

Bidding Document
For
Procurement of
Design, Supply, Installation, Testing and Commissioning of 400/230
kV GIS Substation at Kaliganj on turnkey basis (Package-5)
[Contract No.: PGCB/ADB/L3853/AIIB/L8374/DWZTGEP/GIS/P5]

Addendum 01

1. Volume 1 of 3, Section-3, Clause 1.3.4 Functional Guarantees of the Facilities

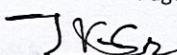
The Text "L = Average Load loss (copper loss) in kW" shall be replaced by
"L = Average Load loss (copper loss) at 75 °C in kW".

2. Volume 3 of 3, Section 1, 1.2.1 Technical Requirements for 400/230KV GIS Substation at Kaliganj

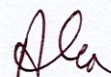
Item Nos. 1F1.x & 1F2.x are added after Item No. 1F12 as follows:

1F1.x	Protection for Kaliganj-Ghorasal Old 1 & Kaliganj-Ghorasal Old 2 overhead line circuits, along with Protection Cubicles at existing Ghorasal Substation		Set	2
		Each comprising		
	i.	Dismantling of existing Protection Panels		
	ii.	Protection main relay (Main-1, Main-2)		
	iii.	Auxiliary relays (TCS, Lockout etc.) & accessories (TTB etc.)		
1F2.x	iv.	Complete Protection Panel (Front opening, Swing frame type) including wiring, lighting, heater, Contactors, humidity controller, MCBs & other accessories		
	Protection for Kaliganj-Tongi Old 1 & Kaliganj-Tongi Old 2 overhead line circuits, along with Protection Cubicles at existing Tongi Substation		Set	2
		Each comprising		
	i.	Dismantling of existing Protection Panels		
	ii.	Protection main relay (Main-1, Main-2)		
	iii.	Auxiliary relays (TCS, Lockout etc.) & accessories (TTB etc.)		
	iv.	Complete Protection Panel (Front opening, Swing frame type) including wiring, lighting, heater, Contactors, humidity controller, MCBs & other accessories		









3. Volume 3 of 3, Schedule B: Bid Prices & Schedules

In Schedule B1, Schedule B2 & Schedule B4 Item Nos. 1F1.x & 1F2.x are added after Item No. 1F12. In Schedule B1: Mandatory Spare, Maintenance & Test Equipment Supplied from Outside the Employer's Country, Item No. FS1 a) is revised and Item No. OS1 is added. Accordingly, the revised Price Schedule is attached as **Attachment 1**.

4. Volume 2 of 3, Section 1. Scope of Works, Clause 1.2 Description of Works, Page 1-2

In sub-clause 1.2.1.1 of Clause 1.2, the 4th paragraph is revised as follows:

The configuration of the 420kV busbar shall be double busbar scheme. GIS design shall include sufficient jointing plugs/adapters, busbar extension/interface module at both ends of GIS bus comprising sufficient buffer gas compartments and appropriate disconnect facilities for extensions without de-energization of complete GIS.

5. Volume 2 of 3, Section 1. Scope of Works, Clause 1.2 Description of Works, Page 1-2

In sub-clause 1.2.1.2 of Clause 1.2, the 4th paragraph is revised as follows:

The configuration of the 230kV busbar shall be double busbar scheme with section. GIS design shall include sufficient jointing plugs/adapters, busbar extension/interface module at both ends of GIS bus comprising sufficient buffer gas compartments and appropriate disconnect facilities for extensions without de-energization of complete GIS.

6. Volume 2 of 3, Section 4, Clause 4.3.7.4 Phases, Page 4-14

The sub-clause 4.3.7.3.1 of clause 4.3.7.4 is revised as follows:

All transformers shall be three phase or single phase as mentioned in the schedule of requirement (Technical Data Sheets) of Volume 3 of the bidding document, with three-legged core or five-legged core form design. The phase relationship of the winding is identified in the specific transformer Data Sheets.

7. Volume 2 of 3, Section 4, Clause 4.3.10 Losses and Evaluation of Losses

The sub-clause 4.3.10.1 of clause 4.3.10 is revised as follows:

Guaranteed values for component losses of the total loss of the transformers shall be as low as is consistent with transport restrictions, reliability and economic use of materials, shall be as stated in the Schedule E: Technical Particulars and Guarantees. The Loading condition shall be treated as Simultaneous Loading in all windings.

8. Volume 2 of 3, Section 4, Clause 4.3.10 Losses and Evaluation of Losses

The sub-clause 4.3.10.2 of clause 4.3.10 is revised as follows:



For the evaluation of the bid as per section 3 (Evaluation and qualification criteria) capitalization cost (Evaluated price of transformer losses) due to transformer guaranteed losses shall be added with the bid price. The evaluated price of the Power Transformer shall be the sum of the quoted bid price of the transformer plus evaluated price of the transformer losses. The evaluated price of transformer loss shall be:

For each unit of the three-phase/single-phase transformers,

$$\text{Evaluated price of transformer loss} = N * a + L * b + M * c$$

Where

N = Average No-load loss (core loss) in kW

L = Average Load loss (copper loss) at 75 °C in kW

M = Total load of transformer cooling fans at transformer maximum continuous rating in kW (when all the cooling fans are in operation)

a = Cost/kW of average no-load loss (core loss) valued at Taka 600,000

b = Cost/kW of average load loss (copper loss) valued at Taka 300,000

c = Cost/kW of auxiliary power valued at Taka 300,000

9. Volume 2 of 3, Section 4, 4.4.2.4 Core design, Page 4-24

Clause 4.4.2.4.1 is revised as follows:

The core shall be either a three-legged core-form or a five-legged core-form construction using mitred step lap design, unless otherwise specified in specific transformer Data Sheets in the Appendix.

10. Volume 2 of 3, Section 4, 4.13 Fiber Optic Based Temperature Sensing System, Page 4-79

Clause 4.13.2 is revised as follows:

The winding sensors are typically located at:

- Near top of upper primary oil duct, X-winding -- 2/ph
- Near bottom of lower primary oil duct, Y-winding--- 2/ph
- Near bottom of lower primary oil duct, Z-winding--- 2/ph when applicable
- One (Total 3 for 3-legged core/total 5 for 5-legged core design) more on each core legs

11. Volume 2 of 3, Section 15 Power Line Carrier, Teleprotection and Communication Equipment, Page 15-15

In Appendix Power Line Carrier, Teleprotection and Communication Equipment, A. 400kV Wave Trap, sl. No. 7 is revised as follows:

SL.	ITEM	SPECIFICATION
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No.		
7	Rated Short time current for 3 second	63kA

12. Volume 3 of 3, Schedule E: Technical Particulars and Guarantees

In clause 1.2.1.4 Wave Trap: 400kV, description of item no. 8 is revised as follows:

No	Description	Unit	Minimum Requirements	Guaranteed
8.	Rated Short time current for 3 second	kA	63	

13. Volume 3 of 3, Schedule E: Technical Particulars and Guarantees

In clause 1.2.1.5 Post Insulator 400 kV (If needed), minimum requirements in item no. 1.7 is revised as follows:

No.	Description	Minimum Requirements		Guaranteed
		Unit	Data	
1.7	Design		Porcelain, outdoor	

14. Volume 3 of 3, Schedule E: Technical Particulars and Guarantees

In clause 1.2.2.3 230kV XLPE Cable, unit and minimum requirements in item no. 17 is revised as follows:

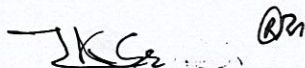
Sl. No	Description	Unit	Minimum Requirements	Guaranteed
17	Sheath Earth Fault Current Carrying capacity for three second cable loaded as above prior to each fault	KA/3sec	63	
	Final Conductor temperature	°C	250°	

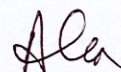
15. Volume 3 of 3, Schedule E: Technical Particulars and Guarantees, 1.2.4 D: Transformers

In clause 1.2.4.1 400/235/34.5 kV 520/750 MVA ONAN/ONAF Autotransformer, minimum requirement in item no. 4.3.5 is revised as follows:

No.	Description	Minimum Requirements		Guaranteed
		Unit	Data	
4.3.5	Maximum hot spot temperature rises in core at rated power	°C	[Insert]	







16. Volume 3 of 3, Schedule E: Technical Particulars and Guarantees

In clause 1.2.5.43 **Fibre Optic Multiplexer Equipment**, minimum requirement in item no. 1.3 is revised as follows:

No.	Description	Minimum Requirements		Guaranteed
		Unit	Data	
1.3	Transmission Capacity	Mbit/s	• STM-4 for 132kV voltage level • STM-4/16 for 230kV voltage level • STM-16 for 400kV voltage level	

17. Volume 2 of 3, Section 5: Protection, Metering & Control and Substation Automation System, Clause 5.18 Digital Fault and Disturbance Recorder (DFDR), Page No. 5-39

Sub-clause 5.18 (h) is revised as follows:

All input signals shall be able to scan and record simultaneously at least 2 or 3 user-programmable sampling rates from 500Hz to 12kHz or higher for fast (short-term) transient monitoring and from 1Hz to 500Hz for slow phenomena (long-term) monitoring in order to detect and record fast (short-term) and slow phenomena (long-term) events.

18. Volume 2 of 3, Section 5: Protection, Metering & Control and Substation Automation System, Clause 5.18 Digital Fault and Disturbance Recorder (DFDR), Page No. 5-39

Sub-clause 5.18 (j) is revised as follows:

At least 25 sec. of memory for transient fault data recording (at 12 kHz or higher sampling rate) and over 1000 sec. for slow (at 30 Hz) phenomena recording shall be provided in addition to the auto-maintained, inbuilt hard disk unit which shall be installed for data storage. The inbuilt hard disk unit shall be managed and operated by the identical industrially proven operating system of the DFDR.

19. Volume 2 of 3, Section 5: Protection, Metering & Control and Substation Automation System

In Appendix, B. Digital Fault and Disturbance Recorder (DFDR), sl. no. 5 (e), page no. 5-126, rating of possible fast sampling rate shall be 500Hz to 12kHz or higher.

20. Volume 3 of 3, Schedule E: Technical Particulars and Guarantees

In clause 1.2.6 F: Digital Fault and Disturbance Recorder (DFDR), item nos. 2.1 & 2.5.5.2 are revised as follows:

No.	Description	Minimum Requirements		Guaranteed
		Unit	Data	
2.1	Number of channels		Refer to B-1 of Vol-2	
2.5.5.2	Fast: 0.5 kHz - 12kHz or higher	Samples / sec	Insert	

21. Volume 2 of 3, Section 15, Power Line Carrier, Teleprotection and Communication Equipment, Page 15-2

Sub-clause (a) General of clause 15.1.3 Line Coupling is revised as follows:

(a) General

The high voltage transmission system is a three phase 50Hz system solidly earthed with the following design parameter detailed elsewhere in this specification:

Nominal Voltage (kV)	400	230	132
Rated Max. Voltage (kV)	420	245	145
Symmetrical Short Circuit Current, 3 sec (kA)	63	63	40
Lightning Impulse Withstand Voltage (kVp)	1425	1050	650
Continuous Switchgear Rating (A)	4000	3150	2000

All current carrying equipment shall be capable of withstanding these conditions.

22. Volume 2 of 3, Section 19, 19.2.1 Kaliganj Substation Drawing List (Sl. No. 27) for 400/230KV GIS Substation at Kaliganj

SL No. 27 (Ansar Barrack) is replaced with SL No. 27A (Single storied Ansar Barrack with foundation for two storied building) as follows:

SL No	Drawing No.	Title
27A	PGCB/DESIGN/2021/KALIGANJ/C08A	Single storied Ansar Barrack with foundation for two storied building

23. Volume 3 of 3, Schedule B: Bid Prices & Schedules for 400/230KV GIS Substation at Kaliganj

Item No. 1M2 xxii. is revised as follows:

Item No.	Description of Equipment Requirement	Unit	Quantity
1M2 xxii.	RCC Box Culvert (top width 8m)	meter	20

[Signature]

[Signature]

[Signature]

[Signature]

24. Volume 3 of 3, Schedule B: Bid Prices & Schedules

In Schedule B1, Schedule B2 & Schedule B4 Item Nos. 1M3 iv. is added after Item No. 1M3 iii. d)

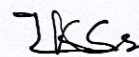
In Schedule B1, Schedule B2 & Schedule B4 Item Nos. 1M3 i. f) is added after Item No. 1M3 i. e)

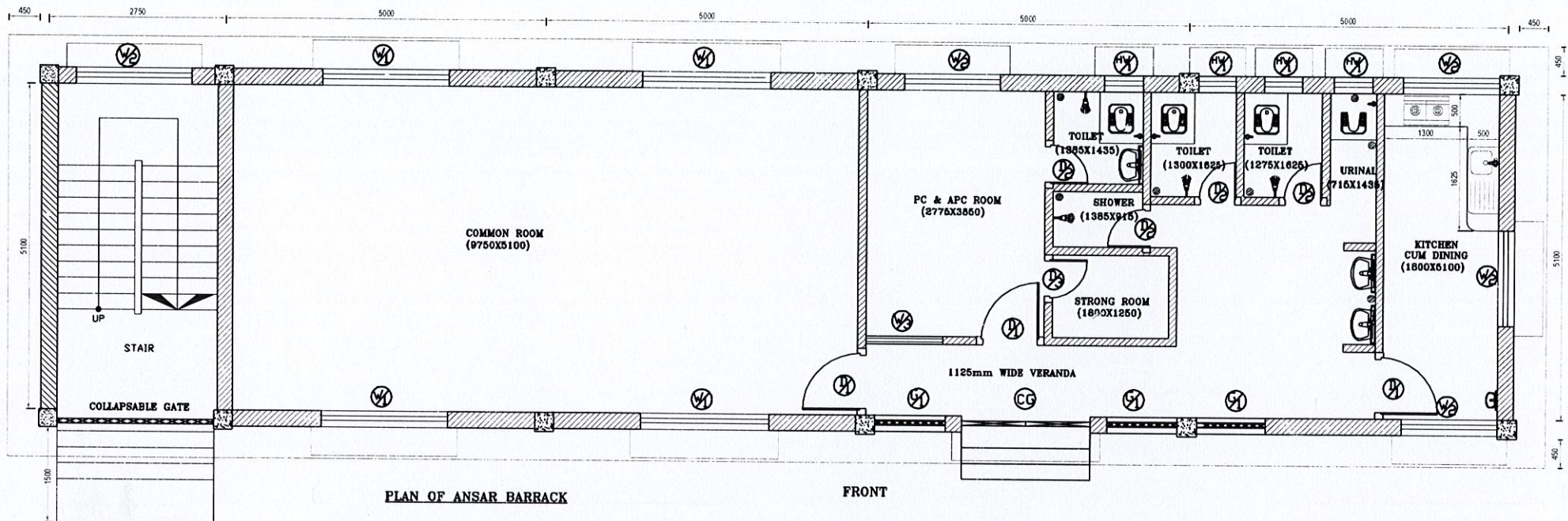
In Schedule B1, Schedule B2 & Schedule B4 Item Nos. 1M3 ii. e) is added after Item No. 1M3 ii. d)

In Schedule B4 Item Nos. 1M2 xxii. is revised

In Schedule B4 Item Nos. 1M2 xxiii. is deleted

Accordingly the revised Price Schedule is attached as **Attachment 1**.





LEGEND

D = DOOR
W = WINDOW
HW = HIGH WINDOW
CG = COLLAPSIBLE GATE
G = VERANDA GRIL

DOOR SCHEDULE

S.L.	NO.	SIZE		MATERIAL
		WIDTH	HEIGHT	
CG	2	2000	2100	M. STEEL
D/1	3	1050	2100	TIMBER
D/2	4	750	2100	PLASTIC
D/3	1	750	2100	M. STEEL

WINDOW / VERANDA GRIL SCHEDULE

S.L.	NO.	SIZE		MATERIAL
		WIDTH	HEIGHT	
W/1	4	2000	1350	ALUMINIUM
W/2	5	1500	1350	ALUMINIUM
W/3	1	1200	1350	ALUMINIUM
H.W/1	4	600	600	ALUMINIUM
G/1	3	1100	1350	MS PLAIN/ FLAT BAR

NOTES:

1. ANSAR BARRACK BUILDING SHALL BE RCC FRAME STRUCTURE AND FLOOR HEIGHT SHALL BE MIN. 3.0 METER.
2. DETAILS OF ARCHITECTURAL, STRUCTURAL & FOUNDATION DRAWING SHALL BE SUBMITTED FOR APPROVAL.
3. WATER SUPPLY SYSTEM, TOILET & OTHER SANITARY FITTINGS SHALL BE PROVIDED.
4. ROOF SHALL BE WATER PROOFED WITH LIME TERRACING 2:2:7-LIME, SHURKI (POWDERED BRICK) & 0.75" DOWN BRICK CHIPS.
5. RAIN WATER DOWN PIPE & BUILDING DRAINAGE SYSTEM SHALL BE TAKE INTO CONSIDER PRIOR TO SLAB CASTING.
6. POWER CONNECTION LAYOUT SHALL BE APPROVED BEFORE WORK.

Tender Drawing

Power Grid Company of Bangladesh Limited			
Project			
DESIGN, SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF 400/230KV GIS SUBSTATION AT KALIGANJ ON TURNKEY BASIS.			
Drawing Title	Ansar Barak		
Drawing No	DOCUMENT ID: PGCB DESIGN/2021/KALIGANJ/06A		
Drawn	Checked	Approved	

C

C

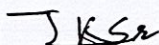
Schedule B1 : Plant and Equipment Supplied from Outside the Employer's Country**New 400/230 kV Substation at KALIGANJ**

(For detailed description of the technical requirements please refer to clause 1.2.1: Technical Requirements for 400/230KV GIS Substation at Kaliganj, Schedule A: Scope of Works, volume 3 of 3 of the bidding document)

Item No.	Description of Equipment Requirement	Unit	Quantity	Code	Foreign Currency (in.....)		Remark
					Unit Price CIP	Total Price CIP	
					(1)	(2) = (1) x (2)	
1A	420 kV switchgear, equipment connection and steel structures						
1A1	420kV GIS Line Feeder Bays	Set	8				
1A2	420kV GIS Auto Transformer Feeder Bays	Set	3				
1A3	420kV GIS Bus Coupler Bays	Set	2				
1A4	420kV GIS Bus Section Bays	Set	2				
1A5	420 kV GIS type LA each comprising three phase	Set	4				
1A6	420kV GIS type Bus FES and Bus VT	Set	4				
1A7	Busbar extension module, each set comprises with sufficient buffer gas compartments and appropriate disconnect facilities for extensions without de-energization of complete GIS	Set	2				
1A8	Standalone Partial Discharge measurement and analyzer system for Complete GIS	Lot	1				
	AIS Switchgear						
1A9	390kV rated voltage at 50°C, 10kA nominal discharge current, 50Hz, gapless metal oxide type, single phase Surge Arresters, outdoor type	No.	27				
1A10	420kV CVT, Single-phase, 50Hz, 1425kVp BIL, 3 windings	No.	18				
1A11	420kV, 4000A single phase Wavetrap	No.	8				
1A12	400kV Rigid tubular conductor and/or stranded conductors including accessories for each connection as required for completing 400kV Switchyard including LA, CVT and WT connection						
	i. Tubular Conductor and/or Flexible Conductor	Lot	1				
1A13	Insulator and fittings including all necessary clamps and connectors as required for completing 400kV GIS Switchyard						
	i. Insulator	Lot	1				
	ii. Fittings & Clamps, Connector	Lot	1				
	iii. Nut-bolt	Lot	1				
1A14	Steel gantry each circuit of 400kV Transmission Line, Transformer & Equipment support Structure including all necessary accessories required for completing 400kV GIS Switchyard						
	i. Steel Structure for T/L with Nut & Bolts						
	a) Gantry Column	No.	10				
	b) Beam	No.	8				
	ii. Steel Structure for 400/230kV Transformer with Nut & Bolts						
	a) Gantry Column	No.	8				
	b) Beam	No.	6				
	iii. Equipment Structure						
	a) LA	No.	33				
	b) 420kV CVT	No.	24				
	iv. Nut-Bolt	Lot	1				
	v. LV power & control cable tray including fitting, fixing accessories	Lot	1				
1B	245 kV switchgear, equipment connection and steel structures						
1B1	245kV GIS Line Feeder Bays	Set	10				
1B2	245kV GIS Auto Transformer Feeder Bays	Set	3				
1B3	245kV Bus Coupler Bays	Set	2				
1B4	245kV Bus Section Bays	Set	2				
1B5	245kV GIS type Bus FES and Bus VT	Set	4				
1B6	Busbar extension module, each set comprises with sufficient buffer gas compartments and appropriate disconnect facilities for extensions without de-energization of complete GIS	Set	2				
	AIS Switchgear, Equipment & Structure						
1B7	198kV rated voltage, 158 kV(rms) continuous operating voltage at 50°C, 10kA nominal discharge current, 50Hz, gapless metal oxide type, single phase Surge Arresters, outdoor type	No.	39				
1B8	Rigid tubular conductor and/or stranded conductors including accessories for each connection as required for completing 230kV Switchyard						
	i. Tubular Conductor and/or Flexible Conductor	Lot	1				
1B9	Insulator and fittings including all necessary clamps and connectors as required for completing 230kV Switchyard						
	i. Insulator	Lot	1				
	ii. Fittings & Clamps, Connector	Lot	1				
	iii. Nut-bolt	Lot	1				

Name of Bidder:

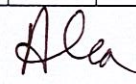
Signature of Bidder:



Item No.	Description of Equipment Requirement	Unit	Quantity	Code	Foreign Currency (in.....)		Remark
					Unit Price	Total Price	
					CIP	CIP	
			(1)		(2)	(3) = (1) x (2)	
1B10	Steel gantry for each circuit of 245kV Transmission Line, Transformer & Equipment support Structure including all necessary accessories required for completing 230kV Switchyard						
	i. Steel Structure for T/L with Nut & Bolts						
	a) Gantry Column	No.	11				
	b) Beam	No.	10				
	ii Equipment Structure						
	a) LA	No.	39				
	b) Outdoor CSE	No.	12				
	iii. Nut & Bolts	Lot	1				
	iv. LV power & control cable tray including fitting, fixing accessories	Lot	1				
	v. HV power cable tray including fitting, fixing accessories	Lot	1				
1D	36kV Switchgears, equipment connection and steel structures						
1D1	36kV AIS Switchgears for Aux. Power Bays, comprises with:						
	i) 36kV, 630A, 31.5kA/3sec, 50Hz, 170kVp BIL, VCB with spring operating mechanism	Set	2				
	ii) 36kV, 630A, 31.5kA/3sec, 50Hz, 170kVp BIL, single vertical break/horizontal, post type, motor operated Disconnecter with Earth Switch	Set	4				
	iii) 36kV, single-phase, 31.5kA/3sec, 50Hz, 170kVp BIL, Current Transformers	No.	6				
	iv) 36kV, 31.5kA/3sec, single-phase, 50Hz, 170kVp BIL, Inductive Voltage Transformers	No.	6				
	v) 30kV rated voltage, 24 kV(rms) continuous operating voltage at 50oC, 10kA nominal discharge current, 50Hz, gapless metal oxide type, single phase Surge Arresters, outdoor type	No.	6				
1D1.x	36kV AIS Switchgears for Unloaded tertiary Auto-Transformer Bays, comprises with:						
	i) 36kV, 31.5kA/3sec, single-phase 50Hz, 170kVp BIL, inductive Voltage Transformers	No.	3				
	ii) 30kV rated voltage, 24 kV(rms) continuous operating voltage at 50oC, 10kA nominal discharge current, 50Hz, gapless metal oxide type, single phase Surge Arresters, outdoor type	No.	3				
1D2	Rigid tubular conductor and/or stranded conductors including accessories for each connection as required for completing 36kV Switchyard						
	i. Tubular Conductor and/or Flexible Conductor	Lot	1				
1D3	Insulator and fittings including all necessary clamps and connectors as required for completing 36kV Switchyard						
	i. Insulator, Post & Disk	Lot	1				
	ii. Fittings & Clamp, Connector	Lot	1				
	iii. Nut-bolt	Lot	1				
1D4	Steel structure for each circuit of Aux. power TR and Auto.TR tertiary side connection including all necessary accessories required for completing 36kV Switchyard						
	i. Equipment Structure with Nut & Bolts	Lot	1				
	ii. LV Power & Control cable tray including fitting, fixing accessories	Lot	1				
1D5	33kV Power Cable with associated material						
	i. 33kV, single phase, 300 sqmm XLPE cable	meter	50				
	ii. 33kV, single phase, outdoor cable termination with accessories	No.	12				
1E	Power Transformers and Auxiliary Transformer						
1E1	400/235/34.5 kV, 520/750 MVA (ONAN/ONAF), three phase outdoor type auto transformer equipped with delta connected 33 kV tertiary winding (brought out to terminal bushings) and RTCC Panel. Direct Hot Spot Temperature measurement facility using fiber optic shall be available.	Set	2				
1E2	On-line Dissolved Gas (multi-gas) & Moisture Analyzer system for 400/235/34.5 kV auto transformers	Set	2				
1E3	33/0.415 kV, 500kVA, three phase outdoor type earthing/auxiliary Zig-Zag transformer and BCT with off-load tap changer, associated outdoor neutral CTs and steel support structures including all necessary connections.	Set	2				
1E4	CAFS of Fire Fighting system for transformer with water feeding equipment						
	i. 400/235/34.5 kV Auto-transformer	set	2				
1F	Control, Protection, Substation Automation & Metering						
400kV Circuit							
1F1	Control, protection and Monitoring including SAS Function for Overhead Line circuits, along with Control & Protection Cubicles	Set	8				
1F2	Control, protection and Monitoring including SAS for Auto transformer circuits, along with Control & Protection Cubicles	Set	3				
1F3	Control, Protection, Monitoring including SAS Function for Bus Coupler circuits, along with Control & Protection Cubicles	Set	2				
1F4	Control, Protection, Monitoring including SAS Function for Bus section circuits, along with Control & Protection Cubicles	Set	2				



Name of Bidder:

Signature of Bidder:

Item No.	Description of Equipment Requirement	Unit	Quantity	Code	Foreign Currency (in.....)		Remark
					Unit Price	Total Price	
					CIP (2)	CIP (3) = (1) x (2)	
1F5	Busbar Protection including SAS Function (400kV Circuit) [Main-1 & Main-2, different make]	Set	2				
1F6	Tariff metering comprises with :	Lot	1				
	i. Meters (Main & Check)	Set	11				
	ii. Complete Panel (Front opening, Swing frame type) including wiring, lighting, heater, humidity controller, TTB, MCBs & other accessories	Lot	1				
230kV Circuits							
1F7	Control, protection and Monitoring including SAS Function for Overhead Line circuits, along with Control & Protection Cubicles	Set	10				
1F8	Control, protection and Monitoring including SAS Function for Auto-transformer circuits, along with Control & Protection Cubicles	Set	3				
1F9	Control, protection and Monitoring including SAS Function for Bus Coupler circuits, along with Control & Protection Cubicles	Set	2				
1F10	Control, protection and Monitoring including SAS Function for Bus Section circuits, along with Control & Protection Cubicles	Set	2				
1F11	Busbar Protection including SAS Function (230kV Circuit)	Set	1				
	Tariff metering comprises with :	Lot	1				
	i. Meters (Main & Check)	Set	13				
	ii. Complete Panel (Front opening, Swing frame type) including wiring, lighting, heater, humidity controller, TTB, MCBs & other accessories	Lot	1				
1F1.x	Protection for Kaliganj-Ghorasal Old 1 & Kaliganj-Ghorasal Old 2 overhead line circuits, along with Protection Cubicles at existing Ghorasal Substation	Set	2				
1F2.x	Protection for Kaliganj-Tongi Old 1 & Kaliganj-Tongi Old 2 overhead line circuits, along with Protection Cubicles at existing Tongi Substation	Set	2				
36kV Circuit							
1F13	Control, Monitoring, Protection & SAS function for 33kV station power system, along with Control & Protection Cubicles	Set	2				
1F14	Control, Monitoring, Protection & SAS function for Unloaded tertiary side of Auto-transformer (can be merged with TR main/backup protection)	Set	1				
	Tariff metering comprises with:	Lot	1				
	i. Meters (Main & Check)	Set	2				
	ii. Complete Panel (Front opening, Swing frame type) including wiring, lighting, heater, humidity controller, TTB, MCBs & other accessories	Lot	1				
1F16	Substation Automation system	Lot	1				
1G	Digital Fault & Disturbance Recorder	Lot	1				
1H	Power Cable & GIL						
1H1	420kV Gas Insulated Line (GIL) for eleven (11) feeders, single phase enclosure, which consist of eight (8) T/L & three (3) T/R, terminating chambers complete with support structure, etc. The Length of GIL shall be different from each bay as per actual design (65 - 240 meter). Actual payment shall be as per final design. The Length given here is as single phase length.	m	5300				
1H2	245kV Gas Insulated Line (GIL) for thirteen (13) feeders, single phase enclosure, which consist of ten (10) T/L & three (3) T/R, terminating chambers complete with support structure, etc. The Length of GIL shall be different from each bay as per actual design (25 - 125 meter). Actual payment shall be as per final design. The Length given here is as single phase length	m	2700				
1H3	230kV, 2000sqmm, XLPE Cu Power cable & termination						
	i. XLPE HV Power cable (Cable shall be laid in cable trench with flat formation arrangement)	m	1400				
	ii. Outdoor type Cable Sealing End per phase with required necessary accessories for line bays	Nos.	12				
	iii. 198kV rated voltage, 158 kV(rms) continuous operating voltage at 50oC, 10kA nominal discharge current, 50Hz, gapless metal oxide type, single phase Surge Arresters, outdoor type	Nos.	6				
	Steel structure for each circuit of 230kV cable connection						
	i. Equipment Structure with Nut & Bolts						
	a) Outdoor type Cable Sealing End	Nos.	12				
1I	Multicore Cables for control, protection, metering & power circuits	Lot	1				
	i. LV Control Cable	Lot	1				
	ii. LV Power Cable	Lot	1				
1J	Earthing and Lightning Protection system						
1J1	Earthing system for complete substation (grounding mesh, grounding rod/ needle type grounding rod) including GIS Building	Lot	1				
1J2	Lightning Protection System for complete substation (overhead, mast type)	Lot	1				
1J3	3-phase Portable earthing devices (for maintenance) with connectors and telescopic glass fibre operating pole suitable for plant shall be supplied (for each voltage level, respectively)	Set	2				
1K	Batteries, Chargers & DC distribution board						
	110V Ni-cad Batteries with chargers & distribution board						

Name of Bidder:

Signature of Bidder:

Item No.	Description of Equipment Requirement	Unit	Quantity	Code	Foreign Currency (in.....)		Remark
					Unit Price	Total Price	
					CIP (2)	CIP (3) = (1) x (2)	
1K1	i. for 400kV system						
	a) _110V Battery Banks, minimum 400Ah at the 5-hours rate of discharge	Set	2				
	b) _Charger (IGBT Type), each float charge shall not be less than 150A rating	Set	2				
	c) _110V DC Distribution panel, MCC type (LV S.W room, SPR, control Room) with Digital Display & Controller	Lot	1				
	d) Inverter, Input- AC & DC, output -AC 230V 5kVA 60min	set	2				
	ii. for 230kV system						
	a) _110V Battery Banks, minimum 400Ah at the 5-hours rate of discharge	Set	2				
	b) _Charger (IGBT Type), each float charge shall not be less than 150A rating	Set	2				
	c) _110V DC Distribution panel, MCC type (Panel Room) with Digital Display & Controller	Lot	1				
1K2	48V Ni-cad Batteries with chargers & distribution board						
	i. 48V battery Banks, minimum 200Ah at the 5-hours rate of discharge	Set	2				
	ii. _Charger (IGBT Type) each float charge shall not be less than 120A rating	Set	2				
	iii. 48V DC Distribution Panel with Digital Display & Controller	Lot	1				
1L	LVAC Distribution						
1L1	AC 415V / 230V Distribution panels (MCC type, LV S.W room, Each Panel & Control room, Generator room etc) with Digital Display & Controller	Lot	1				
1L2	Tariff metering at LV side (Main)	Lot	1				
1M	Civil Works, Building and Foundation (Details in Schedule B4)						
1M1	Complete land development	Refer to Schedule B4					
1M2	Complete civil items required for outdoor works including boundary wall and slope protection	Refer to Schedule B4					
1M3	i. Complete civil works for 420kV Indoor GIS Building including Protection & Metering Room, Control Room, 110V Battery Room, 48 Battery Room, Warehouse and etc.						
	a) _Foundation works	Refer to Schedule B4					
	b) _Super structures	Refer to Schedule B4					
	c) _All finish works like rendering, painting, water supply, sanitary, floor finish, furniture, etc.	Refer to Schedule B4					
	d) _10 ton EOT Crane	Lot	1				
	e) _Warehouse, Separate Spare materials by installing shelves and labels.	Refer to Schedule B4					
	f) Elevator System (Capacity 6 Person)	Lot	1				
	ii. Complete civil works for 245kV Indoor GIS Building including Protection & Metering Room, 110V Battery Room and etc.	Refer to Schedule B4					
	a) _Foundation works	Refer to Schedule B4					
	b) _Super structures	Refer to Schedule B4					
	c) _All finish works like rendering, painting, water supply, sanitary, floor finish, furniture, etc.	Refer to Schedule B4					
	d) _10 ton EOT Crane	Lot	1				
	e) Elevator System (Capacity 6 Person)	Lot	1				
	iii. Emergency Aux. power Room & Water feeding Room	Refer to Schedule B4					
	a) _Foundation works	Refer to Schedule B4					
	b) _Super structures	Refer to Schedule B4					
	c) _All finish works like rendering, painting, water supply, sanitary, floor finish, furniture, etc.	Refer to Schedule B4					
	d) Complete civil work for CAF System including pipe network	Refer to Schedule B4					
	iv. Single storied Ansar Barrack with foundation for two storied building	Refer to Schedule B4					
1M4	Testing of Foundation	Refer to Schedule B4					
1N	Lighting, small power, air conditioning and Ventilation, Fire Fighting System & CCTV						
1N1	Indoor Lighting (LED type), small power, air conditioning (except GIS room) and Ventilation and emergency DC lighting for Indoor.	Lot	1				
1N2	Lighting (LED type) for outside building for security, roadway, switchyard	Lot	1				
1N3	Fire Fighting system for GIS Hall & Control Room						
	i) Fire Fighting system For 230kV GIS Hall & Panel Room	Lot	1				
	ii) Fire Fighting system For 400kV GIS Hall & Panel Room	Lot	1				
	iii) Fire Fighting system For Control Room	Lot	1				
1N4	Complete CCTV with motion sensor (each room and S/Y)	Lot	1				

Name of Bidder:

Signature of Bidder:

Item No.	Description of Equipment Requirement	Unit	Quantity	Code	Foreign Currency (in.....)		Remark
					Unit Price	Total Price	
					CIP	CIP	
			(1)		(2)	(3) = (1) x (2)	
10	Fibre Optic Multiplexer Equipment & PLC Equipment and System for Communication and Protection at Local & Remote end substations - 87 or 21 relay for each transmission line protection (through fibre cores) - 21 relay carrier signal (main and back-up) - SCADA data from switchgear and control system - IP and Analog telephone system - Hot-line telephone system All PLC terminal equipment at remote end substations are ABB make						
101	Indoor Fibre Optic Multiplexer, at Local end SS, Equipment each comprising						
	i. ADM with TP unit with Panels (Front opening, Swing Frame type) & accessories	Set	4				
	ii. IDF/SDF	Set	1				
	iii. Cables	Lot	1				
	iv. EOW telephone with board	Set	1				
	v. Panel including wiring, lighting, filtering fan, humidity controller, heater, power socket & other accessories	Lot	4				
102	vi. All other Accessories not included above	Lot	1				
	Other Indoor equipment, at Local end SS						
	i. Primary phone (IP phone)	No.	6				
	ii. Secondary phone (2W phone with caller ID)	No.	10				
103	iii. Indoor MDF	Set	1				
	Outdoor equipment, at Local end SS						
	i. Underground optical fiber cable, armoured, 48 core	Lot	1				
	ii. Pigtail cables	Lot	1				
104	iii. Outdoor termination box	Set	10				
	Extension/Adaptation of Indoor Fibre Optic Multiplexer Equipment & system at remote end substations each comprising						
	i. Optical STM-16 Card for each 400 kV line at remote end	Lot	1				
	ii. Optical STM-4 Card for each 230 kV line at remote end	Lot	1				
	iii. Required no. of cards with 4 commands for distance protection after detail design	Lot	1				
	iv. Outdoor termination box	Set	1				
105	v. Cables, ODF, MDF, panels as required	Lot	1				
	PLC equipment at Local end SS						
	i. Indoor PLC Equipment with all accessories & Panels (Front opening, Swing Frame type)	Set	12				
	ii. Line matching unit	No.	12				
	iii. Cables & other accessories for complete PLCC system	Lot	1				
106	iv. Indoor PLC Equipment & accessories as complete system for Remote end station	Lot	01				
	Installation, testing & commissioning	Lot	1				
1P	SCADA system for Telecontrol and Telemetry						
1P1	i. Equipment at Substation						
	a) Gateway (server, engineering software)	Set	2				
	b) Ethernet Switch	Set	2				
	c) Hardware Firewall	Set	1				
	d) Complete Panel (Swing Frame type) including wiring, lighting, heater, humidity controller & other accessories	Lot	1				
	e) Cables	Lot	1				
	f) All Other Accessories	Lot	1				
1R	ii. Integration work with Master & Backup NLDC including Engineering & Commissioning	Lot	1				
	Generator for Emergency Aux. Power (with smoke reduction device)						
1R1	250kW 0.415kV, 50Hz Diesel generator	Set	1				
1S	Other equipment						
1S1	Scissor Lift : Battery type for one person / Maximum working height greater than 10m	Lot	1				
1S2	Emergency Interphone (each room)	Lot	1				
Total Price (for New Kaliganj 400/230kV SS) carried to Summary of Price Schedule							
Total Price in words (for New Kaliganj 400/230kV SS).....							

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Name of Bidder:

Signature of Bidder:

Schedule B1 : Mandatory Spare, Maintenance & Test Equipment Supplied from Outside the Employer's Country

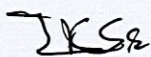
New 400/230 kV Substation at KALIGANJ

(For detailed description of the technical requirements please refer to clause 1.2.1: Technical Requirements for 400/230KV GIS Substation at Kaliganj, Schedule A: Scope of Works, volume 3 of 3 of the bidding document)

Item No.	Description of Equipment Requirement	Unit	Quantity	Code	Foreign Currency (in.....)		Remark
					Unit Price	Total Price	
					CIP	CIP	
			(1)		(2)	(3) = (1) x (2)	
AS	420kV Switchgear, equipment and connection						
AS1	Complete CB module for GIS	phase	2				
AS2	Complete Operation Mechanism with accessories of CB for GIS	set	1				
AS3	Tripping coil for GIS	no	6				
AS4	Closing coil for GIS	no	3				
AS5	Complete DS/ES module for GIS	phase	2				
AS6	Complete Operation Mechanism with accessories of DS/ES for GIS	set	1				
AS7	Complete HSES module for GIS	phase	2				
AS8	Complete Operation Mechanism with accessories of HSES for GIS	set	1				
AS9	Complete CT module for GIS	phase	2				
AS10	Complete VT module for GIS	phase	2				
AS11	Complete LA module for GIS	phase	2				
AS12	Gas pressure gauge	no	6				
AS13	Pressure Relief Device	no	6				
AS14	Rubber gaskets "O" rings and seals for SF6 gas	lot	1				
AS15	All types of control valves for SF6 gas	lot	1				
AS16	GIS-to-Air Bushing	phase	2				
AS17	Each type of Supporting insulator for GIS	set	3				
AS18	Each type of Spacer for GIS	set	4				
AS19	Set of special tools, gauges and instruments for operation and maintenance of GIS	set	2				
AS20	SF6 gas cylinders - 45 kg	no	10				
AS21	420kV CVT, Single-phase, 50Hz, 1425kVp BIL, 3 windings	No.	9				
AS22	390kV rated voltage at 50°C, 10kA nominal discharge current, 50Hz, gapless metal oxide	No.	9				
AS23	Each type of Clamps and Fittings (Minimum 2 nos. or 10% of supplied quantity, whichever is the highest)	lot	1				
BS	245kV Switchgear, equipment and connection						
BS1	Complete CB module for GIS	phase	2				
BS2	Complete Operation Mechanism with accessories of CB for GIS	set	1				
BS3	Tripping coil for GIS	no	6				
BS4	Closing coil for GIS	no	3				
BS5	Complete DS/ES module for GIS	phase	2				
BS6	Complete Operation Mechanism with accessories of DS/ES for GIS	set	1				
BS7	Complete HSES module for GIS	phase	2				
BS8	Complete Operation Mechanism with accessories of HSES for GIS	set	1				
BS9	Complete CT module for GIS	phase	2				
BS10	Complete VT module for GIS	phase	2				
BS11	Gas pressure gauge	no	6				
BS12	Pressure Relief Device	no	6				
BS13	Rubber gaskets "O" rings and seals for SF6 gas	lot	1				
BS14	All types of control valves for SF6 gas	lot	1				
BS15	GIS-to-Air Bushing	phase	2				
BS16	Each type of Supporting insulator for GIS	set	3				
BS17	Each type of Spacer for GIS	set	4				
BS18	Set of special tools, gauges and instruments for operation and maintenance of GIS	set	2				
BS19	SF6 gas cylinders - 45 kg	no	10				
BS20	198kV rated voltage, 158 kV(rms) continuous operating voltage at 50°C, 10kA nominal discharge current, 50Hz, gapless metal oxide type, single phase Surge Arresters, outdoor type	no	4				
BS21	Each type of Clamps and Fittings (Minimum 2 nos. or 10% of supplied quantity, whichever is the highest)	lot	1				
ES	Power Transformers						
	400/230kV Transformer						
ES1	Each type of Bushings						
	a 420kV	no	3				
	b 245kV	no	3				
	c 36kV	no	3				
	d Neutral	no	1				
ES2	Buchholz Relay	Set	1				
ES3	Pressure Relief Device	Set	1				
ES4	WTI	Set	2				
ES5	OTI	Set	1				
ES6	Oil level monitor	Set	1				
ES7	Complete Cooling Fan module with Motor	Set	2				
ES8	Each type of Breathers module with Silicagel	Set	2				
ES9	Set of O-rings and Gaskets with cutting tools	Set	2				
ES10	Transformer oil 200 liter barrel	nos.	20				
ES11	Oil Insulation Tester	No	1				

ES12	Each type of Clamps and Fittings (Minimum 2 nos. or 10% of supplied quantity, whichever is the highest)	lot	1				
ES13	Set of special tools, gauges and instruments for operation and maintenance of Transformer	Set	2				
FS Control, Protection, SAS and Metering							
Each type of Protection Relays							
FS1	a	Line Differential Protection Relay with backup Distance Protection & Directional Earth Fault Protection Functions	no.	32			
	b	Transformer Differential Relay	no.	2			
	c	Directional & Non-directional Overcurrent and Directional & Non-directional Earth Fault Protection Relay	no.	2			
	d	BCU	no.	4			
FS2	Heater	set	6				
FS3	Humidity Sensors	set	6				
FS4	Thermostat	set	6				
FS5	Tripping relays	set	8				
FS6	Each type of Trip circuit supervision relays (Bidder to list)	set	8				
FS7	Each type of MCB	set	2				
FS8	Ethernet Switches	nos.	2				
FS9	Relay Test Block & socket	No.	1				
GS DFDR							
GS1	Each type MCBs	set	1				
GS2	Each type of Ethernet switches	set	1				
KS Battery, Charger & DC distribution							
KS1	Each type of Fuses	set	1				
KS2	Each type of MCB for battery	No.	2				
KS3	Each type of MCB for charger	No.	2				
LS LVAC distribution							
LS1	3-phase set LVAC board incoming MCCB	set	1				
LS2	3-phase sets outgoing MCCBs	set	2				
LS3	1-phase sets outgoing MCBs	set	6				
OS Fibre Optic Multiplexer Equipment & PLC Equipment and System							
OS1	Optical Booster	set	2				
SS Test Equipment							
SS1	SF6 Multi-Analyser for measurement of % SF6, Moisture and SO2 concentration (DILO)	No.	1				
SS2	SF6 Gas leakage detector (infrared type)	No.	1				
MS Maintenance Equipment							
MS1	SF6 Gas Treatment Plant for Gas Filling, Recovery, Evacuation, Filtering, Drying and Storage (DILO)	No.	1				
MS2	Portable vacuum pump suitable for SF6 circuit breaker	No.	1				
MS3	3-phase Portable earthing devices (for maintenance) with connectors and telescopic glass fibre operating pole suitable for plant shall be supplied (for each voltage level, respectively)	Set	2				

Total Price carried to Summary of Price Schedule (Spare, Maintenance & Test Equipement of S/S)



Schedule B2 : Plant and Equipment Supplied from within the Employer's Country**New 400/230 kV Substation at KALIGANJ**

(For detailed description of the technical requirements please refer to clause 1.2.1: Technical Requirements for 400/230KV GIS Substation at Kaliganj, Schedule A: Scope of Works, volume 3 of 3 of the bidding document)

Item No.	Description of Equipment Requirement	Unit	Quantity	Local Currency (in BDT)		Remark
				Unit Price	Total Price	
				EXW	EXW	
			(1)	(2)	(3) = (1) x (2)	
1A						
1A1	420kV GIS Line Feeder Bays	Set	8			
1A2	420kV GIS Auto Transformer Feeder Bays	Set	3			
1A3	420kV GIS Bus Coupler Bays	Set	2			
1A4	420kV GIS Bus Section Bays	Set	2			
1A5	420 kV GIS type LA each comprising three phase	Set	4			
1A6	420kV GIS type Bus FES and Bus VT	Set	4			
1A7	Busbar extension module, each set comprises with sufficient buffer gas	Set	2			
1A8	Standalone Partial Discharge measurement and analyzer system for Complete GIS	Lot	1			
	AIS Switchgear					
1A9	390kV rated voltage at 50°C, 10kA nominal discharge current, 50Hz, gapless metal	No.	27			
1A10	420kV CVT, Single-phase, 50Hz, 1425kVp BIL, 3 windings	No.	18			
1A11	420kV, 4000A single phase Wavetrap	No.	8			
1A12	400kV Rigid tubular conductor and/or stranded conductors including					
	i. Tubular Conductor and/or Flexible Conductor	Lot	1			
	Insulator and fittings including all necessary clamps and connectors as					
1A13	i. Insulator	Lot	1			
	ii. Fittings & Clamps, Connector	Lot	1			
	iii. Nut-bolt	Lot	1			
1A14	Steel gantry each circuit of 400kV Transmission Line , Transformer &					
	i. Steel Structure for T/L with Nut & Bolts					
	a) Gantry Column	No.	10			
	b) Beam	No.	8			
	ii Steel Structure for 400/230kV Transformer with Nut & Bolts					
	a) Gantry Column	No.	8			
	b) Beam	No.	6			
	iii. Equipment Structure					
	a) LA	No.	33			
	b) 420kV CVT	No.	24			
	iv. Nut-Bolt	Lot	1			
	v. LV power & control cable tray including fitting, fixing accessories	Lot	1			
1B						
1B1	245kV GIS Line Feeder Bays	Set	10			
1B2	245kV GIS Auto Transformer Feeder Bays	Set	3			
1B3	245kV Bus Coupler Bays	Set	2			
1B4	245kV Bus Section Bays	Set	2			
1B5	245kV GIS type Bus FES and Bus VT	Set	4			
1B6	Busbar extension module, each set comprises with sufficient buffer gas	Set	2			
	AIS Switchgear, Equipment & Structure					
1B7	198kV rated voltage, 158 kV(rms) continuous operating voltage at 50°C, 10kA	No.	39			
1B8	Rigid tubular conductor and/or stranded conductors including accessories for					
	i. Tubular Conductor and/or Flexible Conductor	Lot	1			
	Insulator and fittings including all necessary clamps and connectors as					
1B9	i. Insulator	Lot	1			
	ii. Fittings & Clamps, Connector	Lot	1			
	iii. Nut-bolt	Lot	1			
1B10	Steel gantry for each circuit of 245kV Transmission Line, Transformer &					
	i. Steel Structure for T/L with Nut & Bolts					
	a) Gantry Column	No.	11			
	b) Beam	No.	10			
	ii Equipment Structure					
	a) LA	No.	39			
	b) Outdoor CSE	No.	12			
	iii. Nut & Bolts	Lot	1			
	iv. LV power & control cable tray including fitting, fixing accessories	Lot	1			
	v. HV power cable tray including fitting, fixing accessories	Lot	1			

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Item No.	Description of Equipment Requirement	Unit	Quantity	Local Currency (in BDT)		Remark
				Unit Price	Total Price	
				EXW	EXW	
			(1)	(2)	(3) = (1) x (2)	
1D	36kV Switchgears, equipment connection and steel structures					
	36kV AIS Switchgears for Aux. Power Bays, comprises with:					
1D1	i. 36kV, 630A, 31.5kA/3sec, 50Hz, 170kVp BIL, VCB with spring operating mechanism	Set	2			
	ii. 36kV, 630A, 31.5kA/3sec, 50Hz, 170kVp BIL, single vertical break/horizontal, post type, motor operated Disconnecter with Earth Switch	Set	4			
	iii. 36kV, single-phase, 31.5kA/3sec, 50Hz, 170kVp BIL, Current Transformers	No.	6			
	iv. 36kV, 31.5kA/3sec, single-phase, 50Hz, 170kVp BIL, Inductive Voltage Transformers	No.	6			
	v. 30kV rated voltage, 24 kV(rms) continuous operating voltage at 50oC, 10kA nominal discharge current, 50Hz, gapless metal oxide type, single phase Surge Arresters, outdoor type	No.	6			
	36kV AIS Switchgears for Unloaded tertiary Auto-Transformer Bays,					
1D1.x	i. 36kV, 31.5kA/3sec, single-phase 50Hz, 170kVp BIL, inductive Voltage Transformers	No.	3			
	ii. 30kV rated voltage, 24 kV(rms) continuous operating voltage at 50oC, 10kA nominal discharge current, 50Hz, gapless metal oxide type, single phase Surge Arresters, outdoor type	No.	3			
1D2	Rigid tubular conductor and/or stranded conductors including accessories for					
	i. Tubular Conductor and/or Flexible Conductor	Lot	1			
	Insulator and fittings including all necessary clamps and connectors as					
1D3	i. Insulator, Post & Disk	Lot	1			
	ii. Fittings & Clamp, Connector	Lot	1			
	iii. Nut-bolt	Lot	1			
	Steel structure for each circuit of Aux. power TR and Auto.TR tertiary side					
1D4	i. Equipment Structure with Nut & Bolts	Lot	1			
	ii. LV Power & Control cable tray including fitting, fixing accessories	Lot	1			
	33kV Power Cable with associated material					
1D5	i. 33kV, single phase, 300 sqmm XLPE cable	meter	50			
	ii. 33kV, single phase, outdoor cable termination with accessories	No.	12			
1E	Power Transformers and Auxiliary Transformer					
1E1	400/235/34.5 kV, 520/750 MVA (ONAN/ONAF), three phase outdoor type auto	Set	2			
1E2	On-line Dissolved Gas (multi-gas) & Moisture Analyzer system for 400/235/34.5 kV	Set	2			
1E3	33/0.415 kV, 500kVA, three phase outdoor type earthing/auxiliary Zig-Zag	Set	2			
1E4	CAFS of Fire Fighting system for transformer with water feeding equipment					
	i. 400/235/34.5 kV Auto-transformer	set	2			
1F	Control, Protection, Substation Automation & Metering					
	400kV Circuit					
1F1	Control, protection and Monitoring including SAS Function for Overhead Line	Set	8			
1F2	Control, protection and Monitoring including SAS for Auto transformer circuits,	Set	3			
1F3	Control, Protection, Monitoring including SAS Function for Bus Coupler circuits,	Set	2			
1F4	Control, Protection, Monitoring including SAS Function for Bus section circuits,	Set	2			
1F5	Busbar Protection including SAS Function (400kV Circuit)	Set	2			
1F6	Tariff metering comprises with :	Lot	1			
	i. Meters (Main & Check)	Set	11			
	ii. Complete Panel (Front opening, Swing frame type) including wiring, lighting, heater, humidity controller, TTB, MCBs & other accessories	Lot	1			
	230kV Circuits					
1F7	Control, protection and Monitoring including SAS Function for Overhead Line	Set	10			
1F8	Control, protection and Monitoring including SAS Function for Auto-transformer	Set	3			
1F9	Control, protection and Monitoring including SAS Function for Bus Coupler circuits,	Set	2			
1F10	Control, protection and Monitoring including SAS Function for Bus Section circuits,	Set	2			
1F11		Set	1			
	Tariff metering comprises with :	Lot	1			
1F12	i. Meters (Main & Check)	Set	13			
	ii. Complete Panel (Front opening, Swing frame type) including wiring, lighting, heater, humidity controller, TTB, MCBs & other accessories	Lot	1			
1F1.x	Protection for Kaliganj-Ghorasai Old 1 & Kaliganj-Ghorasai Old 2 overhead line	Set	2			
1F2.x	Protection for Kaliganj-Tongi Old 1 & Kaliganj-Tongi Old 2 overhead line circuits,	Set	2			
	36kV Circuit					
1F13	Control, Monitoring, Protection & SAS function for 33kV station power system,	Set	2			

Item No.	Description of Equipment Requirement	Unit	Quantity	Local Currency (in BDT)		Remark
				Unit Price	Total Price	
				EXW	EXW	
			(1)	(2)	(3) = (1) x (2)	
1F14	Control, Monitoring, Protection & SAS function for Unloaded tertiary side of Auto-	Set	1			
1F15	Tariff metering comprises with:	Lot	1			
	i. Meters (Main & Check)	Set	2			
	ii. Complete Panel (Front opening, Swing frame type) including wiring, lighting, heater, humidity controller, TTB, MCBs & other accessories	Lot	1			
1F16	Substation Automation system	Lot	1			
1G	Digital Fault & Disturbance Recorder	Lot	1			
1H	Power Cable & GIL					
1H1	420kV Gas Insulated Line (GIL) for eleven (11) feeders, single phase encloser, which	m	5300			
1H2	245kV Gas Insulated Line (GIL) for thirteen (13) feeders, single phase encloser,	m	2700			
1H3	230kV, XLPE 2000sqmm, Cu Power cable & termination					
	i. XLPE HV Power cable	m	1400			
	ii. Outdoor type Cable Sealing End per phase with required necessary accessories for	Nos.	12			
	iii. 198kV rated voltage, 158 kV(rms) continuous operating voltage at 50oC, 10kA	Nos.	6			
1H4	Steel structure for each circuit of 230kV cable connection					
	i. Equipment Structure with Nut & Bolts					
	a) Outdoor type Cable Sealing End	Nos.	12			
1I	Multicore Cables for control, protection, metering & power circuits	Lot	1			
	i. LV Control Cable	Lot	1			
	ii. LV Power Cable	Lot	1			
1J	Earthing and Lightning Protection system					
1J1	Earthing system for complete substation (grounding mesh, grounding rod/ needle	Lot	1			
1J2	Lightning Protection System for complete substation (overhead, mast type)	Lot	1			
1J3	3-phase Portable earthing devices (for maintenance) with connectors and telescopic	Set	2			
1K	Batteries, Chargers & DC distribution board					
1K1	110V Ni-cad Batteries with chargers & distribution board					
	i. for 400kV system					
	a) _110V Battery Banks, minimum 400Ah at the 5-hours rate of discharge	Set	2			
	b) _Charger (IGBT Type), each float charge shall not be less than 150A rating	Set	2			
	c) _110V DC Distribution panel, MCC type (LV S.W room, SPR, control Room) with Digital Display & Controller	Lot	1			
	d) Inverter, Input- AC & DC, output -AC 230V 5kVA 60min	set	2			
	ii. for 230kV system					
	a) _110V Battery Banks, minimum 400Ah at the 5-hours rate of discharge	Set	2			
	b) _Charger (IGBT Type), each float charge shall not be less than 150A rating	Set	2			
	c) _110V DC Distribution panel, MCC type (Panel Room) with Digital Display & Controller	Lot	1			
1K2	48V Ni-cad Batteries with chargers & distribution board					
	i. 48V battery Banks, minimum 200Ah at the 5-hours rate of discharge	Set	2			
	ii. _Charger (IGBT Type) each float charge shall not be less than 120A rating	Set	2			
	iii. 48V DC Distribution Panel with Digital Display & Controller	Lot	1			
1L	LVAC Distribution					
1L1	AC 415V / 230V Distribution panels (MCC type, LV S.W room, Each Panel &	Lot	1			
1L2	Tariff metering at LV side (Main)	Lot	1			
1M	Civil Works, Building and Foundation (Details in Schedule B4)					
1M1	Complete land development	Refer to Schedule B4				
1M2	Complete civil items required for outdoor works including boundary wall and slope	Refer to Schedule B4				
	i. Complete civil works for 420kV Indoor GIS Building including Protection & Metering Room, Control Room, 110V Battery Room, 48 Battery Room, Warehouse and etc.					
	a) Foundation works	Refer to Schedule B4				
	b) Super structures	Refer to Schedule B4				
	c) _All finish works like rendering, painting, water supply, sanitary, floor finish, furniture, etc.	Refer to Schedule B4				
	d) 10 ton EOT Crane	Lot	1			
	e) _Warehouse_ Separate Spare materials by installing shelves and labels.	Refer to Schedule B4				
	f) Elevator System (Capacity 6 Person)	Lot	1			

Item No.	Description of Equipment Requirement	Unit	Quantity	Local Currency (in BDT)		Remark
				Unit Price	Total Price	
				EXW	EXW	
			(1)	(2)	(3) = (1) x (2)	
1M3	ii. Complete civil works for 245kV Indoor GIS Building including Protection & Metering Room, 110V Battery Room and etc.	Refer to Schedule B4				
	a) Foundation works	Refer to Schedule B4				
	b) Super structures	Refer to Schedule B4				
	c) All finish works like rendering, painting, water supply, sanitary, floor finish, furniture, etc.	Refer to Schedule B4				
	d) 10 ton EOT Crane	Lot	1			
	e) Elevator System (Capacity 6 Person)	Lot	1			
	iii. Emergency Aux. power Room & Water feeding Room	Refer to Schedule B4				
	a) Foundation works	Refer to Schedule B4				
	b) Super structures	Refer to Schedule B4				
	c) All finish works like rendering, painting, water supply, sanitary, floor finish, furniture, etc.	Refer to Schedule B4				
	d) Complete civil work for CAF System including pipe network	Refer to Schedule B4				
	iv. Single storied Ansar Barrack with foundation for two storied building	Refer to Schedule B4				
	1M4 Testing of Foundation	Refer to Schedule B4				
	1N Lighting, small power, air conditioning and Ventilation, Fire Fighting System					
1N1	Indoor Lighting (LED type), small power, air conditioning (except GIS room) and	Lot	1			
1N2	Lighting (LED type) for outside building for security, roadway, switchyard	Lot	1			
1N3	Fire Fighting system for GIS Hall & Control Room					
	i) Fire Fighting system For 230kV GIS Hall & Panel Room	Lot	1			
	ii) Fire Fighting system For 400kV GIS Hall & Panel Room	Lot	1			
	iii) Fire Fighting system For Control Room	Lot	1			
1N4	Complete CCTV with motion sensor (each room and S/Y)	Lot	1			
10	Fibre Optic Multiplexer Equipment & PLC Equipment and System for					
101	Indoor Fibre Optic Multiplexer, at Local end SS, Equipment each comprising					
	i. ADM with TP unit with Panels (Front opening, Swing Frame type) & accessories	Set	4			
	ii. IDF/SDF	Set	1			
	iii. Cables	Lot	1			
	iv. EOW telephone with board	Set	1			
	v. Panel including wiring, lighting, filtering fan, humidity controller, heater, power socket & other accessories	Lot	4			
	vi. All other Accessories not included above	Lot	1			
102	Other Indoor equipment, at Local end SS					
	i. Primary phone (IP phone)	No.	6			
	ii. Secondary phone (2W phone with caller ID)	No.	10			
	iii. Indoor MDF	Set	1			
103	Outdoor equipment, at Local end SS					
	i. Underground optical fiber cable, armoured, 48 core	Lot	1			
	ii. Pigtail cables	Lot	1			
	iii. Outdoor termination box	Set	10			
104	Extension/Adaptation of Indoor Fibre Optic Multiplexer Equipment & system at					
	i. Optical STM-16 Card for each 400 kV line at remote end	Lot	1			
	ii. Optical STM-4 Card for each 230 kV line at remote end	Lot	1			
	iii. Required no. of cards with 4 commands for distance protection after detail design	Lot	1			
	iv. Outdoor termination box	Set	1			
	v. Cables, ODF, MDF, panels as required	Lot	1			
105	PLC equipment at Local end SS					
	i. Indoor PLC Equipment with all accessories & Panels (Front opening, Swing Frame type)	Set	12			
	ii. Line matching unit	No.	12			
	iii. Cables & other accessories for complete PLCC system	Lot	1			
	iv. Indoor PLC Equipment & accessories as complete system for Remote end station	Lot	01			
106	Installation, testing & commissioning	Lot	1			
1P	SCADA system for Telecontrol and Telemetry					
	i. Equipment at Substation					
	a) Gateway (server, engineering software)	Set	2			
	b) Ethernet Switch	Set	2			
	c) Hardware Firewall	Set	1			

Item No.	Description of Equipment Requirement		Unit	Quantity	Local Currency (in BDT)		Remark
					Unit Price	Total Price	
					EXW	EXW	
					(1)	(2)	
1P1	d)	Complete Panel (Swing Frame type) including wiring, lighting, heater, humidity controller & other accessories	Lot	1			
	c)	Cables	Lot	1			
	f)	All Other Accessories	Lot	1			
	ii.	Integration work with Master & Backup NLDC including Engineering & Commissioning	Lot	1			
1R	Generator for Emergency Aux. Power (with smoke reduction device)						
1R1	250kW 0.415kV, 50Hz Diesel generator		Set	1			
1S	Other equipment						
1S1	Scissor Lift : Battery type for one person / Maximum working height greater than		Lot	1			
1S2	Emergency Interphone (each room)		Lot	1			
Total Price (for New Kaliganj 400/230kV SS) carried to Summary of Price Schedule							
Total Price in words (for New Kaliganj 400/230kV SS).....							

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Schedule B3: Design Services							
New 400/230 kV Substation at KALIGANJ							
Item No	Description of Required Services	Unit	Quantity	Foreign Currency (in.....)		Local Currency (in BDT)	
				Unit Price	Total Price	Unit Price	Total Price
				foreign portion	foreign portion	local portion	local portion
				(1)	(2) = (1) x (2)	(4)	(5) = (1) x (4)
1	Design and engineering services of the whole substation, local and foreign part	Lump sum	1				
2	Overvoltage and Insulation Co-ordination study for 400kV Substaion	Lump sum	1				
3	Relay Co-ordination study for the Substation with software	Lump sum	1				
New 400/230 kV Substation at Kaliganj							
Subtotal - to Schedule B5 - Grand Total							






Name of Bidder:

Signature of Bidder

Schedule B4.1: Installation and Other Services**New 400/230 kV Substation at KALIGANJ**

(For detailed description of the technical requirements please refer to clause 1.2.1: Technical Requirements for 400/230KV GIS Substation at Kaliganj, Schedule A: Scope of Works, volume 3 of 3 of the bidding document)

Item No.	Description of Equipment Requirement	Unit	Quantity	Foreign Currency (in.....)		Local Currency (in BDT)	
				Unit Price	Total Price	Unit Price	Total Price
				(1)	(2) = (1) x (2)	(4)	(5) = (1) x (4)
1A							
1A1	420kV GIS Line Feeder Bays	Set	8				
1A2	420kV GIS Auto Transformer Feeder Bays	Set	3				
1A3	420kV GIS Bus Coupler Bays	Set	2				
1A4	420kV GIS Bus Section Bays	Set	2				
1A5	420 kV GIS type LA each comprising three phase	Set	4				
1A6	420kV GIS type Bus FES and Bus VT	Set	4				
1A7	Busbar extension module, each set comprises with sufficient buffer gas compartments and appropriate disconnect facilities for extensions without de-energization of complete GIS	Set	2				
1A8	Standalone Partial Discharge measurement and analyzer system for Complete GIS	Lot	1				
AIS Switchgear							
1A9	390kV rated voltage at 50°C, 10kA nominal discharge current, 50Hz, gapless metal oxide type, single phase Surge Arresters, outdoor type	No.	27				
1A10	420kV CVT, Single-phase, 50Hz, 1425kVp BIL, 3 windings	No.	18				
1A11	420kV, 4000A single phase Wavetrap	No.	8				
1A12	400kV Rigid tubular conductor and/or stranded conductors including accessories for each connection as required for completing 400kV Switchyard including LA, CVT and WT connection						
	i. Tubular Conductor and/or Flexible Conductor	Lot	1				
1A13	Insulator and fittings including all necessary clamps and connectors as required for completing 400kV GIS Switchyard						
	i. Insulator	Lot	1				
	ii. Fittings & Clamps, Connector	Lot	1				
	iii. Nut-bolt	Lot	1				
1A14	Steel gantry each circuit of 400kV Transmission Line , Transformer & Equipment support Structure including all necessary accessories required for completing 400kV GIS Switchyard						
	i. Steel Structure for T/L with Nut & Bolts						
	a) Gantry Column	No.	10				
	b) Beam	No.	8				
	ii Steel Structure for 400/230kV Transformer with Nut & Bolts						
	a) Gantry Column	No.	8				
	b) Beam	No.	6				
	iii. Equipment Structure						
	a) LA	No.	33				
	b) 420kV CVT	No.	24				
	iv. Nut-Bolt	Lot	1				
	v. LV power & control cable tray including fitting, fixing accessories	Lot	1				
1B	245 kV switchgear, equipment connection and steel structures						
1B1	245kV GIS Line Feeder Bays	Set	10				
1B2	245kV GIS Auto Transformer Feeder Bays	Set	3				
1B3	245kV Bus Coupler Bays	Set	2				
1B4	245kV Bus Section Bays	Set	2				
1B5	245kV GIS type Bus FES and Bus VT	Set	4				
1B6	Busbar extension module, each set comprises with sufficient buffer gas compartments and appropriate disconnect facilities for extensions without de-energization of complete GIS	Set	2				
AIS Switchgear, Equipment & Structure							
1B7	198kV rated voltage, 158 kV(rms) continuous operating voltage at 50°C, 10kA nominal discharge current, 50Hz, gapless metal oxide type, single phase Surge Arresters, outdoor type	No.	39				
1B8	Rigid tubular conductor and/or stranded conductors including accessories for each connection as required for completing 230kV Switchyard						
	i. Tubular Conductor and/or Flexible Conductor	Lot	1				
	Insulator and fittings including all necessary clamps and connectors as required for completing 230kV Switchyard						

Item No.	Description of Equipment Requirement		Unit	Quantity	Foreign Currency (in.....)		Local Currency (in BDT)	
					Unit Price	Total Price	Unit Price	Total Price
					(1)	(2)	(3) = (1) x (2)	(4)
1B9	i.	Insulator	Lot	1				
	ii.	Fittings & Clamps, Connector	Lot	1				
	iii.	Nut-bolt	Lot	1				
1B10	Steel gantry for each circuit of 245kV Transmission Line, Transformer & Equipment support Structure including all necessary accessories required for completing 230kV Switchyard							
	i.	Steel Structure for T/L with Nut & Bolts						
	a)	Gantry Column	No.	11				
	b)	Beam	No.	10				
	ii	Equipment Structure						
	a)	LA	No.	39				
	b)	Outdoor CSE	No	12				
	iii.	Nut & Bolts	Lot	1				
	iv.	LV power & control cable tray including fitting, fixing accessories	Lot	1				
v.	HV power cable tray including fitting, fixing accessories	Lot	1					
1D	36kV Switchgears, equipment connection and steel structures							
1D1	36kV AIS Switchgears for Aux. Power Bays, comprises with:							
	i)	36kV, 630A, 31.5kA/3sec, 50Hz, 170kVp BIL, VCB with spring operating mechanism	Set	2				
	ii)	36kV, 630A, 31.5kA/3sec, 50Hz, 170kVp BIL, single vertical break/horizontal, post type, motor operated Disconnecter with Earth Switch	Set	4				
	iii)	36kV, single-phase, 31.5kA/3sec, 50Hz, 170kVp BIL, Current Transformers	No.	6				
	iv)	36kV, 31.5kA/3sec, single-phase, 50Hz, 170kVp BIL, Inductive Voltage Transformers	No.	6				
	v)	30kV rated voltage, 24 kV(rms) continuous operating voltage at 50oC, 10kA nominal discharge current, 50Hz, gapless metal oxide type, single phase Surge Arresters, outdoor type	No.	6				
1D1.x	36kV AIS Switchgears for Unloaded tertiary Auto-Transformer Bays, comprises with:							
	i)	36kV, 31.5kA/3sec, single-phase 50Hz, 170kVp BIL, inductive Voltage Transformers	No.	3				
	ii)	30kV rated voltage, 24 kV(rms) continuous operating voltage at 50oC, 10kA nominal discharge current, 50Hz, gapless metal oxide type, single phase Surge Arresters, outdoor type	No.	3				
1D2	Rigid tubular conductor and/or stranded conductors including accessories for each connection as required for completing 36kV Switchyard							
	i.	Tubular Conductor and/or Flexible Conductor	Lot	1				
1D3	Insulator and fittings including all necessary clamps and connectors as required for completing 36kV Switchyard							
	i	Insulator, Post & Disk	Lot	1				
	ii	Fittings & Clamp, Connector	Lot	1				
	iii.	Nut-bolt	Lot	1				
1D4	Steel structure for each circuit of Aux. power TR and Auto.TR tertiary side connection including all necessary accessories required for completing 36kV Switchyard							
	i.	Equipment Structure with Nut & Bolts	Lot	1				
	ii	LV Power & Control Cable tray including fitting, fixing accessories	Lot	1				
1D5	33kV Power Cable with associated material							
	i.	33kV, single phase, 300 sqmm XLPE cable	meter	50				
	ii.	33kV, single phase, outdoor cable termination with accessories	No.	12				
1E	Power Transformers and Auxiliary Transformer							
1E1	400/235/34.5 kV, 520/750 MVA (ONAN/ONAF), three phase outdoor type auto transformer equipped with delta connected 33 kV tertiary winding (brought out to terminal bushings) and RTCC Panel			Set	2			
1E2	On-line Dissolved Gas (multi-gas) & Moisture Analyzer system for 400/235/34.5 kV auto transformers			Set	2			
1E3	33/0.415 kV, 500kVA, three phase outdoor type earthing/auxiliary Zig-Zag transformer and BCT with off-load tap changer, associated outdoor neutral CTs and steel support structures including all necessary connections.			Set	2			
1E4	CAFS of Fire Fighting system for transformer with water feeding equipment							
	i.	400/235/34.5 kV Auto-transformer	set	2				
1F	Control, Protection, Substation Automation & Metering							
400kV Circuit								

Item No.	Description of Equipment Requirement	Unit	Quantity	Foreign Currency (in.....)		Local Currency (in BDT)	
				Unit Price	Total Price	Unit Price	Total Price
			(1)	(2)	(3) = (1) x (2)	(4)	(5) = (1) x (4)
1F1	Control, protection and Monitoring including SAS Function for Overhead Line circuits, along with Control & Protection Cubicles	Set	8				
1F2	Control, protection and Monitoring including SAS for Auto transformer circuits, along with Control & Protection Cubicles	Set	3				
1F3	Control, Protection, Monitoring including SAS Function for Bus Coupler circuits, along with Control & Protection Cubicles	Set	2				
1F4	Control, Protection, Monitoring including SAS Function for Bus section circuits, along with Control & Protection Cubicles	Set	2				
1F5	Busbar Protection including SAS Function (400kV Circuit)	Set	2				
1F6	Tariff metering comprises with :	Lot	1				
	i. Meters (Main & Check)	Set	11				
	ii. Complete Panel (Front opening, Swing frame type) including wiring, lighting, heater, humidity controller, TTB, MCBs & other accessories	Lot	1				
230kV Circuits							
1F7	Control, protection and Monitoring including SAS Function for Overhead Line circuits, along with Control & Protection Cubicles	Set	10				
1F8	Control, protection and Monitoring including SAS Function for Auto-transformer circuits, along with Control & Protection Cubicles	Set	3				
1F9	Control, protection and Monitoring including SAS Function for Bus Coupler circuits, along with Control & Protection Cubicles	Set	2				
1F10	Control, protection and Monitoring including SAS Function for Bus Section circuits, along with Control & Protection Cubicles	Set	2				
1F11	Busbar Protection including SAS Function (230kV Circuit)	Set	1				
	Tariff metering comprises with :	Lot	1				
	i. Meters (Main & Check)	Set	13				
	ii. Complete Panel (Front opening, Swing frame type) including wiring, lighting, heater, humidity controller, TTB, MCBs & other accessories	Lot	1				
1F1.x	Protection for Kaliganj-Ghorasal Old 1 & Kaliganj-Ghorasal Old 2 overhead line	Set	2				
1F2.x	Protection for Kaliganj-Tongi Old 1 & Kaliganj-Tongi Old 2 overhead line circuits,	Set	2				
36kV Circuit							
1F13	Control, Monitoring, Protection & SAS function for 33kV station power system, along with Control & Protection Cubicles	Set	2				
1F14	Control, Monitoring, Protection & SAS function for Unloaded tertiary side of Auto-transformer (can be merged with TR main/backup protection)	Set	1				
	Tariff metering comprises with:	Lot	1				
	i. Meters (Main & Check)	Set	2				
	ii. Complete Panel (Front opening, Swing frame type) including wiring, lighting, heater, humidity controller, TTB, MCBs & other accessories	Lot	1				
1F16	Substation Automation system	Lot	1				
1G	Digital Fault & Disturbance Recorder	Lot	1				
1H	Power Cable & GIL						
1H1	420kV Gas Insulated Line (GIL) for eleven (11) feeders, single phase encloser, which consist of eight (8) T/L & three (3) T/R, terminating chambers complete with support structure, etc. The Length of GIL shall be different from each bay as per actual design (50-250 meter). Actual payment shall be as per final design. The Length given here is as single phase length.	m	5300				
1H2	245kV Gas Insulated Line (GIL) for thirteen (13) feeders, single phase encloser, which consist of ten (10) T/L & three (3) T/R, terminating chambers complete with support structure, etc. The Length of GIL shall be different from each bay as per actual design (50-150 meter). Actual payment shall be as per final design. The Length given here is as single phase length	m	2700				
1H3	230kV, XLPE 2000sqmm, Cu Power cable & termination						
	i. XLPE HV Power cable	m	1400				
	ii. Outdoor type Cable Sealing End per phase with required necessary accessories for line bays	Nos.	12				
	iii. 198kV rated voltage, 158 kV(rms) continuous operating voltage at 50oC, 10kA nominal discharge current, 50Hz, gapless metal oxide type, single phase Surge Arresters, outdoor type	Nos.	6				
	Steel structure for each circuit of 230kV cable connection						
	i. Equipment Structure with Nut & Bolts						
	a) Outdoor type Cable Sealing End	Nos.	12				
1I	Multicore Cables for control, protection, metering & power circuits	Lot	1				
	i. LV Control Cable	Lot	1				
	ii. LV Power Cable	Lot	1				
1J	Earthing and Lightning Protection system						

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Item No.	Description of Equipment Requirement	Unit	Quantity	Foreign Currency (in.....)		Local Currency (in BDT)	
				Unit Price	Total Price	Unit Price	Total Price
				(1)	(2) = (1) x (2)	(4)	(5) = (1) x (4)
1J1	Earthing system for complete substation (grounding mesh, grounding rod/ needle type grounding rod) including GIS Building	Lot	1				
1J2	Lightning Protection System for complete substation (overhead, mast type)	Lot	1				
1J3	3-phase Portable earthing devices (for maintenance) with connectors and telescopic glass fibre operating pole suitable for plant shall be supplied (for each voltage level, respectively)	Set	2				
1K	Batteries, Chargers & DC distribution board						
1K1	110V Ni-cad Batteries with chargers & distribution board						
	i. for 400kV system						
	a) 110V Battery Banks, minimum 400Ah at the 5-hours rate of discharge	Set	2				
	b) Charger (IGBT Type), each float charge shall not be less than 150A rating	Set	2				
	c) 110V DC Distribution panel, MCC type (LV S.W room, SPR, control Room) with Digital Display & Controller	Lot	1				
	d) Inverter, Input- AC & DC, output -AC 230V 5kVA 60min	set	2				
	ii. for 230kV system						
	a) 110V Battery Banks, minimum 400Ah at the 5-hours rate of discharge	Set	2				
	b) Charger (IGBT Type), each float charge shall not be less than 150A rating	Set	2				
	c) 110V DC Distribution panel, MCC type (Panel Room) with Digital Display & Controller	Lot	1				
1K2	48V Ni-cad Batteries with chargers & distribution board						
	i. 48V battery Banks, minimum 200Ah at the 5-hours rate of discharge	Set	2				
	ii. Charger (IGBT Type) each float charge shall not be less than 120A rating	Set	2				
	iii. 48V DC Distribution Panel with Digital Display & Controller	Lot	1				
1L	LVAC Distribution						
1L1	AC 415V / 230V Distribution panels (MCC type, LV S.W room, Each Panel & Control room, Generator room etc) with Digital Display & Controller	Lot	1				
1L2	Tariff metering at LV side (Main)	Lot	1				
1M	Civil Works, Building and Foundation (Details in Schedule B4)						
1M1	Complete land development						
	i. Complete Compacted Land development with carried/dredged earth filling	CuM	438,272				
	ii. Slope protection						
	a) Slope (1V:2H) protection with turfing	sqm	14,505				
1M2	Complete civil items required for outdoor works including boundary wall and slope protection						
	i Outdoor gantry foundation in 400kV switchyard						
	a) Gantry column	Nos	18				
	ii Outdoor equipment foundation in 400kV switchyard						
	a) LA	Nos	33				
	b) CVT	Nos	24				
	c) Busduct support	Lot	1				
	iii. Outdoor gantry foundation in 230kV switchyard						
	a) Gantry column	Nos	11				
	iv. Outdoor equipment foundation in 230kV switchyard						
	a) LA	Nos	39				
	b) Cable Sealing End	Nos	12				
	v. Outdoor equipment foundation 33kV switchyard						
	a) CB	Set	2				
	b) DS	Set	4				
	c) IVT	Nos	6				
	d) CT	Nos	6				
	e) Zigzag Tr	Nos	2				
	f) Tertiary Bus connection	Nos	2				
	vi. Transformer foundation including oilpit & carriage way	Nos	2				
	vii. Blast wall with foundation	Nos	1				
	viii. Property Line Demarcation	meter	1150				
	ix. Security Boundary Wall for overall plan (actual payment shall be as per actual work at site)	meter	1000				
	x. Substation Main gate	Nos	2				
	xi. Approach road (6m width)	m	30				
	xii. Internal road						

Item No.	Description of Equipment Requirement	Unit	Quantity	Foreign Currency (in.....)		Local Currency (in BDT)	
				Unit Price	Total Price	Unit Price	Total Price
			(1)	(2)	(3) = (1) x (2)	(4)	(5) = (1) x (4)
	a) 6m wide road	m	500				
	b) 4.5m wide road	m	750				
	c) 3m wide road	m	50				
	d) 1.5m walk way	m	150				
	xiii Surface drain	m	1150				
	xiv. Cable Trench/tunnel with soakpit						
	a) For LV control, communication, relay etc. cables	Lot	1				
	b) For HV power cables	m	275				
	xv. Whole substation surface finishing with drainage system including outlet	Lot	1				
	xvi. Gravelling in switchyard area	Lot	1				
	xvii. Septic tank (capacity: 25users for 5 years) and soakpit	Nos	4				
	xviii. Pump shed including deep tubewell, motor, pump, water reservoir, water pipe line, electrical connetion etc.	Nos	4				
	xix. Guard house	Nos	1				
	xx. Sentry post	Nos	4				
	xxi. Car port	Nos	2				
	xxii. RCC Box Culvert (top width 8m)	meter	20				
1M3	i. Complete civil works for 420kV Indoor GIS Building including Protection & Metering Room, Control Room, 110V Battery Room, 48 Battery Room, Warehouse and etc.						
	a) Foundation works	Lot	1				
	b) Super structures	Lot	1				
	c) All finish works like rendering, painting, water supply, sanitary, floor finish, furniture, etc.	Lot	1				
	d) 10 ton EOT Crane	Lot	1				
	e) Warehouse_ Separate Spare materials by installing shelves and labels.	Lot	1				
	f) Elevator System (Capacity 6 Person)	Lot	1				
	ii. Complete civil works for 245kV Indoor GIS Building including Protection & Metering Room, 110V Battery Room and etc.						
	a) Foundation works	Lot	1				
	b) Super structures	Lot	1				
	c) All finish works like rendering, painting, water supply, sanitary, floor finish, furniture, etc.	Lot	1				
	d) 10 ton EOT Crane	Lot	1				
	e) Elevator System (Capacity 6 Person)	Lot	1				
	iii. Emergency Aux. power Room & Water feeding Room						
	a) Foundation works	Lot	1				
	b) Super structures	Lot	1				
	c) All finish works like rendering, painting, water supply, sanitary, floor finish, furniture, etc.	Lot	1				
	d) Complete civil work for CAF System including pipe network	Lot	1				
	iv. Single storied Ansar Barrack with foundation for two storied building	Lot	1				
1M4	Testing of Foundation						
	i. Compression Test of pile	No	5				
	ii. Uplift Test of pile	No	3				
1N	Lighting, small power, air conditioning and Ventilation, Fire Fighting System & CCTV						
1N1	Indoor Lighting (LED type), small power, air conditioning (except GIS Hall) and Ventilation and emergency DC lighting for Indoor.	Lot	1				
1N2	Lighting (LED type) for outside building for security, roadway, switchyard	Lot	1				
1N3	Fire Fighting system for GIS Hall & Control Room						
	i) Fire Fighting system For 230kV GIS Hall & Panel Room	Lot	1				
	ii) Fire Fighting system For 400kV GIS Hall & Panel Room	Lot	1				
	iii) Fire Fighting system For Control Room	Lot	1				
1N4	Complete CCTV with motion sensor (each room and S/Y)	Lot	1				
10	Fibre Optic Multiplexer Equipment & PLC Equipment and System for Communication and Protection at Local & Remote end substations						
1O1	Indoor Fibre Optic Multiplexer, at Local end SS, Equipment each comprising						
	i. ADM with TP unit with Panels (Front opening, Swing Frame type) & accessories	Set	4				
	ii. IDF/SDF	Set	1				
	iii. Cables	Lot	1				
	iv. EOW telephone with board	Set	1				

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Item No.	Description of Equipment Requirement		Unit	Quantity	Foreign Currency (in.....)		Local Currency (in BDT)	
					Unit Price	Total Price	Unit Price	Total Price
					(1)	(2) = (1) x (2)	(4)	(5) = (1) x (4)
	v.	Panel including wiring, lighting, filtering fan, humidity controller, heater, power socket & other accessories	Lot	4				
	vi.	All other Accessories not included above	Lot	1				
		Other Indoor equipment, at Local end SS						
102	i.	Primary phone (IP phone)	No.	6				
	ii.	Secondary phone (2W phone with caller ID)	No.	10				
	iii.	Indoor MDF	Set	1				
103		Outdoor equipment, at Local end SS						
	i.	Underground optical fiber cable, armoured, 48 core	Lot	1				
	ii.	Pigtail cables	Lot	1				
	iii.	Outdoor termination box	Set	10				
104		Extension/Adaptation of Indoor Fibre Optic Multiplexer Equipment & system at remote end substations each comprising						
	i.	Optical STM-16 Card for each 400 kV line at remote end	Lot	1				
	ii.	Optical STM-4 Card for each 230 kV line at remote end	Lot	1				
	iii.	Required no. of cards with 4 commands for distance protection after detail design	Lot	1				
	iv.	Outdoor termination box	Set	1				
	v.	Cables, ODF, MDF, panels as required	Lot	1				
105		PLC equipment at Local end SS						
	i.	Indoor PLC Equipment with all accessories & Panels (Front opening, Swing Frame type)	Set	12				
	ii.	Line matching unit	No.	12				
	iii.	Cables & other accessories for complete PLCC system	Lot	1				
	iv.	Indoor PLC Equipment & accessories as complete system for Remote end station	Lot	01				
106		Installation, testing & commissioning	Lot	1				
1P		SCADA system for Telecontrol and Telemetry						
1P1	i.	Equipment at Substation						
	a)	Gateway (server, engineering software)	Set	2				
	b)	Ethernet Switch	Set	2				
	c)	Hardware Firewall	Set	1				
	d)	Complete Panel (Swing Frame type) including wiring, lighting, heater, humidity controller & other accessories	Lot	1				
	e)	Cables	Lot	1				
	f)	All Other Accessories	Lot	1				
	ii.	Integration work with Master & Backup NLDC including Engineering & Commissioning	Lot	1				
1R		Generator for Emergency Aux. Power (with smoke reduction device)						
1R1		250kW 0.415kV, 50Hz Diesel generator	Set	1				
1S		Other equipment						
1S1		Scissor Lift : Battery type for one person / Maximum working height greater than 10m	Lot	1				
1S2		Emergency Interphone (each room)	Lot	1				
Total Price (for New Kaliganj 400/230kV SS) carried to Summary of Price Schedule								
Total Price in words (for New Kaliganj 400/230kV SS).....								

Schedule B4.2: Installation and Other Services

Item No.	Description of Required Services	Unit	Quantity	Foreign Currency (in USD)		Local Currency (in BDT)	
				Unit Price	Total Price	Unit Price	Total Price
			(1)	(2)	(3) = (1) x (2)		
2	Additional Services (Provisional Sum)*						
2.1	Employer's Factory Acceptance Tests Witness (refer to clause 1.3 (b), Scope of Works, Volume 2 of the bidding document)	Lot	1	85500	85500	-	-
2.2	International Training (refer to clause 1.3 (a), Scope of Works, Volume 2 of the bidding document)	Lot	1	66000	66000	-	-
2.3	Local O&M Training (refer to clause 1.3 (c), Scope of Works, Volume 2 of the bidding document)	Lot	1	33000	33000	-	-
Total Price for Additional Services					184500		
(Carried to Schedule-5 : Grand Summary)							

**These costs are fixed ceiling and will be included in total price. But the payment shall be at actual.*

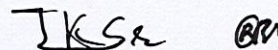
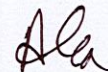
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Schedule B5: Grand Summary			
		Total price	
		Foreign Currency (in.....)	Local Currency (in BDT)
New 400/230 kV Substation at KALIGANJ			
Schedule No. B1:	Plant and Equipment Supplied from outside the Employer's Country		
Schedule No. B2:	Plant & Equipment Supplied from within the Employer's Country		
Schedule No. B3:	Design Services		
Schedule No. B4.1:	Installation and Other Services		
New 400/230 kV Substation at KALIGANJ Grand Total			
Mandatory Spare, Maintenance & Test Equipement			
Schedule No. B1:	Mandatory Spare, Maintenance & Test Equipement Supplied from outside the Employer's Country		
Mandatory Spare, Maintenance & Test Equipement Grand Total			
Additional Services			
Schedule No. B4.2:	Installation and Other Services : Additional Services (Provisional Sum)	USD 184,500.00	
Additional Services Grand Total		USD 184,500.00	
Grand Grand Total			

Name of Bidder:

Signature of Bidder:

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Signature of Bidder:

Design, Supply, Installation, Testing and Commissioning of 400/230 kV GIS Substation at Kaliganj on turnkey basis
(Package-5)

Country of Origin		
Item	Country	Code

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