

## POWER GRID BANGLADESH PLC (PGB)

**Design, Supply, Installation, Testing & Commissioning of Capacity enhancement and Capacitor Bank Installation with associated switchgear in existing grid substation (Package-2, Lot-1)**  
**(Contract No. POWERGRID/CEEGSTL/SS/Package-2/Lot-1/Re-Tender)**  
**Invitation for Bids No.: 27.21.0000.101.07.417.24.4059 dated July 30, 2024**

**Addendum No.: 02**

**(Date: 07.10.2024)**

Following revisions/changes are made in the Bid Document which will form part of the Bid Document.

### **Volume 2 of 3**

**1) Clause No. 20.2: List of Bid Drawings, Vol. 2, Page No. 651**

"Layout of Bhasantek 132/33kV GIS Substation" is revised and attached herewith as Annexure-1.

### **Volume 3 of 3**

**2) Schedule A: Scope of Works, Vol.3, Page No. 13, Clause No. 1.3.2: New 230/138/34.5kV transformer at Agargaon 230/132/33kV GIS Substation**

The item no. 2H3 is revised as follows:

132kV, 1Cx1600sqmm (1 run for each phase) XLPE Cu cables & cable termination (at transformer end) for connecting one (1) 230/138/34.5kV transformer to 132kV GIS.

**3) Schedule A: Scope of Works, Vol.3, Page No. 20, Clause No. 1.3.4: New 138/33kV transformer at Bhasantek 132/33kV GIS Substation**

The sub-item no. (vii) of item No. 4B1 is deleted.

**4) Schedule A: Scope of Works, Vol.3, Page No. 20, Clause No. 1.3.4: New 138/33kV transformer at Bhasantek 132/33kV GIS Substation**

The sub-item no. (viii) of item No. 4B1 is revised as follows:

Three (3) nos. of 120kV rated voltage, 96 kV(rms) continuous operating voltage at 50°C, 10kA nominal discharge current, 50Hz, Heavy duty station class, single phase GIS surge arresters.

**5) Schedule A: Scope of Works, Vol.3, Page No. 20, Clause No. 1.3.4: New 138/33kV transformer at Bhasantek 132/33kV GIS Substation**

The sub-item no. (ix) of item No. 4B1 is revised as follows:

One (1) set of three phase GIS Cable compartment with isolation link.

**6) Schedule A: Scope of Works, Vol.3, Page No. 21, Clause No. 1.3.4: New 138/33kV transformer at Bhasantek 132/33kV GIS Substation**

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Addendum-1  
Page 1 of 2

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**The sub-item no. (xii) of item No. 4B1 is added as follows:**

Three (3) nos. of Single phase complete GIS-to-Cable termination (including both male part/plug and female part/socket) with all accessories for TR bay.

**7) Schedule A: Scope of Works, Vol.3, Page No. 21, Clause No. 1.3.4: New 138/33kV transformer at Bhasantek 132/33kV GIS Substation**

The item No. 4D is revised as follows:

**132kV and 33kV Air Insulated Switches (AIS)**

**8) Schedule A: Scope of Works, Vol.3, Page No. 21, Clause No. 1.3.4: New 138/33kV transformer at Bhasantek 132/33kV GIS Substation**

**The sub-item no. 4D3 of item No. 4D is added as follows:**

Three (3) nos. of 120kV rated voltage, 10kA nominal discharge current, 50Hz, Heavy duty station class, gapless metal oxide type, single phase surge arresters (these surge arresters shall be transformer tank mounted).

**9) Schedule A: Scope of Works, Vol.3, Page No. 21, Clause No. 1.3.4: New 138/33kV transformer at Bhasantek 132/33kV GIS Substation**

The item No. 4H1 is revised as follows:

132kV, 1Cx1200sq. mm (1 run for each phase) XLPE Cu cables & cable termination (at transformer end) for connecting one (1) 132/33kV transformer to 132kV GIS.

**10) Schedule A: Scope of Works, Vol.3, Page No. 21, Clause No. 1.3.4: New 138/33kV transformer at Bhasantek 132/33kV GIS Substation**

The item No. 4P1 is revised as follows:

Complete design, supply and construction of all civil items required for the outdoor works suitable for switchyard gantry & equipment foundations (new), transformer foundation (new), new 132kV and 33kV cable trenches, extension of LV cable trenches, surfacing, gravel laying, extension existing road, and drainage system etc. to accommodate power transformer bay.

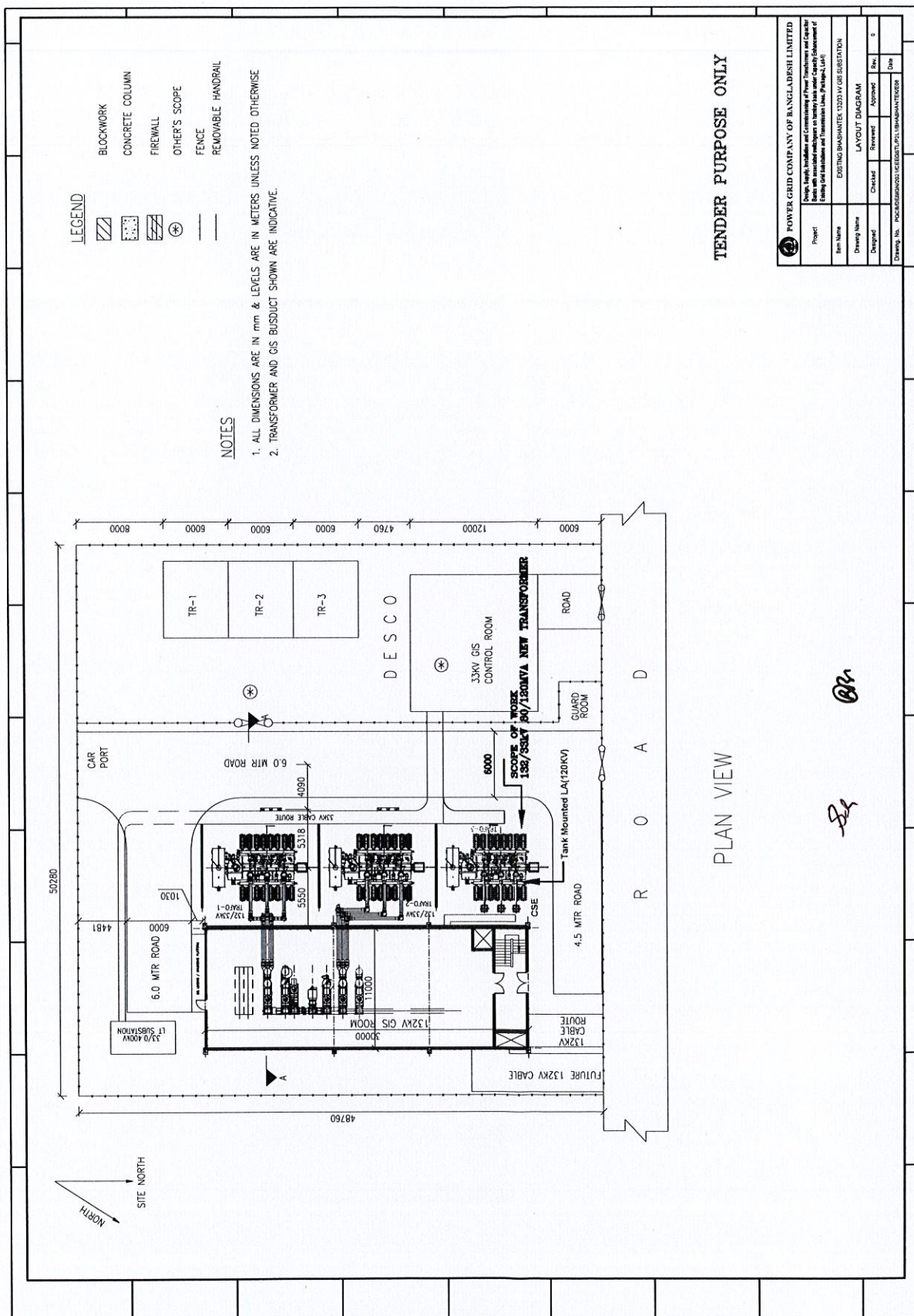
**11) Schedule B: Bid Prices & Schedules, Vol.3:**

A few items in Section-4: New 132/33kV transformer at Bhasantek 132/33kV GIS Substation of "Schedule B: Bid Prices & Schedules" are revised. Accordingly, revised Section-4: New 132/33kV transformer at Bhasantek 132/33kV GIS Substation of Schedule B1, Schedule B2 and Schedule B4 of "Schedule B: Bid Prices & Schedules" are attached herewith as Annexure-2.

**12) Schedule E: Technical Particulars and Guarantees, Vol.3:**

Technical Particulars and Guarantees of 1200 mm<sup>2</sup> XLPE Cu cables for Bhasantek 132/33kV Substation is added as "Annexure-3".

# Annexure - I



| Schedule B1: Plant & Equipment Supplied from Abroad                                                                                              |                                                                                                                                                                                                        |                 |      |      |                          |                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------|------|--------------------------|--------------------------------|
| (For detailed description of price schedule items please refer to Schedule A: Scope of Works, clause 1.3, volume 3 of 3 of the bidding document) |                                                                                                                                                                                                        |                 |      |      |                          |                                |
| No.                                                                                                                                              | Equipment                                                                                                                                                                                              | Quantity<br>(1) | Unit | Code | Unit Price<br>CIP<br>(2) | Total Price CIP<br>(3)=(1)x(2) |
| Section-4: New 132/33kV transformer at Bhasantek 132/33kV GIS Substation                                                                         |                                                                                                                                                                                                        |                 |      |      |                          |                                |
| 4A                                                                                                                                               | Power Transformer                                                                                                                                                                                      |                 |      |      |                          |                                |
| 4A1                                                                                                                                              | 132/33kV, 80/120MVA (ONAN/ONAF), 3Φ outdoor type power transformer                                                                                                                                     | 1               | set  |      |                          |                                |
| 4B                                                                                                                                               | 145kV Gas Insulated Switchgear (GIS)                                                                                                                                                                   |                 |      |      |                          |                                |
| 4B1                                                                                                                                              | 145kV GIS Power Transformer Feeder Bay                                                                                                                                                                 | 1               | set  |      |                          |                                |
| 4C                                                                                                                                               | 33kV Gas Insulated Switchgear (GIS)                                                                                                                                                                    |                 |      |      |                          |                                |
| 4C1                                                                                                                                              | 33kV GIS Auto Transformer Feeder Bay                                                                                                                                                                   | 1               | set  |      |                          |                                |
| 4D                                                                                                                                               | 132kV and 33kV Air Insulated Switches (AIS)                                                                                                                                                            |                 |      |      |                          |                                |
| 4D1                                                                                                                                              | Single-phase, 3-core, 33kV, 31.5kA/1sec, 50Hz, 170kVp BIL, post type inductive voltage transformer.                                                                                                    | 3               | nos. |      |                          |                                |
| 4D2                                                                                                                                              | 30kV rated voltage, 10kA nominal discharge current, 50Hz, Heavy duty station class, single phase AIS surge arresters                                                                                   | 3               | nos. |      |                          |                                |
| 4D3                                                                                                                                              | 120kV rated voltage, 10kA nominal discharge current, 50Hz, Heavy duty station class, gapless metal oxide type, single phase surge arresters (these surge arresters shall be transformer tank mounted). | 3               | nos. |      |                          |                                |
| 4E                                                                                                                                               | Conductor for Mainbus, Jackbus & Equipment connection for 132kV & 33kV                                                                                                                                 |                 |      |      |                          |                                |
| 4E1                                                                                                                                              | i) Flexible conductor for jackbus, jumper, equipment connections                                                                                                                                       | 1               | lot  |      |                          |                                |
|                                                                                                                                                  | ii) Clamps & Connectors                                                                                                                                                                                | 1               | lot  |      |                          |                                |
| 4F                                                                                                                                               | Insulator & fittings for 132kV & 33kV system                                                                                                                                                           |                 |      |      |                          |                                |
| 4F1                                                                                                                                              | i) Insulators                                                                                                                                                                                          | 1               | lot  |      |                          |                                |
|                                                                                                                                                  | ii) Fittings                                                                                                                                                                                           | 1               | lot  |      |                          |                                |
| 4G                                                                                                                                               | Steel structures for 132kV & 33kV system                                                                                                                                                               |                 |      |      |                          |                                |
|                                                                                                                                                  | i) Deleted                                                                                                                                                                                             |                 |      |      |                          |                                |
|                                                                                                                                                  | ii) Deleted                                                                                                                                                                                            |                 |      |      |                          |                                |
| 4G1                                                                                                                                              | iii) Equipment support structures including nut & bolts                                                                                                                                                | 1               | lot  |      |                          |                                |
|                                                                                                                                                  | iv) 33kV Cable tray including fitting, fixing accessories                                                                                                                                              | 1               | lot  |      |                          |                                |
|                                                                                                                                                  | v) LV Cable tray including fitting, fixing accessories                                                                                                                                                 | 1               | lot  |      |                          |                                |
| 4H                                                                                                                                               | Power Cables, Cable Termination and GIL                                                                                                                                                                |                 |      |      |                          |                                |
|                                                                                                                                                  | 132kV Circuit                                                                                                                                                                                          |                 |      |      |                          |                                |
| 4H1                                                                                                                                              | i) 132kV, 1Cx1200sq mm (1 run for each phase) XLPE Cu cables                                                                                                                                           | 100             | m    |      |                          |                                |
| 4H2                                                                                                                                              | ii) Cable termination (at transformer end)                                                                                                                                                             | 3               | set  |      |                          |                                |
|                                                                                                                                                  | Deleted                                                                                                                                                                                                |                 |      |      |                          |                                |
|                                                                                                                                                  | 33kV Circuit                                                                                                                                                                                           |                 |      |      |                          |                                |
|                                                                                                                                                  | i) 33kV XLPE, 3x1Cx800sqmm (3 run for each phase) XLPE Cu cables                                                                                                                                       | 300             | m    |      |                          |                                |

Signature of Bidder:

Name of Bidder:

Signature of Bidder:

| Schedule B1: Plant & Equipment Supplied from Abroad                                                                                              |                                                                                              |  |                 |      |      |                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--|-----------------|------|------|--------------------------------|
| (For detailed description of price schedule items please refer to Schedule A: Scope of Works, clause 1.3, volume 3 of 3 of the bidding document) |                                                                                              |  |                 |      |      |                                |
| No.                                                                                                                                              | Equipment                                                                                    |  | Quantity<br>(1) | Unit | Code | Foreign Currency (in .....)    |
|                                                                                                                                                  |                                                                                              |  |                 |      |      | Unit Price<br>CIP<br>(2)       |
|                                                                                                                                                  |                                                                                              |  |                 |      |      | Total Price CIP<br>(3)=(1)X(2) |
| 4H3                                                                                                                                              | ii) Deleted                                                                                  |  |                 |      |      |                                |
|                                                                                                                                                  | iii) 33kV XLPE cable termination kit with accessories for transformer end                    |  | 9 +1 (spare)    | set  |      |                                |
| 4J                                                                                                                                               | <b>Control, Protection SAS &amp; Metering</b>                                                |  |                 |      |      |                                |
|                                                                                                                                                  | <b>For 132kV control &amp; Protection</b>                                                    |  |                 |      |      |                                |
| 4J1                                                                                                                                              | Control, protection, SAS & metering system with panel including tap changer panel            |  | 1               | set  |      |                                |
| 4J2                                                                                                                                              | Extension of 132kV Busbar Protection                                                         |  | 1               | lot  |      |                                |
| 4J3                                                                                                                                              | Tariff metering for one transformer bay                                                      |  | 1               | lot  |      |                                |
|                                                                                                                                                  | <b>For 33kV control &amp; Protection</b>                                                     |  |                 |      |      |                                |
| 4J4                                                                                                                                              | Deleted                                                                                      |  |                 |      |      |                                |
| 4J5                                                                                                                                              | Deleted                                                                                      |  |                 |      |      |                                |
| 4J6                                                                                                                                              | Tariff metering for one transformer bay                                                      |  | 1               | lot  |      |                                |
| 4K                                                                                                                                               | <b>Multicore Power &amp; Control Cable</b>                                                   |  |                 |      |      |                                |
|                                                                                                                                                  | Multicore, XLPE, LV Power & Control Cable for control, protection, metering & power circuits |  |                 |      |      |                                |
| 4K1                                                                                                                                              | i) LV Control Cable                                                                          |  | 1               | lot  |      |                                |
|                                                                                                                                                  | ii) LV Power Cable                                                                           |  | 1               | lot  |      |                                |
| 4L                                                                                                                                               | <b>Earthing &amp; lightning protection</b>                                                   |  |                 |      |      |                                |
| 4L1                                                                                                                                              | i) Extension of earthing system                                                              |  | 1               | lot  |      |                                |
|                                                                                                                                                  | ii) extension of lightning protection system                                                 |  | 1               | lot  |      |                                |
| 4M                                                                                                                                               | <b>DC Distribution</b>                                                                       |  |                 |      |      |                                |
| 4M1                                                                                                                                              | Extension of existing DCDB system                                                            |  | 1               | lot  |      |                                |
| 4N                                                                                                                                               | <b>LVAC Distribution</b>                                                                     |  |                 |      |      |                                |
| 4N1                                                                                                                                              | Extension of existing LVAC system                                                            |  | 1               | lot  |      |                                |
| 4O                                                                                                                                               | <b>Integration with Existing SCADA/NLDC System</b>                                           |  |                 |      |      |                                |
| 4P                                                                                                                                               | <b>Civil Works</b>                                                                           |  |                 |      |      |                                |
|                                                                                                                                                  | i) 132kV Transformer Foundation including oilpit                                             |  |                 |      |      |                                |
|                                                                                                                                                  | ii) Deleted                                                                                  |  |                 |      |      |                                |
|                                                                                                                                                  | iii) Deleted                                                                                 |  |                 |      |      |                                |
|                                                                                                                                                  | iv) Outdoor equipment foundation in 132kV switchyard                                         |  |                 |      |      |                                |
|                                                                                                                                                  | v) Outdoor equipment foundation in 33kV switchyard                                           |  |                 |      |      |                                |
|                                                                                                                                                  | vi) Cable trench/tunnel with soakpit                                                         |  |                 |      |      |                                |
| AD1                                                                                                                                              |                                                                                              |  |                 |      |      |                                |

Name of Bidder:

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**Schedule B1: Plant & Equipment Supplied from Abroad***(For detailed description of price schedule items please refer to Schedule A: Scope of Works, clause 1.3, volume 3 of 3 of the bidding document)*

|                                                                                                        |                                                                                                                                      |                      |      |      | Foreign Currency (in .....) |                                |
|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------|------|------|-----------------------------|--------------------------------|
| No.                                                                                                    | Equipment                                                                                                                            | Quantity<br>(1)      | Unit | Code | Unit Price<br>CIP<br>(2)    | Total Price CIP<br>(3)=(1)x(2) |
|                                                                                                        |                                                                                                                                      | Refer to Schedule B4 |      |      |                             |                                |
|                                                                                                        | a) New 33kV XLPE cable trench                                                                                                        |                      |      |      |                             |                                |
|                                                                                                        | b) Extension of existing LV Cable Trench                                                                                             |                      |      |      |                             |                                |
|                                                                                                        | c) New 132kV XLPE cable trench                                                                                                       |                      |      |      |                             |                                |
|                                                                                                        | vii) Modification of civil works for control room building/GIS Hall                                                                  |                      |      |      |                             |                                |
|                                                                                                        | viii) Switchyard surface finishing with drainage system                                                                              |                      |      |      |                             |                                |
|                                                                                                        | ix) Graveling in switchyard area                                                                                                     |                      |      |      |                             |                                |
|                                                                                                        | i) Testing of Foundation                                                                                                             |                      |      |      |                             |                                |
| 4P2                                                                                                    | a) Compression test of pile                                                                                                          |                      |      |      |                             |                                |
|                                                                                                        | ii) Pile Integrity Test                                                                                                              |                      |      |      |                             |                                |
| 4Q                                                                                                     | Lighting, small power, air conditioning and Ventilation                                                                              |                      |      |      |                             |                                |
| 4Q1                                                                                                    | Lighting (LED type) for outside building required for bay extension work for security, roadway, switchyard and emergency DC lighting | 1                    | lot  |      |                             |                                |
| Subtotal price for New 132/33kV transformer at Bhasantek 132/33kV GIS Substation carried to Schedule 5 |                                                                                                                                      |                      |      |      |                             |                                |

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Name of Bidder:

Signature of Bidder:

### Schedule B2: Plant & Equipment Supplied from within the Employer's Country

(For detailed description of price schedule items please refer to Schedule A: Scope of Works, clause 1.3, volume 3 of 3 of the bidding document)

| No.                                                                      | Equipment                                                                                                                                                                                              | Quantity<br>(1) | Unit | Code | Local Currency (BDT)  |                                |
|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------|------|-----------------------|--------------------------------|
|                                                                          |                                                                                                                                                                                                        |                 |      |      | Unit Price EXW<br>(2) | Total Price EXW<br>(3)=(1)x(2) |
| Section-4: New 132/33kV transformer at Bhasantek 132/33kV GIS Substation |                                                                                                                                                                                                        |                 |      |      |                       |                                |
| 4A                                                                       | Power Transformer                                                                                                                                                                                      |                 |      |      |                       |                                |
| 4A1                                                                      | 132/33kV, 80/120MVA (ONAN/ONAF), 3φ outdoor type power transformer                                                                                                                                     | 1               | set  |      |                       |                                |
| 4B                                                                       | 145kV Gas Insulated Switchgear (GIS)                                                                                                                                                                   |                 |      |      |                       |                                |
| 4B1                                                                      | 145kV GIS Power Transformer Feeder Bay                                                                                                                                                                 | 1               | set  |      |                       |                                |
| 4C                                                                       | 33kV Gas Insulated Switchgear (GIS)                                                                                                                                                                    |                 |      |      |                       |                                |
| 4C1                                                                      | 33kV GIS Auto Transformer Feeder Bay                                                                                                                                                                   | 1               | set  |      |                       |                                |
| 4D                                                                       | 132kV and 33kV Air Insulated Switches (AIS)                                                                                                                                                            |                 |      |      |                       |                                |
| 4D1                                                                      | Single-phase, 3-core, 33kV, 31.5kA/1sec, 50Hz, 170kVp BIL, post type inductive voltage transformer.                                                                                                    | 3               | nos. |      |                       |                                |
| 4D2                                                                      | 30kV rated voltage, 10kA nominal discharge current, 50Hz, Heavy duty station class, single phase AIS surge arresters                                                                                   | 3               | nos. |      |                       |                                |
| 4D3                                                                      | 120kV rated voltage, 10kA nominal discharge current, 50Hz, Heavy duty station class, gapless metal oxide type, single phase surge arresters (these surge arresters shall be transformer tank mounted). | 3               | nos. |      |                       |                                |
| 4E                                                                       | Conductor for Mainbus, Jackbus & Equipment connection for 132kV & 33kV                                                                                                                                 |                 |      |      |                       |                                |
| 4E1                                                                      | i) Flexible conductor for jackbus,jumper,equipment connections                                                                                                                                         | 1               | lot  |      |                       |                                |
|                                                                          | ii) Clamps & Connectors                                                                                                                                                                                | 1               | lot  |      |                       |                                |
| 4F                                                                       | Insulator & fittings for 132kV & 33kV system                                                                                                                                                           |                 |      |      |                       |                                |
| 4F1                                                                      | i) Insulators                                                                                                                                                                                          | 1               | lot  |      |                       |                                |
|                                                                          | ii) Fittings                                                                                                                                                                                           | 1               | lot  |      |                       |                                |
| 4G                                                                       | Steel structures for 132kV & 33kV system                                                                                                                                                               |                 |      |      |                       |                                |
|                                                                          | i) Deleted                                                                                                                                                                                             |                 |      |      |                       |                                |
|                                                                          | ii) Deleted                                                                                                                                                                                            |                 |      |      |                       |                                |

Name of Bidder:

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| Schedule B2: Plant & Equipment Supplied from within the Employer's Country                                                                       |                                                                                              |                 |      |      |                      |                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------|------|------|----------------------|--------------------------------|
| (For detailed description of price schedule items please refer to Schedule A: Scope of Works, clause 1.3, volume 3 of 3 of the bidding document) |                                                                                              |                 |      |      |                      |                                |
| No.                                                                                                                                              | Equipment                                                                                    | Quantity<br>(1) | Unit | Code | Local Currency (BDT) | Total Price EXW<br>(3)=(1)x(2) |
| 4G1                                                                                                                                              | iii) Equipment support structures including nut & bolts                                      | 1               | lot  |      |                      |                                |
|                                                                                                                                                  | iv) 33kV Cable tray including fitting, fixing accessories                                    | 1               | lot  |      |                      |                                |
|                                                                                                                                                  | v) LV Cable tray including fitting, fixing accessories                                       | 1               | lot  |      |                      |                                |
| 4H                                                                                                                                               | <b>Power Cables, Cable Termination and GIL</b>                                               |                 |      |      |                      |                                |
|                                                                                                                                                  | <b>132kV Circuit</b>                                                                         |                 |      |      |                      |                                |
| 4H1                                                                                                                                              | i) 132kV, 1Cx1200sq mm (1 run for each phase) XLPE Cu cables                                 | 100             | m    |      |                      |                                |
|                                                                                                                                                  | ii) Cable termination (at transformer end)                                                   | 3               | set  |      |                      |                                |
| 4H2                                                                                                                                              | Deleted                                                                                      |                 |      |      |                      |                                |
|                                                                                                                                                  | <b>33kV Circuit</b>                                                                          |                 |      |      |                      |                                |
| 4H3                                                                                                                                              | i) 33kV XLPE, 3x1Cx800sqmm (3 run for each phase) XLPE Cu cables                             | m               | 300  |      |                      |                                |
|                                                                                                                                                  | ii) Deleted                                                                                  |                 |      |      |                      |                                |
|                                                                                                                                                  | iii) 33kV XLPE cable termination kit with accessories for transformer end                    | 9 +1 (spare)    | set  |      |                      |                                |
| 4J                                                                                                                                               | <b>Control, Protection SAS &amp; Metering</b>                                                |                 |      |      |                      |                                |
|                                                                                                                                                  | <b>For 132kV control &amp; Protection</b>                                                    |                 |      |      |                      |                                |
| 4J1                                                                                                                                              | Control, protection, SAS & metering system with panel including tap changer panel            | 1               | set  |      |                      |                                |
| 4J2                                                                                                                                              | Extension of 132kV Busbar Protection                                                         | 1               | lot  |      |                      |                                |
| 4J3                                                                                                                                              | Tariff metering for one transformer bay                                                      | 1               | lot  |      |                      |                                |
|                                                                                                                                                  | <b>For 33kV control &amp; Protection</b>                                                     |                 |      |      |                      |                                |
| 4J4                                                                                                                                              | Deleted                                                                                      |                 |      |      |                      |                                |
| 4J5                                                                                                                                              | Deleted                                                                                      |                 |      |      |                      |                                |
| 4J6                                                                                                                                              | Tariff metering for one transformer bay                                                      | 1               | lot  |      |                      |                                |
| 4K                                                                                                                                               | <b>Multicore Power &amp; Control Cable</b>                                                   |                 |      |      |                      |                                |
|                                                                                                                                                  | Multicore, XLPE, LV Power & Control Cable for control, protection, metering & power circuits |                 |      |      |                      |                                |

Name of Bidder:

Signature of Bidder:

### Schedule B2: Plant & Equipment Supplied from within the Employer's Country

(For detailed description of price schedule items please refer to Schedule A: Scope of Works, clause 1.3, volume 3 of 3 of the bidding document)

| No. | Equipment                                                           | Quantity<br>(1) | Unit | Code | Local Currency (BDT)  |                                |
|-----|---------------------------------------------------------------------|-----------------|------|------|-----------------------|--------------------------------|
|     |                                                                     |                 |      |      | Unit Price EXW<br>(2) | Total Price EXW<br>(3)=(1)x(2) |
| 4K1 | i) LV Control Cable                                                 | 1               | lot  |      |                       |                                |
|     | ii) LV Power Cable                                                  | 1               | lot  |      |                       |                                |
| 4L  | <b>Earthing &amp; lightning protection</b>                          |                 |      |      |                       |                                |
| 4L1 | i) Extension of earthing system                                     | 1               | lot  |      |                       |                                |
|     | ii) extension of lightning protection system                        | 1               | lot  |      |                       |                                |
| 4M  | <b>DC Distribution</b>                                              |                 |      |      |                       |                                |
| 4M1 | Extension of existing DCDB system                                   | 1               | lot  |      |                       |                                |
| 4N  | <b>LVAC Distribution</b>                                            |                 |      |      |                       |                                |
| 4N1 | Extension of existing LVAC system                                   | 1               | lot  |      |                       |                                |
| 4O  | <b>Integration with Existing SCADA/NLDC System</b>                  | 1               | lot  |      |                       |                                |
| 4P  | <b>Civil Works</b>                                                  |                 |      |      |                       |                                |
|     | i) 132kV Transformer Foundation including oilpit                    |                 |      |      |                       |                                |
|     | ii) Deleted                                                         |                 |      |      |                       |                                |
|     | iii) Deleted                                                        |                 |      |      |                       |                                |
|     | iv) Outdoor equipment foundation in 132kV switchyard                |                 |      |      |                       |                                |
|     | v) Outdoor equipment foundation in 33kV switchyard                  |                 |      |      |                       |                                |
|     | vi) Cable trench/tunnel with soakpit                                |                 |      |      |                       |                                |
| 4P1 | a) New 33kV XLPE cable trench                                       |                 |      |      |                       |                                |
|     | b) Extension of existing LV Cable Trench                            |                 |      |      |                       |                                |
|     | c) New 132kV XLPE cable trench                                      |                 |      |      |                       |                                |
|     | vii) Modification of civil works for control room building/GIS Hall |                 |      |      |                       |                                |
|     | viii) Switchyard surface finishing with drainage system             |                 |      |      |                       |                                |
|     | ix) Graveling in switchyard area                                    |                 |      |      |                       |                                |
|     | i) Testing of Foundation                                            |                 |      |      |                       |                                |
| 4P2 | a) Compression test of pile                                         |                 |      |      |                       |                                |

Refer to Schedule B4

Name of Bidder:

Signature of Bidder:

| Schedule B2: Plant & Equipment Supplied from within the Employer's Country                                                                       |                                                                                                                                      |                 |      |      |                       |                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------|------|------|-----------------------|--------------------------------|
| (For detailed description of price schedule items please refer to Schedule A: Scope of Works, clause 1.3, volume 3 of 3 of the bidding document) |                                                                                                                                      |                 |      |      |                       |                                |
| No.                                                                                                                                              | Equipment                                                                                                                            | Quantity<br>(1) | Unit | Code | Local Currency (BDT)  |                                |
|                                                                                                                                                  |                                                                                                                                      |                 |      |      | Unit Price EXW<br>(2) | Total Price EXW<br>(3)=(1)x(2) |
|                                                                                                                                                  | ii) Pile Integrity Test                                                                                                              |                 |      |      |                       |                                |
| 4Q                                                                                                                                               | Lighting, small power, air conditioning and Ventilation                                                                              |                 |      |      |                       |                                |
| 4Q1                                                                                                                                              | Lighting (LED type) for outside building required for bay extension work for security, roadway, switchyard and emergency DC lighting | 1               | lot  |      |                       |                                |
| Subtotal price for New 132/33kV transformer at Bhasantek 132/33kV GIS Substation carried to Schedule 5                                           |                                                                                                                                      |                 |      |      |                       |                                |

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Name of Bidder:

Signature of Bidder:

| Schedule B4: Installation and Other Services                                                                                                     |                                                                                                                                                                                                        |                 |      |                                         |                                                  |                                       |                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------|-----------------------------------------|--------------------------------------------------|---------------------------------------|---------------------------------------------|
| (For detailed description of price schedule items please refer to Schedule A: Scope of Works, clause 1.3, volume 3 of 3 of the bidding document) |                                                                                                                                                                                                        |                 |      |                                         |                                                  |                                       |                                             |
|                                                                                                                                                  |                                                                                                                                                                                                        |                 |      | Foreign Currency (in .....)             |                                                  | Local Currency (BDT)                  |                                             |
| No.                                                                                                                                              | Equipment                                                                                                                                                                                              | Quantity<br>(1) | Unit | Unit Price<br>Foreign<br>Portion<br>(2) | Total Price<br>Foreign<br>Portion<br>(3)=(1)x(2) | Unit Price<br>Local<br>Portion<br>(4) | Total Price Local<br>Portion<br>(5)=(1)x(4) |
| <b>Section-4: New 132/33kV transformer at Bhasantek 132/33kV GIS Substation</b>                                                                  |                                                                                                                                                                                                        |                 |      |                                         |                                                  |                                       |                                             |
| 4A                                                                                                                                               | <b>Power Transformer</b>                                                                                                                                                                               |                 |      |                                         |                                                  |                                       |                                             |
| 4A1                                                                                                                                              | 132/33kV, 80/120MVA (ONAN/ONAF), 3φ outdoor type power transformer                                                                                                                                     | 1               | set  |                                         |                                                  |                                       |                                             |
| 4B                                                                                                                                               | <b>145kV Gas Insulated Switchgear (GIS)</b>                                                                                                                                                            |                 |      |                                         |                                                  |                                       |                                             |
| 4B1                                                                                                                                              | 145kV GIS Power Transformer Feeder Bay                                                                                                                                                                 | 1               | set  |                                         |                                                  |                                       |                                             |
| 4C                                                                                                                                               | <b>33kV Gas Insulated Switchgear (GIS)</b>                                                                                                                                                             |                 |      |                                         |                                                  |                                       |                                             |
| 4C1                                                                                                                                              | 33kV GIS Auto Transformer Feeder Bay                                                                                                                                                                   | 1               | set  |                                         |                                                  |                                       |                                             |
| 4D                                                                                                                                               | <b>132kV and 33kV Air Insulated Switches (AIS)</b>                                                                                                                                                     |                 |      |                                         |                                                  |                                       |                                             |
| 4D1                                                                                                                                              | Single-phase, 3-core, 33kV, 31.5kA/1sec, 50Hz, 170kVp BIL, post type inductive voltage transformer.                                                                                                    | 3               | nos. |                                         |                                                  |                                       |                                             |
| 4D2                                                                                                                                              | 30kV rated voltage, 10kA nominal discharge current, 50Hz, Heavy duty station class, single phase AIS surge arresters                                                                                   | 3               | nos. |                                         |                                                  |                                       |                                             |
| 4D3                                                                                                                                              | 120kV rated voltage, 10kA nominal discharge current, 50Hz, Heavy duty station class, gapless metal oxide type, single phase surge arresters (these surge arresters shall be transformer tank mounted). | 3               | nos. |                                         |                                                  |                                       |                                             |
| 4E                                                                                                                                               | <b>Conductor for Mainbus, Jackbus &amp; Equipment connection for 132kV &amp; 33kV</b>                                                                                                                  |                 |      |                                         |                                                  |                                       |                                             |
| 4E1                                                                                                                                              | i) Flexible conductor for jackbus, jumper, equipment connections                                                                                                                                       | 1               | lot  |                                         |                                                  |                                       |                                             |
|                                                                                                                                                  | ii) Clamps & Connectors                                                                                                                                                                                | 1               | lot  |                                         |                                                  |                                       |                                             |
| 4F                                                                                                                                               | <b>Insulator &amp; fittings for 132kV &amp; 33kV system</b>                                                                                                                                            |                 |      |                                         |                                                  |                                       |                                             |
| 4F1                                                                                                                                              | i) Insulators                                                                                                                                                                                          | 1               | lot  |                                         |                                                  |                                       |                                             |
|                                                                                                                                                  | ii) Fittings                                                                                                                                                                                           | 1               | lot  |                                         |                                                  |                                       |                                             |
| 4G                                                                                                                                               | <b>Steel structures for 132kV &amp; 33kV system</b>                                                                                                                                                    |                 |      |                                         |                                                  |                                       |                                             |
|                                                                                                                                                  | i) Deleted                                                                                                                                                                                             |                 |      |                                         |                                                  |                                       |                                             |
|                                                                                                                                                  | ii) Deleted                                                                                                                                                                                            |                 |      |                                         |                                                  |                                       |                                             |
| 4G1                                                                                                                                              | iii) Equipment support structures including nut & bolts                                                                                                                                                | 1               | lot  |                                         |                                                  |                                       |                                             |
|                                                                                                                                                  | iv) 33kV Cable tray including fitting, fixing accessories                                                                                                                                              | 1               | lot  |                                         |                                                  |                                       |                                             |

Name of Bidder:

Signature of Bidder:

| <b>Schedule B4: Installation and Other Services</b>                                                                                                     |                                                                                              |                 |      |                                         |                                                  |                                       |  |                                             |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------|------|-----------------------------------------|--------------------------------------------------|---------------------------------------|--|---------------------------------------------|--|
| <b>(For detailed description of price schedule items please refer to Schedule A: Scope of Works, clause 1.3, volume 3 of 3 of the bidding document)</b> |                                                                                              |                 |      |                                         |                                                  |                                       |  |                                             |  |
| No.                                                                                                                                                     | Equipment                                                                                    | Quantity<br>(1) | Unit | Foreign Currency (in .....)             |                                                  | Local Currency (BDT)                  |  | Total Price Local<br>Portion<br>(5)=(1)x(4) |  |
|                                                                                                                                                         |                                                                                              |                 |      | Unit Price<br>Foreign<br>Portion<br>(2) | Total Price<br>Foreign<br>Portion<br>(3)=(1)x(2) | Unit Price<br>Local<br>Portion<br>(4) |  |                                             |  |
|                                                                                                                                                         | v) LV Cable tray including fitting, fixing accessories                                       | 1               | lot  |                                         |                                                  |                                       |  |                                             |  |
| <b>4H</b>                                                                                                                                               | <b>Power Cables, Cable Termination and GIL</b>                                               |                 |      |                                         |                                                  |                                       |  |                                             |  |
|                                                                                                                                                         | <b>132kV Circuit</b>                                                                         |                 |      |                                         |                                                  |                                       |  |                                             |  |
| 4H1                                                                                                                                                     | i) 132kV, 1Cx1200sq mm (1 run for each phase) XLPE Cu cables                                 | 100             | m    |                                         |                                                  |                                       |  |                                             |  |
|                                                                                                                                                         | ii) Cable termination (at transformer end)                                                   | 3               | set  |                                         |                                                  |                                       |  |                                             |  |
| 4H2                                                                                                                                                     | Deleted                                                                                      |                 |      |                                         |                                                  |                                       |  |                                             |  |
|                                                                                                                                                         | <b>33kV Circuit</b>                                                                          |                 |      |                                         |                                                  |                                       |  |                                             |  |
|                                                                                                                                                         | i) 33kV XLPE, 3x1Cx800sqmm (3 run for each phase) XLPE Cu cables                             | m               | 300  |                                         |                                                  |                                       |  |                                             |  |
| 4H3                                                                                                                                                     | ii) Deleted                                                                                  |                 |      |                                         |                                                  |                                       |  |                                             |  |
|                                                                                                                                                         | iii) 33kV XLPE cable termination kit with accessories for transformer end                    | 9 +1 (spare)    | set  |                                         |                                                  |                                       |  |                                             |  |
| <b>4J</b>                                                                                                                                               | <b>Control, Protection SAS &amp; Metering</b>                                                |                 |      |                                         |                                                  |                                       |  |                                             |  |
|                                                                                                                                                         | <b>For 132kV control &amp; Protection</b>                                                    |                 |      |                                         |                                                  |                                       |  |                                             |  |
| 4J1                                                                                                                                                     | Control, protection, SAS & metering system with panel including tap changer panel            | 1               | set  |                                         |                                                  |                                       |  |                                             |  |
| 4J2                                                                                                                                                     | Extension of 132kV Busbar Protection                                                         | 1               | lot  |                                         |                                                  |                                       |  |                                             |  |
| 4J3                                                                                                                                                     | Tariff metering for one transformer bay                                                      | 1               | lot  |                                         |                                                  |                                       |  |                                             |  |
|                                                                                                                                                         | <b>For 33kV control &amp; Protection</b>                                                     |                 |      |                                         |                                                  |                                       |  |                                             |  |
| 4J4                                                                                                                                                     | Deleted                                                                                      |                 |      |                                         |                                                  |                                       |  |                                             |  |
| 4J5                                                                                                                                                     | Deleted                                                                                      |                 |      |                                         |                                                  |                                       |  |                                             |  |
| 4J6                                                                                                                                                     | Tariff metering for one transformer bay                                                      | 1               | lot  |                                         |                                                  |                                       |  |                                             |  |
| <b>4K</b>                                                                                                                                               | <b>Multicore Power &amp; Control Cable</b>                                                   |                 |      |                                         |                                                  |                                       |  |                                             |  |
|                                                                                                                                                         | Multicore, XLPE, LV Power & Control Cable for control, protection, metering & power circuits |                 |      |                                         |                                                  |                                       |  |                                             |  |
| 4K1                                                                                                                                                     | i) LV Control Cable                                                                          | 1               | lot  |                                         |                                                  |                                       |  |                                             |  |
|                                                                                                                                                         | ii) LV Power Cable                                                                           | 1               | lot  |                                         |                                                  |                                       |  |                                             |  |
| <b>4L</b>                                                                                                                                               | <b>Earthing &amp; lightning protection</b>                                                   |                 |      |                                         |                                                  |                                       |  |                                             |  |

Name of Bidder:

Signature of Bidder:

| Schedule B4: Installation and Other Services                                                                                                     |                                                                     |                 |      |                                   |                                            |                                 |  |                                          |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-----------------|------|-----------------------------------|--------------------------------------------|---------------------------------|--|------------------------------------------|--|
| (For detailed description of price schedule items please refer to Schedule A: Scope of Works, clause 1.3, volume 3 of 3 of the bidding document) |                                                                     |                 |      |                                   |                                            |                                 |  |                                          |  |
| No.                                                                                                                                              | Equipment                                                           | Quantity<br>(1) | Unit | Foreign Currency (in .....)       |                                            | Local Currency (BDT)            |  | Total Price Local Portion<br>(5)=(1)x(4) |  |
|                                                                                                                                                  |                                                                     |                 |      | Unit Price Foreign Portion<br>(2) | Total Price Foreign Portion<br>(3)=(1)x(2) | Unit Price Local Portion<br>(4) |  |                                          |  |
| 4L1                                                                                                                                              | i) Extension of earthing system                                     | 1               | lot  |                                   |                                            |                                 |  |                                          |  |
|                                                                                                                                                  | ii) extension of lighting protection system                         | 1               | lot  |                                   |                                            |                                 |  |                                          |  |
| 4M                                                                                                                                               | DC Distribution                                                     |                 |      |                                   |                                            |                                 |  |                                          |  |
| 4M1                                                                                                                                              | Extension of existing DCDB system                                   |                 |      |                                   |                                            |                                 |  |                                          |  |
| 4N                                                                                                                                               | LVAC Distribution                                                   |                 |      |                                   |                                            |                                 |  |                                          |  |
| 4N1                                                                                                                                              | Extension of existing LVAC system                                   | 1               | lot  |                                   |                                            |                                 |  |                                          |  |
| 4O                                                                                                                                               | Integration with Existing SCADA/NLDC System                         | 1               | lot  |                                   |                                            |                                 |  |                                          |  |
| 4P                                                                                                                                               | Civil Works                                                         |                 |      |                                   |                                            |                                 |  |                                          |  |
| 4P1                                                                                                                                              | i) 132kV Transformer Foundation including oilpit                    | 1               | nos. |                                   |                                            |                                 |  |                                          |  |
|                                                                                                                                                  | ii) Deleted                                                         |                 |      |                                   |                                            |                                 |  |                                          |  |
|                                                                                                                                                  | iii) Deleted                                                        |                 |      |                                   |                                            |                                 |  |                                          |  |
|                                                                                                                                                  | iv) Outdoor equipment foundation in 132kV switchyard                | 1               | lot  |                                   |                                            |                                 |  |                                          |  |
|                                                                                                                                                  | v) Outdoor equipment foundation in 33kV switchyard                  | 1               | lot  |                                   |                                            |                                 |  |                                          |  |
|                                                                                                                                                  | vi) Cable trench/tunnel with soakpit                                |                 |      |                                   |                                            |                                 |  |                                          |  |
|                                                                                                                                                  | a) New 33kV XLPE cable trench                                       | 1               | lot  |                                   |                                            |                                 |  |                                          |  |
|                                                                                                                                                  | b) Extension of existing LV Cable Trench                            | 1               | lot  |                                   |                                            |                                 |  |                                          |  |
|                                                                                                                                                  | c) New 132kV XLPE cable trench                                      | 1               | lot  |                                   |                                            |                                 |  |                                          |  |
|                                                                                                                                                  | vii) Modification of civil works for control room building/GIS Hall | 1               | Lot  |                                   |                                            |                                 |  |                                          |  |
|                                                                                                                                                  | viii) Switchyard surface finishing with drainage system             | 1               | lot  |                                   |                                            |                                 |  |                                          |  |
|                                                                                                                                                  | ix) Graveling in switchyard area                                    | 1               | lot  |                                   |                                            |                                 |  |                                          |  |
|                                                                                                                                                  | i) Testing of Foundation                                            |                 |      |                                   |                                            |                                 |  |                                          |  |
|                                                                                                                                                  | a) Compression test of pile                                         | 1               | nos. |                                   |                                            |                                 |  |                                          |  |
| 4P2                                                                                                                                              | ii) Pile Integrity Test                                             | 3               | nos. |                                   |                                            |                                 |  |                                          |  |
| 4Q                                                                                                                                               | Lighting, small power, air conditioning and Ventilation             |                 |      |                                   |                                            |                                 |  |                                          |  |




Name of Bidder:

Signature of Bidder:

| Schedule B4: Installation and Other Services                                                                                                     |                                                                                                                                      |                 |      |                                         |                                                  |                                       |                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------|------|-----------------------------------------|--------------------------------------------------|---------------------------------------|---------------------------------------------|
| (For detailed description of price schedule items please refer to Schedule A: Scope of Works, clause 1.3, volume 3 of 3 of the bidding document) |                                                                                                                                      |                 |      |                                         |                                                  |                                       |                                             |
| No.                                                                                                                                              | Equipment                                                                                                                            | Quantity<br>(1) | Unit | Foreign Currency (in .....)             |                                                  | Local Currency (BDT)                  |                                             |
|                                                                                                                                                  |                                                                                                                                      |                 |      | Unit Price<br>Foreign<br>Portion<br>(2) | Total Price<br>Foreign<br>Portion<br>(3)=(1)x(2) | Unit Price<br>Local<br>Portion<br>(4) | Total Price Local<br>Portion<br>(5)=(1)x(4) |
| 4Q1                                                                                                                                              | Lighting (LED type) for outside building required for bay extension work for security, roadway, switchyard and emergency DC lighting | 1               | lot  |                                         |                                                  |                                       |                                             |
| Subtotal price for New 132/33kV transformer at Bhasantek 132/33kV GIS Substation carried to Schedule 5                                           |                                                                                                                                      |                 |      |                                         |                                                  |                                       |                                             |

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Name of Bidder:

Signature of Bidder:

**132kV Power Cable (1200 mm<sup>2</sup>)**

| SI No. | Description                                                                                       | Unit     | Minimum Requirements               | Guaranteed |
|--------|---------------------------------------------------------------------------------------------------|----------|------------------------------------|------------|
| 1      | General                                                                                           |          |                                    |            |
|        | Manufacturer                                                                                      |          | Insert                             |            |
|        | Type                                                                                              |          | Insert                             |            |
|        | Model Designation                                                                                 |          | Insert                             |            |
|        | Country of Origin                                                                                 |          | Insert                             |            |
|        | Standards                                                                                         |          | EC 62067                           |            |
|        | Quality Control                                                                                   |          | ISO 9001<br>ISO 14001<br>ISO 18001 |            |
|        | Type of conductor                                                                                 |          | Copper                             |            |
|        | Type of Insulation                                                                                |          | XLPE                               |            |
|        | Ambient temperature for calculation<br>- Average daily temperature<br>- maximum daily temperature | °C<br>°C | 30<br>45                           |            |
| 2      | Voltage                                                                                           |          |                                    |            |
|        | Rated Voltage                                                                                     | kV       | 132kV                              |            |
|        | Maximum System Voltage                                                                            | kV       | 145kV                              |            |
|        | Impulse withstand voltage                                                                         | kV       | 650                                |            |
|        | Power frequency withstand voltage                                                                 | kV       | 275                                |            |
| 3      | <b>Cores</b>                                                                                      |          |                                    |            |
|        | Number of cores                                                                                   |          | 1 (one)                            |            |
| 4      | <b>Conductor</b>                                                                                  |          |                                    |            |

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| SI No. | Description                                 | Unit            | Minimum Requirements                                                  | Guaranteed |
|--------|---------------------------------------------|-----------------|-----------------------------------------------------------------------|------------|
|        | Standard                                    |                 | IEC 60228                                                             |            |
|        | Nominal Current                             | A               | Insert                                                                |            |
|        | Cross sectional area                        | mm <sup>2</sup> | ≥ 1200                                                                |            |
|        | Nominal Diameter                            | mm              | Insert                                                                |            |
|        | Material                                    |                 | Annealed Copper                                                       |            |
|        | Design (standard of segmental)              |                 | Milliken (4/5 segment)                                                |            |
| 5      | <b>Conductor Screen</b>                     |                 |                                                                       |            |
|        | Material                                    |                 | Semi conducting tape & Extruded semiconducting compound, cross linked |            |
|        | Thickness (approx.)                         | mm              | Insert                                                                |            |
|        | Nominal Diameter over semi-conducting layer | mm              | Insert                                                                |            |
| 6      | <b>Insulation</b>                           |                 |                                                                       |            |
|        | Material                                    |                 | XLPE                                                                  |            |
|        | Process                                     |                 | Triple simultaneous extrusion                                         |            |
|        | Type of curing (dry)                        |                 | Dry Curing (VCV)                                                      |            |
|        | Average Thickness                           |                 | 23-25 mm                                                              |            |
|        | Minimum Thickness                           |                 | Insert                                                                |            |
|        | Nominal Diameter over insulation            |                 | Insert                                                                |            |
| 7      | <b>Insulation screen</b>                    |                 |                                                                       |            |
|        | Material                                    |                 | Extruded semi conducting compound, cross linked                       |            |
|        | Thickness approx.                           |                 | Insert                                                                |            |
|        | Nominal Diameter over semi conducting layer |                 | Insert                                                                |            |

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| SI No. | Description                                                                                          | Unit | Minimum Requirements                                  | Guaranteed |
|--------|------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------|------------|
| 8      | <b>Metallic Screen/Sheath</b>                                                                        |      |                                                       |            |
|        | Type                                                                                                 |      | Corrugated Seamless Aluminium Sheath                  |            |
|        | Thickness (nominal)                                                                                  |      |                                                       |            |
|        | Nominal Diameter over semi Metallic sheath                                                           | mm   | Insert                                                |            |
| 9      | <b>Longitudinal water tightness</b>                                                                  |      |                                                       |            |
|        | Material                                                                                             |      | Semi-conducting swellable tape                        |            |
|        | Nominal thickness and width approx.                                                                  |      | Insert                                                |            |
| 10     | <b>Radial moisture barrier</b>                                                                       |      |                                                       |            |
|        | Material                                                                                             |      | Laminated plastic coated aluminium tape / lead/copper |            |
|        | Nominal thickness and width approx.                                                                  |      | Insert                                                |            |
|        |                                                                                                      |      |                                                       |            |
| 11     | <b>Outer Covering</b>                                                                                |      |                                                       |            |
|        | Material                                                                                             |      | MDPE (Latest generation)                              |            |
|        | Colour                                                                                               |      | Black                                                 |            |
|        | Minimum average thickness                                                                            |      | Insert                                                |            |
|        | Termite repellent                                                                                    |      | Yes                                                   |            |
|        | Type of Termite repellent                                                                            |      | Insert                                                |            |
| 12     | <b>Completed Cable</b>                                                                               |      | Insert                                                |            |
|        | Overall diameter (approx.)                                                                           | mm   | Insert                                                |            |
|        | Weight per meter (approx.)                                                                           | kg   | Insert                                                |            |
| 13     | <b>Continuous Current carrying capacity based on the conditions special laid in the cable trench</b> |      | SPB * & Trefoil                                       |            |

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| SI No. | Description                                                                  | Unit    | Minimum Requirements                                                                       | Guaranteed |
|--------|------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------------|------------|
|        | One circuit                                                                  |         | Insert                                                                                     |            |
|        | Two circuit                                                                  |         | Insert                                                                                     |            |
|        | Three circuit                                                                |         | Insert                                                                                     |            |
|        | Drawn into ducts (One Cable in duct)                                         |         | Insert                                                                                     |            |
|        | One circuit                                                                  |         |                                                                                            |            |
|        | Two circuit                                                                  |         | Same as mentioned above provided the length of into the duct shall not exceed 5 % of route |            |
|        | Three Circuit                                                                |         | Insert                                                                                     |            |
|        | In Air                                                                       |         | Insert                                                                                     |            |
|        | Calculation as per IEC                                                       |         | During Execution                                                                           |            |
| 14     | <b>Max Conductor temperature</b>                                             |         |                                                                                            |            |
|        | Laid direct ground                                                           | °C      | Insert                                                                                     |            |
|        | Draw into ducts                                                              | °C      | Insert                                                                                     |            |
|        | Elected in air                                                               | °C      | Insert                                                                                     |            |
| 15     | Permissible overload in service condition                                    |         | Min 2 hrs in a day<br>Min 100 hrs in a month<br>Min 500 hrs in total life                  |            |
| 16     | Conductor short circuit current cable loaded as above prior to short circuit | kA/1sec | Insert                                                                                     |            |
|        | Carrying capacity for three second cable loaded                              | kA/3sec | Insert                                                                                     |            |
|        | Final conductor temperature                                                  | °C      | Insert                                                                                     |            |
|        | Calculation as per IEC                                                       |         | During Execution                                                                           |            |
| 17     | Sheath Earth Fault Current Carrying capacity                                 | kA/3sec | 40                                                                                         |            |
|        | Final Conductor temperature                                                  | °C      | Insert                                                                                     |            |

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| Sl No. | Description                                                                                       | Unit        | Minimum Requirements                     | Guaranteed |
|--------|---------------------------------------------------------------------------------------------------|-------------|------------------------------------------|------------|
| 18     | Max. Dielectric stress                                                                            | kV/meter    | Insert                                   |            |
|        | <ul style="list-style-type: none"> <li>on the conductor screen (assumed smooth)</li> </ul>        | kV/meter    | Insert                                   |            |
|        | <ul style="list-style-type: none"> <li>on the insulation</li> </ul>                               | kV/meter    | Insert                                   |            |
| 19     | <b>Minimum radius of bend around which cable can be laid</b>                                      |             | 20 x overall diameter of cable in meters |            |
|        | Laid direct                                                                                       |             | Insert                                   |            |
|        | In ducts                                                                                          |             | Insert                                   |            |
|        | In air                                                                                            |             | Insert                                   |            |
| 20     | Nominal Internal diameter of pipes on ducts through which cable may be pulled (One cable in duct) |             | Insert                                   |            |
| 21     | <b>Maximum DC resistance per km of cable at 20°C</b>                                              | ohm/km      |                                          |            |
|        | Of conductor                                                                                      | ohm/km      | Insert                                   |            |
|        | Of metallic layer                                                                                 | ohm/km      | Insert                                   |            |
| 22     | Maximum ac resistance per km of cable at maximum conductor temperature                            | ohm/km      | Insert                                   |            |
| 23     | <b>Insulation Resistance per km of cable per core</b>                                             |             |                                          |            |
|        | At 20°C                                                                                           | mega ohm-km | Insert                                   |            |

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| Sl No. | Description                                                                                                                                               | Unit             | Minimum Requirements | Guaranteed |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------|------------|
|        | At maximum rated temperature                                                                                                                              | mega ohm-km      | Insert               |            |
| 24     | Equivalent star Reactance per meter of 1 - phase circuit at nominal frequency                                                                             | ohm/k m          | Insert               |            |
| 25     | Maximum electrostatic capacitance per meter of cable approx.                                                                                              | $\mu\text{F/km}$ | Insert               |            |
| 26     | Maximum charging current per core per meter pf cable at nominal voltage, $U_0$                                                                            | A/km             | Insert               |            |
| 27     | Maximum dielectric loss cable per uncl of 3 phase circuit when laid direct in the ground ay nominal                                                       | W/m/p hase       | Insert               |            |
| 28     | Maximum induced voltage on metal sheath under fault condition (single core only)                                                                          |                  | Insert               |            |
| 29     | <b>Maximum dielectric Dissipation factor of charging of cable when laid direct in the ground at nominal voltage <math>U_0</math>, normal frequency at</b> |                  |                      |            |
|        | Conductor temperature of 20°C                                                                                                                             |                  | Insert               |            |
|        | Maximum conductor temperature of 90°C                                                                                                                     |                  | Insert               |            |
| 30     | Sheath loss of cable per meter of phase circuit at nominal voltage $U_0$ , normal frequency.                                                              | W/m/p hase       | Insert               |            |
| 31     | Cree page                                                                                                                                                 | Mm               | Insert               |            |
|        | Total creepage distance of outdoor sealing approx. mm and porcelain.                                                                                      |                  |                      |            |
| 32     | Earth continuity copper Conductor (IF REQD)                                                                                                               | $\text{mm}^2$    | Insert               |            |
| 33     | <b>Condition on which current carrying capacity are based</b>                                                                                             |                  |                      |            |

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| SI No. | Description                        | Unit    | Minimum Requirements | Guaranteed |
|--------|------------------------------------|---------|----------------------|------------|
|        | Soil thermal resistivity           | °C-cm/W | Insert               |            |
|        | Ground temperature                 | °C      | Insert               |            |
|        | Air temperature                    | °C      | Insert               |            |
|        | Burial depth                       | M       | Insert               |            |
|        | Axial spacing between phase cables | Mm      | Insert               |            |
|        | Axial spacing between circuits     | Mm      | Insert               |            |
|        | Type of earth bonding.             |         | Insert               |            |

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