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

CLARIFICATION NO. 2
(Date: August 07, 2013)

Clarificaiton-1 and Addendum-1 to the above Bidding Documents have been issued on July 18, 2013. Some more queries have been received after the issuance of Clarification-1 and Addendum-1. Clarifications to the queries received from the prospective Bidders after the issuance of Clarification-1 regarding the Bidding Documents has been prepared and given below:

Volume 1 of 3 **Lot-1: Transmission Lines** **Lot-2: Substations**	
Query 1:	Income Tax, Surcharge and all taxes of similar nature and VAT levied on the Contractor, which is deductible from Contractor's bill as TDS (Tax Deduction at Source) as per Government Tax Rules of Bangladesh in connection with the execution of this Contract, shall be paid by the Employer. From the above clause, we understood that there will be no tax deduction by PGCB from the Contractor's bill as TDS (Tax Deduction at Source) as per Government Tax Rules of Bangladesh in connection with the execution of this Contract and PGCB (Employer) will pay such amount from their own fund and issue us the certificate of such payment to Government. We request you to kindly arrange to confirm whether our above understanding is in line with tender requirements or not at the earliest. This will enable us to assess the exact tax implication and to avoid unnecessary loading in our price towards tax.

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Answer 1:	There will be no tax deduction by PGCB from the Contractor's bill as TDS (Tax Deduction at Source) as per Government Tax Rules of Bangladesh in connection with the execution of this Contract and PGCB (Employer) will pay such amount.
Query 2:	<u>Appendix 1 - Terms and Procedures of Payment</u> Schedule No. 1 - Plant and Equipment Supplied from Abroad: Eighty percent (80%) of the total or pro rata CIP or amount upon Incoterm "CIP," upon delivery to Site, as evidenced by Post Landing Inspection (PLI) Report and within forty-five (45) days after receipt of invoice. Bidder's Clarification: We know that the payment terms of the tender document could not be change. Could you please make an explanation of this payment term? In our opinion, "upon delivery to Site" means "for each shipment upon delivery to Site". Besides, please clarify what is meant by "the Post Landing Inspection (PLI) Report" since it is not mentioned in the conditions of the contract.
Answer 2:	Please refer to Query & Answer-70 of Clarification-1 issued on 18 July 2012 and distributed to all the firms who has purchased the Bidding Document.
Query 3:	<u>Appendix 1 - Terms and Procedures of Payment</u> (B) Payment Procedures In the event that the Employer fails to make any payment on its respective due date, the Employer shall pay to the Contractor interest on the amount of such delayed payment at the rate of one percent (1%) per annum for period of delay until payment has been made in full. Bidder's Clarification: The interest rate shall be 3% per annum for period of delay since it shall be equal or above the loan interest rate.
Answer 3:	Please refer to Query & Answer-9 of Clarification-1 issued on 18 July 2012 and distributed to all the firms who has purchased the Bidding Document.
Query 4:	<u>SCC</u> 10. Employer's Responsibilities Replacing Clause GC 10.6 The Employer shall be responsible for the continued operation of the Facilities after Taking Over, in accordance with 24.7.5. However, Contractor shall not be relieved of his other obligation/responsibilities as are specified in the Contract.

	Bidder's Clarification: The Contractor shall only undertake his other obligation/responsibilities during the Defect Liability Period.
Answer 4:	Contractor shall not be relieved of his other obligation/responsibilities as per the provision of Bidding Document.
Query 5:	<u>SCC</u> 23. Test and Inspection Sub-clause 23.3: For notification of testing, four weeks shall be deemed as reasonable advance notice. Bidder's Clarification: For notification of testing, only one week shall be usually deemed as reasonable advance notice. Four weeks usually entails a substantial degree of uncertainty.
Answer 5:	Notice period shall be as per the terms and conditions of the bidding document.
Query 6:	<u>SCC</u> 27. Defect Liability Sub-Clause 27.8 The following paragraph is added at the end of this sub clause: Upon correction of the defects in the Facilities or any part thereof by repair/replacement, such repair/replacement shall have the Defect Liability Period extended by a period mentioned in Sub-Clause 27.2 from the time such replacement/repair of the facilities or any part thereof". Bidder's Clarification: The Defect Liability Period for any equipment/material shall not be extended in any event, beyond twenty-four (24) months after the date of Taking-over, or 1620 days from the effective day, whichever first occurs. Since (a) if the equipment is damaged, it is not always clear that it should be replaced by the contractor at its own costs. The reason for the damage could be due to a natural cause or due to the improper operation in which case the costs should not be borne by the Contractor; (b) this amounts to an "evergreen" warranty, in that if equipment is repaired, the replacement equipment is subject to a fresh12 months Defect Liability Period, and if further defects occur then warranty could again renew itself forever (in theory). There must be a limit for total extension of Defect Liability Period.
Answer 6:	Your understanding is not correct. The provision of the clause is self explanatory. Upon correction of the defects in the Facilities or any part thereof by repair/replacement, such repair/replacement shall have the Defect Liability Period extended by a period mentioned in Sub-Clause 27.2 from the time such replacement/repair of the facilities or any part thereof.

Query 7:	Please clarify the below matters:
(i)	The skilled workers' wage of electric power construction industry in Bangladesh.
(ii)	The fees for land acquisition of substations and transmission lines, the compensation methods and standards for housing demolition and crops ruined.
(iii)	Composite indicator (BDT/km) for site clean-up of transmission lines in Bangladesh.
(iv)	International Transport (shipping) rates and premium rates from China to Bangladesh.
(v)	Port handling charges (BDT/tons or rate (%)) in Bangladesh.
(vi)	Domestic freight charges (BDT/tons.km or rate (%) in Bangladesh.
(vii)	Import tariff rates of the equipments and materials for substations and transmission lines (such as transformers, steel for towers and etc.) in Bangladesh.
(viii)	The coordinate and elevation system adopts Bengal national coordinate and elevation system or the coordinate and elevation system which the employer wants us to use and the control points (reference points) should be provided by the employer.
(ix)	How much should we charge for the workman? How much should we charge for the survey?
Answer 7:	Replies are given below:
(i)	Bidders are requested to assess themselves.
(ii)	Land acquisition is required by the Contractor. Crop compensation and damage compensation will be paid by the Contractor through Employer and Local Authority.
(iii)	The amount or rate varies depending on route. The bidders are requested to conduct site visit to assess the amount.
(iv) to (vii)	Bidders are requested to assess themselves.
(viii)	Bidders are requested to follow the reference co-ordinate of Survey of Bangladesh or the co-ordinate of Public Works Department, Bangladesh.
(ix)	Bidders are requested to asses themselves. However, emphasis should be given to maintain the quality as mentioned in the bidding document.
	Volume 2 of 3
Query 1:	For multi circuit towers (1QL/1Q15/1Q30/1QT6-Angle/1QT6-Terminal) tower weights are missing in the drawing, please furnish the same.
Answer 1:	Bidders are requested to refer to the Answer to Query 64, Page 13 of 16, Clarification No. 1 (issued on July 18, 2013) for Volume 2 of 3 (Lot-1: Transmission Line).

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Query 2:	Structural drawings for multi circuit tower type 1QT6-Angle/1QT6-Terminal are missing. Please furnish the same with tower weights.
Answer 2:	Soft copy of available structural drawings has already been provided to all the firms who have purchased the Bidding Document. However, the available drawing may be collected again from Design and Quality Control Dept., PGCB Head Office, IEB Bhaban (3rd Floor), Dhaka. The bidders are requested to refer to the Answer to Query 76, Page 16 of 16, Clarification No. 1 (issued on July 18, 2013) for Volume 2 of 3 (Lot-1: Transmission Line) in this regard. Regarding the weight of tower, bidders are requested to inspect the available structural drawings in PGCB design office as per the provision of bid document and get ensured them regarding tower weight. Soft copies of available tower drawings have already been provided to all the firms who have purchased the Bid Document. It may be mentioned here that the hardcopy of tower drawings shall prevail in case of any discrepancy. The above clarification has already been given in Clarification-1 for Lot-1.
Query 3:	For pile foundation design we require Vertical foundation forces for Normal base width towers/Narrow base width towers/multi circuit towers. Please furnish the same.
Answer 3:	Outline drawing of towers and foundation reactions of all the towers has been provided with the bidding document, from which bidders are requested to attain the reactions of expected axis. The bidders are requested to refer to the Answer to Query 44, Page 9 of 16, Clarification No. 1 (issued on July 18, 2013) for Volume 2 of 3 (Lot-1: Transmission Line) in this regard.
Query 4:	For pile, pad & chimney foundation design we require soil properties. Please furnish us the same.
Answer 4:	Please refer to Sl. no. 3 and Attachment-1 of Addendum No. 1 (issued on July 18, 2013) for Volume 2 of 3 (Lot-1: Transmission Line) in this regard.
Query 5:	BOQ (pile length /volumes) for pile foundation is given in schedule 4 for T.T.1DL/1D1/1D25/1DT6. Please clarify given BOQ is for Normal base width towers or Narrow base width towers.
Answer 5:	BOQ (pile length /volumes) for pile foundation is **not** given in Schedule 4. The bidders are requested to refer to the Answer to Query 80, Page 16 of 16, Clarification No. 1 (issued on July 18, 2013) for Volume 2 of 3 (Lot-1: Transmission Line) in this regard.
Query 6:	Please confirm whether we have to design pile foundations for multi circuit towers & (Normal or Narrow base width towers).
Answer 6:	Foundation designs of all poles and towers are included in the scope of the Contractor. The bidders are requested to refer to the Answer to Query nos. 9, 15 and 29, Clarification No. 1 (issued on July 18, 2013) for Volume 2 of 3 (Lot-1: Transmission Line) in this regard.
Query 7:	We have observed the following points while designing pile foundation for stub legs of narrow base tower.

	1. The height of Chimney is only 200 mm above pile cap. 2. The top of pile cap & ground level is same. 3. One set of cleat are in the chimney. In view of the above we understand that length of stubs is short. Hence we request you to please confirm that existing length of stubs & design is acceptable to PGCB.
Answer 7:	The Contractor has to propose revised stub length so that all cleats are remained inside the pile cap. Also, following matters shall be considered to finalize the stub length and foundation: (i) Height of chimney shall be minimum 300mm above ground level. (ii) The ground level shall be 400mm above pile cap top.
Query 8:	We had asked for Clarification of Normal span to be considered for pole design. This is not clarified in the Addendum - 1. It is mentioned in Addendum - 1 to consider span criteria as per Appendix 8A.A4.1, Pg. No. 8A/18. Please note that in span criteria, value of Ruling span is not furnished which is required for sag tension calculation. Please, confirm that the value of Normal Span of 165m for Pole Design can be considered.
Answer 8:	165m wind span shall be considered as ruling span for pole design as mentioned in the Appendix 8A.A4.1, Page 8A/18, Volume 2 of 3, Lot-1 of the Bidding Document.
Query 9:	As per Addendum - 1, Pg. No. 2 of 4, Appendix 8A.A4.1, Pg. No. 8A/19 (R1) is Revised which is missing in Addendum – 1.
Answer 9:	Page no. 8A/19(R1) is enclosed again (**Attachment-1**).
Query 10:	Structural Drawing of Tower Type 1QT6 (Normal Base Width Quad Circuit) is not received. Drawing Numbers specified in Specification of 1QT6 Tower which is missing. S-2395/ S-2396/ S-2397/ S-2398/ S-2399/ S-2400/ S-2401/ S-2402/ S-2403/ S-2404/ S-2405 / S-2414/ S-2759/ S-2760/ S-2761/ S-2762 General Arrangement Drawing of ACD: 1QL _Drawing No. A-5441_Sheet 1 of 1 1Q15 _Drawing No. A-5442_ Sheet 1 of 1 1QT6 _Drawing No. A-5444_ Sheet 1 of 1 1DR _Drawing No. A-5445_ Sheet 1 of 1 1DAX _Drawing No. A-5446_ Sheet 1 of 1 Please arrange above drawings or weight of towers with all Extensions.
Answer 10:	Soft copies of available tower drawings have already been provided to all the firms who have purchased the Bid Document. It may be mentioned here that the hardcopy of tower drawings shall prevail in case of any discrepancy. As such, bidders were/are requested to inspect the available structural drawings in PGCB design office as per the provision of bid document.

	Please refer to the Clarificaiton-1 wherein the above matter has been discussed thoroughly in several places. Bidders/Contractor has to develop any missing drawing which is/are required to complete the project. This has been discussed in Section 8: Towers, Volume 2 of 3, Lot-1 of the Bidding Document. Weights of towers are not readily available to the Employer. Bidders/Contractor has to get ensured themselves regarding the weight of tower on the basis of drawings. Payment of tower shall be made as 'per tower' basis.
Query 10:	Wind Pressure Value 1952N/mm^2 is (Appendix 11.A3/1, Pg. No. 11/21, Section 11) not matching if we calculate wind pressure according to 41.2m/s wind velocity, which is furnished in technical specification. Please clarify that the value of wind pressure 1952 N/mm^2 & corresponding conductor tension as per sag tension calculation to be considered for Pole design. Conductor tension equivalent to 35% of Breaking load need not to consider in Pole Design, if maximum working tension as per sag tension calculation is less.
Answer 10:	Wind pressure is required to be calculated as per clause no. 8A.2.4, Section 8A, Volume 2 of 3, Lot-1 of the bidding document. Please refer to Addendum-2 in this regard. 35% of breaking load of conductor needs to be considered in pole design, even if maximum working tension as per sag tension calculation is found less.
Query 11:	As per the clarifications related to tower drawings, hardcopy of the tower drawings shall prevail in case of any discrepancy in soft copies of drawings provided. Being a foreign bidder, it may not be possible to inspect each & every drawings in PGCB office. We request you to kindly arrange to provide the hard copy of the drawings to work-out the tower weights.
Answer 11:	It is understood that all the firms has local representatives. The firms are requested to collect the available drawings through local representatives.
Query 12:	With reference to above subject works, we are in receipt of your Addendum-1 and Addendum–2 alongwith clarifications. In this regards, we seek certain confirmations from your side as per followings: *For Normal Base Tower Type 1DR & 1DAX, Bills Of Materials not available in Structural Drawing. *For Norma Base Quad Circuit Towers 1Q15, 1Q30, Bills Of Materials not available in Structural Drawing. *For Normal Base Quad Circuit Towers^ 1QT6 Structural Drawings & Bills of Materials not available. *For Narrow Base Tower Bills of Materials not available in Structural Drawing. We request you to kindly arrange to provide the above missing details / drawings at the earliest to enable us to proceed further.

Answer 12:	Clarification-1 and Addendum-1 has been issued, not Addendum-2. Regarding the drawings, please refer to the Answer to Query no. 10 of this Clarification.
Query 13:	It is understood that the Plan & Profile drawings are required to be done in PLS CADD. However, the extent of use of PLS CADD is not described elaborately. Please mention the extent of use of PLS CADD software for this project.
Answer 13:	PLS CADD will required to be used for following purpose: a) The contractor needs to supply plan and profile drawing in PLS CADD format. A PLS CADD backup file (integrated with PLS TOWER and PLS POLE) shall be required to be submitted to PGCB in sections representing the submitted plan and profile. b) A complete PLS CADD model backup (compatible with PLS CADD version 12.1) file with appropriate method 1 structures shall be submitted with the stringing chart and clipping offset reports.
Query 14:	The parameters of commonly used transmission lines, such as the section acreage of the lines, the maximum transmission capacity of the lines, etc.
Answer 14:	The above data has no relevance with this project, as such could not be given.
Query 15:	We should know clearly at which point the OPGW ends in the substation at each tower if it has OPGW, the length of all the OPGW related in the project, and the length of all the PLC channels if needed.
Answer 15:	Please refer to Appendix 1.A2, Section 1: Scope of Works, Volume 2 of 3, Lot-1: Transmission Line regarding termination point of OPGW which is the scope of transmission line Contractor.
Query 16:	Please clarify the below matters:
(i)	List of Meteorological and Hydrological information needed for this project Meteorological data as following: (from Meteorological station near the path of the transmission lines) Item — Unit Annual average temperature — °C Maximum temperature and the date — °C(date) Minimum temperature and the date — °C(date) Average atmospheric pressure — hpa Average relative humidity — % Maximum relative humidity Average annual precipitation — mm Average annual evaporation — mm Average thunderstorm days/year — day Average fog days/year — day Maximum wind velocity and the direction — m/s Soil temperature(depth) — °C(m) Prevailing wind direction

	2. Rose diagram of wind direction (data from Meteorological station) 4. Wind pressure distribution graph in Bangladesh (at 10m height , having a return period of 50 years) 5. Wind speed at 10m height, corresponding to an averaging period of 10min. having a return period of 50 years (m/s) at project site. 6. Icing data of transmission lines in Bangladesh. 7. Meteorological data of existing transmission lines near this project. (feasibility study report could be used as reference) 8. Hydrological data (such as water surface profile of main rivers in Bangladesh; flood control standard of embanked levees, the situation of flood area.) 9. If transmission lines are threatened by the reservoir, data of reservoir should be collected (such as design standards, crest elevation and flood discharge capacity etc.) 10. Navigation standard of Inland River of Bangladesh.
(ii)	Seismic intensity, seismic peak ground acceleration and seismic ground motion parameter zonation.
(iii)	The scope and growth characteristics of regional tectonics, the distribution and activity of active faults, and their effects including earthquakes and geological disasters.
(iv)	Previous geological and geotechnical data of the project.
(v)	The route maps of section C and "2nd circuit in-out of Kaptai - Modunaghat line at Chandraghona Substation" in section A are still absent, which include drawing and coordinate.
(vi)	The rates of terrain, such as percentage of hilly area, high mountain area, swamp area and so on.
(vii)	Topographical features along lines route, such as plant cover, types of trees and so on.
(viii)	The detail for crossing river, such as the width of river, tower sites for crossing Brahmaputra river.
(ix)	The weights of normal base width double circuit tower are listed in VOL2_TL-SECTIONG8-APPENDIX 8.E1, the weights of other kinds of towers are missed. The weights of narrow base width double circuit tower, four circuit tower, and double circuit pole are needed.
(x)	The types and amounts of foundations are listed in VOL3 _IL, the weights of concrete and steel used in foundations are needed. We also need the geotechnical condition along the transmission lines.

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Answer 16:	Replies are given below:
(i)	All required data has already been provided in the Volume 2 of 3 of the Bidding Document.
(ii)	Required seismic data has already been provided in the Volume 2 of 3 of the Bidding Document.
(iii)	Required seismic data has already been provided in the Volume 2 of 3 of the Bidding Document.
(iv)	Required geological and geotechnical data of the project has already been provided in Volume 2 of 3 of the Bidding Document. The Bidders/Contractor has to collect by themselves any further data required.
(v)	Route has already been provided before issuance of Clarification-1 and Addendum-1.
(vi) & (vii)	Bidders are requested to asses themselves through site visit.
(viii)	Details of river crossing have been provided through Clarification-1 & Addendum-1issued on July 18, 2013.
(ix)	Soft copy of available structural drawings has already been provided to all the firms who have purchased the Bidding Document. However, the available drawing may be collected again from Design and Quality Control Dept., PGCB Head Office, IEB Bhaban (3rd Floor), Dhaka. The bidders are requested to refer to the Answer to Query 76, Page 16 of 16, Clarification No. 1 (issued on July 18, 2013) for Volume 2 of 3 (Lot-1: Transmission Line) in this regard. Regarding the weight of tower, bidders are requested to inspect the available structural drawings in PGCB design office as per the provision of bid document and get ensured them regarding tower weight. Soft copies of available tower drawings have already been provided to all the firms who have purchased the Bid Document. It may be mentioned here that the hardcopy of tower drawings shall prevail in case of any discrepancy. Poles are required to be designed by the Bidders/Contractor; hence weight of poles could be attained after designing the same. The above clarification has already been given in Clarification-1 for Lot-1.
(x)	The weight/amount of foundation items such as steel, concrete excavation etc. are not available to the Employer. Bidders have to design the foundation hence the weight/amount of foundation items shall be calculated by the Bidders/Contractor.

The above clarifications will form part of the Bidding Documents.

Encl.: As stated.

ATTACHMENT-1
CLARIFICATION-2
LOT-1

3.0 Security Loadings (Cascade Conditions)				
3.1 Suspension & Tension Poles				
(a)	**Wind span (A)**	**All Poles**	**(m)**	**80**
(b)	**Maximum weight span**	**All Poles**	**(m)**	**600**
3.2 Unbalanced Tension to be Considered				
(a)	Tension Poles	100% of conductor and earthwire tensions under everyday temperature and no wind		
4.0	**Broken Wire Assumption**			
4.1	**Suspension & Heavy Suspension Pole**			
(a)	Earthwire/OPGW is broken.			
(b)	**Any one phase conductor broken.**			
4.1(a) and 4.1(b) shall not occur at the same time.				
4.2	**Tension Poles**			
(a)	**Earthwire/OPGW and one phase conductor are broken.**			
(b)	**Two phase conductors of the same side are broken.**			
4.2(a) and 4.2(b) shall not occur at the same time.				

Note (A): All specified wind spans have been adjusted for spatial effects using the expression (windspan x 0.75 + 30m) for pole design purposes.

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. 2
(Date: August 07, 2013)

Lot-1: Transmission Lines

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

Volume 2 of 3

1. Appendix 8A.A4.1, Page 8A/18, Section 8A

   Page 8A/18 is replaced by enclosed revised page no. 8A/18(R1) **[Attachment-1].**

2. Appendix 11A3/1, Page 11/20, Section 11

   The text "1952" fro Phase and "2147" for earthwires are replaced by the text "to be calculated as per clause no. 8A.2.4, Section 8A of this specification".

Volume 3 of 3

3. Sl. 9(v), Page 3 of 4, Addendum No. 1

   Page 3/6(R1), Schedule No. 4, Section A is replaced by enclosed revised page no. 3/6(R2) **[Attachment-2].**

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.

ATTACHMENT-1

ADDENDUM-2 /LOT-1

APPENDIX 8A.A4

APPENDIX 8A.A4.1

SPAN CRITERIA

1.0	**Climatic Loadings and Security Loadings (Intact Conditions)**				
1.1Suspension & Tension Pole					
				230kV	**132kV**
(a)	Wind span (A)		(m)	-	165
(b)	Maximum weight span	Suspension Pole	(m)	-	263
		Tension Pole	(m)	-	300
(c)	Minimum weight span	Suspension Pole	(m)	-	105
		Tension Pole	(m)	-	zero
1.2	**Terminal Pole**				
(a)	Wind span (A)	-	(m)	-	165
(b)	Maximum weight span	-	(m)	-	263
(c)	Minimum weight span	-	(m)	-	zero
1.3 Unbalanced tension in front and back span in Normal Condition					
(a)	Suspension & Heavy Suspension Pole	3% of maximum working tension of conductor &earthwire			
(b)	1D25P	33% of maximum working tension of conductor &earthwire			
(c)	1DT6P (Angle)	33% of maximum working tension of conductor &earthwire			
(d)	1DT6P (Terminal)	100% Maximum Working Tension of conductor and earthwire			
2.0 Security Loadings (Broken Wire Conditions) – At broken points					
2.1 Suspension & Tension Support					
(a)	Wind span (A)		(m)	-	124
(b)	Maximum weight span	Suspension Poles	(m)	-	198
		Tension Poles	(m)	-	225
(c)	Minimum weight span	Suspension Poles	(m)	-	79
		Tension Poles	(m)	-	Zero
2.2 Unbalanced Tension to be Considered					
(a)	Suspension Poles	0.6 x Max. working tension of Earthwire. 0.6x Max. working tension of Conductor.			
(b)	Tension Poles	1.0 x Max. working tension of Earthwire. 1.0 x Max. working tension of Conductor.			

ATTACHMENT-2

ADDENDUM-2

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 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	1				
3.14	**1D25P Pole-Pad & Chimney Foundation**	**pole**	**1**				
A3.14	**1DT6P Pole-Piled Foundation**						
A3.14.1	Soil Category 2	pole	1				
A3.14.2	Soil Category 3	pole	2				
A3.14.3	Soil Category 4	pole	4				
3.15	**1DT6 Pole-Pad & Chimney Foundation**	**pole**	**3**				
A3.15	**1D9P Pole-Piled Foundation**						
A3.15.1	Soil Category 2	pole	1				
A3.15.2	Soil Category 3	pole	2				
A3.15.3	Soil Category 4	pole	4				
3.16	**1DLP Pole-Pad & Chimney Foundation**	**pole**	**3**				
A3.16	**1DAX E4.5**	**tower**	**13**				
A3.17	**1DAX standard**	**tower**	**3**				
	Sub-total						