POWER GRID COMPANY OF BANGLADESH LIMITED

Design, Supply, Installation, Testing and Commissioning of 400kV and 132kV Transmission Lines under ESPNER Project
[Bid Identification No. : **PGCB/WB/ESPNERP/TL/Package-1**]

CLARIFICATION NO. 2

Pre-bid meeting was held on August 27, 2019 as per clause 7.4 of Instruction to Bidders of Volume 1 of 2 of the Bidding document. PGCB has already replied the queries through a letter headed 'Clarification-1'. Again some more queries were received from the prospective Bidders regarding the Bidding Documents. Clarifications on the above queries are given below, which will form part of the bidding documents.

Sl. No.	Reference and Queries of Prospective Bidders	Reply (PGCB)
	VOLUME -1	
01	**Section-IV, Clause 2.2.5, Page No. 82** The tower type "1Q15" is not mentioned under Technical Data Schedules of 132 kV Pile Foundation for ACSR Grosbeak Conductor. Kindly amend the same accordingly.	Refer to Addendum-2.
02	**Taxes & Duties** a) If a bidder proposes a plant/equipment from two or more manufacturers among which some of the manufacturers are from within Employer's country and other manufacturers are from outside Employer's country, then the bidder must quote either for within Employer's country or for outside Employer's country. In case such bidder quotes price in price schedule of within Employer's country only, but during execution, if such bidder (Contractor) intends to supply that plant/equipment from qualified manufacturer outside Employer's country, to ensure timely completion of contract, then please clarify who will pay Custom Duties & Value Added Tax (CD & VAT) and associated other taxes on such imported plant/equipment. Please, clarify. b) Contractor are responsible for payment of AIT in Price Schedule No. B2 and Employer will deduct AIT from each payment amount. However, if local company is supplying towers under International Tender and getting payment in USD, this is deemed to be an export. Therefore, the EPC contractor who supply Materials and Equipments from within the employer's country are also not liable to pay TDS. It means that AIT in the Price Schedule No. B2 will not be deducted by the employer in case of USD contract between contractor and local manufacturer. Is our understanding correct?	a) Contractor will have to pay the Custom Duties & Value Added Tax (CD & VAT) and associated other taxes on such imported plant/equipment. b) Your understanding is not correct. Quoting only in USD for Schedule no. B2 doesn't change the origin of the manufacturers.
03	**Section-IX, Terms and Procedure of Payment (Appendix I)** a) Payment of custom duties / right of way / governmental offices on behalf of the Employer.	a) Custom duties will be paid by employer whereas right of

Sl. No.	Reference and Queries of Prospective Bidders	Reply (PGCB)
	In this regard, any payment required to be done by the Contractor on behalf of the Employer is suggested to be paid back in the same currency by the Employer within 7 days from submission of invoices. Interest on delay in release of reimbursement shall be considered as prevailing as per https://www.bb.org.bd/fnansys/interestlending.php b) Taxation on Reimbursement In this regard, we would like to know the taxes applicable on Reimbursement invoices – will AIT / TDS be applicable? If applicable, it is proposed to be paid by the Employer in addition to the reimbursement. Please confirm.	way will be reimbursed as per the provision of Section 24 of Volume 2 of the bid document. b) Taxation will be applicable as the provision of Schedule B7 of Volume 1 of the bid document.
04	**Section VIII, GCC and PCC, Clause 10.2** **ROW** We understand that it is the Employer's responsibility for acquiring and providing legal and physical possession of the Site and access thereto. Please Confirm. Since the Employer shall give full possession of and accord all rights of access. Contractor shall not be responsible for any Right of Way for foundation nor for stringing corridor. Please Confirm. What is the current status of Right of Way? Kindly arrange to provide.	Refer to Section 5 and Section 24 of Volume 2 of the bidding document.
05	**Section X – Appendix 2** **Price Adjustment/ Escalation (Appendix 2) – Adjustment Date** As per Appendix 2 – Price Adjustment / Escalation – "The date of adjustment shall be the mid-point of the period of manufacture of the component or Plant. The mid-point shall be determined by considering the start date of manufacture to be 30 days after Contract Effective Date. The end date of manufacture is considered to be 30 days period to the shipping date." We request you to kindly arrange to clarify / confirm the followings: a) We understand that any recovery or payment resulting from price adjustment will be settled at the end of contract after considering cumulative impact of each lot for all the items. Please Confirm.	a) Confirmed b) Confirmed c) Refer to Addendum-2.

Sl. No.	Reference and Queries of Prospective Bidders	Reply (PGCB)
	b) From the above, we understand that Price Variation will not be applicable for OPGW and Earthwire. c) Please refer Section X – Contract Forms, Page No. 308 & 309, Volume-1 of the bid documents where Price Adjustment and conditions applicable to Price Adjustment is given for 'Conductor (ACSR/ACCC)', we understand that it must be 'Conductor (ACSR/AAAC)'. Also, in the given Price Adjustment it is mentioned that "The formula for calculating the price adjustment of the contract price component of the earthwire & OPGW is as follows:". We understand that it must be stated as "The formula for calculating the price adjustment of the contract price component of the Conductor (ACSR/AAAC) is as follows:" Kindly request you to amend the same	
06	**Section X, Contract Forms and Clause No. 34 of GCC Appendix 3 – Insurance Requirements** As per Appendix 3 – Insurance Requirements of Section 10, Contract Forms and Clause No. 34 of GCC, there is no mention of the Insurance Company from where the insurance has to be taken from by the Contractor. We request you to clarify, if the insurance can be taken from any reputed insurance company or specifically from Sadharan Bima Corporation of Bangladesh. Please Clarify.	It is advisable to take insurance from Sadharan Bima Corporation of Bangladesh specifically.
07	**Section-I, (ITB), Clause 20.9 b (ii), Page No. 23 Bid Security (Performance Security)** Please refer Clause 20.9 b (ii) of Section-I, (ITB), Page No. 23, Volume-1 of the bid documents, where it is mentioned that If a successful Bidder fails to "furnish a Performance Security in accordance with ITB 451". We understand that clause to be mentioned for Performance Security must be ITB 51 instead of ITB 451 and it must be stated as "furnish a Performance Security in accordance with ITB 51". Kindly amend the same.	Refer to Addendum-2.
08	**Section I, Clause ITB 20.1** The above clause indicates bid security from reputable source from an eligible country will be acceptable. We as Indian bidder intend to arrange bid security from reputable bank from India. Please confirm that the same is acceptable.	Refer to the reply of Clarification-1.
09	**Section IX, Clause PCC 14.1 & 14.2** The above clause indicates about schedule No. 1. However taxes & duties on Sch. 2, 3 & 4 is not clear. We understand that as per practise in Bangladesh, PGCB will deduct TDS from local portion in the price schedules and VAR will be borne by Employer. Please	For Schedule no. 2, Schedule no. 3 and Schedule no. 4, Employer shall deduct TDS as per applicable rates. VAT will

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Sl. No.	Reference and Queries of Prospective Bidders	Reply (PGCB)
	confirm.	be borne by the employer.
10	**Section IV. Bidding Forms** **Form of Bid Security** **Employer Address in Bid Security (Bank Guarantee):** a) Employer address mentioned as beneficiary in form of Bid security under section VI–Bidding Forms. **Power Grid Company of Bangladesh Limited** **Institution of Engineers Bangladesh (IEB) Building (New),** **4th Floor,8/A Ramna, Dhaka-1000, Bangladesh.** b) Employer address given in BDS under section ITB clause 23.1 **Power Grid Company of Bangladesh Ltd.** **PGCB Head office,** **Avenue-3, Jahurul Islam City,** **Aftabbagar,Badda.** **City: Dhaka** **ZIP Code: 1212** **Country: The People's Republic of Bangladesh** Since the client address is different in Bid security form Compared with BDS. We request you to clarify and confirm the address to be mentioned in the Bank guarantee form as beneficiary.	Refer to Addendum-2.
	VOLUME-2	
01	**Chapter-21, Clause No. 21.2, Page No. 21-1** **Reflecting Paint of Towers in Submerged area:** It is mentioned that "In some areas where the tower may be under water during the rainy season, the tower (all members) shall be painted for navigation with reflecting paint up to 3 m above epoxy coat". Kindly arrange to provide the total no. of towers lying under water-logged area which are to be treated with reflecting paint and also request you to provide their exact location, if possible.	The Bidders are requested to conduct the site visit to get acquainted with site condition in order to determine the tower quantity to be treated with reflecting paint.
02	**Clause 22.2, Chapter-22, Page No. 22** **Bid Documents/ Drawings** It is mentioned that CD containing drawings is a part of the bid but the same has not been received by us. We request you to kindly arrange to provide the same earliest possible. We request you to kindly provide us the remaining documents such as soft copy of price schedule (excel file). Resettlement Action Plan (RAP). Route survey report and Google earth file	Mentioned drawings and all available files have already been provided to the Bidders. However, Bidders may collect the same from the Contract department at PGCB Head Office.

<table>
<tr><th>Sl. No.</th><th>Reference and Queries of Prospective Bidders</th><th>Reply (PGCB)</th></tr>
<tr><td></td><td>(.kmz file) of the area through which the transmission line is passing for our competitive bid preparation.

We request you to kindly arrange to provide the same earliest possible.</td><td></td></tr>
<tr><td>03</td><td>Chapter 9, Clause No. 9.6.2(i), Table 9-1
Insulator Unit – Type Test Requirement

The type test requirement for Insulator Unit are given.

Please confirm whether type test reports shall include all items in Table 9-1 or can only include lists in 9.6.2 [i.e. Radio Interference Voltage, Residual Strength tests are not included in Clause No. 9.6.2.(i)]
Table 9-1: Test Requirements

<table>
<tr><th>Test</th><th>Insulator Units Cap & Pin (Type B)</th><th>Insulator Sets</th></tr>
<tr><td>Type Tests:</td><td></td><td></td></tr>
<tr><td>Verification of dimensions</td><td>X</td><td>-</td></tr>
<tr><td>Dry lightning impulse withstand voltage</td><td>X</td><td>X</td></tr>
<tr><td>Wet power frequency withstand voltage</td><td>X</td><td>X</td></tr>
<tr><td>Thermal mechanical performance</td><td>X</td><td>-</td></tr>
<tr><td>Mechanical or EMF load</td><td>X</td><td>-</td></tr>
<tr><td>Radio Interference Voltage (RIV)</td><td>X</td><td>X</td></tr>
<tr><td>Pollution performance</td><td></td><td>X a)</td></tr>
<tr><td>Power arc</td><td>X</td><td>X</td></tr>
</table>
</td><td>Bidders are requested to follow the type test requirement for insulator units as mentioned in Clause 9.6.2, Section 9. Insulators, Volume 2 of the Bid Document.</td></tr>
<tr><td>04</td><td>Appendix-6 – Scope of Works and Supply by the Employer.

Since this Appendix consists of the Supply by the Employer and specific clauses are mentioned in the 1st paragraph of the Appendix, it is suggested that - The Employer's obligations covered under GCC Clause 10, 21 & 24 should be incorporated in Appendix 6.

Please consider our above request and issue necessary amendments in this regard.</td><td>In this regard, please follow the bid document.</td></tr>
<tr><td>05</td><td>Section 7 & 8
Foundation Activities

a) Over Load Factor for pile foundation of 400 kV line towers are not available in Appendix 7.A2.

Kindly provide the same.

b) Foundation loads of line crossing gantry of 132 kV given on Page 8-47, Annex-8.13 is not clear and Leg slope, stub section & width at +0m level not specified in the given foundation load table.</td><td>a) Please follow the Clarification-1 and Addendum-1.
b) Please follow the Clarification-1 and Addendum-1.
c) Please follow the item no. 2.7 of Schedule B4(ii).</td></tr>
</table>

Sl. No.	Reference and Queries of Prospective Bidders	Reply (PGCB)
	Please furnish the same. c) Foundation design type for 132 kV line crossing gantry is not mentioned in the price schedule. Please confirm that the contractor have to design pile foundation for 132 kV line crossing gantry.	
06	**Section – 11, Clause – 11.2.2 Joints in Wire** We are requesting to add following clause **11.2.2.(d) Carbon Fiber Composite Core** For composite core wires, during the production run, splicing of the galvanic protection barrier is allowed, provided diameter specifications are maintained. Add to the specification for composite core wires that splicing is allowed in the galvanic protection barrier layer. Requirement is from ASTM B987, Section 19.2.	During the production run, splicing is allowed in the galvanic protection barrier layer for Carbon Fiber Composite Core as per ASTM B987.
07	**Section – 11, Annex 11-1(1): 400kV - Overland Portion (ACCC Dhaka)** Existing Clause: Rated tensile strength of Conductor (kN) – 194.4. Request to revise: Rated tensile strength of Conductor (kN) – 192.2 This revision is based on our revised core specification.	Specification of ACCC Dhaka Conductor is revised in the Bid Document as per the latest technical data sheet of ACCC Dhaka Conductor. Please refer to **Addendum-2** in this regard.
08	**Section – 11, Annex 11-1(1): 400kV - Overland Portion (ACCC Dhaka)** Existing Clause: Rated tensile Strength of core (KN) – 153.8 Request to revise: Rated Strength of core (KN) – 151.7 This revision is based on our revised core specification.	Specification of ACCC Dhaka Conductor is revised in the Bid Document as per the latest technical data sheet of ACCC Dhaka Conductor. Please refer to **Addendum-2** in this regard.
09	**Section – 11 –Conductors, Annex 11-4: Test Procedures of Conductor, Clause1.6 iv)Sheaves Test** Existing Clause: The conductor sample of minimum length of 35 meter shall be tested in accordance with IEC 60794-1-2, Section 20, Figure 27 (Procedure 4) with the following details: Tension shall be 10 % of the conductor UTS; pulley diameter shall be at least 35 times that of the conductor: angle between the pulleys shall be 20 degrees. The conductor shall be passed over the pulleys a minimum of 18 times at a speed of 0.2 to 0.5 m/sec. After this test, the UTS of aluminium, steel, or invar core materials shall be evaluated. In the case of polymer composite core conductors, the core shall be inspected for any sign of damage or cracking by subjecting the core to a dye penetration test per ASTM B987 section 14. Dye penetrant exposure time shall be 30 +1/-0 minutes. Request to revise: The conductor sample of minimum length of 35	This procedure says in case of conductor having aluminium cladded steel core, steel core or invar core, conductor's UTS is required to evaluate but in case of composite core, dye penetration test shall be conducted.

Sl. No.	Reference and Queries of Prospective Bidders	Reply (PGCB)
	meter shall be tested in accordance with IEC 60794-1-2, Section 20, Figure 27 (Procedure 4) with the following details: Tension shall be 10 % of the conductor UTS; pulley diameter shall be at least 35 times that of the conductor; angle between the pulleys shall be 20 degrees. The conductor shall be passed over the pulleys a minimum of 18 times at a speed of 0.2 to 0.5 m/sec. After this, the conductor shall be evaluated for UTS test. In the case of polymer composite core conductors, the core shall be inspected for any sign of damage or cracking by subjecting the core to a dye penetration test per ASTM B987 section 14. Dye penetrant exposure time shall be 30 +1/-0 minutes. As per CIGRE 426 Clause 6.1 sheave Test. Only the conductor to be tested to measure the residual tensile strength not individual Aluminum, steel, invar wires.	
10	**Section – 11 –Conductors, Annex 11-4: Test Procedures of Conductor, Clause1.8 Radial Crush Test** Existing Clause: A section of conductor is to be crushed between two six inch steel platens. Load shall be held at 350 Kgs for 1 minute and then released. All the strands/core shall be subsequently disassembled and tensile tested. All the strands/core shall exhibit full strength retention Request to revise: A section of conductor is to be crushed between two six-inch steel platens. Load shall be held at 350 Kgs for 1 minute and then released. All the Core strands/Core shall be subsequently disassembled and tensile tested. Core/Core strands shall exhibit full strength retention vis-a-vis guaranteed breaking strength of core wires (after stranding). Please amend the Test Procedure according to Cigre-426, Clause No. 4.10. Radial Crush Test.	Test procedure of radial crush test of ACCC conductor is amended. Please refer to **Addendum-2** in this regard.
11	**Section – 11, Annex 11-4: Test Procedures of Conductor, clause 1.12** Existing Clause: Heat Resistance test on Aluminium Alloy wire Breaking load test as per clause 1.21 above shall be carried out before and after heating the sample in uniform heat furnace at following temperature for seventy-two hours. The breaking strength of the wire after heating shall not be less than the 90% of the breaking strength before heating: Request to change: Heat Resistance test on Aluminium Alloy wire (not applicable for fully annealed 1350-O Aluminum wire) Clarifying this test is not applicable to Annealed Aluminum.	Your understanding is correct. Heat resistance test is not applicable for annealed aluminum. However, it will be required for Aluminum alloy wires (if any).
12	**Section – 11, Annex 11-4: Test Procedures of Conductor, clause 1.15 Coefficient of linear expansion for composite core / core wires** Existing Clause: The temperature and elongation on a sample shall be continuously measured and recorded at interval of approximately 15-degree C from 15 degree C to maximum continuous operating temperature by changing the temperature by suitable means. Coefficient of linear expansion shall be determined from the measured results.	Your proposal is acceptable. Please refer to **Addendum-2** in this regard.

Sl. No.	Reference and Queries of Prospective Bidders	Reply (PGCB)
	Request to revise: The temperature and elongation on a sample shall be continuously measured and recorded at interval of approximately 15 degree C from Laboratory Ambient Temp to designed maximum operating temperature by changing the temperature by suitable means. Coefficient of linear expansion shall be determined from the measured results.by suitable means. Coefficient of linear expansion shall be determined from the measured results. Please confirm.	
13	**Section – 11, Annex 11-4: Test Procedures of Conductor, clause 1.23** Existing Clause: ii) Torsion Test: The purpose of the test is to determine the resilience of the composite core to twisting and to show that after the composite core has experienced the prescribed twisting, it will not crack or have a loss in tensile strength due to the twisting. A sample length that is 170 times the diameter of the composite core being tested is mounted in the gripping fixtures. One grip shall then be fixed so that it does not twist and the other end shall be twisted a full 360 degrees and then fixed in this position for 2 minutes. Once the twist time is completed, the core is untwisted an inspected for any crazing or other damage. If no damage is observed, the composite core is then tensile tested to failure and the final load recorded. For the test to be accepted, the composite core must withstand at least 100% of its rated tensile strength. Two samples need to be completed in order to satisfy the testing requirement. Request to revise: Please change as follow: ii) Torsion Test: The purpose of the test is to determine the resilience of the composite core to twisting and to show that after the composite core has experienced the prescribed twisting, it will not crack or have a loss in tensile strength due to the twisting. For Standard and High Strength Grade composite cores as per ASTM B987 Table 2, a sample shall be cut long enough as to have a gauge length that is 170 times the diameter of the composite core being tested, between the gripping fixtures. For core lengths less than 170 times the core OD, rotate the core to maintain the same rotation to length ratio. For Extra High Strength Grade composite core as per ASTM B987 Table 2, a sample shall be cut long enough as to have a gauge length that is 340 times the diameter of the composite core being tested, between the gripping fixtures. For core lengths less than 340 times the core OD, rotate the core to maintain the same rotation to length ratio. One grip shall then be fixed so that it does not twist, and the other end shall be twisted a full 360 degrees and then fixed in this position for 2 minutes. Once the twist time is completed, the core is untwisted an inspected for any crazing or other damage. If no damage is observed, the composite core is then tensile tested to failure and the final load recorded. For the test to be accepted, the composite core must withstand at least 100% of its rated tensile strength. Two samples need to be completed. This change specifies a protocol for testing of Extra high strength core when that material is needed for future projects.	For core lengths less than 170 times the core OD, rotating the core to maintain the same rotation to length ratio is acceptable. Extra high strength core is not relevant to this project.

Sl. No.	Reference and Queries of Prospective Bidders	Reply (PGCB)
14	**Section – 11, Annex 11-4: Test Procedures of Conductor, clause 1.24** Existing Clause: **D.C. Resistance Test on Stranded Conductor** On a conductor sample of minimum 5m length two contact-clamps shall be fixed with a predetermined bolt torque. The resistance shall be measured by a Kelvin double bridge by placing the clamps initially zero metre and subsequently one metre apart. The test shall be repeated at least five times and the average value recorded. The value obtained shall be corrected to the value at 200C as per relevant IEC/BS/equivalent standard. The resistance corrected at 200C shall conform to the requirements indicated in the STP. Request to revise: Please amend as follows: On a conductor sample of minimum 5m length two contact-clamps shall be fixed with a predetermined bolt torque. The resistance shall be measured by a Kelvin double bridge by placing the clamps initially zero metre and subsequently one metre apart. The test shall be repeated at least five times and the average value recorded. The value obtained shall be corrected to the value at 20°C as per relevant IEC/BS/equivalent standard. The resistance corrected at 20°C shall conform to the requirements indicated in the STP. Corrected the typo error	Please refer to **Addendum-2** in this regard.
15	**Section – 11, Annex 11-4: Test Procedures of Conductor, clause 1.35** **Existing Clause: Galvanic Protection Barrier Layer Thickness** Determination of the minimum thickness of the galvanic protection barrier layer shall be done by microscopic examination and the minimum thickness shall be determined using an optical comparator or equivalent technique. The minimum thickness shall be at least 0.5 mm Request to revise: Determination of the minimum thickness of the galvanic protection barrier layer shall be done by microscopic examination and the minimum thickness shall be determined using an optical comparator or equivalent technique. The minimum thickness shall be at least 0.38 mm As per ASTM B987/B987M-17, revised Galvanic Layer thickness is 0.38mm so please amend the requirement as per revised ASTM B987.	Please refer to **Addendum-2** in this regard.
16	**Section 11B, Clause 11.4.3** It requires "The steel strands shall be hot dip galvanised and shall have a minimum zinc coating of 260 gms/sq.m." As zinc coating quality is related to steel wire diameter, this provision is not reasonable, for example, ACSR Grosbeak's steel wire diameter is 3.089mm and the 3.089mm steel wire shall have a minimum zinc coating of 245 gms/sq.m as per IEC 60888. it is recommended to design steel wire zinc coating quality as per IEC 60888. please confirm.	Please follow the provision of the Bid Document mentioned in Clause 11.4.3, Section 11B of Volume 2.
17	**Section 11B**	

Sl. No.	Reference and Queries of Prospective Bidders	Reply (PGCB)
	APPENDIX 11B.A1/3 The "Aluminium class (AS wire)" in the parameter table is required to conform to the "Ref IEC 61232".but IEC 61232 is an aluminum-clad steel wire standard. Since the product ACSR is a Aluminum Conductor Steel Reinforced, the corresponding standard should be IEC 60889, please confirm.	Please refer to **Addendum-2** in this regard.
18	**Section 11B ACSR & AAAC CONDUCTORS APPENDIX 11B.A1/3 CONDUCTOR - TYPES AND USES 132kV Line** There is no Tensile strength requirement for OPGW of 132kV line. Please provide this parameter.	The properties of OPGW for 132kV line shall be equivalent to the properties of 7x3.25 GS as mentioned in the Bid Document.
19	**General** There is no particular requirement for the drum in the specification, please kindly confirm whether there is any specific requirement for the drum.	Please refer to Section 17. Packing, Protection and Despatch Marking of Volume 2 of the Bid Document in this regard.
20	**General** The dropping point of antiseptic oil is not mentioned in the specification, please confirm.	Your query could not be understood. However, the drop point of grease shall be 150 degree Celsius.
21	**General** Please provide the structural drawings of towers.	All structural drawings of towers have already been provided with the Bid Document. The Bidder may collect the same from Contract Department at PGCB Head Office.
22	**General** Please provide the detailed geological parameters for design of piled foundation.	Refer to Appendix 7.A4 of Section 7-Foundations of Volume 2 of the bid document.
23	**General** Bidders want to know whether or not tower test is required if the tower types provided by the Employer are adopted. Please clarify.	Please refer to Clause 18.1.11, Section 18. Method of Measurement & Payment of Volume 2 of the Bid Document in this regard.
24	**General** Please provide the drawings of Line Crossing Gantry (except for 132kV) for design.	The drawing of the 132kV line crossing gantry has already been provided with the Bid Document. No other type of line crossing gantry is required for this project.
25	**General** Steels of galvanized towers are Fabricated and Non- fabricated. Please clarify whether the spare parts are fabricated or not.	Your query could not be understood.

Sl. No.	Reference and Queries of Prospective Bidders	Reply (PGCB)
26	**General** Please provide the route map and the assembly drawing of insulator string.	All available drawings have already been provided with the Bid Document. The Bidder may collect the same from Contract Department at PGCB Head Office.

The above mentioned clarification will form part of the Bidding Documents.

-End-