

POWER GRID COMPANY OF BANGLADESH LIMITED (PGCB)

**DESIGN, SUPPLY, ERECTION, TESTING AND COMMISSIONING OF ASHUGANJ-BHULTA 400KV
TRANSMISSION LINE AND BHULTA 400/230KV SUBSTATIONS ON TURNKEY BASIS**

**Lot-1: DESIGN, SUPPLY, ERECTION, TESTING AND COMMISSIONING OF ASHUGANJ-BHULTA 400KV
TRANSMISSION LINE ON TURNKEY BASIS (Contract No. PGCB/GoB/400kv/ABTL)**

**Lot-2: DESIGN, SUPPLY, ERECTION, TESTING AND COMMISSIONING OF BHULTA 400/230KV
SUBSTATIONS ON TURNKEY BASIS (Contract No. PGCB/GoB/400kv/BHULTA-SS)**

PGCB Memo No.: 01/PGCB/Sec(Design & QC)/2014/3737 dated June 29, 2014

Contract Nos. PGCB/GoB/400kv/ABTL and PGCB/GoB/400kv/BHULTA-SS

CLARIFICATION NO. 2

AND

ADDENDUM NO. 2

POWER GRID COMPANY OF BANGLADESH LIMITED

DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF ASHUGANJ-BHULTA
400KV TRANSMISSION LINE AND BHULTA 400/230KV SUBSTATION ON TURNKEY BASISCLARIFICATION NO. 2

(Date: September 11, 2014)

After issuance of CLARIFICATION NO. 1 and ADDENDUM NO. 1 dated on August 25, 2014 Clarifications to the queries received from the prospective bidders regarding the bidding document is given below. Also the updated purchaser list of the bidding document is enclosed herewith [Enclosure-1].

Volume 1 of 3

Query 1: Vol. 1, Article 3, Contract Agreement, Section 9, Contract forms

"The Effective Date shall be started from the Contract Signing Date."

Bidder's Deviations/Variations/Clarifications:

The Effective Date shall be the date whichever occurs latest.

1. The issue date of Letter of Credit;
2. Land take over;
3. The Contract Signing date,

Answer 1: Please follow the Bidding document.

Query 2: Vol. 1, Article 3, Contract Agreement, Section 9, Contract forms

The reasonable time for issuing L/C.

Bidder's Deviations/Variations/Clarifications:

As stated in the bidding document, the Advance Payment Guarantee should be issued within 28 days after the Contract signing and the advance payment should be released by L/C. There is no mentioning about the issuing date of L/C, however, we understand the L/C will be issued within 28 days after contract signing also. Please kindly confirm our understanding.

Answer 2: Your understanding regarding time duration for LC opening is not correct. Opening of LC may take more than 28 days after the Contract signing. However, the Employer will try best to open the LC as soon as possible after signing of the Contract.

Query 3: Vol. 1, 39.4, Section 8 - Special Conditions of Contract

The Contract Price for (i) the items for which quantities have been indicated as lumpsum or lot or set and/or (ii) where the quantities are to be estimated by the Contractor shall remain constant unless there is change made in the Scope of Work by Employer. The quantities and unit prices (i) subsequently arrived while approving the Bill of Quantities (BOQ)/Billing breakup of lumpsum quantities/lot/Set and/or (ii) estimated by the Contractor shall be for on account payment purpose only.

Bidder's Deviations/Variations/Clarifications:

Please confirm our following understanding:

1. Our bidding price shall be quoted as per the quantities indicated in the Bid Price Forms.
2. The said bidding price will not change no matter the actual quantity of equipment/service/work mentioned in the Bid Price Forms exceed or less than the quoted quantity during execution period after the contract be awarded.

Answer 3: The clause GCC 39 of Volume 1 of 3 of the bidding document is applicable for "Change in the Facilities". Bidders are requested to quote as per the quantities indicated in the price schedule. Please refer to Clause no. 1.2.2, page 1/1, Section 1, Scope of Work, Volume 2 of 3 of the bidding document. The quantities set out in the price schedule are estimated quantities. They are not the actual quantities. Actual quantities to be determined during execution. The Contract price will be adjusted during execution stage as per actual quantity. However, unit price will be changed only due to price adjustment (if any).

Query 4: Volume 1, The time for completion of whole facilities shall be 20months from the Effective Date. And some place in the tender document mentioned 600days from the Effective Date. Which time will be prevail? For instance ; please refer to Volume 1 Section 9 contract forms (page 9-14) appendix 4- Time schedule and Volume 1 Section 8 SCC (page 8-3) 8.2 of Volume 1.

Please confirm.

Answer 4: The time for completion of whole facilities is 600days from the Effective date.

Query 5: In case there is some discrepancy /difference/conflict between the bid forms of Volume 1 of 3 (section 4 Bid forms) and the bid forms Volume 3 of 3, which one will prevail?

- Answer 5: Please refer to the addendum-1 and addendum-2 in this regard.
- Query 6: In case of participation through Consortium whether payment for each member of Consortium shall be directly paid to them based on certification by the Consortium leader.
- Answer 6: Please refer to item no.10 of Form-JV, page 6-30, Section 6-Employer's Requirements, Volume 1 of 3 in this regard.
- Query 7: In case of participation through Consortium whether each Consortium member can quote and get paid in the currencies of respective home country?
- Answer 7: Please refer to the Answer 6 as mentioned above.
- Query 8: JV/ Consortium Agreement – no format was found in Bidding document. Please confirm whether we can use our standard format.
- Answer 8: Please refer to Form-JV, page 6-28, section 6 – Employer's Requirements. Volume 1 of 3 of the Bidding document.
- Query 9: Volume 1 of 3, Section 1 -ITB 2.1, page 1-3 & Volume 1 of 3, GCC/SCC 1, page 8-2
- As per ITB Government of Bangladesh (GoB) and Power Grid Company of Bangladesh Ltd. allocated necessary funds towards the cost of the proposed works. As per SCC name of financing Institution is given as Asian Development Bank (ADB).
Please clarify, whether project is funded by ADB or Government of Bangladesh (GoB) and Power Grid Company of Bangladesh Ltd.
- Answer 9: Please refer to item no. 7, page 79 of 121 of Addendum-1 in this regard.
- Query 10: Volume 1 of 3, Section 9 -Contract Forms - Appendix 2 (ii), page 9-10
- Please clarify what is C1 & C0 component in the formula given for calculating price adjustment for conductor, earthwire & OPGW.
- Answer 10: Please refer to item no. 8, page 80 of 121 of Addendum-1 in this regard.
- Query 11: We have bought the tender documents of "Construction and Completion of Ashuganj-Bhulta 400 kV Double Circuit Transmission Line and associated 400/230 kV AIS Substation at Bhulta on Turnkey Basis" two weeks ago. We have strong interest to bid this project since we boast advanced technology and rich experience in relevant areas. But we have found the qualified bidders should have at least one contract outside the bidders own country. As a responsible Contractor, we have

many successful EPC projects experiences on transmission line/substation at 345 kV or higher voltage in China instead of abroad. So, we sincerely request to make a modification of the requirements of the bidder's experience, simply delete the Clause iii of iv SPECIAL EXPERIENCE. Which is as follows:

"At least one of the above contracts must be completed outside the bidders own country".

Answer 11: Bidder's qualification requirement shall be as per the criteria mentioned in the Section 3 – Evaluation and Qualification Criteria, Volume 1 of 3 of the bidding document.

Query 12: In case of Joint Venture Bid, we understand that it is not compulsory to purchase Bidding Documents from PGCB in the name of Joint Venture.

Joint Venture Bid will be accepted by PGCB, even if Bidding documents purchased in the name of Lead Partner. Kindly, Confirm.

Answer 12: Confirmed.

Query 13: If a bid is submitted by a joint venture, can the bidder submit two bid securities separately from each JV Partner with total value remain unchanged? Kindly, clarify.

If permitted, then can the foreign partner submit the Bid security in foreign currency and local partner in equivalent Bangladesh Taka with total value remain unchanged?? Kindly, confirm.

Answer 13: Please refer to item no.11 of Form-JV, page 6-30, Section 6 – Employer's Requirements, Volume 1 of 3 of the Bidding document. Also, please refer to Clause ITB 21.3 (a), page 1-13, Volume 1 of 3 of the bidding document.

Query 14: From clause no 1.2.8 & 1.2.9, Section – 3, Volume – 1, we understand that if sub-contractor within employer's country not qualified / technically not responsive, in that case alternative responsive foreign supplier will be Chosen for supply of materials and new CIF price will be derived after deducting 4.5% VAT.

In this case, bidder has initially quoted prices in local currency in price schedule as a supply within Employer's country, whether new derived CIF price will be allowed to be converted & paid in equivalent foreign currency (USD)? Kindly. Clarify.

Answer 14: The derived CIF will be converted to the bidder's quoted foreign currency for payment. However, exchange rate shall be as per the rate of technical bid opening date.

Query 15: Consider a case, where bidder has quoted plants / equipments as a supply from within employer's country and proposed local and foreign suppliers in their Proposed Subcontractor list. At Tender award stage, both these proposed local and foreign suppliers become technically qualified and acceptable to Employer.

Now at execution stage, if the considered local supplier would not perform as per the expectation and in line with the requirement of project completion schedule. In this case, will PGCB allow supplying balance materials from foreign Sub-contractors??? Kindly, Clarify.

If permitted, then whether PGCB will also pay all Custom Duty / Import Duty, VAT, AIT and other levies for this imported plant?? Kindly, clarify.

Answer 15: All of the quoted individual plants / equipments shall be supplied from the same manufacturer. Hence Bidders are allowed to quote the price of individual plants / equipments either in the price schedule from within the employer's country or from outside the employer's country, but Bidders are not allowed to quote the individual plants / equipments price in both the price schedule.

Query 16: From the tender documents and Clarification – 1, we understand that in case of JV, Lead Partner can received foreign currency payment in his bank account directly through LC on behalf of all partners / joint venture.

Whether Lead Partner can also receive Local Currency payment directly in his bank account on behalf of all partners / joint venture? Kindly, Clarify.

Further, Can these local currency payments directly transferred to Lead Partner's account in foreign country? Kindly, Clarify.

Answer 16: Please refer to the Form-JV, page 6-28, Section 6-Employer's Requirements, Volume 1 of 3 in this regard.

Query 17: We would like to highlight the following scope of works / points involved in this project:

- 1) Complete 400kV Tower & Foundation Design Scope
- 2) Tower Testing of each designed Towers
- 3) Right of Way / Access clearances scope
- 4) Hardly 14-15 months working period at site due to flooding / limited approachability at low land areas during rainy seasons

Considering, all above major points, given 20 months completion period from Effective Date for this project is quite short.

We request you to kindly arrange to increase the completion period by further 10-12 months.

Answer 17: The time for completion of whole facilities is 600days from the Effective date as per the requirement of the bidding document.

Query 18: 1) Please, refer Query 60 (A) (1), Page 26 of 50, Clarification – 1.
From the given answer "Confirmed" against point no. (1), we understand that there will be no tax deduction by PGCB from the payment of Contractor's bill as TDS (Tax Deduction at Source) and PGCB (Employer) will pay such amount from their

own fund and issue us the certificate of such payment to Government.
Whether it is in line with tender requirements, please clarify.

2) Please, refer Query 61 (2), Page 27 of 50, Clarification – 1.
No provision made in tender documents regarding time for reimbursement of VAT on EXW.

Whether, bidder shall consider VAT amount reimbursement within 45 days from the submission of relevant documents in Original to PGCB. Kindly, Clarify.

3) Please, refer Query 62 (2), Page 28 of 50, Clarification – 1.
We understand that Import license and permits for the Plant will be obtained by the Employer (PGCB) in his name. Kindly, confirm.

Answer 18: 1) Please refer to the Answer 60 (1) of Clarification no.1 in this regard.

2) The Employer will try best regarding time for VAT amount reimbursement within 45 days from the submission of relevant documents in Original to PGCB

3) Confirmed.

Query 19: Please, refer the Query 52, Page 24 of 50, Clarification – 1.
We understand that LC will be opened for the whole project at a time.
Kindly, clarify when LC will be opened after award of contract i.e. after 2 months / 3 months...etc.
Since, LC opening date is linked with Price Adjustment formulas; this information will enable bidder to assess the period upto which Price Adjustment will be available.
Please, provide LC opening time after award.

Answer 19: Opening of LC may take more than 28 days after the Contract signing. However, the Employer will try best to open the LC as soon as possible after signing of the Contract.

Query 20: Please, refer the Query 55, Page 25 of 50, Clarification – 1.
Consider a case, where 100% plant / equipments quoted as a supplied from within Employer's country. For which payment will be in local currency and LC will not be opened.
In this case, Subscript '1' refers to indices and exchange rate of which date? Kindly, clarify.

Answer 20: The mentioned case of the query is not practical in the context of this bidding.

Query 21: Please, refer the Query 71, Page 31 of 50, Clarification – 1.
Question & Answer not properly understood.
Whether PGCB will also open LC for local currency payment? Please, clarify.

Answer 21: The Employer will open LC for foreign currency payment only.

Query 22: Please, refer the Query 67, Page 31 of 50, Clarification – 1.
It seems that questions raised for evidence of continued eligibility of Bidders.

What kind of certificates from users required to submit for eligibility? Please, clarify / elaborate more.

Answer 22: Bidder's qualification & eligibility requirement has been mentioned in Section 3 – Evaluation and Qualification Criteria, Volume 1 of 3 of the bidding document.

Query 23: As per Cl. No. 2.7 of Section-3 of Vol. 1 (Page: 3-11) for Evaluation and Qualification Criteria, the subcontractor is required to have valid ISO 9001:2008 certificate.
Since, all the subcontractor may not have exact ISO 9001:2008 certificate, we kindly request you to please amend this suitably as ISO equivalent or above standard certificate.
Kindly confirm.

Answer 23: Please follow the requirement mentioned in the bidding document.

Query 24: Section 3 Evaluation & Qualification criteria / 2.6, subcontractors for Power Transformers/ 3-20

As per specification of the bidding document:

At least last ten (10) years' experience in manufacturing minimum same or higher rating equipment in satisfactory service for a minimum of three (3) years as on the date of bid opening.

Bidder's Clarification:

Please clarify whether the power transformer manufacturers are required to demonstrate manufacturing experience either Voltage rating (400kV min.) or Capacity Rating (520MVA).

Answer 24: Power transformer manufacturers are required to demonstrate manufacturing experience of both the Voltage rating and Capacity rating as per requirement mentioned in the bidding document.

Query 25: Section 1 Instructions to Bidders / 19.1, Currencies of Bid & payment/ 1-12 and subsequent clarification reply(Query 53)

As per specification of the bidding document:

Bid currency shall be either USD or the currency of Bidders home country.

Bidder's Clarification:

If Bidder quoting in Joint venture and currency of their home countries are different, then please clarify whether this JV Bidder are allowed to submit their prices in two different home country currencies. Please confirm.

Answer 25: If Bidder quoting in Joint venture and currency of their home countries are different, then JV Bidder are allowed to submit their prices in two different home country currencies. However, limit of the different foreign currencies shall be as per the clause 19.3, page 1-12, Volume 1 of 3 of the bidding document.

Query 26: Kindly refer to your response to clarification no. 1 date 24th August 2014 for Volume 1 of 3 Answer No, 4 page 3 of 121 where it is mentioned that 'Since CIF Price will be converted to EXW Price, domestic preference will be applied for such items. From the clarification we understand that such derived EXW Prices shall in turn will make the corresponding item to be offered from within Bangladesh and hence no Custom Duty or any other applicable tax that would have been imposed on CIF value shall be applicable on such EXW prices during evaluation. On the other hand, the Domestic Preference shall be applicable as specified in the clause 1.2.7 for such items. Please confirm if the understanding is correct.

Answer 26: Please refer to Clause 1.2.9 of Section-3 and Appendix-1, Section-9, Volume 1 of 3 of the bidding document in this regard.

Query 27: Kindly refer to the Section-6 Employer's Requirement Clause no. 3.7 "Test Reports of Conductor & OPGW" where it is mentioned that All the offered Conductor & All the offered OPGW must be type tested in the laboratory as specified in the bidding document. We have the following clarification in this regard.

As Conductor and OPGW type is too specific for the project and hence getting the TTR for the same conductor & OPGW may not be possible 100% and hence any TTR which would have been for any other equivalent OPGW and Conductor of equal or higher specification should be acceptable. Please confirm.

Answer 27: Bidders are requested to follow the requirement of the bidding document. Bids will be evaluated based on the submitted documents.

Query 28: Kindly refer to the Section-6 Employer's Requirement Clause no. 3.8 (b) "Test Reports of Insulator Strings" where it is mentioned that All the offered or Similar Insulator String (as per kN Rating) must be type tested in the laboratories as per the requirement of the bidding document. Does this mean that all the specified tests here must have conducted on 400 kN insulator String also or 300 kN Insulator report shall be acceptable this insulator as 400 kN is a special case requirement and not regularly used in most of the application. Please Confirm



Answer 28: Bidders are requested to follow the requirement of the bidding document. Bids will be evaluated based on the submitted documents.

Query 29: Kindly refer to the Section-6 Employer's Requirement Clause no. 3.9 "Dampers" where it is mentioned that type tests reports from and independent laboratories for following material

- a. Spacer Damper for ACSR Finch Conductor
- b. Vibration Damper for Earthwire

We would like to submit that the Conductor & Earthwire type applicable for this project are too specific and not mandatorily be used in other similar projects globally. Hence, getting the TTR for dampers specifically designed for ACSR Finch or ACSR Dorking earth wire may not be possible. Hence it is to submit that any similar of equivalent/higher size diameter conductor/earthwire damper reports should also be acceptable. Please confirm.

Answer 29: Bidders are requested to follow the requirement of the bidding document. Bids will be evaluated based on the submitted documents.

Query 30: Regarding bidding document 400/230 AIS substation Bhulta project. Referring to JV FORM, SECTION 6 PAGE 6-28 VOULUME1-3, is it compulsory to fill this form or can be replaced it with own JV form format? It seems the mentioned JV form should be completed during contract award. Kindly request to clear it.

Answer 30: Please follow the Form-JV of the bidding document in this regard.

Ans

Volume 2 of 3 (LOT-1: Transmission Line)

Query 1: During design of the river crossing tower we found the following factors that require PGCB's kind attention (clause 8.2.4.3.a)

a. The K1 factor as reliability factor is not applicable to a wind speed which is evaluated from 2% probability of exceedence. We understand that the 1.15 (K1) factor is taken from table 2 of IEC 60826 where the COV is 0.16. But the wind speed 45m/s is taken from BNBC where it is a value corresponds to 2% (0.02) probability of exceedence. This is not applicable to wind speed sourced from BNBC. We would like to request PGCB to reduce this factor to 1.0.

b. A special factor 1.1 is proposed in the technical specification for wind pressure on OHEW. Since there is already a height factor in place with a power law coefficient 0.2, the wind pressure on OHEW will be increased for the higher OHEW elevation compared to that of the conductor and no additional factor due to height is required. We would like to request PGCB to eliminate this requirement.

c. We would like to request PGCB to allow the use of span reduction factor because of the large spans associated with the river crossing section as per IEC

P-1/28

60826 where 10-minute mean wind speed.

d. The drag factor (force coefficient) for insulator string is proposed as 1.4. But as per the industry practices (e.g. IEC 60826 clause 6.2.6.3, AS/NZS 7000) this factor is 1.2. We would like to request PGCB to reduce this value to 1.2.

Answer 1: Please follow the requirement mentioned in the bidding document.

Query 2: SECTION 5- ACCESS-5.1 WAYLEAVES
5.1.1 GENERAL:

"The necessary permission for the removal of obstructions such as trees, houses, etc. and for the permanent removal or guarding of pipes, telegraph, telephone and power lines will be in the responsibility of the Contractor."

Please clarify if the Contractor is responsible to pay money to landowners for obtaining the necessary permissions?

If yes, please clarify how many houses are inside the route and how much the Contractor shall to pay them?

Answer 2: The Contractor is responsible for the said activities.

Bidders are requested to conduct site visit along the route to get them acquainted regarding the extent of compensation. Bidders are also suggested to contact with relevant agriculture, forest and public works department for rate of compensation.

Query 3: APPENDIX 5.A2- ACCESS ROADS:

"Access roads/routes shall be identified by the Contractor themselves as and where necessary, and shall be constructed by them at their own expense and necessary compensations for damages thereof shall also be paid by the Contractor."

Please clarify if the Contractor is responsible to pay money to landowners for obtaining the necessary permissions to construct the access roads?

Answer 3: The Contractor is responsible for the said activities.

Bidders are requested to conduct site visit along the route to get them acquainted regarding the extent of compensation. Bidders are also suggested to contact with relevant agriculture, forest and public works department for rate of compensation.



Query 4: SECTION 8 -TOWERS- 8.2 DESIGN

"The Contractor is require upgrading the design of existing available 400 KV towers (except river crossing and anchor towers, river crossing and anchor towers will be designed by the Contractor under these contract) with BSEN angles and ISO nuts and bolts with respect to grade and size. Outline drawings of towers and complete loading trees including load factor are enclosed with this specification in this regard."

The mentioned drawings and loading trees are not enclosed. Please submit them in order to upgrade the 400 KV towers.

It is obvious that without the above mentioned drawings and loading tress it is not possible to upgrade the 400 KV towers, so please extend the time for submitting the bids.

Answer 4: The loading tree and outline drawings of all type of 400kV overland towers has already been enclosed in Section 19, Volume 2 of 3 (Lot 1: Transmission Line) of the bidding document. However, softcopy of said drawings/documents are enclosed herewith. Hardcopy shall prevail in case of any discrepancy. The backup files (soft copy) of PLS Tower software of overland tower has also been enclosed here which may be used for the outline dimension verification purpose only.

Query 5: SECTION 19 , BID DRAWINGS
Last page of the document , page 370/370

"The loading tree and line and clearance diagram of the relevant 400KV towers [4DL,4D1,4D25(4DXP), 4D45,4DT6T] have not been uploaded here."

It seems that the mentioned loading trees, lines and clearance diagram of 400 KV towers have not attached to the document. Please submit the mentioned drawings and documents.

Answer 5: The loading tree and outline drawings of all type of 400kV overland towers has already been enclosed in Section 19, Volume 2 of 3 (Lot 1: Transmission Line) of the bidding document. However, softcopy of said drawings/documents are enclosed herewith. Hardcopy shall prevail in case of any discrepancy. The backup files (soft copy) of PLS Tower software of overland tower has also been enclosed here which may be used for the outline dimension verification purpose only.

Query 6: SECTION 8 -TOWERS
We have couple of questions regarding wind on tower in High Intensive Case and Gust Wind case. We need your help to resolve same.

Clause number 8.2.4.3 (c) page number 8/9 is reproduced here for your quick





reference,

For lattice towers the following formulae shall be used to calculate the wind loading on the tower.

$$F_t = q_0 K_1 \{H/10\}^\alpha (1 + 0.2 \sin^2 2\psi) (A_1 C_{f1} \cos^2 \psi + A_2 C_{f2} \sin^2 \psi)$$

Where,

$$q_0 = 1/2 \rho V^2$$

$$\rho = 0.12$$

$$V = 45 \text{ m/sec}$$

H = height to the centre of pressure of the panel (m) under consideration

$\alpha = 0.2$ for all load cases except High Intensity Local Wind load case

$\alpha = 0.2$ for High Intensity Local Wind load case where $H=h$, h =total height of the tower

ψ = angle of incidence of the wind to face 1

A_1, A_2 = area of members in face 1 and 2

C_{f1}, C_{f2} = Force coefficient for faces 1 and 2

For flat sided members $C_{ff} = 3.96 (1 - 1.5\phi + \phi^2)$

ϕ = solidity ratio

Q-1 For high intensive wind, you have furnished Uniform wind pressure

a. Transverse value as 4741 Pa for load case "High intensive Local wind 0°"

b. Transverse & Longitudinal value as 2856 Pa for load case "High intensive Local wind 45°"

c. Longitudinal value as 4741 Pa for load case "High intensive Local wind 90°"

We feel that pressure value given here to be multiplied by Exposed area of Once Face members. We mean all factors (height dependant, Solidarity dependant) are included in the given value. We tried to calculate but we could not come to a conclusion. Please guide us.

Q-2 For Gust Factor Load case, you have furnished Gust Response factor = 1.08 or 1.17, etc. (different for each tower)

In clarifications recently issued, you replied that Standard Practice to follow. We are not aware about standard practice followed. Please help us and guide us.

Q-3 Thank you for providing us the legible copies of the loading trees. We found that the wind pressure calculated for HIW as per the technical specification is different from the same mentioned in the loading tree for the HIW and GRF load cases. Please confirm that Bidders need to determine the HIW load cases as per the technical specification which is more practical instead of HIW and GRF load cases.

Answer 6: The wind pressures and factors given in the loading trees of HIW load cases were developed for using in PLS TOWER with specific automated wind feature that complies with technical specification. The use of loading trees regarding the HIW and GRF will be incorrect unless some required adjustments are made inside the PLS TOWER model. Hence, the HIW and GRF loading trees are deleted through addendum-2. Bidders are required to calculate the HIW loading as per technical specification and apply the same by developing additional loading trees.

Query 7: As per Addendum 1, Lot 1: TL, Enclosure -3, P 1/6 & P 2/6 the drawings of 400 KV River Crossing Suspension Set & Tension Set shows these are of Single conductor configuration.

But as per Price schedule & Technical details provided in the (Appendix 10.A1/1) 400 KV Line (River Crossing Portion) conductor configuration for Insulator sets should be of Twin Bundle conductor configuration. Please confirm whether river crossing section of line is with single conductor or twin conductor.

Answer 7: River crossing suspension set & tension set shall be of twin type. Contractor has to design the suspension set & tension set considering twin conductor arrangement. Please refer to addendum-2 in this regard.

Query 8: Volume 2 of 3, Section 1: Appendix 1.A1 - (2), Page 1/4 & Volume 3 of 3, Price Schedule B1, A7.1

As per scope of work 230 kV line is with one earthwire & one OPGW, whereas in price schedule we have to quote for two OPGW for 2 km of route length. Please clarify exact requirement of 230 kV line (i.e 2 OPGW or 1 OPGW & 1 Earthwire).

Answer 8: Two OPGW will be used for 230kV four circuit transmission line.

Query 9: Volume 2 of 3, Section 1: Scope of Work 1.2.2, Page 1/1 & Volume 3 of 3, Price Schedule B1, A2.1, A7.1.1, A7.1.2 & A7.1.3, A7.2

As per scope of work route length of ASHUGANJ-BHULTA 400 kV DOUBLE CIRCUIT TRANSMISSION LINE is given as 70 km.

Route Length quantity shown against Survey & Route clearance is 72 km & quantity against supply of conductor, earthwire & OPGW it is given as $68+2=70$ km.

Please furnish exact route length of line.

Answer 9: 400kV transmission line route length is 70km (approximately) and 230kV transmission line route length is 2km (approximately).

Query 10: Volume 2 of 3, Section 11, Conductor- 11.6.20, Page 11/13 & Volume 2 of 3, Section 13, Appendix 13.A1/1-2, Page 13/10 & 13/11

The spacing between 2 bundle conductor for spacer damper is mention as 450 mm in section 11, whereas in Appendix 13.A1/1 & 13.A1/2 it is mention as 400 mm. Please clarify.

Answer 10: The spacing between 2 bundle conductors in a phase is 400mm for 400kV transmission line & 450mm for 230kV transmission line.

Query 11: Volume 2 of 3- Section 8-8.2 DESIGN, page 8/3

As per this clause the Contractor is require upgrading the design of existing available 400kV towers (except river crossing and anchor towers, river crossing and anchor towers will be designed by the Contractor under these Contract) with BSEN angles and ISO nuts & bolts with respect to grade and size. Outline drawing of towers and complete loading trees including load factor are enclosed with this specification in this regard.

The documents pertaining to 400 kV tower design mentioned above are missing in the specification, kindly furnish the same.

Answer 11: The loading tree and outline drawings of all type of 400kV overland towers has already been enclosed in Section 19, Volume 2 of 3 (Lot 1: Transmission Line) of the bidding document. However, softcopy of said drawings/documents are enclosed herewith. Hardcopy shall prevail in case of any discrepancy. The backup files (soft copy) of PLS Tower software of overland tower has also been enclosed here which may be used for the outline dimension verification purpose only.

Query 12: With reference to addendum-1 answer no. 10 (e), we understand that we can only reduce middle cross arm width (maintaining circuit to circuit distance at middle cross arm level), maintaining adequate clearance at all levels as per outline drawing. Accordingly we can alter vertical distance between top/middle/bottom cross arms if required. However, panel geometry & panel heights shall remain same below bottom cross arm level. Please confirm whether our understanding is correct.

Answer 12: The distance between middle cross arm to top cross arm or middle cross arm to bottom cross arm may require to be adjusted to maintain adequate clearance if the Contractor intends to reduce the middle cross arm width. Height of bottom cross arm level from tower base must be kept unaltered.

Query 13: In case of high intensity local wind condition, we interpret it as it has to be multiplied with relevant gust factor as indicated in loading trees along with load factor. i.e. intensity wind pressure x gust factor x load factor. This wind pressure will be applied constant over entire tower height. For all other load cases wind on tower shall be calculated as per formula mentioned as per clause 8.2.4.3 (c) wind. Please confirm whether our understanding is correct.

Answer 13: Please refer to the Answer 6 as mentioned above in this regard.

Query 14: In outline diagram furnished with the specification, steel grade is mentioned as given below.

SS-400 (KS D 3503) : L45x4 – L90x6 angles & all plates SS-540 (KS D 3503) : L90x7 up angles.

However, now as per specification requirement we have to upgrade design of tower as per BSEN angles & ISO bolts-nuts. Please confirm whether there is any restriction of steel grade on flange size as was earlier for SS400 & SS540 grade steel.

Answer 14: Please refer to the corresponding British Standard and Appendix 8.A6, page 8/46, Volume 2 of 3 (Lot 1: Transmission Line) in this regard.

Query 15: In case of outline drawing furnished for body extension, it is noted that panel height is 0.5m short in height i.e. for example if we check E4.5m Extension for 4D1T tower, then actual panel height is 4m + 0.5m muffing. (height from GL will be 4.5m) In our opinion, if it is 4.5m body extension then actual panel height shall be 4.5m & height from GL should be 5m.
Please clarify.

Answer 15: Please follow the outline diagram of the bidding document.

Query 16: Please furnish reference drawing of fall arrestor system to be used for river crossing & anchor tower.

Answer 16: Fall arrestor system is required to be designed by the Contractor as per the requirement mention in the bidding document.

Query 17: Please furnish gust factor to be consider for 4DL tower in case of high intensity local wind case.

Answer 17: Please refer to the Answer 6 as mentioned above in this regard.

Query 18: For Loading Trees furnished with specification,

- We understand that Wire Loads for conditions except 'High Intensive Local wind case' and 'Gust Response Factor cases' are including Load factor indicated in respective condition.
- Wind Pressure on Tower in 'High Intensive Local Wind case' is without Load Factor indicated in respective condition.
- You have furnished loading trees, for
 - Case no. 60 to 62 for Tower type 4D1 & 4D25,
 - Case no. 62 to 64 for Tower type 4D25 & 4DT6

In which case as we understand that the gust response factor furnished is to be applied additionally in wind on tower and no wire loads to be considered on cross-arms. Please confirm.

Answer 18: a. Your understanding is correct

b. & c. Please refer to Answer 6 as mentioned above in this regard.

Query 19: Kindly refer to the tension and suspension fitting drawings issued by you for the river crossing portion where it is observed that the same are applicable to the

single conductor arrangement. However, in current project the circuit is twin conductor/phase. We have the following clarification in this regard

a. Is the given drawing is the typical drawing that need to be followed for designing the suspension and tension string for twin conductor arrangement in line with the given specification requirement. Please confirm.

b. If answer to the above query is no, then please provide the drawing that shall be applicable to the twin conductor configuration.

Answer 19: Please refer to the Answer 7 as mentioned above in this regard.

Query 20: SECTION 7 –FOUNDATION

Please confirm whether pile design is to be done considering skin friction or end bearing?

Answer 20: Pile design is to be done considering both the skin friction and end bearing.

Query 21: Please confirm whether permanent steel casing is permitted in pile in case of loose soil.

Answer 21: Permanent steel casing is permitted in pile in case of loose soil subject to approval from Design & Quality Control Department, PGCB prior to commencement of work. However, price of the steel casing shall deem to be included in the quoted price.

Query 22: In case of foundation forces furnished for 230kV towers (Four circuit towers), case description (i.e. NC, Security) is not mentioned. Since foundation FOS is different for both condition, please furnish case description to apply relevant factor of safety for foundation design.

Answer 22: The 'FOUNDATION STRENGTH FACTOR, 230kV Four Circuit' table in APPENDIX 8.E1/1, Page 8/54 of the bidding document has been replaced. Please refer to the addendum-2 in this regard.

Query 23: Please furnish minimum diameter & maximum length of pile permitted.

Answer 23: The minimum diameter of pile is 500mm. The maximum length of pile permitted will be based on the actual site condition and soil report.

Query 24: Kindly confirm whether we can use precast piles.

Answer 24: Precast pile is not allowed for this project.

Query 25: With reference to foundation factor strength factor given on page 7/29 'Appendix-7.A2, please clarify following. It is mentioned that foundation strength factor shall

be used to increase ultimate tower reactions on the foundation for the design of foundation. That mean
ultimate foundation load = Ultimate Tower reaction (including load factor) x foundation strength factor. Please confirm whether our understanding is correct.

Answer 25: Your understanding is correct.

Query 26: Please confirm whether factor of safety as mentioned for pile foundation (FOS=1.5, Appendix no. 7-A4) applies for normal, security as well as high wind local condition.

Answer 26: The mentioned factor of safety for all types of foundation (1.5) is the minimum requirement and applies for normal, security as well as high wind local condition.

Query 27: Ref: Clar – 5, dtd 23rd Aug-14 / Query 38, Page 47 of 50, Clarification - 1)

1) Please, refer the clause no. 7.4.4 of Volume 2 of 3 (Technical Specification for Lot: 1 Transmission Line)

We understand that all galvanized tower steel upto 3 meter or upto maximum anticipated flood level from ground level (whichever is maximum) shall be protected by Coal Tar Epoxy Coating.

Kindly, confirm whether our above understanding is in line with tender requirements or not.

2) Further, from the given answer, we understand that it is recommended to apply Epoxy Coating on Tower Steel at Site Location. Kindly, confirm.

Answer 27: 1) & 2) Please refer to clause no. 7.4.4, page 7/21, Volume 2 of 3 of the bidding document. (Lot 1: Transmission Line)

"All tower steelwork below the maximum anticipated flood level shall be protected by Coal Tar Epoxy coatings. All steelwork to a minimum height of 3m above ground level shall be protected by factory application with the remainder applied on site, including the stub above concrete level."

Volume 3 of 3 (LOT-1: Transmission Line)

Query 1: SCHEDULE B:

A3 Foundations

A3.40 Tower Type 2DT6

A3.41 Tower Type 2QL

A3.42 Tower Type 2Q15

A3.43 Tower Type 2Q30

A3.44 Tower Type 2QT6

Please clarify type of foundation and soil category for the 230kV towers.

Answer 1: Since the quantity of 230kV towers are small in compare to total tower quantity hence category/types of foundation for 230kV towers has not been given.

Query 2: SCHEDULE B

A8 MISCELLANEOUS


A8.4 Miscellaneous Rates for works certified by the Engineer in accordance with method of Payment

(a) Additional Excavation

For additional excavation soil category shall be clear. So it is better that the Contractor submit the Excavation price for different categories of soils.

Answer 2: The item 'A8.4 (a), Additional Excavation' in the bidding document is applicable for special circumstances. The bidder may consider average soil category for this purpose.

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



POWER GRID COMPANY OF BANGLADESH LIMITED

DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF ASHUGANJ-BHULTA 400KV
TRANSMISSION LINE AND BHULTA 400/230KV SUBSTATION ON TURNKEY BASISCLARIFICATION NO. 2

Lot-2 Substation

Clarifications to the queries received from the prospective Bidders regarding the Bidding Documents are given below:

	<u>Volume 2 of 3 (Lot-2, Substation)</u>
Query 1:	<p>As per Section 12 Clause 12.3.2 ;Ground Conditions, Foundations and Site Investigation(a) Fill Sites ; Fill will be placed by the Bidder. On fill sites where the depth of fill exceeds 3 meters the Contract assumes piled foundations shall be installed below buildings.</p> <p>If piled foundations are found to be unnecessary in the Final Site Investigation Report, a reduction in Contract value shall be agreed on the basis schedule rates</p> <p>As per the tender documents, in case the quoted piles are found unnecessary base on the final site investigation report, the contract value shall be deducted on the basis of schedule rate of pile. However, we didn't found the description of schedule rates of pile foundation in the Bidding documents, and there is no separate item for pile foundation in Bid Prices Form. Where can we fix the scheduled rate of pile?</p> <p>Please clarify it, thanks.</p>
Answer 1:	The related specification has been corrected. Please refer to Item No. 1, Item No. 2 & Item No. 3 of Addendum No. 2.
Query 2:	<p>As per Query 26 and Answer 26, CLARIFICATION NO.1; Lot-2 Substation [Contract No. PGCB/400KV/BHULTA-SS]</p> <p>"Query 26: General: We assumed that the layout provided with tender document shown is tentative only, and can be optimized at the best possible level for bidding purpose and during detailed engg.</p> <p>Answer 26: Yes, the layout provided with tender document is tender purpose only and bidders have to their proposal according to this layout drawing. However this layout will be reviewed and optimized during detailed engineering after contract award.</p> <p>Please kindly confirm our following understanding:</p> <ol style="list-style-type: none"> Does it mean the Bid will be rejected if the Bidder's proposed layout and sectional drawing (for bidding purpose) not the same with the said drawings in tender document The layout drawing can be optimized during detailed engineering after contract award, however, the contract price will not be changed as per SCC 39.4, volume 1 of 3.
Answer 2:	<ol style="list-style-type: none"> Proposal shall be as per bid document (drawings & specification). Alternative solution/Bid is not acceptable as per Clause no. ITB 13.1 of Section 2 of volume 1 of 3 of the Bid Document. Yes, the layout drawing may be optimized during detailed engineering after contract award; however, due to optimization if any change in BOQ is made and found acceptable the employer then contract price shall be adjusted as per clause GCC 39.
Query 3:	<p>As per Section 14, Appendix 14.A.2 ;Item No 1M2 PABX (14/26)</p> <p>Drawing PGCB/BHULTA/400KVSS/13;</p> <p>The replacement of the existing PABX of Ghorashal and upgrade the existing PABX of Rampura are under the scope of this tender or not?</p>

	Please confirm this point because these two locations are neither Ashuganj nor Bhulta and also because the description of item 1M2 PABX of Schedule A does not include these two locations and the Price Schedule B1 item 1M2 does not mention anything about these two locations Ghorashal and Rampura.																																			
Answer 3:	Yes, the replacement of the existing PABX of Ghorashal and upgrade the existing PABX of Rampura are under the scope of this tender as per section 14 of volume 2 of 3 (lot2) of the bid document. Please refer to item no. 26 of addendum no.2																																			
Query 4:	Please provide the future planning scheme of the Bhulta 400kV/230kV substation.																																			
Answer 4:	Future space provision may be considered 5 diameters for 400kV & 2 diameters for 230kV.																																			
Query 5:	Please provide the access system study of the Bhulta 400kV/230kV substation.																																			
Answer 5:	In this stage it is not available. But during execution it will be available/ accessible as per requirement after contract award.																																			
Query 6:	If phase R & Y in the bidding document equivalent to phase C & A (IEC standards, phase sequence ABC).																																			
Answer 6:	RYB is equivalent to ABC regarding phase sequence.																																			
Query 7:	<p>As per Volume 2/3 – Page 1/4:</p> <p>Equipment supplied under this Contract shall be suitable for the following system conditions</p> <table><tr><td>Nominal system voltage between phases</td><td>kV</td><td>400</td><td>230</td><td>33</td></tr><tr><td>System frequency</td><td>Hz</td><td>— 50 —</td><td></td><td></td></tr><tr><td>Rated voltage between phases</td><td>kV</td><td>420</td><td>245</td><td>33</td></tr><tr><td>Lightning Impulse withstand Level</td><td>kVp</td><td>1550 for Bus PI 1425 for other equipment</td><td>1050</td><td>170</td></tr><tr><td>Switching Impulse withstand Level</td><td>kVp</td><td>1175(Ph-E) for Bus PI 1050(Ph-E) for other equipment</td><td>—</td><td>—</td></tr><tr><td>50Hz withstand 1 minute</td><td>kV</td><td>—</td><td>450</td><td>70</td></tr><tr><td>Symmetrical short-circuit current (1 sec)</td><td>kA</td><td>50</td><td>63</td><td>25</td></tr></table> <p>But in volume 3/3 – Page SA-28, the short circuit current at 230kV side is 50kA, so if the rated short circuit current (Ith)/1s of all 230kV equipment can be same as 50kA.</p>	Nominal system voltage between phases	kV	400	230	33	System frequency	Hz	— 50 —			Rated voltage between phases	kV	420	245	33	Lightning Impulse withstand Level	kVp	1550 for Bus PI 1425 for other equipment	1050	170	Switching Impulse withstand Level	kVp	1175(Ph-E) for Bus PI 1050(Ph-E) for other equipment	—	—	50Hz withstand 1 minute	kV	—	450	70	Symmetrical short-circuit current (1 sec)	kA	50	63	25
Nominal system voltage between phases	kV	400	230	33																																
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50Hz withstand 1 minute	kV	—	450	70																																
Symmetrical short-circuit current (1 sec)	kA	50	63	25																																
Answer 7:	The rating of short circuit current for 230kV system at Bhulta substation mentioned in Volume 2/ 3 –Page 1/ 4 is not correct. Please refer to Item no. 27 of this clarification and also please refer to Item No. 1 (b) of Addendum no. 1 & Item No. 5 of Addendum No. 2.																																			
Query 8:	According to the local outdoor weather conditions, the area does not need heating system, so the description of the heating part in the bidding documents is not necessary to be considered.																																			
Answer 8:	Room heating is not applicable. Please refer to item no. 6 of addendum no.2																																			
Query 9:	According to the local outdoor weather conditions, there is no desert sand in the area. So the description of sand prevention measures in various equipment and materials in the tender documents is not necessary to be considered.																																			
Answer 9:	Sand prevention measures are to be provided as per bid requirement.																																			
Query 10:	The ventilation fans and ducts for battery room need to be anticorrosion. Except 4mm PVC Liner pipe, glass fiber reinforced plastic also can be used.																																			
Answer10:	Glass fiber reinforced plastic is also acceptable for ventilation fans and ducts for battery room.																																			

Query 11:	In Vol 2 the 400kV overhead transmission lines shall be protected by a full scheme of Distance relay with PUTT/POTT scheme as a main 1 and another full scheme of Distance relay with PUTT/POTT scheme as a main 2. In vol 3 400 kV Line Distance Protection Ashuganj - Bhulta (Main 1) 400kV Line Differential Protection for Ashuganj - Bhulta (Main 2). The two discriptions are different. Please clarify.
Answer11:	Please refer to Item No. 8 of Addendum no.2. The bidder shall also fill the data for 400kVdistance protection (main 2) as per appendix 10.1 & 10.2 of Schedule E of volume 3 of 3 (lot-2)
Query 12:	In Vol 2 PGCB/BHULTA/400KVSS/ 14 drawing, there are operator console and a mimic board in Main Control Building showing in this drawing, but there is no description about the mimic board in the specification. Please make sure if the operator console and mimic board are needed in this project since no operators are necessary in the new substation control rooms.
Answer12:	The mimic diagram shows the drawing in display (monitor) for SAS which shall be of the size of 55 inch LED type wall mounted display (monitor) or multimedia projector.
Query 13:	In Volume 2 SECTION 8 8.4.1& 8.5 "The battery shall be of the high performance Nickel Cadmium pocket plate type , Each battery charging equipment shall be of the thyristor controlled automatic constant voltage type with current limit facilities. we suggest that the battery shall be of the vale regulated lead-acid type, and the battery charging device shall be of High frequency switch type
Answer13:	The vale regulated lead-acid type, and the battery charging device will be of High frequency switch type is not acceptable. The battery shall be Nickel Cadmium pocket plate type & charger shall be thyristor controlled automatic constant voltage type with current limit facilities as per the bidding document.
Query 14:	In Volume 2 SECTION 10 10.1 "All HV breakers, motorized disconnectors, tap changer, etc. shall be controlled form NLDC through the Gateway of the substation automation system using IEC 60870-5-101 protocol." But in SCHEDULA Section-I IN, it used IEC 60870-5-104. Please clarify.
Answer14:	The mentioned protocol IEC 60870-5-101 in clause 10.1, section 10 of volume 2 of 3 (lot-2) shall be IEC 60870-5-104. Please refer to item no. 4 of the Addendum No.2 (Lot-2, substation).
Query 15:	<p>Volume 2 SECTION 10, Clause 10.1"Necessary modification in the software and hardware at NLDC master station is also to be done under this contract to accommodate all the new system extended under this contract."</p> <p>Volume 3, SCHEDUL A, Section-1. " Design, supply, delivery, installation, testing & commissioning of hardware and software to provide the telecontrol & telemetering facilities required at the existing National Load Despatch Center(NLDC) at Rampura and back up station at Biddyut Bhaban for integration of complete new 400/230kV substation. All required electrical signals shall be transmitted to the NLDC through the Industrial Gateway of the substation automation system. All HV breakers, motorized disconnectors, tap changer, etc. shall be controlled form NLDC through the Gateway of the substation automation system using IEC 60870-5-104 protocol. All necessary modification works in the software of master station of NLDC at Rampura & Biddyut Bhaban are to be carried out."</p> <p>Please clarify the way of communication of Bhulta station.</p>
Answer15:	The way of communication shall be of both optical fiber & PLC where optical fiber communication be considered as main and PLC as backup.

Handwritten signatures and initials

Query 16:	<p>As per Clause 4-4.7.1 of Volume 2 of 3;</p> <p>4.7 VOLTAGE CONTROL</p> <p>4.7.1 General</p> <p>Transformers shall be provided with tap changers for varying the effective transformation ratio. Control schemes of on load tap change shall utilize 110V ac centre tap earthed voltage derived from the 415V, 3 phase, 4 wire system. Phase failure relays shall be provided to ensure a secure supply.</p> <p>Tap winding and On Load Tap Changer shall be installed at High Voltage side to regulate the Low Voltage side within required system voltage maintaining range, which is +/- 10%.</p> <p>Number and range of taps shall be as called for in the Schedule A of Requirements.</p> <p>All terminals shall be clearly and permanently marked with numbers corresponding to the cables connected thereto.</p> <p>Tap positions shall be numbered consecutively, ranging from one upwards. The tap positions shall be numbered so that by raising the tap position the LV voltage is increased.</p> <p>As it is described in the Sec4-4.7.1, Please confirm if the autotransformer is VFVV, and when the tap position is neutral, the above functions can be realized.</p> <p>Query: As it is described in the Sec4-4.7.1, Please confirm if the autotransformer is VFVV, and when the tap position is neutral, the above functions can be realized.</p>
Answer16:	<p>The autotransformer shall be variable Flux Variable Voltage (VFVV) and the tap winding (tap position) shall be at high voltage side for regulating low voltage. The above specification shall be maintained without placing the tap winding (tap position) at neutral. In general the tap winding (tap position) is used at neutral side for the turn ratio of 1:2 & above. Therefore, it is preferable not to place at neutral, but it is preferable and also PGCB's practice that the tap winding (tap position) shall be in high side to control low voltage side.</p>
Query 17:	<p>As per Appendix-A2-Clause 16 of Volume 3 of 3;</p> <p>16.1 Total range of variation of on load transformation ratio (on HV side) as sl. nos. 4:</p> <ul style="list-style-type: none"> - Ratio % ± 10 - Size of steps % 1.25 <p>16.2 Type of control: On load local, remote and supervisory electrical and hand operation</p> <p>Query: The above only states the tap on HV side, but the tap positions are not defined. Please kindly clarify of this.</p>
Answer17:	<p>Tap position shall be as per specification mentioned in the document which shall be (0, - 8) i.e. (1, 2, 3, ...17).</p>
Query 18:	<p>As per Sec 6-1-2.8, page:7 of Volume 1 of 3;</p> <p>It is described that the transformer shall be tested under an independent testing laboratory,</p> <p>Query: Is there any requirement of the transformer voltage level and capacity?</p>
Answer18:	<p>The voltage level & capacity has already been mentioned in the document. Please refer to clause no. 2.8, 1st & second line of section 6 of volume 1 of 3 (i.e. Following type test certificates of the equipment of similar or higher specifications (higher voltage & higher capacity) required by the bid shall be submitted as per relevant IEC/BS and shall be from independent testing laboratory.)</p>
Query 19:	<p>As per Volume 2 of 3 Sec 16;</p>

	<p>Detail of the Specification: As to the design of shunt reactor, the neutral insulation level is not specified in the technical specification which is the key data for the design process.</p> <p>Query: Please specify of the neutral insulation level of the shunt reactor.</p>
Answer19:	The neutral insulation level of the shunt reactor is 38kV as power frequency withstands voltage.
Query 20:	Site visit investigation and data collection are necessary for the bidder to prepare a complete technical proposal;
Answer20:	The bidder can visit & access the site for the requirement of bidding purpose with its own cost. please refer to the item no: 29, page: 65/121, Clarification no: 01 (Lot-2, substation)
Query 21:	Please clarify what is the value of 3ph reactive power (Q or MVAR) and inductive current.
Answer21:	The 400kV line (Ashuganj- Bhulta) has not been constructed yet. The line is also under construction. The data may be available during execution after contract award.
Query 22:	What is the method of earthing for shunt reactor earthed (solidly earthed or non solidly earthed)?
Answer 22:	The system is solidly earthed as per specification mentioned in section 1 of volume 2 of 3 of the bid document (lot2).
Query 23:	Please confirm the GPS coordinate of Bhulta site as (23°46'08.4"N 90°34'17.9"E)
Answer 23:	The GPS coordinate of Bhulta site is not finalized yet. Please refer to Item no. 7 page no: 4 & Item no. 21 (page no: 63) of Clarification no. 1 (lot 2, substation).
Query 24:	When we visited Bhulta site for survey, we found there is existing OHL passing the site as well as steel tower in the site. Please clarify whether PGCB has got a plan to remove those facilities.
Answer24:	The existing OHL is the part of Transmission line contract. All the other condition mentioned in the document is under this contract (Lot 2 Substation).
Query 25:	Please confirm the GPS coordinate of Ashuganj site as (24°02'15.7"N 91°00'28.8"E)
Answer25:	The GPS coordinate of Ashuganj site is not finalized yet. Please refer to Item no. 7 page no: 4 & Item no. 21 (page no: 63) of Clarification no. 1 (lot 2, substation).
Query 26:	Please provide the design limitation and withstanding of fault current for earthing transformer.
Answer26:	The fault level at 33kV level is 25kA for 1 sec.
Query 27:	<p>Addendum no 01, of Volume 2 of 3; As per Item no-1 (b), 'Symmetrical short-circuit current (1 sec) for 230kV shall be 50kA instead of 63kA' As per Item no-4, 'Switchgear rating of 50 kA for 400kV and 63 kA for 230 kV systems'.</p> <p>Please clarify and confirm which current level is correct for 230kV. (50kA or 40kA)</p>
Answer27:	The short circuit current rating mentioned in the Item no. 1 (b) of Addendum No. 1, of Volume 2 of 3 is correct. Please refer to Item No. 5 of Addendum No. 2, Volume 2 of 3 (Lot-2, Substation).
Query 28:	<p>Ref: Tech Specification -Section IV, Power Transformers Cl. 4.3.1(ii), Page 4/5;</p> <p>Query: Type of cooling for 520 MVA auto Transformer is ONAN/ONAF. Due to higher rating & losses in this transformer cooler bank size will be very big & will be uneconomical. ALSTOM suggest ONAN/ONAF/OFAF type cooling for this transformer which will reduce overall dimension and provide better cooling for this transformer.</p>

Answer28:	OFAF is not acceptable. As per bid document rating shall be 400/520MVA (ONAN/ONAF) as per bid specification.
Query 29:	Ref: Tech Specification -Section IV, Power Transformers Cl. 4.3.1(ii), Page 4/5: Query: ALSTOM has considered ONAN/ONAF/OFAF type cooling for this transformer. Rating will be 312/416/520 MVA respectively for ONAN/ONAF/OFAF cooling.
Answer 29:	OFAF is not acceptable. As per bid document rating shall be 400/520MVA (ONAN/ONAF) as per bid specification.
Query 30:	Ref: Tech Specification -Section IV, Power Transformers Cl. 4.3.4(ii), Page 4/6, Vol-2 of 3: Query: Short circuit test will not be conducted on this transformer. Only calculation will be submitted in detail engg. stage (if required).
Answer30:	Short circuit test will not be conducted on the transformers to be supplied under this contract. However all transformers shall be capable of withstanding, on any tapings and without damage, the thermal and dynamic effects of external short circuits under the conditions stated in IEC 60076 Part 5. Test report or calculation shall be submitted with the tender as to extend to which the manufacturer has proved or is able to prove, either by calculation or test, the ability of the specified Transformers to withstand short circuit
Query 31:	Ref: Tech Specification -Section IV, Power Transformers Cl. 4.3.6, Page 4/8: Query: Complete impedance pattern is not given in specification. ALSTOM suggest following pattern: HV-IV (Rated tap): 13% (+/-10% Tol.) @ 520 MVA Base HV-TV (Rated tap): 45% Approx @ 520 MVA Base IV-TV (Rated tap): 28% Approx @ 520 MVA Base
Answer31:	HV-IV (Rated tap): 13% (+/-10% Tol.) @ 520 MVA Base is acceptable as per bid document. But at HV-TV (Rated tap) & IV-TV (Rated tap) percentage impedance is not required specification, it is manufacturer design data.
Query 32:	Ref: Tech Specification -Section IV, Power Transformers Cl. 4.4.2, Page 4/9: Query: Maximum flux density in any part of magnetic circuit should not exceed 1.9 Tesla seems higher. Please reconfirm flux density @ 100% rated voltage & rated tap position. Alstom suggest 1.727T at 100% rated voltage & frequency.
Answer32:	Acceptable
Query 33:	Ref: Tech Specification -Section IV, Power Transformers Cl. 4.5.1, Page 4/11: Query: Transformer tank paint scheme to be provided.
Answer33:	Paint shall be Munsell 5Y-7/1.
Query 34:	Ref: Tech Specification -Section IV, Power Transformers Cl. 4.9.3, Page 4/22: Query: ALSTOM scope will be only upto Transformer with Bushings. Cable Box (if applicable) will not be in ALSTOM scope of supply.
Answer 34:	Cable Box is not required.
Query 35:	Ref: Tech Specification -Section IV, Power Transformers Cl. 4.10, Page 4/25: Query: Cabling between Power Transformer & RTCC from control room will not be in ALSTOM scope.
Answer 35:	Cabling between Power Transformer & RTCC from control room is under this scope of work.
Query 36:	Ref: Tech Specification -Appendix A2, Power Transformers sl. No. 13, Page SA-28: Query: duration of fault level to be specified.
Answer36:	duration of fault level shall be 1 sec.

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Query 37:	Ref: Tech Specification -Appendix A2, Power Transformers sl. No. 14, Page SA-28: Query: Impedance between HV-Tertiary, LV-Tertiary @ Rated MVA is not specified. ALSTOM suggests impedance as per pt. No (4).
Answer37:	Please refer to item no. 31 of this clarification.
Query 38:	Ref: Tech Specification -Appendix A2, Power Transformers sl. No. 25, Page SA-29. Query: Complete CT details is required.
Answer38:	Already provided. Please refer to page:SA-29, item.25,schedule-A. Vol-3 of 3 (Lot 2 substation).
Query 39:	Ref: Tech Specification -Appendix A2, Power Transformers sl. No. 27, Page SA-29: Query: No. of Cooling bank is not specified. ALSTOM will consider 2 X50% Cooler bank.
Answer39:	Number of cooling banks shall be as per the requirement of getting 520MVA (ONAF), which depends on manufacturer design.
Query 40:	Plant layout is required for maximum overall dimension. Dimension constraints (if any) to be specified. Please also provide single line diagram.
Answer40:	Already provided. Please refer to drawings at Vol-2 of 3(Lot-2 substation).
Query 41:	Ref: Price Schedule : Transformer sr No. 43: Query: 1 Sets of tap changer spares required, please clarify the parts of tap-changer required for spares so that all bidders will be at par, as it is imported item.
Answer41:	Set of spares for tap changer shall be 10% of the items which will be consumed or become inoperative very frequently (such as Micro Switch, Transducer, Gaskets, Sealing materials etc.)
Query 42:	Please provide the complete specification for Shunt Reactor.
Answer 42:	Please refer to item no: 52 & 59 of clarification no. 1 (Lot-2 substation).
Query 43:	In price variation formula, there is co-efficient for Zinc metal, which is not in line with IEEMA and other PVC formula, kindly relook and confirm the PVC formula.
Answer43:	Co-efficient for Zinc metal shall be from London Metal Exchange (LME) as per bid document.

MS AW QAS

List of Ashugonj Bhulta Project-2014 Bidding Document Purchaser Firms:

Sl no.	Name & Address of firm	Email	Mobile & Tel.	Local Agent Name/Address
01	TBEA Co., Limited Attn: Mr. Liu Shengying	tbea.liushengying@gmail.com	Mob:01713244745 Tel:+8618624415513 Fax:	Mr. Sajal Kumar Saha Dhaka Mectech Solution Ltd.141/1 Nawabpur Road Lalmiah Electric Market. Dhaka
02	Simenes Ltd ZN Tower (Siemens House) Road # 8, Plot # 2, Gulshan Avenue, Gulshan-1. Attn: Mr. H.N. Ashequr Rahaman	Bishwajit.Das@siemens.com	Mob: 01914700063 Tel: +880-2-9893536 Fax: +880-2-989-5422	Mr. Shafiqul Islam
03	Shandong Electric Power Construction No.2 Company. China Attn:	daudarmd@gmail.com	Mob: 01712815160 Tel: +880-2-9561926 Fax: +880-2-9561927	Md. Daudar Rahman Creative Engineers Ltd. Amin Court (3 rd Floor), 31. Bir Uttam Dhaheed Ashfaqus Samad sarak. Motijeel C/A, Dhaka-1000
04	KEC International Limited Building No. 9A, (8 th floor) DLF Phase-III, Gurgaon- 122002 Attn:Mr. KK Sinha		Mob: Tel:+91-124-6757555 Tel: +880-2- 8415458 Fax:+91-22-66670260	Mr. Saah Uddin House No.# 472, (1 st Floor). Road# 08, DOHS. Baridhara, Dhaka-1206.
05	Kalpataru Power Transmission Limited. 101, Part 111 G. I.D.C. Estate Sector-28, Gujarat. India Attn:Mr. Tejas Odedara	mtkg@kalpatarupower.com	Mob: Tel: +917923214000 Fax: +917923211951	
06	ABB India Limited Celebration Point, Plot #385(3 rd floor), Road#113/A. Gulshan, Dhaka- 1212, Bangladesh. Attn: Mr. Md. Ehsanur Rahman	info@bd.abb.com ehsanur.rahman@bd.abb.com mithu.bhowmick@bd.abb.com	Mob:01755552216 Mob:01730070890 Tel: +880-2- 9856468 Fax:9850906	Mr. Mithu Kumar Bhowmick
07	M/S Techno Electric And Engineering Co.Ltd. 2F&3F, Park Plaza, North Block, 71, Park Street Kolkata, Attn: Mr.Sumanta Chudhuri	sumanta.chudhuri@techno.co.in	Mob: +919831270589 Tel:+91 98318 56617- Fax: 033-22171167	Mr.A.S.M Seraj Uddullah
08	M/s. Hyosung Corporation. 119, Mapo-daero, Mapo-gu, Seoul, Korea-121-720. Attn: Eugene Eunsung Lee	skbasak@sahco.biz	Mob:01715298041 Tel: 82-2-707-6079 Fax: +8227149324	Mr. Miah Mosharraf Hossain, SAHCO International Ltd. 8, Panthopath, Dhaka
09	Energypac Engineering Ltd. Jiban Bima Tower 9 th & 11 th floor, 10 Dilkusha C/A, Dhaka. Attn: Mr. Touhidul Islam Shaheen	info@energypac.bd.com	Mob:01819294410 Tel: +880-2- 9561883 Fax: +880-2-9563728	Mr. Touhidul Islam Shaheen
10	Cobra Instalaciones y Servicios, S.A Cardenal Marcelo Spinola. 1028016 Madrid Attn: Mr. GL Thakur	central@grupocobra.com	Mob:01729794084 Tel: +34914569500 Fax: +34914569450	Mr. Yousuf
11	ISOLUX INGENIERIA S.A FR Tower (4 th Floor)	adas@isoluxcorsan.com	Mob:01717197028 Tel:	Md. Hassanuzzaman

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List of Ashugonj Bhulta Project-2014 Bidding Document Purchaser Firms:

	32 Kamal Atatürk Avenue Attn: Mr. Fernando Guillermo Lopez		Fax:	
12	M's TSK GROUP TSK Electronica y Electricidad C/Ada Byron.220 , 33203 Gijon, Spain Attn: Santiago Palacios	Santiago.palacios@grupotsk.com	Mob: 01788405977	
13	Central China Power Grid International Economic & Trade Co., Ltd. F13. GUODIAN PLAZA, NO. 113. XUDONG AVENUE, Wujan, P.R China,	fanlinnan@msn.com	Mob: 01711568297 Tel: +86-27-86763713 Fax: +86-27-87891946	Md. Robiul Alam GETCO Limited 01713148732
14	LTB Leitungsbau GmbH Rotterdammer Strafe 20-28 68219 Mannheim Germany			
15	Chemico Technique Int. Ltd Captain South Avenue Tower(5 th floor) Plot#SW(H)-2,Road No.-3 7 Gulshan Avenue Dhaka-1212	Chemico@bdmail.net	Mob: 01715120586 Tel: 88-02-9851262	Md. Sarowa Hossain Khan Mob: 01715120586
16	SAMSUNG Samsung C&T Corp Bldg., 1321-20, Seocho-Gu, Seoul, Korea		Tel: +82-2-2145-2966 Fax: +82-2-2023-2966	Md. Yusuf Ali, Office Assistant Mob: 01729794084
17	PowerPac Holding Ltd. 242. Tejgaon Industrial Area (2 nd Floor) Dhaka-1208, Bangladesh	info@rnrholdings.com	Mob: 8801671027169 Tel: 88-02-8878428-9 Fax: 88-02-8818213	PowerPac Holding Ltd. Mob: 8801671027169
18	Dongang Electric International Corporation 18, Xixin Anevue, High-tech Zone West Park Chengdu City, Sichuan, P.R.China	ouyanjiang@dongfang.com.cn	Tel: 0086-28-87898727 Fax: 0086-28-87898751	CSL Project Limited Mob: 0730311455 Tel: 88-02-8851584 Fax: 8802-8851584 Email: aminur@cslprojectsbd.com
19	Alstom T & D India Limited DLF IT Park, Plot No. 08 Major Arterial Road, Block AF, Tower C, 8 th Floor, New Town (Rajarhat), Kolkata 700156 Tel: +913340097050 Fax: +913344002812	Shaswata-aroy@alstom.com	Mob: 01617845353 Tel: 88028831936-7 Fax: 88029857357	Shaswata Roy Key Account Manager Mob: 8801617845353
20	Thermal Power Construction Company CEEC Office No. 169, Furong South Road II, Tianxin District, Changsha City Human Province, P.R. China.	Banabir@greenpowerltd.com	Tel: 0731-88933491 Fax: 0173-88933489	Bangabir Kanti Nath Manager Green Power Limited Mob: 01716086406
21	M'S MAPNA GROUP, IRAN	dgahmed@gmail.com	Tel: 88029883878 Fax: 88029883878	SPL Corporation Mob: 01712260199 Tel: 88029883878

List of Ashugonj Bhulta Project-2014 Bidding Document Purchaser Firms:

22	Sumitomo Corporation Asia & Oceania Pte Ltd. 1-8-11 Harumi Chuo-ku. Tokyo 104-8610 Japan.		Tel : 880-2-982-0083 982-0084 Fax : 880-2-982-0090	Fax: 88029883878 Dhaka office Green Grandeur Plot #58E (5 th Floor), Kama' Ataturk Avenue Banani, Dhaka
23	Megatech GNBD Dhaka House#16, Road#140, Suit#A-2 (2 nd floor), Gulshan Circle-1 Dhaka.	megatedhaka@yahoo.com	Tel : 88-02-8858492-93 Fax : 88-02-9860634	Megatech GNBD Dhaka House#16, Road#140, Suit#A-2 (2 nd floor), Gulshan Circle-1 Dhaka.
24	Confidence Steel Limited UTC Building (Level-7). OB. Panthapath, Kawran Bazar, Dhaka.		Tel : 88-02-9102543 Fax : 88-02-9104584	Confidence Steel Limited UTC Building (Level-7). OB. Panthapath, Kawran Bazar, Dhaka. Tel : 88-02-9102543 Fax : 88-02-9104584
25	Guangdong Electric Power Design Institute (GEDI) 1 No. Tainfeng Road, Science Town, Guangzhou City, P.R. China, 510663	lipengfei@gedi.com.cn	Tel : + 862032118153 Fax : +862032118208	Li Pengfei CWN 403, House-29, Road- 43, Gulshan-2, Dhaka-1212 Mob. 01789786268
26	TBEA Co. Ltd, China Office Tel. 86-1063278938 Mob. 0086 13801232160	WangYangGang@gmail.com	Tel. 86-1063278938 Mob. 0086 13801232160	Bangtek House no-07 (1 st floor) Road-124, Gulshan-2 Tel : 88028831301 Cell 01673784051
27	Gammon India Limited Address-A-201/209, Boomerang Complex, Chandivili Farm Road, Andheri (E) Mubnai 40072	contract@transrailindia.com	Tel: 8159329 Mob. 01711731019	Magnitude International House-25, Road-9, Block-kha, PC Culture Housing Society, Adabor, Dhaka Tel : 8159329
28	SEMI +34917017700	Anower@bnbecl.com	Tel : 028189661-3	Ubaidullah Anwar BNB Engineers & Consultants Ltd. T.K Bhaban (9 th Floor) 13 Kawranbazar Dhaka- 1215. Tel : 028189661-3
29	Fujian Electric Power Engineering Company Building C, No 93 Liuyizhonglu Fuzhou 350005, China	Dhaka.fepec@gmail.com	Tel : 9135544	M. Mohsin Uddin Cell-01912241101
30	LTL Project (Pvt) Limited 08, Rosmead Place, Colombo 07, Sri Lanka.	lkarim29@ymail.com	Tel: +(0) 117513195	AM Fazlul Karim Mob : 01711825517
31	CCCE Engineering Ltd House No-485, Road No-08 DOHS Baridhara, Dhaka- 1206	Rakib.ccc007@gmail.com	Tel: 841031717	Md. Rakibul Islam Mob. 01919837740
32	Sirti 46/6 New Zigatola Dhanmondi, Dhaka-1215	Creed.zobayer@gmail.com	Mob. 01723-186942	Zobayer Hossain 01723-186942
33	K.C.J & Associates Ltd House No-11, Road No-7, Sector-1, Uttara Dhaka	kcjal@bangla.net	Tel. 8922715	Khandaker Mehedi Hasan Mob. 01719444488

POWER GRID COMPANY OF BANGLADESH LIMITED (PGCB)

DESIGN, SUPPLY, ERECTION, TESTING AND COMMISSIONING OF ASHUGANJ-BHULTA 400KV TRANSMISSION LINE AND BHULTA 400/230KV SUBSTATIONS ON TURNKEY BASIS

Lot-1: DESIGN, SUPPLY, ERECTION, TESTING AND COMMISSIONING OF ASHUGANJ-BHULTA 400KV TRANSMISSION LINE ON TURNKEY BASIS (Contract No. PGCB/GoB/400kv/ABTL)

Lot-2: DESIGN, SUPPLY, ERECTION, TESTING AND COMMISSIONING OF BHULTA 400/230KV SUBSTATIONS ON TURNKEY BASIS (Contract No. PGCB/GoB/400kv/BHULTA-SS)

PGCB Memo No.: 01/PGCB/Sec(Design & QC)/2014/3737 dated June 29, 2014

Contract Nos. PGCB/GoB/400kv/ABTL and PGCB/GoB/400kv/BHULTA-SS

ADDENDUM NO. 2

(Date: September 11, 2014)

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

Volume 1 of 3

Lot1 – Transmission Lines


Lot 2 – Substation

1. Addendum-1

- (a) Page 78 of 121, Item 1, the text "ITB 19.1" is replaced by the text "ITB 11.2 (k)".
- (b) Page 79 of 121, Item 7(iii), the text "GCC Clause No. 10.2 is replaced by following text." is replaced by the text "Following text is added above the first paragraph:"

2. Section 4-Bidding Forms

- (a) Form 'Bid Security' (Page 4-8), serial no. (b), the text "Instructions to Bidders (hereinafter "the ITB") of the IFB" is replaced by the text "bidding document".
- (b) Form ELI-1 (Page 4-22), ELI-2 (Page 4-23), FIN-2 (Page 4-26) are deleted since the same has been included in Bid Forms, Volume 3 of 3 of the bidding document.
- (c) Form 'FIN-3: Financial Resources' (page 4-27) is replaced by enclosed revised page 4-27(R1). [Enclosure-1]



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3. Section 6 – Employer's Requirements, Form-JV, page 6-30, Item 11.

The following text "the Partner in Charge" is replaced by the text "any Partner".

4. Section 8 – Special Conditions of Contract, page 8-4

The clause no. 11.2 is replaced by the following paragraphs:

"GCC Sub clause 11.2 is replaced as following:

11.2 The Contract Price shall be adjusted in accordance with the provisions of the Appendix 2 (Price Escalation) to the Contract Agreement and on the actual quantity of Plant and Installation Services completed by the Contractor during the Contract Execution Stage. Payment will be made on the actual quantity of Plant and Installation Services that will be completed by the Contractor during the Contract Execution Stage."

Volume 2 of 3

Lot 1 – Transmission Lines

1. Section 8 – Tower

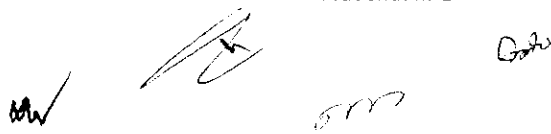
APPENDIX 8.E1/1, Page 8/54, FOUNDATION STRENGTH FACTOR. 230kV Four Circuit,
The table of the bid document has been replaced by the following table:

Applied Loading Case	Strength Factor	
	Tower Type	
All load cases	2QL, 2Q1	2Q15, 2Q30, 2QT6
	1.60	1.90

2. Section 19 - Bid Drawings, Loading Tree for 400kV Overland Towers

- (i) Tower type '4DL' load case 57, 58 and 59 has been deleted.
- (ii) Tower type '4D1T' load case 57, 58, 59, 60, 61 and 62 has been deleted.
- (iii) Tower type '4D25T' load case 57, 58, 59, 60, 61 and 62 has been deleted.
- (iv) Tower type '4D45T' load case 59, 60, 61, 62, 63 and 64 has been deleted.
- (v) Tower type '4DT6T' load case 59, 60, 61, 62, 63 and 64 has been deleted.

3. Drawing nos. TL-013 (R1) & TL-014 (R1) of Addendum-1 are replaced by enclosed revised drawing no. TL-013 (R2) & TL-014 (R2) respectively. [Enclosure-2]



Volume 3 of 3Lot 1 – Transmission LinesLot 2 – Substation1. Bid Forms

(a) Form 'Bid Security' (Page nos. BF-8 and BF-9) are deleted since the same has been included in Section 4: Bidding Forms, Volume 1 of 3 of the bidding document.

(b) Form 'FIN-3: Liquid Asset' (page BF-27) is deleted since the same has been included in Bid Forms, Volume 1 of 3 of the bidding document. It may be mentioned here that the 'Fin-3' in Volume 1 of 3 has been corrected through Addendum-2 [item 1(b)]

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.



Form FIN - 3: Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as indicated in Section 3 (Evaluation and Qualification Criteria)

No.	Source of financing	Amount (US\$ equivalent)
1		
2		
3		

☐ Attached are copies of financial statements (balance sheets including all related notes, and income statements) for the last year, as indicated above, complying with the following conditions.

- All such documents reflect the financial situation of the Bidder or partner to a JV, and not sister or parent companies.
- Historic financial statements must be audited by a certified accountant.
- Historic financial statements must be complete, including all notes to the financial statements.

Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

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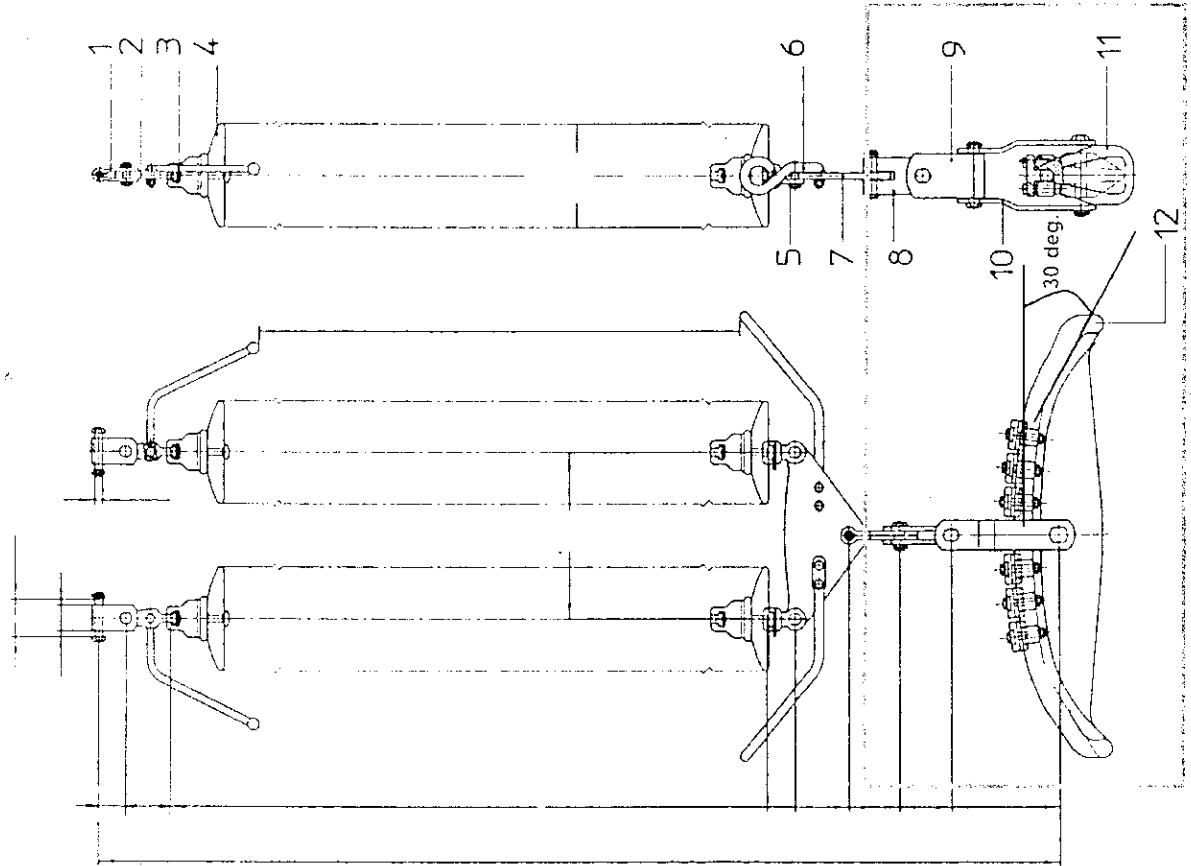
- Total creepage distance of insulator string: Minimum 7m
- Dry lightning impulse withstand voltage of the string: Minimum kV
- Wet power frequency withstand voltage of the string: Minimum kV
- Minimum breaking strength: **600 kN**
- Nominal short circuit current: 31.5 KA/0.5sec
- d.f.s. -Material: Drop forged steel
- h.d.g. -Hot dip galvanized: Zinc thickness acc. to EN ISO 1461

Ball/Socket coupling size acc. to IEC 120/24

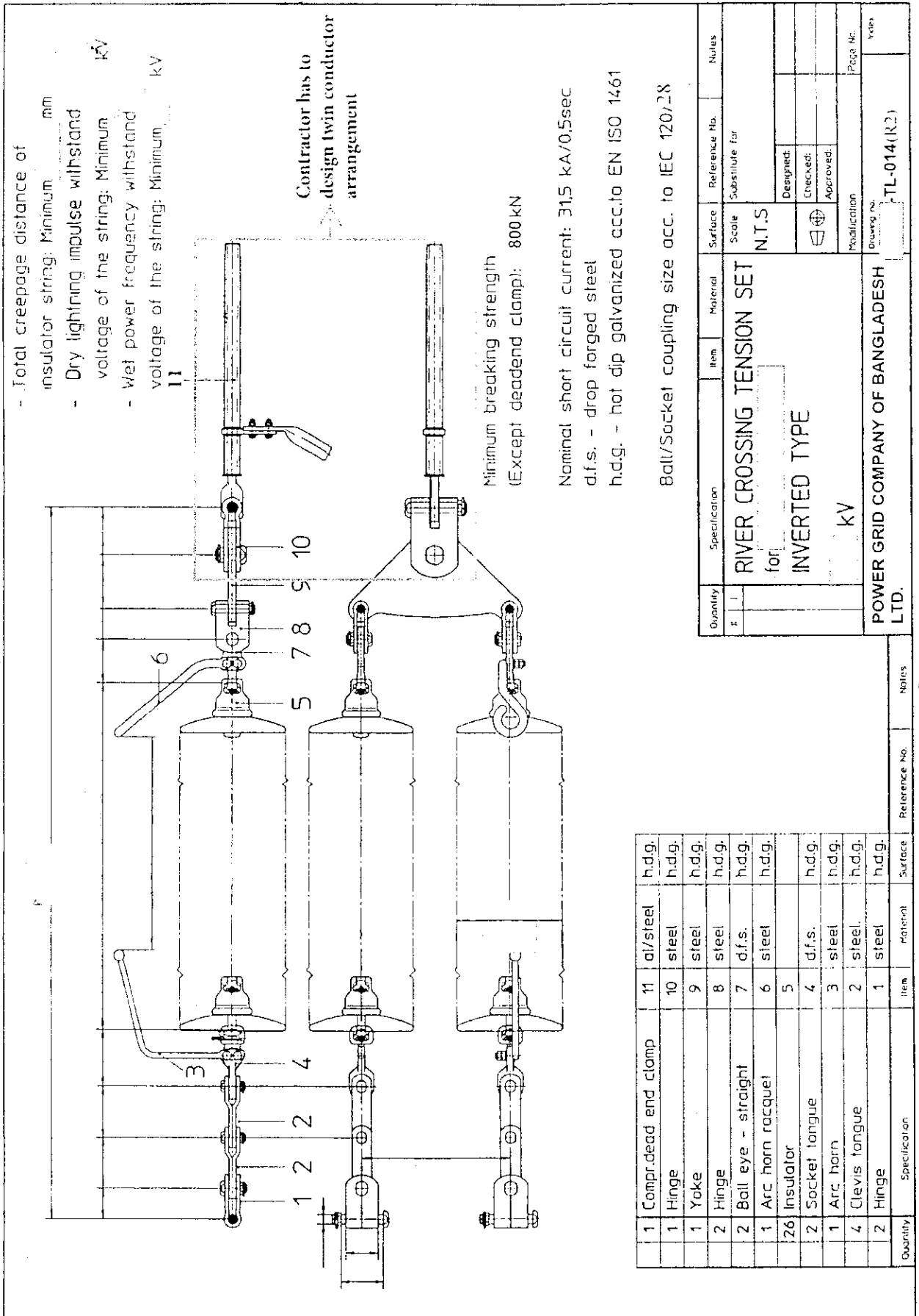
Quantity	Specification	Item	Material	Surface	Reference No.	Notes
1	Armour rod	12	al alloy			
1	Suspension clamp	11	al/steel	h.d.g.		
1	Straps	10	steel	h.d.g.		
1	Hinge	9	steel	h.d.g.		
1	Hinge	8	steel	h.d.g.		
1	Yoke	7	steel	h.d.g.		
2	Arc horn racquet	6	steel	h.d.g.		
2	Socket clevis	5	d.f.s.	h.d.g.		
28	Insulator	4				
2	Upper arc horn	3	steel	h.d.g.		
2	Ball eye - straight	2	d.f.s.	h.d.g.		
2	Hinge	1	steel	h.d.g.		

Scale	N.T.S
Substitute for	
Designated	
Checked	
Approved	
Modification	
Page No	
Page No	
Drawing No	TL-013 (R2)

POWER GRID COMPANY OF BANGLADESH LTD.



Contractor has to design twin conductor arrangement



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POWER GRID COMPANY OF BANGLADESH LIMITED

BIDDING DOCUMENT
FOR THE

DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF ASHUGANJ-BHULTA 400KV
TRANSMISSION LINE AND BHULTA 400/230KV SUBSTATION ON TURNKEY BASIS
[Contract No. PGCB/400kV/BHULTA-SS]

ADDENDUM NO.2

Following revisions/changes are made in the bidding documents which will form part of the bidding documents:

Volume 2 of 3(Lot-2 Substation)

1. Section 12; Clause 12.3.2(a) Fill Sites ; Page no. 12/12 & 12/13 :

a) 1st para ; Page no. 12/12 :

The text fill will be placed by the bidder "On fill sites where the depth of fill exceeds 3 metres the Contract assumes piled foundations shall be installed below buildings. If piled foundations are found to be unnecessary in the Final Site Investigation Report, a reduction in Contract value shall be agreed on the basis of schedule rates." is replaced by the text as follows:

"Site filling shall be carried out by the bidder. Mechanical compaction of earth or sand in 150mm layers including leveling, watering and consolidation each layer with chain dozer, grader, roller etc. to achieve minimum dry density of 90% with optimum moisture content (modified proctor test) up to finished level all complete and accepted by the engineer subject to submission of the method statement.

b) 2nd para; Page no. 12/13 :

The text "Piles shall be concrete (cast insitu or precast) complying with BS 8004" is deleted.

c) 4th para;1st sentence; Page no. 12/13 :

The text "Outdoor equipment shall be provided with spread footings." is deleted.

2. Section 12; Clause 12.3.2(d) Site Investigation Report ; 4th para; Page no. 12/15 :

The text "Where estimated settlement exceeds 25mm, the Bidder shall construct one foundation at an early stage an-test load this foundation to confirm settlement predictions." is replaced by the text "Where estimated settlement exceeds 25mm, the Bidder shall construct one foundation at an early stage and to perform load test of that foundation to confirm settlement predictions."

3. Section 12; Clause 12.3.2(e) Foundation ;1st para; Page no. 12/15 :

The text "Regardless of the result of soil investigation report, the foundations of control building,

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transformer foundations, gantry structures for terminating lines and for auto-transformers shall be provided with piles." is replaced by the text as follows:

"Regardless of the result of soil investigation report, the foundations of main control building, gantry tower/column shall be provided with piles.

Piles shall be cast-in-situ reinforced concrete piles complying with BS 8004. Minimum diameter of pile shall be 500mm

Foundation type for other structures such as transformer, equipment structures, switchyard panel room, guard house, sentry post, boundary wall etc shall be either of spread footing or pile foundation depending on detailed soil investigation."

4. **Section 10; Clause 10.1 Scope; 3rd Para; Page no. 10/3:**

The text "IEC 60870-5-101 protocol" is replaced by the text "IEC 60870-5-104 protocol" wherever mentioned in the specification throughout the bid document.

5. **Item no: 4 ; addendum no 1 of Volume 2/3 (Lot-2, Substation) Page no. 94/121:**

The item no. 4 of addendum no 1 of Volume 2 of 3 (Lot-2, Substation) is corrected as follows:

The text "The protection shall also be suitable for a system fault level equal to the switchgear rating of 50 kA for 400kV & 230 kV and 63 kA for 33 kV systems." is replaced by the text "The protection shall also be suitable for a system fault level equal to the switchgear rating of 50 kA for 400kV, 50 kA for 230 kV and 25 kA for 33 kV systems."

6. **Section 13, Clause 13.30.2, Page 13/22, of volume 2 of 3 (Lot-2, Substation) :**

The Clause no. 13.30.2 (Heating) is deleted.

Volume 3 of 3(Lot-2 Substation)

7. **Schedule A, Page SA-12, item no. 1M2 of volume 3 of 3 (Lot-2, Substation) :**

The text "New digital PABX with subscriber telephone sets for the complete substation including necessary works to interface with existing system" shall be replaced by the text as follows,

"New digital PABX with subscriber telephone sets for the complete substation (Bhuita) including necessary works to interface with existing system.

Ghorashal existing PABX should be replaced by new PABX(SOPHO IS 3030 or equivalent equipment.

Rampura existing PABX should be upgraded from DCS255 to SOPHO IS 3030 or equivalent equipment".

PA
Ghorashal
PA

8. Appendix 10.3: 400kV line differential protection Ashugonj-Bhulta (main 2), schedule E of volume 3 of 3

The Appendix 10.3: 400kV line differential protection Ashugonj-Bhulta (main 2), Schedule E of volume 3 of 3 (lot-2) is deleted.

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