POWER GRID COMPANY OF BANGLADESH LIMITED (PGCB)

DESIGN, SUPPLY, ERECTION, TESTING AND COMMISSIONING OF 132KV TRANSMISSION LINES AND SUBSTATIONS ON TURNKEY BASIS

Lot-1: Design, Supply, Erection, Testing & Commissioning of 132kV Transmission Lines on Turnkey Basis (Contract No. PSEEIP/ADB/PGCB/TL)
Lot-2: Design, Supply, Erection, Testing & Commissioning of 132kV Substations on Turnkey Basis (Contract No. PSEEIP/ADB/PGCB/SS)

Date: 22 May 2013
PGCB Memo No.: 01/PGCB/Sec(Design & QC)/2013/3626
Loan No. 2966-BAN: Power System Expansion and Efficiency Improvement Investment Program (Tranche 1)
Contract Nos. PSEEIP/ADB/PGCB/TL and PSEEIP/ADB/PGCB/SS

ADDENDUM NO. 1
(Date: July 18, 2013)

Following revisions/changes are made in the Bidding Document which will form part of the Bidding Document:

Volume 2 of 3
Lot-1: Transmission Lines

1. Appendix 1.A1, Section 1 – Scope of Work

   Following para is added at the end of second para of Section C, page 1/10:

   "7x3.25 steel earthwire equivalent OPGW shall be used in Ghorashal-Bhulta second circuit in-out to Narsingdi portion starting from Ghorashal substation to Narsingdi substation. The existing steel earthwire has to be dismantled & re-drummed and fittings have to be removed and stored to either Narsingdi or Ghorashal substation by the Contractor. The dismantling of earthwire and OPGW stringing will be done on single circuit live condition."

2. Section 2 - Site Particulars, Appendix 2.A2 Page 2-3

   The text "34.4^{0}" is replaced by "35^{0}" in Maximum daily average temperature.

3. Section 7 - Foundation

   (i) Sub- clause 7.1.1.1, Page 7/1

   The text "as per the Employer's construction drawings..............of anchor bolts (as the case may be)." at the last line is deleted.

   (ii) Page no. 7/27 is replaced by enclosed revised page nos. 7/27(R1) P1/5 to P4/5 to accommodate revised Appendix 7.A1 to 7.A5 **[Attachment-1]**.

4. Section 8 - Tower

   (i) Appendix 8.A1, Page 8/26

   (a) The text "Normal Base" are replaced by "Narrow Base" in Clause 1.(a).
   (b) The text "Narrow Base" are replaced by "Normal Base" in Clause 1.(b).

   (ii) Page 8/39

   The text "APPENDIX 8 E1" is replaced by " APPENDIX 8. E1/4" at the top of the page.

5. Section 8A – Poles

(i) Clause No. 8A.2.3 Page 8A/5

The text "The effect of oblique wind 30° & 45° shall be considered in addition to 0° in normal condition. All tower load cases shall be considered in minimum and maximum angles." are replaced by

"The effect of oblique wind 30°, 45° & 90° shall be considered in addition to 0° in normal condition. All load cases shall be considered in minimum and maximum angles."

(ii) Clause No. 8A.2.6 Page 8A/8

The text "The maximum tension of the phase conductors and earthwire for unbalanced longitudinal loads due to breakage of phase conductors and groundwire shall be considered 70% of their maximum working tensions." is deleted.

(iii) Appendix 8A.A4.1 Page 8A/19: Page 8A/19 is replaced by enclosed revised page 8A/19(R1).

(iv) Sl. 2(a), Appendix 8A.A7, Page 8A/22

The text "Minimum height of ....ground level" is replaced by "Minimum height of bottom phase conductor attachment point from the bottom (base plate) of pole"

6. Section 12 - Vibration Dampers, Appendix 12.A1 Page 12-11

The text "30^0" is replaced by "35^0" in Everyday temperature (^{0}C).

7. Section 14 - Optical Fiber Cable and fittings

(i) Sub-clause 14.2.2 Page 14-1 and Sub-clause 14.3.1 Page 14-4

The para "OPGW of dissimilar materials such as stainless steel tube with aluminum-clad steel wire strands are not allowed." is added at the end of these Sub-clauses.

8. Section 19 – List of Bid Drawings

(i) Page nos. 19/2, 1 of 8 to 8 of 8 are replaced by enclosed revised page no. 19/2(R1), 1 of 10(R1) and 10 of 10(R1) **[Attachment-2]**.
(ii) Table showing the co-ordinates of angle point of the route Section — A, B & D are enclosed **[Attachment-3]**.
(iii) The texts "NORMAL BASE WIDTH" are deleted from page nos. 7 of 8 and 8 of 8.

Volume 3 of 3
Lot-1: Transmission Line

9. Section A

(i) Schedule 1 & 2, Page 1/5

The page is replaced by enclosed revised page no. 1/5(R1) to accommodate revised quantity and anchor towers **[Attachment-4]**.

(ii) Schedule 1 & 2, Page 2/5

The page is replaced by enclosed revised page no. 2/5(R1) to accommodate revised quantity and anchor towers **[Attachment-5]**.

(iii) Schedule 1 & 2, Page 4/5

The text "Tower type 1D25 E6'" is replaced by "Tower type 1D25 E4.5" in item S1.10. The quantity "90" is replaced by "5' in item S2.2. The page is replaced by enclosed revised page no. 4/5(R1). The page is replaced by enclosed revised page no. 4/5(R1) **[Attachment-6]**.

(iv) Schedule 2, Page 1/5: The quantity "10" is replaced by "9' in item A1.1.21.

(v) Schedule 4, Page 1/6, 2/6, 3/6 & 4/6

The text "Soil Category 2", "Soil Category 3" and "Soil Category 4" are deleted from item nos. A3.1.2, A3.2.2, A3.3.2, 3.4.2, 3.10 and 3.12 and the item nos. have been re-numbered. The text "Compression test" in item no. A4.1(ii)a) is replaced by "Uplift test" in page 4/6. Also, quantity of some items has been modified. The pages are replaced by enclosed revised page nos. 1/6(R1), 2/6(R1), 3/6(R1) and 4/6(R1) **[Attachment-7].**

Section B

(i) Schedule 1 & 2, Page 2/4

The quantity for item nos. A2.8, A2.9 & A2.11 will be nil. The pages are replaced by enclosed revised page nos. 2/4(R1) **[Attachment-8]**.

(ii) Schedule 1 & 2, Page 3/4

The text "Tower type 1D25 E6'" is replaced by "Tower type 1D25 E4.5" in item S1.10. The pages are replaced by enclosed revised page nos. 3/4(R1) **[Attachment-9]**.

(iii) Schedule 4, Page 1/4, 2/4 & 3/4

The text "Soil Category 2", "Soil Category 3" and "Soil Category 4" are deleted from item nos. A3.1.2, A3.2.2, A3.3.2 & 3.4.2 and the item nos. have been re-numbered. The text "Compression test" in item no. A4.1(ii)a) is replaced by "Uplift test" in page 4/6. The pages are replaced by enclosed revised page nos. 1/4(R1), 2/4(R1) & 3/4(R1) **[Attachment-10].**

Section C

(i) Schedule 1 & 2, Page 3/5

Page nos. 3/5 of Schedule 1 & 2 are replaced by enclosed revised page nos. 3/5(R1) to accommodate price of Insulator Fittings, OPGW (7/4.25) & Conductor (Mallard) for River Crossing portion (Item nos. A2.6 & 2.7 and A4.3 & 4.4 are included) **[Attachment-11]**. Also, quantity in item A4.1 and A4.2 are replaced be new quantity to accommodate OPGW & relevant fittings for Ghorashal – Narshingdi portion.

(ii) Schedule 4, Page 1/5 & 2/5

The text "3.12.1" and "Soil Category 3" are deleted from item 3.12, page 2/5

Also, the text "Soil Category 2", "Soil Category 3" and "Soil Category 4" are deleted from item nos. A31.2, A3.2.2, A3.3.2 and A3.4.2 and the item nos. have been re-numbered. The pages are replaced by enclosed revised page no. 1/5(R1) and 2/5(R1) **[Attachment-12].**

(iii) Schedule 4, Page 3/5

(a) Page no. 3/5 of Schedule 4 is replaced by enclosed revised page no. 3/5(R1) to accommodate price of dismantling of earthwire and OPGW stringing (Item nos. A7.4 is included) **[Attachment-13]**. The text "Compression test" in item no. A4.1(ii)a) is replaced by "Uplift test". Also, unit 'per tower' and Quantity '158' mentioned against general description of Tower Erection activity are deleted from item A5.2.

Section D

(i) Schedule 1 & 2, page 2/4

Page no. 2/4, Schedule 1 & 2 are replaced by revised page no. 2/4(R1) by incorporating modifications as below **[Attachment-14]:**

(a) The text "six nos. of single conductor for double circuit line" is replaced by "three nos. of single conductor for single circuit line" in item 4.1.1.
(b) The text "six nos. of single conductor for single circuit line" is replaced by "three nos. of single conductor for Single Circuit line" in item 4.1.2.
(c) The quantity "48" is replaced by "58" in item A4.1.2

(ii) Schedule 1 & 2, Page 3/4

The quantity '2' against item no. S2.2 is replaced by '0' in both the Schedule 1 & 2. The page has been replaced by enclosed revised page no. 3/4(R1) **[Attachment-15]**.

(iii) Schedule 4, Page 1/4 & 2/4

(a) The text "Soil Category 2", "Soil Category 3" and "Soil Category 4" are deleted from item nos. A31.2, A3.2.2, A3.3.2 and A3.4.2 and the item nos. have been re-numbered. The pages are replaced by enclosed revised page no. 1/4(R1) and 2/4(R1) **[Attachment-16].**

(b) Schedule 4, Page 3/4

The page is replaced by revised page no. 3/4(R1) by incorporating modifications as below **[Attachment-17]**:

(i) The text "Compression test" in item no. A4.1(ii)a) is replaced by "Uplift test".
(ii) The text "double" is replaced by "single" in item A7.1. Quantity '28' is replaced by '58'.
(iii) Item A7.2 is deleted and sl. no. of item A7.3 becomes A7.2.

10. Section A, B, C & D

Schedule - 3 is replaced by enclosed revised Schedule No. 3 (R1) **[Attachment-18].**

11. Schedule E

(i) The text "A3.1 132kV River Crossing Portion" is replaced by "A3.2 132kV River Crossing Portion" in page SE-4.
(ii) Item A3.3 and A3.4 are added as enclosed page no. SE-4a and SE-4b **[Attachment-19].**

All other terms and conditions of the Bidding Document shall remain un-altered.

The above addendum will form part of the Bidding Documents.

Encl.: As stated.

APPENDIX 7.A1 (R1)

FOUNDATION TYPES & USES

Soil Category	Allowable Foundation Type
1	Concrete Pad & Chimney/ Drilled Shaft Piled*/Rigid Frame Foundation**
2	Concrete Pad & Chimney/ Drilled Shaft Piled*/Rigid Frame Foundation**
3	Raft/ Drilled Shaft Piled*/Rigid Frame Foundation**
4	Drilled Shaft Piled*/Rigid Frame Foundation**

Note: Seismic zone coefficient, G=0.1 shall be considered.

* The bidder may propose any other proven type of piled foundation instead of Drilled Shaft Piled foundation except wooden pile. The bidder shall submit the design of the proposed type of piled foundation along with detailed design calculation, installation procedure with drawings, Quality Control procedure, Standards and Codes of Practices to be followed, advantages of selecting such type of piles, etc. with the bid. Reinforced concrete pile caps shall be used for all types of piles. Payments of all types of foundations shall be on lump-sum basis per tower as per prices quoted in the Price Schedule.

** Foundations at high flood level area shall be rigid frame with multiple drilled or mechanically excavated cast-in-situ piled. The Contractor shall submit his proposed method of installation and Quality Control procedures to the Engineer prior to commencing his design. This is a **Hold Point**.

APPENDIX 7.A2/1

FOUNDATION STRENGTH FACTOR

The following strength factors shall be used to increase the ultimate tower reactions on the foundations for the design of the foundations:

Applied Loading Case	Strength Factor Tower Type	
	1DLP	1D1P, 1D25P, 1DT6P & 1D9P
All load cases	1.23	1.35

APPENDIX 7.A3

NOT USED

7/27(R1). P2/5

APPENDIX 7.A4

GEOTECHNICAL PARAMETERS

(Tender Purposes only)

Parameter		**Soil Category**			
		1	**2**	**3**	**4**
Soil Classification		Compact Sand or Silt	Compact Sand or Silt	Loose Sand or Silt	Very Loose Sand or Silt
SPT 'N' blows/300mm (Average SPT of top 75% of length in case of piled foundation)		10-19	10-19	5-10	<5
CPT Cone Resistance	kgf/cm²	100-120	100-120	60-100	<60
Water level		Foundation width below base	At ground level		
Soil Density	kN/m^3	1600	800	700	700
Backfill Density	kN/m^3	1600	800	700	700
Concrete Density	kN/m^3	2400	1400	1400	1400
Allowable Bearing Pressure under Ultimate Applied Loading	kN/m^2	150	75	40	40
Lateral Pressure (Pad & Chimney Foundations or Raft)	kN/m^2	240	120	65	65
Frustum angle	(degrees to vertical)	15	15	10	0
Bond galvanised steel-concrete	N/mm²	1.0			

Water level at ground level.
Shear characteristics based on direct shear test.

7/27(R1), P3/5

APPENDIX 7.A4 (Continued)

Parameter			Soil Category 4	
For sandy soil				where
Ultimate skin friction $= \frac{1}{2} K_s\, p_d \tan\delta\ A_s$				p_d = effective overburden pressure;
	Bored piles	K_s	0.7	φ = angle of shearing resistance
		δ	Φ	A_s = surface area of pile shaft (m^2)
Driven piles:	Steel	K_s	0.5	
		δ	20°	
	Concrete	K_s	1.0	
		δ	$\frac{3}{4}\Phi$	
For clay soil Ultimate skin friction $= \alpha\, C_U\, A_s$			$\alpha = 0.7 \sim 0.3$	Where α = attachment coefficent C_U = Undrained shear strength

Minimum Requirement for Piled Foundations :

Parameter	Requirement
Minimum factor of safety for piles or drilled shafts i.e. Ultimate resistance to allowable load (For all types of soil categories)	1.5
Minimum percentage of ultimate uplift load **(without foundation strength factor)** to be resisted by dead weight of piles & pile cap (For soil category 4 only)	28%

APPENDIX 7.A5

NOT USED

APPENDIX 7.A6

CONCRETE MIX PARAMETERS

Grade of Concrete	Cement Type	Minimum Cement Content kg/m^3	Maximum Freewater/ cement ratio
C30	Ordinary Portland Cement (OPC)	370	0.5
C30	Portland Composite Cement (PCC)	370	0.5
C30	Prozzolana Portland Cement (PPC)	370	0.5
C30	Sulphate Resisting Portland Cement (SRC)*	As per BSEN 197-1 CEMIII-B-V	

Notes

1. Maximum nominal aggregate size 20mm.
2. For installation of drilled shaft piled foundations using bentonite slurries, minimum cement content shall be increased to 400 kg m^3
3. Slump range for cap and chimney is 50 mm to 100 mm and for pile 150 mm to 200 mm.

* If required as per soil and ground water test report.

ATTACHMENT - 2

ADDN-1/Lot-1

SECTION 19

LIST OF BID DRAWINGS (R1)

Following drawings are enclosed for tender purpose:

Sl.	Drawing Number		Title
1.	PGCB/132kV/SS	:	132kV Suspension Set (70kN)
2.	PGCB/132kV/HSS	:	132kV Heavy Suspension Set (120kN)
3.	PGCB/132kV/TS	:	132kV Tension Set (120kN)
4.	PGCB/132kV/ULD	:	132kV Upright Low duty Tension Set (70kN)
5.	PGCB/132kV/ILD	:	132kV Inverted Low duty Tension Set (70kN)
6.	PGCB/132kV/OPGW SS	:	132kV OPGW Suspension Set
7.	PGCB/132kV/OPGW TS	:	132kV OPGW Tension Set
8.		:	132kV River Crossing Suspension Set (120kN)
9.		:	132kV River Crossing Tension Set (160kN)
10.	PGCB/TL/INS	:	Cross section sketch of Insulator unit showing straight head portion.
11.			Route Map for Section A
12.			Route Map for Section B
13.			Route Map for Section C
14.			Route Map for Section D
15.	PGCB/TL/NP	:	Number Plate
16.	PGCB/TL/DP	:	Danger Plate
17.	PGCB/TL/EARTHING	:	Earthing Arrangement Drawing
18.	PGCB/TL/AT	:	Anti-theft Nuts & Bolts Drawing

List of Tower Drawings is enclosed.

LIST OF AVAILABLE STRUCTURAL/ERECTION DRAWINGS OF TOWERS

NORMAL BASE WIDTH

TOWER TYPE 1DL

Sl.	Description	Drawing No.	Sheet No.	Rev
1	Outline drawing of 1DL std, +3, +9	PGCB/BS/2/02	1 of 1	0
2	Erection Drawing for Bottom part of ±0M	PGCB/SC/02/ED/1DL/23	1 of 4	1
3	Erection Drawing for Upper part-1 of ±0M	PGCB/SC/02/ED/1DL/23	2 of 4	1
4	Erection Drawing for Upper part-2 of ±0M	PGCB/SC/02/ED/1DL/23	3 of 4	0
5	Cross - Arm and Tie plan	PGCB/SC/02/ED/1DL/23	4 of 4	0
6	Erection Drawing for +1.5M body extention	PGCB/SC/02/ED/1DL/142	1 of 1	0
7	Erection Drawing for +9M body extention	PGCB/SC/02/ED/1DL/24	1 of 2	1
8	Erection Drawing for +3.0M body extention	PGCB/SC/02/ED/1DL/24	2 of 2	1
9	Erection Drawing for +4.5M body extention	PGCB/SC/02/ED/1DL/25	1 of 1	0
10	Erection Drawing for +6.0M body extention	PGCB/SC/02/ED/1DL/26	1 of 1	1
11	Step Bolt	PGCB/SC/02/ACC/55	1 of 1	1
12	Stub for pile	PGCB/SC/02/ED/1DL/27/PILE/4	1 of 1	1
13	Stub for pad & chimney	PGCB/BS/2/71	1 of 1	A

TOWER TYPE 1D1

Sl.	Description	Drawing No.	Sheet No.	Rev
1	Outline drawing of 1D1 std, +6, +12	PGCB/BS/2/05	1 of 1	0
2	Outline drawing of 1D1 +3	PGCB/BS/2/06	1 of 2	0
3	Outline drawing of 1D1 +9	PGCB/BS/2/06	2 of 2	0
4	Erection Drawing for Bottom part of ±0M	PGCB/SC/02/ED/1D1/30	1 of 4	0
5	Erection Drawing for Top part-1 of ±0M	PGCB/SC/02/ED/1D1/30	2 of 4	0
6	Erection Drawing for Top part-2 of ±0M	PGCB/SC/02/ED/1D1/30	3 of 4	0
7	Cross - Arm and Tie plan	PGCB/SC/02/ED/1D1/30	4 of 4	0
8	Erection Drawing for +6.0M body extention	PGCB/SC/02/ED/1D1/01/31	2 of 2	1
9	Erection Drawing for +9.0M body extention	PGCB/BS/2/80	1 of 2	0
10	Erection Drawing for +12.0M body extention	PGCB/SC/02/ED/1D1/31	1 of 2	1
11	Stub for pile Soil Category 3 & 4	PGCB/AS/1/32	1 of 1	0

LIST OF AVAILABLE STRUCTURAL/ERECTION DRAWINGS OF TOWERS

NORMAL BASE WIDTH

TOWER TYPE 1D25

Sl.	Description	Drawing No.	Sheet No.	Rev
1	Outline and Clearance Diagram of +9M	PGCB/SC/02/TD/1D-1D25-05	1 of 1	0
2	Body Extension +4.5M	PGCB/SC/02/TD/1D25-05/EXT 02	1 of 1	0
3	Erection Drawing for Bottom part of (-)3M	PGCB/SC/02/ED/1D25/40	1 of 4	0
4	Erection Drawing for Top part-1 of (-)3M	PGCB/SC/02/ED/1D25/40	2 of 4	0
5	Erection Drawing for Top part-2 of (-)3M	PGCB/SC/02/ED/1D25/40	3 of 4	1
6	Cross - Arm and Tie plan	PGCB/SC/02/ED/1D25/40	4 of 4	1
7	Erection Drawing for (-)3M to ±0M portion	PGCB/SC/02/ED/1D25/42	1 of 2	0
8	Erection Drawing for +1.5M body extention	-	-	-
9	Erection Drawing for +3.0M body extention	PGCB/SC/02/ED/1D25/42	2 of 2	0
10	Erection Drawing for +4.5M body extention	PGCB/SC/02/ED/1D25/41	2 of 2	0
11	Erection Drawing for +6.0M body extention	PGCB/SC/02/ED/1D25/43	1 of 1	0
12	Erection Drawing for +9.0M body extention	PGCB/SC/02/ED/1D25/41	1 of 2	0
13	Drawing for Stub for Soil Category-1 & 2	PGCB/SC/02/ED/1D25/44	1 of 1	A
14	Drawing for Stub for Soil Category-3	PGCB/SC/02/ED/1D25/44/PILE/3	1 of 1	A
15	Drawing for Stub for Soil Category-4	PGCB/SC/02/ED/1D25/150	1 of 1	A

TOWER TYPE 1DT6 (Angle)

Sl.	Description	Drawing No.	Sheet No.	Rev
1	Outline Diagram of +6.0M	PGCB/SC/02/ED/1DT6-06	1 of 1	0
2	Erection Drawing for Bottom part of ±0M	PGCB/SC/02/ED/1DT6/47	1 of 5	0
3	Erection Drawing for Top part-1 of ±0M	PGCB/SC/02/ED/1DT6/47	2 of 5	0
4	Erection Drawing for Top part-2 of ±0M	PGCB/SC/02/ED1/1DT6/47	3 of 5	1
5	Erection Drawing for Cross - Arm plan	PGCB/SC/02/ED/1DT6/47	4 of 5	0
6	Erection Drawing for Tie plan	PGCB/SC/02/ED/1DT6/47	5 of 5	0
7	Drawing for Stub for Soil Category-1 & 2	PGCB/SC/02/ED/1DT6/51	1 of 1	0
8	Drawing for Stub for Soil Category-3	PGCB/SC/02/ED/1DT6/51/PILE/3	1 of 1	0

TOWER TYPE 1DT6 (Terminal)

Sl.	Description	Drawing No.	Sheet No.	Rev
1	Erection Drawing for Bottom part of ±0M	PGCB/SC/02/ED/1DT6/153	1 of 6	0
2	Erection Drawing for Top part-1 of ±0M	PGCB/SC/02/ED/1DT6/153	2 of 6	0
3	Erection Drawing for Top part-2 of ±0M	PGCB/SC/02/ED/1DT6/153	3 of 6	0
4	Erection Drawing for Cross - Arm plan with aux. Cross Arm	PGCB/SC/02/ED/1DT6/153	4 of 6	0

LIST OF AVAILABLE STRUCTURAL/ERECTION DRAWINGS OF TOWERS

NORMAL BASE WIDTH

5	Erection Drawing for Cross - Arm plan with aux. Cross Arm	PGCB/SC/02/ED/1DT6/153	5 of 6	0
6	Erection Drawing for Tie plan with aux. Tie	PGCB/SC/02/ED/1DT6/153	6 of 6	0
6	Erection Drawing of Stub for Pile of Terminal Tower	PGCB/SC/02/ED/1DT6/151	1 of 1	0

LIST OF AVAILABLE STRUCTURAL/ERECTION DRAWINGS OF TOWERS

NORMAL BASE WIDTH

TOWER TYPE 1DT6 (Angle/Terminal)

Sl.	Description	Drawing No.	Sheet No.	Rev
1	Erection Drawing for +1.5M body extention	PGCB/SC/02/ED/1DT6/49	1 of 3	0
2	Erection Drawing for +3.0M body extention	PGCB/SC/02/ED/1DT6/49	2 of 3	0
3	Erection Drawing for +4.5M body extention	PGCB/SC/02/ED/1DT6/49	3 of 3	0
4	Erection Drawing for +6.0M body extention	PGCB/SC/02/ED1/1DT6/48	1 of 1	0
5	Erection Drawing for +9.0M body extention	PGCB/SC/02/ED/1DT6/50	1 of 1	0

TOWER TYPE 1DR

Sl.	Description	Drawing No.	Sheet No.	Rev
1	Structural drawing of Basic Body Part-I of River Crossing Tower Type 1DR	S-2423	1 of 3	0
2	Structural drawing of Basic Body Part-I of River Crossing Tower Type 1DR	S-2423	2 of 3	0
3	Structural drawing of Basic Body Part-I of River Crossing Tower Type 1DR	S-2423	3 of 3	0
4	Basic Body Part-II	S-2424	1 of 2	0
5	Basic Body Part-II	S-2424	2 of 2	0
6	Basic Body Part-III	S-2425	1 of 2	A
7	Basic Body Part-III	S-2425	2 of 2	A
8	Basic Body Part-IV	S-2426	1 of 2	B
9	Basic Body Part-IV	S-2426	2 of 2	B
10	Basic Body Part-V	S-2427	1 of 1	A
11	Cage	S-2428	1 of 2	B
12	Peak	S-2428	2 of 2	C
13	Bottom, Middle & Top X-Arms	S-2429	1 iof 1	C
14	Drawing of Standard tower	S-2430	1 of 3	A
15	Drawing of Standard tower	S-2430	2 of 3	A
16	Drawing of Standard tower	S-2430	3 of 3	A
17	Stub Drawing for Standard Tower	S-2920	1 of 1	1
18	Stub Drawing for M10 Tower	S-2921	1 of 1	2

LIST OF AVAILABLE STRUCTURAL/ERECTION DRAWINGS OF TOWERS

NORMAL BASE WIDTH

TOWER TYPE 1DAX

Sl.	Description	Drawing No.	Sheet No.	Rev
1	Structural drawing of Body of Anchor Tower Type '1DAX'	S-2052	-	A
2	Cage & Peak	S-2436	1 of 1	B
3	Cross-arms	S-2054	-	-
4	Standard Tower	S-2434	1 of 1	A
5	+4.5m Body Extension of Tower Type 1DAX	S-2438	1 of 1	0
6	Stub Drawing for +4.5M	S-3032	1 of 1	0

TOWER TYPE 1QL

Sl.	Description	Drawing No.	Sheet No.	Rev
1	Structural drawing of Peak, Top X-Arm & X-Arm-4 & 3 of 1QL type tower	S-2288	1 of 1	3
2	X-Arm-1 & X-Arm-2 and bottom x-arm	S-2289	1 of 1	3
3	Cage-I	S-2290	1 of 1	1
4	Cage-II	S-2291	1 of 1	0
5	Body-I	S-2292	1 of 1	0
6	Body-II	S-2293	1 of 1	0
7	+0m Extension and plan at 'B-B'	S-2294	1 of 1	0
8	+9m Extension	S-2295	1 of 1	0
9	+9m Extension (view at 'F' and plan at 'A-A'	S-2296	1 of 1	1
10	Structural Drawing of +1.5M ext.	S-2407	1 of 1	0
11	Structural Drawing of +3.0M ext.	S-2408	1 of 1	1
12	Structural Drawing of +4.5M ext.	S-2409	1 of 1	1
13	Structural Drawing of +6.0M ext.	S-2410	1 of 1	1
14	Stub Structural Darwing	S-2297	1 of 1	0
15	Stub Shop Drawings	-	-	-
16	Arrangement of A.C.D	A-5441	1 of 1	0

TOWER TYPE 1Q15

Sl.	Description	Drawing No.	Sheet No.	Rev
1	Structural drawing of Stub for +15M	S-2308	1 of 1	0
2	Structural drawing of GW X-Arm & X-Arm-5 & 6 of 1Q15 type tower	S-2310	1 of 1	D
3	X-Arm-3 & X-Arm-4	S-2311	1 of 1	C
4	X-Arm-1 & X-Arm-2	S-2312	1 of 1	D
5	Cage-I	S-2313	1 of 1	E
6	Cage-II	S-2314	1 of 1	E

LIST OF AVAILABLE STRUCTURAL/ERECTION DRAWINGS OF TOWERS

NORMAL BASE WIDTH

7	Body	S-2315	1 of 1	D
8	Basic body with plan 'B-B'	S-2316	1 of 1	D
9	0-Base	S-2317	1 of 1	D
10	+6m Extension (top part of +12m & +15m Extension)	S-2318	1 of 1	D
11	Plan view 'A-A' & Oblique view 'D'	S-2319	1 of 1	D
12	+15m Extension (bottom part of +15m Extension)	S-2320	1 of 1	D
13	Plan view 'C-C' & Oblique view 'H'	S-2321	1 of 1	D
14	Drawing of M/C Tension Tower +1.5M	S-2441	1 of 1	A
15	Drawing of M/C Tension Tower +3.0M	S-2442	1 of 1	A
16	Drawing of M/C Tension Tower +4.5M	S-2443	1 of 1	A
17	Drawing of M/C Tension Tower +9.0M	S-2444	1 of 1	A
18	Drawing of M/C Tension Tower +12.0M	S-2445	1 of 1	A

TOWER TYPE 1Q30

Sl.	Description	Drawing No.	Sheet No.	Rev
1	Outline Diagram	DS-1716	1 of 1	A
2	Structural drawing of GW X-Arm & X-Arm-5 & 6	S-2336	1 of 1	B
3	X-Arm-3 & X-Arm-4	S-2337	1 of 1	B
4	X-Arm-1 & X-Arm-2	S-2338	1 of 1	B
5	Cage-I	S-2339	1 of 1	B
6	Cage-II	S-2340	1 of 1	B
7	Body	S-2341	1 of 1	A
8	Basic body	S-2342	1 of 1	A
9	Plan B-B and Oblique View	S-2343	1 of 1	A
10	0-Base	S-2344	1 of 1	A
11	+3m Ext with plan A-A and oblique view	S-2345	1 of 1	A
12	+4.5m Extension with oblique view	S-2346	1 of 1	A
13	+6.0m Extension with view 'E'	S-2347	1 of 1	A
14	+9.0m Extension with view 'F'	S-2348	1 of 1	A
15	+1.5m Extension with view 'B'	S-2349	1 of 1	A
16	Structural Drawing of Stub	S-2489	1 of 1	0

LIST OF AVAILABLE STRUCTURAL/ERECTION DRAWINGS OF TOWERS

NORMAL BASE WIDTH

TOWER TYPE 1QT6

Sl.	Description	Drawing No.	Sheet No	Rev
1	Structural drawing of GW X-Arm & X-Arm-6 of 1QT6 type tower	S-2395	1 of 1	2
2	X-Arm-4 & X-Arm-5	S-2396	1 of 1	3
3	X-Arm-2 & X-Arm-3	S-2397	1 of 1	3
4	X-Arm-1	S-2398	1 of 1	3
5	Cage-I	S-2399	1 of 1	1
6	Cage-2	S-2400	1 of 1	2
7	Body	S-2401	1 of 1	2
8	Basic Body	S-2402	1 of 1	0
9	0 Base	S-2403	1 of 1	0
10	+9M Extension	S-2404	1 of 1	0
11	Plan A-A & B-B	S-2405	1 of 1	1
12	+6M Extension	S-2414	1 of 1	0
13	Aux. cross-arm GW & 6	S-2759	1 of 1	1
14	Aux. cross-arm 4 & 5	S-2760	1 of 1	0
15	Aux. cross-arm 2 & 3	S-2761	1 of 1	0
16	Aux. crooss-arm 1	S-2762	1 of 1	1

GENERAL ARRANGEMENT DRAWING OF ACD

Sl.	Description	Drawing No.	Sheet No.	Rev
1	1QL	A-5441	1 of 1	-
2	1Q15	A-5442	1 of 1	-
3	1QT6	A-5444	1 of 1	-
4	1DR	A-5445	1 of 1	-
5	1DAX	A-5446	1 of 1	-

LIST OF AVAILABLE STRUCTURAL/ERECTION DRAWINGS OF TOWERS

NORMAL BASE WIDTH

STRUCTURAL DRAWING OF STUB

Sl.	Description	Drawing No.	Sheet No.	Rev
1	1DL	PGCB/LOT-1/1DL/P/1	1 of 1	0
2	1D1	PGCB/LOT-1/1D1/P/1	1 of 1	0
3	1D25	PGCB/SC/02/ED/1D25/150	1 of 1	0
4	1DT6	PGCB/SC/02/ED/1DT6/151	1 of 1	0
5	1QL	S-2297	1 of 1	0
6	1Q15	S-2308	1 of 1	-
7	1QT6	S-2393	1 of 1	-
8	1DAX	S-3032	1 of 1	-
9	1DR	S-2920	1 of 1	0

LIST OF AVAILABLE STRUCTURAL/ERECTION DRAWINGS OF TOWERS

NORMAL BASE WIDTH

TOWER TYPE 1DL
NARROW BASE WIDTH

Sl.	Description	Drawing No.	Sheet No.	Rev
1	132kV Tower Type – 1DL, Top Part	T2005-1DL-01	1 of 1	A
2	132kV Tower Type – 1DL, Bottom Part	T2005-1DL-02	1 of 1	B
3	132kV Tower Type – 1DL, E0 Body	T2005-1DL-03	1 of 1	B
4	132kV Tower Type – 1DL, E1.5 Body	T2005-1DL-04	1 of 1	B
5	132kV Tower Type – 1DL, E3 Body	T2005-1DL-05	1 of 1	B
6	132kV Tower Type – 1DL, E4.5 Body	T2005-1DL-06	1 of 1	B
7	132kV Tower Type – 1DL, E6 Body	T2005-1DL-07	1 of 1	B
8	132kV Tower Type – 1DL, E9 Body	T2005-1DL-08	1 of 1	B
9	132kV Tower Type – 1DL, Stub (Except E9)	T2005-1DL-09	1 of 1	A
10	132kV Tower Type – 1DL, Stub (E9)	T2005-1DL-09A	1 of 1	0
11	132kV Tower Type – 1DL, Template	T2005-1DL-10	1 of 1	A
12	132kV Tower Type – 1DL, Template	T2005-1DL-10	1 of 1	A

TOWER TYPE 1D1
NARROW BASE WIDTH

Sl.	Description	Drawing No.	Sheet No.	Rev
1	132kV Tower Type – 1D1, Top Part	T2005-1D1-01	1 of 1	B
2	132kV Tower Type – 1D1, Bottom Part	T2005-1D1-02	1 of 1	A
3	132kV Tower Type – 1D1, E0 Body	T2005-1D1-03	1 of 1	B
4	132kV Tower Type – 1D1, E1.5 Body	T2005-1D1-04	1 of 1	B
5	132kV Tower Type – 1D1, E3 Body	T2005-1D1-05	1 of 1	B
6	132kV Tower Type – 1D1, E4.5 Body	T2005-1D1-06	1 of 1	B
7	132kV Tower Type – 1D1, E6 Body	T2005-1D1-07	1 of 1	B
8	132kV Tower Type – 1D1, E9 Body	T2005-1D1-08	1 of 1	B
9	132kV Tower Type – 1D1, E12 Body	T2005-1D1-09	1 of 1	0
10	132kV Tower Type – 1D1, Stub (Except E12)	T2005-1D1-09	1 of 1	A
11	132kV Tower Type – 1D1, Stub (E12)	T2005-1D1-09A	1 of 1	0
12	132kV Tower Type – 1D1, Template	T2005-1D1-10	1 of 1	A

LIST OF AVAILABLE STRUCTURAL/ERECTION DRAWINGS OF TOWERS

NORMAL BASE WIDTH

TOWER TYPE 1D25
NARROW BASE WIDTH

Sl.	Description	Drawing No.	Sheet No.	Rev
1	132kV Tower Type – 1D25, Top Part	T2005-1D25-01	1 of 1	B
2	132kV Tower Type – 1D25, Bottom Part	T2005-1D25-02	1 of 1	B
3	132kV Tower Type – 1D25, E0 Body	T2005-1D25-03	1 of 1	A
4	132kV Tower Type – 1D25, E1.5 Body	T2005-1D25-04	1 of 1	A
5	132kV Tower Type – 1D25, E3 Body	T2005-1D25-05	1 of 1	C
6	132kV Tower Type – 1D25, E9 Body	T2005-1D25-05A	1 of 1	0
7	132kV Tower Type – 1D25, Stub (Except E9)	T2005-1D25-06	1 of 1	0
8	132kV Tower Type – 1D25, Stub (E9)	T2005-1D25-06A	1 of 1	0
9	132kV Tower Type – 1D25, Template	T2005-1D25-07	1 of 1	0
10	132kV Tower Type – 1D25, Template (E9)	T2005-1D25-08	1 of 1	0

TOWER TYPE 1DT6
NARROW BASE WIDTH

Sl.	Description	Drawing No.	Sheet No.	Rev
1	132kV Tower Type – 1DT6, Top Part	T2005-1DT6-01	1 of 1	0
2	132kV Tower Type – 1DT6, Bottom Part	T2005-1DT6-02	1 of 1	0
3	132kV Tower Type – 1DT6, E0 Body	T2005-1DT6-03	1 of 1	0
4	132kV Tower Type – 1DT6, E1.5 Body	T2005-1DT6-04	1 of 1	0
5	132kV Tower Type – 1DT6, E3 Body	T2005-1DT6-05	1 of 1	0
6	132kV Tower Type – 1DT6, E4.5 Body	T2005-1DT6-06	1 of 1	0
7	132kV Tower Type – 1DT6, E6 Body	T2005-1DT6-07	1 of 1	0
8	132kV Tower Type – 1DT6, E9 Body	T2005-1DT6-08	1 of 1	0
9	132kV Tower Type – 1DT6, Stub	T2005-1DT6-09	1 of 1	0

ATTACHMENT-3

ADDN-1 / Lot-1

AP list and Coordinate at Rangamati to Chandraghona

	X Co-or			Y Co-or		
AP Name	Deg	Min	Sec	Deg	Min	Sec
Start point	92	7	20.45	22	28	54.44
AP_1	92	7	6.98	22	29	9.48
AP_2	92	5	42.49	22	29	55.59
AP_3	92	4	39.02	22	30	41.28
AP_4	92	4	43.33	22	32	41.54
AP_5	92	4	17.04	22	33	29.25
AP_6	92	3	29.32	22	33	44.67
AP_7	92	3	9.57	22	34	35.1
AP_8	92	4	10.81	22	35	30.23
AP_9	92	4	14.98	22	35	37.15
AP_10	92	4	27.79	22	35	37.49
Ap_11	92	4	46.31	22	35	52.58
AP_12	92	4	56.29	22	35	54.96
AP_13	92	5	7.38	22	36	0.98
AP_14	92	5	13.29	22	36	5.34
AP_15	92	5	21.34	22	36	10.3
AP_16	92	5	39.12	22	36	14.08
AP_17	92	5	46.07	22	36	15.3
AP_18	92	5	49.85	22	36	21.4
AP_19	92	5	57.42	22	36	21.49
AP_20	92	6	12.77	22	36	46.93
AP_21	92	6	16.95	22	37	6.47
AP_22	92	6	25.64	22	37	19.05
AP_23	92	6	30.16	22	37	21.73
AP_24	92	6	34.61	22	37	21.72
AP_25	92	6	37.95	22	37	25.57
AP_26	92	6	46.08	22	37	37.36
AP_27	92	6	47.56	22	37	41.3
AP_28	92	6	46.22	22	37	49.28
AP_29	92	6	53.73	22	37	55.27
AP_30	92	6	56.27	22	37	58.74
AP_31	92	6	56.78	22	38	7.91
AP_32	92	6	59.15	22	38	10.38
AP_33	92	7	0.02	22	38	13.89
AP_34	92	7	11.91	22	38	24.3
AP_35	92	7	20.49	22	38	28.75
AP_36	92	7	20.90	22	38	34.7
AP_37	92	7	23.66	22	38	36.98
AP_38	92	7	33.60	22	38	37.69
AP_39	92	7	39.18	22	38	36.78
AP_40	92	7	44.27	22	38	38.86
AP_41	92	7	53.35	22	38	45.77
AP_42	92	7	56.81	22	38	44.37
AP_43	92	8	5.42	22	38	46.03
AP_44	92	8	9.79	22	38	48.37
AP_45	92	8	23.33	22	38	53.07
AP_46	92	8	34.90	22	39	2.92
AP_47	92	8	38.30		39	9.71

Ap list of Khagrachhari to Rangamati Route

Ap	Deg	Min	Sec	Deg	Min	Sec
AP-1	91	58	26.328	23	5	33.18
AP-2	91	58	30.432	23	5	28.824
AP-3	91	59	19.752	23	3	28.62
AP-4	91	59	5.82	23	2	58.848
AP-5	91	59	10.608	23	2	51.072
AP-6	91	59	28.536	23	2	36.24
AP-7	91	59	52.764	23	2	24.324
AP-8	92	0	11.196	23	2	25.044
AP-9	92	0	13.68	23	2	23.352
AP-10	92	0	14.868	23	2	20.112
AP-11	92	0	15.48	23	2	15.612
AP-12	92	0	20.88	23	2	9.312
AP-13	92	0	26.424	23	2	5.856
AP-14	92	0	28.116	23	2	3.876
AP-15	92	0	32.904	23	1	57.828
AP-16	92	0	42.552	23	1	50.484
AP-17	92	0	47.484	23	1	48.072
AP-18	92	0	52.74	23	1	44.976
AP-19	92	0	52.632	23	1	29.712
AP-20	92	0	57.312	23	1	16.896
AP-21	92	1	10.38	23	0	50.58
AP-22	92	1	4.764	23	0	31.932
AP-23	92	0	42.588	23	0	9.9
AP-24	92	0	39.456	23	0	0.54
AP-25	92	0	42.336	22	59	47.868
AP-26	92	0	45.036	22	59	45.924
AP-27	92	0	47.016	22	59	42
AP-28	92	0	50.076	22	59	37.572
AP-29	92	0	55.332	22	59	34.8
AP-30	92	0	59.472	22	59	29.292
AP-31	92	0	59.58	22	59	27.492
AP-32	92	0	58.896	22	59	25.116
AP-33	92	0	56.016	22	59	18.78
AP-34	92	0	55.548	22	59	16.728
AP-35	92	0	55.476	22	59	8.376
AP-36	92	0	54.108	22	59	4.128
AP-37	92	0	55.908	22	59	0.816
AP-38	92	0	57.528	22	58	55.164
AP-39	92	1	2.568	22	58	47.64
AP-40	92	1	5.448	22	58	44.436
AP-41	92	1	6.168	22	58	41.556
AP-42	92	1	7.068	22	58	30.216
AP-43	92	1	8.94	22	58	26.112
AP-44	92	1	9.048	22	58	24.708
AP-45	92	1	8.22	22	58	21.036
AP-46	92	1	9.768	22	58	15.132
AP-47	92	1	9.696	22	58	14.268
AP-48	92	1	6.924	22	58	11.172

Ap list of Khagrachhari to Rangamati Route

Ap	Deg	Min	Sec	Deg	Min	Sec
AP-49	92	1	6.6	22	58	9.624
AP-50	92	1	7.608	22	58	3.612
AP-51	92	1	12.612	22	57	58.248
AP-52	92	1	15.168	22	57	52.776
AP-53	92	1	15.132	22	57	50.976
AP-54	92	1	14.16	22	57	47.88
AP-55	92	1	13.044	22	57	40.824
AP-56	92	1	13.224	22	57	38.88
AP-57	92	1	11.568	22	57	29.556
AP-58	92	1	6.42	22	57	21.096
AP-59	92	1	5.88	22	57	18.252
AP-60	92	1	5.088	22	57	16.884
AP-61	92	1	5.916	22	57	11.628
AP-62	92	1	7.644	22	57	6.516
AP-63	92	1	7.752	22	57	4.14
AP-64	92	1	4.404	22	56	57.84
AP-65	92	1	3.072	22	56	52.404
AP-66	92	1	5.592	22	56	37.104
AP-67	92	1	5.196	22	56	33.864
AP-68	92	1	1.704	22	56	28.032
AP-69	92	1	1.416	22	56	22.452
AP-70	92	1	2.1	22	56	17.412
AP-71	92	1	1.236	22	56	9.312
AP-72	92	1	2.1	22	56	3.048
AP-73	92	1	0.948	22	55	56.532
AP-74	92	1	0.732	22	55	46.992
AP-75	92	0	57.888	22	55	40.152
AP-76	92	0	54.324	22	55	36.948
AP-77	92	0	48.348	22	55	33.996
AP-78	92	0	43.632	22	55	22.764
AP-79	92	0	43.38	22	55	18.372
AP-80	92	0	54.576	22	54	51.768
AP-81	92	0	54.54	22	54	49.068
AP-82	92	0	57.276	22	54	42.444
AP-83	92	0	55.584	22	54	35.28
AP-84	92	0	58.212	22	54	30.348
AP-85	92	0	56.844	22	54	26.172
AP-86	92	0	58.608	22	54	22.212
AP-87	92	1	4.188	22	54	16.236
AP-88	92	1	3.756	22	54	12.06
AP-89	92	1	0.408	22	54	6.732
AP-90	92	0	58.86	22	53	57.876
AP-91	92	0	57.6	22	53	55.212
AP-92	92	0	58.032	22	53	47.616
AP-93	92	0	59.04	22	53	45.924
AP-94	92	0	59.616	22	53	41.28
AP-95	92	1	2.532	22	53	37.608
AP-96	92	1	6.024	22	53	31.704

Ap list of Khagrachhari to Rangamati Route

Ap	Deg	Min	Sec	Deg	Min	Sec
AP-97	92	1	9.66	22	53	27.564
AP-98	92	1	11.352	22	53	24.072
AP-99	92	1	14.16	22	53	16.764
AP-100	92	1	15.492	22	53	14.424
AP-101	92	1	16.716	22	53	13.344
AP-102	92	1	19.992	22	53	11.94
AP-103	92	1	20.316	22	53	11.256
AP-104	92	1	20.316	22	53	10.464
AP-105	92	1	19.704	22	53	7.296
AP-106	92	1	20.208	22	53	4.992
AP-107	92	1	22.188	22	53	2.616
AP-108	92	1	28.524	22	52	58.188
AP-109	92	1	29.748	22	52	54.732
AP-110	92	1	33.96	22	52	48.54
AP-111	92	1	35.328	22	52	47.388
AP-112	92	1	37.884	22	52	46.668
AP-113	92	1	39.18	22	52	45.768
AP-114	92	1	40.548	22	52	38.136
AP-115	92	1	41.232	22	52	36.66
AP-116	92	1	42.6	22	52	29.604
AP-117	92	1	44.58	22	52	26.796
AP-118	92	1	48.432	22	52	23.34
AP-119	92	1	51.24	22	52	19.38
AP-120	92	1	52.14	22	52	18.84
AP-121	92	1	54.3	22	52	18.336
AP-122	92	2	0.168	22	52	12.612
AP-123	92	2	4.596	22	52	6.456
AP-124	92	2	4.74	22	52	3.612
AP-125	92	2	4.092	22	52	1.596
AP-126	92	2	2.544	22	52	0.3
AP-127	92	1	57.828	22	51	59.256
AP-128	92	1	55.38	22	51	56.592
AP-129	92	1	53.184	22	51	56.484
AP-130	92	1	51.78	22	51	56.016
AP-131	92	1	50.448	22	51	54.324
AP-132	92	1	49.368	22	51	51.66
AP-133	92	1	44.364	22	51	49.14
AP-134	92	1	40.692	22	51	49.392
AP-135	92	1	39.288	22	51	48.996
AP-136	92	1	38.604	22	51	47.736
AP-137	92	1	38.316	22	51	44.64
AP-138	92	1	37.092	22	51	43.2
AP-139	92	1	33.024	22	51	42.192
AP-140	92	1	32.052	22	51	41.22
AP-141	92	1	31.512	22	51	37.764
AP-142	92	1	30.432	22	51	34.992
AP-143	92	1	27.444	22	51	31.536
AP-144	92	1	25.788	22	51	28.296

Ap list of Khagrachhari to Rangamati Route

Ap	Deg	Min	Sec	Deg	Min	Sec
AP-145	92	1	26.004	22	51	26.892
AP-146	92	1	26.724	22	51	25.632
AP-147	92	1	30.432	22	51	23.508
AP-148	92	1	30.828	22	51	22.356
AP-149	92	1	30.612	22	51	20.808
AP-150	92	1	31.044	22	51	18.432
AP-151	92	1	31.512	22	51	17.82
AP-152	92	1	35.4	22	51	15.264
AP-153	92	1	41.412	22	51	8.424
AP-154	92	1	42.024	22	51	7.344
AP-155	92	1	42.672	22	51	5.076
AP-156	92	1	41.304	22	51	0.828
AP-157	92	1	41.088	22	50	58.632
AP-158	92	1	44.94	22	50	40.632
AP-159	92	1	46.2	22	50	37.824
AP-160	92	1	46.056	22	50	33.648
AP-161	92	1	46.488	22	50	31.416
AP-162	92	1	51.492	22	50	25.26
AP-163	92	1	54.372	22	50	18.348
AP-164	92	2	0.168	22	50	11.256
AP-165	92	2	0.816	22	49	59.16
AP-166	92	2	3.516	22	49	48.54
AP-167	92	2	3.084	22	49	46.884
AP-168	92	2	0.744	22	49	43.86
AP-169	92	1	59.88	22	49	41.628
AP-170	92	2	0.744	22	49	38.424
AP-171	92	2	3.48	22	49	34.212
AP-172	92	2	4.092	22	49	30.828
AP-173	92	2	5.136	22	49	29.532
AP-174	92	2	6.072	22	49	27.444
AP-175	92	2	10.608	22	49	24.564
AP-176	92	2	11.184	22	49	23.052
AP-177	92	2	9.888	22	48	59.94
AP-178	92	2	16.44	22	48	44.496
AP-179	92	2	15.504	22	48	34.092
AP-180	92	2	16.512	22	48	21.996
AP-181	92	2	14.532	22	48	20.124
AP-182	92	2	6.36	22	48	18.936
AP-183	92	2	4.416	22	48	17.892
AP-184	92	2	2.976	22	48	15.696
AP-185	92	2	3.732	22	48	10.548
AP-186	92	2	1.572	22	48	6.912
AP-187	92	2	1.392	22	48	5.904
AP-188	92	2	4.02	22	47	58.2
AP-189	92	2	1.968	22	47	52.332
AP-190	92	2	1.572	22	47	46.608
AP-191	92	1	57.72	22	47	41.856
AP-192	92	1	49.836	22	47	37.104

Ap list of Khagrachhari to Rangamati Route

Ap	Deg	Min	Sec	Deg	Min	Sec
AP-193	92	1	48.396	22	47	33.072
AP-194	92	1	48.288	22	47	31.704
AP-195	92	1	51.168	22	47	29.652
AP-196	92	1	51.276	22	47	26.34
AP-197	92	1	50.088	22	47	24.288
AP-198	92	1	50.196	22	47	23.424
AP-199	92	1	51.78	22	47	21.192
AP-200	92	1	51.924	22	47	17.844
AP-201	92	1	52.788	22	47	15.432
AP-202	92	1	53.184	22	47	11.688
AP-203	92	1	54.66	22	47	8.268
AP-204	92	1	57.252	22	47	6
AP-205	92	1	57.756	22	47	2.94
AP-206	92	2	0.168	22	46	58.692
AP-207	92	2	1.104	22	46	54.048
AP-208	92	2	1.068	22	46	51.816
AP-209	92	2	2.472	22	46	48.936
AP-210	92	2	3.84	22	46	47.64
AP-211	92	2	4.596	22	46	45.264
AP-212	92	2	7.296	22	46	42.096
AP-213	92	2	8.34	22	46	38.064
AP-214	92	2	4.776	22	46	31.764
AP-215	92	2	11.256	22	46	23.412
AP-216	92	2	18.816	22	46	0.264
AP-217	92	2	46.464	22	45	28.008
AP-218	92	3	5.004	22	44	57.156
AP-219	92	3	42.012	22	44	14.748
AP-220	92	4	21.756	22	43	55.452
AP-221	92	5	2.256	22	43	12.504
AP-222	92	6	9.36	22	42	16.02
AP-223	92	6	8.748	22	42	5.292
AP-224	92	6	11.7	22	41	58.2
AP-225	92	6	11.124	22	41	53.736
AP-226	92	6	12.384	22	41	50.028
AP-227	92	6	12.636	22	41	44.052
AP-228	92	6	19.44	22	41	41.46
AP-229	92	6	19.944	22	41	40.164
AP-230	92	6	18.72	22	41	33.144
AP-231	92	6	23.328	22	41	30.3
AP-232	92	6	32.364	22	41	22.488
AP-233	92	6	45.756	22	41	16.908
AP-234	92	6	53.208	22	41	9.852
AP-235	92	7	4.08	22	41	8.808
AP-236	92	7	7.716	22	41	6.972
AP-237	92	7	14.376	22	41	1.752
AP-238	92	7	16.86	22	40	53.688
AP-239	92	7	23.232	22	40	49.008
AP-240	92	7	24.168	22	40	47.892

Ap list of Khagrachhari to Rangamati Route

Ap	Deg	Min	Sec	Deg	Min	Sec
AP-241	92	7	24.924	22	40	46.128
AP-242	92	7	27.228	22	40	38.64
AP-243	92	7	34.032	22	40	32.592
AP-244	92	7	38.964	22	40	23.484
AP-245	92	7	45.588	22	40	7.5
AP-246	92	7	44.904	22	40	4.764
AP-247	92	7	41.916	22	40	1.776
AP-248	92	7	39.792	22	39	57.06
AP-249	92	7	40.44	22	39	54.792
AP-250	92	7	43.284	22	39	51.372
AP-251	92	7	44.976	22	39	46.368
AP-252	92	8	3.732	22	39	31.356
AP-253	92	8	5.316	22	39	16.128
AP-254	92	8	12.84	22	38	55.932
AP-255	92	8	17.52	22	38	53.988
AP-256	92	8	24.936	22	38	55.896
AP-257	92	8	34.26	22	39	2.88
AP-258	92	8	37.86	22	39	9.648

Proposed Mymensingh Ghatail Tangail 132kv Transmission Line Project			
Co-ordinates Point		Easting	Northing
SL	Strat Point	492084	685072
1	Ap1	492039	685256
2	Ap2	492225	686349
3	Ap3	492980	686690
4	Ap4	493610	686498
5	Ap5	493951	686505
6	Ap6	494249	686658
7	Ap7	494702	687130
8	Ap8	494888	687638
9	Ap9	496471	688953
10	Ap10	496928	690386
11	Ap11	496771	690629
12	Ap12	496915	692172
13	Ap13	497589	692523
14	Ap14	499956	694676
15	Ap15	500186	696043
16	Ap16	501649	696424
17	Ap17	501824	697990
18	Ap18	499455	701878
19	Ap19	499306	704018
20	Ap20	498948	705397
21	Ap21	498924	707327
22	Ap22	497964	709057
23	Ap23	498188	710050
24	Ap24	499683	711407
25	Ap25	499790	713536
26	Sub-Station	498821	714963
27	Ghatail		
28	Ap1	501155	715265
29	Ap2	505239	715254
30	Ap3	506375	714589
31	Ap4	508073	714314
32	Ap5	509208	714390
33	Ap6	513898	713237
34	Ap7	517819	716276
35	Ap8	518509	717301
36	Ap9	524808	719696
37	Ap10	526690	721899
38	Ap11	531439	721853
39	Ap12	534439	720644
40	Ap13	539536	721767
41	Ap14	543059	723428
42	Ap15	543864	724199
43	Ap16	543958	724522
44	Ap17	545250	726029
45	Ap18	546247	725975
46	Ap19	547198	726241
47	Ap20	548268	727361
48	Ap21	549489	729287
49	Ap22	549221	730892
50	Ap23	548355	731304
51	Ap24	546831	733888
52	Ap25	546326	734098
53	Ap26	545924	734518
54	Ap27	545117	735885
55	Ap28	543463	737199
56	Ap29	542992	737417
57	Ap30	542519	738239
58	End Point	542448	736570
	Mymenshingh		

Digital Survey Company.

Final Data Table Sunamgonj-Chatakr132kvT/L Project

SL	(Ap to Ap)	Distance(m)	Angle (Degree) L/R	Village	Mauza	Union	Thana	District	Remarks
1	Strat 00 to AP1	144.544	58R	Baghbari	Baghbar	Chatak	Chatak	Sunamgon	Chatak Sub-Station
2	Ap1 to AP2	317.489	32R	Baghbar	Baghbar	Chatak	Chatak	Sunamgonj	
3	Ap2 to Ap3	1022.447	24L	Baghbar	Baghbar	Chatak	Chatak	Sunamgonj	
4	Ap3 to Ap4	1001.993	78R	Nijgoan	Nijgoan	Umarpur	Chatak	Sunamgonj	
5	Ap4 to Ap5	1207.314	7L	Malsinagor	Malsinagor	Umarpur	Chatak	Sunamgonj	
6	Ap5 to Ap6	1510.865	3L	Bramangoan	Bramangoan	Umarpur	Dowerabazar	Sunamgonj	
7	Ap6 to Ap7	2856.104	35R	Kishobpur	Mondergoan	Monohorpur	Dowerabazar	Sunamgonj	
8	Ap7 to Ap8	4052.382	14R	Patkapan	Patkapan	Monohorpur	Dowerabazar	Sunamgonj	
9	Ap8 to Ap9	6184.826	2R	Nichantapur	Mandari	Monohorpur	Dowerabazar	Sunamgonj	
10	Ap9 to Ap10	5531.546	12R	Pachap Ram	Pachap Rampur	Afternagar	Dowerabazar	Sunamgonj	
11	Ap10 to AP11	2650.026	42L	Baderpur	Baderpur	Afternagar	Dowerabazar	Sunamgonj	
12	Ap11 to AP12	1834.305	38L	Kairghat	Kairghat	Afternagar	Sador	Sunamgonj	
13	Ap12 to AP13	1787.608	17R	Rasulpur	Rasulpur	Afternagar	Sador	Sunamgonj	
14	Ap13 to AP14	1822.891	19L	Jhaya Chor	Jhaya Chor	Afternagar	Sador	Sunamgonj	
15	Ap14 to End Point	1621.749		Jalalpur	Jalalpur		Sador	Sunamgon	Proposed Sub-Station
16	**Total Length(km)**	33.546							

Final Data Table Sylhet-Bianibazar132kvT/L Project									
SL	(Ap to Ap)	Distance(m)	Angle (Degree) L/R	Village	Mauza	Union	Thana	District	Remarks
1	Strat 00 to AP1	3335.223	7L	Purarkhal	Purarkhal	Sonargoan	Sylhet Sadar	Sylhet	Cutting Point
2	Ap1 to AP2	3083.187	2L	Sreerampur	Sreerampur	Paschambagh	Golapgonj	Sylhet	
3	Ap2 to Ap3	6531.547	32R	Utter Hatimn	Utter Hatimnagor	Paschambagh	Golapgonj	Sylhet	
4	Ap3 to Ap4	3343.695	36L	Bagha	Bagha	Rajagonj	Kanaighat	Sylhet	
5	Ap4 to Ap5	3585.48	37R	Fathagonj	Fathagon	Rajagonj	Kanaighat	Sylhet	
6	Ap5 to Ap6	5737.326	8L	Nayamati	Nayamati	Rajagonj	Kanaighat	Sylhet	
7	Ap6 to Ap7	1553.434	32R	Faljur	Faljur	Rajagonj	Kanaighat	Sylhet	
8	Ap7 to Ap8	908.403	24R	Upar Jhingabari	Upar Jhingaba	Rajagonj	Kanaighat	Sylhet	
9	Ap8 to Ap9	848.943	16L	Upar Jhingabari	Upar Jhingaba	Churkhai	Bianibazar	Sylhet	
10	Ap9 to End Point	779.877		Kamargram	Kamargram	Churkhai	Bianibazar	Sylhet	
	Total Length(km)	**29.707115**							

Code	Y	X	Z	H	Description
	Latitude	Longitude	Elevation	Height	
Start	24°49'55.53228"N	91°53'24.89265"E			Start at Cutting Point at Tower No-650, Existing 132KV Line (Fenchuganj-Sylhet)
AP-1	24°50'44.63989"N	91°55'10.81905"E			AP-1
AP-2	24°51'39.95389"N	91°56'42.42465"E			AP-2
AP-3	24°53'34.65709"N	91°59'58.29345"E			AP-3
AP-4	24°53'36.46069"N	92°01'57.44625"E			AP-4
AP-5	24°54'46.90189"N	92°03'39.20025"E			AP-5
AP-6	24°54'47.71909"N	92°07'03.71625"E			AP-6
AP-7	24°54'55.39069"N	92°07'58.44705"E			AP-7
AP-8	24°54'43.52509"N	92°08'28.15425"E			AP-8
AP-9	24°54'23.27869"N	92°08'48.72105"E			AP-9
End	24°54'10.05589"N	92°09'12.43785"E			End Point at Proposed Sub-Station, Biani Bazar

ATTACHMENT-4
ADDN-1 / Lot-1

POWER GRID COMPANY OF BANGLADESH LIMITED

BIDDING DOCUMENT
FOR
THE PROCUREMENT
OF
PACKAGE-1: DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF 132KV TRANSMISSION LINES AND SUBSTATIONS ON TURNKEY BASIS

LOT-1: TRANSMISSION LINES
Section - A: Chandraghona – Rangamati – Khagrachori 132kV Double Circuit Transmission and 2nd circuit in-out of Kaptai - Modunaghat line at Chandraghona

Schedule No.1 - Plant and Mandatory Spare Parts Supplied from Abroad

					Foreign Currency in ---	
Item	Description	Code[1]	Unit	Qty	Unit Price[2] CIP	Total Price CIP
				(1)	(2)	(1) x (2)
A1	Towers					
A1.1	Fabrication galvanising and supply of various types of towers, its body / leg (equal & unequal) extensions (complete) including stubs and bolts & nuts, including hangers, D-shackles pack washer spring washer plain washer, tower earthing, anti-theft nuts & bolts, danger plate, number plate bird guards anti-climbing device, step bolt, rest platform (if required), ladder (if required) etc as per specification (payment shall be released for identified complete tower)					
	Tower Type 1DL (NARROW BASE WIDTH)					
A1.1.1	Tower Type 1DL Slaandard		each	1		
A1.1.2	Tower Type 1DL E1.5		each	1		
A1.1.3	Tower Type 1DL E3.0		each	1		
A1.1.4	Tower Type 1DL E4.5		each	2		
A1.1.5	Tower Type 1DL E6.0		each	2		
A1.1.6	Tower Type 1DL E9.0		each	4		
	Tower Type 1D1 (NARROW BASE WIDTH)					
A1.1.7	Tower type 1D1 Standard		each	2		
A1.1.8	Tower type 1D1 E1.5		each	2		
A1.1.9	Tower type 1D1 E3.0		each	2		
A1.1.10	Tower type 1D1 E4.5		each	4		
A1.1.11	Tower type 1D1 E6.0		each	4		
A1.1.12	Tower type 1D1 E9.0		each	6		
A1.1.13	Tower type 1D1 E12.0		each	2		
A1.1.14	Tower type 1D1 E15.0		each	2		
	Tower Type 1D25 (NARROW BASE WIDTH)					
A1.1.15	Tower Type 1D25 Standard		each	2		
A1.1.16	Tower Type 1D25 E1.5		each	2		
A1.1.17	Tower Type 1D25 E3.0		each	2		
A1.1.18	Tower Type 1D25 E4.5		each	2		
A1.1.19	Tower Type 1D25 E6.0		each	4		
A1.1.20	Tower Type 1D25 E9.0		each	4		
	Tower Type 1DT6 (NARROW BASE WIDTH)					
A1.1.21	Tower Type 1DT6 Standard		each	19		
A1.1.22	Tower Type 1DT6 E1.5		each	25		
A1.1.23	Tower Type 1DT6 E3.0		each	30		
A1.1.24	Tower Type 1DT6 E4.5		each	40		
A1.1.25	Tower Type 1DT6 E6.0		each	70		
A1.1.26	Tower Type 1DT6 E9.0		each	80		
A1.1.27	Tower Type 1DT6 (-3)		each	10		
A1.1.28	Auxiliary crossarms for double circuit towers		per set of three	3		
	Sub-total for Item A1					

POWER GRID COMPANY OF BANGLADESH LIMITED

BIDDING DOCUMENT
FOR
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OF
PACKAGE-1: DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF 132KV TRANSMISSION LINES AND SUBSTATIONS ON TURNKEY BASIS

LOT-1: TRANSMISSION LINES

Section - A: Chandraghona – Rangamati – Khagrachori 132kV Double Circuit Transmission and 2nd circuit in-out of Kaptai - Modunaghat line at Chandraghona Substation

Schedule No.2 - Plant and Mandatory Spare Parts Supplied from within Employer's Conutry

					Foreign Currency in-----		Local Currency in Bangladesh Taka		
Item	Description	Code[1]	Unit	Qty	EXW Unit Price[1]	EXW Total Price[1]			VAT on EXW
				(1)	(2)	(3)=(1)x(2)			(4)
A1	Towers								
A1.1	Fabrication, galvanising and supply of various types of towers its body leg (equal & unequal) extensions (complete) including stubs and bolts & nuts, including hangers, D-shackles, pack washer, spring washer, plain washer, tower earthing anti-theft nuts & bolts, danger plate, number plate, bird guards anti-climbing device, step bolt, rest platform (if required), ladder (if required) etc as per specification (payment shall be released for identified complete tower)								
	Tower Type 1DL (NARROW BASE WIDTH)								
A1.1.1	Tower Type 1DL Staandard		each	1					
A1.1.2	Tower Type 1DL E1.5		each	1					
A1.1.3	Tower Type 1DL E3.0		each	1					
A1.1.4	Tower Type 1DL E4.5		each	2					
A1.1.5	Tower Type 1DL E6.0		each	2					
A1.1.6	Tower Type 1DL E9.0		each	4					
	Tower Type 1D1 (NARROW BASE WIDTH)								
A1.1.7	Tower type 1D1 Standard		each	2					
A1.1.8	Tower type 1D1 E1.5		each	2					
A1.1.9	Tower type 1D1 E3.0		each	2					
A1.1.10	Tower type 1D1 E4.5		each	4					
A1.1.11	Tower type 1D1 E6.0		each	4					
A1.1.12	Tower type 1D1 E9.0		each	6					
A1.1.13	Tower type 1D1 E12.0		each	2					
A1.1.14	Tower type 1D1 E15.0		each	2					
	Tower Type 1D25 (NARROW BASE WIDTH)								
A1.1.15	Tower Type 1D25 Standard		each	2					
A1.1.16	Tower Type 1D25 E1.5		each	2					
A1.1.17	Tower Type 1D25 E3.0		each	2					
A1.1.18	Tower Type 1D25 E4.5		each	2					
A1.1.19	Tower Type 1D25 E6.0		each	4					
A1.1.20	Tower Type 1D25 E9.0		each	4					
	Tower Type 1DT6 (NARROW BASE WIDTH)								
A1.1.21	Tower Type 1DT6 Standard		each	18					
A1.1.22	Tower Type 1DT6 E1.5		each	25					
A1.1.23	Tower Type 1DT6 E3.0		each	30					
A1.1.24	Tower Type 1DT6 E4.5		each	40					
A1.1.25	Tower Type 1DT6 E6.0		each	70					
A1.1.26	Tower Type 1DT6 E9.0		each	50					
A1.1.27	Tower Type 1DT6 (-3)		each	10					
A1.1.28	Auxiliary crossarms for double circuit towers		per set of three	3					
	Sub-total for Item A1								

Note: EXW price are required to be quoted exlcuding VAT. VAT on EXW shall be quoted in separate column in Bangladesh Taka. VAT on EXW is included in the Contract Price and shall be paid by the Contractor which shall be reimbursed by the Employer to the Contractor at actual basis but not more than the quoted amount upon submission of relevant document.

ATTACHMENT-5
ADDN-1 / LoL-1

POWER GRID COMPANY OF BANGLADESH LIMITED

**BIDDING DOCUMENT
FOR
THE PROCUREMENT
OF**

PACKAGE-1: DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF 132KV TRANSMISSION LINES AND SUBSTATIONS ON TURNKEY BASIS

LOT-1: TRANSMISSION LINES
Section - A: Chandraghona – Rangamati – Khagrachori 132kV Double Circuit Transmission and 2nd circuit in-out of Kaptai - Modunaghat line at Chandraghona

Schedule No.1 - Plant and Mandatory Spare Parts Supplied from Abroad

					Foreign Currency in ···	
Item	Description	Code[1]	Unit	Qty	Unit Price[2] CIP	Total Price CIP
				(1)	(2)	(1) x (2)
A1.1.29	Tower Type 1QL Staandard		each	1		
A1.1.30	Tower Type 1QL E3		each	1		
A1.1.31	Tower Type 1QL E6		each	1		
A1.1.32	Tower Type 1Q15 Standard		each	1		
A1.1.33	Tower Type 1Q15 E3		each	1		
A1.1.34	Tower Type 1Q15 E6		each	1		
A1.1.35	Tower Type 1Q30 Standard		each	1		
A1.1.36	Tower Type 1Q30 E3		each	1		
A1.1.37	Tower Type 1Q30 E6		each	1		
A1.1.38	Tower Type 1Q16 Standard		each	1		
A1.1.39	Tower Type 1Q16 E3		each	1		
A1.1.40	Tower Type 1Q16 E6		each	1		
A1.1.41	Auxiliary crossarms for four circuit towers		per set of three	4		
A1.1.42	Anchor tower 1DAX E4.5		each	13		
A1.1.43	Anchor tower 1DAX standard		each	3		
A1.1.44	Galvanized Steel Materials					
(i)	Fabricated		ton	10		
(ii)	Non-fabricated		ton	10		
A1.2	Poles					
A1.2.1	Fabrication, galvanising and supply of various types of poles including crossarms, base plates, anchor bolt, stiffener, bolts & nuts, including hangers, D shackles, spring washer, plain washer, pole earthing, danger plate, number plate, bird guards, anti-climbing device, ladder, rest platform (if required), etc. as per specification (payment shall be released for identified complete pole)					
A1.2.1.1	Pole Type 1DLP		each	20		
A1.2.1.2	Pole Type 1D1P		each	4		
A1.2.1.3	Pole Type 1D25P		each	4		
A1.2.1.4	Pole Type 1D16P		each	10		
A1.2.1.5	Pole Type 1D9P		each	10		
A1.2.1.6	Auxiliary crossarms		per set of three	2		
	Sub-total for item A1					

ATTACHMENT-6
ADDN-1 / Lot-1

POWER GRID COMPANY OF BANGLADESH LIMITED

BIDDING DOCUMENT
FOR
THE PROCUREMENT
OF
PACKAGE-1: DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF 132KV TRANSMISSION LINES AND SUBSTATIONS ON TURNKEY BASIS

LOT-1: TRANSMISSION LINES
Section - A: Chandraghona – Rangamati – Khagrachori 132kV Double Circuit Transmission and 2nd circuit in-out of Kaptai - Modunaghat line at Chandraghona

Schedule No.1 - Plant and Mandatory Spare Parts Supplied from Abroad

					Foreign Currency in —	
Item	Description	Code[1]	Unit	Qty	Unit Price[2] CIP	Total Price CIP
				(1)	(2)	(1) x (2)
S	SPARES					
S1	Towers (NARROW BASE WIDTH)					
	Fabrication, galvanising and supply of various types of towers, its body / leg (equal & unequal) extensions (complete) including stubs and bolts & nuts, including hangers, D-shackles, pack washer, spring washer, plain washer, tower earthing, anti-theft nuts & bolts, danger plate, number plate, bird guards, anti-climbing device, step bolt, rest platform (if required), ladder (if required) etc. as per specification (payment shall be released for identified complete tower).					
S1.1	Tower Type 1DL Standard		each	1		
S1.2	Tower Type 1DL E1.5		each	1		
S1.3	Tower Type 1DL E3		each	1		
S1.4	Tower Type 1DL E4.5		each	1		
S1.5	Tower Type 1DL E6		each	1		
S1.6	Tower Type 1DL E9		each	1		
S1.7	Tower Type 1D1 standard		each	1		
S1.8	Tower Type 1D1 E9		each	1		
S1.9	Tower Type 1D1 E15		each	1		
S1.10	Tower Type 1D25 E4.5		each	1		
S1.11	Tower Type 1D25 E6		each	1		
S1.12	Tower Type 1D25 E9		each	1		
S1.13	Tower Type 1DT6 Standard		each	1		
S1.14	Tower Type 1DT6 E1.5		each	1		
S1.15	Tower Type 1DT6 E3		each	1		
S1.16	Tower Type 1DT6 E4.5		each	1		
S1.17	Tower Type 1DT6 E6		each	1		
S1.18	Tower Type 1DT6 E9		each	1		
S1.2	Poles					
S1.2.1	Fabrication, galvanising and supply of various types of poles, including crossarms, base plates, anchor bolt, stiffener, bolts & nuts, including hangers, D-shackles, spring washer, plain washer pole earthing, danger plate, number plate, bird guards, anti-climbing device, ladder, rest platform (if required), etc. as per specification (payment shall be released for identified complete pole).					
S1.2.1.1	Pole Type 1DLP		each	1		
S1.2.1.2	Pole Type 1D1P		each	1		
S1.2.1.3	Pole Type 1D25P		each	1		
S1.2.1.4	Pole Type 1DT6P		each	7		
S1.2.1.5	Pole Type 1D9P		each	1		
S2	**Phase conductor, Earthwire and OPGW**					
S2.1	ACSR Grosbeak		km	28		
S2.2	OPGW (7/3.75 Steel earthwire equivalent)		km	5		
S3	**Insulator**					
S3.1	70kN insulator unit		each	558		
S3.2	120kN insulator unit		each	1936		
S4	**Fittings & Accessories**					
S4.1	Mid-span joint for phase ACSR Grosbeak		each	10		
S4.2	Repair sleeve for phase ACSR Grosbeak		each	10		
S4.3	Suspension fittings without disc for ACSR		set	56		
S4.4	Tension fittings without disc for ACSR Grosbeak		set	194		
S4.5	OPGW (7x3.25 mm S earthwire equivalent) suspension set, complete assembly		set	3		
S4.6	OPGW (7x3.25 mm S earthwire equivalent) tension set, complete assembly		set	32		
S4.7	Vibration damper for 7x3.25 mm S earthwire equivalent OPGW		set	45		
	Sub-total for Item S					

ATTACHMENT-5
ADDN-1 / LoT-1

POWER GRID COMPANY OF BANGLADESH LIMITED

BIDDING DOCUMENT
FOR
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OF

PACKAGE-1: DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF 132KV TRANSMISSION LINES AND SUBSTATIONS ON TURNKEY BASIS

LOT-1: TRANSMISSION LINES
Section - A: Chandraghona – Rangamati – Khagrachori 132kV Double Circuit Transmission and 2nd circuit in-out of Kaptai - Modunaghat line at Chandraghona

Schedule No.1 - Plant and Mandatory Spare Parts Supplied from Abroad

					Foreign Currency in ---	
Item	Description	Code[1]	Unit	Qty	Unit Price[2] CIP	Total Price CIP
				(1)	(2)	(1) x (2)
A1 1 29	Tower Type 1QL Staandard		each	1		
A1 1 30	Tower Type 1QL E3		each	1		
A1 1 31	Tower Type 1QL E6		each	1		
A1 1 32	Tower Type 1Q15 Standard		each	1		
A1 1 33	Tower Type 1Q15 E3		each	1		
A1 1 34	Tower Type 1Q15 E6		each	1		
A1 1 35	Tower Type 1Q30 Standard		each	1		
A1 1 36	Tower Type 1Q30 E3		each	1		
A1 1 37	Tower Type 1Q30 E6		each	1		
A1 1 38	Tower Type 1QT6 Standard		each	1		
A1 1 39	Tower Type 1QT6 E3		each	1		
A1 1 40	Tower Type 1QT6 E6		each	1		
A1 1 41	Auxiliary crossarms for four circuit towers		per set of three	4		
A1 1 42	Anchor tower 1DAX E4.5		each	13		
A1 1 43	Anchor tower 1DAX standard		each	3		
A1 1 44	Galvanized Steel Materials					
(i)	Fabricated		ton	10		
(ii)	Non-fabricated		ton	10		
A1.2	Poles					
A1.2.1	Fabrication, galvanising and supply of various types of poles including crossarms, base plates anchor bolt stiffener, bolts & nuts, including hangers D-shackles, spring washer plain washer pole earthing danger plate number plate bird guards, anti-climbing device ladder rest platform (if required) etc as per specification (payment shall be released for identified complete pole)					
A1 2 1 1	Pole Type 1DLP		each	20		
A1 2 1 2	Pole Type 1D1P		each	4		
A1 2 1 3	Pole Type 1D25P		each	4		
A1 2 1 4	Pole Type 1DT6P		each	10		
A1 2 1 5	Pole Type 1D9P		each	10		
A1 2 1 6	Auxiliary crossarms		per set of three	2		
	Sub-total for Item A1					

POWER GRID COMPANY OF BANGLADESH LIMITED

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PACKAGE-1: DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF 132KV TRANSMISSION LINES AND SUBSTATIONS ON TURNKEY BASIS

LOT-1: TRANSMISSION LINES

Section - A: Chandraghona – Rangamati – Khagrachori 132kV Double Circuit Transmission and 2nd circuit in-out of Kaptai - Modunaghat line at Chandraghona Substation

Schedule No.2 - Plant and Mandatory Spare Parts Supplied from within Employer's Conutry

Item	Description	Code	Unit	Qty	Foreign Currency in ---- EXW Unit Price[1]	EXW Total Price[1]	Local Currency in Bangladesh		VAT on EXW
				(1)	(2)	(3)=(1)x(2)			(4)
S	**SPARES**								
S1	**Towers (NARROW BASE WIDTH)** Fabrication, galvanising and supply of various types of towers, its body / leg (equal & unequal) extensions (complete) including stubs and bolts & nuts, including hangers, D-shackles, pack washer, spring washer, plain washer, tower earthing, anti-theft nuts & bolts, danger plate, number plate, bird guards, anti-climbing device, step bolt, rest platform (if required), ladder (if required), etc. as per specification (payment shall be released for identified complete tower)								
S1.1	Tower Type 1DL Standard		each	1					
S1.2	Tower Type 1DL E1.5		each	1					
S1.3	Tower Type 1DL E3		each	1					
S1.4	Tower Type 1DL E4.5		each	1					
S1.5	Tower Type 1DL E6		each	1					
S1.6	Tower Type 1DL E9		each	1					
S1.7	Tower Type 1D1 standard		each	1					
S1.8	Tower Type 1D1 E9		each	1					
S1.9	Tower Type 1D1 E15		each	1					
S1.10	Tower Type 1D25 E4.5		each	1					
S1.11	Tower Type 1D25 E6		each	1					
S1.12	Tower Type 1D25 E9		each	1					
S1.13	Tower Type 1DT6 Standard		each	1					
S1.14	Tower Type 1DT6 E1.5		each	1					
S1.15	Tower Type 1DT6 E3		each	1					
S1.16	Tower Type 1DT6 E4.5		each	1					
S1.17	Tower Type 1DT6 E6		each	1					
S1.18	Tower Type 1DT6 E9		each	1					
S1.2	**Poles**								
S1.2.1	Fabrication, galvanising and supply of various types of poles including crossarms, base plates, anchor bolt, stiffener, bolts & nuts, including hangers, D-shackles, spring washer, plain washer, pole earthing, danger plate, number plate, bird guards, anti climbing device, ladder, rest platform (if required), etc. as per specification (payment shall be released for identified complete pole)								
S1.2.1.1	Pole Type 1DLP		each	1					
S1.2.1.2	Pole Type 1D1P		each	1					
S1.2.1.3	Pole Type 1D25P		each	1					
S1.2.1.4	Pole Type 1DT6P		each	1					
S1.2.1.5	Pole Type 1D9P		each	1					
S2	**Phase conductor, Earthwire and OPGW**								
S2.1	ACSR Grosbeak		km	29					
S2.2	OPGW [illegible] 3.25 Steel earthwire equivalent		km	5					
S3	**Insulator**								
S3.1	70kN insulator unit		each	[illegible]					
S3.2	120kN insulator unit		each	[illegible]					
S4	Fittings & Accessories		each	[illegible]					
S4.1	Mid span joint for phase ACSR Grosbeak		each	10					
S4.2	Repair sleeve for phase ACSR Grosbeak		each	10					
S4.3	Suspension fittings without disc for ACSR		each	56					
S4.4	Tension fittings without disc for ACSR Grosbeak		each	194					
S4.5	OPGW 7x3.25 mm Steel earthwire equivalent suspension set complete assembly		each	3					
S4.6	OPGW 7x3.25 mm Steel earthwire equivalent tension set complete assembly		each	[illegible]					
S4.7	Vibration damper for 7x3.25 mm Steel earthwire equivalent OPGW		each	45					
	Sub-total for Item S								

Note: EXW price are required to be quoted excluding VAT. VAT on EXW shall be quoted in separate column in Bangladesh Taka. VAT on EXW is included in the Contract Price and shall be paid by the Contractor which shall be reimbursed by the Employer to the Contractor at actual basis but not more than the quoted amount upon submission of relevant document.

POWER GRID COMPANY OF BANGLADESH LIMITED

BIDDING DOCUMENT
FOR
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PACKAGE-1: DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF 132KV TRANSMISSION LINES AND SUBSTATIONS ON TURNKEY BASIS

LOT-1: TRANSMISSION LINES

Section - A: Chandraghona – Rangamati – Khagrachori 132kV Double Circuit Transmission and 2nd circuit in-out of Kaptai - Modunaghat line at Chandraghona Substation

Schedule No.4 - Installation and Other Services

Item	Description	Unit	Qty	Unit Price [1]		Total Price [1]	
				Foreign Currency Portion	Local Currency Portion	Foreign	Local
			(1)	(2)	(3)	(1) x (2)	(1) x (3)
A3.2	1D1 Tower (NARROW BASE WIDTH)						
A3.2.1	Piled Foundation						
(a)	Soil Category 2	tower	3				
(b)	Soil Category 3	tower	8				
(c)	Soil Category 4	tower	10				
A3.2.2	Pad Chimney Foundation	tower	3				
A3.3	1D25 Tower (NARROW BASE WIDTH)						
A3.3.1	Piled Foundation						
(a)	Soil Category 2	tower	1				
(b)	Soil Category 3	tower	2				
(c)	Soil Category 4	tower	10				
A3.3.2	Pad Chimney Foundation	tower	3				
A3.4	1DT6 Tower (NARROW BASE WIDTH)						
A3.4.1	Piled Foundation						
(a)	Soil Category 2	tower	34				
(b)	Soil Category 3	tower	90				
(c)	Soil Category 4	tower	110				
A3.4.2	Pad Chimney Foundation	tower	39				
A3.5	1QL Tower						
A3.5.1	Piled Foundation						
(a)	Soil Category 2	tower	1				
(b)	Soil Category 3	tower	1				
(c)	Soil Category 4	tower	1				
A3.6	1Q15 Tower						
A3.6.1	Piled Foundation						
(a)	Soil Category 2	tower	1				
(b)	Soil Category 3	tower	1				
(c)	Soil Category 4	tower	1				
	Sub-total						

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LOT-1: TRANSMISSION LINES

Section - A: Chandraghona – Rangamati – Khagrachori 132kV Double Circuit Transmission and 2nd circuit in-out of Kaptai - Modunaghat line at Chandraghona Substation

Schedule No.4 - Installation and Other Services

Item	Description	Unit	Qty	Unit Price [1]		Total Price [1]	
				Foreign Currency Portion	Local Currency Portion	Foreign	Local
			(1)	(2)	(3)	(1) x (2)	(1) x (3)
A3.7	**1Q30 Tower**						
A3.7.1	**Piled Foundation**						
(a)	Soil Category 2	tower	1				
(b)	Soil Category 3	tower	1				
(c)	Soil Category 4	tower	1				
A3.8	**1QT6 Tower**						
A3.8.1	**Piled Foundation**						
(a)	Soil Category 2	tower	1				
(b)	Soil Category 3	tower	1				
(c)	Soil Category 4	tower	1				
A3.9	**1DLP Pole-Piled Foundation**						
A3.9.1	Soil Category 2	pole	4				
A3.9.2	Soil Category 3	pole	4				
A3.9.3	Soil Category 4	pole	9				
3.10	**1DLP Pole-Pad & Chimney Foundation**	**pole**	**3**				
A3.11	**1D1P Pole-Piled Foundation**						
A3.11.1	Soil Category 2	pole	1				
A3.11.2	Soil Category 3	pole	1				
A3.11.3	Soil Category 4	pole	1				
3.12	**1D1P Pole-Pad & Chimney Foundation**	**pole**	**1**				
A3.13	**1D25P Pole-Piled Foundation**						
A3.13.1	Soil Category 2	pole	1				
A3.13.2	Soil Category 3	pole	1				
A3.13.3	Soil Category 4	pole	2				
A3.14	**1DT6P Pole-Piled Foundation**						
A3.14.1	Soil Category 2	pole	2				
A3.14.2	Soil Category 3	pole	3				
A3.14.3	Soil Category 4	pole	5				
A3.15	**1D9P Pole-Piled Foundation**						
A3.15.1	Soil Category 2	pole	2				
A3.15.2	Soil Category 3	pole	3				
A3.15.3	Soil Category 4	pole	5				
A3.16	**1DAX E4.5**	**tower**	**13**				
A3.17	**1DAX standard**	**tower**	**3**				
	Sub-total						

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LOT-1: TRANSMISSION LINES

Section - A: Chandraghona – Rangamati – Khagrachori 132kV Double Circuit Transmission and 2nd circuit in-out of Kaptai - Modunaghat line at Chandraghona Substation

Schedule No.4 - Installation and Other Services

Item	Description	Unit	Qty	Unit Price [1]		Total Price [1]	
				Foreign Currency Portion	Local Currency Portion	Foreign	Local
			(1)	(2)	(3)	(1) x (2)	(1) x (3)
A4	Conducting integrity test on pile using electronic control unit, hand held hammer, accelerometer, computer with software to assess as installed pile characteristics including mobilization of necessary manpower, equipments, materials etc required for successful completion of the job	No	348				
A4.1	Test foundation (service pile) to prove compliance with Technical specification payment for successfultest only:						
(i)	Pile Test						
a)	Uplift test	test	1				
b)	Compression test	test	1				
(ii)	Pad & Chimney Test						
a)	**Uplift test**	test	1				
A5.1	Installation of Stubs including bolts and nuts	per tower	352				
A5.2	Complete erection of various types of towers/poles & its body / leg (equal & unequal) extensions (complete) excluding stubs and bolts & nuts but including hangers, D-shackles, pack washer, spring washer, plain washer, welding, painting (if required), rest platform installation (if required), ladder installation (if required), aircraft warning sphere installation (if required), aircraft warning light installation (if required) etc. as per specification (payment shall be released for identified complete tower). The item also include installation of tower earthing, number plate, danger plate, bird guard, step bolt, anti-climbing device etc.						
A5.2.1	1DL (Narrow base width) type tower	tower	11				
A5.2.2	1D1 (Narrow base width) type tower	tower	24				
A5.2.3	1D25 (Narrow base width) type tower	tower	16				
A5.2.4	1D16 (Narrow base width) type tower	tower	273				
A5.2.5	1QL type tower	tower	3				
A5.2.6	1Q15 type tower	tower	3				
A5.2.7	1Q30 type tower	tower	3				
A5.2.8	1Q16 type tower	tower	3				
A5.2.9	1DLP type Pole	pole	20				
A5.2.10	1D1P type Pole	pole	4				
A5.2.11	1D25 P type Pole	pole	4				
A5.2.12	1D16 type Pole	pole	10				
A5.2.13	1D9P type Pole	pole	10				
A5.2.14	**1DAX E4.5 type tower**	**tower**	**13**				
A5.2.15	**1DAX standard type tower**	**tower**	**3**				
A6	Protection of Tower/Pole Footing						
i)	Random rubble stone masonary including excavation (1:5 cement mortar)	Cum	50				
ii)	M15 Conc. for top seal cover	Cum	1				
A7	**Stringing**						
A7.1	Installation of insulator strings complete with arcing horns & necessary hardware, installing & stringing of conductor including fixing of conductor accessories & stringing of single OPGW including fixing of OPGW accessories for **double circuit line.**	km	90				
A7.2	Installation of insulator strings complete with arcing horns & necessary hardware, installing & stringing of conductor including fixing of conductor accessories & stringing of two OPGW including fixing of OPGW accessories for **four circuit line.**	km	1				
A7.3	**By-pass of existing line to facilitate of in-out (poles, insulators & fittings under this contract to be used for pass before usint in the main line)**	Lot	1				
	Sub-total						

POWER GRID COMPANY OF BANGLADESH LIMITED

ATTACHMENT-8

BIDDING DOCUMENT
FOR
THE PROCUREMENT
OF

ADDN-1 LOT-1

PACKAGE-1: DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF 132KV TRANSMISSION LINES AND SUBSTATIONS ON TURNKEY BASIS

LOT-1: TRANSMISSION LINES
Section - B: Mymensingh -Tangail 132kV Transmission Line

Schedule No.1 - Plant and Mandatory Spare Parts Supplied from Abroad

Item	Description	Code[1]	Unit	Qty	Foreign Currency in --- Unit Price[2] CIP	Total Price CIP
				(1)	(2)	(1) x (2)
A2	**Supply of insulator and fittings:** Insulator sets complete with insulators and all hardware fittings including suspension clamps, tension dead ends, armour rods as per requirement,arcing horn etc.					
A2 1	132kV 70kN Suspension Insulator String for ACSR Grosbeak		Sets	1,602		
A2 2	132kV 120kN Heavy Suspension Insulator String for ACSR Grosbeak		Sets	378		
A2 3	132kV 120kN tension Insulator String for ACSR Grosbeak		Sets	602		
A2 4	132kV 70kN inverted low duty Tension Insulator String for ACSR Grosbeak		Sets	12		
A2 5	132kV 70kN upright low duty tension Insulator String for ACSR Grosbeak		Sets	12		
A2 6	132kV, 120kN river crossing twin suspension set for ACSR Mallard conductor		each-twin	12		
A2.7	132kV, 160kN river crossing twin tension set for ACSR Mallard conductor		each-twin	12		
A2 8	Suspension set for 7x4 25 steel earthwire equivalent OPGW		each	Nil		
A2 9	Tension set for 7x4.25 steel earthwire equivalent OPGW		each	Nil		
A2 10	Vibration Damper for ACSR Mallard conductor		each	36		
A2 11	Vibration Damper for 7x4 25 steel earthwire equivalent OPGW		each	Nil		
A4	**Supply of Conductor and OPGW**					
A4.1	ACSR Grosbeak single conductor per phase Total six nos single conductors for double circuit line Payment for extra length for sag, jumper joint etc shall deem to be included in the quoted price		route-km	106		
A4 2	a) 7x3 25 earthwire equivalent OPGW Fibre Optic Cable - 24 Fibre including joint box and earth bond as required as per actual site condition One no OPGW for the line Payment for extra length due to sag, joint etc shall deem to be included in the quoted price		route-km	106		
	b) Tension set complete assembly for above OPGW		Set	105		
	c) OPGW suspension set complete assembly for above OPGW		Set	335		
	d) Vibration damper for above OPGW		nos	973		
A4 3	ACSR Mallard single conductor per phase Total six nos single conductors for double circuit line Payment for extra length for sag jumper joint etc shall deem to be included in the quoted price		route-km	1		
A4 4	a) 7x4 25 earthwire equivalent OPGW Fibre Optic Cable - 24 Fibre including joint box and earth bond as required as per actual site condition One no OPGW for the line Payment for extra length due to sag joint etc shall deem to be included in the quoted price		route-km	1		
	b) OPGW tension set complete assembly for above OPGW		Set	2		
	c) OPGW suspension set complete assembly for above OPGW		Set	2		
	d) Vibration damper for above OPGW		nos	4		
	Sub-total for Item A2, A3 & A4					

Note Regarding quoting of Vibration Damper price bidders are requested to carefully go through the Vibration Damper in Schedule 5

POWER GRID COMPANY OF BANGLADESH LIMITED

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PACKAGE-1: DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF 132KV TRANSMISSION LINES AND SUBSTATIONS ON TURNKEY BASIS

LOT-1: TRANSMISSION LINES

Section - B: Mymensingh -Tangail 132kV Transmission Line

Schedule No.2 - Plant and Mandatory Spare Parts Supplied from within Employer's Conutry

					Foreign Currency in----		Local Currency in Bangladesh Taka		
Item	Description	Code[1]	Unit	Qty	EXW Unit Price[1]	EXW Total Price[1]			VAT on EXW
				(1)	(2)	(3)=(1)x(2)			(4)
A2	**Supply of insulator and fittings:**								
	Insulator sets complete with insulators and all hardware fittings including suspension clamps, tension dead ends, armour rods as per requirement,arcing horn etc								
A2 1	132kV 70kN Suspension Insulator String for ACSR Grosbeak		Sets	1,802					
A2 2	132kV 120kN Heavy Suspension Insulator String for ACSR Grosbeak		Sets	378					
A2 3	132kV 120kN tension insulator String for ACSR Grosbeak		Sets	602					
A2 4	132kV 70kN inverted law duty Tension insulator String for ACSR Grosbeak		Sets	12					
A2 5	132kV 70kN upright low duty tension insulator String for ACSR Grosbeak		Sets	12					
A2 6	132kV, 120kN river crossing twin suspension set for ACSR Mallard conductor		each-twin	12					
A2.7	132kV 160kN river crossing twin tension set for ACSR Mallard conductor		each-twin	12					
A2 8	Suspension set for 7x4 25 steel earthwire equivalent OPGW		each	Nil					
A2 9	Tension set for 7x4 25 steel earthwire equivalent OPGW		each	Nil					
A2 10	Vibration Damper for ACSR Mallard conductor		each	36					
A2 11	Vibration Damper for 7x4.25 steel earthwire equivalent OPGW		each	Nil					
A4	**Supply of Conductor and OPGW**								
A4 1	ACSR Grosbeak single conductor per phase Total six nos single conductors for double circuit line Payment for extra length for sag jumper joint etc shall deem to be included in the quoted price		route km	106					
A4 2	a) 7x3 25 earthwire equivalent OPGW Fibre Optic Cable - 24 Fibre including joint box and earth bond as required as per actual site condition One no OPGW for the line Payment for extra length due to sag, joint etc shall deem to be included in the quoted price		route km	106					
	b) Tension set complete assembly for above OPGW		Set	105					
	c) OPGW suspension set complete assembly for above OPGW		Set	338					
	d) Vibration damper for above OPGW		nos	973					
A4 3	ACSR Mallard single conductor per phase Total six nos single conductors for double circuit line Payment for extra length for sag jumper joint etc shall deem to be included in the quoted price		route km	1					
A4 4	a) 7x4 25 earthwire equivalent OPGW Fibre Optic Cable - 24 Fibre including joint box and earth bond as required as per actual site condition One no OPGW for the line Payment for extra length due to sag joint etc shall deem to be included in the quoted price		route-km	1					
	b) OPGW tension set complete assembly for above OPGW		Set	2					
	c) OPGW suspension set complete assembly for above OPGW		Set	2					
	d) Vibration damper for above OPGW		nos	4					
	Sub-total for Item A2, A3 & A4								

Note: EXW price are required to be quoted exlcuding VAT. VAT on EXW shall be quoted in separate column in Bangladesh Taka. VAT on EXW is included in the Contract Price and shall be paid by the Contractor which shall be reimbursed by the Employer to the Contractor at actual basis but not more than the quoted amount upon submission of relevant document.

Note: Regarding quoting of Vibration Damper price, bidders are requested to carefully go through the Vibration Damper in Schedule E

ATTACHMENT-9

ADDN-1, Lot-1

POWER GRID COMPANY OF BANGLADESH LIMITED

BIDDING DOCUMENT
FOR
THE PROCUREMENT
OF
PACKAGE-1: DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF 132KV TRANSMISSION LINES AND SUBSTATIONS ON TURNKEY BASIS

LOT-1: TRANSMISSION LINES
Section - B: Mymensingh -Tangail 132kV Transmission Line

Schedule No.1 - Plant and Mandatory Spare Parts Supplied from Abroad

Item	Description	Code[1]	Unit	Qty	Foreign Currency in --- Unit Price[2] CIP	Total Price CIP
				(1)	(2)	(1) x (2)
S	**SPARES**					
S1	**Towers** Fabrication, galvanising and supply of various types of towers, its body / leg (equal & unequal) extensions (complete) including stubs and bolts & nuts, including hangers, D-shackles, pack washer, spring washer, plain washer, tower earthing, anti-theft nuts & bolts, danger plate, number plate, bird guards, anti-climbing device, step bolt, rest platform (if required), ladder (if required) etc. as per specification (payment shall be released for identified complete tower).					
S1.1	Tower Type 1DL Standard		each	1		
S1 2	Tower Type 1DL E1.5		each	2		
S1.3	Tower Type 1DL E3		each	3		
S1.4	Tower Type 1DL E4 5		each	3		
S1.5	Tower Type 1DL E6		each	3		
S1 6	Tower Type 1DL E9		each	3		
S1.7	Tower Type 1D1 standard		each	1		
S1 8	Tower Type 1D1 E9		each	2		
S1.9	Tower Type 1D1 E15		each	2		
S1 10	Tower Type 1D25 E4.5		each	1		
S1.11	Tower Type 1D25 E6		each	1		
S1 12	Tower Type 1D25 E9		each	2		
S1.13	Tower Type 1DT6 Standard		each	2		
S1.14	Tower Type 1DT6 E1 5		each	2		
S1.15	Tower Type 1DT6 E3		each	2		
S1.16	Tower Type 1DT6 E4.5		each	3		
S1 17	Tower Type 1DT6 E6		each	3		
S1 18	Tower Type 1DT6 E9		each	3		
S2	**Phase conductor, Earthwire and OPGW**					
S2 1	ACSR Grosbeak		km	30		
S2 2	7/3 25 Steel earthwire equivalent OPGW (24fibre)		km	5		
S2 3	7/4 25 Steel earthwire equivalent OPGW (24fibre)		km	1		
S3	**Insulator**					
S3.1	70kN insulator unit		each	913		
S3 2	120kN insulator unit		each	502		
S3 3	160kN insulator unit		each	100		
S4	**Fittings & Accessories**					
S4 1	Mid-span joint for phase ACSR Grosbeak		each	10		
S4 2	Repair sleeve for phase ACSR Grosbeak		each	10		
S4 3	Mid span joint of 7/3 25 S earthwire		each	10		
S4 4	Suspension fittings without disc for ACSR		set	92		
S4 5	Tension fittings without disc for ACSR Grosbeak		set	51		
S4 6	Tension fittings without disc for ACSR Mallard		set	10		
S4 7	Suspension set for 7x3 25 mm S earthwire		set	10		
S4 8	Tension set for 7x3 25 mm S earthwire		set	20		
S4 9	Vibration damper for 7x3 25 mm S earthwire		each	10		
S4.10	OPGW (7x3 25 mm S earthwire equivalent) suspension set, complete assembly		set	20		
S4.11	OPGW (7x3.25 mm S earthwire equivalent) tension set, complete assembly		set	5		
S4.12	Vibration damper for 7x3 25 mm S earthwire equivalent OPGW		set	20		
S4 13	OPGW (7x4 25 mm S earthwire equivalent) suspension set, complete assembly		set	2		
S4 14	OPGW (7x4 25 mm S earthwire equivalent) tension set, complete assembly		set	2		
	Sub-total for Item S					

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LOT-1: TRANSMISSION LINES

Section - B: Mymensingh -Tangail 132kV Transmission Line

Schedule No.2 - Plant and Mandatory Spare Parts Supplied from within Employer's Conutry

					Foreign Currency in----		Local Currency in Bangladesh Taka		
Item	Description	Code[1]	Unit	Qty	EXW Unit Price[1]	EXW Total Price[1]			VAT on EXW
				(1)	(2)	(3)=(1)x(2)			(4)
S	**SPARES**								
S1	**Towers**								
	Fabrication, galvanising and supply of various types of towers, its body / leg (equal & unequal) extensions (complete) including stubs and bolts & nuts, including hangers, D-shackles, pack washer, spring washer, plain washer, tower earthing, anti-theft nuts & bolts danger plate, number plate, bird guards, anti-climbing device, step bolt, rest platform (if required), ladder (if required) etc. as per specification (payment shall be released for identified complete tower)								
S1.1	Tower Type 1DL Standard		each	1					
S1.2	Tower Type 1DL E1.5		each	2					
S1.3	Tower Type 1DL E3		each	3					
S1.4	Tower Type 1DL E4.5		each	3					
S1.5	Tower Type 1DL E6		each	3					
S1.6	Tower Type 1DL E9		each	3					
S1.7	Tower Type 1D1 standard		each	1					
S1.8	Tower Type 1D1 E9		each	2					
S1.9	Tower Type 1D1 E15		each	2					
S1.10	Tower Type 1D25 E4.5		each	1					
S1.11	Tower Type 1D25 E6		each	1					
S1.12	Tower Type 1D25 E9		each	2					
S1.13	Tower Type 1DT6 Standard		each	2					
S1.14	Tower Type 1DT6 E1.5		each	2					
S1.15	Tower Type 1DT6 E3		each	2					
S1.16	Tower Type 1DT6 E4.5		each	3					
S1.17	Tower Type 1DT6 E6		each	3					
S1.18	Tower Type 1DT6 E9		each	3					
S2	**Phase conductor, Earthwire and OPGW**								
S2.1	ACSR Grosbeak		km	30					
S2.2	7/3.25 Steel earthwire equivalent OPGW (24fibre)		km	5					
S2.3	7/4.25 Steel earthwire equivalent OPGW (24fibre)		km	1					
S3	**Insulator**								
S3.1	70kN insulator unit		each	913					
S3.2	120kN insulator unit		each	502					
S3.3	160kN insulator unit		each	100					
S4	**Fittings & Accessories**								
S4.1	Mid-span joint for phase ACSR Grosbeak		each	10					
S4.2	Repair sleeve for phase ACSR Grosbeak		each	10					
S4.3	Mid-span joint of 7/3.25 S earthwire		each	10					
S4.4	Suspension fittings without disc for ACSR Grosbeak		set	92					
S4.5	Tension fittings without disc for ACSR		set	51					
S4.6	Tension fittings without disc for ACSR Mallard		set	10					
S4.7	Suspension set for 7x3.25 mm S earthwire		set	10					
S4.8	Tension set for 7x3.25 mm S earthwire		set	20					
S4.9	Vibration damper for 7x3.25 mm S earthwire		each	10					
S4.10	OPGW (7x3.25 mm S earthwire equivalent) suspension set, complete assembly		set	20					
S4.11	OPGW (7x3.25 mm S earthwire equivalent) tension set, complete assembly		set	5					
S4.12	Vibration damper for 7x3.25 mm S earthwire equivalent OPGW		set	20					
S4.13	OPGW (7x4.25 mm S earthwire equivalent) suspension set, complete assembly		set	2					
S4.14	OPGW (7x4.25 mm S earthwire equivalent) tension set, complete assembly		set	2					
	Sub-total for Item S								

Note: EXW price are required to be quoted exlcuding VAT. VAT on EXW shall be quoted in separate column in Bangladesh Taka. VAT on EXW is included in the Contract Price and shall be paid by the Contractor which shall be reimbursed by the Employer to the Contractor at actual basis but not more than the quoted amount upon submission of relevant document.

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LOT-1: TRANSMISSION LINES

Section - B: Mymensingh -Tangail 132kV Transmission Line

Schedule No.4 - Installation and Other Services

Item	Description	Unit	Qty	Unit Price [1]		Total Price [1]	
				Foreign Currency Portion	Local Currency Portion	Foreign	Local
			(1)	(2)	(3)	(1) x (2)	(1) x (3)
A4	Conducting integrity test on pile using electronic control unit hand held hammer, accelerometer computer with software to assess as intalled pile characteristics including mobilization of necessary manpower equipments materials etc required for successful completion of the job	No	1560				
A4.1	Test foundation (service pile) to prove compliance with Technical specification payment for successfultest only						
(i)	Pile Test						
a	Uplift test	test	1				
b	Compression test	test	1				
(ii)	Pad & Chimney Test						
a	**Uplift test**	test	1				
A5.1	Installation of Stubs including bolts and nuts	per tower	390				
A5.2	Complete erection of various types of towers/poles, & its body leg (equal & unequal) extensions (complete) excluding stubs and bolts & nuts but including hangers D shackles, pack washer spring washer plain washer welding, painting (if required), rest platform installation (if required) ladder installation (if required) aircraft warning sphere installation (if required) aircraft warning light installation (if required) etc as per specification (payment shall be released for certified complete tower) The item also include installation of tower earthing number plate danger plate bird guard step bolt anti-climbing device etc						
A5.2.1	1DL (Normal base width) type tower	tower	[illegible]				
A5.2.2	1D1 (Normal base width) type tower	tower	63				
A5.2.3	1D25 (Normal base width) type tower	tower	[illegible]				
A5.2.4	1D16 (Normal base width) type tower	tower	32				
A5.2.5	1DR	tower	[illegible]				
A5.2.6	1DAX	tower	[illegible]				
A6	Protection of Tower Footing						
	Random rubble stone masonary including excavation (1:5 cement mortar)	Cum	50				
	M15 Conc. for top seal cover	Cum	[illegible]				
A7	**Stringing**						
A7.1	Installation of insulator strings complete with arcing horns & necessary hardware installing & stringing of conductor including fixing of conductor accessories & stringing of single OPGW including fixing of OPGW accessories for **double circuit line**.	km	[illegible]				
	Sub-total						

ATTACHMENT-10
ADDN-1, LOT-1

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LOT-1: TRANSMISSION LINES

Section - B: Mymensingh -Tangail 132kV Transmission Line

Schedule No.4 - Installation and Other Services

Item	Description	Unit	Qty	Unit Price [1]		Total Price [1]	
				Foreign Currency Portion	Local Currency Portion	Foreign	Local
			(1)	(2)	(3)	(1) x (2)	(1) x (3)
A1	**Route Survey and clearance**						
A1.1	Profile survey in accordance with the requirements of the technical specification including full ground survey with change of tower location, if any, tower plotting and preparation and submission of route maps, profile drawings, SMM documents, etc	km	106				
A1.2	Route clearance in accordance with requirements of the technical specification including payment of compensation for crops, trees, houses, etc and all kind of damage compensation	km	106				
A2	**Geotechnical Investigation**						
A2.1	Geotechnical investigation in accordance with the requirements of the Technical Specification						
(i)	Level 3	borehole	nil				
(ii)	Level 4	borehole	21				
A3	**Foundation**						
	Foundations for towers poles including all setting out, Concrete, Reinforcement, Excavation, Pumping, Stub cutting, Geotechnical Investigation (Level 2), Shuttering, Leveling, Timbering, supply & installation of foundation steelwork, Earthing Materials, Backfilling, approved Protective Coating & site clearing etc						
A3.1	**1DL Tower (NORMAL BASE WIDTH)**						
A3.1.1	**Piled Foundation**						
(a)	Soil Category 2	tower	20				
(b)	Soil Category 3	tower	71				
(c)	Soil Category 4	tower	130				
A3.1.2	**Pad Chimney Foundation**	**tower**	**50**				
A3.2	**1D1 Tower (NORMAL BASE WIDTH)**						
A3.2.1	**Piled Foundation**						
(a)	Soil Category 2	tower	2				
(b)	Soil Category 3	tower	11				
(c)	Soil Category 4	tower	40				
A3.2.2	**Pad Chimney Foundation**	**tower**	**10**				
	Sub-total						

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LOT-1: TRANSMISSION LINES

Section - B: Mymensingh -Tangail 132kV Transmission Line

Schedule No.4 - Installation and Other Services

Item	Description	Unit	Qty	Unit Price [1]		Total Price [1]	
				Foreign Currency Portion	Local Currency Portion	Foreign	Local
			(1)	(2)	(3)	(1) x (2)	(1) x (3)
A3.3	1D25 Tower (NORMAL BASE WIDTH)						
A3.3.1	Piled Foundation						
(a)	Soil Category 2	tower	2				
(b)	Soil Category 3	tower	5				
(c)	Soil Category 4	tower	10				
A3.3.2	Pad Chimney Foundation	tower	3				
A3.4	1DT6 Tower (NORMAL BASE WIDTH)						
A3.4.1	Piled Foundation						
(a)	Soil Category 2	tower	3				
(b)	Soil Category 3	tower	5				
(c)	Soil Category 4	tower	20				
A3.4.2	Pad Chimney Foundation	tower	4				
A3.5	1DR M10	tower	2				
A3.6	1DAX E4.5	tower	2				
	Sub-total						

ATTACHMENT-11

ADDN-1, Lot-1

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LOT-1: TRANSMISSION LINES

Section - C: Brahmanbaria – Narsingdi 132kV Double Circuit Transmission Line and 2nd circuit in-out of Ghorashal-Bhulta line at Narsingdi substation

Schedule No.1 - Plant and Mandatory Spare Parts Supplied from Abroad

Item	Description	Code[1]	Unit	Qty	Foreign Currency in --- Unit Price[2] CIP	Total Price CIP
				(1)	(2)	(1) x (2)
A2	Supply of insulator and fittings: Insulator sets complete with insulators and all hardware fittings including suspension clamps, tension dead ends, armour rods as per requirement,arcing horn etc.					
A2 1	132kV 70kN Suspension Insulator String for ACSR Grosbeak		Sets	1,049		
A2 2	132kV 120kN Heavy Suspension Insulator String for ACSR Grosbeak		Sets	60		
A2 3	132kV 120kN tension Insulator String for ACSR Grosbeak		Sets	600		
A2 4	132kV 70kN inverted low duty Tension Insulator String for ACSR Grosbeak		Sets	24		
A2 5	132kV 70kN upright low duty tension Insulator String for ACSR Grosbeak		Sets	24		
A2.6	132kV, 120kN river crossing twin suspension set for ACSR Mallard conductor		each-twin	24		
A2.7	132kV, 160kN river crossing twin tension set for ACSR Mallard conductor		each-twin	24		
A2.8	Vibration Damper for ACSR Mallard conductor		each	72		
A3	Accessories for Conductor					
A3 1	Mid Span Compression Joint for ACSR Grosbeak		Nos	78		
A3 2	Repair Sleeve for ACSR Grosbeak		Nos	78		
A3 3	Vibration Damper for ACSR Grosbeak		Nos	1975		
A4	Supply of Conductor and OPGW					
A4 1	ACSR Grosbeak single conductor per phase. Total six nos. single conductors for double circuit line Payment for extra length for sag, jumper, joint etc shall deem to be included in the quoted price.		route-km	59		
A4 2	a) OPGW Fibre Optic Cable - 24 Fibre including joint box and earth bond as required as per actual site condition. One no OPGW for the line Payment for extra length due to sag, joint etc. shall deem to be included in the quoted price		route-km	75		
	b) OPGW tension set complete assembly for above OPGW		Set	86		
	c) OPGW suspension set complete assembly for above OPGW		Set	208		
	d) OPGW vibration damper		nos	733		
A4.3	ACSR Mallard single conductor per phase. Total six nos. single conductors for double circuit line. Payment for extra length for sag, jumper, joint etc. shall deem to be included in the quoted price.		route-km	1		
A4.4	a) 7x4.25 earthwire equivalent OPGW Fibre Optic Cable - 24 Fibre including joint box and earth bond as required as per actual site condition. One no. OPGW for the line. Payment for extra length due to sag, joint etc. shall deem to be included in the quoted price.		route-km	1		
	b) OPGW tension set complete assembly for above OPGW		Set	4		
	c) OPGW suspension set complete assembly for above OPGW		Set	4		
	d) Vibration damper for above OPGW		nos.	8		
	Sub-total for Item A2, A3 & A4					

Note Regarding quoting of Vibration Damper price bidders are requested to carefully go through the Vibration Damper in Schedule E.

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LOT-1: TRANSMISSION LINES

Section - C: Brahmanbaria – Narsingdi 132kV Double Circuit Transmission Line and 2nd circuit in-out of Ghorashal-Bhulta line at Narsingdi substation

Schedule No.2 - Plant and Mandatory Spare Parts Supplied from within Employer's Conutry

					Foreign Currency in----		Local Currency in Bangladesh Taka		
Item	Description	Code[1]	Unit	Qty	EXW Unit Price[1]	EXW Total Price[1]			VAT on EXW
				(1)	(2)	(3)=(1)x(2)			(4)
				(1)	(2)	(1) x (2)			
A2	**Supply of insulator and fittings:** Insulator sets complete with insulators and all hardware fittings including suspension clamps, tension dead ends, armour rods as per requirement,arcing horn etc.								
A2 1	132kV 70kN Suspension Insulator String for ACSR Grosbeak		Sets	1,049					
A2 2	132kV 120kN Heavy Suspension Insulator String for ACSR Grosbeak		Sets	60					
A2 3	132kV 120kN tension Insulator String for ACSR Grosbeak		Sets	600					
A2 4	132kV 70kN inverted low duty Tension Insulator String for ACSR Grosbeak		Sets	24					
A2 5	132kV 70kN upright low duty tension Insulator String for ACSR Grosbeak		Sets	24					
A2 6	**132kV, 120kN river crossing twin suspension set for ACSR Mallard conductor**		each-twin	24					
A2.7	**132kV, 160kN river crossing twin tension set for ACSR Mallard conductor**		each-twin	24					
A2.8	**Vibration Damper for ACSR Mallard conductor**		each	72					
A3	**Accessories for Conductor**								
A3.1	Mid Span Compression Joint for ACSR		Nos	78					
A3 2	Repair Sleeve for ACSR Grosbeak		Nos	78					
A3 3	Vibration Damper for ACSR Grosbeak		Nos	1975					
A4	**Supply of Conductor and OPGW**								
A4 1	ACSR Grosbeak single conductor per phase Total six nos single conductors for double circuit line. Payment for extra length for sag, jumper joint etc. shall deem to be included in the quoted		route-km	59					
A4 2	a) OPGW Fibre Optic Cable - 24 Fibre including joint box and earth bond as required as per actual site condition. One no. OPGW for the line Payment for extra length due to sag, joint etc shall deem to be included in the quoted price		route km	75					
	b) OPGW tension set complete assembly for above OPGW		Set	86					
	c) OPGW suspension set complete assembly for above OPGW		Set	208					
	d) OPGW vibration damper		nos	733					
A4.3	**ACSR Mallard single conductor per phase. Total six nos. single conductors for double circuit line. Payment for extra length for sag, jumper, joint etc. shall deem to be included in the quoted price.**		route-km	1					
A4.4	**a) 7x4.25 earthwire equivalent OPGW Fibre Optic Cable - 24 Fibre including joint box and earth bond as required as per actual site condition. One no. OPGW for the line. Payment for extra length due to sag, joint etc. shall deem to be included in the quoted price.**		route-km	1					
	b) OPGW tension set complete assembly for above OPGW		Set	4					
	c) OPGW suspension set complete assembly for above OPGW		Set	4					
	d) Vibration damper for above OPGW		nos.	8					
	Sub-total for Item A2, A3 & A4								

Note: EXW price are required to be quoted excluding VAT. VAT on EXW shall be quoted in separate column in Bangladesh Taka. VAT on EXW is included in the Contract Price and shall be paid by the Contractor which shall be reimbursed by the Employer to the Contractor at actual basis but not more than the quoted amount upon submission of relevant document

Note: Regarding quoting of Vibration Damper price, bidders are requested to carefully go through the Vibration Damper in Schedule E

ATTACHMENT - 12

ADDN-1 Lot-1

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LOT-1: TRANSMISSION LINES

Section - C: Brahmanbaria – Narsingdi 132kV Double Circuit Transmission Line and 2nd circuit in-out of Ghorashal-Bhulta line at Narsingdi substation

Schedule No.4 - Installation and Other Services

Item	Description	Unit	Qty	Unit Price [1]		Total Price [1]	
				Foreign Currency Portion	Local Currency Portion	Foreign	Local
			(1)	(2)	(3)	(1) x (2)	(1) x (3)
A1	Route Survey and clearance						
A1.1	Profile survey in accordance with the requirements of the technical specification, including full ground survey with change of tower location, if any, tower plotting and preparation and submission of route maps, profile drawings, SIMM documents, etc.	km	56				
A1.2	Route clearance in accordance with requirements of the technical specification including payment of compensation for crops, trees, houses, etc. and all kind of damage compensation	km	56				
A2	Geotechnical Investigation						
A2.1	Geotechnical investigation in accordance with the requirements of the Technical Specification						
(i)	Level 3	borehole	nil				
(ii)	Level 4	borehole	21				
A3	Foundation						
	Foundations for towers/poles including all setting out, Concrete, Reinforcement, Excavation Pumping, Stub-cutting, Geotechnical investigation (Level 2), Shuttering, Leveling Timbering, supply & Installation of foundation steelwork, Earthing Materials, Backfilling, approved Protective Coating & site clearing etc.						
A3.1	1DL Tower (NORMAL BASE WIDTH)						
A3.1.1	Piled Foundation						
(a)	Soil Category 2	tower	13				
(b)	Soil Category 3	tower	40				
(c)	Soil Category 4	tower	80				
A3.1.2	Pad Chimney Foundation	tower	28				
A3.2	1D1 Tower (NORMAL BASE WIDTH)						
A3.2.1	Piled Foundation						
(a)	Soil Category 2	tower	1				
(b)	Soil Category 3	tower	2				
(c)	Soil Category 4	tower	4				
A3.2.2	Pad Chimney Foundation	tower	3				
	Sub-total						

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LOT-1: TRANSMISSION LINES

Section - C: Brahmanbaria – Narsingdi 132kV Double Circuit Transmission Line and 2nd circuit in-out of Ghorashal-Bhulta line at Narsingdi substation

Schedule No.4 - Installation and Other Services

Item	Description	Unit	Qty	Unit Price [1]		Total Price [1]	
				Foreign Currency Portion	Local Currency Portion	Foreign	Local
			(1)	(2)	(3)	(1) x (2)	(1) x (3)
A3.3	1D25 Tower (NORMAL BASE WIDTH)						
A3.3.1	Piled Foundation						
(a)	Soil Category 2	tower	1				
(b)	Soil Category 3	tower	2				
(c)	Soil Category 4	tower	8				
A3.3.2	Pad Chimney Foundation	tower	3				
A3.3	1DT6 Tower (NORMAL BASE WIDTH)						
A3.3.1	Piled Foundation						
(a)	Soil Category 2	tower	1				
(b)	Soil Category 3	tower	1				
(c)	Soil Category 4	tower	9				
A3.3.2	Pad Chimney Foundation	tower	3				
A3.4	1DR M10	tower	2				
A3.5	1DR type tower	tower	2				
A3.6	1DAX E4.5 type tower	tower	4				
A3.7	1QL type tower						
3 7 1	Soil Category 3	tower	1				
A3.8	1Q15 type tower						
3 8 1	Soil Category 3	tower	1				
A3.9	1Q30 type tower						
3 9 1	Soil Category 3	tower	1				
A3 10	1QT6 type tower						
3 10 1	Soil Category 3	tower	1				
A3.11	H-Pole	H-pole	4				
	Sub-total						

ATTACHMENT-13

ADDN-1, lot-1

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PACKAGE-1: DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF 132KV TRANSMISSION LINES AND SUBSTATIONS ON TURNKEY BASIS

LOT-1: TRANSMISSION LINES

Section - C: Brahmanbaria – Narsingdi 132kV Double Circuit Transmission Line and 2nd circuit in-out of Ghorashal-Bhulta line at Narsingdi substation

Schedule No.4 - Installation and Other Services

Item	Description	Unit	Qty	Unit Price[1]		Total Price[1]	
				Foreign Currency Portion	Local Currency Portion	Foreign	Local
			(1)	(2)	(3)	(1) x (2)	(1) x (3)
A4	Conducting integrity test on pile using electronic control unit, hand held hammer, accelerometer, computer with software to assess as installed pile characteristics including mobilization of necessary manpower, equipments, materials etc. required for successful completion of the job	No	828				
A4.1	Test foundation (service tier) to prove compliance with Technical specification, payment for successful test only						
(i)	Pile Test						
a)	Uplift test	test	1				
b)	Compression test	test	1				
(ii)	Pad & Chimney Test						
a)	Uplift test	test	1				
A5.1	Installation of Stubs including bolts and nuts	per tower	207				
A5.2	Complete erection of various types of towers/poles & its body / leg (equal & unequal) extensions (complete) excluding stubs and bolts & nuts but including hangers, D-shackles, pack washer, spring washer, plain washer, welding, painting (if required), test platform installation (if required), ladder installation (if required), aircraft warning sphere installation (if required), aircraft warning light installation (if required) etc. as per specification (payment shall be released for identified complete tower). The item also include installation of tower earthing, number plate, danger plate, bird guard, step bolt, anti-climbing device etc.						
A5.2.1	1DL (Normal base width) type tower	tower	161				
A5.2.2	1D1 (Normal base width) type tower	tower	10				
A5.2.3	1D25 (Normal base width) type tower	tower	14				
A5.2.4	1DT6 (Normal base width) type tower	tower	14				
A5.2.5	1DR	tower	4				
A5.2.6	1DAX	tower	4				
A5.2.7	1QL type tower	tower	1				
A5.2.8	1Q15 type tower	tower	1				
A5.2.9	1Q30 type tower	tower	[illegible]				
A5.2.10	1QT6 type tower	tower	1				
A5.2.11	H-Pole	H-Pole	4				
A6	Protection of Tower Footing						
i)	Random rubble stone masonary including excavation (1:5 cement mortar)	Cum	50				
ii)	M15 Conc. for top seal cover	Cum	1				
A7	**Stringing**						
A7.1	Installation of insulator strings complete with arcing horns & necessary hardware, installing & stringing of conductor including fixing of conductor accessories, installing & stringing of earthwire including fixing of earthwire accessories & installing & stringing of OPGW including fixing of OPGW accessories for **double circuit line incl. H-Pole**	km	56				
A7.2	Installation of insulator strings complete with arcing horns & necessary hardware, installing & stringing of conductor including fixing of conductor accessories & stringing of two OPGW including fixing of OPGW accessories for **four circuit line.**	km	3				
A7.3	By-pass of existing line to facilitate of in-out, poles, insulators & fittings under this contract to be used for pass before use in the main line	Lot	1				
A7.4	**Dismantling of existing earthwire & fittings, storing the same and installation of OPGW including fixing of OPGW accessories for existing double circuit tower in single circuit live line condition**	**km**	**16**				
	Sub-total						

Schedules of Rates and Prices

POWER GRID COMPANY OF BANGLADESH LIMITED

ATTACHMENT-14

ADDN-1, Lot-1

BIDDING DOCUMENT
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PACKAGE-1: DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF 132KV TRANSMISSION LINES AND SUBSTATIONS ON TURNKEY BASIS

LOT-1: TRANSMISSION LINES

Section D: Chattak – Sunamganj 132kV Single Circuit Transmission Line and T-off of Fenchuganj-Sylhet line to Bianibazar substation

Schedule No.1 - Plant and Mandatory Spare Parts Supplied from Abroad

					Foreign Currency in ---	
Item	Description	Code[1]	Unit	Qty	Unit Price[2] CIP	Total Price CIP
				(1)	(2)	(1) x (2)
A2	**Supply of insulator and fittings:** Insulator sets complete with insulators and all hardware fittings including suspension clamps, tension dead ends, armour rods as per requirement,arcing horn etc.					
A2.1	132kV 70kN Suspension Insulator String for ACSR Grosbeak		Sets	738		
A2.2	132kV 120kN Heavy Suspension Insulator String for ACSR Grosbeak		Sets	60		
A2.3	132kV 120kN tension Insulator String for ACSR Grosbeak		Sets	600		
A2.4	132kV 70kN inverted low duty Tension Insulator String for ACSR Grosbeak		Sets	24		
A2.5	132kV 70kN upright low duty tension Insulator String for ACSR Grosbeak		Sets	24		
A3	Accessories for Conductor					
A3.1	Mid Span Compression Joint for ACSR Grosbeak		Nos	78		
A3.2	Repair Sleeve for ACSR Grosbeak		Nos	78		
A3.3	Vibration Damper for ACSR Grosbeak		Nos	1975		
A4	**Supply of Conductor and OPGW**					
A4.1.1	ACSR Grosbeak single conductor per phase. Total **three** nos. single conductors for **single** circuit line **on double circuit towers**. Payment for extra length for sag, jumper, joint etc shall deem to be included in the quoted price		route- km	28		
A4.1.2	ACSR Grosbeak single conductor per phase. Total **three** nos. single conductors for single circuit line **on double circuit towers**. Payment for extra length for sag, jumper, joint etc shall deem to be included in the quoted price.		route- km	30		
A4.2	a) OPGW Fibre Optic Cable - 24 Fibre including joint box and earth bond as required as per actual site condition. One no. OPGW for the line. Payment for extra length due to sag, joint etc. shall deem to be included in the quoted price.		route km	56		
	b) OPGW tension set complete assembly for above OPGW		Set	100		
	c) OPGW suspension set complete assembly for above OPGW		Set	108		
	d) OPGW vibration damper		nos.	395		
	Sub-total for Item A2, A3 & A4					

Note: Regarding quoting of Vibration Damper price, bidders are requested to carefully go through the Vibration Damper in Schedule E.

Schedules of Rates and Prices
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LOT-1: TRANSMISSION LINES
Section D: Chattak – Sunamganj 132kV Single Circuit Transmission Line and T-off of Fenchuganj-Sylhet line to Bianibazar substation
Schedule No.2 - Plant and Mandatory Spare Parts Supplied from within Employer's Conutry

					Foreign Currency in-----		Local Currency in Bangladesh Taka		
Item	Description	Code[1]	Unit	Qty	EXW Unit Price[1]	EXW Total Price[1]			VAT on EXW
				(1)	(2)	(3)=(1)x(2)			(4)
A2	**Supply of insulator and fittings:** Insulator sets complete with insulators and all hardware fittings including suspension clamps, tension dead ends armour rods as per requirement arcing horn etc								
A2.1	132kV 70kN Suspension Insulator String for ACSR Grosbeak		Sets	738					
A2.2	132kV 120kN Heavy Suspension Insulator String for ACSR Grosbeak		Sets	60					
A2.3	132kV 120kN tension Insulator String for ACSR Grosbeak		Sets	600					
A2.4	132kV 70kN inverted low duty Tension Insulator String for ACSR Grosbeak		Sets	24					
A2.5	132kV 70kN upright low duty tension Insulator String for ACSR Grosbeak		Sets	24					
A3	**Accessories for Conductor**								
A3.1	Mid Span Compression Joint for ACSR		Nos	78					
A3.2	Repair Sleeve for ACSR Grosbeak		Nos	78					
A3.3	Vibration Damper for ACSR Grosbeak		Nos	1975					
A4	**Supply of Conductor and OPGW**								
A4.1.1	ACSR Grosbeak single conductor per phase Total three nos single conductors for single circuit line on double circuit towers Payment for extra length for sag, jumper, joint etc. shall deem to be included in the quoted price		route-km	28					
A4.1.2	ACSR Grosbeak single conductor per phase Total three nos single conductors for single circuit line on double circuit towers Payment for extra length for sag jumper, joint etc shall deem to be included in the quoted price		route-km	30					
A4.2	a) OPGW Fibre Optic Cable - 24 Fibre including joint box and earth bond as required as per actual site condition One no OPGW for the line Payment for extra length due to sag, joint etc shall deem to be included in the quoted price		route-km	58					
	b) OPGW tension set complete assembly for above OPGW		Set	100					
	c) OPGW suspension set complete assembly for above OPGW		Set	108					
	d) OPGW vibration damper		nos	395					
	Sub-total for item A2, A3 & A4								

Note EXW price are required to be quoted excluding VAT VAT on EXW shall be quoted in separate column in Bangladesh Taka VAT on EXW is included in the Contract Price and shall be paid by the Contractor which shall be reimbursed by the Employer to the Contractor at actual basis but not more than the quoted amount upon submission of relevant document

Note Regarding quoting of Vibration Damper price bidders are requested to carefully go through the Vibration Damper in Schedule E

Schedules of Rates and Prices

POWER GRID COMPANY OF BANGLADESH LIMITED

ATTACHMENT-15

ADDN-1. Lot-1

BIDDING DOCUMENT
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LOT-1: TRANSMISSION LINES

Section D: Chattak – Sunamganj 132kV Single Circuit Transmission Line and T-off of Fenchuganj-Sylhet line to Bianibazar substation

Schedule No.1 - Plant and Mandatory Spare Parts Supplied from Abroad

Item	Description	Code[1]	Unit	Qty	Foreign Currency in --- Unit Price[2] CIP	Total Price CIP
				(1)	(2)	(1) x (2)
S	Spares					
S1	**Towers** Fabrication, galvanising and supply of various types of towers, its body / leg (equal & unequal) extensions (complete) including stubs and bolts & nuts, including hangers, D-shackles, pack washer, spring washer, plain washer, tower earthing, anti-theft nuts & bolts, danger plate, number plate, bird guards, anti-climbing device, step bolt, rest platform (if required), ladder (if required) etc. as per specification (payment shall be released for identified complete tower).					
S1.1	Tower Type 1DL E3		each	1		
S1.2	Tower Type 1DL E6		each	1		
S1.3	Tower Type 1DL E9		each	1		
S1.4	Tower Type 1D1 E15		each	1		
S1.5	Tower Type 1D25 E6		each	1		
S1.6	Tower Type 1D25 E9		each	1		
S1.7	Tower Type 1DT6 Standard		each	1		
S1.8	Tower Type 1DT6 E3		each	1		
S1.9	Tower Type 1DT6 E6		each	1		
S2.0	Tower Type 1DT6 E9		each	1		
S2	**Phase conductor, Earthwire and OPGW**					
S2.1	ACSR Grosbeak		km	13		
S2.2	Earthwire 7/3.25 Steel		km	0		
S2.3	OPGW (7/3.25 Steel earthwire equivalent)		km	5		
S3	**Insulator**					
S3.1	70kN insulator unit		each	393		
S3.2	120kN insulator unit		each	330		
S4	**Fittings & Accessories**					
S4.1	Mid-span joint for phase ACSR Grosbeak		each	10		
S4.2	Repair sleeve for phase ACSR Grosbeak		each	10		
S4.3	Mid-span joint of 7/3.25 S earthwire		each	10		
S4.4	Suspension fittings without disc for ACSR Grosbeak		set	40		
S4.5	Tension fittings without disc for ACSR Grosbeak		set	33		
S4.6	Suspension set for 7x3.25 mm S earthwire		set	10		
S4.7	Tension set for 7x3.25 mm S earthwire		set	20		
S4.8	Vibration damper for 7x3.25 mm S earthwire		each	10		
S4.9	OPGW (7x3.25 mm S earthwire equivalent) suspension set, complete assembly		set	20		
S4.10	OPGW (7x3.25 mm S earthwire equivalent) tension set, complete assembly		set	5		
S4.11	Vibration damper for 7x3.25 mm S earthwire equivalent OPGW		set	20		
	Sub-total for Item S					

Schedules of Rates and Prices
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LOT-1: TRANSMISSION LINES
Section D: Chattak – Sunamganj 132kV Single Circuit Transmission Line and T-off of Fenchuganj-Sylhet line to Bianibazar substation
Schedule No.2 - Plant and Mandatory Spare Parts Supplied from within Employer's Conutry

					Foreign Currency in-----		Local Currency in Bangladesh Taka		
Item	Description	Code[1]	Unit	Qty	EXW Unit Price[1]	EXW Total Price[1]			VAT on EXW
				(1)	(2)	(3)=(1)x(2)			(4)
S	SPARES								
S1	**Towers** Fabrication, galvanising and supply of various types of towers, its body / leg (equal & unequal) extensions (complete) including stubs and bolts & nuts, including hangers, D-shackles, pack washer, spring washer, plain washer, tower earthing, anti-theft nuts & bolts danger plate, number plate, bird guards, anti-climbing device step bolt, rest platform (if required), ladder (if required) etc. as per specification (payment shall be released for identified complete tower								
S1 1	Tower Type 1DL E3		each	1					
S1 2	Tower Type 1DL E6		each	1					
S1 3	Tower Type 1DL E9		each	1					
S1 4	Tower Type 1D1 E12		each	1					
S1 5	Tower Type 1D25 E6		each	1					
S1 6	Tower Type 1D25 E9		each	1					
S1 7	Tower Type 1DT6 Standard		each	1					
S1 8	Tower Type 1DT6 E3		each	1					
S1 9	Tower Type 1DT6 E6		each	1					
S2.0	Tower Type 1DT6 E9		each	1					
S2	**Phase conductor, Earthwire and OPGW**								
S2 1	ACSR Grosbeak		km	13					
S2 2	Earthwire 7/3.25 Steel		km	0					
S2.3	OPGW (7/3.25 Steel earthwire equivalent)		km	5					
S3	**Insulator**								
S3 1	70kN insulator unit		each	393					
S3 2	120kN insulator unit		each	330					
S4	**Fittings & Accessories**								
S4 1	Mid-span joint for phase ACSR Grosbeak		each	10					
S4 2	Repair sleeve for phase ACSR Grosbeak		each	10					
S4 3	Mid-span joint of 7/3 25 S earthwire		each	10					
S4 4	Suspension fittings without disc for ACSR Grosbeak		set	40					
S4 5	Tension fittings without disc for ACSR		set	33					
S4 6	Suspension set for 7x3 25 mm S earthwire		set	10					
S4 7	Tension set for 7x3 25 mm S earthwire		set	20					
S4 8	Vibration damper for 7x3 25 mm S earthwire		each	10					
S4 9	OPGW (7x3 25 mm S earthwire equivalent) suspension set complete assembly		set	20					
S4 10	OPGW (7x3 25 mm S earthwire equivalent) tension set. complete assembly		set	5					
S4 11	Vibration damper for 7x3 25 mm S earthwire equivalent OPGW		set	20					
	Sub-total for Item S								

Note: EXW price are required to be quoted exlcuding VAT. VAT on EXW shall be quoted in separate column in Bangladesh Taka. VAT on EXW is included in the Contract Price and shall be paid by the Contractor which shall be reimbursed by the Employer to the Contractor at actual basis but not more than the quoted amount upon submission of relevant document.

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ATTACHMEN 16

ADDN-1 , Lot-1

POWER GRID COMPANY OF BANGLADESH LIMITED

BIDDING DOCUMENT
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LOT-1: TRANSMISSION LINES

Section D: Chattak – Sunamganj 132kV Single Circuit Transmission Line and T-off of Fenchuganj-Sylhet line to Bianibazar substation

Schedule No.4 - Installation and Other Services

Item	Description	Unit	Qty	Unit Price [1]		Total Price [1]	
				Foreign Currency Portion		Foreign	VAT on EXW
			(1)	(2)		(1) x (2)	
A1	Route Survey and clearance						
A1.1	Profile survey in accordance with the requirements of the technical specification, including full ground survey with change of tower location, if any, tower plotting and preparation and submission of route maps, profile drawings, SIMM documents, etc	km	48				
A1.2	Route clearance in accordance with requirements of the technical specification including payment of compensation for crops, trees, houses, etc and all kind of damage compensation.	km	48				
A2	Geotechnical Investigation						
A2.1	Geotechnical Investigation in accordance with the requirements of the Technical Specification						
	Level 3	borehole	nil				
	Level 4	borehole	21				
A3	Foundation						
	Foundations for towers/poles including all setting out, Concrete, Reinforcement, Excavation, Pumping, Stub-cutting, Geotechnical Investigation (Level 2), Shuttering, Leveling, Timbering, supply & Installation of foundation steelwork, Earthing Materials,Backfilling, approved Protective Coating & site clearing etc						
A3.1	1DL Tower (NORMAL BASE WIDTH)						
A3.1.1	Piled Foundation						
(a)	Soil Category 2	tower	8				
(b)	Soil Category 3	tower	30				
(c)	Soil Category 4	tower	50				
A3.1.2	Pad Chimney Foundation	tower	10				
A3.2	1D1 Tower (NORMAL BASE WIDTH)						
A3.2.1	Piled Foundation						
(a)	Soil Category 2	tower	1				
(b)	Soil Category 3	tower	2				
(c)	Soil Category 4	tower	4				
A3.2.2	Pad Chimney Foundation	tower	3				
	Sub-total						

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LOT-1: TRANSMISSION LINES

Section D: Chattak – Sunamganj 132kV Single Circuit Transmission Line and T-off of Fenchuganj-Sylhet line to Bianibazar substation

Schedule No.4 - Installation and Other Services

Item	Description	Unit	Qty	Unit Price [1]		Total Price [1]	
				Foreign Currency Portion		Foreign	VAT on EXW
			(1)	(2)		(1) x (2)	
A3.3	1D25 Tower (NORMAL BASE WIDTH)						
A3.3.1	Piled Foundation						
(a)	Soil Category 2	tower	2				
(b)	Soil Category 3	tower	4				
(c)	Soil Category 4	tower	8				
A3.3.2	Pad & Chimney Foundation	tower	6				
A3.4	1DT6 Tower (NORMAL BASE WIDTH)						
A3.4.1	Piled Foundation						
(a)	Soil Category 2	tower	3				
(b)	Soil Category 3	tower	6				
(c)	Soil Category 4	tower	15				
A3.4.2	Pad & Chimney Foundation	tower	6				
	Sub-total						

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ATTACHMENT-17

ADDN-1, Lot-1

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LOT-1: TRANSMISSION LINES

Section D: Chattak – Sunamganj 132kV Single Circuit Transmission Line and T-off of Fenchuganj-Sylhet line to Bianibazar substation

Schedule No.4 - Installation and Other Services

Item	Description	Unit	Qty	Unit Price [1]		Total Price [1]	
				Foreign Currency Portion		Foreign	VAT on EXW
			(1)	(2)		(1) x (2)	
A4	Conducting integrity test on pile using electronic control unit hand held hammer, accelerometer, computer with software to assess as intal'ed pile charactenstics including mobilization of necessary manpower, equipments, materials etc required for successful completion of the job	No.	632				
A4.1	Test foundation (service pile) to prove compliance with Technical specification, payment for successfultest only						
(i)	Pile Test						
a	Uplift test	test	1				
b	Compression test	test	1				
[illegible]	Pad & Chimney Test						
a	**Uplift test**	test	1				
A5.1	Installation of Stubs including bolts and nuts	per tower	158				
A5.2	Complete erection of various types of towers poles, & its body / leg (equal & unequal) extensions (complete) excluding stubs and bolts & nuts but including hangers, D-shackles, pack washer, spring washer, plain washer, welding painting (if required), rest platform installation (if required), ladder installation (if required) aircraft warning sphere installation (if required) aircraft warning light installation (if required) etc as per specification (payment shall be released for identified complete tower) The item also include installation of tower earthing number plate, danger plate, bird guard, step bolt, anti-climbing device etc						
A5.2.1	1DL (Normal base width) type tower	tower	98				
A5.2.2	1D1 (Normal base width) type tower	tower	10				
A5.2.3	1D25 (Normal base width) type tower	tower	20				
A5.2.4	1D16 (Normal base width) type tower	tower	30				
A6	Protection of Tower Footing						
	Random rubble stone masonary including excavation (1:5 cement mortar)	Cum	50				
[illegible]	M15 Conc for top seal cover	Cum	1				
A7	**Stringing**						
A7.1	Installation of insulator strings complete with arcing horns & necessary hardware installing & stringing of conductor including fixing of conductor **accessories** installing & stringing of earthwire including fixing of earthwire **accessories & installing & stringing of OPGW** including fixing of OPGW **accessories for single circuit line on double circuit towers**	km	58				
A7.2	**By-pass of existing line to facilitate of in-out (poles, insulators & fittings under this contract to be used for pass before usinf in the main line)**	Lot	1				
	Sub-total						

ATTACHMENT-18

ADDN-1, Lot-1

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LOT-1: TRANSMISSION LINES
Section - A, Section B, Section C and Section D

Schedule No. 3 - Design Service

Item	Description	Qty	Unit Price [1]		Total Price [1]
			Local Currency Portion	Foreign Currency Portion	
		(1)	*(2)*	*(optional)*	*(1) x (2)*
1	Section A				
2	Section B				
3	Section C				
4	Section D				
	Total (to Schedule No. 5 Grand Summary)				

Name of Bidder ______________________

Signature of Bidder ______________________

[1] specifiy currency in accordance with specifications in Bid Data Sheet under ITB 18.1.

ATTACHMENT-19

ADDN-1 Lot-1

A3.3 132kV Overland Portion

S.I.	Designation	Unit	Value
1	Stranding		
2	Diameter		
	e) Individual core	mm	
	f) Individual Al	mm	
	g) Core	mm	
	h) Total Diameter	mm	
3	Area		
	c) Al	mm^2	
	d) Total Area	mm^2	
4	Weight	Kg/m	
5	Breaking Load		
	d) Core	kN	
	e) Aluminum	kN	
	f) Complete Cable	kN	
6	Modulus		
	d) Core	GPa	
	e) Aluminum	GPa	
	f) Complete Cable	GPa	
7	Thermal Elongation		
	d) Core	10^6/C	
	e) Aluminum	10^6/C	
	f) Complete Cable	10^6/C	
8	Heat Capacity		
	c) Core	W-s/m-C	
	d) Aluminum	W-s/m-C	
9	Resistance		
	e) DC @ 20C	Ohms/km	
	f) AC @ 25C	Ohms/km	
	g) AC @ 50C	Ohms/km	
	h) AC @ 75C		
10	Geometric Mean Radius		
11	Reactance (1 ft spacing, 60 Hz)		
	c) Inductive Xa	Ohms/km	
	d) Capacitive X'a	Ohms/km	

A3.4 132kV River Crossing Portion

S.I.	Designation	Unit	Value
1	Stranding		
2	Diameter		
	a) Individual core	mm	
	b) Individual Al	mm	
	c) Core	mm	
	d) Total Diameter	mm	
3	Area		
	a) Al	mm^2	
	b) Total Area	mm^2	
4	Weight	Kg/m	
5	Breaking Load		
	a) Core	kN	
	b) Aluminum	kN	
	c) Complete Cable	kN	
6	Modulus		
	a) Core	GPa	
	b) Aluminum	GPa	
	c) Complete Cable	GPa	
7	Thermal Elongation		
	a) Core	10^6/C	
	b) Aluminum	10^6/C	
	c) Complete Cable	10^6/C	
8	Heat Capacity		
	a) Core	W-s/m-C	
	b) Aluminum	W-s/m-C	
9	Resistance		
	a) DC @ 20C	Ohms/km	
	b) AC @ 25C	Ohms/km	
	c) AC @ 50C	Ohms/km	
	d) AC @ 75C		
10	Geometric Mean Radius		
11	Reactance (1 ft spacing, 60 Hz)		
	a) Inductive Xa		
	b) Capacitive X'a	Ohms/km	
		Ohms/km	