

ATTACHEMENT 04

Design, Supply, Installation, Testing & Commissioning of 400/230/132 kV AIS Substation at Pekua and associated single /double circuit 400kV/230kV/132kV LILO Lines on turnkey basis (Package-1)
[Contract No.: PGCB/ADB/400kV/PEKUA/PTSIREP/PACKAGE-1]

Schedule 4D: Installation and Other Services

Item	Description	Unit	Quantity	Unit Price ¹		Total Price ¹	
				Local Currency [In BDT]	Foreign Currency [In EXW]	Local Currency [In BDT]	Foreign Currency [In EXW]
				EXW	EXW	EXW	EXW
1	2	3	4	5	6	7 = 4x5	8 = 4x6
1A	420 kV Air Insulated Switchgear						
1A.1	SF6 Circuit breaker,4000A, 63kA/1s, live tank, gang operating	set	4				
1A.2	SF6 Circuit breaker, 4000A,63kA/1s, live tank, single pole operating	set	9				
1A.3	Disconnect switch with E/S , 4000A,63kA/1s	set	4				
1A.4	Disconnect switch without E/S, 4000A,63kA/1s	set	27				
1A.5	Busbar grounding Switch	set	2				
1A.6	Single phase current transformer, multi core, 4000/1,63kA/1s	nos.	57				
1A.7	Single phase capacitive voltage transformer, multi-core	nos.	27				
1A.8	Single phase surge arrester,390kV rated,10kA	nos.	27				
1A.9	Wave Trap,single phase, 420kV, 4000A, 63kA/1s	nos.	4				
1A.10	Post type support insulators for 400kV busbar and switchgear	lot	1				
1A.11	Rigid tubular bus and required conductors, insulators, fittings including all necessary clamps and connectors for busbar connections						
i)	Rigid Tubular Bus	lot	1				
ii)	Flexible Conductor for jumper, equipment connections	lot	1				
iii)	Insulator	lot	1				
iv)	Fittings	lot	1				
1A.12	Steel Structures for gantry and equipment supports						
a)	Gantry Column including nut & bolts	lot	1				
b)	Gantry beam at Main Bus & Jack-Bus height including nut & bolts	lot	1				
c)	Equipment support structures including nut & bolts						
i)	Circuit Breaker	set	13				
ii)	Disconnect with Earth Switch	set	4				
iii)	Disconnect without Earth Switch	set	27				
iv)	Bus Earth Switch	set	2				
v)	Current Transformer	nos.	57				
vi)	Capacitive Voltage Transformer	nos.	27				
vii)	Surge Arrester	nos.	27				
viii)	Wave Trap	nos.	4				
ix)	Post type support insulators for 400kV busbar and switchgear	lot	1				
x)	Cable tray including fitting, fixing accessories	lot	1				
1B	245 kV Air Insulated Switchgear						
1B.1	SF6 Circuit breaker,2000A,50kA/1s, live tank, gang operating for Transformer Bay	set	5				
1B.2	SF6 Circuit breaker,2000A, 50kA/1s, live tank, single pole operating for Line Bay	set	4				
1B.3	SF6 Circuit breaker,3150A,50kA/1s, live tank, gang operating for Bus Coupler Bay	set	1				
1B.4	Disconnect switch without E/S, 2000A,50kA/1s for Transformer Bay	set	15				
1B.5	Disconnect switch without E/S, 2000A,50kA/1s for Line bay	set	8				
1B.6	Disconnect switch without E/S, 3150A,50kA/1s for bus coupler bay	set	2				
1B.7	Disconnect switch with E/S, 2000A,50kA/1s for line bay	set	4				
1B.8	Single phase current transformer,50kA/1s multicore for Transformer Bay	nos.	15				
1B.9	Single phase current transformer,50kA/1s multicore for line bay	nos.	12				
1B.10	Single phase current transformer,50kA/1s multicore for bus coupler bay	nos.	3				
1B.11	Single phase capacitive voltage transformer (CVT), multi core	nos.	33				
1B.12	Single phase surge arrester, 198kV rated,10kA	nos.	27				
1B.13	Flexible conductorsfor bus and jumper, insulators, fittings including all necessary clamps and connectors for busbar connections						
i)	Flexible Conductor for Bus, jumper, equipment connections	lot	1				
ii)	Insulator	lot	1				
iii)	Fittings	lot	1				
Price carried forward							

Sub Total Price in words.....

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Sub-Total brought forward							
1B.14	Steel Structures for gantry and equipment supports						
a)	Gantry Column including nut & bolts	lot	1				
b)	Gantry beam at Main Bus & Jack-Bus height including nut & bolts	lot	1				
c)	Equipment support structures including nut & bolts						
i)	Circuit Breaker	set	10				
ii)	Disconnector without Earth Switch	set	25				
iii)	Disconnector with Earth Switch	set	4				
iv)	Bus Earth Switch	set	0				
v)	Current Transformer	nos.	30				
vi)	Capacitive Voltage Transformer	nos.	33				
vii)	Surge Arrester	nos.	27				
viii)	Wave Trap	set	0				
ix)	Post type support insulators	lot	1				
d)	Cable tray including fitting, fixing accessories	lot	1				
1C	145 kV Air Insulated Switchgear						
1C.1	SF6 Circuit breaker, 1600A, 40kA/1s, live tank, gang operating for Transformer Bay	set	2				
1C.2	SF6 Circuit breaker, 1600A, 40kA/1s, live tank, single pole operating for Line Bay	set	4				
1C.3	SF6 Circuit breaker, 3150A, 40kA/1s, live tank, gang operating for Bus Coupler Bay	set	1				
1C.4	Disconnector switch without E/S, 1600A, 40kA/1s for Transformer Bay	set	6				
1C.5	Disconnector switch without E/S, 1600A, 40kA/1s for Line bay	set	8				
1C.6	Disconnector switch without E/S, 3150A, 40kA/1s for bus coupler bay	set	2				
1C.7	Disconnector switch with E/S, 1600A, 40kA/1s for line bay	set	4				
1C.8	Single phase current transformer, 40kA/1s, multi core for Transformer Bay	nos.	6				
1C.9	Single phase current transformer, 40kA/1s for line bay	nos.	12				
1C.10	Single phase current transformer, 40kA/1s for bus coupler bay	nos.	3				
1C.11	Single phase voltage transformer (VT), multi-core	nos.	24				
1C.12	Single phase surge arrester, 120kV rated, 10kA	nos.	18				
1C.13	Flexible conductors for bus and jumper, insulators, fittings including all necessary clamps and connectors for busbar compositions						
i)	Flexible Conductor for Bus, jumper, equipment connections	lot	1				
ii)	Insulator	lot	1				
iii)	Fittings	lot	1				
Price carried forward							
Sub Total Price in words							

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[Contract No.: PGCB/ADB/400kV/PEKUA/PTSIREP/PACKAGE-1]

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Sub-Total brought forward							
1C.14	Steel Structures for gantry and equipment supports						
a)	Gantry Column including nut & bolts						
i)	For Main Bus	lot	1				
ii)	For Jack-Bus	lot	1				
b)	Gantry beam at Main Bus & Jack-Bus height including nut & bolts	lot	1				
c)	Equipment support structures including nut & bolts						
i)	Circuit Breaker	set	7				
ii)	Disconnector without Earth Switch	set	16				
iii)	Disconnector with Earth Switch	set	4				
iv)	Bus Earth Switch	set	0				
v)	Current Transformer	nos.	21				
vi)	Voltage Transformer	nos.	24				
vii)	Surge Arrester	nos.	18				
viii)	Wave Trap	set	0				
ix)	Post type support insulators	lot	1				
x)	Cable tray including fitting, fixing accessories	lot	1				
1D 33kV Switches & connection							
1D.1	33kV Vacuum Circuit breaker	set	2				
1D.2	33kV Disconnector switch	set	4				
1D.3	33kV Inductive voltage transformer (VT), 2 core	nos.	15				
1D.4	Single phase surge arrester, 30kV rated, 10kA	nos.	15				
1D.5	Tertiary side connection including necessary fittings, structures, 33kV XLPE cable and conductors	lot	1				
1D.6	33kV Current transformer	nos.	6				
1E Power Transformer & Earthing/Auxiliary Transformer							
1E.1	400/230/33 kV, 400/520MVA (ONAN/ONAF), three phase Power Transformer	set	3				
1E.2	230/132/33 kV, 225/300MVA (ONAN/ONAF), three phase Power Transformer	set	2				
1E.3	33/0.4 kV, 500kVA Earthing auxiliary Transformer	set	2				
1E.4	Complete water spray fire fighting system for all 400/230/33 kV three phase outdoor type power transformer	Set	1				
1E.5	Complete water spray fire fighting system for all 230/132/33 kV three phase outdoor type power transformer	Set	1				
1F Control, Protection, SAS and Metering							
1F.1	Complete Station SAS Panels	lot	1				
420kV Circuits							
1F.2	Complete Control, Protection, monitoring & SAS Panel for overhead line circuits	set	4				
1F.3	Complete Control, Protection, monitoring & SAS Panel for Auto transformer circuits	set	3				
1F.4	Complete Busbar Protection Panel	set	2				
1F.5	Complete Digital Fault Disturbance Recorder (DFDR) panel	Set	1				
1F.6	Complete Tariff metering panel	lot	1				
230kV Circuits							
1F.7	Complete Control, Protection, monitoring & SAS Panel for overhead line circuits	set	4				
1F.8	Complete Control, Protection, monitoring & SAS Panel for Auto transformer circuits	set	5				
1F.9	Complete Control, Protection, monitoring & SAS Panel for Bus Coupler circuits	set	1				
1F.10	Complete Busbar Protection Panel	set	2				
1F.11	Complete Digital Fault Disturbance Recorder (DFDR) panel	Set	1				
1F.12	Complete Tariff metering panel	lot	1				
145kV Circuits							
1F.13	Complete Control, Protection, monitoring & SAS Panel for overhead line circuits	set	4				
1F.14	Complete Control, Protection, monitoring & SAS Panel for Auto transformer circuits	set	2				
1F.15	Complete Control, Protection, monitoring & SAS Panel for Bus Coupler circuits	set	1				
1F.16	Complete Busbar Protection Panel	set	1				
1F.17	Complete Digital Fault Disturbance Recorder (DFDR) panel	Set	1				
1F.18	Complete Tariff metering panel	lot	1				
38kV Circuit							
1F.19	Control, Monitoring, Protection & SAS for 33kV station power system	lot	1				
1F.20	Tariff metering	lot	1				
1G Multicore Cables							
1G.1	Multicore Cables for control, protection, metering & power circuits						
i)	LV Control Cable	lot	1				
ii)	LV Power Cable	lot	1				
Price carried forward							
Sub Total Price in words							

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[Contract No.: PGCB/ADB/400kV/PEKUA/PTSIREP/PACKAGE-1]
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Sub-Total brought forward							
1H	Earthing and Lightning Protection						
1H.1	Earthing system for complete substation	lot	1				
1H.2	Lighting Protection System for complete substation	lot	1				
1I	Batteries, chargers & DC distribution						
1I.1	110V Ni-cad Batteries with chargers & distribution board & others						
a)	for 400kV System						
i)	110V Battery Banks, Ah	set	2				
ii)	Charger, A	set	2				
iii)	110V DC Distribution panel, MCC type	lot	1				
c)	for 230kV System						
i)	110V Battery Banks, Ah	set	2				
ii)	Charger, A	set	2				
iii)	110V DC Distribution panel, MCC type	lot	1				
iv)	Inverter for SAS	set	2				
b)	for 132kV System						
i)	110V Battery Banks, Ah	set	2				
ii)	Charger, A	set	2				
iii)	110V DC Distribution panel, MCC type	lot	1				
1I.2	48V Ni-cad Batteries with chargers & distribution board						
i)	48V battery Banks,Ah	set	2				
ii)	Charger, A	set	2				
iii)	48V DC Distribution Panel	lot	1				
1J	LVAC Distribution						
1J.1	AC 415V or 240V distribution panels (MCC type)	lot	1				
1J.3	Tariff metering at LV side(Main & Check)	lot	1				
1K	Civil Works, Building and Foundation						
1K.1*	Complete land development and slope protection						
i)	Complete land development with carried/dredged earth filling including approach road	cum	804473				
ii)	Slope protection						
a.	Slope (1V:2H) protection with CC block	lot	1				
1K.2	Complete civil items required for outdoor works						
i)	Outdoor gantry foundation in 400kV switchyard						
a.	Gantry column	lot	1				
ii)	Outdoor equipment foundation in 400kV switchyard						
a.	CB	set**	13				
b.	DS without ES	set**	27				
c.	DS with ES	set**	4				
d.	Bus ES	set**	2				
e.	CT	nos.**	57				
f.	CVT	nos.**	27				
g.	LA	nos.**	27				
h.	Wave Trap	set**	4				
i.	PI	lot	1				
ii)	Outdoor gantry foundation in 230kV switchyard						
a.	Gantry column	lot	1				
iv)	Outdoor equipment foundation in 230kV switchyard						
a.	CB	set**	10				
b.	DS without ES	set**	25				
c.	DS with ES	set**	4				
d.	CT	nos.**	30				
e.	CVT	nos.**	33				
f.	LA	nos.**	27				
g.	PI	lot	1				
v)	Outdoor gantry foundation in 132kV switchyard						
a.	Gantry column	lot	1				
vi)	Outdoor equipment foundation in 132kV switchyard						
a.	CB	set**	7				
b.	DS without ES	set**	16				
c.	DS with ES	set**	4				
d.	CT	nos.**	21				
e.	JVT	nos.**	24				
f.	LA	nos.**	18				
g.	PI	lot	1				
vii)	Outdoor equipment foundation in 33kV switchyard						
a.	CB	set**	2				
b.	DS	set**	4				
c.	JVT	nos.**	15				
d.	LA/SA	nos.**	15				
e.	CT	nos.**	6				
viii)	Outdoor gantry/tubular bus bar foundation in 33kV switchyard	lot	1				
ix)	Transformer pad with foundation including oil pit						
a.	520MVA transformer	nos.	3				
b.	300MVA transformer	nos.	2				
x)	Blast wall with foundation	nos.	5				
xi)	Boundary wall for overall plan						
a.	Boundary wall with RCC retaining wall	m	1000				
b.	Boundary wall without retaining wall	m	425				
xii)	Substation main gate	nos.	1				
xiii)	Chain link fencing	m	500				
xiv)	Approach road (pavement width 8m)	m	20				
xv)	Internal road						
a.	8m wide road	m	1000				
b.	4.5m wide road	m	500				
c.	3m wide road	m	300				
d.	1.5 walk way	m	10				

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Sub-Total brought forward							
xvi)	Surface drain	m	1350				
xvii)	Cable trench/tunnel with soak pit	lot	1				
xviii)	Whole substation surface finishing with drainage system including outlet (excluding surface drain)	lot	1				
xix)	Gravel laying in switchyard area	lot	1				
xx)	Septic tank cum soak well	nos.	3				
xxi)	Pump shed including deep tube well, motor, pump, water reservoir, water pipe line, electrical connection etc.	lot	1				
xxii)	Guard house	nos.	1				
xxiii)	Sentry post	nos.	3				
xxiv)	Car port	nos.	1				
xxv)	Ansar barrack	nos.	1				
xxvi)	Water Treatment Plant	lot	1				
1K.3 Complete civil works for Control Room & Switchyard Panel Room building							
i)	Complete civil works for one control room building						
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				
ii)	Complete civil works for two 400KV switchyard panel room building						
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				
iii)	Complete civil works for one 132KV switchyard panel room building						
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				
1K.4 Testing of Foundation							
i)	Compression test of pile	nos.	5				
ii)	Uplift test of pile	nos.	4				
1K.5 Complete firefighting system for transformers including water pond/reservoir, pipe network and pump							
1L Lighting, small power, air conditioning and Ventilation							
1L.1	Lighting, small power, air conditioning and Ventilation and emergency DC lighting for control building and local control houses	lot	1				
1L.2	Lighting for outside building for security, roadway, switchyard and emergency DC lighting	lot	1				
1M Fibre Optic Multiplexer Equipment and PLC Equipment for Communication and Protection							
1M.1	Indoor Fibre Optic Multiplexer Equipment	lot	1				
1M.2	under ground optical fiber cable, armoured, 48/24 core including Outdoor termination box, indoor MDF & pigtail cables.	lot	1				
1M.3	PLC Equipment	lot	1				
1N SCADA system for Telecontrol and Telemetry							
1N.1	Complete SCADA hardware & software	lot	1				
1 Price carried forward							
Sub Total Price in words							

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[Contract No.: PGCB/ADB/400kV/PEKUA/PTSIREP/PACKAGE-1]**

Schedule 4D.1: Installation and Other Services

Item	Description	Unit	Quantity	Unit Price ¹		Total Price ¹	
				Local Currency [In BDT]	Foreign Currency [In BDT]	Local Currency [In BDT]	Foreign Currency [In BDT]
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2	Additional Services						
2.0 A	Employer's Factory Acceptance Tests Witness (as per schedule A)*	Lot	1	USD 85500	USD 85500	-	-
2.0 B	Local O&M Training*	Lot	1	USD 33000	USD 33000	-	-
led forward to Schedule No. 5 - Grand Summary							

Total Price in words.....

* actual payment shall be as per actual work at site

** one set includes foundation for three phases of a circuit

- 1 Specify currency in accordance with specifications in Bid Data Sheet under ITB 19.1 in Single-stage Bid. Create and use as many columns for Unit Price and Total Price as there are currencies.