total			
1	2	3	4	5	6	7	8=6x7	
Part I-A: Borang - Naubise (Ratmate) 220 kV Transmission Line								
	Total of 1							
2.0	220 kV TOWER PARTS (220 kV Double Circuit Twin MOOSE Tower for Lapang Biharthok - Ratmate Section)							
2.1	Fabrication, galvanising & supply of various types of towers & tower parts, tower/leg extensions (complete) excluding stubs but including bolts and nuts, step bolts, hangers, D-shackles, pack plates, pack washers							
2.1.1	High Tensile Steel	MT	1569.31	88.97	1,658.28			
2.1.2	Mild Steel	MT	404.83	22.25	427.08			

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

S.N.	Description	Part I-A: Borang - Naubise (Ratmate) 220 kV Transmission Line						Remarks
		Unit	Quantity			Cost Estimate(Including Local Transportation and Insurance Upto Final destination) (Excluding Taxes and Duties applicable in Nepal)		
			For Construction	Spares	Total	Unit Rate(USD)	Amount(USD)	
1	2	3	4	5	6	7	8=6x7	
Part I-A: Borang - Naubise (Ratmate) 220 kV Transmission Line								
2.2	Fabrication, galvanising & supply of stub for various types of towers with pack washers including supply of bolts and nuts							
2.2.1	High Tensile Steel	MT	68.68	3.53	72.21			
	Total of 2							
3.0	TOWER ACCESSORIES AND EARTHING							
3.1	Tower Accessories							
i)	Danger Plate	Nos.	142		142			
ii)	Number Plate	Nos.	142		142			
iii)	Anti Climbing Device	Sets	142		142			
iv)	Phase Plate (set of 6)	Sets	142		142			
v)	Circuit plate (sets of 2)	Sets	142		142			
vi)	Aviation Signal	Sets	10		10			

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

General Note: Plans and Equipment including Temporary Spares to be supplied from abroad								
S.N.	Description					Cost Estimate(Including Local Transportation and Insurance Upto Final destination) (Excluding Taxes and Duties applicable in Nepal)		Remarks
		Unit	Quantity			Unit Rate(USD)	Amount(USD)	
			For Construction	Spares	Total			
1	2	3	4	5	6	7	8=6x7	
Part I-A: Borang - Naubise (Ratmate) 220 kV Transmission Line								
vii)	Bird Guards	Sets	15		15			
	Total of Sub - Total 3.1							
3.2	Tower Earthing Material							
i)	Pipe Type earthing complete with pipe, flat, salt, sand & charcoal	Sets	25		25			
ii)	Counterpoise Type							
a	Counterpoise Type - 25 m	Sets	76		76			
b	Counterpoise Type - 50 m	Sets	32		32			
c	Counterpoise type - 100M	Set	9		9			
	Total of Sub - Total 3.2							
	Total of 3							
4.0	LINE MATERIALS							
4.1	Conductor and Accessories							
	For Borang - Lapang Biharthok Section							
i)	ACSR conductor, code name "BEAR" with armour rod etc to complete the job	km	150	4	154			

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

S.N.	Description					Cost Estimate(Including Local Transportation and Insurance Upto Final destination) (Excluding Taxes and Duties applicable in Nepal)		Remarks				
						Unit	Quantity			Unit Rate(USD)	Amount(USD)	
							For Construction		Spares			Total
1	2	3	4	5	6	7	8=6x7					
Part I-A: Borang - Naubise (Ratmate) 220 kV Transmission Line												
ii)	Stockbridge Vibration damper for BEAR Conductor with preformed armour rods	Sets	1884	50	1934							
iii)	Mid span compression joints for ACSR "BEAR" conductor	Nos.	110	20	130							
iv)	Repair sleeve for ACSR "BEAR" conductor	Nos.	40	10	50							
	For Lapang Biharthok - Ratmate Section											
i)	ACSR conductor, code name "MOOSE" with armour rod etc to complete the job	km	300	8	308							
ii)	Stockbridge Vibration damper for MOOSE Conductor with preformed armour rods	Sets	4248	80	4328							
iii)	Mid span compression joints for ACSR "MOOSE" conductor	Nos.	220	40	260							
iv)	Repair sleeve for ACSR "MOOSE" conductor	Nos.	75	25	100							
v)	Bundle Spacer for line, suitable for Twin ACSR MOOSE conductor	Nos.	2382	100	2482							
vi)	Rigid Spacer for jumper for Twin ACSR MOOSE conductor	Nos.	414	100	514							
	Sub - Total of 4.1											

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

S.N.	Description					Cost Estimate(Including Local Transportation and Insurance Upto Final destination) (Excluding Taxes and Duties applicable in Nepal)		Remarks
		Unit	Quantity			Unit Rate(USD)	Amount(USD)	
			For Construction	Spares	Total			
1	2	3	4	5	6	7	8=6x7	
Part I-A: Borang - Naubise (Ratmate) 220 kV Transmission Line								
4.2	Earthwire and Optical Fiber ground wire (OPGW) and accessories							
A	Installation of Earthwire and accessories							
a	GS Earthwire 7/3.35 mm	km	27	2	29			
b	Mid Span Compression joint for 7/3.35 mm GS Earthwire	Nos.	18	5	23			
b	Flexible Copper Bond for 7/3.35 mm GS Earthwire	Nos.	137	10	147			
c	Vibration Damper for 7/3.35 mm GS Earthwire	Nos.	354	20	374			
B	Installation of OPGW and accessories							
a	Optical fiber ground wire including intermediate splice boxes, terminal splice boxes and additional length as required	km	51		51			
b	Stockbridge Vibration damper for OPGW overhead ground wire with preformed armour rods	Nos.	668	40	708			
	Sub - Total of 4.2							

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Consolidated Bill of Materials and Equipment including Transportation, Spares to be supplied from abroad								
S.N.	Description					Cost Estimate(Including Local Transportation and Insurance Upto Final destination) (Excluding Taxes and Duties applicable in Nepal)		Remarks
		Unit	Quantity			Unit Rate(USD)	Amount(USD)	
			For Construction	Spares	Total			
1	2	3	4	5	6	7	8=6x7	
Part I-A: Borang - Naubise (Ratmate) 220 kV Transmission Line								
4.3	Insulator strings with insulators, attachment assemblies and arcing horns all complete for ACSR "BEAR", ACSR "MOOSE" conductor and attachment assemblies all complete for Earthwire and OPGW							
	For Borang - Lapang Biharthok Section							
i)	Single tension insulator string for "BEAR" with compression clamps all complete long rod Polymer Insulator (650kV BIL long rod polymer insulator)	Sets	312	24	336			
ii)	Double tension insulator string for "BEAR" with compression clamps all complete long rod Polymer Insulator (650kV BIL long rod polymer insulator)	Sets	516	48	564			
iii)	Pilot insulators string for "BEAR" with compression clamps all complete long rod Polymer Insulator (650kV BIL long rod polymer insulator)	Sets	60	6	66			
	For Lapang Biharthok - Ratmate Section							

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Part I-A: Borang - Naubise (Ratmate) 220 kV Transmission Line												
S.N.	Description					Cost Estimate(Including Local Transportation and Insurance Upto Final destination) (Excluding Taxes and Duties applicable in Nepal)		Remarks				
						Unit	Quantity			Unit Rate(USD)	Amount(USD)	
							For Construction		Spares			Total
1	2	3	4	5	6	7	8=6x7					
Part I-A: Borang - Naubise (Ratmate) 220 kV Transmission Line												
i)	Double suspension insulator string for "MOOSE" with compression clamps all complete long rod Polymer Insulator (1250kV BIL long rod polymer insulator)(suitable for 120 kN insulator)	Sets	90	18	108							
ii)	Double tension insulator string for "MOOSE" with compression clamps all complete long rod Polymer Insulator (1250kV BIL long rod polymer insulator)(suitable for 160 kN insulator)	Sets	654	60	714							
iii)	Double tension insulator string for "MOOSE" with compression clamps all complete long rod Polymer Insulator (1250kV BIL long rod polymer insulator) (suitable for 210 kN insulator)	Sets	66	12	78							
iv)	Pilot insulators string for "MOOSE" with compression clamps all complete long rod Polymer Insulator (650kV BIL long rod polymer insulator)	Sets	90	12	102							
	7/3.35 mm Earthwire											
i)	Earthwire Tension Clamp complete for one tower (one set/tower)	Sets	59	4	63							

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S.N.	Description					Cost Estimate(Including Local Transportation and Insurance Upto Final destination) (Excluding Taxes and Duties applicable in Nepal)		Remarks				
						Unit	Quantity			Unit Rate(USD)	Amount(USD)	
							For Construction		Spares			Total
1	2	3	4	5	6	7	8=6x7					
Part I-A: Borang - Naubise (Ratmate) 220 kV Transmission Line												
ii)	Earthwire Suspension Clamp complete for one tower	Sets	15	2	17							
	OPGW											
i)	OPGW suspension preformed assembly complete for one tower	Sets	15	2	17							
ii)	OPGW tension preformed assembly complete for one tower (one set/tower)	Sets	127	6	133							
	Sub - Total of 4.3											
4.4	Optical Fiber and accessories											
i)	Optical approach cable for both Substation	km	1.5		1.5							
ii)	Optical Distribution Frames for both substation to complete the jobs	Sets	4		4							
	Sub - Total of 4.4											
	Total of 4											
5.0	Monitoring,Testing and Analyzing equipments											
i)	Transmission Line Fault Analyzer as per specification	Sets	1		1							

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S.N.	Description					Cost Estimate(Including Local Transportation and Insurance Upto Final destination) (Excluding Taxes and Duties applicable in Nepal)	Remarks	
		Unit	Quantity					Unit Rate(USD)
			For Construction	Spares	Total			
1	2	3	4	5	6	7	8=6x7	
Part I-A: Borang Naubise (Ratmate) 220 kV Transmission Line								
ii)	Tower Footing Impedance Meter as per specification	Sets	1		1			
iii)	Portable DC Earth Fault Locator as per specification	Sets	1		1			
iv)	Earthing Resistance Tester as per specification	Sets	1		1			
v)	Non-Contact Voltage Detector along with 5 meter telescopic fiber glass rod as per specification	Sets	1		1			
vi)	Leakage Detector for Insulator as per specification	Sets	1		1			
	Total of 5							
6.0 TOOLS AND TACKELS								
i)	Flat wrench of different sizes for common bolts	Sets	1		1			
ii)	Torque wrench of different sizes for common bolts	Sets	1		1			
iii)	Pipe wrench for common bolts	Sets	1		1			
iv)	Steel ropes (Pilot wire) 35 sq. mm	m	1000		1000			
v)	Pilot wire grips (35 sq. mm) come along clamp	Nos.	3		3			
vi)	Rubber covered rollers, pullies(2,3 keys)	Sets	3		3			
vii)	Portable earthing set (for Transmission line maintenance safety purpose)	Sets	1		1			
viii)	Safety belt	Sets	5		5			
ix)	Line operator's leather gloves	Pairs	5		5			
x)	Hydraulic,Manually operated portable crimping tools with 2 sets of each dies suitable for conductor "BEAR", "MOOSE" and OPGW	Sets	1		1			
xi)	Safetv helmet with chinstrap and accessories	Sets	10		10			

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General Notes: Plans and Equipment including Temporary Spares to be supplied with contract								
S.N.	Description					Cost Estimate(Including Local Transportation and Insurance Upto Final destination) (Excluding Taxes and Duties applicable in Nepal)		Remarks
		Unit	Quantity			Unit Rate(USD)	Amount(USD)	
			For Construction	Spares	Total			
1	2	3	4	5	6	7	8=6x7	
Part I-A: Borang - Naubise (Ratmate) 220 kV Transmission Line								
xii)	Insulation tester (10000 V) suitable for outdoor line testing purpose	Nos.	1		1			
xiii)	Earth resistivity tester	Nos.	1		1			
xiv)	Double sheeve pulley block 5 MT capacity with all accessories	Sets	1		1			
xv)	Sagging Winch 10 MT capacity hand operated	Sets	1		1			
xvi)	Grip suitable for ACSR "BEAR" Conductor	Sets	4		4			
xvii)	Grip suitable for ACSR "MOOSE" Conductor	Sets	4		4			
xviii)	Grip suitable for "OPGW" Ground Wire	Sets	4		4			
	Total of 6							
	TOTAL of Part I-A: Borang Naubise (Ratmate) 220 kV Transmission Line							

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		Estimated		CIP Project Site including insurance, clearing, forwarding and transportation to site (Excluding Taxes and Duties applicable in Nepal)		REMARKS
				F/C (USD)		
Item No.	Description	Unit	Quantity	Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
1	ELECTRICAL WORKS					
1.1	Power Transformer					
1.1.1	132/33 kV, Three Phase 24/30 MVA, ONAN/ONAF Power Transfromer complete with On load Tap Changer (OLTC) and RTCC facility with Tank Mounted LA at LV side and Bushing CT on both sides, complete with all accessories as specified.	Set	1			
1.1.2	33/11 kV, Three phase 6/8 MVA, ONAN/ONAF Power Transformer complete with On load Tap Changer (OLTC) and RTCC facility with Tank Mounted LA at LV side and Bushing CT on both sides, delta/star connected complete with all accessories as specified	Set	1			
1.2	Circuit breakers/Switchgears					
1.2.1	145 kV, 1250 A, 3 phase, SF6 Circuit Breaker, (individual pole operation type), complete with all accessories as per specification for incoming lines	Set	3			
1.2.2	145 kV, 1250 A, 3 phase, SF6 Circuit Breaker, (three pole operation type), complete with all accessories as per specification for Transformer HT.	Set	1			
1.2.3	145 kV, 2000 A, 3 phase, SF6 Circuit Breaker, three pole operation type, complete with all accessories as per specification for Bus Coupler	Set	1			
1.2.4	36 kV, 1250 A, 3 phase, Vaccum Circuit Breaker for incomer, three pole operation type, complete with all accessories as per specification	Set	1			

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		Estimated		CIP Project Site including insurance, clearing, forwarding and transportation to site (Excluding Taxes and Duties applicable in Nepal)		REMARKS
				F/C (USD)		
Item No.	Description	Unit	Quantity	Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
1.2.5	36 kV, 800 A, 3 phase, Vaccum Circuit Breaker for outgoing feeders, three pole operation type, complete with all accessories as per specification	Set	4			
1.3	Disconnecting Switches					
1.3.1	145 kV, 1250 A, 3 phase Center Break Disconnecting Switch with Grounding Switch complete with all accessories as per specification	Set	3			
1.3.2	145 kV, 2000 A, 3 phase, Center Break Disconnecting Switch without Grounding Switch complete with all accessories as per specification	Set	2			
1.3.3	145 kV, 1250 A, 3 phase Center Break Disconnecting Switch without Grounding Switch complete with all accessories as per specification	Set	14			
1.3.4	36 kV, 1250 A, 3 phase Disconnecting Switch without Grounding Switch complete with all accessories as per specification	Set	1			
1.3.5	36 kV, 800 A, 3 phase Disconnecting Switch without Grounding Switch complete with all accessories as per specification	Set	4			
1.3.6	36 kV, 800 A, 3 phase Disconnecting Switch with Grounding Switch complete with all accessories as per specification	Set	3			
1.3.7	36 kV, 400 A, 3 phase Disconnecting Switch without Grounding Switch complete with all accessories as per specification	Set	1			
1.4	Instrument Transformers					

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Schedule No: 1: Plant and Equipment including mandatory spares to be supplied from abroad						
		Estimated		CIP Project Site including insurance, clearing, forwarding and transportation to site (Excluding Taxes and Duties applicable in Nepal)		REMARKS
				F/C (USD)		
Item No.	Description	Unit	Quantity	Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
1.4.1	145 kV, 50 VA, 132/V3 /110/V3 kV, Class 0.2/3P Capacitor Voltage Transformer complete with all accessories as per specification	Nos.	15			
1.4.2	145 kV, 30 VA, 5 core Current Transformer complete with all accessories as per specification	Nos.	12			
1.4.3	145 kV, 30 VA, 4 core Current Transformer complete with all accessories as per specification	Nos.	3			
1.4.4	36 kV, 30 VA, 33/V3/110/V3 kV Voltage Transformer complete with all accessories asp per specification	Nos.	6			
1.4.5	36 kV, 30 VA, 2 core Current Transformer complete with all accessories as per specification	Nos.	15			
1.5	Lightening Arrestor					
1.5.1	120 kV, 10 kA Lightening Arrestor including Discharge Counter complete with all accessories as per specification	Nos.	12			
1.5.2	30 kV, 10 kA Lightening Arrestor complete with all accessories as per specification	Nos.	18			
1.5.3	9 kV, 10 kA Lightening Arrestor complete with all accessories as per specification	Nos.	12			
1.6	Control and relay panel					
1.6.1	132 kV Transmission Line Control and Relay Panel complete with all accessories as per specification	Sets	3			
1.6.2	132/33 kV Transformer Control and Relay Panel complete with all accessories as per specification	Set	1			

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PMD/EGMP/BNRTLSS-077/78-01: Design, Supply, Installation, Testing and Commissioning of Borang - Naubise (Ratmate) 220 kV Transmission Line and Associated Substations

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

Schedule No. 1: Plant and Equipment including mandatory spares to be supplied from abroad						
		Estimated		CIP Project Site including insurance, clearing, forwarding and transportation to site (Excluding Taxes and Duties applicable in Nepal)		REMARKS
				F/C (USD)		
Item No.	Description	Unit	Quantity	Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
1.6.3	132 kV Bus Coupler Panel with Bus bar Protection Facilities	set	1			
1.6.4	33/11 kV Transformer Control and Relay Panel complete with all accessories as per specification	Set	1			
1.6.5	33 kV Protection Control and Relay Panel complete with all accessories as per specification for Line Bays	Set	4			
1.7	Grounding					
1.7.1	Galvanized E.H.S. Steel wires of size 7/3.35 for Lightening Shield Wire in take off and internal structures, with accessories to complete the specified scope of works	lot	1			
1.7.2	Earthing of substation with conductors, electrode grounding materials and accessories to complete the specified scope of works	Lot	1			
1.8	11 KV VCB Switchgear Panel with all accessories as per specified					
1.8.1	12 kV, 1250 A, 3 phase, VCB Switchgears for Incomer complete with control, protection, metering and all accessories as per specification	Set	1			
1.8.2	12 kV, 800 A, 3 phase, VCB Switchgears for Outgoing Feeders complete with control, protection, metering and all accessories as per specification	Sets	3			
1.9	Control and Power Cables					
1.9.1	600 V power and lighting cable for all works to complete the specified scope of work	Lot	1			

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				F/C (USD)		
Item No.	Description	Unit	Quantity	Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
1.9.2	600 V control cable to complete the specified scope of works	Lot	1			
1.9.3	36 kV, 630 sq. mm 3 x single core XLPE Copper Power Cable including Termination and Accessories complete from LV sides of 132/33 kV Power Transformers to proposed 33 kV Switchyard Bays as per Drawings	m	200			
1.9.4	12 kV, 400 sq. mm 3 x single core XLPE Copper Power Cable including Straight Joints with Accessories complete from LV sides of 33/11 kV Power Transformers to indoor 11 kV Switchgear Room as per Drawings	m	150			
1.9.5	12 kV, 185 sq.mm 3 core XLPE Aluminium Power Cable including Straight Joints with Accessories complete for 3 nos. of Outgoing Distribution Feeders as specified.	m	450			
1.10	Miscellaneous material					
1.10.1	145 kV Insulator Strings with necessary hardwares, Clamps for Substation Works and connection between Line Tower, Take Off Gantry and Internal Gantry structure, complete as per the specified scope of works	Lot	1			
1.10.2	36 kV Insulator Strings with necessary hardware, Clamps for Substation Works and connection between Line Tower, Take Off Gantry and Internal Strucutre, complete as per the specified scope of works	Lot	1			

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Schedule for Plant and Equipment including mandatory spares to be supplied from abroad						
		Estimated		CIP Project Site including insurance, clearing, forwarding and transportation to site (Excluding Taxes and Duties applicable in Nepal)		REMARKS
				F/C (USD)		
Item No.	Description	Unit	Quantity	Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
1.10.3	ACSR "BEAR" Conductors and Accessories to complete the specified scope of works including for Line Tower to Take Off and Internal Structure (including stringing of conductor between tower to gantry for 132kV & 33 kV .)	Lot	1			
1.10.4	132 kV Tubular Bus (Outer Dia 100 mm and thickness 10 mm) and Bus Support Insulators including all other Accessories required to complete the specified scope of work	Lot	1			
1.10.5	145 kV Support Insulators including all other Accessories required to complete the specified scope of work	Lot	1			
1.10.6	33 kV Tubular Bus (Dia 75 mm, thickness 8 mm) and Bus Support Insulator including all other accessories required to complete the specified scope of work	Lot	1			
1.10.7	33 kV Power Fuse with Support Insulator including all other accessories required to complete the specified scope of work	Lot	1			
1.10.8	33 kV Overhead Distribution Line with all Accessories complete from Substation to Outdoor existing lines including breakdown of existing line to separate feeder lines	Lot	1			
1.10.9	11 kV Overhead Distribution Line with all Accessories complete from Substation to Outdoor existing lines including breakdown of existing line to separate feeder lines	Lot	1			
1.10.10	Switchyard Lighting (including lighting for internal road)	Lot	1			
1.11	Station Supply					

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				F/C (USD)		
Item No.	Description	Unit	Quantity	Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
1.11.1	33/0.4 kV, Three phase 315 kVA, ONAN Disribution Transformer with Off load Tap Changer delta/star with Current Limiting Fuse (DO Fuse) connected complete with all accessories as specified	Set	1			
1.11.2	400V AC distribution board panel	Lot	1			
1.12	Battery / Battery Charger					
1.12.1	110 V Maintenance Free Lead Acid Battery complete with all accessories	Set	1			
1.12.2	48 V Maintenance Free Lead Acid Battery complete with all accessories	Set	1			
1.12.3	Battery Charger for 110 V battery complete with all accessories	Set	1			
1.12.4	Battery Charger for 48 V battery complete with all accessories	Set	1			
1.12.5	110 V DC Distribution Board complete with all accessories	Set	1			
1.12.6	48 V DC Distribution Board complete with all accessories	Set	1			
1.13	Fire Detection & Alarm System					
1.13.1	50 litre foam type, Portable/Trolley/Wheel mounted fire extinguishers	Nos.	2			
1.13.2	4.5 kg CO2 type, Fire Extinguisher	Nos.	10			
1.13.3	22.5 kg Dry Chemical Power (DCP) type, Trolley/Wheel mounted fire extinguishers	Nos.	3			
1.13.4	Smoke detection system in Control Room Building	set	1			
1.13.5	Fire detection and Alarm System in Control Room Building	set	1			
	Total of Electrical of Borang S/S					
2	SUBSTATION AUTOMATION/ COMMUNICATION / SCADA (Based on IEC 61850)					
2.1	SUBSTATION AUTOMATION					

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				F/C (USD)		
Item No.	Description	Unit	Quantity	Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
a.	Complete Substation automation system including hardware and software for the substation & remote control stations alongwith associated equipments for the followings as per Technical Specification.					
i.	132 kV System	Bays	5			
ii.	33kV system	Nos.	5			
iii.	11kV HT indoor switchgear	Lot	1			
iii.	BCU for auxiliary system	Lot	1			
b.	Integration of all 132/33/11kV Bays under present scope with the SCADA of SIEMENS (SINAUT Spectrum) at Load Dispatch Centre, Kathmandu including supply of Hardware, Software, accessories etc. as per TS Section Project.	Lot	1			
	Sub Total of 2.1					
2.2	COMMUNICATION / SCADA					
i	Digital Protection Coupler	Nos.	2			
ii	IP-PBAX with per TS	Set	1			
iii	Optical Distribution Frame complete in all respects as per technical specifications	Lot	1			
iv	Optical Approach Cable -24 pair Fibre (DWSM -G.652D) along with Installation hardware set for above 24 Fibre, Fibre Optic Approach Cable complete in all respects as per technical specifications	Lot	1			
	Sub Total of 2.2					

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				F/C (USD)		
Item No.	Description	Unit	Quantity	Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
	Total of Communication of Borang S/S					
3	CIVIL AND ARCHITECTURAL WORKS					
3.1	Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories					
3.1.1	Rail Structure for 132/33 kV Power Transformer including access from Internal Road	Lot	1			
3.1.2	Rail Structure for 33/11 kV Power Transformer including access from Internal Road	Lot	1			
3.1.3	132 kV Take Off Gantry structure for two line bays, one spare bay , bus coupler bay & one transformer bays including internal gantry tower & beam structures as per scope of contract	Bays	5			
3.1.4	132 kV SF6 Circuit Breaker	Sets	5			
3.1.5	132 kV Disconnecting Switch with Earth Switch	Sets	3			
3.1.6	132 kV Disconnecting Switch without Earth switch	Set	16			
3.1.7	132 kV Capacitive Voltage Transformer	No.	15			
3.1.8	132 kV Current Transformer	No.	15			
3.1.9	120 kV Lightening Arrestor	No.	12			
3.1.10	132 kV Bus Post Insulator/CVT	No.	36			
3.1.11	132 kV Support Insulator	No.	8			
3.1.12	33 kV Vaccum Circuit Breaker	Sets	5			
3.1.13	33 kV Disconnecting Switch with Earth Switch	Sets	3			
3.1.14	33 kV Disconnecting Switch without Earth Switch	Sets	6			

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				F/C (USD)		
Item No.	Description	Unit	Quantity	Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
3.1.15	33 kV Current Transformer	Nos.	15			
3.1.16	33 kV Voltage Transformer	Nos.	6			
3.1.17	30 kV Lightning Arrestor	Nos.	18			
3.1.18	33 kV Bus Support Insulator	Lot	1			
3.1.19	33 kV Power Fuse Support Insulator	Lot	1			
3.1.20	Earth mast	Lot	1			
3.1.21	Switchyard Fence as per Specifications (including Fence with Gate for 132 kV switchyard)	Rm	300			
3.1.22	Switchyard Fence as per Specificaitons (including Fence with Gate for 33 kV switchyard)	Rm	200			
3.1.23	Identification plate, danger notice etc	Lot	1			
	Sub Total of Civil and Arichitectural Works of Borang Substation					
4	SPARE PARTS					
4.1	For 132/33 kV Transformer					
4.1.1	132 kV and 33 kV Bushing(one of each type)	Set	1			
4.1.2	Dial type Thermometers (WTI & OTI)	Set	1			
4.1.3	Oil Level Gauges	Set	1			
4.1.4	Insulating Oil (10% of total supply)	Lot	1			
4.1.5	Indicating Lamps (25% of used)	Lot	1			
4.1.6	All types of Fuses (25% of used)	Lot	1			

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Item No.	Description	Unit	Quantity	Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
4.1.7	Complete set of Gaskets of each type	Set	1			
4.1.8	Complete set of Pressure Relief Devices	Set	1			
4.1.9	All type of Auxiliary, Current, Voltage and Thermal Relays, Contactors and Timers for control, protection and cooling circuit(one of each type)	Set	1			
4.1.10	OLTC Motor Contactor	Set	2			
4.1.11	Complete set of Buchholz relay	Set	1			
4.1.12	OLTC Motor	Set	2			
4.2	For 33/11 kV Transformer					
4.2.1	33 kV and 11 kV Bushing(one of each type)	Set	1			
4.2.2	Dial type Thermometers	Set	1			
4.2.3	Oil Level Gauges	Set	1			
4.2.4	Insulating Oil (10% of total supply)	Lot	1			
4.2.5	Indicating Lamps (25% of used)	Lot	1			
4.2.6	All types of Fuses (25% of used)	Lot	1			
4.2.7	Complete set of Gaskets of each type	Set	1			
4.2.8	Complete set of Pressure Relief Devices	Set	1			
4.2.9	All type of Auxiliary, Current, Voltage and Thermal Relays, Contactors and Timers for control, protection and cooling circuit(one of each type)	Set	1			
4.2.10	OLTC Motor Contactor	Set	1			
4.2.11	Complete set of Buchholz relay	Set	1			

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Item No.	Description	Unit	Quantity	Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
4.2.12	OLTC motor	Set	1			
4.3	For 145kV SF6 Circuit Breaker					
4.3.1	Complete set (one chamber) of interrupter	Sets	3			
4.3.2	Tripping Coils	Nos.	6			
4.3.3	Closing Coils	Nos.	6			
4.3.4	Pressure Switch, Relays and Contactors (one of each type)	Sets	2			
4.3.5	Motors for mechanism of each type	Nos.	2			
4.3.6	Gas filling equipment complete with accessories	Set	1			
4.3.7	Complete set(one chamber) of Sealing rings and Gaskets	Sets	2			
4.4	For 36kV Vaccum Circuit Breaker					
4.4.1	Tripping Coils	Nos.	4			
4.4.2	Closing Coils	Nos.	4			
4.4.3	Relays and Contactors (One of each type)	Sets	2			
4.4.4	Motors for Mechanism of each type	Set	1			
4.4.5	Interrupter for VCB	No.	1			
4.5	For 12kV VCB Switchgears					
4.5.1	11 kV Vaccum Interrupter	Nos.	2			
4.5.2	Tripping Coils	Nos.	4			
4.5.3	Closing Coils	Nos.	4			
4.5.4	Spring Charging Motor	Set	2			
4.5.5	3 Phase Overcurrent Relay with ground fault for 11kV Side	Sets	1			
4.5.6	Ammeter	Nos.	1			

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(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
4.5.7	Voltmeter	Nos.	1			
4.5.8	kVA Meter	Nos.	1			
4.5.9	11 kV CTs as in Outgoing Feeder	Sets	1			
4.5.10	Operating Handle	Sets	1			
4.5.11	Indicating Lamps (100% of used)	Set	1			
4.5.12	For 145kV Disconnecting Switches					
4.6.1	Procelain Insulator	Nos.	4			
4.6.2	Main Contact Assemblies(one assembly)	Set	4			
4.6.3	Auxiliary Contacts	Sets	2			
4.6.4	Interlocking Coil	Nos.	2			
4.7	For 36kV Disconnecting Switches					
4.7.1	Procelain Insulator	Nos.	4			
4.7.2	Main Contact Assemblies(one assembly)	Sets	3			
4.7.3	Auxiliary Contacts	Sets	2			
4.7.4	Interlocking Coil	Nos.	2			
4.8	Instrument Transformers of used type					
4.8.1	145 kV Current Transformer	Nos.	2			
4.8.2	145 kV Capacitive Voltage Transformer	Nos.	2			
4.8.3	36 kV Current Transformer	Nos.	2			
4.8.4	36 kV Potential Transformer	Nos.	2			
4.9	Lightening Arrestor					
4.9.1	120 kV Single Phase Lightening Arrestor (pedestal-type)	Nos.	2			

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(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
4.9.2	30 kV Single Phase Lightening Arrestor (pedestal-type)	Nos.	2			
4.9.3	9 kV Single phase Lightening Arrestor (Pedestal-type)	Nos.	2			
4.10	For 132/33 kV Control and Relay Panel					
4.10.1	Indicating Lamps(50% of used)	Lot	1			
4.10.2	Fuses of each type(50% of used)	Lot	1			
4.10.3	Color Caps of each color for indicating lamps (30% of used)	Lot	1			
4.10.4	One of each type of Switch, Timer and other special devices	Set	1			
4.10.5	3 Phase Overcurrent Relays with Earthfault Inbuilt	Set	1			
4.10.6	3 Phase Transformer Differential Relays	Set	1			
4.10.7	Each type of Auxiliary Relay	Set	1			
4.10.8	Ammeter	No.	2			
4.10.9	Voltmeter	No.	2			
4.11	132 kV Control and Protection Panel					
4.11.1	Indicating Lamps(50% of used)	Lot	1			
4.11.2	Fuses of each type(50% of used)	Lot	1			
4.11.3	Color Caps of each color for indicating lamps (30% of used)	Lot	1			
4.11.4	One of each type of Switch, Timer and other special devices	Set	1			
4.11.5	Distance Relay for Line Protection	No.	1			
4.11.6	One of each type of Over current and earth fault relays	Lot	1			
4.11.7	Carrier Auxiliary Relay	No.	1			
4.11.8	Synchro Check Relay	No.	1			
4.11.9	Trip-Circuit Supervision Relay	No.	1			

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(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
4.11.10	Ammeter	Nos.	2			
4.11.11	Voltmeter	Nos.	2			
4.12	For 33/11 kV Transformer Control and Relay Panel					
4.12.1	Indicating Lamps (50% of used)	Lot	1			
4.12.2	Fuses of each type(50% of used)	Lot	1			
4.12.3	Color Caps of each color for indicating lamps (30% of used)	Lot	1			
4.12.4	One of each type of Switch, Timer and other special devices	Set	1			
4.12.5	3 Phase Over Current Relays with Earthfault Inbuilt	Set	1			
4.12.6	3 Phase Transformer Differential Relays	Set	1			
4.12.7	Each type of Auxiliary Relay	Set	1			
4.12.8	Ammeter	No.	2			
4.12.9	Voltmeter	No.	2			
4.13	Communication/SCADA					
4.13.1	Digital Protection Coupler	Lot	1			
4.13.2	SDH and transmission equipments	Lot	1			
4.14	110 V Battery Charger					
4.14.1	Fuses of each type(50% of used)	Lot	1			
4.14.2	Indicating Lamp (50% of used)	Lot	1			
4.14.3	One of each type of Switch, Timer and other special devices	Lot	1			
4.14.4	Ammeter	No.	1			
4.14.5	Voltmeter	No.	1			

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(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
Part I-B: BORANG 132/33/11 kV AIS Substation						
4.15	48V Battery Charger					
4.15.1	Fuses of each type(50% of used)	Lot	1			
4.15.2	Indicating Lamp (50% of used)	Lot	1			
4.15.3	One of each type of Switch, Timer and other special devices	Lot	1			
4.15.4	Ammeter	No.	1			
4.15.5	Voltmeter	No.	1			
	Sub Total of Spare Parts					
	Total of Part I-B Borang 132/33/11 kV AIS Substation					

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Item No.	Item description	Estimated		CIP Project Site including insurance, clearing, forwarding and transportation to site (Excluding Taxes and Duties applicable in Nepal)		Remarks
		Unit	Quantity	FC		
				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
	PART - A: OWNER ASSESSED QUANTITIES					
A1.1	POWER TRANSFORMER					
1	33.33 MVA, 220/v3 / 132/v3 kV Single Phase Power Transformer (without transformer Oil)	Nos.	7			
2	Insulating oil for the above Power Transformer (* 1Lot = Oil for 1 Autotransformers)	Lot*	7			
3	33kV Current transformer (NCT) for autotransformer	Nos.	1			
A1.2	POWER TRANSFORMER					
1	24/30 MVA, 132 /33 kV Three Phase Power Transformer (without transformer Oil)	Nos.	1			
2	Insulating oil for the above Power Transformer	Lot	1			
A1.3	POWER TRANSFORMER					
1	33/11 kV, Three phase 6/8 MVA, ONAN/ONAF Power Transformer complete with On load Tap Changer (OLTC) and RTCC facility with Tank Mounted LA at LV side and Bushing CT on both sides, delta/star connected complete with all accessories as specified	Nos.	1			

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	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
B	Testing & Maintenance Equipments					
1	Oil Storage tank of 20KL	Nos.	1			
2	Transformer Oil Filtration plant (10 KLPH)	Nos.	1			
C	LT Transformer					
1	33/0.400 kV Three phase 630 kVA, ONAN Disribution Transformer with Off load Tap Changer delta/star with Current Limiting Fuse (DO Fuse) connected complete with all accessories as specified	Nos.	2			
D	245 KV EQUIPMENTS					
D1	245KV GIS Equipment					
1.1	245kV, SF6 GIS Bus Bars Module [Module description as per Technical Project specification]	Sets	2			
1.2	245kV, SF6 GIS Bus Coupler bay Module [Module description as per Technical Project specification]	Sets	1			
1.3	245kV, SF6 GIS Line bay including spare bay Module [Module description as per Technical Project specification]	Sets	3			

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(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
1.4	2145kV, SF6 GIS ICT bay Module including switching arrangement for 1-ph spare transformer [Module description as per Technical Project specification]	Sets	2			
1.5	SF6 Gas Insulated Bus Duct (GIB) outside GIS Hall alongwith associated support structure and accessories					
1.5.1	2000A, 40 kA for 1 sec. single phase	Mtr.	125			
1.5.2	2000A, 40 kA for 1 sec. three phase	Mtr.	275			
1.6	245 kV Auxiliary Bus to connect spare unit of Transformer [Module description as per Technical specification and Section Project Specific Requirement]	Set	1			
1.7	245kV, SF6 to Air Bushing along with associated support structure for Connecting GIS to AIS alongwith support structure					
1.7.1	2000A, 40 kA for 1 sec. single phase	Nos.	16			
D.2	245KV Outdoor Equipment					
1.0	216 KV Surge Arrester (1-phase)	Nos.	16			
2.0	245kV Capacitive Voltage Transfromer for line	Nos.	9			
3.0	245 kV Bus Post Insulator (1-phase) (Except for wave trap)	Nos.	54			

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		Unit	Quantity	FC		
				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
E	145kV Equipment					
E.1	145KV GIS Equipment					
1.1	145kV, SF6 GIS Bus Bars Module [Module description as per Technical Project specification]	Sets	2			
1.2	145kV, SF6 GIS Bus Coupler bay Module [Module description as per Technical Project specification]	Set	1			
1.3	145kV, SF6 GIS Line bay including spare bay Module [Module description as per Technical Projct specification]	Sets	3			
1.4	145kV, SF6 GIS ICT feeder bay Module for 220/132 kV Transformer including switching arrangement for 1-ph spare transformer [Module description as per Technical Project specification]	Sets	2			
1.5	145kV, SF6 GIS ICT feeder bay Module for 132/33 kV 3-ph Transformer [Module description as per Technical Project specification]	Sets	1			
1.6	SF6 Gas Insulated Bus Duct (GIB) outside GIS hall including Bus Duct support structure and associated accessories					
1.6.1	1250A, 31.5kA for 1sec. single phase	Mtr.	90			
1.6.2	1250A, 31.5kA for 1 sec. three phase	Mtr.	250			

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		Unit	Quantity	FC		
				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
1.7	145 kV Auxiliary Bus to connect spare unit of Transformer [Module description as per Technical specification and Section Project Specific Requirement]	Set	1			
1.8	145kV, SF6/Air Bushing for Connecting GIS to AIS alongwith support structure					
1.8.1	1250A, 31.5kA, 1sec single phase	Nos.	19			
E.2	145kV EQUIPMENT (AIS)					
1.0	120 kV Surge Arrestors (1-Phase)	Nos.	19			
2.0	8800pF, 145 kV Capacitive Voltage Transformer (1-Phase)	Nos.	9			
3.0	145 kV Bus Post Insulator	Nos.	66			
F.A1	72.5 kV EQUIPMENT					
1.1	72.5 kV, 1250A, 31.5kA Circuit Breaker (3-phase) with support structure	Nos.	1			
1.2	72.5 kV, 1250A,31.5kA Isolators with earth switch (3-phase, DBR type)	Nos.	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			
1.6	C/R Panel for Station Transformer	Nos.	1			

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	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
F.B1	33 KV EQUIPMENT					
F.B1.1	33 kV Outdoor Equipment					
1.1	30 kV Surge Arrester (1 ph.)	Nos	18			
1.2	36 kV BPI	Nos.	9			
F.B1.2	33kV, 25 kA (3 Phase) Indoor switch gear panel complete with control, protection, metering and all accessories as per specification					
1.0	33 kV Indoor VCB Switchgear					
1.1	33 kV, 2500 A, 3 phase, VCB Switchgears for Incomer complete with control, protection, metering and all accessories as per specification	Nos	1			
1.2	32 kV, 1250 A, 3 phase, VCB Switchgears for Outgoing Feeders complete with control, protection, metering and all accessories as per specification	Nos	3			
1.3	33 KV Station Transformer Indoor Switchgear complete with control, protection, metering and all accessories as per specification	Nos	1			
G	11 KV EQUIPMENT					
G.1	11 kV Outdoor Equipment					
1.0	9 kV Surge Arrester (1-ph)	Nos.	12			

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				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
G.2	11 kV, 25 kA (3 phase) Indoor Switchgear Panel					
1.1	12 kV, 1250 A, 3 phase, VCB Switchgears for Incomer complete with control, protection, metering and all accessories as per specification	Set	1			
1.2	12 kV, 800 A, 3 phase, VCB Switchgears for Outgoing Feeders complete with control, protection, metering and all accessories as per specification	Set	3			
H	Testing & Maintenance Equipment					
H.1	Testing & Maintenance Equipment for GIS					
1	SF6 Gas processing Unit	Set	1			
2	Partial Discharge Monitoring System	Set	1			
3	Dew Point Meter	Set	1			
4	SF6 Gas Leak Detector	Set	1			
5	Portable Ladder with adustable height as per TS	Nos.	1			
6	EOT crane for 220kV GIS Hall	Set	1			
7	EOT crane for 132kV GIS Hall	Set	1			

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				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
8	Online monitoring Equipment of fault gases, air components and moisture in transformer insulating fluids (Dissolved gas Analyzer) of Power Transformer (Autotransformer) with Inside View (Analysis Software) as per specification	Set	7			
9	Power Transformer (Autotransformer) Bushing online Monitoring equipment as per specification	Set	3			
H.2	Monitoring, Analyzing and Testing Equipments for Substation					
1	LA Monitoring Equipments as per specification	Set	1			
2	High-Voltage Asset Analyzer as per specification	Set	1			
3	Sweep Frequency Response Analyzer as per specification	Set	1			
4	Three Phase Relay Testing Kit as per specification	Set	1			
5	High Voltage Apparatus Tester (Tan-Delta) as per specification	Set	1			
6	3-Phase Automatic Transformer Turns Ratio Tester with three selectable test voltages (4VAC, 40VAC, 100VAC) and built-in LTC controller. (TTR) as per specification	Set	1			

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		Unit	Quantity	FC		
				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
7	Circuit breaker analyzer with built-in 200A Micro-ohmmeter – 3 or 6 -Main Contact model, Base unit with PC software, hook-up cables, cable carrying bag, shipping case, and built-in thermal printer using TP4 paper to observe On-Line, Dual-Ground, and having bluetooth options as per specification	Set	1			
I	RELAY PANELS (WITH AUTOMATION)					
1	245kV					
1.1	Line Control and Protection Panel	Nos.	3			
1.2	Transformer Control and Protection Panel (For both HV & MV side)	Nos.	2			
1.3	Bus Coupler Control and Protection Panel	Nos.	1			
1.4	Bus Bar Protection Panel	set	1			
2	145kV					
2.1	Line Control and Protection Panel	Nos.	3			
2.2	Transformer Control and Protection Panel (For both HV & MV side)	Nos.	3			
2.3	Bus Coupler Control and Protection Panel	Nos.	1			
2.4	Bus Bar Protection Panel	set	1			

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				Unit Rate	Amount	
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	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
3	Other/Common equipments Pertaining to C & R System					
3.1	Time Synchronisation Equipment	No.	1			
3.2	Relay Test kit	No.	1			
J	SUBSTATION AUTOMATION					
1	Substation Automation System as per Technical Specification:					
1.1	220kV System	Nos.	6			
1.2	132 kV System	Nos.	7			
1.3	BCU for auxiliary system	set	1			
1.4	33kV Indoor Switchgear	Nos.	5			
1.5	11kV Indoor Switchgear	Lot	1			
K	Digital Protection Coupler & IP-PBAX					
1	Digital Protection Coupler	Nos	6			
2	IP-PBAX with per TS	Set	1			
3	Optical Distribution Frame complete in all respects as per technical specifications	Lot	1			

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		Unit	Quantity	FC		
				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
4	Optical Approach Cable -24 pair Fibre (DWSM -G.652D) along with Installation hardware set for above 24 Fibre, Fibre Optic Approach Cable complete in all respects as per technical specifications	Lot	1			
L	LT Switchgear (As per Technical specification)					
1	400V Main switchboard	Set	1			
2	400V ACDB	Set	1			
3	400V MLDB	Set	1			
4	400V Emergency LDB	Set	1			
5	220V DCDB	Sets	2			
6	48V DCDB	Set	2			
M	Batteries					
1	220V					
i	600 AH	Nos	2			
2	48V					
i	600AH	Nos	2			
N	Float Cum Boost Battery Charger					

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				Unit Rate	Amount	
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	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
1	220V Float Cum Boost Battery Charger					
i	80A/80A	Nos	2			
2	48V Float Cum Boost Battery Charger					
i	80A/80A	Nos	2			
O	Diesel Generator with control Panel					
a	250 kVA	Set	1			
P	Fire Protection System					
1	Portable /Trolley/Wheel mounted extinguishers					
1.1	9 litre water type	Nos	2			
1.2	50 litre foam type	Nos	2			
1.3	4.5 kg CO ₂ type	Nos	6			
1.4	4.5 kg Dry Chemical Power (DCP) type	Nos	2			
2.0	Smoke detection system	Set	1			
3.0	Fire detection and Alarm System	Set	1			
Q	Cables along with clamps, glands, lugs and straight joints etc.					

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	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
1.0	33kV HT 3C, 400 Sq.mm Aluminum Cable alongwith accessories and termination equipments for termination of 33 kV Line	KM	2			
2.0	33 kV HT 3C, 400 Sq.mm Aluminum Cable alongwith accessories and termination equipments for termination of 33 kV LT Transformer	KM	0.25			
3.0	33 kV HT Cable (1CX800 SQmm) Copper for 33 kV side of 132/33 kV Transformer alongwith accessories and termination equipments	KM	0.5			
4	Power Cables - (1.1kV grade)					
4.1	3.5Cx300 sqmm (XLPE) cable for filter Machine along with 2 nos outdoor receptacles 250A	KM	0.15			
5	12 kV, 400 sq. mm 3 x single core XLPE Copper Power Cable including Straight Joints with Accessories complete from LV sides of 33/11 kV Power Transformers to indoor 11 kV Switchgear Room as per Drawings	KM	0.15			
6	12 kV, 185 sq.mm 3 core XLPE Aluminium Power Cable including Straight Joints with Accessories complete for 3 nos. of Outgoing Distribution Feeders as specified.	KM	0.45			
7	33 kV Overhead Distribution Line with all Accessories complete from Substation to Outdoor existing lines including breakdown of existing line to separate feeder lines	LS	1			

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	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
8	11 kV Overhead Distribution Line with all Accessories complete from Substation to Outdoor existing lines including breakdown of existing line to separate feeder lines	LS	1			
R	Air conditioning					
1	High wall type split AC unit of 2 TR capacities for control room, relay room and battery room	Nos.	40			
S	STEEL STRUCTURES (Tower,Gantry structures& Equipment support structures)(Including Design)					
1.0	Lattice/pipe Structure for towers,beams and equipments including peak plates/pack washers and guest paltes including foundation bolts(nuts,washers,MS plate welded at the bottom)including Design					
1.1	Rail Structure for 220/132 kVand 132/33 kV Power Transformer including access from Internal Road	Lot	1			
1.2	220 kV Take Off Gantry structure for all bays including internal gantry tower & beam structures as per scope of Contract	Lot	1			
1.3	132 kV Take Off Gantry structure for all bays including internal gantry tower & beam structures as per scope of Contract	Lot	1			

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(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
1.4	220 kV Capacitive Voltage Transformer	Nos	9			
1.5	220 kV Lightening Arrestor	Nos	16			
1.6	220 kV Bus Post Insulator	Nos	54			
1.7	132 kV Capacitive Voltage Transformer	Nos	9			
1.8	120 kV Lightening Arrestor	Nos	19			
1.9	132 kV Bus Post Insulator	Nos	66			
1.10	30 kV Lightening Arrestor	Nos	18			
1.11	33 kV Bus Support Insulator	Nos	9			
1.12	Earth mast	Lot	1			
T	Communication Equipment (detail as per TS)					
1	Transmission Equipment					
	Telecommunication Equipments					
1.1.1	SDH Equipment (STM-4 upgradable to STM - 16, MADM upto 5 MSP protected directions)					

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	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
(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 and integration with existing Communication equipments at Dana and Kusma 220 kV S/s	Nos.	1			
(ii)	Optical Interface Cards/SFP					
(a)	L4.1 SFP(To be modified as per link budget calculation)	Nos.	4			
(iii)	Tributary cards					
(a)	E1 Interface card (Min.8 interfaces per card)	Set	2			
(b)	Giga -Ethernet Interface 10/100/1000 Mbps Base T with Layer-2 switching (Min 8 Interfaces per card)	Nos.	2			
1.1.2	Equipment Cabinets	No	1			
1.1.3	VOIP telephone instrument with one common POE+ switch (min. 8 port)	set	2			
U	<u>PRE-ENGINEERED BUILDINGS</u>					
1	GIS Building and Panel Rooms including all supply materials from abroad except civil works and for civil works refer schedule 4(a)					
1.1	220 kV GIS Hall and Panel Rooms including all supply materials from abroad except civil works and for civil works refer schedule 4(a)					

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PMD/EGMP/BNRTLSS-077/78-01:Design, Supply, Installation ,Testing and Commissioning of Borang - Naubise (Ratmate) 220 kV Transmission Line and Associated

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

Item No.	Item description	Estimated		CIP Project Site including insurance, clearing, forwarding and transportation to site (Excluding Taxes and Duties applicable in Nepal)		Remarks
		Unit	Quantity	FC		
				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
(a)	220 kV GIS Hall	Sq. M.	450			
(b)	AHU	Sq. M.	127			
(c)	Panel Room	Sq. M.	38			
1.2	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.	400			
(b)	AHU	Sq. M.	98			
(c)	Panel Room	Sq. M.	37			
	SUB TOTAL PART-A					
	PART-B: VENDOR ASSESSED QUANTITIES					
A	Erection Hardware :-Insulator strings, Disc Insulators, Hardware, conductor, bus-bar materials, cable trays, clamps, spacers, connectors including connectors for Auto Transformer , Junction box, earthwire, earthing material risers, buried cable trenches/pipe of equipment & lighting, all accessories etc. for the following:					
1	220 kV DM-type layout for GIS termination arrangement					
1.1	Line Bay	Set	3			

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(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
1.3	Transformer Bay	Sets	2			
2	132 kV DM-type layout for GIS termination arrangement					
1.1	Line Bay	Sets	3			
1.3	Transformer Bay	Sets	3			
B	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 auxilary 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.	Sets	1			
C	Air conditioning & ventilation System					
1	Ventilation & Airconditioning system (as per technical specification)					
1.1	220kV GIS Hall	LS	1			

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				Unit Rate	Amount	
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	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
1.2	132 kV GIS Hall	LS	1			
D	Illumination System					
1.1	Substation Lighting					
1.1.1	Control Room cum administrative building illumination	LS	1			
1.1.2	220kV GIS Building	LS	1			
1.1.3	132kV GIS Building	LS	1			
1.2	Security Room	LS	1			
1.3	Fire fighting Room	LS	1			
1.4	Outdoor Switchyard Lighting	LS	1			
1.5	Street Lighting	LS	1			
1.6	Occupancy sensor	LS	1			
1.7	Township Area Lighting	LS	1			
E	Fire Protection System per technical Specification)					

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(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
1	Pumping arrangement for HVW system & hydrant system, complete with all piping, valves, fittings,etc. inside pump house	Set	1			
2	Hydrant system, complete U/G piping and accessories etc. outside the Pump House.	Set	1			
3	HVW spray system, Hydrant system and complete U/G & O/G piping and accessories etc. out side the pump house for Transformer :					
3.1	33.33 MVA, 220/132 kV Single Phase Auto Transformer	nos	7			
3.2	132/33 kV Three phase transformer	nos	1			
F	POWER & CONTROL CABLES					
1	1.1 kV LV Cables					
1.1	Power Cables(PVC)- (1.1kV grade)	LS	1			
1.2	Control Cable (PVC)- (1.1kV grade)	LS	1			
1.3	Cable glands, lugs & straight through joints for Power & Control cables	LS	1			
G	Visual Monitoring System for watch & ward as per technical specification	LS	1			

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	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
H	Earthing and lightning protection including necesaary connectors/connections, risers etc. complete in all respect(but excluding LM structures for Lightning protection)					
1.0	Earth Conductor (copper)	LS	1			
2.0	Earth Rod (copper clad steel)	LS	1			
3.0	Equipment for lightning protection	LS	1			
I	SUBSTATION AUTOMATION					
1	Integration of all 220/132kV/33/11 Bays under present scope with the SCADA of SIEMENS (SINAUT Spectrum) at Load Dispatch Centre, Kathmandu including supply of Hardware, Software, accessories etc. as per TS Section Project.	LS	1			
	SUB TOTAL PART-B					
	PART-C: MANDATORY SPARES (Break up of Lumpsum quantity shall be as per Annexure-I, Section Project of Technical Specification).					
I.	Transformer(220/132 kV)					
1.1	Oil cooler pump with motor	Set	1			
1.2	Cooler Fan with motor	No.	1			

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				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
1.3	Local & Remote WTI with sensing device & contact (each type)	Set	1			
1.4	Buchholz relay complete with contacts (Main tank)	Set	1			
1.5	Magnetic oil level gauge	No.	1			
1.6	Starters, contactors, switches & relays for electrical control panels (one set of each type)	Set	1			
1.7	Remote tap position Indicator	No.	1			
1.8	Oil Flow indicator with flow switch	Set	1			
1.9	245kV Bushing with metal parts and gaskets and lifting tools	Nos.	1			
1.10	145 kV Bushing with metal parts and gaskets and lifting tools	Nos.	1			
1.11	36kV Bushing with metal parts and gaskets and lifting tools	Nos.	1			
1.12	Spare insulating oil to be handed over to after commissioning for O&M requirement	KL	10			
2	<u>Transformer(132/33 kV)</u>					
2.1	Cooler Fan with motor	No.	1			
2.2	Local & Remote WTI with sensing device & contact (each type)	Set	1			

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				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
2.3	Buchholz relay complete with contacts (Main tank)	Set	1			
2.4	Magnetic oil level gauge	No.	1			
2.5	Starters, contactors, switches & relays for electrical control panels (one set of each type)	Set	1			
2.6	Remote tap position Indicator	No.	1			
2.7	Oil Flow indicator with flow switch	Set	1			
2.8	145kV Bushing with metal parts and gaskets and lifting tools	Nos.	1			
2.9	12 kV Bushing with metal parts and gaskets and lifting tools	Nos.	1			
2.10	Spare insulating oil to be handed over to Employer after commissioning for O&M requirement	KL	10			
3	GIS(220 KV & 132 KV)					
3.1	General					
3.1.1	SF6 gas Pressure Relief Devices, 1Nos. of each type	Set	1			
3.1.2	SF6 Pressure gauge cum switch OR Density monitors and pressure switch as applicable (1 no. of each type)	Set	1			

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				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
3.1.3	Coupling device for pressure gauge cum switch for connecting Gas handling plant	Set	1			
3.1.4	Rubber Gaskets, “O” Rings and Seals for SF6 gas of each type	Set	1			
3.1.5	Molecular filter for SF6 gas with filter bags(20% of total weight)	Set	1			
3.1.6	All types of Control Valves for SF6 gas of each type	Set	1			
3.1.7	SF6 gas (20 % of total gas quantity)	Set	1			
3.1.8	All types of coupling for SF6 gas (1 no. of each type)	Set	1			
3.1.9	Pipe length (Copper or Steel as applicable) for SF6 Circuit of each type	Set	1			
3.1.10	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					
3.1.10.1	For 3 Phase Enclosure if applicable	No.	1			
3.1.10.2	For Single phase enclosure if applicable	No.	1			
3.1.11	Locking device to keep the Dis-connectors (Isolators) and Earthing switches in close or open position in case of removal of the driving Mechanism	Set	1			
3.1.12	Bus Support insulator of each type for 3 phase/single phase enclosure.	No.	1			

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				FC		
		Unit	Quantity	Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
3.1.13	SF6 to air bushing (220kV & 132kV - 1 No. of each type & rating) as applicable	Set	1			
3.2	<i>245KV SF6 CIRCUIT BREAKER:</i>					
3.2.1	Complete Circuit Breaker pole of each type & rating complete with interrupter, main circuit enclosure and Marshalling Box with operating mechanism	No.	1			
3.2.2	Rubber gaskets, `O' rings and seals for SF6 gas (1 No. of each type)	Set	1			
3.2.3	Trip coil assembly with resistor as applicable	Set	1			
3.2.4	Closing coil assembly with resistor as applicable.	Set	1			
3.2.5	Relays, Power contactors, push buttons, timers & MCBs etc (1 No. of each type & rating)	Set	1			
3.2.6	Closing coil assembly (including valve, if applicable)	Set	1			
3.2.7	Trip coil assembly (including valve, if applicable)	Set	1			
3.2.8	Auxiliary switch assembly of each type	Set	1			
3.3	<i>145KV SF6 CIRCUIT BREAKER:</i>					

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(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
3.3.1	Complete Circuit Breaker pole of each type & rating complete with interrupter, main circuit enclosure and Marshalling Box with operating mechanism	No.	1			
3.3.2	Rubber gaskets, `O' rings and seals for SF6 gas (1 No. of each type)	Set	1			
3.3.3	Trip coil assembly with resistor as applicable	Set	1			
3.3.4	Closing coil assembly with resistor as applicable .	Set	1			
3.3.5	Relays, Power contactors, push buttons, timers & MCBs etc (1 No. of each type & rating)	Set	1			
3.3.6	Closing coil assembly (including valve, if applicable)	Set	1			
3.3.7	Trip coil assembly (including valve, if applicable)	Set	1			
3.3.8	Auxiliary switch assembly of each type	Set	1			
3.4	<u>245KV ISOLATORS :</u>					
3.4.1	Complete set of 3-phase dis-connector including main circuit, enclosure, driving mechanism	Set	1			
3.4.2	3-phase Earthing switch including main circuit, enclosure, driving mechanism.	Set	1			

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	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
3.4.3	Copper contact fingers for dis-connector male & female contact for one complete (3 phase) dis-connector of each type and rating	Set	1			
3.4.4	Copper contact fingers for earthing switch male & female contacts, for one complete (3 phase) earthing switch of each type and rating	Set	1			
3.4.5	Open / Close contactor assembly, timers, key interlock for one complete (3 phase) dis-connector and (3 phase) earthing switch of each rating (1 No. of each type and rating)	Set	1			
3.4.6	Push button switch - (1 No. of each type & rating) as applicable	Set	1			
3.4.7	Limit switch and Aux. Switches for complete 3 phase equipment					
3.4.7.1	For isolator	Set	1			
3.4.7.2	For earth switch	Set	1			
3.5	<u>145KV ISOLATORS :</u>					
3.5.1	Complete set of 3-phase dis-connector including main circuit, enclosure, driving mechanism	Set	1			
3.5.2	3-phase Earthing switch including main circuit, enclosure, driving mechanism.	Set	1			

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(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
3.5.3	Copper contact fingers for dis-connector male & female contact for one complete (3 phase) dis-connector of each type and rating	Set	1			
3.5.4	Copper contact fingers for earthing switch male & female contacts, for one complete (3 phase) earthing switch of each type and rating	Set	1			
3.5.5	Open / Close contactor assembly, timers, key interlock for one complete (3 phase) dis-connector and (3 phase) earthing switch of each rating (1 No. of each type and rating)	Set	1			
3.5.6	Push button switch - (1 No. of each type & rating) as applicable	Set	1			
3.5.7	Limit switch and Aux. Switches for complete 3 phase equipment					
3.5.7.1	For isolator	Set	1			
3.5.7.2	For earth switch	Set	1			
3.6	245KV CURRENT TRANSFORMER					
3.6.4	Gas insulated complete CT of each type and rating with enclosure.	No.	1			
3.6.2	Secondary bushing of each type	Set	1			
3.7	145KV CURRENT TRANSFORMER					

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	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
3.7.1	Gas insulated complete CT of each type and rating with enclosure.	No.	1			
3.7.2	Secondary bushing of each type	Set	1			
4	245kV Voltage Transformer					
4.1	Gas insulated complete PT of each type and rating with enclosure.	No.	1			
5	145 kV Voltage Transformer					
5.1	Gas insulated complete PT of each type and rating with enclosure.	No.	1			
6	AIS Capacitive Voltage Transformer					
6.1	220kV,4400pF CVT (excluding support structure/ common JB)	No.	1			
6.2	132kV, 8800pF CVT (excluding support structure/ common JB)	No.	1			
7	AIS Surge Arrestors					
7.1	216kV Surge Arrestor with insulating base, terminal connector , Surge counter & accessories (excluding support structure)	Set	1			

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	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
7.2	120kV Surge Arrestor with insulating base, terminal connector , Surge counter & accessories (excluding support structure)	Set	1			
8.A	72.5 kV Equipments					
8.A1	72.5 kV Circuit Breaker					
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			

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	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
viii)	Pressure switches / Density monitor (1 no. of each type)	Set	1			
ix)	Auxiliary switch assembly (for one pole of CB)	Set	1			
8.A2	72.5 kV 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			
8.A3	72.5 kV, 1250 A, 31.5 kA with 120% extended rating CT	No.	1			

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	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
8.A4	72.5 kV PT (1-phase)	No.	1			
8.B	DG Set					
i)	Self starter assembly	No.	1			
ii)	AVR (Auto Voltage Regulator)/ AVR card	Set	1			
9	Battery Charger					
9.1	220V Battery Chargers					
9.1.1	Set of Control Cards	Set	1			
9.1.2	Set of relays	Set	1			
9.1.3	Rectifier transformer	No.	1			
9.1.4	Thyristor/ Diode	Set	1			
9.1.5	Fuses of Thyristor with indicators	Set	6			
9.2	48V Battery Chargers					
9.2.1	Set of Control Cards	Set	1			
9.2.2	Set of relays	Set	1			

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PMD/EGMP/BNRTLSS-077/78-01:Design, Supply, Installation, Testing and Commissioning of Borang - Naubise (Ratmate) 220 kV Transmission Line and Associated

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

Item No.	Item description	Estimated		CIP Project Site including insurance, clearing, forwarding and transportation to site (Excluding Taxes and Duties applicable in Nepal)		Remarks
		Unit	Quantity	FC		
				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
9.2.3	Rectifier transformer	No.	1			
9.2.4	Thyristor/ Diode	Set	1			
9.2.5	Fuses of Thyristor with indicators	Set	6			
10	Relay & Protection					
10.1	Line Protection Panel					
10.1.1	Numerical distance relay (1 no. of each type)	Set	1			
10.2	Transformer Protection Panel					
10.2.1	Transformer differential protection	No.	1			
10.2.2	Restricted earth fault protection relay with non-linear resistor	No.	1			
10.2.3	Directional over current & E/F Protection Relay	no	1			
10.3	COMMON SPARES					
103.1	Power supply module for Bus Bar protection.	No.	1			
10.3.2	Bay unit module	Set	1			
10.4	Breaker protection Relay					
10.4.1	Breaker failure relay	No.	1			
10.4.2	Trip circuit supervision relay	Nos.	2			

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

Item No.	Item description	Estimated		CIP Project Site including insurance, clearing, forwarding and transportation to site (Excluding Taxes and Duties applicable in Nepal)		Remarks
		Unit	Quantity	FC		
				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
10.4.3	Self reset trip relay (relay of each type)	Set	1			
10.4.4	Hand reset trip relay(relay of each type)	Set	1			
10.4.5	Timer relay(relay of each type)	Set	1			
10.4.6	DC supervision relay(relay of each type)	Set	1			
10.4.7	Flag relays(relay of each type)	Set	1			
10.4.8	Auxiliary relays(relay of each type)	Set	1			
11	Digital protection Coupler	LS	1			
12	Sub-Station Automation System					
12.1	Bay control unit (IED) of each type	Set	1			
12.2	Ethernet switch of each type	Set	1			
13	LT Transformer					
13.1	Bushings (Each type)	Set	1			
13.2	Diaphragm for pressure relief vent	No.	1			
13.3	Silica gel container	No.	1			

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

Item No.	Item description	Estimated		CIP Project Site including insurance, clearing, forwarding and transportation to site (Excluding Taxes and Duties applicable in Nepal)		Remarks
		Unit	Quantity	FC		
				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
13.4	Set of Valves (Each Type)	Set	1			
13.5	Buchholz relay (if applicable)	No.	1			
14	Illumination System					
14.1	5% of each type of lighting fixture supplied	LS	1			
15	Erection Hardware					
15.1	5% spares of the actual quantities for Insulator strings & hardwares, clamps & connectors (including equipment connectors), spacers, corona bell and welding sleeves,	LS	1			
16	Telecommunication Equipments					
16.1	Transmission Equipment					
16.1.1	SDH Equipment (STM-4 MADM upgradable to STM - 16 upto 4 MSP protected directions)					
16.1.1.1	Common cards, Power supply cards, power cabling, other hardware & accessories (each)	Set	1			

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

Item No.	Item description	Estimated		CIP Project Site including insurance, clearing, forwarding and transportation to site (Excluding Taxes and Duties applicable in Nepal)		Remarks
		Unit	Quantity	FC		
				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
16.2	Optical Interface/SFP for					
16.2.2	L4.1 SFP	No	1			
16.3	Tributary Cards					
16.3.1	E1 Interface card (Min.8 interfaces per card)	No.	1			
16.3.2	Giga -Ethernet Interface 10/100/1000 Mbps Base T with Layer-2 switching (Min 4 Interfaces per card)	No.	1			
17	LT Indoor Switchgear					
17.1	11 kV Vaccum Interrupter	Nos.	2			
17.2	Tripping Coils	Nos.	4			
17.3	Closing Coils	Nos.	4			
17.4	Spring Charging Motor	Set	2			
17.5	3 Phase Overcurrent Relay with ground fault for 11kV Side	Sets	1			
17.6	Ammeter	Nos.	1			
17.7	Voltmeter	Nos.	1			
17.8	kVA Meter	Nos.	1			
17.9	11 kV CTs as in Outgoing Feeder	Sets	1			
17.10	Operating Handle	Sets	1			

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

Item No.	Item description	Estimated		CIP Project Site including insurance, clearing, forwarding and transportation to site (Excluding Taxes and Duties applicable in Nepal)		Remarks
		Unit	Quantity	FC		
				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	PART I-C LAPANG 220/132/33/11 kV GIS Substation					
17.11	Indicating Lamps (100% of used)	Set	1			
18	MV Indoor Swtichgear					
	(33) kV Switchgear					
18.1	33kV Vacuum Interrupter for Incomer and Outgoing	No.	3			
18.2	Tripping Coils	No.	3			
18.3	Closing Coils	Set	3			
18.4	Spring Charging Motor	Set	1			
18.5	Protection Relays					
18.5.1	3 phase Overcurrent Relay, for 33kV side one of each type	Nos.	1			
18.5.2	Ground Fault Relay, for33kV side, oe of each type	Nos.	1			
18.6	Ammeter, Nos one of each rating	Nos.	1			
18.7	Voltmeter, Nos	Nos.	1			
18.8	kVA Meter, each	Nos.	1			
18.9	CTs of each type	set	1			
18.10	Operating Handle	No.	1			
18.11	Indicating lamps and fuses (100% of used), Lot	LS	1			
19	Fire Fighting					

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

Item No.	Item description	Estimated		CIP Project Site including insurance, clearing, forwarding and transportation to site (Excluding Taxes and Duties applicable in Nepal)		Remarks
		Unit	Quantity	FC		
				Unit Rate	Amount	
(1)	(2)	(3)	(4)	(5)	(6) = (4) x (5)	
	<u>PART I-C LAPANG 220/132/33/11 kV GIS Substation</u>					
19.1	Recommended Spares	Set	1			
	SUB-TOTAL-C					
	<u>Total of Part I-C Lapang 220/132/33 kV GIS Substation</u> <u>[(Part-A+ Part-B+ Part C)]</u>					
	<u>Total of Schedule 1 = Part(I-A + I-B + I-C)</u>					

Note : 1) Bidder is required to quote prices in this Schedule for all the individual items/sub-items.

2.) The Prices of equipments are inclusive of type test charges

3.) BOQ given above is indicative only based on the scope of work as given in Employer's Requirements. The quantities mentioned above may undergo change during detailed engineering to meet the functional requirement and scope of work defined in Employer's Requirements.

Specify currency in accordance with BDS ITB Clause 32.1, Part-I of the Bidding Documents.

* Strike-out whichever is not applicable.

Name of Bidder:

Signature of Bidder:

(Printed Name)

(Designation)

(Common Seal)



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

LC: Local Currency (NRs)

[illegible]

Note : 1) Bidder is required to quote prices in this Schedule for all the items in Schedule 1 which they wish to supply from within Nepal.

2.) The Prices of equipments are inclusive of type test charges

Specify currency in accordance with BDS ITB Clause 32.1, Part-I of the Bidding Documents.

* Strike-out whichever is not applicable.

^a Specify currency in accordance with ITB 19.1 of the BDS.

^b Column 5 Price shall include all customs duties and sales and other taxes already paid or payable on the components and raw materials used in the manufacture or assembly of the item or the customs duties and sales and other taxes already paid on previously imported items.

(Common Seal)

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Schedule 3: Design Services and Prototype Testing

Item No.	Item Description	Estimated		Rate	Total Amount	Remarks
		Unit	Quantity		FC (USD)	
1	2	3	4	5	6=4x5	
A	Design, Proto Assembly and Testing of Towers with +9.0 m Body Extension at various Design Loads & then upto destruction as per specifications including the cost of materials after allowing rebate for scrap value of steel of destroyed tower					
1	220 kV Towers					
1.1	DA+9.0 m Extension	Nos.	1			
	<u>Total of Schedule 3</u>					

NOTE: The design cost is included in schedule 1.

Name of Bidder:

Signature of Bidder:

(Printed Name)

(Designation)

(Common Seal)



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Schedule 4: Installation Services

(a) Installation Charges and Civil Works

S No.	Description					Remarks
		Estimated Unit	Estimated Qty	Construction & Installation Unit Rate (Excluding Taxes) in L/C (NPR)	Total Amount (NPR)	
1	2	3	4	5	6=4x5	
<u>Part IV-A: Borang - Naubise (Ratmate) 220 kV Transmission Line</u>						
1	Survey					
a	Check survey, tower spotting stacking of tower locations	KM	48.00			
b	Numbering and Marking of Trees along RoW	lot	1			
c	Preparation of Land Parcel Data from tower spotting for land acquisition	lot	1			
	Total of 1					
2	Soil investigation					
a	Soil test by SPT and auger boring up to 6 M depth including laboratory tests	Loc	55			
b	Soil test by SPT and auger boring up to 12 - 20 M depth including laboratory tests	Loc	60			
	Total of 2					
3	Measurements of soil resistivity/ground resistance	Loc	142			
	Total of 3					
4	Erection of towers with its body and leg extensions (complete) including bolt & nuts, tack welding and supply and application of enamel & zinc rich paint					

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Schedule 4: Installation Services

(a) Installation Charges and Civil Works

S No.	Description					Remarks
		Estimated Unit	Estimated Qty	Construction & Installation Unit Rate (Excluding Taxes) in L/C (NPR)	Total Amount (NPR)	
1	2	3	4	5	6=4x5	
<u>Part IV-A: Borang - Naubise (Ratmate) 220 kV Transmission Line</u>						
	<u>132 kV Towers, Tower parts and Tower/leg extensions for Borang - Lapang Biharthok Section</u>					
4.1	Erection of towers & tower extension parts complete with step bolts, hangers, D-shackles, bolts & nuts etc, tack welding and supply and application of enamel & zinc rich paint but excluding tower accessories such as danger plates, number plates, phase plates, anti-climbing devices (for DA, DB, DC & DD towers)	MT	547.89			
	<u>220 kV Towers, Tower parts and Tower/leg extensions for Lapang Biharthok - Ratmate Section</u>					
4.2	Erection of towers & tower extension parts complete with step bolts, hangers, D-shackles, bolts & nuts etc, tack welding and supply and application of enamel & zinc rich paint but excluding tower accessories such as danger plates, number plates, phase plates, anti-climbing devices (for DA, DB, DC & DD towers)	MT	1,974.14			
	Total of 4					

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Schedule 4: Installation Services

(a) Installation Charges and Civil Works

S No.	Description					Remarks
		Estimated Unit	Estimated Qty	Construction & Installation Unit Rate (Excluding Taxes) in L/C (NPR)	Total Amount (NPR)	
1	2	3	4	5	6=4x5	
<u>Part IV-A: Borang - Naubise (Ratmate) 220 kV Transmission Line</u>						
5	Work associated with construction of tower foundations including stub setting					
	<u>132 kV Towers, Tower parts and Tower/leg extensions for Borang - Lapang Section</u>					
5.1	Excavation in various types of soil					
5.1.1	Dry Soil	Cu.m	11,900.00			
5.1.2	Wet Soil	Cu.m	3,570.00			
5.1.3	Fissured Rock	Cu.m	8,330.00			
5.2	Concreting (including all associated works related to foundation not covered under 5.1, 5.3 and 5.4)					
5.2.1	M20 Concrete Nominal mix 1:1.5:3	Cu.m	5,134.00			
5.2.2	M10 Concrete Nominal mix 1:3:6	Cu.m	510.00			
5.3	Supply and placement of Reinforcement Steel	MT	374.3			

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Schedule 4: Installation Services

(a) Installation Charges and Civil Works

S No.	Description					Remarks
		Estimated Unit	Estimated Qty	Construction & Installation Unit Rate (Excluding Taxes) in L/C (NPR)	Total Amount (NPR)	
1	2	3	4	5	6=4x5	
<u>Part IV-A: Borang - Naubise (Ratmate) 220 kV Transmission Line</u>						
5.4	Transportation and installation of stubs including bolts and nuts	MT	22.73			
	<u>220 kV Towers, Tower parts and Tower/leg extensions for Borang - Lapang Biharthok Section</u>					
5.5	Excavation in various types of soil					
5.5.1	Dry Soil	Cu.m	21,312.00			
5.5.2	Wet Soil	Cu.m	6,393.60			
5.5.3	Fissured Rock	Cu.m	14,918.40			
5.6	Concreting (including all associated works related to foundation not covered under 5.5, 5.7 and 5.8)					
5.6.1	M20 Concrete Nominal mix 1:1.5:3	Cu.m	7,056.64			
5.6.2	M10 Concrete Nominal mix 1:3:6	Cu.m	799.20			
5.7	Supply and placement of Reinforcement Steel	MT	625.42			

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Schedule 4: Installation Services

(a) Installation Charges and Civil Works

S No.	Description					Remarks
		Estimated Unit	Estimated Qty	Construction & Installation Unit Rate (Excluding Taxes) in L/C (NPR)	Total Amount (NPR)	
1	2	3	4	5	6=4x5	
<u>Part IV-A: Borang - Naubise (Ratmate) 220 kV Transmission Line</u>						
5.8	Transportation and installation of stubs including bolts and nuts	MT	93.27			
	TOTAL OF 5					
6	Installation of tower accessories and earthing					
6.1	Tower accessories					
a	Danger plate	No	142			
b	Number plate	No	142			
c	Anti climbing device	Sets	142			
d	Phase plate (sets of 6)	Sets	142			
e	Circuit plate (sets of 2)	Sets	142			
f	Aviation Signal	Sets	10			
g	Bird Guard	Sets	15			
6.2	Installation of tower earthing materials					

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Schedule 4: Installation Services

(a) Installation Charges and Civil Works

S No.	Description					Remarks
		Estimated Unit	Estimated Qty	Construction & Installation Unit Rate (Excluding Taxes) in L/C (NPR)	Total Amount (NPR)	
1	2	3	4	5	6=4x5	
<u>Part IV-A: Borang - Naubise (Ratmate) 220 kV Transmission Line</u>						
a	Tower grounding materials	Sets	25			
b	Counterpoise type		-			
i	Counterpoise type - 25M	Sets	76			
ii	Counterpoise type - 50M	Sets	32			
iii	Counterpoise type - 100M	Sets	9			
	Total of 6					
7	Installation of line materials					
7.1	Stringing of conductor and ground wire					
a	ACSR BEAR conductor including armour rod, mid span joints, repair sleeves, etc (single wire)	KM	150			
b	ACSR MOOSE conductor including armour rod, mid span joints, repair sleeves, etc (single wire)	KM	300			
c	7/3.35 mm Earthwire including clamp,mid span joints, repair sleeves, flexible copper bond, etc	KM	27			

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Schedule 4: Installation Services

(a) Installation Charges and Civil Works

S No.	Description					Remarks
		Estimated Unit	Estimated Qty	Construction & Installation Unit Rate (Excluding Taxes) in L/C (NPR)	Total Amount (NPR)	
1	2	3	4	5	6=4x5	
<u>Part IV-A: Borang - Naubise (Ratmate) 220 kV Transmission Line</u>						
d	Steel ground wire with optical fibre (24 fiber) including intermediate splice boxes and necessary terminal splice boxes etc.	KM	51			
e	Optical fibre termination equipment at dead end tower of both end substation	sets	4			
	Total of 7					
8	Protection of tower footing					
a	Random rubble stone masonry including excavation, stone soling and PCC (1:4 cement : concrete)	Cum	6,000			
b	Stone bound in galvanizing wire netting including excavation	Cum	9,000			
c	Back filling and leveling of volumes enclosed by revetment	Cum	1,500			
c	M15 concrete nominal mix 1:2:4 for top seal cover	Cum	1,500			
d	Slope cutting and revetment works	Cum	1,500			
	Total of 8					
9	Benching Work including associated work complete					

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Schedule 4: Installation Services

(a) Installation Charges and Civil Works

S No.	Description					Remarks
		Estimated Unit	Estimated Qty	Construction & Installation Unit Rate (Excluding Taxes) in L/C (NPR)	Total Amount (NPR)	
1	2	3	4	5	6=4x5	
<u>Part IV-A: Borang - Naubise (Ratmate) 220 kV Transmission Line</u>						
a	All kind of soil except fissured rock & hard rock	Cum	12,000			
b	Fissured Rock	Cum	6,000			
c	Hard Rock	Cum	3,000			
	Total of 9					
	<u>TOTAL of Part IV-A: Borang Naubise (Ratmate) 220 kV Transmission Line</u>					

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Schedule 4: Installation Services

(a) Installation Charges and Civil Works

Item No.	Description	Estimated		Construction & Installation (Excluding Taxes) L/C (NPR)		REMARKS
		Unit	Quantity	Unit Rate	Amount	
1	2	3	4	5	6=4x5	
Part IV-B: BORANG 132/33/11 kV AIS Substation						
1	ELECTRICAL WORKS					
1.1	Power Transformer					
1.1.1	132/33 kV, Three Phase 24/30 MVA, ONAN/ONAF Power Transformer complete with On load Tap Changer (OLTC) and RTCC facility with Tank Mounted LA at LV side and Bushing CT on both sides, complete with all accessories as specified	Set	1			
1.1.2	33/11 kV, Three phase 6/8 MVA, ONAN/ONAF Power Transformer complete with On load Tap Changer (OLTC) and RTCC facility with Tank Mounted LA at LV side and Bushing CT on both sides, delta/star connected complete with all accessories as specified	Set	1			
1.2	Circuit breakers/Switchgears					
1.2.1	145 kV, 1250 A, 3 phase, SF6 Circuit Breaker, (individual pole operation type), complete with all accessories as per specification for incoming lines	Sets	3			
1.2.2	145 kV, 1250 A, 3 phase, SF6 Circuit Breaker, (three pole operation type), complete with all accessories as per specification for Transformer HT.	Sets	1			
1.2.3	145 kV, 2000 A, 3 phase, SF6 Circuit Breaker, three pole operation type, complete with all accessories as per specification for Bus Coupler	Set	1			

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Schedule 4: Installation Services

(a) Installation Charges and Civil Works

Item No.	Description	Estimated		Construction & Installation (Excluding Taxes) L/C (NPR)		REMARKS
		Unit	Quantity	Unit Rate	Amount	
1	2	3	4	5	6=4x5	
Part IV-B: BORANG 132/33/11 kV AIS Substation						
1.2.4	36 kV, 1250 A, 3 phase, Vacuum Circuit Breaker for incomer, three pole operation type, complete with all accessories as per specification	Set	1			
1.2.5	36 kV, 800 A, 3 phase, Vacuum Circuit Breaker for outgoing feeders, three pole operation type, complete with all accessories as per specification	Sets	4			
1.3	Disconnecting Switches					
1.3.1	145 kV, 1250 A, 3 phase Center Break Disconnecting Switch with Grounding Switch complete with all accessories as per specification	Sets	3			
1.3.2	145 kV, 2000 A, 3 phase, Center Break Disconnecting Switch without Grounding Switch complete with all accessories as per specification	Sets	2			
1.3.3	145 kV, 1250 A, 3 phase Center Break Disconnecting Switch without Grounding Switch complete with all accessories as per specification	Sets	14			
1.3.4	36 kV, 1250 A, 3 phase Disconnecting Switch without Grounding Switch complete with all accessories as per specification	Sets	1			
1.3.5	36 kV, 800 A, 3 phase Disconnecting Switch without Grounding Switch complete with all accessories as per specification	Sets	4			
1.3.6	36 kV, 800 A, 3 phase Disconnecting Switch with Grounding Switch complete with all accessories as per specification	Sets	3			

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Schedule 4: Installation Services

(a) Installation Charges and Civil Works

Item No.	Description	Estimated		Construction & Installation (Excluding Taxes) L/C (NPR)		REMARKS
		Unit	Quantity	Unit Rate	Amount	
1	2	3	4	5	6=4x5	
Part IV-B: BORANG 132/33/11 kV AIS Substation						
1.3.7	36 kV, 400 A, 3 phase Disconnecting Switch without Grounding Switch complete with all accessories as per specification	Set	1			
1.4	Instrument Transformers					
1.4.1	145 kV, 50 VA, 132/V3 /110/V3 kV, Class 0.2/3P Capacitor Voltage Transformer complete with all accessories as per specification	Nos.	15			
1.4.2	145 kV, 30 VA, 5 core Current Transformer complete with all accessories as per specification	Nos.	12			
1.4.3	145 kV, 30 VA, 4 core Current Transformer complete with all accessories as per specification	Nos.	3			
1.4.4	36 kV, 30 VA, 33/V3/110/V3 kV Voltage Transformer complete with all accessories as per specification	Nos.	6			
1.4.5	36 kV, 30 VA, 2 core Current Transformer complete with all accessories as per specification	Nos.	15			
1.5	Lightening Arrestor					
1.5.1	120 kV, 10 kA Lightening Arrestor including Discharge Counter complete with all accessories as per specification	Nos.	12			
1.5.2	30 kV, 10 kA Lightening Arrestor complete with all accessories as per specification	Nos.	18			
1.5.3	9 kV, 10 kA Lightening Arrestor complete with all accessories as per specification	Nos.	12			
1.6	Control and relay panel					

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(a) Installation Charges and Civil Works

		Estimated		Construction & Installation (Excluding Taxes)		REMARKS
				L/C (NPR)		
Item No.	Description	Unit	Quantity	Unit Rate	Amount	
1	2	3	4	5	6=4x5	
Part IV-B: BORANG 132/33/11 kV AIS Substation						
1.6.1	132 kV Transmission Line Control and Relay Panel complete with all accessories as per specification	Sets	3			
1.6.2	132/33 kV Transformer Control and Relay Panel complete with all accessories as per specification	Set	1			
1.6.3	132 kV Bus Coupler Panel with Bus bar Protection Facilities	set	1			
1.6.4	33/11 kV Transformer Control and Relay Panel complete with all accessories as per specification	Set	1			
1.6.5	33 kV Protection Control and Relay Panel complete with all accessories as per specification for Line Bays	Set	4			
1.7	Grounding					
1.7.1	Galvanized E.H.S. Steel wires of size 7/3.35 for Lightning Shield Wire in take off and internal structures, with accessories to complete the specified scope of works	lot	1			
1.7.2	Earthing of substation with conductors, electrode grounding materials and accessories to complete the specified scope of works	Lot	1			
1.8	11 KV VCB Switchgear Panel with all accessories as per specified					
1.8.1	12 kV, 1250 A, 3 phase, VCB Switchgears for Incomer complete with control, protection, metering and all accessories as per specification	Set	1			
1.8.2	12 kV, 800 A, 3 phase, VCB Switchgears for Outgoing Feeders complete with control, protection, metering and all accessories as per specification	Sets	3			
1.9	Control and Power Cables					

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(a) Installation Charges and Civil Works

		Estimated		Construction & Installation (Excluding Taxes)		REMARKS
				L/C (NPR)		
Item No.	Description	Unit	Quantity	Unit Rate	Amount	
1	2	3	4	5	6=4x5	
Part IV-B: BORANG 132/33/11 kV AIS Substation						
1.9.1	600 V power and lighting cable for all works to complete the specified scope of work	Lot	1			
1.9.2	600 V control cable to complete the specified scope of works	Lot	1			
1.9.3	36 kV, 630 sq. mm 3 x single core XLPE Copper Power Cable including Termination and Accessories complete from LV sides of 132/33 kV Power Transformers to proposed 33 kV Switchyard Bays as per Drawings	m	200			
1.9.4	12 kV, 400 sq. mm 3 x single core XLPE Copper Power Cable including Straight Joints with Accessories complete from LV sides of 33/11 kV Power Transformers to indoor 11 kV Switchgear Room as per Drawings	m	150			
1.9.5	12 kV, 185 sq.mm 3 core XLPE Aluminium Power Cable including Straight Joints with Accessories complete for 3 nos. of Outgoing Distribution Feeders as specified.	m	450			
1.10	Miscellaneous material					
1.10.1	145 kV Insulator Strings with necessary hardwares, Clamps for Substation Works and connection between Line Tower, Take Off Gantry and Internal Gantry structure, complete as per the specified scope of works	Lot	1			
1.10.2	36 kV Insulator Strings with necessary hardware, Clamps for Substation Works and connection between Line Tower, Take Off Gantry and Internal Strucutre, complete as per the specified scope of works	Lot	1			

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Item No.	Description	Estimated		Construction & Installation (Excluding Taxes) L/C (NPR)		REMARKS
		Unit	Quantity	Unit Rate	Amount	
1	2	3	4	5	6=4x5	
Part IV-B: BORANG 132/33/11 kV AIS Substation						
1.10.3	ACSR "BEAR" Conductors and Accessories to complete the specified scope of works including for Line Tower to Take Off and Internal Structure (including stringing of conductor between tower to gantry for 132kV & 33 kV .)	Lot	1			
1.10.4	132 kV Tubular Bus (Outer Dia 100 mm and thickness 10 mm) and Bus Support Insulators including all other Accessories required to complete the specified scope of work	Lot	1			
1.10.5	145 kV Support Insulators including all other Accessories required to complete the specified scope of work	Lot	1			
1.10.6	33 kV Tubular Bus (Dia 75 mm, thickness 8 mm) and Bus Support Insulator including all other accessories required to complete the specified scope of work	Lot	1			
1.10.7	33 kV Power Fuse with Support Insulator including all other accessories required to complete the specified scope of work	Lot	1			
1.10.8	33 kV Overhead Distribution Line with all Accessories complete from Substation to Outdoor existing lines including breakdown of existing line to separate feeder lines	Lot	1			
1.10.9	11 kV Overhead Distribution Line with all Accessories complete from Substation to Outdoor existing lines including breakdown of existing line to separate feeder lines	Lot	1			
1.10.10	Switchyard Lighting (including lighting for internal road)	Lot	1			
1.11	Station Supply					

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(a) Installation Charges and Civil Works

Item No.	Description	Estimated		Construction & Installation (Excluding Taxes) L/C (NPR)		REMARKS
		Unit	Quantity	Unit Rate	Amount	
1	2	3	4	5	6=4x5	
Part IV-B: BORANG 132/33/11 kV AIS Substation						
1.11.1	33/0.4 kV, Three phase 315 kVA, ONAN Distribution Transformer with Off load Tap Changer delta/star with Current Limiting Fuse (DO Fuse) connected complete with all accessories as specified	Set	1			
1.11.2	400V AC distribution board panel	Lot	1			
1.12	Battery / Battery Charger					
1.12.1	110 V Maintenance Free Lead Acid Battery complete with all accessories	Set	1			
1.12.2	48 V Maintenance Free Lead Acid Battery complete with all accessories	Set	1			
1.12.3	Battery Charger for 110 V battery complete with all accessories	Set	1			
1.12.4	Battery Charger for 48 V battery complete with all accessories	Set	1			
1.12.5	110 V DC Distribution Board complete with all accessories	Set	1			
1.12.6	48 V DC Distribution Board complete with all accessories	Set	1			
1.13	Fire Detection & Alarm System					
1.13.1	50 litre foam type, Portable/Trolley/Wheel mounted fire extinguishers	Nos.	2			
1.13.2	4.5 kg CO2 type, Fire Extinguisher	Nos.	10			
1.13.3	22.5 kg Dry Chemical Power (DCP) type, Trolley/Wheel mounted fire extinguishers	Nos.	3			
1.13.4	Smoke detection system in Control Room Building	set	1			
1.13.5	Fire detection and Alarm System in Control Room Building	set	1			
	Total of Electrical works of Borang S/S					
2	SUBSTATION AUTOMATION/ COMMUNICATION / SCADA (Based on IEC 61850)					

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(a) Installation Charges and Civil Works

Item No.	Description	Estimated		Construction & Installation (Excluding Taxes) L/C (NPR)		REMARKS
		Unit	Quantity	Unit Rate	Amount	
1	2	3	4	5	6=4x5	
Part IV-B: BORANG 132/33/11 kV AIS Substation						
2.1	SUBSTATION AUTOMATION					
a.	Complete Substation automation system including hardware and software for the substation & remote control stations alongwith associated equipments for the followings as per Technical Specification.					
i	132 kV System	Nos.	5			
ii	33kV system	Nos.	5			
iii	11kV HT indoor switchgear	Lot	1			
iii	BCU for auxiliary system	Set	1			
b.	Integration of all 132/33/11kV Bays under present scope with the SCADA of SIEMENS (SINAUT Spectrum) at Load Dispatch Centre, Kathmandu including supply of Hardware, Software, accessories etc. as per TS Section Project.	Lot	1			
2.1.2	COMMUNICATION / SCADA					
i	Digital Protection Coupler	Nos.	2			
ii	IP-PBAX with per TS	Lot	1			
iii	Optical Distribution Frame complete in all respects as per technical specifications	Lot	1			
iv	Optical Approach Cable -24 pair Fibre (DWSM -G.652D) along with Installation hardware set for above 24 Fibre, Fibre Optic Approach Cable complete in all respects as per technical specifications	Lot	1			
	Total of Communication of Borang S/S					

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(a) Installation Charges and Civil Works

Item No.	Description	Estimated		Construction & Installation (Excluding Taxes) L/C (NPR)		REMARKS
		Unit	Quantity	Unit Rate	Amount	
1	2	3	4	5	6=4x5	
Part IV-B: BORANG 132/33/11 kV AIS Substation						
3	CIVIL AND ARCHITECTURAL WORKS					
3.1	Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories					
3.1.1	Rail Structure for 132/33 kV Power Transformer including access from Internal Road	Lot	1			
3.1.2	Rail Structure for 33/11 kV Power Transformer including access from Internal Road	Lot	1			
3.1.3	132 kV Take Off Gantry structure for two line bays, one spare bay, bus coupler bay & one transformer bays including internal gantry tower & beam structures as per scope of contract	Bays	5			
3.1.4	132 kV SF6 Circuit Breaker	Sets	5			
3.1.5	132 kV Disconnecting Switch with Earth Switch	Sets	3			
3.1.6	132 kV Disconnecting Switch without Earth switch	Set	16			
3.1.7	132 kV Capacitive Voltage Transformer	Nos.	15			
3.1.8	132 kV Current Transformer	Nos.	15			
3.1.9	120 kV Lightning Arrestor	Nos.	12			
3.1.10	132 kV Bus Post Insulator/CVT	Nos.	36			
3.1.11	132 kV Support Insulator	Nos.	8			
3.1.12	33 kV Vacuum Circuit Breaker	Sets	5			
3.1.13	33 kV Disconnecting Switch with Earth Switch	Sets	3			
3.1.14	33 kV Disconnecting Switch without Earth Switch	Sets	6			
3.1.15	33 kV Current Transformer	Nos.	15			

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(a) Installation Charges and Civil Works

Item No.	Description	Estimated		Construction & Installation (Excluding Taxes) L/C (NPR)		REMARKS
		Unit	Quantity	Unit Rate	Amount	
1	2	3	4	5	6=4x5	
Part IV-B: BORANG 132/33/11 kV AIS Substation						
3.1.16	33 kV Voltage Transformer	Nos.	6			
3.1.17	30 kV Lightning Arrestor	Nos.	18			
3.1.18	33 kV Bus Support Insulator	Lot	1			
3.1.19	33 kV Power Fuse Support Insulator	Lot	1			
3.1.20	Earth mast	Lot	1			
3.1.21	Switchyard Fence as per Specifications (including Fence with Gate for 132 kV switchyard)	Rm	300			
3.1.22	Switchyard Fence as per Specifications (including Fence with Gate for 33 kV switchyard)	Rm	200			
3.1.23	Identification plate, danger notice etc	Lot	1			
	Total of Steel structure works of Borang S/S					
3.2	Concrete Foundation for Equipment and Steel Structures complete with excavation, backfilling, form works, concrete works and reinforcement bars					
3.2.1	132/33 kV, Three Phase 24/30 MVA, Power Transformer complete as specified	set	1			
3.2.2	33/11 kV, Three phase 8 MVA, Power Transformer complete	set	1			
3.2.3	33/0.4 kV, Three phase 315 kVA, ONAN Distribution Transformer with Off load Tap Changer delta/star connected complete with all accessories as specified	set	1			

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(a) Installation Charges and Civil Works

Item No.	Description	Estimated		Construction & Installation (Excluding Taxes) L/C (NPR)		REMARKS
		Unit	Quantity	Unit Rate	Amount	
1	2	3	4	5	6=4x5	
Part IV-B: BORANG 132/33/11 kV AIS Substation						
3.2.4	132 kV Take Off Gantry structure for two line bays, one spare bay, bus coupler bay & one transformer bays including internal gantry tower & beam structures as per scope of contract	Bays	5			
3.2.5	132 kV SF6 Circuit Breaker	Sets	5			
3.2.6	132 kV Disconnecting Switch with Earth Switch	Sets	3			
3.2.7	132 kV Disconnecting Switch without Earth switch	Set	16			
3.2.8	132 kV Capacitive Voltage Transformer	Nos.	15			
3.2.9	132 kV Current Transformer	Nos.	15			
3.2.10	120 kV Lightening Arrestor	Nos.	12			
3.2.11	132 kV Bus Post Insulator/CVT	Nos.	36			
3.2.12	132 kV Support Insulator	Nos.	8			
3.2.13	33 kV Vacuum Circuit Breaker	Sets	5			
3.2.14	33 kV Disconnecting Switch with Earth Switch	Sets	3			
3.2.15	33 kV Disconnecting Switch without Earth Switch	Sets	6			
3.2.16	33 kV Current Transformer	Nos.	15			
3.2.17	33 kV Voltage Transformer	Nos.	6			
3.2.18	30 kV Lightening Arrestor	Nos.	18			
3.2.19	33 kV Bus Support Insulator	Lot	1			
3.2.20	33 kV Power Fuse Support Insulator	Lot	1			
3.2.21	Switchyard Fence as per Specifications (including Fence with Gate for 132 kV switchyard)	Rm	300			

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(a) Installation Charges and Civil Works

Item No.	Description	Estimated		Construction & Installation (Excluding Taxes) L/C (NPR)		REMARKS
		Unit	Quantity	Unit Rate	Amount	
1	2	3	4	5	6=4x5	
Part IV-B: BORANG 132/33/11 kV AIS Substation						
3.2.22	Switchyard Fence as per Specifications (including Fence with Gate for 33 kV switchyard)	Rm	200			
3.2.23	Cable Trench, Duct Bank, Conduit and Handhole and Cable Tray (including crossing) as per specification	Lot	1			
3.2.24	Switchyard Drainage (running at two corners of substation) with RCC slab covering including (hume pipe or culvert crossing etc as required)as per approved drawing and specification	Lot	1			
	Total of Civil Works of Borang Substation					
3.3	Construction of Buildings (All complete)					
3.3.1	Control Building with electrification, air condictioning, sanitary, smoke detector , fire alarm system,concreting and all necessary work to complete the building as specified on TS	Sq.m	500			
3.3.2	Three Storey Staff Quarter building with electrification, sanitary and all necessary works to complete the building as specified on TS	Sq.m	780			
3.3.3	Store building with electrification, sanitary and all necessary works to complete the building as per approved drawing and TS	lot	1			
3.3.4	Guard house (security room) with electrification, sanitary and all necessary works as specified on TS	Sq.m	100			
3.3.5	Car parking shed as per approved drawing and TS (10 No of cars)	lot	1			
3.3.6	Construcion of water tank of 18000 Leter (including 1HP water pump) as per approved drawing and specification	lot	1			

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(a) Installation Charges and Civil Works

Item No.	Description	Estimated		Construction & Installation (Excluding Taxes) L/C (NPR)		REMARKS
		Unit	Quantity	Unit Rate	Amount	
1	2	3	4	5	6=4x5	
Part IV-B: BORANG 132/33/11 kV AIS Substation						
	Total of Construction of Buildings of Borang Substation					
3.4	Miscellaneous works					
3.4.1	Clearing and stripping	lot	1			
3.4.2	Soil investigation works all complete as per TS	Loc	5			
3.4.3	Soil Resistivity test	lot	1			
3.4.4	Excavation work including Site Surveying, levelling, cutting, filling,Grading with earth cutting and filling by borrow pit earth, including compaction and leveling etc all complete for all levels of 132kV and 33kV Switchyard ,Control Building,Staff Quarter, Guard House and all other locations for all kind of soil	Cu.m	65000			
3.4.5	Stone spreading including antiweed treatment in switchyard including PCC (1:5:10)all complete as per TS	Lot	1			
3.4.6	Construction of Concrete road within switch yard as per technical specification and approved drawing all complete	RM	250			
3.4.7	Construction of boundary wall including gates all complete as per TS	RM	1500			

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Item No.	Description	Estimated		Construction & Installation (Excluding Taxes) L/C (NPR)		REMARKS
		Unit	Quantity	Unit Rate	Amount	
1	2	3	4	5	6=4x5	
Part IV-B: BORANG 132/33/11 kV AIS Substation						
3.4.8	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.including excavation, PCC (1:2:4 & 1:4:8) all complete	Cu.M	2300			
3.4.9	Construction of concrete approach road up to switch yard and other buildings as per approved drawing and technical specification .	RM	600			
3.4.10	Construction of Septic Tank (2 Nos.) as per Specification and approved Drawings,	lot	1			
3.4.11	Reinforced Cement Concrete of Grade M25 (1:1.5:3) for other Miscellaneous works including form works reinforcement etc all complete	Cu.M	120			
3.4.12	PCC 1:3:6 for miscellaneous works	Cu.M	200			

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Item No.	Description	Estimated		Construction & Installation (Excluding Taxes) L/C (NPR)		REMARKS
		Unit	Quantity	Unit Rate	Amount	
1	2	3	4	5	6=4x5	
Part IV-B: BORANG 132/33/11 kV AIS Substation						
3.3.13	External water supply from borewell/single point of water supply within substation boundary to water Tank, control room Building and other buildings as applicable including all items like excavation, pipes, fittings, jointings, valves, chambers/manholes, water pumps (1HP) etc required to complete the job as per approved drawings and specification	Lot	1			
3.3.14	Slope protection work	lot	1			
3.3.15	Excavation on hard rock	Cu.m	2938.356			
	Total of miscellaneous works of Borang Substation					
	Total of Part IV-B Borang 132/33/11 kV AIS Substation					

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(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
	PART - A: OWNER ASSESSED QUANTITIES					
A1.1	POWER TRANSFORMER					
1	33.33MVA, 220/√3 / 132/√3 kV Single Phase Power Transformer (without transformer Oil)	Nos.	7			
2	Insulating oil for the above Power Transformer	Lot	7			
3.0	33kV Current transformer (NCT) for autotrasnformer	No	1			
A1.2	POWER TRANSFORMER					
1	24/30 MVA, 132 /11 kV Three Phase Power Transformer (without transformer Oil)	Nos.	1			
2	Insulating oil for the above Power Transformer	Lot	1			
A1.3	POWER TRANSFORMER					
1	33/11 kV, Three phase 6/8 MVA, ONAN/ONAF Power Transformer complete with On load Tap Changer (OLTC) and RTCC facility with Tank Mounted LA at LV side and Bushing CT on both sides, delta/star connected complete with all accessories as specified	Nos.	1			

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Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
C)	LT Transformer					
1	33/0.4 kV Three phase 630 kVA, ONAN Disribution Transformer with Off load Tap Changer delta/star with Current Limiting Fuse (DO Fuse) connected complete with all accessories as specified	Nos.	2			
D	245 KV EQUIPMENTS					
D.1	245KV GIS Equipment					
1.1	245kV, SF6 GIS Bus Bars Module [Module description as per Technical Project specification]	Sets	2			
1.2	245kV, SF6 GIS Bus Coupler bay Module [Module description as per Technical Project specification]	Sets	1			
1.3	245kV, SF6 GIS Line bay Module [Module description as per Technical Projct specification]	Sets	2			
1.4	245kV, SF6 GIS spare Line feeder bay Module as per section project	Sets	1			
1.5	2145kV, SF6 GIS ICT bay Module including switching arrangement for 1-ph spare transformer [Module description as per Technical Project specification]	Sets	2			

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(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
1.6	SF6 Gas Insulated Bus Duct (GIB) outside GIS Hall alongwith associated support structure and accessories					
1.6.1	2000A, 40 kA for 1 sec. single phase	Mtr.	125			
1.6.2	2000A, 40 kA for 1 sec. three phase	Mtr.	275			
1.7	245 kV Auxiliary Bus to connect spare unit of Transformer [Module description as per Technical specification and Section Project Specific Requirement]	Set	1			
1.8	245kV, SF6/Air Bushing for Connecting GIS to AIS alongwith support structure					
1.8.1	2000A, 40.5kA, 1sec single phase	Nos.	16			
D.2	245KV Outdoor Equipment					
1.1	216 KV Surge Arrester (1-phase)	Nos.	16			
1.2	245kV Capacitive Voltage Transfromer	Nos.	9			
1.3	245kV Bus Post Insulator	Nos.	54			
E	145kV Equipment					
E.1	145KV GIS Equipment					

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Schedule No. 4: Installation Services

(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
1.1	145kV, SF6 GIS Bus Bars Module [Module description as per Technical Project specification]	Sets	2			
1.2	145kV, SF6 GIS Bus Coupler bay Module [Module description as per Technical Project specification]	Set	1			
1.3	145kV, SF6 GIS Line bay including spare bay Module [Module description as per Technical Projet specification]	Sets	3			
1.4	145kV, SF6 GIS ICT feeder bay Module for 220/132 kV Transformer including switching arrangement for 1-ph spare transformer [Module description as per Technical Project specification]	Sets	2			
1.5	145kV, SF6 GIS ICT feeder bay Module for 132/33 kV 3-ph Transformer [Module description as per Technical Project specification]	Sets	1			
1.6	SF6 Gas Insulated Bus Duct (GIB) outside GIS hall including Bus Duct, support structure and associated accessories					
1.6.1	1250A, 31.5kA for 1sec. single phase	Mtr.	90			
1.6.2	1250A, 31.5kA for 1 sec. three phase	Mtr.	250			

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Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
1.7	245 kV Auxiliary Bus to connect spare unit of Transformer [Module description as per Technical specification and Section Project Specific Requirement]	Set	1			
1.8	145kV, SF6/Air Bushing for Connecting GIS to AIS alongwith support structure					
1.8.1	1250A, 31.5kA, 1sec single phase	Nos	19			
E.2	145kV EQUIPMENT (AIS)					
1.0	120 kV Surge Arrestors (1-Phase)	Nos.	19			
2.0	8800pF, 145 kV Capacitive Voltage Transformer (1-Phase)	Nos.	9			
3.0	145kV Bus Post Insulator	Nos.	66			
F.A1	72.5 KV EQUIPMENT					
1.1	72.5 kV, 1250A, 31.5kA Circuit Breaker (3-phase) with support structure	Nos.	1			
1.2	72.5 kV, 1250A,31.5kA Isolators with earth switch (3-phase, DBR type)	Nos.	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			

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Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
1.5	72.5 kV BPI (1-phase)	Nos.	6			
1.6	C/R Panel for Station Transformer	Nos.	1			
F	33 KV EQUIPMENT					
F.1	33kV Outdoor Equipment					
1.1	30 kV Surge Arrester (1 ph.)	Nos	18			
1.2	36 kV BPI	Nos.	9			
F.2	33kV, 25 kA (3 Phase) Indoor switch gear panel complete with control, protection, metering and all accessories as per specification					
1.0	33 kV Indoor VCB Switchgear					
1.1	33 kV, 2500 A, 3 phase, VCB Switchgears for Incomer complete with control, protection, metering and all accessories as per specification	Nos	1			
1.2	32 kV, 1250 A, 3 phase, VCB Switchgears for Outgoing Feeders complete with control, protection, metering and all accessories as per specification	Nos	3			

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(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
1.3	33 KV Station Transformer Indoor Switchgear complete with control, protection, metering and all accessories as per specification	Nos	1			
G	11 KV EQUIPMENT					
G.1	11 kV Outdoor Equipment					
1.1	9 kV Surge Arrester (1-ph)	Nos.	12			
G.2	11 kV, 25 kA (3 phase) Indoor Switchgear Panel					
1.1	12 kV, 1250 A, 3 phase, VCB Switchgears for Incomer complete with control, protection, metering and all accessories as per specification	Set	1			
1.2	12 kV, 800 A, 3 phase, VCB Switchgears for Outgoing Feeders complete with control, protection, metering and all accessories as per specification	Set	3			
H	Testing & Maintenance Equipment for GIS					
1.1	SF6 Gas processing Unit	Set	1			

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Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
1.2	Partial Discharge Monitoring System	Set	1			
1.3	EOT crane for 220kV GIS Hall	Set	1			
1.4	EOT crane for 132kV GIS Hall	Set	1			
1.5	Online monitoring Equipment of fault gases, air components and moisture in transformer insulating fluids (Dissolved gas Analyzer) of Power Transformer (Autotransformer)	Set	7			
1.6	Power Transformer (Autotransformer) Bushing online Monitoring equipment	Set	3			
I	RELAY PANELS (WITH AUTOMATION)					
1	245kV					
1.1	Line Control and Protection Panel	Nos.	3			
1.2	Transformer Control and Protection Panel (For both HV & MV side)	Nos.	2			
1.3	Bus Coupler Control and Protection Panel	Nos.	1			
1.4	Bus Bar Protection Panel	Set	1			

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(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
2	145kV					
2.1	Line Control and Protection Panel	Nos.	3			
2.2	Transformer Control and Protection Panel (For both HV & MV side)	Nos.	3			
2.3	Bus Coupler Control and Protection Panel	Nos.	1			
2.4	Bus Bar Protection Panel	Set	1			
3	Other/Common equipments Pertaining to C & R System					
3.1	Time Synchronisation Equipment	No.	1			
3.2	Relay Test kit	No.	1			
J	SUBSTATION AUTOMATION					
1	Substation Automation System as per Technical Specification:					
1.1	220kV System	Nos.	5			
1.2	132 kV System	Nos.	6			

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Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
1.3	BCU for auxiliary system	set	1			
1.4	33 kV Indoor Switchgear	Nos.	4			
1.5	11 kV Indoor Switchgear	Lot	1			
K	Digital Protection Coupler & IP-PBAX					
1	Digital Protection Coupler	Nos	6			
2	IP-PBAX with per TS	Set	1			
3	Optical Distribution Frame complete in all respects as per technical specifications	Lot	1			
4	Optical Approach Cable -24 pair Fibre (DWSM -G.652D) along with Installation hardware set for above 24 Fibre, Fibre Optic Approach Cable complete in all respects as per technical specifications	Lot	1			
L	LT Switchgear (As per Technical specification)					
1	400V Main switchboard	Set	1			
2	400V ACDB	Set	1			

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Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
3	400V MLDB	Set	1			
4	400V Emergency LDB	Set	1			
5	220V DCDB	Sets	2			
6	48V DCDB	Set	2			
M	Batteries					
1	220V					
1.1	600 AH	Nos	2			
2	48V					
2.1	600AH	Nos	2			
N	Float Cum Boost Battery Charger					
1	220V Float Cum Boost Battery Charger					
1.1	80A/80A	Nos	2			
2	48V Float Cum Boost Battery Charger					
2.1	80A/80A	Nos	2			

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Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
O	Diesel Generator with control Panel					
1	250 kVA	Set	1			
P	Fire Protection System					
1	Portable /Trolley/Wheel mounted extinguishers					
1.1	9 litre water type	Nos	2			
1.2	50 litre foam type	Nos	2			
1.3	4.5 kg CO ₂ type	Nos	6			
1.4	4.5 kg Dry Chemical Power (DCP) type	Nos	2			
2.0	Smoke detection system	Set	1			
3.0	Fire detection and Alarm System	Set	1			
Q	Cables along with clamps, glands, lugs and straight joints etc.					
1.0	33kV HT 3C, 400 Sq.mm Aluminum Cable alongwith accessories and termination equipments for termination of 33 kV Line	KM	2			

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Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	<u>Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation</u>					
2.0	33kV HT 3C, 400 Sq.mm Aluminum Cable alongwith accessories and termination equipments for termination of 33 kV LT Transformer	KM	0.25			
3.0	33kV HT Cable (1CX800 SQmm) Copper for 33 kV side of 132/33 kV Transformer alongwith accessories and termination equipments	KM	0.5			
4	Power Cables - (1.1kV grade)					
4.1	3.5Cx300 sqmm (XLPE) cable for filter Machine along with 2 nos outdoor receptacles -250A	KM	0.15			
5	12 kV, 400 sq. mm 3 x single core XLPE Copper Power Cable including Straight Joints with Accessories complete from LV sides of 33/11 kV Power Transformers to indoor 11 kV Switchgear Room as per Drawings	KM	0.15			
6	12 kV, 185 sq.mm 3 core XLPE Aluminium Power Cable including Straight Joints with Accessories complete for 3 nos. of Outgoing Distribution Feeders as specified.	KM	0.45			
7	33 kV Overhead Distribution Line with all Accessories complete from Substation to Outdoor existing lines including breakdown of existing line to separate feeder lines	LS	1			

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Schedule No. 4: Installation Services

(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
8	11 kV Overhead Distribution Line with all Accessories complete from Substation to Outdoor existing lines including breakdown of existing line to separate feeder lines	LS	1			
R	Air conditioning					
1	High wall type split AC unit of 2 TR capacities for control room, relay room and battery room	Nos.	40			
T	Communication Equipment (detail as per TS)					
1	Telecommunication Equipments					
1.1	SDH Equipment (STM-4 upgradable to STM - 16, MADM upto 5 MSP protected directions)					
1.1.1	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 and integration with existing Communication equipments at Dana and Kusma 220 kV S/s	Nos.	1			
2	Optical Interface Cards/SFP					

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Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
2.1	L4.1 SFP(To be modified as per link budget calculation)	Nos.	4			
3	Tributary cards					
3.1	E1 Interface card (Min.8 interfaces per card)	Set	2			
3.2	Giga -Ethernet Interface 10/100/1000 Mbps Base T with Layer-2 switching (Min 8 Interfaces per card)	Nos.	2			
4	Equipment Cabinets	No	1			
5	VOIP telephone instrument with one common POE+ switch (min. 8 port)	set	2			
	SUB TOTAL PART-A					
	PART-B: VENDOR ASSESSED QUANTITIES					
A	Erection Hardware :-Insulator strings, Disc Insulators, Hardware, conductor, bus-bar materials, cable trays, clamps, spacers, connectors including conectors for Auto Transformer , Junction box, earthwire, earthing material risers, buried cable trenches/pipe of equipment & lighting, all accessories etc. for the following:					
1	220 kV DM-type layout for GIS termination arrangement					

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		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
1.1	Line Bay	Set	3			
1.2	Transformer Bay	Sets	2			
2	132 kV DM-type layout for GIS termination arrangement					
2.1	Line Bay	Sets	3			
2..2	Transformer Bay	Sets	3			
B	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.	Sets	1			
C	Air conditioning & ventilation System					

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		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
1	Ventilation & Airconditioning system (as per technical specification)					
1.1	220kV GIS Hall	LS	1			
1.2	132 kV GIS Hall	LS	1			
D	Illumination System					
1.1	Substation Lighting					
1.1.1	Control Room cum administrative building illumination	LS	1			
1.1.2	220kV GIS Building	LS	1			
1.1.3	132kV GIS Building	LS	1			
1.2	Security Room	LS	1			
1.3	fire Fighting Room	LS	1			
1.4	Outdoor Switchyard Lighting	LS	1			
1.5	Street Lighting	LS	1			
1.6	Occupancy sensor	LS	1			

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Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
1.7	Township Area Lighting	LS	1			
E	Fire Protection System per technical Specification)					
1	Pumping arrangement for HVW system & hydrant system, complete with all piping, valves, fittings,etc. inside pump house	set	1			
2	Hydrant system, complete U/G piping and accessories etc. outside the Pump House.	set	1			
3	HVW spray system, Hydrant system and complete U/G & O/G piping and accessories etc. out side the pump house for Transformer :					
3.1	33.33 MVA, 220/132 kV Single Phase Auto Transformer	nos	7			
3.2	24/30 MVA,132/33 kV Three phase transformer	nos	1			
F	POWER & CONTROL CABLES					
1	1.1 kV LV Cables					
1.1	Power Cables(PVC)- (1.1kV grade)	LS	1			

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Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	<u>Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation</u>					
1.2	Control Cable (PVC)- (1.1kV grade)	LS	1			
1.3	Cable glands, lugs & straight through joints for Power & Control cables	LS	1			
G	Visual Monitoring System for watch & ward as per technical specification	LS	1			
H	Earthing and lightning protection including necesarry connectors/connections, risers etc. complete in all respect(but excluding LM structures for Lightning protection)					
1.0	Earth Conductor (copper)	LS	1			
2.0	Earth Rod (copper clad steel)	LS	1			
3.0	Equipment for lightning protection	LS	1			
I	SUBSTATION AUTOMATION					

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		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
1	Integration of all 220/132/33/11kV Bays under present scope with the SCADA of SIEMENS (SINAUT Spectrum) at Load Dispatch Centre, Kathmandu including supply of Hardware, Software, accessories etc. as per TS Section Project.	LS	1			
	SUB TOTAL PART-B					
	PART-C: Civil Works					
	CIVIL AND ARCHITECTURAL WORKS ERECTION)					
1	Steel structure for post, beam and equipment supporting frame complete with Foundation bolts,bolts, nuts and all accessories required to complete the scope of works					
1.1	Rail Structure for 220/132 kVand 132/33 kV Power Transformer including access from Internal Road	Lot	5			
1.2	220 kV Take Off Gantry structure for all bays including internal gantry tower & beam structures as per scope of Contract	Lot	5			

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PMD/EGMP/BNRTLSS-077/78-01: Design, Supply, Installation, Testing and Commissioning of Borang - Naubise (Ratmate) 220 kV Transmission Line and Associated Substations

Schedule No. 4: Installation Services

(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
1.3	132 kV Take Off Gantry structure for all bays including internal gantry tower & beam structures as per scope of Contract	Lot	6			
1.4	220 kV Capacitive Voltage Transformer	Nos	9			
1.5	220 kV Lightening Arrestor	Nos	16			
1.6	220 kV SF6 to GIS Bushing	Nos.	16			
1.7	220 kV Bus Post Insulator	Nos	54			
1.8	132 kV Capacitive Voltage Transformer	Nos	9			
1.9	120 kV Lightening Arrestor	Nos	19			
1.10	132 kV SF6 to GIS Bushing	Nos	19			
1.11	132 kV Bus Post Insulator	Nos	66			
1.12	30 kV Lightening Arrestor	Nos	18			
1.13	33 kV Bus Post Insulator	Nos	9			
1.14	Earth mast	Lot	1			
1.15	Switchyard Fence as per Specifications (including Fence with Gate for 220kV switchyard)	RM	320			

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Schedule No. 4: Installation Services

(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
1.16	Switchyard Fence as per Specificaitons (including Fence with Gate for132kV switchyard)	RM	200			
1.17	Identification plate, danger notice etc	Lot	1			
2	Concrete Foundation for Equipment and Steel Structures complete with excavation, backfilling, form works, concrete works and reinforcement bars and all other necessary materials and works as per the specifications to complete the required scope of works					
2.1	220/132 kV , Single Phase 33.33 MVA, Power Transformer complete along with the Stone filling over grating(40mm size),Fire Wall and Rail Cum Road as specified	Set	7			
2.2	132/33 kV , Three Phase 24/30 MVA, Power Transformer complete along with the Stone filling over grating(40mm size),Fire Wall and Rail Cum Road as specified	Set	1			
2.3	33/0.4 kV, Three phase , 630 kVA, ONAN Distribution Transformer	Set	2			

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Schedule No. 4: Installation Services

(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	<u>Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation</u>					
2.4	220 kV Take Off Gantry structure for three line bays including internal gantry tower & beam structures as per scope of Contract	Lot	5			
2.5	132 kV Take Off Gantry structure for three line bays, bus coupler & one transformer bays including internal gantry tower & beam structures as per scope of contract	Lot	6			
2.6	220 kV Capacitive Voltage Transformer	No.	9			
2.7	220 kV Lightening Arrestor	No.	16			
2.8	220 kV SF6 to GIS Bushing	Nos	16			
2.9	220 kV Bus Post Insulator	Nos	54			
2.10	132 kV Capacitive Voltage Transformer	Nos.	9			
2.11	132 kV Lightening Arrestor	Nos.	19			
2.12	132 kV SF6 to GIS Bushing	Nos.	19			
2.13	132 kV Bus Post Insulator	Nos.	66			

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Schedule No. 4: Installation Services

(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	<u>Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation</u>					
2.14	30 kV Lightening Arrestor	Nos.	18			
2.15	33 kV Bus Post Insulator	Nos.	9			
2.16	Switchyard Fence as per Specifications (including Fence with Gate for 220 kV switchyard)	Rm	320			
2.17	Switchyard Fence as per Specifications (including Fence with Gate for 132 kV switchyard)	Rm	200			
2.18	33 kV take off gantry structures & 33 kV, outdoor type cable termination structures / sealing-end and all accessories, Cable Trench, Duct Bank, Conduit and Handhole and Cable Tray as per spec	Lot	1			
3	Miscellaneous					
3.1	Clearing and stripping	lot	1			
3.2	Exploration works for soil strength for foundations including laboratory tests	loc	5			

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Schedule No. 4: Installation Services

(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	<u>Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation</u>					
3.3	Geological Investigation for exploring the stability of soil mass and earth crust including but not limited to the age of mass movement, depth and location of underlying rocks, seismic hazards and acquifer.	LS	1			
3.4	Soil Resistivity test	lot	1			
3.5	Excavation work including Site Surveying, levelling, cuting, filling,Grading with earth cutting and filling by borrow pit earth, including compaction and leveling etc all complete for all levels of 220 kV, 132kV and 33kV Switchyard ,Control Building,Staff Quarter, Guard House and all other locations for all kind of soil	cu.m	80000			
3.6	All black top (Bituminous/Ashphalt) road from main road to Substation and internal road including crossings with a slab culvert for drainage just outside substation area all complete as per Specifications	Rm	100			
3.7	Making of Gabion Box including rolling, cutting, weaving and crate filling (Hexagonal mesh size 100x120mm with 10SWG and salvage wire 7 SWG Box Size 2.0x1.0x1.0m)	cu.m	200			
3.8	Excavation in all types of soil and rock including backfilling disposal etc. for all leads and lifts	Cu.M	20,000			



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Schedule No. 4: Installation Services

(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
3.9	Providing and laying of Plain Cement Concrete (PCC) (1:4:8) (miscellaneous works)	Cu.M	50			
3.10	Providing and laying of Plain Cement Concrete (PCC) (1:2:4)	Cu.M	40			
3.11	Providing and laying of Reinforced Cement Concrete Design Mix M25 including pre cast, shuttering, Grouting of pockets & underpinning but including steel reinforcement	Cu.M	350			
3.12	Providing and laying Plain Cement Concrete 1:5:10 (1 cement : 5 sand : 10 Stone aggregate) for antiweed treatment	Cu.M	500			
3.13	Misc. Structural steel including embedments, edge protection angles, gratings etc.	MT	30			
3.14	Supplying and installation of reinforcement bars in miscellaneous works as required in RCC Works	MT	40			
3.15	Stone spreading including antiweed treatment in switchyard excluding PCC	Sq. M.	700			
3.16	Switchyard Drainage (running across and at sides of substation including subsurface) with RCC slab covering for efficient drainage in substation all complete as per specification	Rm	600			

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Schedule No. 4: Installation Services

(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
4.0	BUILDINGS					
4.1	CONTROL ROOM BUILDING					
	All Civil works including internal and external finishing, internal cable trench, etc. complete as per technical specification and approved drawings,including excavation,Stone soling, PCC, RCC,form works and reinforcement steel (Including 33kV switchgear room)	Sq. M.	750			
4.2	PRE ENGINEERED BUILDING					
4.2.1	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 etc. complete to erect the building as per approved drawings and technical specification					
a.	220 KV GIS HALL	Sq. M.	450			
b.	AHU Room	Sq. M.	127			
c.	Panel Room	Sq. M.	38			
4.2.2	132 KV GIS HALL					

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Schedule No. 4: Installation Services

(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
	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 etc. complete to erect the building as per approved drawings and technical specification					
a.	132 KV GIS HALL	Sq. M.	400			
b.	AHU Room	Sq. M.	98			
c.	Panel Room	Sq. M.	37			
5.0	All civil works for following structures as per technical specification and approved drawings including internal and external finishing, excavation, PCC, RCC and reinforcement steel (Fe-500), etc					
5.1	Fire fighting pump house building	Sq. M.	100			
5.2	Water Tank	LS	1			
5.3	Staff Quarters including,electrification, aircondititioning, finishing , concreteing, furnishing materials all complete as required and specified					
5.3.1	B Type	Sq. M.	500			
5.3.2	C Type	Sq. M.	500			
5.4	Security Room(Guard House)	Sq. M.	40			
5.5	Parking Shed (for 5 Cars)	LS	1			

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Schedule No. 4: Installation Services

(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation					
6.0	Concrete road as per specification including reinforcement & concrete					
	(a) Road 3.75m wide	Rm	320			
7.0	Septic tank and soak pit complete as per technical specification and approved drawing including concrete & reinforcement					
	For 10 users(Control Building)	LS	1			
	For 50 users(Staff Quarter)	LS	1			
	For 5 users(Guard House)	LS	1			
8.0	Supplying and erecting dewatering pumps					
8.1	5 HP	Nos.	2			
8.2	0.5 HP	Nos.	1			
9.0	External water supply from borewell/main water supply point to Fire water Tank, control room building, Staff Quarter buildings,Guard House					
9.1	80 mm Dia GI pipe	RM	100			
9.2	50 mm Dia GI pipe	RM	200			
9.3	40mm Dia GI pipe	RM	250			
9.4	25mm Dia GI pipe	RM	300			
10.0	External sewerage system including all item such as excavation, piping, pipe fittings, manholes, gali trap, gali chamber etc.					
10.1	250 mm Dia.	RM	250			

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Schedule No. 4: Installation Services

(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	<u>Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation</u>					
10.2	150 mm Dia.	RM	150			
11.0	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.including excavation, PCC (1:2:4 & 1:4:8)	Cu. M	5500			
12.0	Construction of retaining wall with reinforced Cement Concrete (RCC) in 1:1.5:3 Cement ,Sand ,aggregate including excavation for foundation with lead and lift ,dry stone soling, leveling up with nominal concrete providing weep holes with necessary filter materials,reinforcement bars and coping on the top of Wall	Cu.M	200			
13	Stone Masonry Drains in cement mortar 1:4 in foundation complete including excavation,PCC as per Drawing and Technical Specifications	R.m	600			
14	Local sand filling around and under DG set foundation and other foundations as applicable	Cu.M	500			



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Schedule No. 4: Installation Services

(a) Installation Charges and Civil Works

Sl. No.	Item Description	Installation Charges				Remarks
		Unit	Qty.	Portion in Nepalese Currency (in NPR)		
				Unit Rate	Total Charges	
(1)	(2)	(3)	(4)	(5)	(6)=(4)x(5)	
	<u>Part IV-C: 220/132/33/11 kV GIS Lapang Biharthok Substation</u>					
15	Stone soling below foundations wherever specified in aproved drawings during detailed Engineering	Cu.M	500			
16	Excavation on hard rock	Cu.M	1500			
	SUB-TOTAL-C					
	<u>Total of Part IV-C Lapang 220 /132/33 kV GIS Substation</u>					
	<u>Total of Schedule 4(a) = Part (IV-A + IV-B + IV-C)</u>					

Name of Bidder:
Signature of Bidder:
(Printed Name)
(Designation)
(Common Seal)



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Schedule No. 4 : Installation and Other Services (Common for all)

(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		Remarks
						Currency (USD)	Total Training Charges	
1	2		3	4	5	6	7 = 4 x 6	
A	Training to Owners personnel on Design , testing and Maintenance aspect as per Section Project, Technical Specification at manufacturer's works	i) Control & Protection and Substation Automation System		3	5 days			
		ii) GIS		3	5 days			
		iii) Telecommunication Equipment (SDH ,MUX & NMS (Craft Terminal))		3	5 days			
		iv)Transformer		3	5 days			
		v) PLS-CADD Software		5	10 days			
		vi) PLS-TOWER Software		5	10 days			
	Total for Training Charges							
	Total of Schedule 4(b)							

REMARKS:

1. Training at Manufacturer's works: The Contractor shall include in the training charges payment of per Diem allowance to NEA trainees @ USD 150 per day per trainee for the duration of training abroad towards accommodation, meals and other incidental expenses and to and fro economy class air ticket from Nepal to place of training. The duration of training shall be excluding travelling period.

Name of Bidder:
Signature of Bidder:
(Printed Name)
(Designation)
(Common Seal)

Date:



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Schedule No. 4 : Installation and Other Services *(Common for all)*

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

Sl. No.	Description of the Test		Training duration in days	Currency	Training Charges for Contractors Trainers		Remarks
		Item for which training is to be imparted.			Unit rate (USD)	Total Training Charges	
1	2	3	4	5	6	7 = 4x 6	
a)	On Job training on operation, maintenance and testing & commissioning aspect at one Location in Nepal as per section Project, Technical Specification	i) Control & Protection	5				
		ii) Substation Automation System including integration aspect of existing SCADA (of Siemens suppliedSINAUT Spectrum Software) at Load Dispatch Center	5				
		iii. GIS	5				
		iv) Telecommunication Equipment (SDH ,MUX & NMS (Craft Terminal))	5				
		v. TRANSFORMERS	5				
	Total for Training Charges						
	<u>Total of Schedule 4(c)</u>						

REMARKS:

2. 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 Owner.

Name of Bidder:

Signature of Bidder:

(Printed Name)

(Designation)

(Common Seal)



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Schedule No. 4 : Installation and Other Services *(Common for all)*

(d): Maintenance Charges

SI No	Description	Unit	Qty.	Total Maintenance Charges		Remarks
				Currency	Total Maintenance Charges (USD)	
	1	2	3	4	5	
1	Maintenance Charges for Communication Equipments including SDH & MUX. for One (1) year during Warranty period	Year	1	USD		
2	Maintenance Charges for Communication Equipments including SDH & MUX. for Six (6) years after Warranty period	Year	6	USD		
	Total Maintenance Charges for Communication Equipment Package (Total Schedule 4d)					
	<u>Total of Schedule 4 (d)</u>					

Name of Bidder:

Date:

Signature of Bidder:

(Printed Name)

(Designation)

(Common Seal)



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Schedule No. 5: Grand Summary

		Part A: Borang - Naubise (Ratmate) 220 kV Transmission Line		Part B: Borang Substation		Part C: Lapan Substation		Total Part (A + B + C)	
Sl. No.	Description	Total Price USD	Total Price NPR	Total Price USD	Total Price NPR	Total Price USD	Total Price NPR	Total Price USD	Total Price NPR
1	TOTAL SCHEDULE NO. 1	1	2	3	4	5	6	7=1+3+5	8=2+4+6
	Plant and Equipment including Mandatory Spares to be supplied from abroad, including Type Test Charges for Type Tests to be conducted abroad.								
2	TOTAL SCHEDULE NO. 2								
	Plant and Equipment including Mandatory Spares Parts to be supplied from within Nepal including Type Test Charges								
3	TOTAL SCHEDULE NO. 3								
	Design Services & Prototype Testing								
4	TOTAL SCHEDULE NO. 4								
	a. Installation Charges								
	b. Training Charges for Training to be imparted abroad								
	c. Training Charges for Training to be imparted in Nepal								
	d. Maintenance charges								
	GRAND TOTAL [1+2+3+4(a)+4(b)+4(c)+4(d)]								

Name of Bidder:
Signature of Bidder:
(Printed Name)
(Designation)
(Common Seal)
Date



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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