**Bidding Document**

**for**

**Supply and Installation of Automatic Weather Stations (AWS) and Automatic Raingauges**

**ICB PACKAGE NO.: BMD-G-1**

**UNDER IDA CREDIT NO: 5837-BD**

****

**Bangladesh Meteorological Department**

**e-24, Agargaon, Dhaka-1207.**

**Bangladesh.**



**Procurement of**

**Supply and Installation of Automatic Weather Stations (AWS) and Automatic Raingauges**

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| **ICB PACKage No.** | **:** | BMD-G-1 |
| **Project** | **:** | BANGLADESH Weather and Climate Services Regional PROJECT (component-a: strengthening Meteorological INformation services and early warning systems) |
| **Purchaser** | **:** | BANGLADESH Meteorological Department |
| **Country** | **:** | The people’s republic Bangladesh |
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**Table of Contents**

PART 1 – Bidding Procedures 1

Section I. Instructions to Bidders 5

Section II. Bid Data Sheet (BDS) 29

Section III. Evaluation and Qualification Criteria 35

Section IV. Bidding Forms 43

Section V. Eligible Countries 77

Section VI. Bank Policy - Corrupt and Fraudulent Practices 78

PART 2 – Supply Requirements 81

Section VII. Schedule of Requirements 83

PART 3 - Contract 153

Section VIII. General Conditions of Contract 154

Section IX. Special Conditions of Contract 177

Section X. Contract Forms 188

Appendix 200

# PART 1 – Bidding Procedures

**Table of Clauses**

A. General 5

1. Scope of Bid 5

2. Source of Funds 5

3. Corrupt and Fraudulent Practices 5

4. Eligible Bidders 6

5. Eligible Goods and Related Services 8

B. Contents of Bidding Document 9

6. Sections of Bidding Document 9

7. Clarification of Bidding Documents 10

8. Amendment of Bidding Document 10

C. Preparation of Bids 10

9. Cost of Bidding 10

10. Language of Bid 10

11. Documents Comprising the Bid 11

12. Letter of Bid and Price Schedules 11

13. Alternative Bids 12

14. Bid Prices and Discounts 12

15. Currencies of Bid and Payment 14

16. Documents Establishing the Eligibility and Conformity of the Goods and Related Services 14

17. Documents Establishing the Eligibility and Qualifications of the Bidder 15

18. Period of Validity of Bids 16

19. Bid Security 16

20. Format and Signing of Bid 18

D. Submission and Opening of Bids 18

21. Sealing and Marking of Bids 18

22. Deadline for Submission of Bids 19

23. Late Bids 19

24. Withdrawal, Substitution, and Modification of Bids 19

25. Bid Opening 20

E. Evaluation and Comparison of Bids 21

26. Confidentiality 21

27. Clarification of Bids 22

28. Deviations, Reservations, and Omissions 22

29. Determination of Responsiveness 22

30. Nonconformities, Errors and Omissions 23

31. Correction of Arithmetical Errors 23

32. Conversion to Single Currency 24

33. Margin of Preference 24

34. Evaluation of Bids 24

35. Comparison of Bids 25

36. Qualification of the Bidder 25

37. Purchaser’s Right to Accept Any Bid, and to Reject Any or All Bids 26

F. Award of Contract 26

38. Award Criteria 26

39. Purchaser’s Right to Vary Quantities at Time of Award 26

40. Notification of Award 26

41. Signing of Contract 27

42. Performance Security 27

|  |  |
| --- | --- |
| Section I. Instructions to Bidders | |
|  | 1. General |
| 1. Scope of Bid | * 1. In connection with the Invitation for Bids, **specified in the Bid Data Sheet (BDS),** the Purchaser, **as specified in the BDS,** issues these Bidding Documents for the supply of Goods and Related Services incidental thereto as specified in Section VII, Schedule of Requirements. The name, identification and number of lots (contracts) of this International Competitive Bidding (ICB) procurement are **specified in the BDS.**   2. Throughout these Bidding Documents:  the term “in writing” means communicated in written form (e.g. by mail, e-mail, fax, telex) with proof of receipt;if the context so requires, “singular” means “plural” and vice versa; and“day” means calendar day. |
| 2. Source of Funds | * 1. The Borrower or Recipient (hereinafter called “Borrower”) **specified in the BDS** has applied for or received financing (hereinafter called “funds”) from the International Bank for Reconstruction and Development or the International Development Association (hereinafter called “the Bank”) in an amount **specified in BDS,** toward the project named **in BDS.** The Borrower intends to apply a portion of the funds to eligible payments under the contract for which these Bidding Documents are issued.   2. Payment by the Bank will be made only at the request of the Borrower and upon approval by the Bank in accordance with the terms and conditions of the Loan (or other financing) Agreement. The Loan (or other financing) Agreement prohibits a withdrawal from the Loan (or other financing) account for the purpose of any payment to persons or entities, or for any import of goods, if such payment or import, to the knowledge of the Bank, is prohibited by decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations. No party other than the Borrower shall derive any rights from the Loan (or other financing) Agreement or have any claim to the proceeds of the Loan (or other financing). |
| 3. Corrupt and Fraudulent Practices | 3.1 The Bank requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Section VI. 3.2 In further pursuance of this policy, Bidders shall permit and shall cause its agents (where declared or not), sub-contractors, sub-consultants, service providers or suppliers and to permit the Bank to inspect all accounts, records and other documents relating to the submission of the application, bid submission (in case prequalified), and contract performance (in the case of award), and to have them audited by auditors appointed by the Bank. |
| 4. Eligible Bidders | * 1. A Bidder may be a firm that is a private entity, a government-owned entity—subject to ITB 4.5—or any combination of such entities in the form of a joint venture (JV) under an existing agreement or with the intent to enter into such an agreement supported by a letter of intent. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the bidding process and, in the event the JV is awarded the Contract, during contract execution. **Unless specified in the BDS**, there is no limit on the number of members in a JV.   2. A Bidder shall not have a conflict of interest. Any Bidder found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest for the purpose of this bidding process, if the Bidder:  directly or indirectly controls, is controlled by or is under common control with another Bidder; orreceives or has received any direct or indirect subsidy from another Bidder; orhas the same legal representative as another Bidder; orhas a relationship with another Bidder, directly or through common third parties, that puts it in a position to influence the bid of another Bidder, or influence the decisions of the Purchaser regarding this bidding process; orparticipates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which such Bidder is involved. However, this does not limit the inclusion of the same subcontractor in more than one bid; orany of its affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the bid; orany of its affiliates has been hired (or is proposed to be hired) by the Purchaser or Borrower for the Contract implementation; orwould be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the project specified in the BDS ITB 2.1 that it provided or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm; orhas a close business or family relationship with a professional staff of the Borrower (or of the project implementing agency, or of a recipient of a part of the loan) who: (i) are directly or indirectly involved in the preparation of the bidding documents or specifications of the contract, and/or the bid evaluation process of such contract; or (ii) would be involved in the implementation or supervision of such contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Bank throughout the procurement process and execution of the contract  * 1. A Bidder may have the nationality of any country, subject to the restrictions pursuant to ITB 4.7. A Bidder shall be deemed to have the nationality of a country if the Bidder is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to the determination of the nationality of proposed sub-contractors or sub-consultants for any part of the Contract including related Services.   2. A Bidder that has been sanctioned by the Bank in accordance with the above ITB 3.1, including in accordance with the Bank’s Guidelines on Preventing and Combating Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants (“Anti-Corruption Guidelines”), shall be ineligible to be prequalified for, bid for, or be awarded a Bank-financed contract or benefit from a Bank-financed contract, financially or otherwise, during such period of time as the Bank shall have determined. The list of debarred firms and individuals is available at the electronic address **specified in the BDS.**   3. Bidders that are Government-owned enterprises or institutions in the Purchaser’s Country may participate only if they can establish that they (i) are legally and financially autonomous (ii) operate under commercial law, and (iii) are not dependent agencies of the Purchaser. To be eligible, a government-owned enterprise or institution shall establish to the Bank’s satisfaction, through all relevant documents, including its Charter and other information the Bank may request, that it: (i) is a legal entity separate from the government (ii) does not currently receive substantial subsidies or budget support; (iii) operates like any commercial enterprise, and, inter alia, is not obliged to pass on its surplus to the government, can acquire rights and liabilities, borrow funds and be liable for repayment of its debts, and can be declared bankrupt; and (iv) is not bidding for a contract to be awarded by the department or agency of the government which under their applicable laws or regulations is the reporting or supervisory authority of the enterprise or has the ability to exercise influence or control over the enterprise or institution.   4. A Bidder shall not be under suspension from bidding by the Purchaser as the result of the operation of a Bid–Securing Declaration.   5. Firms and individuals may be ineligible if so indicated in Section V and (a) as a matter of law or official regulations, the Borrower’s country prohibits commercial relations with that country, provided that the Bank is satisfied that such exclusion does not preclude effective competition for the supply of goods or the contracting of works or services required; or (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower’s country prohibits any import of goods or contracting of works or services from that country, or any payments to any country, person, or entity in that country.   6. A Bidder shall provide such evidence of eligibility satisfactory to the Purchaser, as the Purchaser shall reasonably request. |
| 5. Eligible Goods and Related Services | * 1. All the Goods and Related Services to be supplied under the Contract and financed by the Bank may have their origin in any country in accordance with Section V, Eligible Countries.   2. For purposes of this Clause, the term “goods” includes commodities, raw material, machinery, equipment, and industrial plants; and “related services” includes services such as insurance, installation, training, and initial maintenance.   3. The term “origin” means the country where the goods have been mined, grown, cultivated, produced, manufactured or processed; or, through manufacture, processing, or assembly, another commercially recognized article results that differs substantially in its basic characteristics from its components. |
|  | B. Contents of Bidding Document |
| 6. Sections of Bidding Document | * 1. The Bidding Documents consist of Parts 1, 2, and 3, which include all the Sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITB 8.   **PART 1 Bidding Procedures**   * Section I. Instructions to Bidders (ITB) * Section II. Bidding Data Sheet (BDS) * Section III. Evaluation and Qualification Criteria * Section IV. Bidding Forms * Section V. Eligible Countries * Section VI. Bank Policy-Corrupt and Fraudulent Practices |
|  | **PART 2 Supply Requirements**   * Section VII. Schedule of Requirements   **PART 3 Contract**   * Section VIII. General Conditions of Contract (GCC) * Section IX. Special Conditions of Contract (SCC) * Section X. Contract Forms |
|  | * 1. The Invitation for Bids issued by the Purchaser is not part of the Bidding Document.   2. Unless obtained directly from the Purchaser, the Purchaser is not responsible for the completeness of the document, responses to requests for clarification, the Minutes of the pre-Bid meeting (if any), or Addenda to the Bidding Document in accordance with ITB 8. In case of any contradiction, documents obtained directly from the Purchaser shall prevail.   3. The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Documents and to furnish with its Bid all information or documentation as is required by the Bidding Documents. |
| 7. Clarification of Bidding Documents | * 1. A Bidder requiring any clarification of the Bidding Document shall contact the Purchaser in writing at the Purchaser’s address **specified in the BDS**. The Purchaser will respond in writing to any request for clarification, provided that such request is received prior to the deadline for submission of bids within a period **specified in the BDS.** The Purchaser shall forward copies of its response to all Bidders who have acquired the Bidding Documents in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. If so **specified in the BDS**, the Purchaser shall also promptly publish its response at the web page **identified in the BDS**. Should the clarification result in changes to the essential elements of the Bidding Documents, the Purchaser shall amend the Bidding Documents following the procedure under ITB 8 and ITB 22.2. |
| 8. Amendment of Bidding Document | * 1. At any time prior to the deadline for submission of bids, the Purchaser may amend the Bidding Documents by issuing addenda.   2. Any addendum issued shall be part of the Bidding Documents and shall be communicated in writing to all who have obtained the Bidding Documents from the Purchaser in accordance with ITB 6.3.The Purchaser shall also promptly publish the addendum on the Purchaser’s web page in accordance with ITB 7.1.   3. To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, the Purchaser may, at its discretion, extend the deadline for the submission of bids, pursuant to ITB 22.2. |
|  | C. Preparation of Bids |
| 9. Cost of Bidding | * 1. The Bidder shall bear all costs associated with the preparation and submission of its bid, and the Purchaser shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process. |
| 10. Language of Bid | * 1. The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Purchaser, shall be written in the language **specified in the BDS.** Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages into the language **specified in the BDS,** in which case, for purposes of interpretation of the Bid, such translation shall govern. |
| 11. Documents Comprising the Bid | * 1. The Bid shall comprise the following:  Letter of Bid in accordance with ITB 12;  * + 1. completed schedules, in accordance with ITB 12 and 14  Bid Security or Bid-Securing Declaration, in accordance with ITB 19.1;alternative bids, if permissible, in accordance with ITB 13;written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2;documentary evidence in accordance with ITB 17 establishing the Bidder’s qualifications to perform the contract if its bid is accepted;documentary evidence in accordance with ITB 17 establishing the Bidder’s eligibility to bid;documentary evidence in accordance with ITB 16, that the Goods and Related Services to be supplied by the Bidder are of eligible origin;documentary evidence in accordance with ITB 16 and 30, that the Goods and Related Services conform to the Bidding Documents;any other document **required in the BDS.** 11.2 In addition to the requirements under ITB 11.1, bids submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful bid shall be signed by all members and submitted with the bid, together with a copy of the proposed Agreement.  11.3 The Bidder shall furnish in the Letter of Bid information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid. |
| 12. Letter of Bid and Price Schedules | * 1. The Letter of Bid and Price Schedules shall be prepared using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITB 20.2. All blank spaces shall be filled in with the information requested. |
| 13. Alternative Bids | * 1. Unless otherwise **specified in the BDS,** alternative bids shall not be considered. |
| 14. Bid Prices and Discounts | * 1. The prices and discounts quoted by the Bidder in the Letter of Bid and in the Price Schedules shall conform to the requirements specified below.   2. All lots (contracts) and items must be listed and priced separately in the Price Schedules.   3. The price to be quoted in the Letter of Bid in accordance with ITB 12.1 shall be the total price of the bid, excluding any discounts offered.   4. The Bidder shall quote any discounts and indicate the methodology for their application in the Letter of Bid, in accordance with ITB 12.1.   5. Prices quoted by the Bidder shall be fixed during the Bidder’s performance of the Contract and not subject to variation on any account, **unless otherwise specified in the BDS.** A bid submitted with an adjustable price quotation shall be treated as nonresponsive and shall be rejected, pursuant to ITB 29. However, if in accordance with the BDS, prices quoted by the Bidder shall be subject to adjustment during the performance of the Contract, a bid submitted with a fixed price quotation shall not be rejected, but the price adjustment shall be treated as zero.   6. If so specified in ITB 1.1, bids are being invited for individual lots (contracts) or for any combination of lots (packages). Unless otherwise **specified in the BDS,** prices quoted shall correspond to 100 % of the items specified for each lot and to 100% of the quantities specified for each item of a lot. Bidders wishing to offer discounts for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITB 14.4 provided the bids for all lots (contracts) are opened at the same time.   7. The terms EXW, CIP, and other similar terms shall be governed by the rules prescribed in the current edition of Incoterms, published by The International Chamber of Commerce, **as specified in the BDS.**   8. Prices shall be quoted as specified in each Price Schedule included in Section IV, Bidding Forms. The dis-aggregation of price components is required solely for the purpose of facilitating the comparison of bids by the Purchaser. This shall not in any way limit the Purchaser’s right to contract on any of the terms offered. In quoting prices, the Bidder shall be free to use transportation through carriers registered in any eligible country, in accordance with Section V, Eligible Countries. Similarly, the Bidder may obtain insurance services from any eligible country in accordance with Section V, Eligible Countries. Prices shall be entered in the following manner:  For Goods manufactured in the Purchaser’s Country: (i) the price of the Goods quoted EXW (ex-works, ex-factory, ex warehouse, ex showroom, or off-the-shelf, as applicable), including all customs duties and sales and other taxes already paid or payable on the components and raw material used in the manufacture or assembly of the Goods;  (ii) any Purchaser’s Country sales tax and other taxes which will be payable on the Goods if the contract is awarded to the Bidder; and  (iii) the price for inland transportation, insurance, and other local services required to convey the Goods to their final destination (Project Site) **specified in the BDS.**   1. For Goods manufactured outside the Purchaser’s Country, to be imported: 2. the price of the Goods, quoted CIP named place of destination, in the Purchaser’s Country, as **specified in the BDS;** 3. the price for inland transportation, insurance, and other local services required to convey the Goods from the named place of destination to their final destination (Project Site) **specified in the BDS;** 4. For Goods manufactured outside the Purchaser’s Country, already imported: 5. the price of the Goods, including the original import value of the Goods; plus any mark-up (or rebate); plus any other related local cost, and custom duties and other import taxes already paid or to be paid on the Goods already imported. 6. the custom duties and other import taxes already paid (need to be supported with documentary evidence) or to be paid on the Goods already imported; 7. the price of the Goods, obtained as the difference between (i) and (ii) above; 8. any Purchaser’s Country sales and other taxes which will be payable on the Goods if the contract is awarded to the Bidder; and 9. the price for inland transportation, insurance, and other local services required to convey the Goods from the named place of destination to their final destination (Project Site) **specified in the BDS.** 10. for Related Services, other than inland transportation and other services required to convey the Goods to their final destination, whenever such Related Services are specified in the Schedule of Requirements:     1. the price of each item comprising the Related Services (inclusive of any applicable taxes). |
| 15. Currencies of Bid and Payment | * 1. The currency(ies) of the bid and the currency(ies) of payments shall be as specified in the BDS*.*The Bidder shall quote in the currency of the Purchaser’s Country the portion of the bid price that corresponds to expenditures incurred in the currency of the Purchaser’s country, unless otherwise **specified in the BDS.**   2. The Bidder may express the bid price in any currency. If the Bidder wishes to be paid in a combination of amounts in different currencies, it may quote its price accordingly but shall use no more than three foreign currencies in addition to the currency of the Purchaser’s Country. |
| 16. Documents Establishing the Eligibility and Conformity of the Goods and Related Services | * 1. To establish the eligibility of the Goods and Related Services in accordance with ITB 5, Bidders shall complete the country of origin declarations in the Price Schedule Forms, included in Section IV, Bidding Forms.   2. To establish the conformity of the Goods and Related Services to the Bidding Documents, the Bidder shall furnish as part of its Bid the documentary evidence that the Goods conform to the technical specifications and standards specified in Section VII, Schedule of Requirements.   3. The documentary evidence may be in the form of literature, drawings or data, and shall consist of a detailed item by item description of the essential technical and performance characteristics of the Goods and Related Services, demonstrating substantial responsiveness of the Goods and Related Services to the technical specification, and if applicable, a statement of deviations and exceptions to the provisions of the Section VII, Schedule of Requirements.   4. The Bidder shall also furnish a list giving full particulars, including available sources and current prices of spare parts, special tools, etc., necessary for the proper and continuing functioning of the Goods during the period **specified in the BDS** following commencement of the use of the goods by the Purchaser.   5. Standards for workmanship, process, material, and equipment, as well as references to brand names or catalogue numbers specified by the Purchaser in the Schedule of Requirements, are intended to be descriptive only and not restrictive. The Bidder may offer other standards of quality, brand names, and/or catalogue numbers, provided that it demonstrates, to the Purchaser’s satisfaction, that the substitutions ensure substantial equivalence or are superior to those specified in the Section VII, Schedule of Requirements. |
| 17. Documents Establishing the Eligibility and Qualifications of the Bidder | * 1. To establish Bidder’s their eligibility in accordance with ITB 4, Bidders shall complete the Letter of Bid, included in Section IV, Bidding Forms.   2. The documentary evidence of the Bidder’s qualifications to perform the contract if its bid is accepted shall establish to the Purchaser’s satisfaction:      1. that, if **required in the BDS,** a Bidder that does not manufacture or produce the Goods it offers to supply shall submit the Manufacturer’s Authorization using the form included in Section IV, Bidding Forms to demonstrate that it has been duly authorized by the manufacturer or producer of the Goods to supply these Goods in the Purchaser’s Country;      2. that, if **required in the BDS,** in case of a Bidder not doing business within the Purchaser’s Country, the Bidder is or will be (if awarded the contract) represented by an Agent in the country equipped and able to carry out the Supplier’s maintenance, repair and spare parts-stocking obligations prescribed in the Conditions of Contract and/or Technical Specifications; and      3. that, the Bidder meets each of the qualification criterion specified in Section III, Evaluation and Qualification Criteria. |
| 18. Period of Validity of Bids | * 1. Bids shall remain valid for the period **specified in the BDS** after the bid submission deadline date prescribed by the Purchaser in accordance with ITB22.1. A bid valid for a shorter period shall be rejected by the Purchaser as nonresponsive.   2. In exceptional circumstances, prior to the expiration of the bid validity period, the Purchaser may request bidders to extend the period of validity of their bids. The request and the responses shall be made in writing. If a Bid Security is requested in accordance with ITB Clause 19, it shall also be extended for a corresponding period. A Bidder may refuse the request without forfeiting its Bid Security. A Bidder granting the request shall not be required or permitted to modify its bid, except as provided in ITB 18.3.   3. If the award is delayed by a period exceeding fifty-six (56) days beyond the expiry of the initial bid validity, the Contract price shall be determined as follows:      1. In the case of fixed price contracts, the Contract price shall be the bid price adjusted by the factor **specified in the BDS**.      2. In the case of adjustable price contracts, no adjustment shall be made.      3. In any case, bid evaluation shall be based on the bid price without taking into consideration the applicable correction from those indicated above. |
| 19. Bid Security | * 1. The Bidder shall furnish as part of its bid, either a Bid-Securing Declaration or a bid security, as **specified in the BDS,** in original form and, in the case of a bid security in the amount and currency **specified in the BDS.**   2. A Bid Securing Declaration shall use the form included in Section IV, Bidding Forms.   3. If a bid security is specified pursuant to ITB 19.1, the bid security shall be a demand guarantee in any of the following forms at the Bidder’s option :  an unconditional guarantee issued by a bank or financial institution (such as an insurance, bonding or surety company);an irrevocable letter of credit;a cashier’s or certified check; oranother security **specified in the BDS**, from a reputable source from an eligible country. If the unconditional guarantee is issued by a financial institution located outside the Purchaser’s Country, the issuing financial institution shall have a correspondent financial institution located in the Purchaser’s Country to make it enforceable. In the case of a bank guarantee, the bid security shall be submitted either using the Bid Security Form included in Section IV, Bidding Forms, or in another substantially similar format approved by the Purchaser prior to bid submission. The bid security shall be valid for twenty-eight (28) days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 18.2.   * 1. If a Bid Security is specified pursuant to ITB 19.1, any bid not accompanied by a substantially responsive Bid Security shall be rejected by the Purchaser as non-responsive.   2. If a Bid Security is specified pursuant to ITB 19.1, the Bid Security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder’s signing the contract and furnishing the Performance Security pursuant to ITB 42.   3. The Bid Security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the contract and furnished the required performance security.   4. The Bid Security may be forfeited or the Bid Securing Declaration executed:  if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid, or any extension thereto provided by the Bidder ; orif the successful Bidder fails to:sign the Contract in accordance with ITB 41; orfurnish a performance security in accordance with ITB 42.  * 1. The bid security or Bid- Securing Declaration of a JV must be in the name of the JV that submits the bid. If the JV has not been legally constituted into a legally enforceable JV at the time of bidding, the bid security or Bid-Securing Declaration shall be in the names of all future members as named in the letter of intent referred to in ITB 4.1 and ITB 11.2.   2. If a bid security is not required in the BDS, pursuant to ITB 19.1, and   3. if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid, or   4. if the successful Bidder fails to: sign the Contract in accordance with ITB 41; or furnish a performance security in accordance with ITB 42;   the Borrower may, **if provided for in the BDS**, declare the Bidder ineligible to be awarded a contract by the Purchaser for a period of time **as stated in the BDS**. |
| 20. Format and Signing of Bid | * 1. The Bidder shall prepare one original of the documents comprising the bid as described in ITB 11 and clearly mark it “Original.” Alternative bids, if permitted in accordance with ITB 13, shall be clearly marked “Alternative.” In addition, the Bidder shall submit copies of the bid, in the number specified in the BDS and clearly mark them “Copy.” In the event of any discrepancy between the original and the copies, the original shall prevail.   2. The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the BDS and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid where entries or amendments have been made shall be signed or initialed by the person signing the bid.   3. In case the Bidder is a JV, the Bid shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives.   4. Any inter-lineation, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the bid. |
|  | D. Submission and Opening of Bids |
| 21. Sealing and Marking of Bids | * 1. The Bidder shall enclose the original and all copies of the bid, including alternative bids, if permitted in accordance with ITB 13, in separate sealed envelopes, duly marking the envelopes as “Original”, “Alternative” and “Copy.” These envelopes containing the original and the copies shall then be enclosed in one single envelope.   2. The inner and outer envelopes shall:  bear the name and address of the Bidder;be addressed to the Purchaser in accordance with ITB 24.1;bear the specific identification of this bidding process indicated in ITB 1.1**;** andbear a warning not to open before the time and date for bid opening.  * 1. If all envelopes are not sealed and marked as required, the Purchaser will assume no responsibility for the misplacement or premature opening of the bid. |
| 22. Deadline for Submission of Bids | * 1. Bids must be received by the Purchaser at the address and no later than the date and time **specified in the BDS.** When so specified in the BDS, bidders shall have the option of submitting their bids electronically. Bidders submitting bids electronically shall follow the electronic bid submission procedures specified in the BDS.   2. The Purchaser may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Documents in accordance with ITB 8, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended. |
| 23. Late Bids | * 1. The Purchaser shall not consider any bid that arrives after the deadline for submission of bids, in accordance with ITB 22. Any bid received by the Purchaser after the deadline for submission of bids shall be declared late, rejected, and returned unopened to the Bidder. |
| 24. Withdrawal, Substitution, and Modification of Bids | * 1. A Bidder may withdraw, substitute, or modify its Bid after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization (the power of attorney) in accordance with ITB 20.2, (except that withdrawal notices do not require copies ). The corresponding substitution or modification of the bid must accompany the respective written notice. All notices must be:  1. prepared and submitted in accordance with ITB 20 and 21 (except that withdrawal notices do not require copies), and in addition, the respective envelopes shall be clearly marked “Withdrawal,” “Substitution,” or “Modification;” and 2. received by the Purchaser prior to the deadline prescribed for submission of bids, in accordance with ITB 22.    1. Bids requested to be withdrawn in accordance with ITB 24.1 shall be returned unopened to the Bidders.    2. No bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Bid or any extension thereof. |
| 25. Bid Opening | * 1. Except as in the cases specified in ITB 23 and 24, the Purchaser shall publicly open and read out in accordance with ITB 25.3 all bids received by the deadline at the date, time and place **specified in the BDS** in the presence of Bidders’ designated representatives and anyone who choose to attend. Any specific electronic bid opening procedures required if electronic bidding is permitted in accordance with ITB 22.1 shall be as **specified in the BDS.**   2. First, envelopes marked “Withdrawal” shall be opened and read out and the envelope with the corresponding bid shall not be opened, but returned to the Bidder. If the withdrawal envelope does not contain a copy of the “power of attorney” confirming the signature as a person duly authorized to sign on behalf of the Bidder, the corresponding bid will be opened. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at bid opening. Next, envelopes marked “Substitution” shall be opened and read out and exchanged with the corresponding Bid being substituted, and the substituted Bid shall not be opened, but returned to the Bidder. No Bid substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at bid opening. Envelopes marked “Modification” shall be opened and read out with the corresponding Bid. No Bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at Bid opening. Only bids that are opened and read out at Bid opening shall be considered further.   3. All other envelopes shall be opened one at a time, reading out: the name of the Bidder and whether there is a modification; the total Bid Prices, per lot (contract) if applicable, including any discounts and alternative bids; the presence or absence of a Bid Security, if required; and any other details as the Purchaser may consider appropriate. Only discounts and alternative bids read out at Bid opening shall be considered for evaluation. The Letter of Bid and the Price Schedules are to be initialed by representatives of the Purchaser attending bid opening in the manner **specified in the BDS.** The Purchaser shall neither discuss the merits of any bid nor reject any bid (except for late bids, in accordance with ITB 25.1).   4. The Purchaser shall prepare a record of the bid opening that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification; the Bid Price, per lot (contract) if applicable, including any discounts, and alternative bids; and the presence or absence of a Bid Security, if one was required. The Bidders’ representatives who are present shall be requested to sign the record. The omission of a Bidder’s signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders. |
|  | E. Evaluation and Comparison of Bids |
| 26. Confidentiality | * 1. Information relating to the evaluation of bids and recommendation of contract award, shall not be disclosed to bidders or any other persons not officially concerned with the bidding process until information on Contract Award is communication to all Bidders in accordance with ITB 40.   2. Any effort by a Bidder to influence the Purchaser in the evaluation or contract award decisions may result in the rejection of its Bid.   3. Notwithstanding ITB 26.2, from the time of bid opening to the time of Contract Award, if any Bidder wishes to contact the Purchaser on any matter related to the bidding process, it should do so in writing. |
| 27. Clarification of Bids | * 1. To assist in the examination, evaluation, comparison of the bids, and qualification of the Bidders, the Purchaser may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder in respect to its Bid and that is not in response to a request by the Purchaser shall not be considered. The Purchaser’s request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease, in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Purchaser in the Evaluation of the bids, in accordance with ITB 31.   2. If a Bidder does not provide clarifications of its bid by the date and time set in the Purchaser’s request for clarification, its bid may be rejected. |
| 28. Deviations, Reservations, and Omissions | * 1. During the evaluation of bids, the following definitions apply:  1. “Deviation” is a departure from the requirements specified in the Bidding Documents; 2. “Reservation” is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Documents; and 3. “Omission” is the failure to submit part or all of the information or documentation required in the Bidding Documents |
| 29. Determination of Responsiveness | * 1. The Purchaser’s determination of a bid’s responsiveness is to be based on the contents of the bid itself, as defined in ITB 11.   2. A substantially responsive Bid is one that meets the requirements of the Bidding Documents without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that:  if accepted, wouldaffect in any substantial way the scope, quality, or performance of the Goods and Related Services specified in the Contract; orlimit in any substantial way, inconsistent with the Bidding Documents, the Purchaser’s rights or the Bidder’s obligations under the Contract; orif rectified, would unfairly affect the competitive position of other bidders presenting substantially responsive bids.  * 1. The Purchaser shall examine the technical aspects of the bid submitted in accordance with ITB 16 and ITB 17, in particular, to confirm that all requirements of Section VII, Schedule of Requirements have been met without any material deviation or reservation, or omission.   2. If a bid is not substantially responsive to the requirements of Bidding Documents, it shall be rejected by the Purchaser and may not subsequently be made responsive by correction of the material deviation, reservation, or omission. |
| 30. Nonconformi­ties, Errors and Omissions | * 1. Provided that a Bid is substantially responsive, the Purchaser may waive any nonconformities in the Bid.   2. Provided that a bid is substantially responsive, the Purchaser may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the bid related to documentation requirements. Such omission shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.   3. Provided that a bid is substantially responsive, the Purchaser shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component. |
| 31. Correction of Arithmetical Errors | 1. Provided that the Bid is substantially responsive, the Purchaser shall correct arithmetical errors on the following basis:  if there is a discrepancy between the unit price and the line item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line item total shall be corrected, unless in the opinion of the Purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the line item total as quoted shall govern and the unit price shall be corrected;if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; andif there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.  1. Bidders shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITB 31.1 shall result in the rejection of the Bid. |
| 32. Conversion to Single Currency | * 1. For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted in a single currency as **specified in the BDS.** |
| 33. Margin of Preference | * 1. **Unless otherwise specified in the BDS,** a margin of preference shall not apply. |
| 34. Evaluation of Bids | * 1. The Purchaser shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.   2. To evaluate a Bid, the Purchaser shall consider the following:  evaluation will be done for Items or Lots (contracts), as **specified in the BDS;** and the Bid Price as quoted in accordance with clause 14;price adjustment for correction of arithmetic errors in accordance with ITB 31.1;price adjustment due to discounts offered in accordance with ITB 14.3;converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 32;price adjustment due to quantifiable nonmaterial nonconformities in accordance with ITB 30.3;the additional evaluation factors are specified in Section III, Evaluation and Qualification Criteria;  * 1. The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.   2. If these Bidding Documents allows Bidders to quote separate prices for different lots (contracts), the methodology to determine the lowest evaluated price of the lot (contract) combinations, including any discounts offered in the Letter of Bid Form, is specified in Section III, Evaluation and Qualification Criteria   3. The Purchaser’s evaluation of a bid will exclude and not take into account:  in the case of Goods manufactured in the Purchaser’s Country, sales and other similar taxes, which will be payable on the goods if a contract is awarded to the Bidder;in the case of Goods manufactured outside the Purchaser’s Country, already imported or to be imported, customs duties and other import taxes levied on the imported Good, sales and other similar taxes, which will be payable on the Goods if the contract is awarded to the Bidder;any allowance for price adjustment during the period of execution of the contract, if provided in the bid.  * 1. The Purchaser’s evaluation of a bid may require the consideration of other factors, in addition to the Bid Price quoted in accordance with ITB 14. These factors may be related to the characteristics, performance, and terms and conditions of purchase of the Goods and Related Services. The effect of the factors selected, if any, shall be expressed in monetary terms to facilitate comparison of bids, unless otherwise **specified in the BDS** from amongst those set out in Section III, Evaluation and Qualification Criteria. The criteria and methodologies to be used shall be as specified in ITB 34.2 (f). |
| 35. Comparison of Bids | * 1. The Purchaser shall compare the evaluated prices of all substantially responsive bids established in accordance with ITB 34.2to determine the lowest evaluated bid. The comparison shall be on the basis of CIP (place of final destination) prices for imported goods and EXW prices, plus cost of inland transportation and insurance to place of destination, for goods manufactured within the Borrower’s country, together with prices for any required installation, training, commissioning and other services. The evaluation of prices shall not take into account custom duties and other taxes levied on imported goods quoted CIP and sales and similar taxes levied in connection with the sale or delivery of goods. |
| 36. Qualification of the Bidder | * 1. The Purchaser shall determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated and substantially responsive bid meets the qualifying criteria specified in Section III, Evaluation and Qualification Criteria.   2. The determination shall be based upon an examination of the documentary evidence of the Bidder’s qualifications submitted by the Bidder, pursuant to ITB 17.   3. An affirmative determination shall be a prerequisite for award of the Contract to the Bidder. A negative determination shall result in disqualification of the bid, in which event the Purchaser shall proceed to the next lowest evaluated bid to make a similar determination of that Bidder’s qualifications to perform satisfactorily. |
| 37. Purchaser’s Right to Accept Any Bid, and to Reject Any or All Bids | * 1. The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability to Bidders. In case of annulment, all bids submitted and specifically, bid securities, shall be promptly returned to the Bidders. |
|  | F. Award of Contract |
| 38. Award Criteria | * 1. Subject to ITB 37.1, the Purchaser shall award the Contract to the Bidder whose bid has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Documents, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily. |
| 39. Purchaser’s Right to Vary Quantities at Time of Award | * 1. At the time the Contract is awarded, the Purchaser reserves the right to increase or decrease the quantity of Goods and Related Services originally specified in Section VII, Schedule of Requirements, provided this does not exceed the percentages **specified in the BDS,** and without any change in the unit prices or other terms and conditions of the bid and the Bidding Documents. |
| 40. Notification of Award | * 1. Prior to the expiration of the period of bid validity, the Purchaser shall notify the successful Bidder, in writing, that its Bid has been accepted. The notification letter (hereinafter and in the Conditions of Contract and Contract Forms called the “Letter of Acceptance”) shall specify the sum that the Purchaser will pay the Supplier in consideration of the supply of Goods (hereinafter and in the Conditions of Contract and Contract Forms called “the Contract Price”). At the same time, the Purchaser shall also notify all other Bidders of the results of the bidding and shall publish in *UNDB online* the results identifying the bid and lot (contract) numbers and the following information:   (i) name of each Bidder who submitted a Bid;  (ii) bid prices as read out at Bid Opening;  (iii) name and evaluated prices of each Bid that was evaluated;  (iv) name of bidders whose bids were rejected and the reasons for their rejection; and  (v) name of the successful Bidder, and the Price it offered, as well as the duration and summary scope of the contract awarded.   * 1. Until a formal Contract is prepared and executed, the notification of award shall constitute a binding Contract.   2. The Purchaser shall promptly respond in writing to any unsuccessful Bidder who, after notification of award in accordance with ITB 40.1, requests in writing the grounds on which its bid was not selected. |
| 41. Signing of Contract | * 1. Promptly after notification, the Purchaser shall send the successful Bidder the Contract Agreement.   2. Within twenty-eight (28) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Purchaser.   3. Notwithstanding ITB 41.2 above, in case signing of the Contract Agreement is prevented by any export restrictions attributable to the Purchaser, to the country of the Purchaser, or to the use of the products/goods, systems or services to be supplied, where such export restrictions arise from trade regulations from a country supplying those products/goods, systems or services, the Bidder shall not be bound by its bid, always provided however, that the Bidder can demonstrate to the satisfaction of the Purchaser and of the Bank that signing of the Contact Agreement has not been prevented by any lack of diligence on the part of the Bidder in completing any formalities, including applying for permits, authorizations and licenses necessary for the export of the products/goods, systems or services under the terms of the Contract. |
| 42. Performance Security | * 1. Within twenty eight (28) days of the receipt of notification of award from the Purchaser, the successful Bidder, if required, shall furnish the Performance Security in accordance with the GCC, subject to ITB 34.5, using for that purpose the Performance Security Form included in Section X, Contract Forms, or another Form acceptable to the Purchaser. If the Performance Security furnished by the successful Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Purchaser. A foreign institution providing a bond shall have a correspondent financial institution located in the Purchaser’s Country.   2. Failure of the successful Bidder to submit the above-mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security. In that event the Purchaser may award the Contract to the next lowest evaluated Bidder, whose bid is substantially responsive and is determined by the Purchaser to be qualified to perform the Contract satisfactorily. |

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| Section II. Bid Data Sheet (BDS)  The following specific data for the goods to be procured shall complement, supplement, or amend the provisions in the Instructions to Bidders (ITB). Whenever there is a conflict, the provisions herein shall prevail over those in ITB.  *[Instructions for completing the Bid Data Sheet are provided, as needed, in the notes in italics mentioned for the relevant ITB Clauses.]* | | | |
| **ITB Clause Reference** | | **A. General** | |
| **ITB 1.1** | | The reference number of the Invitation for Bids is :  **23.09.0000.090.45.006.19. Date: 27-Jan-2020** | |
| **ITB 1.1** | | The Purchaser is: **Bangladesh Meteorological Department, Government of the People’s Republic of Bangladesh.** | |
| **ITB 1.1** | | The name of the ICB is:  ***Supply and Installation of Automatic Weather Stations (AWS) and Automatic Raingauges***  The identification number of the ICB is: **BMD-G-1**  The number and identification of lots (contracts) comprising this ICB is: **This contract is comprised of a single lot.** | |
| **ITB 2.1** | | The Borrower is: **The People’s Republic of Bangladesh** | |
| **ITB 2.1** | | Loan or Financing Agreement amount: **US$ 113 million** | |
| **ITB 2.1** | | The name of the Project is: **Bangladesh Weather and Climate Services Regional Project (Component A: Strengthening Meteorological Information Services and Early Warning System)** | |
| **ITB 4.1** | | Maximum number of members in the JV shall be: **3 (three)** | |
| IITB 4.4 | | A list of debarred firms and individuals is available on the Bank’s external website: <http://www.worldbank.org/debarr> | |
|  | | **B. Contents of Bidding Documents** | |
| **ITB 7.1** | | For **Clarification of Bid purposes** only, the Purchaser’s address is:  Attention:  **Ahmed Arif Rashid**  **Project Director (PD), BWCSRP (Component-A), BMD**  Address: Abhawa Bhaban, E-24, Agargaon  Floor/ Room number*: N/A*  City: Dhaka  ZIP Code: 1207  Country: Bangladesh  Telephone: +880 2 48110705, 9123838, 8901016  Facsimile number: +880 2 58152019, 9119230  Electronic mail address*:*  PD : [*ahmedarifrashid@gmail.com*](mailto:ahmedarifrashid@gmail.com)  DPD (Finance and Admin) : [*momenulislam799@hotmail.com*](mailto:momenulislam799@hotmail.com)    ***Date and Time of pre-bid meeting:*** **25-Feb-2020 at BST 11:00** at Hall Room, 1st floor, Bangladesh Meteorological Department, Meteorological Complex, E-24, Agargaon, Dhaka-1207, Bangladesh.  Requests for clarification should be received by the Purchaser no later than: ***14 days before the submission deadline.*** | |
|  | | **C. Preparation of Bids** | |
| **ITB 10.1** | | The language of the bid is: **English**.  All correspondence exchange shall be in **the English** language.  Language for translation of supporting documents and printed literature is **English*.*** | |
| **ITB 11.1 (j)** | | The Bidder shall submit the following additional documents in its Bid:   1. Manufacturer’s catalogue/brochure/leaflets or any other similar documents of the offered product. 2. Supply record of the manufacturer for last 5 years using the form specified in Section IV. 3. In case the Bidder appoints an agent to act on behalf of the Bidder for this procurement, the Bidder and the agent must sign an Agent Agreement, clearly mentioning specific roles and responsibilities of the Agent and the Bidder. | |
| **ITB 13.1** | | Alternative Bids **shall not be** considered. | |
| **ITB 14.5** | | The prices quoted by the Bidder **shall not** be subject to adjustment during the performance of the Contract. | |
| **ITB 14.6** | | Prices quoted for each lot (contract) shall correspond at least **to 100** percent of the items specified for each lot (contract).  Prices quoted for each item of a lot shall correspond at least to **100** percent of the quantities specified for this item of a lot. | |
| **ITB 14.7** | | The Incoterms edition is: **2010**. | |
| **ITB 14.8 (b) (i) and (c) (v)** | | Place of Destination: Chattogram port of Bangladesh  Customs duties and Value Added Taxes (CD &VAT) of the imported materials under the Contract (incurred at the port of entry) shall be paid by the Purchaser. However, customs formalities including appointment of, and payment to, clearing and forwarding (C&F) agent shall be done by the purchaser. Port dues and all other charges shall be borne by the supplier. | |
| **ITB 14.8 (a) (iii);(b)(ii) and (c)(v)** | | “Final destination (Project Site)”:  **Bangladesh Meteorological Department, Abhawa Bhaban, E-24, Agargaon, Dhaka-1207 and**  **Multiple locations in Bangladesh listed in Appendix A.** | |
| **ITB 15.1** | | The prices shall be quoted by the bidder in any freely convertible currency up to a maximum of three currencies.  **The Bidder is required to quote in the currency of the Purchaser’s Country the portion of the bid price that corresponds to expenditures incurred in that currency.** | |
| **ITB 16.4** | | Period of time the Goods are expected to be functioning (for the purpose of spare parts): **10 (ten) *years.*** | |
| **ITB 17.2 (a)** | | Manufacturer’s authorization is: **required for items listed in Appendix B.** | |
| ITB 17.2 (b) | | After sales service is: **required.**  In case of a Bidder not doing business within the Purchaser’s Country, the Bidder will be (if awarded the contract) represented by an Agent in the country equipped and able to carry out the Supplier’s maintenance, repair and spare parts-stocking obligations prescribed in the Conditions of Contract and Technical Specifications. If awarded the contract, the bidder should establish After sales service network in the purchaser’s country within six months of award of contract. | |
| **ITB 18.1** | | The bid validity period shall be **120 (one hundred and twenty)** days. | |
| **ITB 18.3 (a)** | | The bid price shall be adjusted by the following factor(s): **None** | |
| **ITB 19.1** | | A *Bid Security* ***shall be*** required.  The amount and currency of the bid security shall be **USD 100,000.00 (US Dollar One Hundred Thousand)** or equivalent in any freely convertible currency.  If the unconditional guarantee is issued by a financial institution located outside the Purchaser’s Country, the issuing financial institution shall have a correspondent financial institution located in the Purchaser’s Country to make it enforceable.  In the case of a bank guarantee, the bid security shall be submitted either using the Bid Security Form included in Section IV, Bidding Forms, or in another substantially similar format approved by the Purchaser prior to bid submission.  In the case of a bank guarantee, if the issuing bank is located outside the Purchaser’s country, the Bid Security shall be endorsed by its correspondent bank or branch located in the Purchaser’s country to make it enforceable.  The bid security shall be valid for twenty-eight (28) days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 18.2. | |
| **ITB 19.3 (d)** | | Another security specified in the BDS, from a reputable source from an eligible country – Not applicable | |
| **ITB 19.9** | | Not applicable | |
| **ITB 20.1** | | In addition to the original of the bid, the number of copies are**: 1 (one) in separate envelopes**  **In addition, the Bidder will provide a soft copy of the bid in PDF format in USB flash drive/ CD. In case of interpretation, the original of the bid will prevail.** | |
| **ITB 20.2** | | The written confirmation of authorization to sign on behalf of the Bidder shall consist of: Power of attorney to sign the bid in accordance with ITB clause 20, with supporting document that the person(s) signing the power of attorney has the authority to delegate his/her authority to other person (for example, constitutional document or board resolution).  In case the Bidder authorizes a person who is not the payroll employee of the Bidder, the Bidder and the authorized person must have an Agent Agreement with specific roles and responsibilities with respect to this procurement. | |
|  | | **D. Submission and Opening of Bids** | |
| **ITB 22.1** | | For Bid submission purposes only, the Purchaser’s address is:  Hall Room (1st floor)  Bangladesh Meteorological Department  Ahbawa Bhaban, E-24, Agargaon, Dhaka-1207, Bangladesh.  ***The deadline for bid submission is:***  **Date: 15-Mar-2020**  **Time: 14:00 Hours local time (GMT+6 hours).**  Bidders/Manufacturers shall not have the option of submitting their bids electronically. | |
| **ITB 25.1** | | **The Bid opening shall take place at:**  Hall Room (1st Floor)  Bangladesh Meteorological Department  Abhawa Bhaban, E-24, Agargaon  Dhaka-1207, Bangladesh.  (Tenderers and their authorised representatives are allowed to attend)  **Date: 15-Mar-2020**  **Time: 15:00 Hours local time (GMT+6 hours).** | |
| **ITB 25.3** | | The Letter of Bid and Price Schedules shall be initialed by **3 (three)** representatives of the Purchaser conducting Bid opening. *Each Bid shall be initialed by all representatives and shall be numbered, any modification to the unit or total price shall be initialed by the Representative of the Employer* | |
| **E. Evaluation and Comparison of Bids** | | | |
| **ITB 32.1** | | The currency that shall be used for bid evaluation and comparison purposes to convert all bid prices expressed in various currencies into a single currency is BDT.  The source of exchange rate shall be: Bangladesh Bank webpage at “http://www.bangladesh-bank.org” and the rate shall be the BC selling exchange rate.  If the exchange rates are not available from the above source on the particular date, the exchange rates published in the Wall Street Journal would be used for currency conversion in US Dollar.  **The date for the exchange rate shall be 07 (seven) days earlier to the bid submission deadline.** | |
| **ITB 33.1** | | A margin of domestic preference shall apply.  The application methodology is defined in Section III Evaluation and Qualification Criteria. | |
| **ITB 34.2(a)** | | Evaluation will be done for all items together (contract).  Bids will be evaluated by lot (contract). If a Price Schedule shows items listed but not priced, their prices shall be assumed to be included in the prices of other items. An item not listed in the Price Schedule shall be assumed to be not included in the bid and such bid shall be treated as non-responsive. | |
| **ITB 34.6** | | The adjustments shall be determined using the following criteria, from amongst those set out in Section III, Evaluation and Qualification Criteria: ***[refer to Section III, Evaluation and Qualification Criteria; insert complementary details if necessary]***   1. Deviation in Delivery schedule: ***NO*** 2. Deviation in payment schedule: ***NO*** 3. the cost of major replacement component, mandatory spare parts, and service: ***NO*** 4. the availability in the Purchaser’s Country of spare parts and after-sales services for the equipment offered in the Bid : ***NO*** 5. Life cycle costs: the costs during the life of the goods or equipment ***: NO*** 6. the performance and productivity of the equipment offered: ***NO***   ***Any other specific criteria : None*** | |
|  | | **F. Award of Contract** | |
| **ITB 39.1** | | The maximum percentage by which quantities may be increased is: **25%**  The maximum percentage by which quantities may be decreased is: **25%** | |

Section III. Evaluation and Qualification Criteria

This Section contains all the criteria that the Purchaser shall use to evaluate a bid and qualify the Bidders. in accordance with ITB 34 and ITB 36, no other factors, methods or criteria shall be used.

**[The Purchaser shall select the criteria deemed appropriate for the procurement process, insert the appropriate wording using the samples below or other acceptable wording, and delete the text in italics]**

**Contents**

[1. Margin of Preference (ITB 33) 36](#_Toc31063037)

[2. Evaluation(ITB 34) 37](#_Toc31063038)

[3. Qualification (ITB 36) 39](#_Toc31063039)

1. Margin of Preference (ITB 33)

If the Bidding Data Sheet so specifies, the Purchaser will grant a margin of preference to goods manufactured in the Purchaser’s country for the purpose of bid comparison, in accordance with the procedures outlined in subsequent paragraphs.

Bids will be classified in one of three groups, as follows*:*

(a) **Group A:** Bids offering goods manufactured in the Purchaser’s Country, for which (i) labor, raw materials, and components from within the Purchaser’s Country account for more than thirty (30) percent of the EXW price; and (ii) the production facility in which they will be manufactured or assembled has been engaged in manufacturing or assembling such goods at least since the date of bid submission.

(b) **Group B:** All other bids offering Goods manufactured in the Purchaser’s Country.

(c) **Group C:** Bids offering Goods manufactured outside the Purchaser’s Country that have been already imported or that will be imported*.*

To facilitate this classification by the Purchaser, the Bidder shall complete whichever version of the Price Schedule furnished in the Bidding Documents is appropriate provided, however, that the completion of an incorrect version of the Price Schedule by the Bidder shall not result in rejection of its bid, but merely in the Purchaser’s reclassification of the bid into its appropriate bid group.

The Purchaser will first review the bids to confirm the appropriateness of, and to modify as necessary, the bid group classification to which bidders assigned their bids in preparing their Bid Forms and Price Schedules.

All evaluated bids in each group will then be compared to determine the lowest evaluated bid of each group. Such lowest evaluated bids shall be compared with each other and if as a result of this comparison a bid from Group A or Group B is the lowest, it shall be selected for the award.

If as a result of the preceding comparison, the lowest evaluated bid is a bid from Group C, all bids from Group C shall be further compared with the lowest evaluated bid from Group A after adding to the evaluated price of goods offered in each bid from Group C, for the purpose of this further comparison only, an amount equal to 15% (fifteen percent) of the respective CIP bid price for goods to be imported and already imported goods. Both prices shall include unconditional discounts and be corrected for arithmetical errors. If the bid from Group A is the lowest, it shall be selected for award. If not, the lowest evaluated bid from Group C shall be selected as paragraph above.”

2. Evaluation(ITB 34)

**2.1. Evaluation Criteria (ITB 34.6)**

The Purchaser’s evaluation of a bid may take into account, in addition to the Bid Price quoted in accordance with ITB Clause 14.8, one or more of the following factors as specified in ITB 34.2(f) and in BDS referring to ITB 34.6**,** using the following criteria and methodologies.

(a) Delivery schedule. (as per Incoterms specified in the BDS) Not Applicable

*The Goods specified in the List of Goods are required to be delivered within the acceptable time range (after the earliest and before the final date, both dates inclusive) specified in Section VII, Schedule of Requirements. No credit will be given to deliveries before the earliest date, and bids offering delivery after the final date shall be treated as nonresponsive. Within this acceptable period, an adjustment, as specified in BDS 34.6, will be added, for evaluation purposes only, to the bid price of bids offering deliveries later than the “Earliest Delivery Date” specified in Section VII, Schedule of Requirements.*

(b) Deviation in payment schedule. *[insert one of the following ]* Not Applicable

(i) *Bidders shall state their bid price for the payment schedule outlined in the SCC. Bids shall be evaluated on the basis of this base price. Bidders are, however, permitted to state an alternative payment schedule and indicate the reduction in bid price they wish to offer for such alternative payment schedule. The Purchaser may consider the alternative payment schedule and the reduced bid price offered by the Bidder selected on the basis of the base price for the payment schedule outlined in the SCC.*

**or**

(ii) *The SCC stipulates the payment schedule specified by the Purchaser. If a bid deviates from the schedule and if such deviation is considered acceptable to the Purchaser, the bid will be evaluated by calculating interest earned for any earlier payments involved in the terms outlined in the bid as compared with those stipulated in the SCC, at the rate per annum specified in BDS 34.6.*

(c) Cost of major replacement components, mandatory spare parts, and service. *[insert one of the following]* Not Applicable

(i) *The list of items and quantities of major assemblies, components, and selected spare parts, likely to be required during the initial period of operation specified in the BDS 16.4, is in the List of Goods. An adjustment equal to the total cost of these items, at the unit prices quoted in each bid, shall be added to the bid price, for evaluation purposes only.*

**or**

(ii) *The Purchaser will draw up a list of high-usage and high-value items of components and spare parts, along with estimated quantities of usage in the initial period of operation specified in the BDS 16.4. The total cost of these items and quantities will be computed from spare parts unit prices submitted by the Bidder and added to the bid price, for evaluation purposes only.*

(d) Availability in the Purchaser’s Country of spare parts and after sales services for equipment offered in the bid*.* Not Applicable

An adjustment equal to the cost to the Purchaser of establishing the minimum service facilities and parts inventories, as outlined in BDS 34.6, if quoted separately, shall be added to the bid price, for evaluation purposes only*.*

(e) Projected operating and maintenance costs. Not Applicable

Operating and maintenance costs. An adjustment to take into account the operating and maintenance costs of the Goods will be added to the bid price, for evaluation purposes only, if specified in BDS 34.6. The adjustment will be evaluated in accordance with the methodology specified in the BDS 34.6.

(f) Performance and productivity of the equipment. *[insert one of the following]* Not Applicable

(i)Performance and productivity of the equipment. An adjustment representing the capitalized cost of additional operating costs over the life of the plant will be added to the bid price, for evaluation purposes if specified in the BDS 34.6. The adjustment will be evaluated based on the drop in the guaranteed performance or efficiency offered in the bid below the norm of 100, using the methodology specified in BDS 34.6.

**or**

(ii) An adjustment to take into account the productivity of the goods offered in the bid will be added to the bid price, for evaluation purposes only, if specified in BDS 34.6. The adjustment will be evaluated based on the cost per unit of the actual productivity of goods offered in the bid with respect to minimum required values, using the methodology specified in BDS 34.6.

(g) Specific additional criteria

The evaluation of a bid shall take into account, the Bid Price quoted in the following forms under Section IV.

1. **Price Schedule: Goods Manufactured Outside the Purchaser’s Country, to be imported; OR**

**Price Schedule: Goods Manufactured Outside the Purchaser’s Country, already imported; OR**

**Price Schedule: Goods Manufactured in the Purchaser’s Country; AND**

1. **Price and Completion Schedule – Related Services; AND**
2. **Price and Completion Schedule – Annual Maintenance Services (cost of comprehensive Annual Maintenance Contract (AMC) for 03 (three) years after 02 (two) years mandatory warranty period).**

**2.2. Multiple Contracts (ITB 34.4)** Not Applicable

The Purchaser shall award multiple contracts to the Bidder that offers the lowest evaluated combination of bids (one contract per bid) and meets the post-qualification criteria (this Section III, Sub-Section ITB 36.1 Post-Qualification Requirements)

The Purchaser shall:

(a) evaluate only lots or contracts that include at least the percentages of items per lot and quantity per item as specified in ITB 14.8

(b) take into account:

* + - 1. the lowest-evaluated bid for each lot and
      2. the price reduction per lot and the methodology for its application as offered by the Bidder in its bid”

**2.3. Alternative Bids (ITB 13.1)**

*An alternative if permitted under ITB 13.1, will be evaluated as follows:*

***[Alternate bid not permitted]***

3. Qualification (ITB 36)

**3.1 Post-qualification Requirements (ITB 36.1)**

After determining the lowest-evaluated bid in accordance with ITB 35.1, the Purchaser shall carry out the post-qualification of the Bidder in accordance with ITB 36, using only the requirements specified. Requirements not included in the text below shall not be used in the evaluation of the Bidder’s qualifications.

* + 1. **Financial capability of bidder :**

The Bidder shall furnish documentary evidence that it meets the following financial requirement(s):

**(i) Average Annual Turnover**

**Bidder shall have annual turnover** at least **USD 05 (five) Million or equivalent** over a period of best 03 (three) years within last 05 (five years) i.e. 05 years counting backward from the date of publication of IFB;

*Bidder shall submit audited financial reports along with the bid, if Annual Turnover remains mentioned in the audited financial reports or if not required by the law of the Applicant’s country, other financial statements (third party statements enough to substantiate annual turnover) acceptable to the Employer, for the last five (5) years to substantiate average annual turnover.*

**(ii) Liquid Assets**

The Bidder at the time of bid submission should have at least the amount of **USD 04 (four) million or equivalent** liquid asset or working capital or credit facilities or their combination.

**Bidder as a Joint Venture**

In case of joint venture, all parties combined must meet the financial requirement stipulated in (i) and (ii) above. While, each partner to the joint venture must meet at least Twenty Five (25) percent of the financial requirements as mentioned above.

**(b) Experience and Technical Capacity**

The Bidder shall furnish documentary evidence to demonstrate that it meets the following experience requirement(s):

**(i) General Experience**:

The Bidder (in case of JV, each partner) shall have at least 05 (five) years of general experience in “manufacturing and supplying” / “Installation and commissioning” / “operation and maintenance” of Meteorological Equipment (i.e. years counting backward from the date of IFB publication).

**(ii) Specific Experience**:

Successful completion of contracts of similar nature (Ref. to **\*\*Note**) with a total value of at least **USD 03 (three) million or equivalent involving at least 150 numbers of AWS in not more than two contracts** within the last five years (years counting backward from the date of publication of the IFB).

**(c) Documentary Evidence**

*The Bidder shall furnish documentary evidence to demonstrate that the Goods it offers meet th*e following usage requirement:

*The goods offered by the bidder must satisfy the respective specifications mentioned in the technical specification of section VII – Schedule of requirements.*

**(d) Manufacturer’s Capability and Capacity**

The Bidder will furnish documentary evidence that the proposed Manufacturer(s) meets the following requirements:

1. The manufacturer has manufactured and supplied the proposed equipment (Synoptic AWS/ ARG/ Ag-AWS) having similar make and model for at least 150 equipment (Synoptic AWS/ ARG/ Ag-AWS) annually in any two of last 5 years. If the bidder is sourcing the equipment from different manufacturers, each manufacturer should meet this requirement in their respective category (Synoptic AWS/ ARG/ Ag-AWS) and the experience must be for the equipment make and model similar to one being proposed for this procurement.
2. Overall experience of manufacturing of the Automatic Weather Stations for the last 10 (ten) years, counting backward from the date of publication of IFB. (supply history/ appropriate documents should be provided)
3. Annual production capacity of Automatic Weather Stations: **320 sets**
4. The manufacturer should have registration with the local Chamber of Commerce and Industries or similar entity within the manufacturer’s country.

**\*\*Note: “Contract of similar nature” means implementation of Meteorological / Hydro-Meteorological equipment with telemetry in outdoor environment involving “Manufacturing and Supplying” / “Installation and Commissioning” / “Operation and Maintenance”.**

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| Section IV. Bidding Forms |

**Table of Forms**

Letter of Bid 44

Bidder Information Form 47

Bidder’s JV Members Information Form 48

Price Schedule: Goods Manufactured Outside the Purchaser’s Country, to be Imported 50

Price Schedule: Goods Manufactured Outside the Purchaser’s Country, already imported\* 56

Price Schedule: Goods Manufactured in the Purchaser’s Country 61

Price and Completion Schedule - Related Services 66

Price and Completion Schedule - Annual Maintenance Services 69

Form of Bid Security 71

Form of Bid Security (Bid Bond) – Not Applicable 73

Form of Bid-Securing Declaration – Not Applicable 74

Manufacturer’s Authorization 75

Letter of Bid

|  |
| --- |
| *The Bidder must prepare the Letter of Bid on stationery with its letterhead clearly showing the Bidder’s complete name and address.*  ***Note: All italicized text is for use in preparing these form and shall be deleted from the final products.*** |

Date: **[insert date (as day, month and year) of Bid Submission]**

ICB No.: **BMD-G-1**

Invitation for Bid No.: **[insert identification]**

Alternative No.: ***[insert identification No if this is a Bid for an alternative]***

To:

Project Director

Bangladesh Weather and Climate Services Regional Project (Component-A)

Bangladesh Meteorological Department

Abhawa Bhaban, E-24, Agargaon, Dhaka-1207. Bangladesh.

Phone: +88-02-48110705

1. We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB 8) ;
2. We meet the eligibility requirements and have no conflict of interest in accordance with ITB 4;
3. We have not been suspended nor declared ineligible by the Purchaser based on execution of a Bid Securing Declaration in the Purchaser’s country in accordance with ITB 4.6
4. We offer to supply in conformity with the Bidding Documents and in accordance with the Delivery Schedules specified in the Schedule of Requirements the following Goods:**[*insert a brief description of the Goods and Related Services*]**;
5. The total price of our Bid, excluding any discounts offered in item (f) below is:

In case of only one lot, total price of the Bid **[insert the total price of the bid in words and figures, indicating the various amounts and the respective currencies];**

In case of multiple lots, total price of each lot **[insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies];**

In case of multiple lots, total price of all lots (sum of all lots) **[insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies]**;

1. The discounts offered and the methodology for their application are:

(i) The discounts offered are: **[Specify in detail each discount offered.**]

(ii) The exact method of calculations to determine the net price after application of discounts is shown below:[**Specify in detail the method that shall be used to apply the discounts**];

1. Our bid shall be valid for a period of **[*specify the number of calendar days*]**  days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
2. If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;
3. We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process in accordance with ITB 4.2(e), other than alternative bids submitted in accordance with ITB 13;
4. We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by a member of the World Bank Group or a debarment imposed by the World Bank Group in accordance with the Agreement for Mutual Enforcement of Debarment Decisions between the World Bank and other development banks. Further, we are not ineligible under the Employer’s country laws or official regulations or pursuant to a decision of the United Nations Security Council;
5. We are not a government owned entity/ We are a government owned entity but meet the requirements of ITB 4.5;[[1]](#footnote-1)
6. We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract: **[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]**

|  |  |  |  |
| --- | --- | --- | --- |
| Name of Recipient | Address | Reason | Amount |
|  |  |  |  |
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|  |  |  |  |
|  |  |  |  |

(If none has been paid or is to be paid, indicate “none.”)

1. We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and
2. We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.
3. We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in any type of fraud and corruption

Name of the Bidder**\*** **[insert complete name of person signing the Bid]**

Name of the person duly authorized to sign the Bid on behalf of the Bidder**\*\* [insert complete name of person duly authorized to sign the Bid]**

Title of the person signing the Bid **[insert complete title of the person signing the Bid]**

Signature of the person named above [**insert signature of person whose name and capacity are shown above**]

Date signed \_**[insert date of signing]** day of **[insert month]**, **[insert year]**

**\***: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

\*\*: Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid Schedules.

Bidder Information Form

*[The Bidder shall fill in this Form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted.]*

Date: *[insert date (as day, month and year) of Bid Submission*]

ICB No.: ***BMD-G-1***

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

Page \_\_\_\_\_\_\_\_ of\_ \_\_\_\_\_\_ pages

|  |
| --- |
| 1. Bidder’s Name *[insert Bidder’s legal name]* |
| 2. In case of JV, legal name of each member : *[insert legal name of each member in JV]* |
| 3. Bidder’s actual or intended country of registration: *[insert actual or intended country of registration]* |
| 4. Bidder’s year of registration: *[insert Bidder’s year of registration]* |
| 5. Bidder’s Address in country of registration: *[insert Bidder’s legal address in country of registration]* |
| 6. Bidder’s Authorized Representative Information  Name: *[insert Authorized Representative’s name]*  Address: *[insert Authorized Representative’s Address]*  Telephone/Fax numbers: *[insert Authorized Representative’s telephone/fax numbers]*  Email Address: *[insert Authorized Representative’s email address]* |
| 7. Attached are copies of original documents of*[check the box(es) of the attached original documents]*  🞎 Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above, in accordance with ITB 4.3.  🞎 In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1.  🞎 In case of Government-owned enterprise or institution, in accordance with ITB 4.5 documents establishing:   * Legal and financial autonomy * Operation under commercial law * Establishing that the Bidder is not dependent agency of the Purchaser   2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership. |

Bidder’s JV Members Information Form

*[The Bidder shall fill in this Form in accordance with the instructions indicated below. The following table shall be filled in for the Bidder and for each member of a Joint Venture]].*

Date: *[insert date (as day, month and year) of Bid Submission*]

ICB No.: ***BMD-G-1***

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

Page \_\_\_\_\_\_\_\_ of\_ \_\_\_\_\_\_ pages

|  |
| --- |
| 1. Bidder’s Name: *[insert Bidder’s legal name]* |
| 2. Bidder’s JV Member’s name: *[insert JV’s Member legal name]* |
| 3. Bidder’s JV Member’s country of registration: *[insert JV’s Member country of registration]* |
| 4. Bidder’s JV Member’s year of registration: *[insert JV’s Member year of registration]* |
| 5. Bidder’s JV Member’s legal address in country of registration: *[insert JV’s Member legal address in country of registration]* |
| 6. Bidder’s JV Member’s authorized representative information  Name: *[insert name of JV’s Member authorized representative]*  Address: *[insert address of JV’s Member authorized representative]*  Telephone/Fax numbers: *[insert telephone/fax numbers of JV’s Member authorized representative]*  Email Address: *[insert email address of JV’s Member authorized representative]* |
| 7. Attached are copies of original documents of*[check the box(es) of the attached original documents]*  🞎 Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITB 4.3.  🞎 In case of a Government-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and absence of dependent status, in accordance with ITB 4.5.  2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership. |

Price Schedule Forms

*[The Bidder shall fill in these Price Schedule Forms in accordance with the instructions indicated. The list of line items in column 1 of the* ***Price Schedules*** *shall coincide with the List of Goods and Related Services specified by the Purchaser in the Schedule of Requirements.]*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Price Schedule: Goods Manufactured Outside the Purchaser’s Country, to be Imported | | | | | | | | | | |
|  | | | | (Group C bids, goods to be imported)  Currencies in accordance with ITB 15 | | | | Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  ICB No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Alternative No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Page N° \_\_\_\_\_\_ of \_\_\_\_\_\_ | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | 9 |
| Line Item  N° | Description of Goods | Country of Origin | Delivery Date as defined by Incoterms | Quantity and physical unit | Unit price  cip Chattogram Port  in accordance with ITB 14.8(b)(i) | CIP Price per line item  (Col. 5x6) | Price per line item for inland transportation and other services required in the Purchaser’s country to convey the Goods to their final destination specified in BDS | | | Total Price per Line item  (Col. 7+8) |
| *[insert number of the item]* | *[insert name of good]* | *[insert country of origin of the Good]* | *[insert quoted Delivery Date]* | *[insert number of units to be supplied and name of the physical unit]* | *[insert unit price CIP per unit]* | *[insert total CIP price per line item]* | *[insert the corresponding price per line item]* | | | *[insert total price of the line item]* |
| **A. Synoptic AWS (35 to be installed)** | | | | | | | | | | |
| 1 | Data Collection Platform (DCP) |  |  | 35 Number |  |  |  | | |  |
| 2 | Mobile Phone Network Modem/ Radio (GPRS / GSM based) (With SIM) |  |  | 35 Number |  |  |  | | |  |
| 3 | Temperature/ Relative Humidity Sensor |  |  | 35 Number |  |  |  | | |  |
| 4 | Wind Speed and Direction Sensor |  |  | 35 Number |  |  |  | | |  |
| 5 | Automatic Rain Gauge (Tipping Bucket Rain Gauge) |  |  | 35 Number |  |  |  | | |  |
| 6 | Solar Radiation Sensor |  |  | 35 Number |  |  |  | | |  |
| 7 | Sunshine Duration Sensor |  |  | 35 Number |  |  |  | | |  |
| 8 | Atmospheric Pressure Sensor |  |  | 35 Number |  |  |  | | |  |
| 9 | Power Supply and Charging System |  |  | 35 Number |  |  |  | | |  |
| 10 | Grounding, Surge and Lightning Protection |  |  | 35 Number |  |  |  | | |  |
| 11 | Meteorological Masts & Civil Works (Mast and Enclosure for DCP, Battery and Regulator) |  |  | 35 Number |  |  |  | | |  |
| **B. Ag-AWS (125 Stations to be installed)** | | | | | | | | | | |
| 12 | Data Collection Platform (DCP) |  |  | 125 Number |  |  |  | | |  |
| 13 | Mobile Phone Network Modem/Radio (GPRS / GSM based) (With SIM) |  |  | 125 Number |  |  |  | | |  |
| 14 | Temperature/ Relative Humidity Sensor |  |  | 125 Number |  |  |  | | |  |
| 15 | Wind Speed and Direction Sensor |  |  | 125 Number |  |  |  | | |  |
| 16 | Automatic Rain Gauge (Tipping Bucket Rain Gauge) |  |  | 125 Number |  |  |  | | |  |
| 17 | Solar Radiation Sensor |  |  | 125 Number |  |  |  | | |  |
| 18 | Atmospheric Pressure Sensor |  |  | 125 Number |  |  |  | | |  |
| 19 | Soil Temperature Sensor |  |  | 125 Number |  |  |  | | |  |
| 20 | Power Supply and Charging System |  |  | 125 Number |  |  |  | | |  |
| 21 | Grounding, Surge and Lightning Protection |  |  | 125 Number |  |  |  | | |  |
| 22 | Meteorological Masts & Civil Works (Mast and Enclosure for DCP, Battery and Regulator) |  |  | 125 Number |  |  |  | | |  |
| **C. ARG (65 Stations to be installed)** | | | | | | | | | | |
| 23 | Data Collection Platform (DCP) |  |  | 65 Number |  |  |  | | |  |
| 24 | Mobile Phone Network Modem/Radio (GPRS / GSM based) (With SIM) |  |  | 65 Number |  |  |  | | |  |
| 25 | Automatic Rain Gauge (Tipping Bucket Rain Gauge) |  |  | 65 Number |  |  |  | | |  |
| 26 | Power Supply and Charging System |  |  | 65 Number |  |  |  | | |  |
| 27 | Grounding, Surge and Lightning Protection |  |  | 65 Number |  |  |  | | |  |
| 28 | Meteorological Masts & Civil Works (Mast and Enclosure for DCP, Battery and Regulator) |  |  | 65 Number |  |  |  | | |  |
| **Accessories for standardization** | | | | | | | | | | |
| 29 | Field Temperature and Relative Humidity Reference Standard (for field calibration purpose) |  |  | 07 Number |  |  |  | | |  |
| 30 | Field Rain Gauge Check Standard (for field calibration purpose) |  |  | 04 Number |  |  |  | | |  |
| 31 | Field Atmospheric Pressure Check Standard (for field calibration purpose) |  |  | 07 Number |  |  |  | | |  |
| **ICT Software and Hardware** | | | | | | | | | | |
| 32 | Meteorological Data Collection Server (Server-1) |  |  | 01 Set |  |  |  | | |  |
| 33 | Meteorological Data Processing and Data Exchange Physical Server (Server-2, Server-3(Redundant)) |  |  | 02 Set |  |  |  | | |  |
| 34 | Cloud server for web and visualization software (Server 4 on cloud) |  |  | 01 Set |  |  |  | | |  |
| 35 | Web Server (Server-5) |  |  | 01 Set |  |  |  | | |  |
| 36 | Network Attached Storage (NAS) (For data archiving) |  |  | 01 Set |  |  |  | | |  |
| 37 | Network Router (Redundant 1) |  |  | 02 Number |  |  |  | | |  |
| 38 | Security Router (For 3 servers) |  |  | 03 Number |  |  |  | | |  |
| 39 | Online UPS 3KVA (for 4 servers) |  |  | 04 Number |  |  |  | | |  |
| 40 | Offline UPS 1200 VA (for WASAs and BMD Headquarters) |  |  | 05 Number |  |  |  | | |  |
| 41 | Computer rack |  |  | 01 Set |  |  |  | | |  |
| 42 | KVM Switch and Monitor |  |  | 01 Set |  |  |  | | |  |
| 43 | Computers (for WASAs and BMD Headquarters) |  |  | 05 Set |  |  |  | | |  |
| 44 | Large Display screens for WASAs and BMD Headquarters |  |  | 05 Set |  |  |  | | |  |
| 45 | Data Collection Software – AWS, Ag-AWS and ARG Station Communication, Control and Collection Software (Software to reside on Server 1) |  |  | 01 Set |  |  |  | | |  |
| 46 | AWS/Ag-AWS/ARG Data Processing Software (Software to reside on Server 2 and Server 3) |  |  | 02 Set |  |  |  | | |  |
| 47 | Data Visualization and Dissemination Software (Software to reside on Server 4 on cloud and Server 5) |  |  | 02 Set |  |  |  | | |  |
| 48 | ARG Station Visualization, Alert, Alarm Software (Software to reside on Server 4 and Server 5) |  |  | 02 Set |  |  |  | | |  |
|  | | | | | | | | Total Price |  | |
| Name of Bidder *[insert complete name of Bidder]*  Signature of Bidder *[signature of person signing the Bid]*  Date *[Insert Date]* | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Price Schedule: Goods Manufactured Outside the Purchaser’s Country, already imported\* | | | | | | | | | | | |
|  | | | (Group C bids, Goods already imported)  Currencies in accordance with ITB 15 | | | | | | Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  ICB No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Alternative No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Page N° \_\_\_\_\_\_ of \_\_\_\_\_\_ | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Line Item  N° | Description of Goods | Country of Origin | Delivery Date as defined by Incoterms | Quantity and physical unit | Unit price including Custom Duties and Import Taxes paid, in accordance with ITB 14.8(c)(i) | Custom Duties and Import Taxes paid per unit in accordance with ITB 14.8(c)(ii) , [to be supported by documents] | Unit Price net of custom duties and import taxes, in accordance with ITB 148 (c) (iii)  (Col. 6 minus Col.7) | Price per line item net of Custom Duties and Import Taxes paid, in accordance with ITB 14.8(c)(i)  (Col. 5×8) | Price per line item for inland transportation and other services required in the Purchaser’s country to convey the goods to their final destination, as specified in BDS in accordance with ITB 14.8 (c)(v) | Sales and other taxes paid or payable per item if Contract is awarded (in accordance with ITB 14.8(c)(iv) | Total Price per line item  (Col. 9+10) |
| *[insert number of the item]* | *[insert name of Goods]* | *[insert country of origin of the Good]* | *[insert quoted Delivery Date]* | *[insert number of units to be supplied and name of the physical unit]* | *[insert unit price per unit]* | *[insert custom duties and taxes paid per unit]* | *[insert unit price net of custom duties and import taxes]* | *[ insert price per line item net of custom duties and import taxes]* | *[insert price per line item for inland transportation and other services required in the Purchaser’s country]* | *[insert sales and other taxes payable per item if Contract is awarded]* | *[insert total price per line item]* |
| **A. Synoptic AWS (35 to be installed)** | | | | | | | | | | | |
| 1 | Data Collection Platform (DCP) |  |  | 35 Number |  |  |  |  |  |  |  |
| 2 | Mobile Phone Network Modem/ Radio (GPRS / GSM based) (With SIM) |  |  | 35 Number |  |  |  |  |  |  |  |
| 3 | Temperature/ Relative Humidity Sensor |  |  | 35 Number |  |  |  |  |  |  |  |
| 4 | Wind Speed and Direction Sensor |  |  | 35 Number |  |  |  |  |  |  |  |
| 5 | Automatic Rain Gauge (Tipping Bucket Rain Gauge) |  |  | 35 Number |  |  |  |  |  |  |  |
| 6 | Solar Radiation Sensor |  |  | 35 Number |  |  |  |  |  |  |  |
| 7 | Sunshine Duration Sensor |  |  | 35 Number |  |  |  |  |  |  |  |
| 8 | Atmospheric Pressure Sensor |  |  | 35 Number |  |  |  |  |  |  |  |
| 9 | Power Supply and Charging System |  |  | 35 Number |  |  |  |  |  |  |  |
| 10 | Grounding, Surge and Lightning Protection |  |  | 35 Number |  |  |  |  |  |  |  |
| 11 | Meteorological Masts & Civil Works (Mast and Enclosure for DCP, Battery and Regulator) |  |  | 35 Number |  |  |  |  |  |  |  |
| **B. Ag-AWS (125 Stations to be installed)** | | | | | | | | | | | |
| 12 | Data Collection Platform (DCP) |  |  | 125 Number |  |  |  |  |  |  |  |
| 13 | Mobile Phone Network Modem/Radio (GPRS / GSM based) (With SIM) |  |  | 125 Number |  |  |  |  |  |  |  |
| 14 | Temperature/ Relative Humidity Sensor |  |  | 125 Number |  |  |  |  |  |  |  |
| 15 | Wind Speed and Direction Sensor |  |  | 125 Number |  |  |  |  |  |  |  |
| 16 | Automatic Rain Gauge (Tipping Bucket Rain Gauge) |  |  | 125 Number |  |  |  |  |  |  |  |
| 17 | Solar Radiation Sensor |  |  | 125 Number |  |  |  |  |  |  |  |
| 18 | Atmospheric Pressure Sensor |  |  | 125 Number |  |  |  |  |  |  |  |
| 19 | Soil Temperature Sensor |  |  | 125 Number |  |  |  |  |  |  |  |
| 20 | Power Supply and Charging System |  |  | 125 Number |  |  |  |  |  |  |  |
| 21 | Grounding, Surge and Lightning Protection |  |  | 125 Number |  |  |  |  |  |  |  |
| 22 | Meteorological Masts & Civil Works (Mast and Enclosure for DCP, Battery and Regulator) |  |  | 125 Number |  |  |  |  |  |  |  |
| **C. ARG (65 Stations to be installed)** | | | | | | | | | | | |
| 23 | Data Collection Platform (DCP) |  |  | 65 Number |  |  |  |  |  |  |  |
| 24 | Mobile Phone Network Modem/Radio (GPRS / GSM based) (With SIM) |  |  | 65 Number |  |  |  |  |  |  |  |
| 25 | Automatic Rain Gauge (Tipping Bucket Rain Gauge) |  |  | 65 Number |  |  |  |  |  |  |  |
| 26 | Power Supply and Charging System |  |  | 65 Number |  |  |  |  |  |  |  |
| 27 | Grounding, Surge and Lightning Protection |  |  | 65 Number |  |  |  |  |  |  |  |
| 28 | Meteorological Masts & Civil Works (Mast and Enclosure for DCP, Battery and Regulator) |  |  | 65 Number |  |  |  |  |  |  |  |
| **Accessories for standardization** | | | | | | | | | | | |
| 29 | Field Temperature and Relative Humidity Reference Standard (for field calibration purpose) |  |  | 07 Number |  |  |  |  |  |  |  |
| 30 | Field Rain Gauge Check Standard (for field calibration purpose) |  |  | 04 Number |  |  |  |  |  |  |  |
| 31 | Field Atmospheric Pressure Check Standard (for field calibration purpose) |  |  | 07 Number |  |  |  |  |  |  |  |
| **ICT Software and Hardware** | | | | | | | | | | | |
| 32 | Meteorological Data Collection Server (Server-1) |  |  | 01 Set |  |  |  |  |  |  |  |
| 33 | Meteorological Data Processing and Data Exchange Physical Server (Server-2, Server-3(Redundant)) |  |  | 02 Set |  |  |  |  |  |  |  |
| 34 | Cloud server for web and visualization software (Server 4 on cloud) |  |  | 01 Set |  |  |  |  |  |  |  |
| 35 | Web Server (Server-5) |  |  | 01 Set |  |  |  |  |  |  |  |
| 36 | Network Attached Storage (NAS) (For data archiving) |  |  | 01 Set |  |  |  |  |  |  |  |
| 37 | Network Router (Redundant 1) |  |  | 02 Number |  |  |  |  |  |  |  |
| 38 | Security Router (For 3 servers) |  |  | 03 Number |  |  |  |  |  |  |  |
| 39 | Online UPS 3KVA (for 4 servers) |  |  | 04 Number |  |  |  |  |  |  |  |
| 40 | Offline UPS 1200 VA (for WASAs and BMD Headquarters) |  |  | 05 Number |  |  |  |  |  |  |  |
| 41 | Computer rack |  |  | 01 Set |  |  |  |  |  |  |  |
| 42 | KVM Switch and Monitor |  |  | 01 Set |  |  |  |  |  |  |  |
| 43 | Computers (for WASAs and BMD Headquarters) |  |  | 05 Set |  |  |  |  |  |  |  |
| 44 | Large Display screens for WASAs and BMD Headquarters |  |  | 05 Set |  |  |  |  |  |  |  |
| 45 | Data Collection Software – AWS, Ag-AWS and ARG Station Communication, Control and Collection Software (Software to reside on Server 1) |  |  | 01 Set |  |  |  |  |  |  |  |
| 46 | AWS/Ag-AWS/ARG Data Processing Software (Software to reside on Server 2 and Server 3) |  |  | 02 Set |  |  |  |  |  |  |  |
| 47 | Data Visualization and Dissemination Software (Software to reside on Server 4 on cloud and Server 5) |  |  | 02 Set |  |  |  |  |  |  |  |
| 48 | ARG Station Visualization, Alert, Alarm Software (Software to reside on Server 4 and Server 5) |  |  | 02 Set |  |  |  |  |  |  |  |
|  | | | | | | | | | | Total Bid Price |  |
| Name of Bidder *[insert complete name of Bidder]*  Signature of Bidder *[signature of person signing the Bid]*  Date *[insert date]* | | | | | | | | | | | |

\* *[For previously imported Goods, the quoted price shall be distinguishable from the original import value of these Goods declared to customs and shall include any rebate or mark-up of the local agent or representative and all local costs except import duties and taxes, which have been and/or have to be paid by the Purchaser. For clarity the bidders are asked to quote the price including import duties, and additionally to provide the import duties and the price net of import duties which is the difference of those values.]*

Price Schedule: Goods Manufactured in the Purchaser’s Country

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Purchaser’s Country  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | (Group A and B bids)  Currencies in accordance with ITB 15 | | | | Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  ICB No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Alternative No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Page N° \_\_\_\_\_\_ of \_\_\_\_\_\_ | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Line Item  N° | Description of Goods | Delivery Date as defined by Incoterms | Quantity and physical unit | Unit price EXW | Total EXW price per line item  (Col. 4×5) | Price per line item for inland transportation and other services required in the Purchaser’s Country to convey the Goods to their final destination | Cost of local labor, raw materials and components from with origin in the Purchaser’s Country  % of Col. 5 | Sales and other taxes payable per line item if Contract is awarded (in accordance with ITB 14.8(a)(ii) | Total Price per line item  (Col. 6+7) |
| *[insert number of the item]* | *[insert name of Good]* | *[insert quoted Delivery Date]* | *[insert number of units to be supplied and name of the physical unit]* | *[insert EXW unit price]* | *[insert total EXW price per line item]* | *[insert the corresponding price per line item]* | *[Insert cost of local labor, raw material and components from within the Purchase’s country as a % of the EXW price per line item]* | *[insert sales and other taxes payable per line item if Contract is awarded]* | *[insert total price per item]* |
| **A. Synoptic AWS (35 to be installed)** | | | | | | | | | |
| 1 | Data Collection Platform (DCP) |  |  | 35 Number |  |  |  |  |  |
| 2 | Mobile Phone Network Modem/ Radio (GPRS / GSM based) (With SIM) |  |  | 35 Number |  |  |  |  |  |
| 3 | Temperature/ Relative Humidity Sensor |  |  | 35 Number |  |  |  |  |  |
| 4 | Wind Speed and Direction Sensor |  |  | 35 Number |  |  |  |  |  |
| 5 | Automatic Rain Gauge (Tipping Bucket Rain Gauge) |  |  | 35 Number |  |  |  |  |  |
| 6 | Solar Radiation Sensor |  |  | 35 Number |  |  |  |  |  |
| 7 | Sunshine Duration Sensor |  |  | 35 Number |  |  |  |  |  |
| 8 | Atmospheric Pressure Sensor |  |  | 35 Number |  |  |  |  |  |
| 9 | Power Supply and Charging System |  |  | 35 Number |  |  |  |  |  |
| 10 | Grounding, Surge and Lightning Protection |  |  | 35 Number |  |  |  |  |  |
| 11 | Meteorological Masts & Civil Works (Mast and Enclosure for DCP, Battery and Regulator) |  |  | 35 Number |  |  |  |  |  |
| **B. Ag-AWS (125 Stations to be installed)** | | | | | | | | | |
| 12 | Data Collection Platform (DCP) |  |  | 125 Number |  |  |  |  |  |
| 13 | Mobile Phone Network Modem/Radio (GPRS / GSM based) (With SIM) |  |  | 125 Number |  |  |  |  |  |
| 14 | Temperature/ Relative Humidity Sensor |  |  | 125 Number |  |  |  |  |  |
| 15 | Wind Speed and Direction Sensor |  |  | 125 Number |  |  |  |  |  |
| 16 | Automatic Rain Gauge (Tipping Bucket Rain Gauge) |  |  | 125 Number |  |  |  |  |  |
| 17 | Solar Radiation Sensor |  |  | 125 Number |  |  |  |  |  |
| 18 | Atmospheric Pressure Sensor |  |  | 125 Number |  |  |  |  |  |
| 19 | Soil Temperature Sensor |  |  | 125 Number |  |  |  |  |  |
| 20 | Power Supply and Charging System |  |  | 125 Number |  |  |  |  |  |
| 21 | Grounding, Surge and Lightning Protection |  |  | 125 Number |  |  |  |  |  |
| 22 | Meteorological Masts & Civil Works (Mast and Enclosure for DCP, Battery and Regulator) |  |  | 125 Number |  |  |  |  |  |
| **C. ARG (65 Stations to be installed)** | | | | | | | | | |
| 23 | Data Collection Platform (DCP) |  |  | 65 Number |  |  |  |  |  |
| 24 | Mobile Phone Network Modem/Radio (GPRS / GSM based) (With SIM) |  |  | 65 Number |  |  |  |  |  |
| 25 | Automatic Rain Gauge (Tipping Bucket Rain Gauge) |  |  | 65 Number |  |  |  |  |  |
| 26 | Power Supply and Charging System |  |  | 65 Number |  |  |  |  |  |
| 27 | Grounding, Surge and Lightning Protection |  |  | 65 Number |  |  |  |  |  |
| 28 | Meteorological Masts & Civil Works (Mast and Enclosure for DCP, Battery and Regulator) |  |  | 65 Number |  |  |  |  |  |
| **Accessories for standardization** | | | | | | | | | |
| 29 | Field Temperature and Relative Humidity Reference Standard (for field calibration purpose) |  |  | 07 Number |  |  |  |  |  |
| 30 | Field Rain Gauge Check Standard (for field calibration purpose) |  |  | 04 Number |  |  |  |  |  |
| 31 | Field Atmospheric Pressure Check Standard (for field calibration purpose) |  |  | 07 Number |  |  |  |  |  |
| **ICT Software and Hardware** | | | | | | | | | |
| 32 | Meteorological Data Collection Server (Server-1) |  |  | 01 Set |  |  |  |  |  |
| 33 | Meteorological Data Processing and Data Exchange Physical Server (Server-2, Server-3(Redundant)) |  |  | 02 Set |  |  |  |  |  |
| 34 | Cloud server for web and visualization software (Server 4 on cloud) |  |  | 01 Set |  |  |  |  |  |
| 35 | Web Server (Server-5) |  |  | 01 Set |  |  |  |  |  |
| 36 | Network Attached Storage (NAS) (For data archiving) |  |  | 01 Set |  |  |  |  |  |
| 37 | Network Router (Redundant 1) |  |  | 02 Number |  |  |  |  |  |
| 38 | Security Router (For 3 servers) |  |  | 03 Number |  |  |  |  |  |
| 39 | Online UPS 3KVA (for 4 servers) |  |  | 04 Number |  |  |  |  |  |
| 40 | Offline UPS 1200 VA (for WASAs and BMD Headquarters) |  |  | 05 Number |  |  |  |  |  |
| 41 | Computer rack |  |  | 01 Set |  |  |  |  |  |
| 42 | KVM Switch and Monitor |  |  | 01 Set |  |  |  |  |  |
| 43 | Computers (for WASAs and BMD Headquarters) |  |  | 05 Set |  |  |  |  |  |
| 44 | Large Display screens for WASAs and BMD Headquarters |  |  | 05 Set |  |  |  |  |  |
| 45 | Data Collection Software – AWS, Ag-AWS and ARG Station Communication, Control and Collection Software (Software to reside on Server 1) |  |  | 01 Set |  |  |  |  |  |
| 46 | AWS/Ag-AWS/ARG Data Processing Software (Software to reside on Server 2 and Server 3) |  |  | 02 Set |  |  |  |  |  |
| 47 | Data Visualization and Dissemination Software (Software to reside on Server 4 on cloud and Server 5) |  |  | 02 Set |  |  |  |  |  |
| 48 | ARG Station Visualization, Alert, Alarm Software (Software to reside on Server 4 and Server 5) |  |  | 02 Set |  |  |  |  |  |
|  | | | | | | | | Total Price |  |
| Name of Bidder *[insert complete name of Bidder]*  Signature of Bidder *[signature of person signing the Bid]*  Date *[insert date]* | | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Price and Completion Schedule - Related Services | | | | | | | |
|  | | Currencies in accordance with ITB 15 | | | | Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  ICB No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Alternative No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Page N° \_\_\_\_\_\_ of \_\_\_\_\_\_ | |
| 1 | 2 | | 3 | 4 | 5 | 6 | 7 |
| Service  N° | Description of Services (excludes inland transportation and other services required in the Purchaser’s country to convey the goods to their final destination) | | Country of Origin | Delivery Date at place of Final destination | Quantity and physical unit | Unit price | Total Price per Service  (Col. 5\*6 or estimate) |
| *[insert number of the Service]* | *[insert name of Services]* | | *[insert country of origin of the Services]* | *[insert delivery date at place of final destination per Service]* | *[insert number of units to be supplied and name of the physical unit]* | *[insert unit price per item]* | *[insert total price per item]* |
| 1 | Implementation plan document (as per the section 3.4.17) | |  |  | 10 Copy |  |  |
| 2 | Training Program Schedule (as per Training Section 3.4.13) | |  |  | 12 Copy |  |  |
| 3 | Executing Off-site (foreign) training (as per Training Section 3.4.13) | |  |  | 60 Trainee-Days |  |  |
| 4 | Training material of off-site (foreign) training (as per Training Section 3.4.13) | |  |  | 15 Copy |  |  |
| 5 | Training material of onsite training (as per Training Section 3.4.13) | |  |  | 100 Copy |  |  |
| 6 | Additional Data Sheet (as per the section 3.4.17) | |  |  | 04 Copy |  |  |
| 7 | Additional User and Operational Manual (as per the section 3.4.17) | |  |  | 07 Copy |  |  |
| 8 | Diagrams and Drawings (as per the section 3.4.17) | |  |  | 20 Copy |  |  |
| **A** | **Related services during installation and commissioning stage** | | | | | | |
| 9 | Installation of AWS Stations including civil and other related works as specified in the technical specifications | |  |  | 35 Number |  |  |
| 10 | Installation of Ag-AWS Stations including necessary civil and other related works as specified in the technical specifications | |  |  | 125 Number |  |  |
| 11 | Installation of ARG Stations including necessary civil and other related works as specified in the Technical specifications. | |  |  | 65 Number |  |  |
| 12 | Integration of all AWS, Ag-AWS and ARG Remote Stations to Data Center at BMD Headquarters, Dhaka | |  |  | LS |  |  |
| 13 | Full systems Installation & Integration (AWS / Ag-AWS / ARG) at Data center of BMD including hosting of website on cloud and real time synchronizing of data with cloud server and physical server; as specified in the Technical Specifications | |  |  | LS |  |  |
| 14 | Installation and integration of computers and display boards at the WASA sites and BMD Headquarters | |  |  | LS |  |  |
| 15 | Installation of hardware and software at Data Center at BMD Headquarters, Dhaka | |  |  | LS |  |  |
| 16 | Integration of all hardware and software to complete operational status including the quality control process and ingestion of data into BMDs official database | |  |  | LS |  |  |
| 17 | Onsite training (local) (as per Training Section 3.4.13) | |  |  | 240 Trainee-Days |  |  |
| 18 | High speed Internet connection (8 mbps upload and 8 mbps download) with static IP address and domain name fees (domain name to be decided) and charge for unlimited data packet through SIMs all AWS, Ag-AWS and ARG stations | |  |  | 03 Months |  |  |
| 19 | Services for hosting website on cloud including cloud charges during commissioning period | |  |  | LS |  |  |
| **B** | **List of related services during 02 (two) years Warranty period** | | | | | | |
| 20 | Service of Operation, Troubleshooting, Maintenance, Repairing, Warranty, Support and Overall Management of AWS, Ag-AWS and ARG including cost of replacements, operating costs and transport | |  |  | LS |  |  |
| 21 | Service of 14 (fourteen) meteorological technicians (7 teams, 2 people per team) placed at strategic locations to perform emergency and preventative maintenance as required for the management of data as specified in section 3.4.11 | |  |  | 336 Man Months |  |  |
| 22 | Service of 02 (two) Information Technology specialists (Senior Computer System & Software Specialist and Junior Computer System & Software Specialist) to be placed at Data Center at BMD Headquarters to execute the responsibilities as specified in section in section 3.4.11 | |  |  | 48 Man Months |  |  |
| 23 | Services for hosting website on cloud including cloud charges for 2 years of warranty period | |  |  | 24 Months |  |  |
| 24 | High speed Internet connection (8 mbps upload and 8 mbps download) with static IP address and domain name fees (domain name to be decided) and charge for unlimited data packet through SIMs all AWS, Ag-AWS and ARG stations | |  |  | 24 Months |  |  |
|  | | | | | Total Bid Price | |  |
| Name of Bidder *[insert complete name of Bidder]*  Signature of Bidder *[signature of person signing the Bid]*  Date *[insert date]* | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Price and Completion Schedule - Annual Maintenance Services  (to be used for evaluation purpose and establishing Annual Maintenance Contract) | | | | | | | |
|  | | Currencies in accordance with ITB 15 | | | | Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  ICB No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Alternative No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Page N° \_\_\_\_\_\_ of \_\_\_\_\_\_ | |
| 1 | 2 | | 3 | 4 | 5 | 6 | 7 |
| Service  N° | Description of Services (excludes inland transportation and other services required in the Purchaser’s country to convey the goods to their final destination) | | Country of Origin | Delivery Date at place of Final destination | Quantity and physical unit | Unit price | Total Price per Service  (Col. 5\*6 or estimate) |
| *[insert number of the Service ]* | *[insert name of Services]* | | *[insert country of origin of the Services]* | *[insert delivery date at place of final destination per Service]* | *[insert number of units to be supplied and name of the physical unit]* | *[insert unit price per item]* | *[insert total price per item]* |
|  | **List of related services during 03 (three) years AMC period after 02 (two) years Warranty period** | | | | | | |
| 1 | Service of Operation, Troubleshooting, Maintenance, Repairing, Warranty, Support and Overall Management of AWS, Ag-AWS and ARG including cost of replacements, operating costs and transport | |  |  | LS |  |  |
| 2 | Service of 14 (fourteen) meteorological technicians (7 teams, 2 people per team) placed at strategic locations to perform emergency and preventative maintenance as required for the management of data as specified in section 3.4.11 | |  |  | 504 Man Months |  |  |
| 3 | Service of 02 (two) Information Technology specialists (Senior Computer System & Software Specialist and Junior Computer System & Software Specialist) to be placed at Data Center at BMD Headquarters to execute the responsibilities as specified in section in section 3.4.11 | |  |  | 72 Man Months |  |  |
| 4 | Services for hosting website on cloud including cloud charges in AMC period | |  |  | 36 Months |  |  |
| 5 | High speed Internet connection (8 mbps upload and 8 mbps download) with static IP address and domain name fees (domain name to be decided) and charge for unlimited data packet through SIMs all AWS, Ag-AWS and ARG stations | |  |  | 36 Months |  |  |
|  | | | | | Total Bid Price | |  |
| Name of Bidder *[insert complete name of Bidder]*  Signature of Bidder *[signature of person signing the Bid]*  Date *[insert date]* | | | | | | | |

Form of Bid Security

**(Bank Guarantee)**

*[The bank shall fill in this Bank Guarantee Form in accordance with the instructions indicated.]*

*[Guarantor letterhead or SWIFT identifier code]*

**Beneficiary:** *[Purchaser to insert its name and address]*

**IFB No.:** *[Purchaser to insert reference number for the Invitation for Bids]*

**Alternative No***.: [Insert identification No if this is a Bid for an alternative]*

**Date:** *[Insert date of issue]*

**BID GUARANTEE No.:** *[Insert guarantee reference number]*

**Guarantor:** *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that \_\_\_\_\_\_ *[insert name of the Bidder, which in the case of a joint venture shall be the name of the joint venture (whether legally constituted or prospective) or the names of all members thereof]* (hereinafter called "the Applicant") has submitted or will submit to the Beneficiary its bid (hereinafter called "the Bid") for the execution of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ under Invitation for Bids No. \_\_\_\_\_\_\_\_\_\_\_ (“the IFB”).

Furthermore, we understand that, according to the Beneficiary’s conditions, bids must be supported by a bid guarantee.

At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of \_\_\_\_\_\_\_\_\_\_\_  (\_\_\_\_\_\_\_\_\_\_\_\_) upon receipt by us of the Beneficiary’s complying demand, supported by the Beneficiary’s statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Applicant:

(a) has withdrawn its Bid during the period of bid validity set forth in the Applicant’s Letter of Bid (“the Bid Validity Period”), or any extension thereto provided by the Applicant; or

(b) having been notified of the acceptance of its Bid by the Beneficiary during the Bid Validity Period or any extension thereto provided by the Applicant, (i) has failed to execute the contract agreement, or (ii) has failed to furnish the performance security, in accordance with the Instructions to Bidders (“ITB”) of the Beneficiary’s bidding document.

This guarantee will expire: (a) if the Applicant is the successful bidder, upon our receipt of copies of the contract agreement signed by the Applicant and the performance security issued to the Beneficiary in relation to such contract agreement; or (b) if the Applicant is not the successful bidder, upon the earlier of (i) our receipt of a copy of the Beneficiary’s notification to the Applicant of the results of the bidding process; or (ii)twenty-eight days after the end of the Bid Validity Period.

Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

*[Signature(s)]*

***Note: All italicized text is for use in preparing this form and shall be deleted from the final product.***

Form of Bid Security (Bid Bond) – Not Applicable

*[The Surety shall fill in this Bid Bond Form in accordance with the instructions indicated.]*

BOND NO. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

BY THIS BOND *[name of Bidder]* as Principal (hereinafter called “the Principal”), and *[name, legal title, and address of surety],***authorized to transact business in** *[name of country of Purchaser],* as Surety (hereinafter called “the Surety”), are held and firmly bound unto *[name of Purchaser]* as Obligee (hereinafter called “the Purchaser”) in the sum of *[amount of Bond]*[[2]](#footnote-2)*[amount in words]*, for the payment of which sum, well and truly to be made, we, the said Principal and Surety, bind ourselves, our successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has submitted or will submit a written Bid to the Purchaser dated the \_\_\_ day of \_\_\_\_\_\_, 20\_\_, for the supply of *[name of Contract]* (hereinafter called the “Bid”).

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal:

1. has withdrawn its Bid during the period of bid validity set forth in the Principal’s Letter of Bid (“the Bid Validity Period”), or any extension thereto provided by the Principal; or
2. having been notified of the acceptance of its Bid by the Purchaser during the Bid Validity Period or any extension thereto provided by the Principal; (i) failed to execute the contract agreement; or (ii) has failed to furnish the Performance Security, in accordance with the Instructions to Bidders (“ITB”) of the Purchaser’s bidding document.

then the Surety undertakes to immediately pay to the Purchaser up to the above amount upon receipt of the Purchaser’s first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser shall state that the demand arises from the occurrence of any of the above events, specifying which event(s) has occurred.

The Surety hereby agrees that its obligation will remain in full force and effect up to and including the date 28 days after the date of expiration of the Bid Validity Period set forth in the Principal’s Letter of Bid or any extension thereto provided by the Principal.

IN TESTIMONY WHEREOF, the Principal and the Surety have caused these presents to be executed in their respective names this \_\_\_\_ day of \_\_\_\_\_\_\_\_\_\_\_\_ 20\_\_.

Principal: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Surety: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 Corporate Seal (where appropriate)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
*(Signature) (Signature)  
(Printed name and title) (Printed name and title)*

Form of Bid-Securing Declaration – Not Applicable

*[The Bidder shall fill in this Form in accordance with the instructions indicated.]*

Date: *[date (as day, month and year)]*

Bid No.: *[number of bidding process]*

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

To: *[complete name of Purchaser]*

We, the undersigned, declare that:

We understand that, according to your conditions, bids must be supported by a Bid-Securing Declaration.

We accept that we will automatically be suspended from being eligible for bidding in any contract with the Purchaser for the period of time of *[number of months or years]* starting on *[date],* if we are in breach of our obligation(s) under the bid conditions, because we:

(a) have withdrawn our Bid during the period of bid validity specified in the Letter of Bid; or

(b) having been notified of the acceptance of our Bid by the Purchaser during the period of bid validity, (i) fail or refuse to execute the Contract; or (ii) fail or refuse to furnish the Performance Security, if required, in accordance with the ITB.

We understand this Bid Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of our Bid.

Name of the Bidder**\***

Name of the person duly authorized to sign the Bid on behalf of the Bidder**\*\*** \_\_\_\_\_\_\_

Title of the person signing the Bid \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of the person named above \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date signed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ day of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_

**\***: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

\*\*: Person signing the Bid shall have the power of attorney given by the Bidder attached to the Bid

*[Note: In case of a Joint Venture, the Bid-Securing Declaration must be in the name of all members to the Joint Venture that submits the bid.]*

Manufacturer’s Authorization

*[The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer. The Bidder shall include it in its bid, if so indicated in the* ***BDS.****]*

Date: *[insert date (as day, month and year) of Bid Submission]*

ICB No.: *BMD-G-1*

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

To:

Ahmed Arif Rashid

Project Director

Strengthening Meteorological Information Services and Early Warning Systems (Component A) under Bangladesh Weather and Climate Services Regional Project

Bangladesh Meteorological Department

Abhawa Bhaban, E-24, Agargaon, Dhaka-1207. Bangladesh.

Phone: +880 2 48110705, 9123838, 8901016

WHEREAS

We *[insert complete name of Manufacturer],* who are official manufacturers of*[insert type of goods manufactured],* having factories at [insert full address of Manufacturer’s factories], do hereby authorize *[insert complete name of Bidder]* to submit a bid the purpose of which is to provide the following Goods, manufactured by us *[insert name and or brief description of the Goods],* and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with Clause 28 of the General Conditions of Contract, with respect to the Goods offered by the above firm.

Signed: *[insert signature(s) of authorized representative(s) of the Manufacturer]*

Name: *[insert complete name(s) of authorized representative(s) of the Manufacturer]*

Title: *[insert title]*

Dated on \_\_\_\_\_\_\_\_\_\_\_\_ day of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_ *[insert date of signing]*

Bidder’s Supply Record (Last 5 yrs)

Name of the Bidder and Address:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name of the Goods | Contract Value | Contract Date | Contract Completion Date | Purchaser name and Address with email, telephone and fax |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**Note:** Supporting documents (Completion Certificate) need to be submitted for each record.

Section V. Eligible Countries

**Eligibility for the Provision of Goods, Works and Non Consulting Services in   
Bank-Financed Procurement**

In reference to ITB 4.7 and 5.1, for the information of the Bidders, at the present time firms, goods and services from the following countries are excluded from this bidding process:

Under ITB 4.7(a) and 5.1: **Israel**

Under ITB 4.7(b) and 5.1: **None**

Section VI. Bank Policy - Corrupt and Fraudulent Practices

Guidelines for Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, dated January 2011.

“**Fraud and Corruption:**

1.16 It is the Bank’s policy to require that Borrowers (including beneficiaries of Bank loans), bidders, suppliers, contractors and their agents (whether declared or not), sub-contractors, sub-consultants, service providers or suppliers, and any personnel thereof, observe the highest standard of ethics during the procurement and execution of Bank-financed contracts.[[3]](#footnote-3) In pursuance of this policy, the Bank:

(a) defines, for the purposes of this provision, the terms set forth below as follows:

(i) “corrupt practice” is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;[[4]](#footnote-4);

(ii) “fraudulent practice” is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;[[5]](#footnote-5)

(iii) “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;[[6]](#footnote-6)

(iv) “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;[[7]](#footnote-7)

(v) "obstructive practice" is:

(aa) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or

(bb) acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under paragraph 1.16(e) below.

(b) will reject a proposal for award if it determines that the bidder recommended for award, or any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;

(c) will declare misprocurement and cancel the portion of the loan allocated to a contract if it determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement or the implementation of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;

(d) will sanction a firm or individual, at any time, in accordance with the prevailing Bank’s sanctions procedures,[[8]](#footnote-8) including by publicly declaring such firm or individual ineligible, either indefinitely or for a stated period of time: (i) to be awarded a Bank-financed contract; and (ii) to be a nominated[[9]](#footnote-9);

(e) will require that a clause be included in bidding documents and in contracts financed by a Bank loan, requiring bidders, suppliers and contractors, and their sub-contractors, agents, personnel, consultants, service providers, or suppliers, to permit the Bank to inspect all accounts, records, and other documents relating to the submission of bids and contract performance, and to have them audited by auditors appointed by the Bank.”

# PART 2 – Supply Requirements

|  |
| --- |
| Section VII. Schedule of Requirements |

**Contents**

1. List of Goods and Delivery Schedule 84

2. List of Related Services and Completion Schedule 88

3. Technical Specifications 93

4. Drawings 150

5. Inspections and Tests 151

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| * + - 1. List of Goods and Delivery Schedule | | | | | | | |
| *[The Purchaser shall fill in this table, with the exception of the column “Bidder’s offered Delivery date” to be filled by the Bidder]* | | | | | | | |
| Line Item  N° | Description of Goods | Qty. | Unit | Final Destination (Project Site) | Delivery (as per Incoterms) Date | | |
| Earliest Delivery Date | Latest Delivery Date | Bidder’s offered Delivery date [*to be provided by the bidder*] |
| **A. Synoptic AWS (35 to be installed)** | | | | | | | |
|  | Data Collection Platform (DCP) | 35 | Number | As specified in Appendix A | 120 days from the date of Contract signing | 270 days from the date of Contract signing |  |
|  | Mobile Phone Network Modem/ Radio (GPRS / GSM based) (With SIM) | 35 | Number | -do- | -do- | -do- |  |
|  | Temperature/ Relative Humidity Sensor | 35 | Number | -do- | -do- | -do- |  |
|  | Wind Speed and Direction Sensor | 35 | Number | -do- | -do- | -do- |  |
|  | Automatic Rain Gauge (Tipping Bucket Rain Gauge) | 35 | Number | -do- | -do- | -do- |  |
|  | Solar Radiation Sensor | 35 | Number | -do- | -do- | -do- |  |
|  | Sunshine Duration Sensor | 35 | Number | -do- | -do- | -do- |  |
|  | Atmospheric Pressure Sensor | 35 | Number | -do- | -do- | -do- |  |
|  | Power Supply and Charging System | 35 | Number | -do- | -do- | -do- |  |
|  | Grounding, Surge and Lightning Protection | 35 | Number | -do- | -do- | -do- |  |
|  | Meteorological Masts & Civil Works (Mast and Enclosure for DCP, Battery and Regulator) | 35 | Number | -do- | -do- | -do- |  |
| **B. Ag-AWS (125 Stations to be installed)** | | | | | | | |
|  | Data Collection Platform (DCP) | 125 | Number | As specified in Appendix A | 120 days from the date of Contract signing | 270 days from the date of Contract signing |  |
|  | Mobile Phone Network Modem/Radio (GPRS / GSM based) (With SIM) | 125 | Number | -do- | -do- | -do- |  |
|  | Temperature/ Relative Humidity Sensor | 125 | Number | -do- | -do- | -do- |  |
|  | Wind Speed and Direction Sensor | 125 | Number | -do- | -do- | -do- |  |
|  | Automatic Rain Gauge (Tipping Bucket Rain Gauge) | 125 | Number | -do- | -do- | -do- |  |
|  | Solar Radiation Sensor | 125 | Number | -do- | -do- | -do- |  |
|  | Atmospheric Pressure Sensor | 125 | Number | -do- | -do- | -do- |  |
|  | Soil Temperature Sensor | 125 | Number | -do- | -do- | -do- |  |
|  | Power Supply and Charging System | 125 | Number | -do- | -do- | -do- |  |
|  | Grounding, Surge and Lightning Protection | 125 | Number | -do- | -do- | -do- |  |
|  | Meteorological Masts & Civil Works (Mast and Enclosure for DCP, Battery and Regulator) | 125 | Number | -do- | -do- | -do- |  |
| **C. ARG (65 Stations to be installed)** | | | | | | | |
|  | Data Collection Platform (DCP) | 65 | Number | As specified in Appendix A | 120 days from the date of Contract signing | 270 days from the date of Contract signing |  |
|  | Mobile Phone Network Modem/Radio (GPRS / GSM based) (With SIM) | 65 | Number | -do- | -do- | -do- |  |
|  | Automatic Rain Gauge (Tipping Bucket Rain Gauge) | 65 | Number | -do- | -do- | -do- |  |
|  | Power Supply and Charging System | 65 | Number | -do- | -do- | -do- |  |
|  | Grounding, Surge and Lightning Protection | 65 | Number | -do- | -do- | -do- |  |
|  | Meteorological Masts & Civil Works (Mast and Enclosure for DCP, Battery and Regulator) | 65 | Number | -do- | -do- | -do- |  |
| **Accessories for standardization** | |  |  |  |  |  |  |
|  | Field Temperature and Relative Humidity Reference Standard (for field calibration purpose) | 07 | Number | Maintaining Offices (MNO) | -do- | -do- |  |
|  | Field Rain Gauge Check Standard (for field calibration purpose) | 04 | Number | -do- | -do- | -do- |  |
|  | Field Atmospheric Pressure Check Standard (for field calibration purpose) | 07 | Number | -do- | -do- | -do- |  |
| **ICT Software and Hardware** | |  |  |  |  |  |  |
|  | Meteorological Data Collection Server (Server-1) | 01 | Set | BMD Data Center (Dhaka) | -do- | -do- |  |
|  | Meteorological Data Processing and Data Exchange Physical Server (Server-2, Server-3(Redundant)) | 02 | Set | -do- | -do- | -do- |  |
|  | Cloud server for web and visualization software (Server 4 on cloud) | 01 | Set | -do- | -do- | -do- |  |
|  | Web Server (Server-5) | 01 | Set | -do- | -do- | -do- |  |
|  | Network Attached Storage (NAS) (For data archiving) | 01 | Set | -do- | -do- | -do- |  |
|  | Network Router (Redundant 1) | 02 | Number | -do- | -do- | -do- |  |
|  | Security Router (For 3 servers) | 03 | Number | -do- | -do- | -do- |  |
|  | Online UPS 3KVA (for 4 servers) | 04 | Number | -do- | -do- | -do- |  |
|  | Offline UPS 1200 VA (for WASAs and BMD Headquarters) | 05 | Number | -do- | -do- | -do- |  |
|  | Computer rack | 01 | Set | -do- | -do- | -do- |  |
|  | KVM Switch and Monitor | 01 | Set | -do- | -do- | -do- |  |
|  | Computers (for WASAs and BMD Headquarters) | 05 | Set | BMD Headquarters and WASA sites as mentioned in Appendix A | -do- | -do- |  |
|  | Large Display screens for WASAs and BMD Headquarters | 05 | Set | -do- | -do- | -do- |  |
|  | Data Collection Software – AWS, Ag-AWS and ARG Station Communication, Control and Collection Software (Software to reside on Server 1) | 01 | Set | BMD Data Center (Dhaka) | -do- | -do- |  |
|  | AWS/Ag-AWS/ARG Data Processing Software (Software to reside on Server 2 and Server 3) | 02 | Set | -do- | -do- | -do- |  |
|  | Data Visualization and Dissemination Software (Software to reside on Server 4 on cloud and Server 5) | 02 | Set | -do- | -do- | -do- |  |
|  | ARG Station Visualization, Alert, Alarm Software (Software to reside on Server 4 and Server 5) | 02 | Set | -do- | -do- | -do- |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 2. List of Related Services and Completion Schedule | | | | | |
| **Service** | **Description of Service** | **Quantity** | **Physical Unit** | **Place where Services shall be performed** | **Final Completion Date(s) of Services** |
|
|  | Implementation plan document (as per the section 3.4.17) | 10 | Copy | BMD Headquarters, Dhaka | Within two weeks after contract signing |
|  | Training Program Schedule (as per Training Section 3.4.13) | 12 | Copy | BMD Headquarters, Dhaka | Within two months after contract signing |
|  | Executing Off-site (foreign) training (as per Training Section 3.4.13) | 60 | Trainee-Days | To be mentioned by the Supplier | Within three months after contract signing |
|  | Training material of off-site (foreign) training (as per Training Section 3.4.13) | 15 | Copy | BMD Headquarters, Dhaka | Within three months after contract signing |
|  | Training material of onsite training (as per Training Section 3.4.13) | 100 | Copy | BMD Headquarters, Dhaka | Within six months after contract signing |
|  | Additional Data Sheet (as per the section 3.4.17) | 04 | Copy | BMD Headquarters, Dhaka | Before starting the commissioning and acceptance |
|  | Additional User and Operational Manual (as per the section 3.4.17) | 07 | Copy | BMD Headquarters, Dhaka | Before starting the commissioning and acceptance |
|  | Diagrams and Drawings (as per the section 3.4.17) | 20 | Copy | BMD Headquarters, Dhaka | Before starting the commissioning and acceptance |
| A | **Related services during installation and commissioning stage** | | | | |
|  | Installation of AWS Stations including civil and other related works as specified in the technical specifications | 35 | Number | Sites as given under Appendix A | 12 Months from the date of contract signing |
|  | Installation of Ag-AWS Stations including necessary civil and other related works as specified in the technical specifications | 125 | Number | Sites as given under Appendix A | 12 Months from the date of contract signing |
|  | Installation of ARG Stations including necessary civil and other related works as specified in the Technical specifications. | 65 | Number | Sites as given under Appendix A | 12 Months from the date of contract signing |
|  | Integration of all AWS, Ag-AWS and ARG Remote Stations to Data Center at BMD Headquarters, Dhaka | LS | LS | As per requirement | 12 months from the date of signing of agreement |
|  | Full systems Installation & Integration (AWS / Ag-AWS / ARG) at Data center of BMD including hosting of website on cloud and real time synchronizing of data with cloud server and physical server; as specified in the Technical Specifications | LS | LS | Data Center at BMD Headquarters, Dhaka | 12 Months from the date of contract signing |
|  | Installation and integration of computers and display boards at the WASA sites and BMD Headquarters | LS | LS | As per requirement | 12 Months from the date of contract signing |
|  | Installation of hardware and software at Data Center at BMD Headquarters, Dhaka | LS | LS | As per requirement | 12 Months from the date of contract signing |
|  | Integration of all hardware and software to complete operational status including the quality control process and ingestion of data into BMDs official database | LS | LS | As per requirement | 12 Months from the date of contract signing |
|  | Onsite training (local) (as per Training Section 3.4.13) | 240 | Trainee-Days | BMD Headquarters, AWS, Ag-AWS and ARG sites as mentioned in Appendix A | During commissioning stage |
|  | High speed Internet connection (8 mbps upload and 8 mbps download) with static IP address and domain name fees (domain name to be decided) and charge for unlimited data packet through SIMs all AWS, Ag-AWS and ARG stations | 03 | Months | BMD Headquarters, AWS, Ag-AWS and ARG sites as mentioned in Appendix A | 3 months during Commissioning |
|  | Services for hosting website on cloud including cloud charges during commissioning period | 01 | LS | As per requirement | During commissioning stage |
| **B** | **List of related services during 02 (two) years Warranty period** | | | | |
|  | Service of Operation, Troubleshooting, Maintenance, Repairing, Warranty, Support and Overall Management of AWS, Ag-AWS and ARG including cost of replacements, operating costs and transport | LS | LS | BMD Headquarters and locations as mentioned in Appendix A | Throughout 02 years of warranty period |
|  | Service of 14 (fourteen) meteorological technicians (7 teams, 2 people per team) placed at strategic locations to perform emergency and preventative maintenance as required for the management of data as specified in section 3.4.11 | 336 | Man Months | Field Locations, as per table in technical specifications | Throughout 02 years of warranty period |
|  | Service of 02 (two) Information Technology specialists (Senior Computer System & Software Specialist and Junior Computer System & Software Specialist) to be placed at Data Center at BMD Headquarters to execute the responsibilities as specified in section in section 3.4.11 | 48 | Man Months | BMD Headquarters | Throughout 02 years of warranty period |
|  | Services for hosting website on cloud including cloud charges for 2 years of warranty period | 24 | Months | BMD Headquarters | Throughout 02 years of warranty period |
|  | High speed Internet connection (8 mbps upload and 8 mbps download) with static IP address and domain name fees (domain name to be decided) and charge for unlimited data packet through SIMs all AWS, Ag-AWS and ARG stations | 24 | Months | BMD Headquarters, AWS, Ag-AWS and ARG sites as mentioned in Appendix A | Throughout 02 years of warranty period |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **2. List of Related Services and Completion Schedule – Annual Maintenance Services**  **(to be used for evaluation purpose and establishing Annual Maintenance Contract )** | | | | | |
| **Service** | **Description of Service** | **Quantity** | **Physical Unit** | **Place where Services shall be performed** | **Final Completion Date(s) of Services** |
|
|  | **List of related services during 03 (three) years AMC period after 02 (two) years Warranty period** | | | | |
|  | Service of Operation, Troubleshooting, Maintenance, Repairing, Warranty, Support and Overall Management of AWS, Ag-AWS and ARG including cost of replacements, operating costs and transport | LS | LS | BMD Headquarters and locations as mentioned in Appendix A | Throughout 03 years of AMC period |
|  | Service of 14 (fourteen) meteorological technicians (7 teams, 2 people per team) placed at strategic locations to perform emergency and preventative maintenance as required for the management of data as specified in section 3.4.11 | 504 | Man Months | Field Locations, as per table in technical specifications | Throughout 03 years of AMC period |
|  | Service of 02 (two) Information Technology specialists (Senior Computer System & Software Specialist and Junior Computer System & Software Specialist) to be placed at Data Center at BMD Headquarters to execute the responsibilities as specified in section in section 3.4.11 | 72 | Man Months | BMD Headquarters | Throughout 03 years of AMC period |
|  | Services for hosting website on cloud including cloud charges in AMC period | 36 | Months | BMD Headquarters | Throughout 03 years of AMC period |
|  | High speed Internet connection (8 mbps upload and 8 mbps download) with static IP address and domain name fees (domain name to be decided) and charge for unlimited data packet through SIMs all AWS, Ag-AWS and ARG stations | 36 | Months | BMD Headquarters, AWS, Ag-AWS and ARG sites as mentioned in Appendix A | Throughout 03 years of AMC period |

3. Technical Specifications

* 1. Introduction & Background

Knowledge of available environmental resources and the interactions that occur in the area below the soil surface, the soil–air interface and the boundary layer of the atmosphere provides essential guidance for strategic agrometeorological decisions in long-range planning of agricultural systems. This applies to both favorable and unfavorable conditions– and these may vary a great deal. Typical examples are the design of irrigation and drainage schemes, decisions relating to land-use and farming patterns, and within these choices, selections of crops and animals, varieties and breeds, and farm machinery.

In modern agriculture, ecology and economy are on equal terms; through environmental issues they are even interdependent. Weather events and climate are important to production and can be a burden on the farmer’s budget and financial viability if not properly managed.

Detailed observations/monitoring and real-time dissemination of meteorological information, quantification by remote-sensing (radar and satellites), and derived indices and operational services are important for tactical agrometeorological decisions in the short-term planning of agricultural operations at different growth stages. The well-organized and where possible, automatic production and coordinated dissemination of this information and related advisories and services are essential. Tactical decisions include “average cost”-type decisions in sustainable agriculture with low external inputs, regarding timing of cultural practices, such as ploughing, sowing/planting, mulching, weeding, thinning, pruning and harvesting. They also include, particularly for high-input agriculture, “high cost”-type decisions, such as the application of water and implementation of costly crop protection measures.

Regardless of the type of decision, an ever-improving understanding of the effects of weather and climate on soils, plants, animals, trees and related production in farming systems is necessary for decision-makers (farmers and managers) to ensure timely and efficient use of meteorological and climatological information and of agrometeorological services for agriculture. To these ends, choices have to be made regarding the right mixture and blending of traditional adaptation strategies, contemporary knowledge in science and technology, and appropriate policy environments. Without policy support systems for agrometeorological services, yields with the available production means will remain below optimal.

* 1. Goals & Objectives

The goal of the real-time AWS network upgrade in Bangladesh is to automate 35 existing AWS stations that are delivered to the international community by agreement with The World Meteorological Agency (WMO). The automation of the network will streamline the collection and delivery of the data to BMD national modeling efforts as well as international modeling efforts that rely and assimilate this data into global and regional models that are eventually used by BMD in providing weather forecasts.

The goal of the real-time Ag-AWS network in Bangladesh is to provide improved information to help the agricultural sector with making decisions to optimize crop production. This relates to planting times, irrigation scheduling, crop management to assure high yield, and when to harvest crops. Since crop growing conditions can vary dramatically in a region, the Ag-AWS network to be installed will be dense and evenly distributed throughout the country. The following objectives will be advanced in order to obtain the overarching goal.

1. Design and install an economical Ag-AWS monitoring network throughout Bangladesh that will be representative for the agricultural sector throughout the many growing regions in the country.
2. Design and develop a real-time data collection and dissemination system that effectively moves Ag-AWS information from the remote station to the agricultural user.
3. Design and develop a high-quality data set that can be used for crop models and other predictive tools to aid crop management in general.

Once this observation network is installed, the BMD will have the information necessary to depict the national weather conditions that can be used to foster improved crop management and harvest yields.

* 1. Scope of Work

Services will include the acquisition, configuration and installation of 225 meteorological stations.

The scope of work includes the following activities as guided by the technical specifications.

1. Acquire AWS Data Collection Platform (DCP), mobile network transmitter and sensors that will operate in the challenging environment of Bangladesh.
2. Upgrade the existing 35 manual synoptic stations with the AWS, providing installation, calibration, and operation of the stations.
3. Acquire Ag-AWS Data Collection Platform (DCP), mobile network transmitter and sensors that will operate in the challenging environment of Bangladesh. Install 125 Ag-AWS stations at selected locations throughout the country of Bangladesh.
4. Acquire ARG (automatic rain gauge) Data Collection Platform (DCP), mobile network transmitter and sensors that will operate in the challenging environment of Bangladesh. Install and configure ARG stations at 65 locations selected urban centers.
5. Supply, configure, install and test remote stations e.g. DCP, sensors, power supply, transmitting antenna, GPS receiver etc. and bring network up to operational status. GPS Receiver will help to get accurate time for reference on the data logger, the positioning data (lat, long) is also useful to use for the reporting in case of BUFR message. All data should be archived in Network Attached Storage (NAS) server in real time basis and should be retrievable whenever necessary. Security issue must be addressed through security routers.
6. Supply, install and configure data collection servers and software to collect AWS, Ag-AWS and ARG data automatically and continuously as further described in the technical specifications.
7. Supply, install and configure four computer servers and one (1) cloud server and associated software. This will include writing modules for automation of certain processes, such as product generation and data exchange. There will be a provision of BUFR formatted data (WMO format) so that in every synoptic hour BUFR Formatted data (WMO Data) can be pulled to BMD’s GTS system through FTP.
8. Supply, install and configure software to be installed on four (4) physical servers and one (1) cloud server (as indicated in the technical specifications)
9. Provide and install ancillary IT related systems/equipment to support AWS/Ag-AWS /ARG data collection such as computer rack(s), routers, UPS, etc.
10. Provide software to route data to other BMD subsystems, such as the BMD quality control software and the BMD official meteorological database.
11. Assure that all real-time data is loaded into the time series database software and the BMD official meteorological database.
12. Provide staff at the divisional headquarters at three divisional offices to operate and maintain AWS, Ag-AWS and ARG network.
13. Provide expenses (funds) during warranty and operation and maintenance period, such as the cost of transportation and IT for bidder supplied meteorological technicians and station operational costs, such as SIM charges and battery replacement.
14. Develop reports and products as directed by the Purchaser during the course of the contract (this is a task of the bidder supplied IT staff that will be assigned full-time to the BMD data center at the BMD headquarters in Dhaka.
15. Develop software code as directed by Purchaser during warranty and operation and maintenance period (this is a task of the two bidder supplied IT staff assigned to BMD headquarters)
16. Provide staff at data center to operate newly acquired data center computer systems.
17. Provide Warranty period to start after all installed systems are commissioned (to be determined to be 100% operational).
18. Provide Annual Maintenance after warranty period.
19. Provide documentation.
20. Provide classroom training and distance learning training modules that can be viewed on the computer.
21. The Bidder will be responsible to bear all costs regarding electricity and connectivity/SIM during maintenance, warranty and AMC period.
    1. General Technical Concepts
       1. Design Principles

There will be 125 new Ag-AWS stations **(see Appendix A)** that will be procured, installed, and maintained as part of this Bid. There will also be 35 Synoptic AWS stations **(see Appendix A)** installed at existing synoptic manual observations sites, while there are already 12 synoptic AWS already installed. There will be also 65 ARG stations **(see Appendix A)** which will be installed in 65 different locations through the divisional zones.

The synoptic AWS stations will be deployed a bit differently than the Ag-AWS station, with AWS sensor placement better suited for synoptic meteorology, wind measurement at 10m, and lower for the Ag-AWS stations.

The Ag-AWS stations are intended to be economical solutions where the initial cost of the station is appreciably lower than that of a typical synoptic station. It is expected that both the AWS and Ag-AWS solution will be highly reliable and cost effective to maintain throughout the lifespan of the technology, which is expected to be a minimum of 15 years.

Data from these stations will have several uses spanning across numerous sectors. The primary reason of the stations is to support the agricultural meteorology sector and more specifically to support decision making towards the optimization of crop management and production. However, rainfall data is also expected to support general water management in the region, especially flood management and as well as seasonal variations of rainfall that contribute to drought. Wind speed and direction will be used to record maximum sustained wind speed and gusts during cyclone events. So, it is generally envisioned that the data will serve a great number of purposes.

Data relay in real-time is an important aspect of AWS, Ag-AWS, and ARG monitoring network proposed herein. Data relay will be automatic and autonomous from human intervention in delivering the data from the field to BMD headquarters in Dhaka. The communication network will utilize the national mobile phone data network as primary but there must have a provision of Data Collection Platform (DCP) on the Geo-stationary Meteorological Satellite as a secondary provision.

The heart of the data collection system will be a receive station that will be located at the BMD headquarter office in Dhaka. In the event there are communication drops at certain sites, it will be necessary that the data collection software automatically account for which data is missing and recover the missing data when communication is restored.

A design consideration is that data collection will be provided as a system. A system infers that the actual data collection solution could include multiple data collection servers and utilize several software solutions to achieve the requirements of data collection. For instance, the system will be required to provide web-based data visualization, product generation, and automatic transfer of data to other Purchaser subsystems. This may be performed by a single software solution or a number of solutions.

A schematic of the Synoptic AWS, Ag-AWS and ARG network is shown in Figure 1. The schematic reflects the data flow and the subsystems and serves as a point of reference for the details outlined in the Technical Requirements in Section 3.6. The cloud server is not shown. The data flow will begin at the remote station, which will transfer data to the data collection server located at the BMD data center. Data will then be eventually moved to the web server at the BMD data center. The web server at the BMD data center will then sync with the cloud server so that users can use either the BMD physical server or the cloud web server.

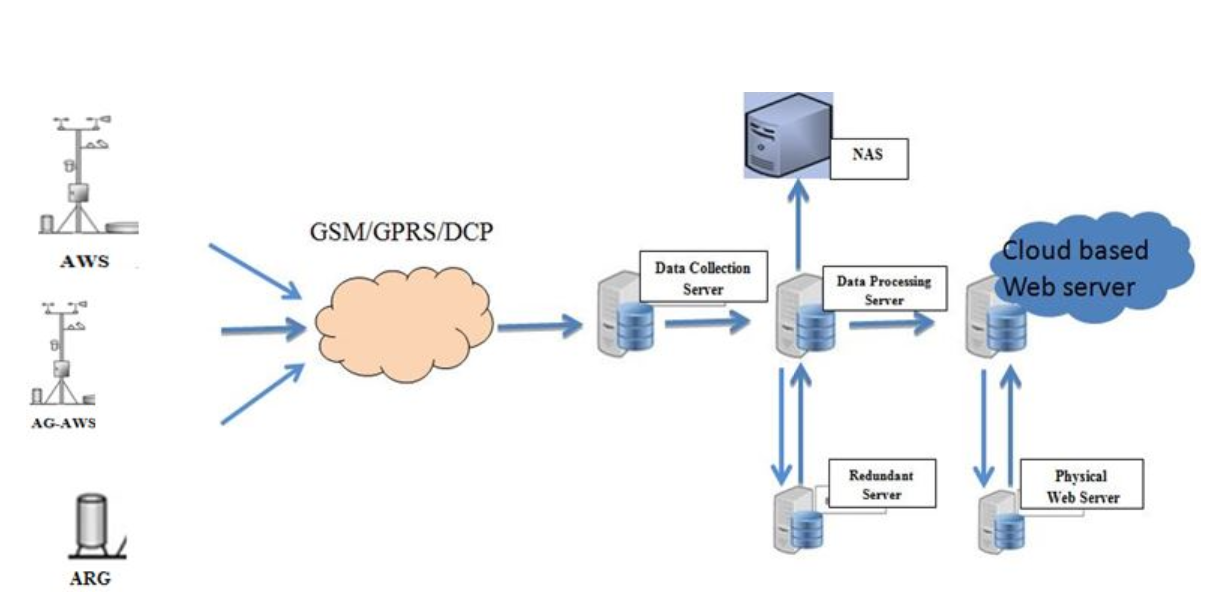


Figure 1: Schematic of Proposed BMD Synoptic AWS, Ag-AWS and ARG Data Collection and Dissemination System

Alarms will be triggered only through the web server at the BMD data center. The cloud server will be used to view data only.

* + 1. Capacity and Implementation Constraints

BMD currently collects data from a limited number of synoptic stations, and much of this is manually collected and manually relayed back to BMD Dhaka headquarters. The installation and operation of the new AWS, Ag-AWS and ARG stations cannot be performed by BMD considering the existing capacity of BMD staff. The operation of the new technology alone will require gradual strengthening and uplifting of BMD technical ability to maintain any observation networks, especially observation networks that are automatic in nature. For this reason, the installation, operation and maintenance of the AWS & Ag-AWS climate network will be outsourced to the Bidder for at least the first five years with the first 2 (two) years being covered by a Warranty Period and next 3 (three) years Operation & Maintenance will be covered by an Annual Maintenance Contract (AMC) from the date of commissioning. The cost of the Warranty and AMC will be provided by the Bidder as part of this Bid.

The Purchaser will gradually be adding trained staff and may eventually assume the operation & maintenance (O&M) activities, though an actual target date for adding trained staff uncertain at this time. However, the Purchaser may join the Bidders O&M staff to observe activities and gain hands-on training at any time. The Bidder will accommodate the Purchaser’s staff in joining field activities related to this Bid.

* + 1. Automatic Weather Stations (Synoptic) AWS

This section provides the details of the components required as part of the Synoptic AWS stations. There will be 35 AWS supplied as part of this project. The locations of the Synoptic AWS stations are provided in Appendix A.

* + - 1. Data Collection Platform (DCP)

| Specifications of Data Collection Platform | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of Origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | Power Input | * 10 – 15 V DC * Must survive reverse polarity connections (system will operate normally when polarity is applied properly without any product replacement, such as fuses) |
| 6. | Internal Memory | * Non-volatile internal flash memory * Sufficient to store hourly state weather parameters for 6 months minimum; and * Sufficient to store data and time of every rain gauge tip for one year minimum |
| 7. | Inputs | * Sufficient sensor inputs to connect all sensors required by the project * Sufficient bit resolution to achieve required sensor accuracy as stated in sensor specification |
| 8. | Measurement & Logging Intervals | * Wind speed and direction 4 reading per second for gust determination. Hourly Maximum gust and direction of gust will be logged hourly for the previous hour * Ability to change measurement and log rates of all sensors whereby different sensors can have different measurement and log rates. |
| 9. | Rainfall Processing and Reset | * Programmable rainfall accumulation periods of daily or annual totals * Programmable rainfall reset to 0 from every day, to once per year at a user selectable day of the year |
| 10. | Analog to Digital Converter | * 16-bit minimum, or as necessary to prevent any loss of stated accuracy or resolution from the sensors connected to the DCP |
| 11. | Communication Ports | * 1 port dedicated for DCP programming and downloading of data supplied with 2m cable minimum length for each DCP * Baud rate and throughput minimum of 115.2 kbps for programming and on-site downloading of data. |
| 12. | Programming | * The DCP will be programmable by both by a laptop computer or tablet computer connecting to the communication port or wireless connection. * DCP to be programmed directly onsite by downloading stored program files * Programming software must be compatible with Linux and mobile tablet devices (web interface desirable) * Programming software must include unlimited right to copy and use by the Purchaser |
| 13. | Features | * Non-volatile internal flash memory that can store one year of data as specified under measurement and logging interval section. This is to include a minimum of one year of data of each tip of the tipping bucket. * Preprocessing for statistics and noise rejectionprocess should be available. * WMO compliant data formats should be supportedfor transmission of data over various communicationnetworks * The database can either be readout anddistributed to the processing unit throughTCP/IP network or other telemetric system * Data download (performed at station) to be provided in text format with all data having a date/time stamp and being in scan order * Provision to download data by user selectable time periods * If DCP power is interrupted the DCP will automatically restart data collection and transmissions once power is restored without loss of previously recorded data |
| 14. | Internal Clock | * Internal battery backup for clock * Internal clock drift less than 1 second per day. * Automatic and user directed time sync using GSM/GPS service |
| 15. | Other | * All accessories to make the DCP functional (this includes brackets, cables, connectors, etc.). * Demonstrated ability to measure and store all parameters once per minute and transfer this data every minute. * Remote maintenance and automatic dataacquisition capability through theGSM/GPRS telecomm service provider |

The DCP will allow programmable measurement times and data collection intervals. The measured data will be stored on the DCP and utilize data storage that will drop off the oldest data as new data is stored, though the DCP is required to store a minimum of 1 year of data before any data drops off. The table below provides a guideline to how often data should be measured and logged. When data is downloaded on-site, there will be a provision to download the rainfall data with a date/time of each tipping bucket event as an accumulated annual rainfall amount. The purpose of this is to determine depth-duration rainfall and high intensity short duration rainfall rates.

|  |  |  |  |
| --- | --- | --- | --- |
| Measurement and Logging Interval | | | |
| Sensor | Units | Measurement/Logging Interval | Transmit Interval |
| AWS | | | |
| Temperature | C | Hourly/Hourly | Hourly |
| Relative Humidity | RH | Hourly/Hourly | Hourly |
| Wind Speed | ms-1 | Hourly/Hourly | Hourly |
| Wind Direction | o True | Hourly/Hourly | Hourly |
| Wind Gust | ms-1 | 1 second/Hourly | Hourly |
| Wind Direction @ Peak Gust | oTrue | 1 second/Hourly | Hourly |
| Time of Gust | hh:mm:ss | 1 second/Hourly | Hourly |
| Solar Radiation | Wm-2 | Hourly | Hourly |
| Atmospheric Pressure | hPa | Hourly | Hourly |
| Accumulated Rainfall | mm | Continuous/Every Tip | Hourly–Annual Accumulation |
| Battery Voltage | V | Hourly | Hourly |
| Solar Charging Volts | V | Hourly | Hourly |

* + - 1. Mobile Phone Network Modem/Radio ( GPRS / GSM based) (With SIM)

The stations will transmit data back to the BMD Dhaka headquarters using the national mobile phone data network and using a compatible modem that will operate seamlessly with the DCP. The communication requirements are further described under the section which provides details of the communication software which will reside on the data collection server in the BMD data center.

The Bidder will be responsible for all matters related to the testing, analysis and implementing communication links between the stations and the BMD data center that are required for reliable communications (> 99%).

It will be the responsibility of the bidder/contractor to assure the relay of data from each site. This means that in the event there is no or weak mobile network communications at a given site, the bidder/contractor will be required to provide technology to assure real-time data relay. This may be in the form of a high-gain and/or directional antenna to reach the mobile network system, or other technology to relay the information to a nearby weather station that can transmit through the mobile network. The bidder/contractor will be responsible to supply this equipment as part of this tender document.

* + - 1. Temperature/Relative Humidity Sensor

Temperature and Relative Humidity sensors will be mounted at 2m above the ground. Cables and fastening equipment will be included to complete the installation. This sensor will be mounted on the tower.

Sensor solution will permit calibration to occur in Bangladesh.

| Temperature and Relative Humidity Sensor Specifications (Combined) | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| Temperature Sensor Specification | | |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of Origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | Sensor Type | Platinum Resistance |
| 6. | Range | -10˚C to 60˚C |
| 7. | Accuracy | ±0.2˚ C for > -10 C and ≤ 40˚C |
| 8. | Resolution | 0.1˚C |
| 9. | Response Time | <20 seconds |
| 10. | Radiation Shield | * Naturally ventilated radiation shield to protect both temperature and relative humidity sensor * Composted of UV stabilized fiber-glass filled polyester with outer surface painted white to reflect the sun radiation and minimum absorption. * Shields made of metal are not permitted. |
| Relative Humidity Sensor Specification | | |
| 11. | Sensor Type | Electrical Capacitance Solid State |
| 12. | Measurement Range | 0-100% |
| 13. | Accuracy | ±2% Humidity or Smaller |
| 14. | Resolution | 1% |
| 15. | Stability | ±1% RH/year |
| 16. | Certification | All sensors should be calibrated and provided standard calibration certificate |

* + - 1. Wind Speed and Direction Sensor

Ultrasonic sensor will be mounted at 10m above the ground. Cables and fastening equipment will be included to complete the installation. This sensor will be mounted on the tower.

Sensor solution will permit calibration to occur in Bangladesh.

| Wind Speed and Directions Sensor Specifications | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| Wind Speed Specification | | |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of Origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | Sensor Technology | Ultrasonic |
| 6. | Range | 0 to > 70 ms-1 |
| 7. | Accuracy | ≤ ±0.5 ms-1 or ±3%, whichever is greater |
| 8. | Resolution | 0.1 ms-1 |
| 9. | Response Time | ≤ 0.5 second |
| 10. | Starting Threshold | < 1m/s |
| Wind Direction Specification | | |
| 11. | Range | 0-360˚ |
| 12. | Accuracy | ±2⁰ |
| 13. | Resolution | 1⁰ |
| 14. | Response Time | ≤ 1second |
| 15. | Accessories | Mounting Hardware should be provided for the sensor |
| 16. | Data Out rate | Data output should be compatible to the supplied data logger |
| 17. | Certification | All sensors should be calibrated and provided standard calibration certificate |

* + - 1. Automatic Rain Gauge (Tipping Bucket Rain Gauge)

A calibration document is required for each rain gauge delivered that indicates the date/time the rain gauge was calibrated and measured accuracy from the calibration process showing the rainfall rate, quantity of water (rainfall) introduced to the rain gauge and the amount or water (rainfall) measured by the gauge. The Bidder may be required to confirm the calibration on randomly selected rain gauges at the discretion of the Purchaser once on site.

The tipping bucket rain gauge will be mounted away from obstructions, such as trees, fencing, and the met tower. The orifice (rim) of the gauge will be 1.5m from the ground. Cables and fastening equipment will be included to complete the installation. Wires that would otherwise come in contact with the ground must be placed in rigid metal conduit that is water tight.

This sensor will be mounted away from the tower, and at least laterally 2 m from any portion of the tower. See further details under the civil works section.

Sensor solution will permit calibration to occur in Bangladesh.

| Rain Gauge Specifications | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of Origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | Diameter of Aperture | 200-225 mm |
| 6. | Collecting Area | 314-400 sq.cm |
| 7. | Technology | Tipping Bucket |
| 8. | Contact | Dual Reed Switch  Reed switches and other electronic components within the rain gauge are required to be fully encapsulated in water proof materials |
| 9. | Accuracy | ±2% (at 250 mm hr-1) |
| 10. | Resolution | 0.2 mm (bucket size) |
| 11. | Catch Can Filter System | * The rain gauge must include a filter system to prevent unwanted material into the funnel constriction (such as leaves) * The filter system is to be placed near to entrance to the funnel constriction to eliminate splash from leaving the orifice |
| 12. | Leveling | Bulls-eye leveling arrangement fitted to the base of the rain gauge that is built into the gauge (not added as an OEM improvement). |
| 13. | Outer Enclosure | Outer enclosure removable from the base to gain access to the tipping buckets for cleaning and calibration without altering the level of the gauge. |
| 14. | Composition | Fabricated using corrosion resistant, rugged material or made of anodized aluminum. |
| 15. | Features | * Insect screen covers shall cover all openings * The gauge will have leg adjustments to easily set the level in the horizontal dimension |
| 16. | Certification | All sensors should be calibrated and provided standard calibration certificate |

The rain gauge must have the following characteristics (taken from the WMO).

1. The rim of the collector should have a sharp edge and should fall away vertically on the inside, and be steeply beveled on the outside;
2. The area of the orifice should be known to the nearest 0.5%, and the construction should be such that this area remains constant while the gauge is in normal use;
3. The collector should be designed to prevent rain from splashing in and out. This can be achieved if the vertical wall is sufficiently deep and the slope of the funnel is sufficiently steep (at least 45%);
4. The construction should be such as to minimize wetting errors. This can be done by choosing the proper material and minimizing the total inner surface of the collector;
5. The container should have a narrow entrance and be sufficiently protected from radiation to minimize the loss of water by evaporation. Precipitation gauges used in locations where only weekly or monthly readings are practicable should be similar in design to the type used for daily measurements, but with a container of larger capacity and stronger construction.
   * + 1. Solar Radiation Sensor

The solar radiation sensor will be mounted at 2m above the ground. Cables and fastening equipment will be included to complete the installation.

Sensor solution will permit calibration to occur in Bangladesh.

| Solar Radiation Sensor Specifications | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of Origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | Sensor | CMP 11 or better |
| 6. | ISO Classification | ISO 9060 First Class Pyranometer |
| 7. | Spectral Range | 310 – 2800 nm |
| 8. | Response time | ≤ 20 s |
| 9. | Maximum Solar Irradiance | 2000 Wm-2 |
| 10. | Tilt Error | ±0.2% at 1000 wm-2 |
| 11. | Temperature Sensitivity | ±1% (-10 to 40 C) |
| 13. | Field of View | 180⁰ |
| 14. | Resolution | 1 Wm-2 |
| 15. | Construction | glass dome |
| 16. | Accessories | Sensor mounting support, cables (power and signal) and other accessories required to perform the observation in a reliable and accurate manner  Bubble level that is built into a sensor (not an after-market addition) |
| 17. | Certification | All sensors should be calibrated and provided standard calibration certificate |

* + - 1. Sunshine Duration Sensor

The sunshine duration sensor shall measure sunshine when direct solar radiation exceeds the level of 120 Wm-2. The sensor must be waterproof and resistant to scratching.

Sensor solution will permit calibration to occur in Bangladesh.

| Sunshine Duration Sensor | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of Origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | Spectral Range | 300 to 1100 nm |
| 6. | Sunshine duration uncertainty | ±0.1 hour |
| 7. | Accuracy | > 90% (monthly sunshine hours)  > 90% (direct signal for clear sky) |
| 8. | Resolution | 0.1 hour |
| 9. | Accessories | Sensor mounting support, cables (power and signal) and other accessories required to perform the observation in a reliable and accurate manner  Bubble level that is built into a sensor (not an after-market addition) |
| 10. | Certification | All sensors should be calibrated and provided standard calibration certificate |

* + - 1. Atmospheric Pressure Sensor

The atmospheric pressure senor will be placed inside the instrument enclosure with a breathing tube connecting the sensor to the exterior of the enclosure. Outlet should ensure protection against wind interference.

Sensor solution will permit calibration to occur in Bangladesh.

| Atmospheric Pressure Sensor Specifications | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of Origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | Sensor Type | Capacitive or Barocap |
| 6. | Range | 800 – 1100 hPa |
| 7. | Accuracy | ±0.15 hPa |
| 8. | Repeatability | ±0.03 hPa |
| 9. | Linearity | ±0.05 hPa |
| 10 | Long-term Stability | ±0.1 hPa yr-1 |
| 11 | Calibration Uncertainty | ±0.07 hPa |
| 12. | Response Time | ≤ 1 second |
| 13. | Accessories | Mounting Hardware should be provided for the sensor |
| 14. | Certification | All sensors should be calibrated and provided standard calibration certificate |

* + - 1. Power Supply and Charging System

The power supply and management system will be supplied with each system and will utilize solar panels charge batteries and uses a charge regulator in order to maintain charge of the battery and extend the life of the battery by not overcharging it. This will include wire, connectors, pole stand-offs and other equipment used to attach the panel to the gauge. The charging system may be tested by the Purchaser prior to installation to assure the autonomy (and other) requirements are met. The solar panels will be mounted on the tower in such way as to not interfere with measurements. Solar panels must be kept away from temperature sensors so as to not be a heat source during hot days, and away radiation sensors so as to not cast shadows on the sensor and away from the ultrasonic sensor as to not change the local wind patterns in the vicinity of the wind sensor. The charge regulator will be placed in the enclosure and share space with the DCP, modem and battery.

|  |  |  |
| --- | --- | --- |
| Power Supply & Management | | |
| No. | Item | Technical Specification |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of Origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | Voltage | 12 Volt Nominal |
| 6. | Capacity | 140 Watt or More |
| 7. | Module efficiency | 16% or higher |
| 8. | Charging System | 12 V Solar Panel(s) sufficient to keep the battery system charged to full capacity during consecutive cloudy days |
| 9. | Accessories | Charge regulator properly sized for the selected solar panel and battery |
| 10. | Battery Type | Sealed Maintenance Free |
| 11. | System Voltage | 12 V DC Battery |
| 12. | Capacity | Sufficient to measure, log, and transmit data for a period of 14 days autonomously |
| 13. | Designed Lifetime | More than 10 years based upon 30% discharge cycles |
| 14. | Material | Fiber Reinforced Plastic |
| 15. | International Protection Rating | IP66 or better |

* + - 1. Grounding, Surge and Lightning Protection

Each station shall employ a grounding system that will protect the electronic equipment from electrical surge caused by lightening. The system will consist of a single point grounding system which will tie all grounding wires to a copper grounding plate. The plate will then be connected with a copper grounding strap to a grounding rod. Antenna cables will utilize polyphasers to protect the data collection platform and radios from lightning damage. The Bidder will provide all parts for this installation and properly install the Single Point Grounding System at each station.

* + - 1. Meteorological Masts & Civil Works (Mast and Enclosure for DCP, Battery and Regulator)

The AWS station will be mounted on a **Bidder** supplied pole mast that is especially designed and supplied to mount meteorological equipment. The pole mast shall be supplied by the bidder of any renowned international brand AWS manufacturing company. The pole mast shall be sufficient to securely mount the wind sensor at 10 m ± 0.1 m in height. Air temperature and humidity should be measured at between 1.2m and 1.5m above the ground in a shaded and ventilated environment. The mast is required to include lightning protection (rod) and electrical grounding. The mast will be fully and easily tilt-able, by one person, for sensor maintenance such that the sensor is not more than 1.5 m above the ground for maintenance. This is required to be possible with a single person. The mast delivery is required to include all parts and material, including the concrete required for a foundation.

The **Bidder** will survey each site and make a recommendation to the **Purchaser** and will get the approval from the **Purchaser** prior to installation. If the **Bidde**r installs the station without final site approval, then the **Bidder** will incur the cost of moving the station. The recommended location must meet the requirements of the WMO for exposure.

Solar panels can be placed on the tower, though an acceptable location would be at a height and distance as to not interfere with the meteorological observation systems. The solar panel could be mounted below the sensors, or on another pipe mount away from the tower. No wires are permitted to be in contact with the ground, as all wires along the ground or underground must be placed in rigid water tight conduit. Wires run on the tower structure must be weatherproof if not enclosed in conduit and must be secured by ultraviolet (sun) resistant ties or straps attached every 15 cm of cable run.

The **Bidde**r will be responsible for all materials and civil works at each site. This is to include concrete foundation for both the masts and the fencing to prevent forcible entry and tampering. The **Bidder** will supply keyed locks for the fence structures and the enclosure. All fence structure keys will match other fence locks in the project. Likewise, enclosure locks will match all other enclosure locks.

| Pole Mast | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | Material Type | Alloy |

* + - 1. Any other accessories / equipment required for successful operation of system but not listed in Price Schedule table

To be proposed by the bidder.

* + 1. Agricultural Automatic Weather Stations (Ag-AWS)

This section provides the details of the components required as part of the Ag-AWS. There will be 125 Ag-AWS supplied as part of this project. The locations of the Ag-AWS are provided in Appendix A.

* + - 1. Data Collection Platform (DCP)

The Ag-AWS DCP is expected to vary slightly from the Synoptic AWS DCP

Specifications of Data Collection Platform

| No. | Item | Technical Specification |
| --- | --- | --- |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of Origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | Power Input | * 10 – 15 V DC * Must survive reverse polarity connections (system will operate normally when polarity is applied properly without any product replacement, such as fuses) |
| 6. | Internal Memory | * Non-volatile internal flash memory * Sufficient to store hourly state weather parameters for 6 months minimum; and * Sufficient to store data and time of every rain gauge tip for one year minimum |
| 7. | Inputs | * Sufficient sensor inputs to connect all sensors required by the project * Sufficient bit resolution to achieve required sensor accuracy as stated in sensor specification |
| 8. | Measurement & Logging Intervals | * Ability to change measurement and log rates of all sensors whereby different sensors can have different measurement and log rates. |
| 9. | Rainfall Processing and Reset | * Programmable rainfall accumulation periods of daily or annual totals (accumulated rainfall) * Programmable rainfall reset to 0 from every day, to once per year at a user selectable day of the year |
| 10. | Analog to Digital Converter | * 16-bit minimum, or as necessary to prevent any loss of stated accuracy or resolution from the sensors connected to the DCP |
| 11. | Communication Ports/Telemetric Interface | * 1 port is dedicated for DCP programming and downloading of data supplied with 2m cable minimum length for each DCP * Communication port for GSM/GPRS radio * TCP/IP port for future addition of VSAT/Iridium/Himawari/INSAT to be used simultaneously and in parallel with the GSM/GPRS (dual communication path) * Baud rate and throughput minimum of 115.2 kbps (for data download) |
| 12. | Data Format | WMO compliant SYNOP,BUFR,CSV |
| 13. | Programming | * The DCP will be programmable by both by a laptop computer or tablet computer connecting to the communication port or wireless connection. * DCP to be programmed directly onsite by downloading stored program files * Programming software must be compatible using Linux and mobile tablet devices (preferably web based applications). * Programming software must include unlimited right to copy and use by the Purchaser |
| 14. | Features | * Non-volatile internal flash memory that can store one year of data as specified under measurement and logging interval section. This is to include a minimum of one year of data of each tip of the tipping bucket. * Data download (performed at station) to be provided in text format with all data having a date/time stamp and being in scan order * Provision to download data by user selectable time periods * If DCP power is interrupted the DCP will automatically restart data collection and transmissions once power is restored without loss of previously recorded data |
| 15. | Internal Clock | * Internal battery backup for clock * Internal clock drift less than 1 second per day. * Automatic and user directed time sync using GSM/GPS service |
| 16. | Other | * All accessories to make the DCP functional (this includes brackets, cables, connectors, etc.). * Demonstrated ability to measure and store all parameters once per minute and transfer this data every minute. |

|  |  |  |  |
| --- | --- | --- | --- |
| Measurement and Logging Interval | | | |
| Sensor | Units | Measurement/Logging Interval | Transmit Interval |
| AWS & Ag-AWS Stations | | | |
| Temperature | C | Hourly/Hourly | Hourly |
| Relative Humidity | RH | Hourly/Hourly | Hourly |
| Wind Speed | ms-1 | Hourly/Hourly | Hourly |
| Wind Direction | o True | Hourly/Hourly | Hourly |
| Total Solar Radiation | Wm-2 | Hourly | Hourly |
| Atmospheric Pressure | hPa | Hourly | Hourly |
| Accumulated Rainfall | Mm | Continuous/Every Tip | Hourly–Annual Accumulation |
| Battery Voltage | V | Hourly | Hourly |
| Solar Charging Volts | V | Hourly | Hourly |
| Soil Temperature | C | Hourly | Hourly |
| Evapotranspiration | Will be calculated | | |

* + - 1. Mobile Phone Network Modem/Radio ( GPRS / GSM based) (With SIM)

As previously specified.

* + - 1. Temperature/Relative Humidity Sensor

As previously specified.

* + - 1. Wind Speed and Direction Sensor

As previously specified, except the sensor will be mounted 2-3 m above the ground.

* + - 1. Automatic Rain Gauge (Tipping Bucket Rain Gauge)

As previously specified.

* + - 1. Solar Radiation Sensor

| Solar Radiation Sensor Specifications | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of Origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | Sensor | * High stability silicon photovoltaic/photodiode detector |
| 6. | ISO Classification | * ISO 9060 Fast Response Class C or better |
| 7. | Spectral Range | ~ 400 to 1100 nm |
| 8. | Response time | ≤ 1 s |
| 9. | Maximum Solar Irradiance | 2000 Wm-2 |
| 10. | Tilt Error | ±0.2% at 1000 wm-2 |
| 11. | Field of View | 180⁰ |
| 12. | Resolution | 1 Wm-2 |
| 13. | Uncertainty | < 1% |
| 14. | Construction | glass dome |
| 15. | Accessories | * Sensor mounting support, cables (power and signal) and other accessories required to perform the observation in a reliable and accurate manner * Bubble level that is built into a sensor (not an after-market addition) |
| 16. | Certification | All sensors should be calibrated and provided standard calibration certificate |

* + - 1. Atmospheric Pressure Sensor

As previously specified

* + - 1. Soil Temperature Sensor

Soil temperature will be 15cm below the soil surface under irrigated grass. Please provide Data Sheet.

| Soil Temperature | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| Temperature Sensor Specification | | |
|  | | |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of Origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | Sensor Type | Thermistor with water resistant coating |
| 6. | Range | -10 to 50 ˚C |
| 7. | Accuracy | ±0.5 C for > 0 ˚C and ≤ 40 ˚C |
| 8. | Resolution | * 0.1 ˚C |
| 9. | Radiation Shield | * Naturally ventilated radiation shield * Composted of UV stabilized fiber-glass filled polyester with outer surface painted white to reflect the sun radiation and minimum absorption. * Shields made of metal are not permitted. |

* + - 1. Power Supply and Charging System

As previously specified.

* + - 1. Grounding, Surge and Lightning Protection

As previously specified.

* + - 1. Meteorological Masts & Civil Works (Mast and Enclosure for DCP, Battery and Regulator)

The Ag-AWS station will be mounted on a Bidder supplied tripod or simple pole and cross-arm that will allow for the temperature/relative humidity sensor and ultrasonic wind sensor to be placed at 2 m above the ground without interfering with one another. The mounting structure will be in an area 20ft x 12ft, as agreed upon with the Purchaser. The area will be enclosed by cyclone fencing of 2 m in height with a lockable gate. The 20ft x 12ft area will be located where the area is free from obstruction, such as buildings and trees according to WMO convention of nearby obstructions.

Solar panels can be placed on the tower, though an acceptable location would be at a height and distance as to not interfere with the meteorological observation systems. The solar panel could be mounted below the sensors, or on another pipe mount away from the tower. No wires are permitted to be in contact with the ground, as all wires along the ground or underground must be placed in rigid watertight conduit. Wires run on the tower structure must be weatherproof if not enclosed in conduit and must be secured by ultraviolet (sun) resistant ties or straps attached every 15 cm of cable run.

The Bidder will be responsible for all materials and civil works at each site. This is to include concrete foundation for both the masts and the fencing to secure the fencing and masts in place and prevent forcible entry and tampering. The Purchaser will approve final siting prior to installation. If the Bidder installs the station without final site approval, then the Bidder will incur the cost of moving the station. The Bidder will supply keyed locks for the fence structures and the enclosure. All fence structure keys will match other fence locks in the project. Likewise, enclosure locks will match all other enclosure locks.

* + - 1. Any other accessories / equipment required for successful operation of system but not listed in Price Schedule table

To be proposed by the bidder.

* + 1. Urban Automatic Rain Gauges

This section provides the details of the components required as part of the Urban Automatic Rain Gauges (ARG) stations. There will be 65 ARG stations supplied as part of this project. The locations of the ARG stations are provided in Appendix A.

* + - 1. Data Collection Platform (DCP)

These stations will measure rainfall only.

Specifications of Data Collection Platform:

| No. | Item | Technical Specification |
| --- | --- | --- |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of Origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | Power Input | * 10 – 15 V DC * Must survive reverse polarity connections (system will operate normally when polarity is applied properly without any product replacement, such as fuses) |
| 6. | Internal Memory | * Non-volatile internal flash memory * Sufficient to store hourly state weather parameters for 6 months minimum; and * Sufficient to store data and time of every rain gauge tip for one year minimum |
| 7. | Inputs | * Sufficient sensor inputs to connect all sensors required by the project * Sufficient bit resolution to achieve required sensor accuracy as stated in sensor specification |
| 8. | Measurement & Logging Intervals | * Ability to change measurement and log rates of all sensors whereby different sensors can have different measurement and log rates. |
| 9. | Rainfall Processing and Reset | * Programmable rainfall accumulation periods of daily or annual totals (accumulated rainfall) * Programmable rainfall reset to 0 from every day, to once per year at a user selectable day of the year |
| 10. | Analog to Digital Converter | * 16-bit minimum, or as necessary to prevent any loss of stated accuracy or resolution from the sensors connected to the DCP |
| 11. | Communication Ports | * 1 port dedicated for DCP programming and downloading of data supplied with 2m cable minimum length for each DCP * Comm port for GSM/GPRS radio * TCP/IP port for future addition of VSAT/Iridium to be used simultaneously and in parallel with the GSM/GPRS (dual communication path) * Baud rate and throughput minimum of 115.2 kbps for programming and on-site downloading of data |
| 12. | Programming | * The DCP will be programmable by both by a laptop computer or tablet computer connecting to the communication port or wireless connection. * DCP to be programmed directly onsite by downloading stored program files * Programming software must be compatible using Linux and mobile tablet devices (preferably web based). * Programming software must include unlimited right to copy and use by the Purchaser |
| 13. | Features | * Non-volatile internal flash memory that can store one year of data as specified under measurement and logging interval section. This is to include a minimum of one year of data of each tip of the tipping bucket. * Data download (performed at station) to be provided in text format with all data having a date/time stamp and being in scan order * Provision to download data by user selectable time periods * If DCP power is interrupted the DCP will automatically restart data collection and transmissions once power is restored without loss of previously recorded data * Required support for dual path communication using GSM/GPRS and either VSAT/Iridium/Himawari/INSAT or other TCP/IP based communication modem/radio. |
| 14. | Internal Clock | * Internal battery backup for clock * Internal clock drift less than 1 second per day. * Automatic and user directed time sync using GSM/GPS service |
| 15. | Other | * All accessories to make the DCP functional (this includes brackets, cables, connectors, etc.). * Demonstrated ability to measure and store all parameters once per minute and transfer this data every minute. |

|  |  |  |  |
| --- | --- | --- | --- |
| Measurement and Logging Interval | | | |
| Sensor | Units | Measurement/Logging Interval | Transmit Interval |
| AWS & Ag-AWS Stations | | | |
| Accumulated Rainfall | mm | Continuous/Every Tip | Hourly–Annual Accumulation and at user configurable rainfall amounts (i.e. every 2 mm) |
| Battery Voltage | V | Hourly | Hourly |
| Solar Charging Volts | V | Hourly | Hourly |

* + - 1. Mobile Phone Network Modem/Radio ( GPRS / GSM based) (With SIM)

As previously specified.

* + - 1. Automatic Rain Gauge (Tipping Bucket Rain Gauge)

As previously specified.

* + - 1. Power Supply and Charging System

As previously specified.

* + - 1. Grounding, Surge and Lightning Protection

As previously specified.

* + - 1. Meteorological Masts & Civil Works (Mast and Enclosure for DCP, Battery and Regulator)

The urban rainfall sites (ARG Stations) will be placed at various facilities (WASA Sites) as indicated in the Appendix A. It may be difficult to maintain WMO rain gauge exposure requirements. It is anticipated that the sites will be located at secure locations, thus the need for cyclone fences may be limited. However, the requirement for a secure enclosure with a keyed lock is still necessary. The enclosure will hold the DCP, GPRS/GSM modem, battery and regulator. The rain gauge will be mounted in such a way where the orifice will be 1 – 1.5 m above the ground or as siting permits.

* + - 1. Any other accessories / equipment required for successful operation of system but not listed in Price Schedule table

To be proposed by the bidder.

* + 1. Field Sensor Performance Check Standards

**Field Temperature and Relative Humidity Reference Standard (for field calibration purpose)**

**Field Rain Gauge Check Standard (for field calibration purpose) and**

**Field Atmospheric Pressure Check Standard (for field calibration purpose)**

Part of the task of the field crew is to perform a field check of sensor performance. The purpose of the field check standards is to check if the sensors are operating within specification or are otherwise in need for calibration. Field check calibration standards will be traceable standards. The field calibration standards will also be calibrated as warranted by the manufacturer of the standard. Please provide data sheets on all products listed below. Field calibration standards are required for the following:

**Field Temperature and Relative Humidity Reference Standard (for field calibration purpose)**

* + 1. Handheld Reference Temperature & Relative Humidity- QTY-10 Units. This can either be a combined handheld sensor, or two different handheld devices. Must come with NIST or comparable certificate.
       1. Temperature
          1. Range: -20 to +60C
          2. Resolution: 0.1C
          3. Accuracy ± 0.2C
          4. Display LCD or other that is easily visible in daylight
          5. Traceable Calibration Certificate Required
          6. Battery operated (AA/AAA, rechargeable or other commonly available battery)
          7. Specified for use to measure air temperature
          8. Carrying case
       2. Humidity
          1. Range 5 to 95%
          2. Accuracy ± 1% 10 to 90% RH
          3. Stability ± 1% Rh per year
          4. Display LCD or other that is easily visible in daylight
          5. Battery operated (AA/AAA, rechargeable or other commonly available battery)
          6. Traceable calibration certificate required
          7. Specified for use to measure atmospheric humidity
          8. Carrying Case

**Field Rain Gauge Check Standard (for field calibration purpose)**

* + 1. Rain Gauge- QTY-10 Units
       1. Rain gauge calibrator for dynamic test
          1. Multiple orifices to achieve different rainfall rates up to 250 mm per hour
          2. Calibrated volume of water 900 ml minimum
       2. 10ml or larger syringe for static test

**Field Atmospheric Pressure Check Standard (for field calibration purpose)**

* + 1. Handheld Atmospheric Pressure Meter- QTY-10 Units
       1. Barometric Pressure Transfer Standard
          1. Range: 500 to 1100 hPa
          2. Resolution: 0.01 hPa
          3. Accuracy ± 0.15 hPa
          4. Long-term stability ±0.1 hPa/year
          5. Display LCD or other that is easily visible in daylight
          6. Traceable Calibration Certificate Required
          7. Battery operated (AA/AAA, rechargeable or other commonly available battery)
          8. Specified for use to measure atmospheric pressure
          9. Carrying case
       2. Sensor Calibration

Sensor calibration will be performed by the Bidder at intervals recommended by the manufacturer or if the field performance check shows deviation from specifications. There will be a calibration facility set up by the Purchaser in a subsequent phase of the project (not tendered in this document). Until this facility is set up, the Bidder will be responsible for performing sensor calibration and obtaining calibration certificates that are in compliance with the manufacturers’ calibration procedure.

Once the calibration facility has been put in place by the Purchaser, the Bidder meteorological technicians will be responsible for sensor calibration at the Purchaser’s facilities.

The spare components are intended for use as a rolling inventory so that station sensors can be brought into the laboratory for calibration without losing data at the stations.

It is intended to have the Bidder calibrate all meteorological sensors at regular intervals as recommended by the manufacturer, whether it is at the Purchaser’s facilities or at some other recognized calibration facility until the Purchaser’s calibration facility is completed. All costs related to performing the sensor calibration will be the responsibility of the Bidder.

* + 1. AWS/Ag-AWS/ARG Computer Servers and IT equipment

There shall be one cloud server and 4 computer servers required. All servers shall be rack-mounted and reside in a Supplier supplied computer rack. Specifications of all computer servers being offered should be included in bid package and/or available upon request.

The combination of servers and cloud shall provide a distributed computing environment, meant to isolate tasks and assure the most important aspects of the data center can be easily performed. The servers consist of:

1. The Data Collection physical Server (Server 1)
2. The Data Processing physical Server (Server 2)
3. The Data Processing physical Server (redundant) (Server 3)
4. The Data Dissemination/Web Server through cloud server (Server 4)
5. The Data Dissemination/Web Server (physical Server) (Server 5)
   * + 1. Meteorological Data Collection Server (Server 1)

*Data Collection Server – Server 1*

The Data Collection Server shall receive data that is transmitted by the hydrometeorological network. The server shall collect data from the GSM/GPRS station data stream. This will include software to parse the data to be further processed and stored by the Data Processing Server (Server 2).

The specification of the Data Collection Server (Server 1) consists of the following:

| Data Collection Server (Server 1) Specifications | | | | | |
| --- | --- | --- | --- | --- | --- |
| No. | | Item | | Technical Specification | |
|  | | Brand Name | | Must be Mentioned By Bidder | |
|  | | Model Number | | Must be Mentioned By Bidder and Provide Data Sheet | |
|  | | Country of Origin | | Must be Mentioned By Bidder | |
|  | | Country of Manufacture | | Must be Mentioned By Bidder | |
|  | | Form Factor | | Rack Mount | |
|  | | Processor | | Processor (6C, 1.7GHz, 1866MHz, 15MB, 85W) or similar | |
|  | | Operating System | | LINUX based .OS Media included, and Resource DVD included | |
|  | | Memory | | 32 GB 2400MHz DDR4 RDIMM ECC or similar | |
|  | | Hard Drive | | 2.5" 1TB SATA Class 20 Solid State Drive (RAID 1 Minimum) | |
|  | | Network Card | | Intel I350 (4x1Gbit) Quad Port Network Card or similar | |
|  | | Power Supply | | Dual, hot-plug, Redundant Power Supply (1+1), 1100W or similar | |
|  | | DVD ROM | | DVD ROM, SATA, Internal | |
|  | | Ports | | 2 Serial, 4 USB 3.0 ports, backward compatible to USB 2.0 | |
|  | | Keyboard/Mouse | | To be included and wired | |
|  | | KVM Switch Compatibility | | Server shall require the necessary ports to be fully compatible with required KVM Switch | |
|  | | Rack Mounting Rails | | Compatible with rack that is being supplied separately | |
|  | | Power | | 220V AC | |
|  | | Warranty | | 2 (two) years’ hardware repair/replacement and software support on OS, 24 hours support by OEM/Local Agent | |

* + - 1. Meteorological Data Processing and Data Exchange Physical Server (Server 2, Server 3 (Redundant))

Server 3 is Redundant Server

| Data Processing Server (Server 2, Server 3) Specifications | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
|  | Brand Name | Must be Mentioned By Bidder |
|  | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
|  | Country of Origin | Must be Mentioned By Bidder |
|  | Country of Manufacture | Must be Mentioned By Bidder |
|  | Form Factor | Rack Mount |
|  | Processor | Processor 3.3GHz, 8M cache, 4C/4T, turbo (80W) or similar |
|  | Operating System | LINUX based .OS Media included, and Resource DVD included |
|  | Memory | 32GB) 2400MT/s DDR4 ECC UDIMM or similar |
|  | Hard Drive | 4 X 1TB 7.2K RPM NLSAS 12Gbps 3.5in Cabled Hard Drive or similar (using RAID 5), hardware controller to be included) |
|  | Network Card | On-Board LOM 1GBASE-T Dual Port (BCM5720 GbE LOM) Network Card or similar |
|  | Power Supply | Dual, hot-plug, Redundant Power Supply (1+1), 1100W or similar |
|  | DVD ROM | DVD ROM, SATA, Internal |
|  | Ports | 1 Serial, 4 USB 3.0 ports, backward compatible to USB 2.0 |
|  | Keyboard/Mouse | To be included and wired |
|  | KVM Switch Compatibility | Server shall require the necessary ports to be fully compatible with required KVM Switch |
|  | Rack Mounting Rails | Compatible with rack that is being supplied separately |
|  | Power | 220V AC |
|  | Warranty | 2 (two) years’ hardware repair/replacement and software support on OS, 24 hours support by OEM/Local Agent |

* + - 1. Cloud server for web and visualization software (Server 4 on cloud)

| Cloud Web Portal Server (Server 4) Specifications | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
|  | Brand Name | Must be Mentioned By Bidder |
|  | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
|  | Country of Origin | Must be Mentioned By Bidder |
|  | Country of Manufacture | Must be Mentioned By Bidder |
|  | Storage | At-least 200 GB Storage |
|  | Processor cores | At-least 4 cores |
|  | Operating system | To be defined by bidder compatible with software to be supplied by bidder |
|  | RAM | At-least 8 GB |
|  | VPM | Virtual machine required |
|  | Bandwidth | To be defined by bidder to host at least 1000 average simultaneous requests |
|  | Data transfer Volume | To be defined by bidder to host at least 1000 average simultaneous requests |
|  | Backup | 4 Copy cloud, first copy for main, second for mirror, third for backup and fourth for disaster recovery, with automated backup |
|  | Database | To be defined by bidder compatible with software to be supplied by bidder |
|  | Cloud Subscription | Pre-paid for 5 years beyond commissioning date |
|  | Administrator Panel | Required, root access through SSH |
|  | Administrative Access | Required, to be passed on to purchaser at the end of Warranty obligations of the bidder |
|  | Server Management | Self-managed cloud |
|  | Dedicated IP | 1 |
|  | Domain name | Registered for 10 years, in the name of purchaser |
|  | SSL Certificate | Required, pre-paid for 5 years beyond commissioning date |
|  | Availability | 99.99 % of time |

* + - 1. Web Server (Server 5)

This web server will be a physical server installed at the BMD data center in the same rack where Server 1, 2, and 3 is installed.

| Web Server (Server 5) Specifications | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
|  | Brand Name | Must be Mentioned By Bidder |
|  | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
|  | Country of Origin | Must be Mentioned By Bidder |
|  | Country of Manufacture | Must be Mentioned By Bidder |
|  | Form Factor | Rack Mount |
|  | Processor | Processor 3.3GHz, 8M cache, 4C/4T, turbo (80W) or similar |
|  | Operating System | LINUX or as compatible with web application based OS Media included, and Resource DVD included |
|  | Memory | 32GB 2400MT/s DDR4 ECC UDIMM or similar |
|  | Hard Drive | 4 X 1TB 7.2K RPM NLSAS 12Gbps 3.5in Cabled Hard Drive or similar (using RAID 5), hardware controller to be included) |
|  | Network Card | On-Board LOM 1GBASE-T Dual Port (BCM5720 GbE LOM) Network Card or similar  \ |
|  | Power Supply | Dual, hot-plug, Redundant Power Supply (1+1), 1100W or similar |
|  | DVD ROM | DVD ROM, SATA, Internal |
|  | Ports | 1 Serial, 4 USB 3.0 ports, backward compatible to USB 2.0 |
|  | Keyboard/Mouse | To be included and wired |
|  | KVM Switch Compatibility | Server shall require the necessary ports to be fully compatible with required KVM Switch |
|  | Rack Mounting Rails | Compatible with rack that is being supplied separately |
|  | Power | 220V AC |
|  | Warranty | 2 (two) years’ hardware repair/replacement and software support on OS, 24 hours support by OEM/Local Agent |

* + - 1. Network Attached Storage (NAS) (For data archiving)

The specification of Network Attached Storage (Data Storage Server):

| NAS Server | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of Origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | CPU Frequency | Quad Core 1.5GHz, burst up to 2.3GHz |
| 6. | System Memory | 4 GB DDR3 |
| 7. | Drive Bays | 4 |
| 8. | Maximum Internal Raw Capacity | 48TB  Mounted Raw Capacity: 48TB  (4 x 12TB 3.5” SATA HDD)  Actual Useful Capacity: 24TB |
| 9. | External HDD Interface | 2 x USB 3.0 Port and 1 x eSATA Port |
| 10. | RJ-45 1GbE LAN Port | 2 x Gigabit Port |
| 11. | Type | Rack mounted |
| 12. | Power supply | 100 – 240VAC, 50/60Hz |

* + - 1. Network Router

The specification of network router:

| Network Router | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Name | Mentioned by Bidder and Provide Data Sheet |
| 3. | Country of origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | Routing Port | 3 onboard Gigabit ports |
| 6. | No. of Switch Port | 4 |
| 7. | NIM Slot | 1 |
| 8. | ISC Slot | 1 |
| 9. | SM Slot | 1 |
| 10. | 4 GB flash memory and | 4 GB flash memory and 4 GB DRAM |
| 11. | Transport Protocol | IPSec, PPPoE, |
| 12. | Routing Protocol | OSPF, IS-IS, RIP-1, RIP-2, BGP, EIGRP, DVMRP, PIM-SM, IGMPv3, GRE, PIM-SSM, static IPv4 routing, static IPv6 routing, policy-based routing (PBR), IPv4-to-IPv6 Multicast Remote |
| 13. | Management Protocol | SNMP, RMON Features: VPN support, VLAN support, Syslog support, IPv6 support, Class-Based Weighted Fair Queuing (CBWFQ), Weighted Random Early Detection (WRED) |
| 14. | Bandwidth Handling | Up to 300Mbps full duplex |
| 15. | Aggregate Throughput | 100Mbps |

* + - 1. Security Router (For 3 servers)

The specification of security router:

| Security Router | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
|  | Brand Name | Must be Mentioned By Bidder |
|  | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
|  | Country of Origin | Must be Mentioned By Bidder |
|  | Country of Manufacture | Must be Mentioned By Bidder |
|  | WAN Ethernet | 2 x RJ-45 ports 10/100/1000 bps |
|  | EHWIC slots | 2 slots |
|  | Network Interface Ports | Cisco 4-Port Gigabit Ethernet LAN Switch |
|  | Networking standards | IEEE 802.1Q, 802.3, 802.3ah, 802.3u |
|  | Routing Protocols | BGP, IP, IS-IS, MPLS, OSPF |
|  | Management protocols | QoS, CBWFQ, WRED, PBR, PfR, NBAR |
|  | Supported network protocols | IPv4, IPv6, IGMPv3 |
|  | Security | 3DES, DES, WPA-AES Firewall security |
|  | Ethernet LAN | 10/100/1000Base-T(X), Full duplex |
|  | Memory (DDR2 DRAM) | 512 MB |
|  | USB Flash memory (internal) | 256 MB |
|  | External USB slots | 1 x Type A |
|  | USB console port | 1 x mini-Type B, up to 115.2 kbps |
|  | Serial console and aux ports | 2 x up to 115.2 kbps |
|  | Power supply | 100 – 240VAC, 47 – 63 Hz |
|  | Power Consumption | 25W (no option module) |

* + - 1. Online UPS 3 KVA

Specification of Online UPS:

| Online UPS 3 KVA | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of Origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| Output |  |  |
| 5. | Topology | Double conversion online |
| 6. | Nominal output voltage | 220 |
| 7. | Efficiency at full load | Minimum 92% |
| 8. | Output frequency (sync to mains) | 50Hz +/- 5Hz |
| 9. | Output power capacity | 2100 W |
| 10. | Output connections | (8) IEC 320 C13; (2) IEC 320 C19 |
| Input |  |  |
| 11. | Nominal input voltage | 220-230 V |
| 12. | Input frequency | 45 – 65 Hz (auto sensing) |
| 13. | Bypass | Automatic and Manual (Built-in) |
| Battery |  |  |
| 14. | Battery type | Maintenance-free sealed lead-acid battery with suspended electrolyte: leak proof |
| 15. | Runtime | Battery pack minimum 45 minutes at full load |
| Communications and Management | | |
| 16. | Interface port(s) | RJ-45 10/100 Base-T, RJ-45 Serial, SmartSlot |
| 17. | Emergency power off (EPO) | Yes |
| 18. | Control panel | LEDs |

* + - 1. Offline UPS 1200 VA

Specification of offline UPS

| UPS 1200 VA | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| 1. | Brand Name | Must be Mentioned By Bidder |
| 2. | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3. | Country of Origin | Must be Mentioned By Bidder |
| 4. | Country of Manufacture | Must be Mentioned By Bidder |
| 5. | Input voltage Range | 160Vc to 270 Vc |
| 6. | Output Power | 1200 VA (min) |
| 7. | Out Put Voltage | 220 V Ac |
| 8. | Transfer Time | <4 M.S |
| 9. | Backup Time | 15 minute (min) at full load |
| 10. | Protection | Spike Surge, Blackout, Over load, under load, short circuit, Under and Over voltage |
| 11. | Noise | EMI/RFI Filter built in |

* + 1. IT accessories and computers for WASA
       1. Computer rack

Computer rack to mount servers, KVM Terminal/Switch, UPS. To be 19 inches wide, 42U in height, metallic, with locking front door. Compatible with all rack mount devices being procured under this bid document.

* + - 1. KVM Switch and Monitor

17” Terminal and KVM Switch with 8 ports, and rails to mount in Supplier furnished computer cabinet. The KVM switch must be compatible with all servers that are procured in this procurement, and much be capable to connect with Linux / Windows 10 and Windows 2012/2016/2019 operating systems.

* + - 1. Computers for WASAs and BMD

Specification of computer:

| Computer for WASAs and BMD | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| 1 | Brand Name | Must be Mentioned By Bidder |
| 2 | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3 | Country of Origin | Must be Mentioned By Bidder |
| 4 | Country of Manufacture | Must be Mentioned By Bidder |
| 5 | Operating system | Windows 10 Home / Professional 64bit |
| 6 | Processor | Intel® Core™ i7-7740X |
| 7 | Memory, standard | 16 GB DDR4 and above or equivalent (RAM) |
| 8 | Boot drive | 512 GB SSD or equivalent |
| 9 | Display | 58.42 cm (23) diagonal WLED-backlit (1920 x 1080). Touch-enabled (optional) |
| 10 | Optical drive | OEM DVD Drive |
| 11 | Port | 4 USB 2.0; 2 USB 3.0; 1 headphone/microphone combo |
| 12 | Pointing device | USB wired/wireless optical mouse |
| 13 | Keyboard | USB wired/wireless standard keyboard |
| 14 | Pre-installed software | Preinstalled MS Office Lifetime with lifetime antivirus. |

* + - 1. Large display screen for WASAs

Specification of large display screen:

| 42” Display Unit (LED) | | |
| --- | --- | --- |
| No. | Item | Technical Specification |
| 1 | Brand Name | Must be Mentioned By Bidder |
| 2 | Model Number | Must be Mentioned By Bidder and Provide Data Sheet |
| 3 | Country of Origin | Must be Mentioned By Bidder |
| 4 | Country of Manufacture | Must be Mentioned By Bidder |
| 5 | Screen Type | 42’’ Screen LED |
| 6 | Display resolution | 1920 x 1080or better |
| 7 | Colors | 256 colors |
| 8 | Interfaces | 1 x Ethernet (RJ45) (max. 12Mbit/s), HDMI port, USB port 1 x USB Multimedia card / SD card slot combined |
| 9 | Industrial Ethernet | 1 x Ethernet (RJ45) |
| 10 | Protocols | Protocol (Ethernet) TCP/IP |
| 11 | Image Formats Supported | JPEG, JPS, MPO |
| 12 | Sound technology | Dolby digital |

* + 1. Computer Software

All computer software should employ open software (free to use), to the extent possible. In case of licensed software, all the licenses should be pre- paid for 10 years. In particular, databases should employ PostgreSQL, My SQL, or other similar database software that will not incur use fees.

This is also the case for web software, which should be Apache, or similar, that can be used indefinitely without charge.

* + - 1. Data Collection Software - AWS/Ag-AWS/ARG Station Communication, Control and Collection Software (Software to reside on Server 1)

The DCS will be comprised of a data collection server and associated software that will be used to collect, store, process, display and disseminate information to other subsystems the Purchaser operates or will operate in the future. The DCS will incorporate servers that will run software to perform communication through the mobile data network with the remote AWS/Ag-AWS/ARG stations. The data will be stored on bidder supplied database (PostgreSQL preferred) that may be part of the web visualization system. The Bidder will provide a dedicated internet connection with 8 Mbps of uploading and 8 Mbps of downloading speed with Global IP address (static) including a domain name. Collect data from all AWS/Ag-AWS/ARG stations within 1 minute after the hour the data is valid (i.e. Data logged at 1000 local time will arrive no later than 1001 local time the same day).

Bidder must meet and ensure the following technical characteristics of the solution:

1. Flexible number of remote station collection with the capability of communicating to, receiving and storing data from at least 1000 AWS, Ag-AWS, and ARG stations.
2. Overall system performance to be better than 99.8% (three nines) of error free data collection and operation (this is not considering mobile data network interruptions)
3. Storage of raw data and meta data for 1000 stations for 10 years online
4. Operators handbook and maintenance instructions for all parts of the system in English (3 copies).

Complete documentation of all software and hardware components, including system block diagram and circuit diagrams (in English, 3 copies).

The application / software must be capable of doing the following functions:

* + 1. Two-way communication between the server and the AWS/Ag-AWS/ARG remote stations to perform the following :

1. Data collection at user assignable times
2. Receive data based on exceptional meteorological events on a random basis
3. Reprogram any one or a batch of AWS/Ag-AWS/ARG DCPs
4. Time sync for all, group, or single stations.
   * 1. In the event an AWS/Ag-AWS/ARG station loses communication, once the communication link is restored the system will recover the missing data automatically
     2. The AWS/Ag-AWS/ARG server software will provide a web interface for the viewing of real-time (raw) and historical data. The data output will include the following:
        1. Graphical trend analysis (time plot) of one and/or many sensors as selected by the user. Zoom ability on graphical plots. Graphs to be saved as JPG files.
        2. Tabular output data by station, by sensor for a group of stations
        3. Automatically calculates minimum, maximum, average and standard deviation
        4. Automatic view of data logger status both tabular and on a web-based map
     3. Create and customize full featured DCP programs that can be transmitted to each or a group of AWS/Ag-AWS/ARG stations over the mobile data network
     4. Software must run as a Service, and automatically start up upon server reboot
     5. Automatically save data in user selectable network directories in CSV and XML format in such a way where the data can be easily imported into third-party software solutions (i.e. product generators, time series database, etc.)
     6. Complete data collection diagnostics including number of stations reporting over a user selectable time period

Software license fees prepaid for a 5-year program starting from the date of system commissioning.

* + - 1. AWS/Ag-AWS/ARG Data Processing Software (Software to reside on Server 2 and Server 3)

The following software will run on Server 2.

Field Maintenance, Management and Tracking software

There is a requirement for field maintenance & tracking software. This software should be web based, hosted on Server 5. This software will be used to produce monthly maintenance reports through the entire period of the contract (Installation period, warranty period, and AMC). This software will allow the field crews to log daily activities, especially activities that have to do with the AWS, Ag-AWS, ARG and Data Center operations. The field maintenance software will provide the following:

Record all station visits including the following activities

Date of visit

1. Time of arrival
2. Station name
3. Technician(s) name
4. Purpose of visit
5. Operational status upon arrival
6. Operation status upon departure
7. Activities performed during visit
8. Recommendation of activities on future visit
9. Time of Departure
10. The records will be sortable by any of the fields. For instance, the software must produce a record of all activities at a given station, or all activities performed by a given technician, or any combination of fields.
11. The field maintenance management software will be used to produce monthly reports that will be prepared by the Bidder and delivered to the Purchaser no later than the 5th day after the end of the month the report is valid for.
12. Field maintenance management software will include licensing and maintenance fees are required to be pre-paid for a period of 5 years so that no further expenses will be required by the Purchaser over the 5-year time frame starting from the date of commissioning and the start of the Warranty Period. It should be noted that software not having licensing or annual maintenance fees are desirable.

**Data Exchange Software**

This software will be provided by the bidder and used to export data from the preliminary data collection database and import the data into the BMD quality control and database system. This same software will also export data to the Web Server.

* + - 1. Data Visualization and Dissemination Software (Software to reside on Server 4 on cloud)

The cloud Web Software will serve as visualization and dissemination system that will be populated from the BMDs web server located in the BMD data Center.

The software should be capable to display real time data of all sensors (station wise), live graph for each station, last 24-hours data, 7-days data and network coverage displayed on map and some other form of data visualization as per the requirements of purchaser (BMD).

The cloud data server will perform all functions as specified for Server 5 below. The alert/alarm system will be the primary function of Server 5 but may be assigned to Server 4. At no time should Server 4 and Server 5 be configured to issue alarms simultaneously.

Please see the requirements of the web software required by Server 5 below.

Near the end of the operation and maintenance period, the purchaser may request that the cloud server perform all the function of Server 5. This is expected to be handled by the bidder supplied technicians, which means that the bidder supplied technicians should have expertise in all software components and operating systems. This includes web server software.

* + - 1. ARG Station Visualization, Alert, Alarm Software (Software to reside on Server 5)

The BMD internal Web Software will serve two general functions. The first function is to provide an interface to the hydro-meteorological information, which will include real-time data in plot, tabular, and map form. Additionally, the software will allow the management of alarm conditions based on real-time measurements being relayed to the data collection system. The primary purpose of the software is to notify urban centers of the occurrence of exceptional rainfall as recorded from the urban rain gauge network.

The Web Portal Software shall include the following features.

1. Access to real-time data in graphical, tabular, and map form.
2. Graphical products shall have the following features:
   1. Time plot of any single parameter for a time period of 24 hours (this may be changed through a configuration process).
   2. Time plot of 1-4 parameters for a single station over a user selectable time period (3 hours to 365 days).
   3. Graphical plot must reveal data values on plot by simply hovering over the trend line.
   4. Graphical plot will allow the depiction of 3 warning levels for water level to be defined when configuring the station. (This will only be permitted for authorized individuals or from a process that is not accessible through the public web page).
3. Tabular products shall have the following features:
   1. Tabular plots for a single station showing all parameters for a period of 18 hours (changeable in the configuration process).
   2. Allow the user to move directly from the tabular output to the graphical output by selecting a hyperlink on the tabular output.
   3. Separate tabular plot for climate statistics providing daily data, and then summaries of the daily data (i.e. total rainfall)
4. Map Products
   1. Automatic Generation of Rainfall Maps over user settable time period, such as 1-hour, 3-hour, 12-hour, 24-hour, etc. These maps shall be automatically generated and populate the web portal and web pages. These products must include utilities to automatically send these products to the user community.
   2. Automatic generation of rainfall stations on a map. This shall include options to view that last hour, or any user defined period.
   3. The station icons shall be color coded according to the water level, with the following user settable thresholds for each station:
      1. Green – Normal
      2. Yellow – Watch
      3. Red – Warning (extreme rainfall event)

The colors may also be assigned to international/regional conventions, which may use different terms and more/less levels or warning.

1. Data Download Utility

Configuration – Only available to authorized personnel

1. Add/Edit/Delete station/parameter
2. Add/Edit/Delete up to three warning levels rainfall rate, battery voltage, and any parameter being collected. These warning levels shall appear on the graphical output and shall be used to annotate the tabular output through a change in font color.
3. Provide threshold and rate of change alarms for rate of change for rainfall. User shall be able to determine the period over which the change shall be evaluated (i.e. 2 inches per hour, 1 inch per 15 minutes)
4. Add/Edit/Delete warning levels for alert/alarm notification using text messages and email
5. Add/Edit/Delete individual or groups to be alarmed. The number of groups to be alarmed shall be no smaller than 30 groups.
6. Alarm conditions shall be set according to the a) the evaluated parameter(s) b) the group receiving the alarm; c) the method of receiving the alarm
7. Add/Edit/Delete how each group is to be alarmed (text, email, both)
8. Alarms can be either a single condition or a group of conditions (i.e. single condition rainfall rate above a certain threshold)
   * 1. Spare Parts

The bid includes spares. The spares will be used to swap sensors out as part of the calibration process and to also serve as replacements for defective sensors. The Bidder is required to maintain a complete set of operating equipment as specified in Section 1, “List of Goods”. The Bidder is required to repair all equipment within 02 (two) months of failure of equipment.

* + 1. Staffing Requirements

The project requires the Bidder to provide staff positions to fill the tasks of meteorological technician and computer systems & software support. The personnel will be required to be dedicated to the project as scheduled below and will remain onsite for the period of the schedule. The Purchaser will provide office space and furnishing (desk, chair, cabinets) for the Bidder provided staff at the Purchaser’s facilities. The meteorological technicians will have their own arrangements for reliable transportation which will be supplied by the Bidder. It is required that the vehicle being used will be a 4x4 vehicle capable of holding and securing all of the equipment used for field maintenance. There will be one 4x4 vehicle for each 2 persons meteorological technician team.

The meteorological technicians will be responsible for cleaning stations, performing field checks of stations and assure the stations are in proper operating conditions. Any deficiencies in the stations are required to be immediately repaired by the meteorological technicians. Maintenance schedules and activities are proposed in detail under responsibilities.

There is a requirement for the Bidder to provide monthly operation & maintenance reports during the warranty period. The reports are due the 7th day of every month documenting the previous month’s activity. The reports must include an accounting of all station visits actions taken. These maintenance reports will include a report on the computer servers and software, status of data collection, and the number of stations being actively collected at the computer center.

**1.**

**2.**

**3.**

**4.**

**5.**

**6.**

**6.1**

**Staff Schedule Requirements**

The Bidder supplied staff will be required to work in the field during the entire warranty and AMC period (if any). It is most important that the staff be entirely committed to the project and will not be allowed to be shared between projects without the written consent of the Purchaser.

Staff Requirements to be supplied by the Bidder are as follows:

|  |  |  |
| --- | --- | --- |
| **No of Personnel Required** | **Designation and Location** | **Period of Commitment** |
|  | **BMD Headquarters in Dhaka** | |
| 1 | Senior Computer System & Software Specialist | Full Time |
| 1 | Junior Computer System & Software Specialist | Full Time |
|  | **BMD Headquarters in Dhaka** | |
| 1 | Senior Meteorological Technician | Full Time |
| 1 | Junior Meteorological Technician | Full Time |
|  | **Rajshahi Maintaining Office (MNO)** | |
| 1 | Senior Meteorological Technician | Full Time |
| 1 | Junior Meteorological Technician | Full Time |
|  | **Rangpur MNO** | |
| 1 | Senior Meteorological Technician | Full Time |
| 1 | Junior Meteorological Technician | Full Time |
|  | **Khulna MNO** | |
| 1 | Senior Meteorological Technician | Full Time |
| 1 | Junior Meteorological Technician | Full Time |
|  | **Chattogram MNO** | |
| 1 | Senior Meteorological Technician | Full Time |
| 1 | Junior Meteorological Technician | Full Time |
|  | **Sylhet MNO** | |
| 1 | Senior Meteorological Technician | Full Time |
| 1 | Junior Meteorological Technician | Full Time |
|  | **Barishal MNO** | |
| 1 | Senior Meteorological Technician | Full Time |
| 1 | Junior Meteorological Technician | Full Time |
|  |  |  |

* + - 1. Meteorological Technicians – Responsibilities, Qualifications and Supervision

There are two levels of meteorological technicians required. There will be a senior meteorological technician and a junior meteorological technician at each maintenance center.

**Senior Meteorological Technician**

The senior meteorological technician will be highly trained and certified to have expertise in operation and maintenance of the equipment used in the project. The senior meteorological technician will also be certified to have expertise in complete knowledge and understanding in making sensor calibration checks and field adjustments. The senior meteorological technician is required to have a firm grasp and understanding of the installed technology and be able to train junior meteorological technicians from both Purchaser and Bidder candidate pool.

It is paramount that the senior meteorological technician be able to maintain, repair, and replace all AWS/Ag-AWS/ARG equipment and civil works.

**Junior Meteorological Technician**

The junior meteorological technician will work under the senior meteorological technician and assist in performing preventative and emergency maintenance visits. The junior meteorological technician will be certified by the Bidder to maintain data stations.

**Responsibilities**

The meteorological technicians will be responsible for maintaining all AWS, Ag-AWS and ARG stations installed by the Bidder. The meteorological technicians will be required to record activities at the stations using the maintenance management & tracking software purchased as part of this tender. The meteorological technicians will perform **preventative maintenance visits once every 6 months** or more frequent, to each and every station in their area of responsibility. The meteorological technicians will also perform emergency maintenance visits on an “as-needed” basis, and within 24 hours of a station going down. Area of responsibility is outlined in Appendix A and Appendix B.

During each such maintenance visit (either scheduled or unscheduled), the bidder’s representative must take geo-tagged time stamped pictures and submit to purchaser. Three pictures must be taken for each visit for each site, covering status before maintenance, during maintenance and after maintenance.

The maintenance activities will include clearing weeds, cleaning equipment and enclosures ridding the equipment of insects. The technicians will perform spot checks of instrument performance, which means the technicians must have, as provided by the Bidder, accurate temperature sensors and rain gauge test equipment to assure the temperature and relative humidity sensors are in proper working order.

The bidder will also be responsible for producing monthly reports, due no later than 7th day of each month, which is valid for the previous month.

The monthly reports will include the summary of the entire meteorological network. The report will include:

* + 1. Station summary of the following:
       1. Number of hours reporting for the previous month.
       2. The number of hours missing for the previous month.
       3. The number of penalty days for the previous month.
       4. Notes on exceptional activities, such as equipment theft/damage.
    2. Summary of field maintenance activities. Including:
       1. The number of station visits for preventative maintenance for the previous month.
       2. The number of station visits for emergency maintenance for the previous months including problem and action taken.
       3. Other technician activity, such as the number of days worked, vacation, sick, etc.
    3. Data Center Summary of the following:
       1. Server downtime and reason for downtime
       2. Software/hardware upgrades
       3. Daily maintenance activity log

The purchaser will modify the reports as directed by the purchaser to include more or less information.

The contractor provided technicians/IT personnel will be responsible for using the time series database to perform quality control and establish a “data for record” database. Data will be processed and stored no later than two months after the data is received at the server.

**Supervision**

The meteorological technicians (both senior and junior) will take supervision from the Purchaser’s Executive Meteorologist though the purchaser must be cognizant of the contractual commitments of the technicians in assuring that no stations are down beyond a period where penalties may commence. This means that meteorological technician activities must be carefully coordinated with the Purchaser. Regular dialogue is required between the Bidder and the Purchaser. The Purchaser can also request station maintenance activities, again provided that the activities don’t interfere with the technician’s contractual obligations.

* + 1. Computer System & Software Specialist – Responsibilities, Qualifications and Supervision

There are two levels of computer system & software staff required. There will be a Senior Computer Systems & Software Specialist and a Junior Computer Systems & Software Specialist.

**Senior Computer System and Software Specialist**

The Senior Computer System and Software Specialist will be highly trained and certified to use the AWS/Ag-AWS/ARG Communication & Data Collections Server(s) and all associated software. The senior position must have a broad and in-depth experience with operating systems, system programming, database programming, web programming and a clear understanding of the applications installed as part of this tender. The senior specialist will have a firm grasp of the software and be capable of training the Purchaser’s officials as requested by the Purchaser and also training the junior specialist. The senior specialist will assure that the data transmitted to the center is being properly stored on the AWS/Ag-AWS/ARG Communication and Data Collection Data Base, as well as the time series data base software.

The Senior Specialist will also be capable configuring web pages that are used to disseminate and visualize the collected data.

**Junior Computer System and Software Specialist experience**

The Junior Computer System and Software Specialist will serve the Senior Specialist in providing assistance in maintaining the computer server and all software packages and all other activities of the Senior Specialist. The junior specialist should have experience in system programming, database programming and web programming, and should be able to fill-in for the senior position when the senior staff is absent.

**Responsibilities**

The computer system and software specialists will have the responsibility if maintaining the computer systems and network that were acquired as part of this project. The specialists will also be responsible for operating the AWS/Ag-AWS/ARG Communication & Data Collection Server(s) and software any other software that is procured as part of this tender.

The bidders IT staff will also be responsible for producing monthly reports, due no later than 7th day of each month, which is valid for the previous month.

The monthly reports will include the summary of the IT systems supported by the IT staff. The report will include:

1. Data Center performance, including:
   1. Downtime caused by servers;
   2. Downtime caused by software;
   3. Number of hours/days of outages on each subsystem;
   4. Amount of data collected and stored;
   5. Number of hits on website;
   6. Most popular products

**Supervision**

The computer system and software specialists (both senior and junior) will take supervision from the Purchaser’s Executive Meteorologist, though the purchaser must be cognizant of the contractual commitments of the IT staff in assuring that the IT system is operating properly, whose failure to perform timely maintenance may incur penalties. This means that meteorological technician’s activities must be carefully coordinated with the Purchaser. Regular dialogue is required between the Bidder and Purchaser.

* + 1. Training
       1. Training Program Schedule

The Bidder is responsible to provide a training program schedule for onsite and off-site trainings in hard copy and soft copy forms. The training program shall include the followings (but not limited to):

1. Description of training courses
2. Topic covered in each module of training
3. Day wise training topic covered
4. Method of training

The Bidder must attach training program schedule with the bid.

* + - 1. Training Details

The Bidder is responsible to arrange both trainings Onsite (Local) and Off-site (foreign).

**Onsite (Local) Training:**

Onsite (Local) training shall be for 08 (eight) groups containing 10 (ten) personnel in each group for 03 (three) days session including training on the following modules:

1. Installation of AWS, Ag-AWS and ARG stations including the setup of the data communication devices and antenna alignment
2. Programing the Data Collection Platform including building and storing the programs
3. Description of the AWS, Ag-AWS and ARG Communication & Data Collection System, and use of all software at BMD head office
4. Care and handling of the sensors, DCP and other accessories
5. On-site field visits, adjusting and downloading data from the field
6. Preventive & Emergency maintenance including field checks and calibration
7. Common problems and troubleshooting techniques
8. Calibration methods

The Bidder is responsible to bear all cost necessary for the training including salaries of trainers/ resource persons, refreshment/ food, per-diem/ allowances for trainees, cost incurred for training materials (such as note book, pen, handbag etc.), training logistic cost such as training venue, desk/ computer (if any), projector, board etc.

**Off-site (Foreign) Training:**

Off-site (foreign) training shall be for 04 personnel on each category namely: AWS, Ag-AWS and ARG on (i) Operation & Maintenance, (ii) Troubleshooting, (iii) Database management, (iv) Server, MET Network and Storage management, and (v) Other IT management for 05 (five) days.

The bidder shall be responsible for arranging round-trim airfare, accommodation, food, local transportation and DSA (Daily Subsistence Allowance) as per standard rules for off-site (foreign) trainings.

* + - 1. Training Material

The Bidder is responsible to arrange training material (in English) for both onsite and off-site training in 03 (three) forms.

1. Training materials in paper form (hard copy)
2. Training material in soft copy form on USB drives with an unlimited right to copy for the Purchaser
3. Training modules in video format on USB drives
   * 1. Responsibilities of Bidder during Installation and Commissioning Stage

The Bidder’s responsibilities during installation and commissioning stage are outlined below:

1. The Bidder will be responsible for obtaining all tools and equipment necessary to complete the installation, commissioning, testing and acceptance
2. The Bidder will be responsible in acquiring vehicles for field use and paying all expenses related to these vehicles. It is recommended that the vehicles be 4x4 trucks. It is required that there will be a minimum of one vehicle for each two-person team that is stationed at divisional (field) offices.
3. The Bidder will provide transportation for the Purchaser’s staff to join maintenance visits for the purpose of capacity building and training. It is expected that the 4x4 trucks will handle this, and no other arrangements for additional vehicles will be required.
4. The Bidder will be responsible for all travel related costs, including fuel and maintenance of 4x4 trucks used for maintenance. These charges should be built into the operation and maintenance costs indicated in Items related to Operation and Maintenance of the complete system under the “List of Related Services and Completion Schedule”.
5. The Bidder is responsible for obtaining office devices and supplies for their use, such as computer printers, paper stock, pens, etc.
6. The Bidder will be responsible for acquiring computers for field use, and prepare reports, etc.
7. The Bidder will be responsible for acquiring internet connectivity at the field offices.
8. The bidder is responsible for paying all the GSM mobile charges for SIM cards and data at remote sites which must be included in Items related to Operation and Maintenance of the complete system under the “List of Related Services and Completion Schedule”.
9. The bidder is responsible for paying all the salaries, per-diem, travel and all incidental charges for their personnel deployed at BMD headquarters and field offices
10. The bidder is responsible for paying all transport and shipping, packing / unpacking, installation / uninstallation charges for replacement / repair of defective equipment.
11. The bidder is responsible for paying all replacement batteries whenever required and should be included under Items related to Operation and Maintenance of the complete system under the “List of Related Services and Completion Schedule”.
12. The bidder is responsible to conduct training as stated in the training section.
    * 1. Responsibilities of Bidder during Warranty Period

The Bidder’s responsibilities during warranty period (of two years) are outlined below:

1. The Bidder will be responsible for obtaining all tools and equipment necessary to complete the installation.
2. It is assumed the Bidder will use the same vehicles acquired for maintenance during warranty period.
3. The Bidder will provide transportation for the Purchaser’s staff to join maintenance visits for the purpose of capacity building and training. It is expected that the 4x4 trucks will handle this, and no other arrangements for additional vehicles will be required.
4. The Bidder will be responsible for all travel related costs, including fuel and maintenance of 4x4 trucks used for maintenance. These charges should be built into the operation and maintenance costs indicated in Items related to Operation and Maintenance of the complete system under the “List of Related Services and Completion Schedule”.
5. The Bidder is responsible for obtaining office devices and supplies for their use, such as computer printers, paper stock, pens, etc.
6. The Bidder will be responsible for acquiring computers for field use, and prepare reports, etc.
7. The Bidder will be responsible for acquiring internet connectivity at the field offices for their own staff (technicians).
8. The bidder is responsible for paying all the GSM mobile charges for SIM cards and data at remote sites which must be included in Items related to Operation and Maintenance of the complete system under the “List of Related Services and Completion Schedule”.
9. The bidder is responsible for paying all the data and telemetry charges, subscriptions for satellite telemetry at remote sites and BMD headquarters
10. The bidder is responsible for paying all the salaries, per-diem, travel and all incidental charges for their personnel deployed at BMD headquarters and field offices
11. The bidder is responsible for paying all transport and shipping, packing / unpacking, installation / uninstallation charges for replacement / repair of defective equipment.
12. The bidder is responsible for paying all replacements of any devices, batteries etc. whenever required for smooth operation of the system
13. Submit Geo-tagged time stamped photographs during maintenance visits as per section 3.4.11.1.
    * 1. Purchaser Responsibilities

The Purchaser is responsible for taking permissions for land to be used to install the AWS/Ag-AWS/ARG stations. The space should be free from interference from buildings and trees that have an impact on the meteorological measurements being made at the AWS/ Ag-AWS/ARG station. Specifically, Ag-AWS stations should be located in an environment that represents the agriculture. This means that Ag-AWS locations with urban areas should be avoided.

The Purchaser is also responsible for providing office space for the technical staff being requested on this contract.

* + 1. Documents/ Diagram Arranged by the Bidder

**Implementation Plan Document**

The Bidder is responsible to develop/ update implementation plan document and deliver to the Purchaser immediate after signing the contract. Implementation plan may be updated depending on actual situation and dependencies. The Bidder shall update implementation plan with necessary consent and input from concerned personnel from the Purchaser/ Purchaser nominated personnel or organizations.

The implementation plan shall comprise (but not limited to):

1. Details list of tasks/ Work Breakdown Structure (WBS) (including civil work, electrical work, installation, configuration, integration, commissioning etc.)
2. Personnel input (both from supplier and purchaser sides) and the Bidder’s resource deployment planning
3. Status of deliverables
4. Task planning including start/ end dates, dependencies, resource assigning etc.
5. Meeting minutes (if any)
6. Approval/ compliance/ no objection required (if any)
7. Any assumptions/ risks, challenges/ constraints etc.
8. Any issues/ difficulties
9. Method of updating status (progress) weekly/ fortnightly/ monthly basis (including task done, task pending, reason of deviation etc.)
10. Any suggestion/ recommendations, feedbacks etc.
11. Bug/ defect list and status
12. System acceptance criteria (in details)
13. Testing and commissioning plan
14. Operation and maintenance plan

The Bidder shall deliver implementation plan in both soft copy (by mail) and hard copy.

**Additional Data Sheet**

The Bidder is responsible to arrange additional data sheet of DCP, sensors and other equipment (as installed in the stations). The additional data sheet shall be delivered in hard copy and electronic form (in USB drive or CD).

**Additional User and Operational Manual**

The Bidder is responsible to provide additional user and operational manuals in English Language covering all equipment. Manual shall include SOPs for operating, maintaining and troubleshooting of field equipment. Manual shall be delivered in hard copy and electronic form (in USB drive or CD) and video format.

**Diagrams and Drawings**

The Bidder is responsible to develop diagrams such as Wiring Diagrams, Information Technology Components (Server, Router, Software, Website etc.) Deployment Diagram, Network Diagram etc. The diagrams and drawings shall be delivered in hard copy and electronic form (in USB drive or CD).

* + 1. Acceptance Checklist

**Note to Bidders:** The following Checklist is provided to help the Bidder organize and consistently present its Technical Bid. For each of the following Technical Requirements, the Bidder must describe how its Technical Bid responds to each Requirement. In addition, the Bidder must provide cross references to the relevant supporting information, if any, included in the bid. The cross reference should identify the relevant document(s), page number(s), and paragraph(s). The Technical Responsiveness Checklist does not supersede the rest of the Technical Requirements (or any other part of the Bidding Documents). If a requirement is not mentioned in the Checklist that does not relieve the Bidder from the responsibility of including supporting evidence of compliance with that other requirement in its Technical Bid. One- or two-word responses (e.g. “Yes,” “No,” “Will comply,” etc.) are normally not sufficient to confirm technical responsiveness with Technical Requirements.

M represents “Mandatory”,

P represents “Preferred”,

D represents “Desirable”.

The bidders will prepare their bids following the **Technical Requirements (Section VII).**

In addition, the following Project Management Documents will be required:

In addition, the following Project Management Documents will be required:

| **Level** | **Requirements description** | **Response** |
| --- | --- | --- |
| M | END-User documents: |  |
| M | The Bidder should provide detail information regarding the documentation that will be supplied with the system. The following minimum documentation (hard copy and soft copy) on the proposed systems must be made available in English: |  |
| M | A. Project Documentation |  |
| M | Project Management Controls |  |
| M | Project Plans |  |
| M | Implementation Controls |  |
| M | Quality Controls |  |
| M | Scope Management Controls |  |
| M | Progress Reports |  |
| M | B. System Documentation |  |
| M | Requirement Specifications |  |
| M | Technical Specifications |  |
| M | System Descriptions & Specifications |  |
| M | Installation Manuals |  |
| M | System Administration Guide |  |
| M | Maintenance Documentation |  |
| M | C. User Documentation |  |
| M | Training Requirements |  |
| M | Training Documentations |  |
| M | User Guides |  |
| M | Administrator Documentations |  |
| M | Transaction Processing Guidelines |  |
| M | Operational Processing Guidelines |  |
| M | Operational Procedures |  |
| M | Error Correction Procedures |  |
| M | D. Testing Specifications |  |
| M | Technical Documents: |  |
| M | Documentation should be consistent with international standards |  |
| M | Documentation should be user-friendly |  |
| M | Documentation should be indexed |  |
| M | Diagrams and schematics should be provided where possible to facilitate practical understanding. The Bidder must assure on-going documentation updates |  |
| M | The Bidder must supply the documentation of the applications on optical disks or other digital media together with the system for its updating as changes are introduced |  |
| M | Technical documentation appropriate to the hardware and systems that are being provided must be made available in both hard copy and soft copy (DVD-ROM). A commitment to providing updated versions must be given. |  |

4. Drawings

Not Applicable

5. Inspections and Tests

* 1. **Installation**

The supplier will be responsible for installing and commissioning systems as proposed below. The commissioning process will result in final acceptance of the solutions and the start of the prescribed warranty period. The warranty period will only begin when all systems have been successfully commissioned, which means all systems must be operational and working error free.

1. **Data Server(s) and Software**

The Bidder will be required to install all computer systems, software and ancillary devices that are supplied as part of this tender. The Purchaser will provide space to install equipment and utilities (internet connection) at the BMD Dhaka offices.

1. Synoptic AWS & Ag-AWS Observation Network

Supply and installation of material needed for establishing stations will be the responsibility of the Bidder. Sensor placement shall abide by WMO convention to the extent possible, though there are variations to the WMO convention outlined in the tender technical specification. The Bidder shall assume the cost of installation; including personnel and proper vehicles to transport the fragile equipment. The Bidder shall be responsible for all equipment up to and through the warranty period. The Purchaser will not provide any installation, as this is considered a turn-key system with all services and costs to be incurred by the Bidder.

The Purchaser will be in charge of gaining permission for land use where the remote AWS/Ag-AWS/ARG stations will be placed. The Bidder shall also assume the cost of telecommunication charges for all AWS/Ag-AWS stations and specified dedicated internet connection at the BMD Dhaka headquarters from the date(s) of installation, through the 2 (two) years Warranty Period and on through the 3 (three) years AMC Period.

* 1. **Details of Inspection and Testing**

The following inspections and tests shall be performed:

* + 1. **Testing and Inspection**

It is the Bidder’s responsibility to ensure that the equipment is sufficiently tested prior to shipment and installation. During final acceptance testing, the Bidder will have to demonstrate full functionality and performance of all system components according to specifications. Prior to final acceptance, all expenditures related to unsatisfactory performance of the equipment, such as the costs of repairs, additional site visits, shipping costs etc., will be at the Bidder’s expenses.

The costs for all tests and for all inspections to be made under the contract shall be borne by the Bidder and shall be deemed to be included in the contract price with the exception of the Purchaser’s costs for witnessing tests.

* + 1. **Receiving Inspection**

The system is to be inspected in-country, after clearing customs, to ensure that 100 percent of the shipment is received and delivered. The Bidder is to arrange for this receiving inspection as well as for customs clearance and delivery to appropriate storage facilities to be provided and maintained by the Bidder.

* + 1. **Site Installation and Acceptance Tests**

The Bidder will install all the equipment and will undertake site tests of each station. The exact locations for installation by Bidder are provided in Appendix A. The equipment site description is provided under the section “Meteorological Masts & Civil Works”.

After final configuration and programming, the Bidder will conduct an “end-to-end” operational test for each of these stations. A formal check list shall be followed, and the results of the tests shall be recorded. The Purchaser’s personnel will be trained in conducting the same site acceptance tests. A Site Acceptance Test will be passed if all sensors and data collection platforms obtain and store correct values for a period of 24 hours.

* + 1. **Operational Test (OT)**

Operational Tests shall be conducted at two stages of project implementation. In each case, any operational problems related to the remote stations are to be fixed before approval can be received for the system OT. The first OT must be conducted immediately after the first lot of remote stations has been installed by the Bidder. All hardware and software components of this real time network have to be tested. The OT will be considered to be successful if all components as a whole have been operating without problems during at least 72 hours period.

The second, third, fourth and final OT will be witnessed by the Purchaser’s designated representatives as each lot of stations are completed. It will take place when all the remote stations have been installed; however, the final OT will not be delayed due to delays or problems related to the installation of individual remote stations. The Purchaser shall decide the start date of the test in consultation with the Bidder. The Bidder shall notify the Purchaser accordingly and shall perform the OT.

The final OT shall be test for “end-to-end” performance of the entire system for a period of one week. The Bidder shall demonstrate and document that the system correctly generated 95% of all expected data (normally scheduled data collections and transmissions) for the one week period. The Bidder will produce a report documenting the quantities of data expected / received and indicating the success / failure of the OT. The OT will be repeated until the 98% success level is achieved or a specific waiver of the requirement (minimum 95%) is obtained.

All equipment failures will be counted except those that can be specifically determined to be “acts of God”. Failure of stations due to acts of God (natural disasters or other incidents) will not count against the 95%. Equipment needed for testing shall be provided by the Bidder.

* + 1. **Final Acceptance**

When the system has passed the Final OT, the Bidder can apply for Final Acceptance. When Final Acceptance is given, the system will be officially considered to be under Warranty.

# PART 3 - Contract

|  |
| --- |
| Section VIII. General Conditions of Contract |

**Table of Clauses**

1. Definitions 156

2. Contract Documents 157

3. Corrupt and Fraudulent Practices 157

4. Interpretation 157

5. Language 158

6. Joint Venture, Consortium or Association 159

7. Eligibility 159

8. Notices 159

9. Governing Law 159

10 Settlement of Disputes 159

11. Inspections and Audit by the Bank 160

12. Scope of Supply 161

13. Delivery and Documents 161

14. Supplier’s Responsibilities 161

15 Contract Price 161

16. Terms of Payment 161

17. Taxes and Duties 161

18. Performance Security 162

19. Copyright 162

20. Confidential Information 162

21. Subcontracting 163

22. Specifications and Standards 164

23. Packing and Documents 164

24. Insurance 164

25. Transportation and Incidental Services 165

26. Inspections and Tests 165

27. Liquidated Damages 166

28. Warranty 167

29. Patent Indemnity 167

30 Limitation of Liability 169

31. Change in Laws and Regulations 169

32. Force Majeure 169

33. Change Orders and Contract Amendments 170

34. Extensions of Time 170

35. Termination 171

36. Assignment 172

37. Export Restriction 172

**Section VIII. General Conditions of Contract**

|  |  |  |  |
| --- | --- | --- | --- |
| 1. Definitions | | 1.1 The following words and expressions shall have the meanings hereby assigned to them: “Bank” means the World Bank and refers to the International Bank for Reconstruction and Development (IBRD) or the International Development Association (IDA).“Contract” means the Contract Agreement entered into between the Purchaser and the Supplier, together with the Contract Documents referred to therein, including all attachments, appendices, and all documents incorporated by reference therein.“Contract Documents” means the documents listed in the Contract Agreement, including any amendments thereto.“Contract Price” means the price payable to the Supplier as specified in the Contract Agreement, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract.“Day” means calendar day.“Completion” means the fulfillment of the Related Services by the Supplier in accordance with the terms and conditions set forth in the Contract.“GCC” means the General Conditions of Contract.“Goods” means all of the commodities, raw material, machinery and equipment, and/or other materials that the Supplier is required to supply to the Purchaser under the Contract.“Purchaser’s Country” is the country specified in the Special Conditions of Contract (SCC).“Purchaser” means the entity purchasing the Goods and Related Services, as specified in the **SCC.**“Related Services” means the services incidental to the supply of the goods, such as insurance, installation, training and initial maintenance and other such obligations of the Supplier under the Contract.“SCC” means the Special Conditions of Contract.“Subcontractor” means any person, private or government entity, or a combination of the above, to whom any part of the Goods to be supplied or execution of any part of the Related Services is subcontracted by the Supplier.“Supplier” means the person, private or government entity, or a combination of the above, whose bid to perform the Contract has been accepted by the Purchaser and is named as such in the Contract Agreement.“The Project Site,” where applicable, means the place named in the **SCC.** | |
| 2. Contract Documents | | * 1. Subject to the order of precedence set forth in the Contract Agreement, all documents forming the Contract (and all parts thereof) are intended to be correlative, complementary, and mutually explanatory. The Contract Agreement shall be read as a whole. | |
| 3. Corrupt and Fraudulent Practices | | 3.1 The Bank requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Appendix to the GCC.  3.2 The Purchaser requires the Supplier to disclose any commissions or fees that may have been paid or are to be paid to agents or any other party with respect to the bidding process or execution of the Contract. The information disclosed must include at least the name and address of the agent or other party, the amount and currency, and the purpose of the commission, gratuity or fee. | |
| 4. Interpretation | | * 1. If the context so requires it, singular means plural and vice versa.   2. Incoterms  Unless inconsistent with any provision of the Contract**,** the meaning of any trade term and the rights and obligations of parties thereunder shall be as prescribed by Incoterms.The terms EXW, CIP, FCA, CFR and other similar terms, when used, shall be governed by the rules prescribed in the current edition of Incoterms specified in the **SCC** and published by the International Chamber of Commerce in Paris, France.  * 1. Entire Agreement   The Contract constitutes the entire agreement between the Purchaser and the Supplier and supersedes all communications, negotiations and agreements (whether written or oral) of the parties with respect thereto made prior to the date of Contract.   * 1. Amendment   No amendment or other variation of the Contract shall be valid unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each party thereto.   * 1. Nonwaiver  Subject to GCC Sub-Clause 4.5(b) below, no relaxation, forbearance, delay, or indulgence by either party in enforcing any of the terms and conditions of the Contract or the granting of time by either party to the other shall prejudice, affect, or restrict the rights of that party under the Contract, neither shall any waiver by either party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.Any waiver of a party’s rights, powers, or remedies under the Contract must be in writing, dated, and signed by an authorized representative of the party granting such waiver, and must specify the right and the extent to which it is being waived.  * 1. Severability   If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract. | |
| 5. Language | | * 1. The Contract as well as all correspondence and documents relating to the Contract exchanged by the Supplier and the Purchaser, shall be written in the language specified in the **SCC.** Supporting documents and printed literature that are part of the Contract may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified**,** in which case, for purposes of interpretation of the Contract, this translation shall govern.   2. The Supplier shall bear all costs of translation to the governing language and all risks of the accuracy of such translation, for documents provided by the Supplier. | |
| 6. Joint Venture, Consortium or Association | | * 1. If the Supplier is a joint venture, consortium, or association, all of the parties shall be jointly and severally liable to the Purchaser for the fulfillment of the provisions of the Contract and shall designate one party to act as a leader with authority to bind the joint venture, consortium, or association. The composition or the constitution of the joint venture, consortium, or association shall not be altered without the prior consent of the Purchaser. | |
| 7. Eligibility | | * 1. The Supplier and its Subcontractors shall have the nationality of an eligible country. A Supplier or Subcontractor shall be deemed to have the nationality of a country if it is a citizen or constituted, incorporated, or registered, and operates in conformity with the provisions of the laws of that country.   2. All Goods and Related Services to be supplied under the Contract and financed by the Bank shall have their origin in Eligible Countries. For the purpose of this Clause, origin means the country where the goods have been grown, mined, cultivated, produced, manufactured, or processed; or through manufacture, processing, or assembly, another commercially recognized article results that differs substantially in its basic characteristics from its components. | |
| 8. Notices | | * 1. Any notice given by one party to the other pursuant to the Contract shall be in writing to the address specified in the **SCC.** The term “in writing” means communicated in written form with proof of receipt.   2. A notice shall be effective when delivered or on the notice’s effective date, whichever is later. | |
| 9. Governing Law | * 1. The Contract shall be governed by and interpreted in accordance with the laws of the Purchaser’s Country, unless otherwise specified in the **SCC.**   2. Throughout the execution of the Contract, the Contractor shall comply with the import of goods and services prohibitions in the Purchaser’s country when   (a) as a matter of law or official regulations, the Borrower’s country prohibits commercial relations with that country; or   * 1. (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower’s Country prohibits any import of goods from that country or any payments to any country, person, or entity in that country. |
| 10 Settlement of Disputes | * 1. The Purchaser and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.   2. If, after twenty-eight (28) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given. Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Goods under the Contract. Arbitration proceedings shall be conducted in accordance with the rules of procedure **specified in the SCC.**   3. Notwithstanding any reference to arbitration herein,      1. the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and      2. the Purchaser shall pay the Supplier any monies due the Supplier. |
| 11. Inspections and Audit by the Bank | * 1. The Supplier shall keep, and shall make all reasonable efforts to cause its Subcontractors to keep, accurate and systematic accounts and records in respect of the Goods in such form and details as will clearly identify relevant time changes and costs.   2. The Supplier shall permit, and shall cause its Subcontractors to permit, the Bank and/or persons appointed by the Bank to inspect the Supplier’s offices and all accounts and records relating to the performance of the Contract and the submission of the bid, and to have such accounts and records audited by auditors appointed by the Bank if requested by the Bank. The Supplier’s and its Subcontractors and consultants’ attention is drawn to Clause 3 [Fraud and Corruption], which provides, inter alia, that acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under this Sub-Clause 11.1 constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank’s prevailing sanctions procedures) |
| 12. Scope of Supply | 12.1 The Goods and Related Services to be supplied shall be as specified in the Schedule of Requirements. |
| 13. Delivery and Documents | 13.1 Subject to GCC Sub-Clause 33.1, the Delivery of the Goods and Completion of the Related Services shall be in accordance with the Delivery and Completion Schedule specified in the Schedule of Requirements. The details of shipping and other documents to be furnished by the Supplier are specified in the **SCC.** |
| 14. Supplier’s Responsibilities | 14.1 The Supplier shall supply all the Goods and Related Services included in the Scope of Supply in accordance with GCC Clause 12, and the Delivery and Completion Schedule, as per GCC Clause 13. |
| 15 Contract Price | 15.1 Prices charged by the Supplier for the Goods supplied and the Related Services performed under the Contract shall not vary from the prices quoted by the Supplier in its bid, with the exception of any price adjustments authorized in the **SCC.** |
| 16. Terms of Payment | 16.1 The Contract Price, including any Advance Payments, if applicable, shall be paid as specified in the **SCC.**  16.2 The Supplier’s request for payment shall be made to the Purchaser in writing, accompanied by invoices describing, as appropriate, the Goods delivered and Related Services performed, and by the documents submitted pursuant to GCC Clause 13 and upon fulfillment of all other obligations stipulated in the Contract.  16.3 Payments shall be made promptly by the Purchaser, but in no case later than sixty (60) days after submission of an invoice or request for payment by the Supplier, and after the Purchaser has accepted it.  16.4 The currencies in which payments shall be made to the Supplier under this Contract shall be those in which the bid price is expressed.  16.5 In the event that the Purchaser fails to pay the Supplier any payment by its due date or within the period set forth in the **SCC,** the Purchaser shall pay to the Supplier interest on the amount of such delayed payment at the rate shown in the **SCC,** for the period of delay until payment has been made in full, whether before or after judgment or arbitrage award. |
| 17. Taxes and Duties | 17.1 For goods manufactured outside the Purchaser’s Country, the Supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside the Purchaser’s Country.  17.2 For goods Manufactured within the Purchaser’s country, the Supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted Goods to the Purchaser.  17.3 If any tax exemptions, reductions, allowances or privileges may be available to the Supplier in the Purchaser’s Country, the Purchaser shall use its best efforts to enable the Supplier to benefit from any such tax savings to the maximum allowable extent. |
| 18. Performance Security | 18.1 If required as specified in the SCC, the Supplier shall, within twenty-eight (28) days of the notification of contract award, provide a performance security for the performance of the Contract in the amount specified in the **SCC.**  18.2 The proceeds of the Performance Security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier’s failure to complete its obligations under the Contract.  18.3 As specified in the SCC, the Performance Security, if required, shall be denominated in the currency(ies) of the Contract, or in a freely convertible currency acceptable to the Purchaser; and shall be in one of the format stipulated by the Purchaser in the **SCC,** or in another format acceptable to the Purchaser.  18.4 The Performance Security shall be discharged by the Purchaser and returned to the Supplier not later than twenty-eight (28) days following the date of Completion of the Supplier’s performance obligations under the Contract, including any warranty obligations, unless specified otherwise in the **SCC.** |
| 19. Copyright | 19.1 The copyright in all drawings, documents, and other materials containing data and information furnished to the Purchaser by the Supplier herein shall remain vested in the Supplier, or, if they are furnished to the Purchaser directly or through the Supplier by any third party, including suppliers of materials, the copyright in such materials shall remain vested in such third party |
| 20. Confidential Information | 20.1 The Purchaser and the Supplier shall keep confidential and shall not, without the written consent of the other party hereto, divulge to any third party any documents, data, or other information furnished directly or indirectly by the other party hereto in connection with the Contract, whether such information has been furnished prior to, during or following completion or termination of the Contract. Notwithstanding the above, the Supplier may furnish to its Subcontractor such documents, data, and other information it receives from the Purchaser to the extent required for the Subcontractor to perform its work under the Contract, in which event the Supplier shall obtain from such Subcontractor an undertaking of confidentiality similar to that imposed on the Supplier under GCC Clause 20.  20.2 The Purchaser shall not use such documents, data, and other information received from the Supplier for any purposes unrelated to the contract. Similarly, the Supplier shall not use such documents, data, and other information received from the Purchaser for any purpose other than the performance of the Contract.  20.3 The obligation of a party under GCC Sub-Clauses 20.1 and 20.2 above, however, shall not apply to information that: the Purchaser or Supplier need to share with the Bank or other institutions participating in the financing of the Contract;now or hereafter enters the public domain through no fault of that party;can be proven to have been possessed by that party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other party; orotherwise lawfully becomes available to that party from a third party that has no obligation of confidentiality. 20.4 The above provisions of GCC Clause 20 shall not in any way modify any undertaking of confidentiality given by either of the parties hereto prior to the date of the Contract in respect of the Supply or any part thereof.  20.5 The provisions of GCC Clause 20 shall survive completion or termination, for whatever reason, of the Contract. |
| 21. Subcontracting | 21.1 The Supplier shall notify the Purchaser in writing of all subcontracts awarded under the Contract if not already specified in the bid. Such notification, in the original bid or later shall not relieve the Supplier from any of its obligations, duties, responsibilities, or liability under the Contract.  21.2 Subcontracts shall comply with the provisions of GCC Clauses 3 and 7. |
| 22. Specifications and Standards | 22.1 Technical Specifications and Drawings The Goods and Related Services supplied under this Contract shall conform to the technical specifications and standards mentioned in Section VI, Schedule of Requirements and, when no applicable standard is mentioned, the standard shall be equivalent or superior to the official standards whose application is appropriate to the Goods’ country of origin.The Supplier shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designed by or on behalf of the Purchaser, by giving a notice of such disclaimer to the Purchaser.Wherever references are made in the Contract to codes and standards in accordance with which it shall be executed, the edition or the revised version of such codes and standards shall be those specified in the Schedule of Requirements. During Contract execution, any changes in any such codes and standards shall be applied only after approval by the Purchaser and shall be treated in accordance with GCC Clause 33. |
| 23. Packing and Documents | 23.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract. During transit, the packing shall be sufficient to withstand, without limitation, rough handling and exposure to extreme temperatures, salt and precipitation, and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the goods’ final destination and the absence of heavy handling facilities at all points in transit.  23.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including additional requirements, if any, specified in the **SCC,** and in any other instructions ordered by the Purchaser. |
| 24. Insurance | 24.1 Unless otherwise specified in the **SCC,** the Goods supplied under the Contract shall be fully insured—in a freely convertible currency from an eligible country—against loss or damage incidental to manufacture or acquisition, transportation, storage, and delivery, in accordance with the applicable Incoterms or in the manner specified in the **SCC.** |
| 25. Transportation and Incidental Services | 25.1 Unless otherwise specified in the **SCC,** responsibility for arranging transportation of the Goods shall be in accordance with the specified Incoterms. |
|  | 25.2 The Supplier may be required to provide any or all of the following services, including additional services, if any, **specified in SCC:**  (a) performance or supervision of on-site assembly and/or start‑up of the supplied Goods;  (b) furnishing of tools required for assembly and/or maintenance of the supplied Goods;  (c) furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods;  (d) performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and  (e) training of the Purchaser’s personnel, at the Supplier’s plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied Goods.  25.3 Prices charged by the Supplier for incidental services, if not included in the Contract Price for the Goods, shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services |
| 26. Inspections and Tests | 26.1 The Supplier shall at its own expense and at no cost to the Purchaser carry out all such tests and/or inspections of the Goods and Related Services as are specified in the **SCC.**  26.2 The inspections and tests may be conducted on the premises of the Supplier or its Subcontractor, at point of delivery, and/or at the Goods’ final destination, or in another place in the Purchaser’s Country as specified in the **SCC.** Subject to GCC Sub-Clause 26.3, if conducted on the premises of the Supplier or its Subcontractor, all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Purchaser.  26.3 The Purchaser or its designated representative shall be entitled to attend the tests and/or inspections referred to in GCC Sub-Clause 26.2, provided that the Purchaser bear all of its own costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses.  26.4 Whenever the Supplier is ready to carry out any such test and inspection, it shall give a reasonable advance notice, including the place and time, to the Purchaser. The Supplier shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Purchaser or its designated representative to attend the test and/or inspection.  26.5 The Purchaser may require the Supplier to carry out any test and/or inspection not required by the Contract but deemed necessary to verify that the characteristics and performance of the Goods comply with the technical specifications codes and standards under the Contract, provided that the Supplier’s reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such test and/or inspection impedes the progress of manufacturing and/or the Supplier’s performance of its other obligations under the Contract, due allowance will be made in respect of the Delivery Dates and Completion Dates and the other obligations so affected.  26.6 The Supplier shall provide the Purchaser with a report of the results of any such test and/or inspection.  26.7 The Purchaser may reject any Goods or any part thereof that fail to pass any test and/or inspection or do not conform to the specifications. The Supplier shall either rectify or replace such rejected Goods or parts thereof or make alterations necessary to meet the specifications at no cost to the Purchaser, and shall repeat the test and/or inspection, at no cost to the Purchaser, upon giving a notice pursuant to GCC Sub-Clause 26.4.  26.8 The Supplier agrees that neither the execution of a test and/or inspection of the Goods or any part thereof, nor the attendance by the Purchaser or its representative, nor the issue of any report pursuant to GCC Sub-Clause 26.6, shall release the Supplier from any warranties or other obligations under the Contract. |
| 27. Liquidated Damages | 27.1 Except as provided under GCC Clause 32, if the Supplier fails to deliver any or all of the Goods by the Date(s) of delivery or perform the Related Services within the period specified in the Contract, the Purchaser may without prejudice to all its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to the percentage specified in the **SCC** of the delivered price of the delayed Goods or unperformed Services for each week or part thereof of delay until actual delivery or performance, up to a maximum deduction of the percentage specified in those **SCC.** Once the maximum is reached, the Purchaser may terminate the Contract pursuant to GCC Clause 35. |
| 28. Warranty | 28.1 The Supplier warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.  28.2 Subject to GCC Sub-Clause 22.1(b), the Supplier further warrants that the Goods shall be free from defects arising from any act or omission of the Supplier or arising from design, materials, and workmanship, under normal use in the conditions prevailing in the country of final destination.  28.3 Unless otherwise specified in the **SCC,** the warranty shall remain valid for twelve (12) months after the Goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the **SCC,** or for eighteen (18) months after the date of shipment from the port or place of loading in the country of origin, whichever period concludes earlier.  28.4 The Purchaser shall give notice to the Supplier stating the nature of any such defects together with all available evidence thereof, promptly following the discovery thereof. The Purchaser shall afford all reasonable opportunity for the Supplier to inspect such defects.  28.5 Upon receipt of such notice, the Supplier shall, within the period specified in the **SCC,** expeditiously repair or replace the defective Goods or parts thereof, at no cost to the Purchaser.  28.6 If having been notified, the Supplier fails to remedy the defect within the period specified in the **SCC,** the Purchaser may proceed to take within a reasonable period such remedial action as may be necessary, at the Supplier’s risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract. |
| 29. Patent Indemnity | 29.1 The Supplier shall, subject to the Purchaser’s compliance with GCC Sub-Clause 29.2, indemnify and hold harmless the Purchaser and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney’s fees and expenses, which the Purchaser may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract by reason of: the installation of the Goods by the Supplier or the use of the Goods in the country where the Site is located; andthe sale in any country of the products produced by the Goods.Such indemnity shall not cover any use of the Goods or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, neither any infringement resulting from the use of the Goods or any part thereof, or any products produced thereby in association or combination with any other equipment, plant, or materials not supplied by the Supplier, pursuant to the Contract. 29.2 If any proceedings are brought or any claim is made against the Purchaser arising out of the matters referred to in GCC Sub-Clause 29.1, the Purchaser shall promptly give the Supplier a notice thereof, and the Supplier may at its own expense and in the Purchaser’s name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.  29.3 If the Supplier fails to notify the Purchaser within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Purchaser shall be free to conduct the same on its own behalf.  29.4 The Purchaser shall, at the Supplier’s request, afford all available assistance to the Supplier in conducting such proceedings or claim, and shall be reimbursed by the Supplier for all reasonable expenses incurred in so doing.  29.5 The Purchaser shall indemnify and hold harmless the Supplier and its employees, officers, and Subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney’s fees and expenses, which the Supplier may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Purchaser. |
| 30 Limitation of Liability | 30.1 Except in cases of criminal negligence or willful misconduct,  (a) the Supplier shall not be liable to the Purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Supplier to pay liquidated damages to the Purchaser and  (b) the aggregate liability of the Supplier to the Purchaser, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the supplier to indemnify the purchaser with respect to patent infringement |
| 31. Change in Laws and Regulations | 31.1 Unless otherwise specified in the Contract, if after the date of 28 days prior to date of Bid submission, any law, regulation, ordinance, order or bylaw having the force of law is enacted, promulgated, abrogated, or changed in the place of the Purchaser’s country where the Site is located (which shall be deemed to include any change in interpretation or application by the competent authorities) that subsequently affects the Delivery Date and/or the Contract Price, then such Delivery Date and/or Contract Price shall be correspondingly increased or decreased, to the extent that the Supplier has thereby been affected in the performance of any of its obligations under the Contract. Notwithstanding the foregoing, such additional or reduced cost shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with GCC Clause 15. |
| 32. Force Majeure | 32.1 The Supplier shall not be liable for forfeiture of its Performance Security, liquidated damages, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.  32.2 For purposes of this Clause, “Force Majeure” means an event or situation beyond the control of the Supplier that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of the Supplier. Such events may include, but not be limited to, acts of the Purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.  32.3 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. |
| 33. Change Orders and Contract Amendments | 33.1 The Purchaser may at any time order the Supplier through notice in accordance GCC Clause 8, to make changes within the general scope of the Contract in any one or more of the following: drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;the method of shipment or packing;the place of delivery; andthe Related Services to be provided by the Supplier. 33.2 If any such change causes an increase or decrease in the cost of, or the time required for, the Supplier’s performance of any provisions under the Contract, an equitable adjustment shall be made in the Contract Price or in the Delivery/Completion Schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustment under this Clause must be asserted within twenty-eight (28) days from the date of the Supplier’s receipt of the Purchaser’s change order.  33.3 Prices to be charged by the Supplier for any Related Services that might be needed but which were not included in the Contract shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services.  33.4 Subject to the above, no variation in or modification of the terms of the Contract shall be made except by written amendment signed by the parties. |
| 34. Extensions of Time | 34.1 If at any time during performance of the Contract, the Supplier or its subcontractors should encounter conditions impeding timely delivery of the Goods or completion of Related Services pursuant to GCC Clause 13, the Supplier shall promptly notify the Purchaser in writing of the delay, its likely duration, and its cause. As soon as practicable after receipt of the Supplier’s notice, the Purchaser shall evaluate the situation and may at its discretion extend the Supplier’s time for performance, in which case the extension shall be ratified by the parties by amendment of the Contract.  34.2 Except in case of Force Majeure, as provided under GCC Clause 32, a delay by the Supplier in the performance of its Delivery and Completion obligations shall render the Supplier liable to the imposition of liquidated damages pursuant to GCC Clause 26, unless an extension of time is agreed upon, pursuant to GCC Sub-Clause 34.1. |
| 35. Termination | 35.1 Termination for Default The Purchaser, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, may terminate the Contract in whole or in part:if the Supplier fails to deliver any or all of the Goods within the period specified in the Contract, or within any extension thereof granted by the Purchaser pursuant to GCC Clause 34;if the Supplier fails to perform any other obligation under the Contract; orif the Supplier, in the judgment of the Purchaser has engaged in fraud and corruption, as defined in GCC Clause 3, in competing for or in executing the Contract.In the event the Purchaser terminates the Contract in whole or in part, pursuant to GCC Clause 35.1(a), the Purchaser may procure, upon such terms and in such manner as it deems appropriate, Goods or Related Services similar to those undelivered or not performed, and the Supplier shall be liable to the Purchaser for any additional costs for such similar Goods or Related Services. However, the Supplier shall continue performance of the Contract to the extent not terminated. 35.2 Termination for Insolvency. The Purchaser may at any time terminate the Contract by giving notice to the Supplier if the Supplier becomes bankrupt or otherwise insolvent. In such event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy that has accrued or will accrue thereafter to the Purchaser 35.3 Termination for Convenience. The Purchaser, by notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Purchaser’s convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.The Goods that are complete and ready for shipment within twenty-eight (28) days after the Supplier’s receipt of notice of termination shall be accepted by the Purchaser at the Contract terms and prices. For the remaining Goods, the Purchaser may elect:to have any portion completed and delivered at the Contract terms and prices; and/orto cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and Related Services and for materials and parts previously procured by the Supplier. |
| 36. Assignment | 36.1 Neither the Purchaser nor the Supplier shall assign, in whole or in part, their obligations under this Contract, except with prior written consent of the other party. |
| 37. Export Restriction | 37.1 Notwithstanding any obligation under the Contract to complete all export formalities, any export restrictions attributable to the Purchaser, to the country of the Purchaser, or to the use of the products/goods, systems or services to be supplied, which arise from trade regulations from a country supplying those products/goods, systems or services, and which substantially impede the Supplier from meeting its obligations under the Contract, shall release the Supplier from the obligation to provide deliveries or services, always provided, however, that the Supplier can demonstrate to the satisfaction of the Purchaser and of the Bank that it has completed all formalities in a timely manner, including applying for permits, authorizations and licenses necessary for the export of the products/goods, systems or services under the terms of the Contract. Termination of the Contract on this basis shall be for the Purchaser’s convenience pursuant to Sub-Clause 35.3. |

**APPENDIX TO GENERAL CONDITIONS**

**Bank’s Policy- Corrupt and Fraudulent Practices**

***(text in this Appendix shall not be modified)***

**Guidelines for Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, dated January 2011:**

“**Fraud and Corruption:**

1.16 It is the Bank’s policy to require that Borrowers (including beneficiaries of Bank loans), bidders, suppliers, contractors and their agents (whether declared or not), sub-contractors, sub-consultants, service providers or suppliers, and any personnel thereof, observe the highest standard of ethics during the procurement and execution of Bank-financed contracts.[[10]](#footnote-10) In pursuance of this policy, the Bank:

(a) defines, for the purposes of this provision, the terms set forth below as follows:

(i) “corrupt practice” is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;[[11]](#footnote-11);

(ii) “fraudulent practice” is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;[[12]](#footnote-12)

(iii) “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;[[13]](#footnote-13)

(iv) “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;[[14]](#footnote-14)

(v) "obstructive practice" is:

(aa) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or

(bb) acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under paragraph 1.16(e) below.

(b) will reject a proposal for award if it determines that the bidder recommended for award, or any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;

(c) will declare misprocurement and cancel the portion of the loan allocated to a contract if it determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement or the implementation of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;

(d) will sanction a firm or individual, at any time, in accordance with the prevailing Bank’s sanctions procedures,[[15]](#footnote-15) including by publicly declaring such firm or individual ineligible, either indefinitely or for a stated period of time: (i) to be awarded a Bank-financed contract; and (ii) to be a nominated[[16]](#footnote-16);

(e) will require that a clause be included in bidding documents and in contracts financed by a Bank loan, requiring bidders, suppliers and contractors, and their sub-contractors, agents, personnel, consultants, service providers, or suppliers, to permit the Bank to inspect all accounts, records, and other documents relating to the submission of bids and contract performance, and to have them audited by auditors appointed by the Bank.”

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| Section IX. Special Conditions of Contract | |
| The following Special Conditions of Contract (SCC) shall supplement and / or amend the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC*.* | |
| **GCC 1.1(i)** | The Purchaser’s country is: **The People’s Republic of Bangladesh** |
| **GCC 1.1(j)** | The Purchaser is: **Bangladesh Meteorological Department (BMD)** |
| **GCC 1.1 (o)** | The Project Site(s)/Final Destination(s) is/are:  Bangladesh Meteorological Department  Abhawa Bhaban, E-24, Agargaon, Dhaka-1207, Bangladesh  And  Multiple locations in Bangladesh listed in Appendix A. |
| **GCC 4.2 (a)** | The meaning of the trade terms shall be as prescribed by Incoterms. |
| **GCC 4.2 (b)** | The version edition of Incoterms shall be 2010. |
| **GCC 5.1** | The language shall be: English |
| **GCC 8.1** | For **notices**, the Purchaser’s address shall be:  Attention: **Ahmed Arif Rashid**  **Project Director (PD), BWCSRP (Component-A), BMD**  Street Address: Abhawa Bhaban, E-24, Agargaon  Floor/ Room number*: N/A*  City: Dhaka  ZIP Code: 1207  Country: Bangladesh  Telephone: +880 2 48110705, 9123838, 8901016  Facsimile number: +880 2 58152019, 9119230  Electronic mail address*:*  PD : [*ahmedarifrashid@gmail.com*](mailto:ahmedarifrashid@gmail.com)  DPD (Finance and Admin) : [*momenulislam799@hotmail.com*](mailto:momenulislam799@hotmail.com) |
| **GCC 9.1** | The governing law shall be the law of*:* **The People’s Republic of Bangladesh.** |
| **GCC 10.2** | The rules of procedure for arbitration proceedings pursuant to GCC Clause 10.2 shall be as follows:  ***(a) Contract with foreign Supplier:***  GCC 10.2 (a)—Any dispute, controversy or claim arising out of or relating to this Contract, or breach, termination or invalidity thereof, shall be settled by arbitration in accordance with the UNCITRAL Arbitration Rules as at present in force.  ***(b) Contracts with Supplier national of the Purchaser’s country:***  In the case of a dispute between the Purchaser and a Supplier who is a national of the Purchaser’s country, the dispute shall be referred to adjudication or arbitration in accordance with the laws of the Purchaser’s country. |
| **GCC 13.1** | Details of Shipping and other Documents to be furnished by the Supplier to the Purchaser by hand or courier with a copy to the insurance company are:  **For Goods supplied from outside the purchaser’s country:**   * + - 1. Supplier’s invoice showing Goods’ description (with HS code), quantity, unit price, total price, freight and insurance costs and any other applicable costs under the Contract – two (2) original and six (6) copies;       2. Bill of lading– two (2) original and six (6) copies of each;       3. Bill of exchange– two (2) original and six (6) copies;       4. Packing list identifying contents of each package – two (2) original and six (6) copies;       5. Insurance certificate – two (2) original and six (6) copies;       6. Manufacturer’s and Supplier’s warranty certificate – two (2) original and six (6) copies;       7. Certificate of origin issued by the relevant authority/ organization (not by the Manufacturer/ Supplier) – two (2) original and six (6) copies;   **Notes:**  Original shipping documents shall be prepared in accordance with the L/C opened by Bangladesh Meteorological Department and in all cases it must be clearly mentioned that Bangladesh Meteorological Department is the importer / consignee. The No. of the L/C which will be opened in favor of the supplier by Bangladesh Meteorological Department must be mentioned in the original Bill of Lading and Commercial Invoice.  The above documents shall be received by the Purchaser before arrival of the Goods and, if not received, the Supplier will be responsible for any consequent expenses.  **For Goods supplied from within the Purchaser’s country**:   * + - 1. Supplier’s invoice showing Goods’ description (with HS code), quantity, unit price, total price, costs and freight and any other applicable costs under the Contract – two (2) original and six (6) copies;       2. Goods Receiving Reports by the Purchaser- one (1) original and seven (7) copies;       3. Delivery note, railway receipt, or truck receipt– two (2) original and six (6) copies;       4. Packing list identifying contents of each package – two (2) original and six (6) copies;       5. Manufacturer’s and Supplier’s warranty certificate – two (2) original and six (6) copies;       6. Insurance certificate – two (2) original and six (6) copies;       7. Certificate of origin issued by the relevant authority/ organization (not by the Manufacturer/ Supplier) – two (2) original and six (6) copies   **Note:**  The above documents shall be received by the Purchaser before arrival of the Goods and, if not received, the Supplier will be responsible for any consequences. |
| **GCC 15.1** | Contract Price: It is a total price for goods and related services excluding Operation and Maintenance cost in Annual Maintenance Contract (AMC) period of 03 (three) years.  The prices charged for the Goods supplied and the related Services performed **shall not** be adjustable. |
| **GCC 16.1** | GCC 16.1—The method and conditions of payment to be made to the Supplier under this Contract shall be as follows:  **Payment for Goods supplied from abroad:**  Payment shall be made in the currency(ies) of contract in the following manner:   1. **Advance Payment** Ten (10) percent of the Contract Price shall be paid within thirty (30) days of signing of the Contract, and upon submission of claim and a bank guarantee for equivalent amount valid until the Goods are delivered and in the form provided in the bidding documents or another form acceptable to the Purchaser. 2. **On Shipment:**  Forty (40) percent of the Contract Price of the Goods shipped shall be paid through irrevocable confirmed letter of credit opened in favor of the Supplier in a bank in its country, upon submission of documents specified in GCC Clause 12. 3. **On Installation, Commissioning and Acceptance:** Thirty (30) percent of the Contract Price shall be paid within thirty (30) days of issuance of operational acceptance certificate by the Purchaser upon receipt of the Goods, completion of installation, commissioning and testing at the designated sites as mentioned in the delivery and completion schedule upon submission of claim supported by the acceptance certificate issued by the Purchaser and meeting all the contract obligations as specified in Supply Requirements. 4. **On successful operation and maintenance of the system during 2 years warranty period:**   (a) Ten (10) percent of the Contract Price shall be paid after six (06) months of completion of Installation, Commissioning and Acceptance subject to accomplishing the concerned responsibilities as specified in Supply Requirements.  (b) Ten (10) percent of the Contract Price shall be paid after twelve (12) months of completion of Installation, Commissioning and Acceptance subject to accomplishing the concerned responsibilities as specified in Supply Requirements.  Payment of local currency portion shall be made in Bangladesh Taka within thirty (30) days of presentation of claim supported by a certificate from the Purchaser declaring that the Goods have been delivered and that all other contracted Services have been performed.  **Payment for Goods and Services supplied from within the Purchaser’s country:**  Payment shall be made in the currency(ies) of contract in the following manner:   1. **Advance Payment:**  Not applicable 2. **On Shipment:** Fifty (50) percent of the Contract Price of the Goods shipped shall be paid through irrevocable confirmed letter of credit opened in favor of the Supplier in a bank in its country, upon submission of documents specified in GCC Clause 12. 3. **On Installation, Commissioning and Acceptance:** Thirty (30) percent of the Contract Price shall be paid within thirty (30) days of issuance of operational acceptance certificate by the Purchaser upon receipt of the Goods, completion of installation, commissioning and testing at the designated sites as mentioned in the delivery and completion schedule upon submission of claim supported by the acceptance certificate issued by the Purchaser and meeting all the contract obligations as specified in Supply Requirements. 4. **On successful operation and maintenance of the system during 2 years warranty period:**   (a) Ten (10) percent of the Contract Price shall be paid after six (06) months of completion of Installation, Commissioning and Acceptance subject to accomplishing the concerned responsibilities as specified in Supply Requirements.  (b) Ten (10) percent of the Contract Price shall be paid after twelve (12) months of completion of Installation, Commissioning and Acceptance subject to accomplishing the concerned responsibilities as specified in Supply Requirements.  **Payment terms during AMC period:**  If AMC has become effective after completion of Mandatory Warranty period, the payment shall be made as follows:  AMC cost inclusive of AIT & VAT payable on it shall be paid on half yearly basis after completing 02 (two) years of mandatory warranty period. The Condition (applicable for payment) shall be governed by a Supplementary Contract (Draft AMC specified in Appendix C) to be established with the Bidder titled “Service Level Agreement for Operation, Troubleshooting, Servicing, Maintenance and Management Synoptic AWS, Ag-AWS and ARG”  **Other terms:**   * 1. Should the inspection of material and/or equipment provided in GCC clause 26 reveal non-conformance to specifications, defective material and/or equipment, improper boxing, packing, marking, documentation or other factors affecting Supplier’s performance under the Contract, the Purchaser shall have the right to call upon the surety or sureties issuing the performance security for the cost of repair or replacement up to the full amount of the performance security.   2. In case of short supply of materials or for any rejected materials against the Contract, the excess amount of CD & VAT paid by Bangladesh Meteorological Department will be retained from the Supplier.   3. Charges for the establishment or amendment to Letter of Credit shall be borne by the Purchaser; however, if amendment is made at the specific request of the Supplier, charges for such amendment to Letter of Credit shall be borne by the Supplier. |
| **GCC 16.5** | The payment-delay period after which the Purchaser shall pay interest to the supplier shall be 60 (sixty) days.  The interest rate that shall be applied is:  For foreign currency: 3-month LIBOR rate plus one (1) percent  For local currency: Ten (10) percent per annum |
| **GCC 18.1** | A Performance Security shall be required.  The amount of the Performance Security shall be: Ten (10) percent of the contract amount. |
| **GCC 18.3** | The Performance Security shall be in the form of a Demand Guarantee (Bank Guarantee) issued by a scheduled bank of Bangladesh or any internationally recognized foreign bank located outside the Purchaser’s country. If the issuing bank is located outside the Purchaser’s country, the Performance Security shall be endorsed by its correspondent bank or branch located in the Purchaser’s country to make it enforceable. The performance security must not be perforated, torn, sealed or signed by any party other than the issuing bank.  The Performance security shall be denominated in US dollars, Bangladesh taka, or any freely convertible currency acceptable to the Purchaser.  If AMC has become effective after completion of Mandatory Warranty period (02 years), the Supplier shall also arrange a new Performance Security Ten (10) percent of the AMC price prior to signing the AMC by both parties. |
| **GCC 18.4** | **Discharge of the Performance Security** shall take place as follows:  40% of Performance Security shall be released after completion of first one year warranty period.  Rest 60% of Performance Security shall be released after completion of entire warranty period subject to fulfill the following condition:  The supplier shall submit a new Performance Security 10% (ten percent) of price of AMC for Operation, Troubleshooting, Servicing, Maintenance and Management Synoptic AWS, Ag-AWS and ARG after completion of Mandatory Warranty period if AMC has become effective (Draft AMC specified in Appendix C).  Otherwise, rest 60% of Performance Security shall be discharged by the Purchaser and returned to the Supplier not later than twenty-eight (28) days following the date of Completion of the Supplier’s performance obligations under the contract, including warranty obligations.  **Discharge of the Performance Security for AMC** shall take place as follows:  The Performance Security submitted during signing AMC (if effective) shall be released by the Purchaser and returned to the Supplier not later than twenty-eight (28) days following the date of Completion of the Supplier’s performance obligations under AMC as stated in Draft AMC (specified in Appendix C). |
| **GCC 23.2** | The packing, marking and documentation within and outside the packages shall be:  Product packages shall be clearly and durably marked on their bases, and metal tags shall be attached to the inside and outside of reels, and will display the following mandatory information in English:  a. Contract Number  b. Name or trade mark of manufacturer  c. Name and address of Consignee  d. Country of origin  e. Gross weight  f. Net weight  g. Package number of total number of packages  h. Brief description of the content.  i. Shipping data.  All materials used for packing shall be environmentally neutral.  Additional marking and documentation within and outside the packages shall be: **None.**  The packing, marking and documentation within and outside the packages shall be as specified in clause 6 of section VII. and all packages or crates shall be marked as follows:  **Consignee of materials:**  **Project Director**  **Bangladesh Weather and Climate Services Regional Project (Component-A)**  **Bangladesh Meteorological Department**  **Abhawa Bhaban, E-24, Agargaon, Dhaka, Bangladesh**  **Telephone: +880 2 48110705, 9123838, 8901016**  **Facsimile number: +880 2 58152019, 9119230** |
| **GCC 24.1** | The insurance coverage shall be as specified in the Incoterms*.* |
| **GCC 25.1** | Responsibility for transportation of the Goods shall be as specified in the Incoterms. |
| **GCC 25.2** | Incidental services to be provided are: None |
| **GCC 26.1** | The inspections and tests shall be carried out as per the instructions outlined in “Inspection & Tests” section. |
| **GCC 26.2** | The Inspections and tests shall be conducted at: BMD Headquarters, Dhaka and the locations specified Appendix A |
| **GCC 27.1** | The liquidated damages shall be: **0.5% (zero point five percent)** of contract price of delayed Goods or Services per week or part thereof. |
| **GCC 27.1** | The maximum amount of liquidated damages shall be: Ten (10) percent of the contract price. |
| **GCC 28.3** | The period of validity of the Warranty shall be: 2 (two) years from the date of acceptance of goods by the purchaser.  For purposes of the Warranty, the place(s) of final destination(s) shall be:  **Bangladesh Meteorological Department, E-24, Agargaon, Dhaka-1207 and**  **Multiple locations in Bangladesh listed in Appendix A.** |
| **GCC 28.5** | Bidder shall provide at least 14 (fourteen) meteorological technicians (7 teams, 2 people per team) and 02 (two) Information Technology specialists at BMD headquarters for Operation of the system for AWS, ARG and Ag-AWS and ensure seamless data transfer from remote stations to BMD headquarter at Dhaka via telemetry and. The period for repair or replacement shall be: 48 Hours. It is the responsibility of the bidder to rectify/replace the equipment without any notice from purchaser and it is the duty of its personnel i.e. dedicated service engineers at field office / BMD headquarters to notice that site become non-operational or become faulty.  A remote site shall be treated as faulty if it fails to respond or transmits erroneous data during six consecutive pre-programmed observation cycles. If a remote site continues to remain "fail" for more than 6 hours in excess of the maintenance time schedule of 48 hours. The remote site would also be considered faulty if bidder fails to pay data subscription charges for telemetry  The Data centre would be considered faulty if any of server / cloud server / software are not functioning properly for 24 hours period. The data centre would also be considered faulty if bidder failed to pay cloud service charges or high speed internet charges.  The contractor is liable to pay penalty @ Tk. 2000/= (BDT Two Thousand) per Day/ remote site. The Day for the purpose of penalty shall be taken as failure period of 24 hours or part thereof for a particular remote site. The penalty for faulty equipment at data centres beyond 24 hours would be Tk. 10,000/= (BDT Ten Thousand) per day.  The amount of penalty will be recovered from bank guarantee or payment due to bidder during 2-year warranty and comprehensive operation and maintenance period. |
| **GCC 28.6** | The period shall be 14(fourteen) days. |

**Attachment: Price Adjustment Formula (Not Applicable)**

If in accordance with GCC 15.1, prices shall be adjustable, the following method shall be used to calculate the price adjustment:

15.1 Prices payable to the Supplier, as stated in the Contract, shall be subject to adjustment during performance of the Contract to reflect changes in the cost of labor and material components in accordance with the formula:

P1 = P0 [a + bL1 + cM1] - P0

L0 M0

a+b+c = 1

in which:

P1 = adjustment amount payable to the Supplier.

P0 = Contract Price (base price).

a = fixed element representing profits and overheads included in the Contract Price and generally in the range of five (5) to fifteen (15) percent.

b = estimated percentage of labor component in the Contract Price.

c = estimated percentage of material component in the Contract Price.

L0, L1 = \*labor indices applicable to the appropriate industry in the country of origin on the base date and date for adjustment, respectively.

M0, M1 = \*material indices for the major raw material on the base date and date for adjustment, respectively, in the country of origin.

The Bidder shall indicate the source of the indices and the base date indices in its bid.

The coefficients a, b, and c as specified by the Purchaser are as follows:

a = *[insert value of coefficient]*

b= *[insert value of coefficient]*

c= *[insert value of coefficient]*

Base date = thirty (30) days prior to the deadline for submission of the bids.

Date of adjustment = *[insert number of weeks]* weeks prior to date of shipment (representing the mid-point of the period of manufacture).

The above price adjustment formula shall be invoked by either party subject to the following further conditions:

(a) No price adjustment shall be allowed beyond the original delivery dates. As a rule, no price adjustment shall be allowed for periods of delay for which the Supplier is entirely responsible. The Purchaser will, however, be entitled to any decrease in the prices of the Goods and Services subject to adjustment.

(b) If the currency in which the Contract Price P0 is expressed is different from the currency of origin of the labor and material indices, a correction factor will be applied to avoid incorrect adjustments of the Contract Price. The correction factor shall correspond to the ratio of exchange rates between the two currencies on the base date and the date for adjustment as defined above.

(c) No price adjustment shall be payable on the portion of the Contract Price paid to the Supplier as advance payment.

|  |
| --- |
| Section X. Contract Forms |

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award.

**Table of Forms**

[Letter of Acceptance 189](#_Toc31063971)

[Contract Agreement 190](#_Toc31063972)

[Performance Security 192](#_Toc31063973)

[Advance Payment Security 196](#_Toc31063974)

Letter of Acceptance

*[letterhead paper of the Purchaser]*

*[date]*

To: *[name and address of the Supplier]*

Subject: ***Notification of Award Contract No.***  . . . . . . . . . .

This is to notify you that your Bid dated . . . . ***[insert date] . .*** . . for execution of the . . . . . . . . . ***.[insert name of the contract and identification number, as given in the SCC]***. . . . . . . . . . for the Accepted Contract Amount of . . . . . . . . ***.[insert*** ***amount in numbers and words and name of currency]***, as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose the of the Performance Security Form included in Section X, Contract Forms, of the Bidding Document.

Authorized Signature:

Name and Title of Signatory:

Name of Agency:

**Attachment: Contract Agreement**

Contract Agreement

*[The successful Bidder shall fill in this form in accordance with the instructions indicated]*

THIS AGREEMENT made

the *[ insert:* ***number****]* day of *[ insert:* ***month****]*, *[ insert:* ***year****]*.

BETWEEN

(1) *[ insert complete name of Purchaser ]*, a *[ insert description of type of legal entity, for example, an agency of the Ministry of .... of the Government of { insert name of Country of Purchaser }, or corporation incorporated under the laws of { insert name of Country of Purchaser } ]* and having its principal place of business at *[ insert address of Purchaser**]* (hereinafter called “the Purchaser”), of the one part, and

(2) *[ insert name of Supplier**]*, a corporation incorporated under the laws of *[ insert: country of Supplier**]* and having its principal place of business at *[ insert: address of Supplier ]* (hereinafter called “the Supplier”), of the other part :

WHEREAS the Purchaser invited bids for certain Goods and ancillary services, viz., *[insert brief description of Goods and Services]* and has accepted a Bid by the Supplier for the supply of those Goods and Services

The Purchaser and the Supplier agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other contract documents.

1. the Letter of Acceptance
2. the Letter of Bid
3. the Addenda Nos.\_\_\_\_\_ (if any)
4. Special Conditions of Contract
5. General Conditions of Contract
6. the Specification (including Schedule of Requirements and Technical Specifications)
7. the completed Schedules (including Price Schedules)
8. any other document listed in GCC as forming part of the Contract

3. In consideration of the payments to be made by the Purchaser to the Supplier as specified in this Agreement, the Supplier hereby covenants with the Purchaser to provide the Goods and Services and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the Goods and Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of *[insert the name of the Contract governing law country]* on the day, month and year indicated above.

For and on behalf of the Purchaser

Signed: *[insert signature]*

in the capacity of *[ insert title or other appropriate designation ]*

in the presence of *[insert identification of official witness]*

For and on behalf of the Supplier

Signed: *[insert signature of authorized representative(s) of the Supplier]*

in the capacity of *[ insert title or other appropriate designation ]*

in the presence of *[ insert identification of official witness]*

Performance Security

**Option 1: (Bank Guarantee)**

*[The bank, as requested by the successful Bidder, shall fill in this form in accordance with the instructions indicated]*

*[Guarantor letterhead or SWIFT identifier code]*

**Beneficiary:** *[insert name and Address of Purchaser ]*

**Date:** \_ *[Insert date of issue]*

**PERFORMANCE GUARANTEE No.:** *[Insert guarantee reference number]*

**Guarantor:** *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that \_ *[insert name of Supplier, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called "the Applicant") has entered into Contract No. *[insert reference number of the contract]* dated *[insert date]* with the Beneficiary, for the supply of \_ *[insert name of contract and brief description of Goods and related Services]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]*( ) *[insert amount in words]*,[[17]](#footnote-17)1 such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary’s complying demand supported by the Beneficiary’s statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the …. Day of ……, 2… [[18]](#footnote-18)2, and any demand for payment under it must be received by us at this office indicated above on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   
*[signature(s)]*

***Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.***

**Option 2: Performance Bond – Not Applicable**

By this Bond *[insert name of Principal]* as Principal (hereinafter called “the Supplier”) and *[insert name of Surety]* as Surety (hereinafter called “the Surety”), are held and firmly bound unto *[insert name of Purchaser]* as Obligee (hereinafter called “the Supplier”) in the amount of *[insert amount in words and figures]*, for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contract Price is payable, the Supplier and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Contractor has entered into a written Agreement with the Purchaser dated the day of , 20 , for *[name of contract and brief description of Goods and related Services]* in accordance with the documents, plans, specifications, and amendments thereto, which to the extent herein provided for, are by reference made part hereof and are hereinafter referred to as the Contract.

NOW, THEREFORE, the Condition of this Obligation is such that, if the Supplier shall promptly and faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Supplier shall be, and declared by the Purchaser to be, in default under the Contract, the Purchaser having performed the Purchaser’s obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

(1) complete the Contract in accordance with its terms and conditions; or

(2) obtain a Bid or bids from qualified Bidders for submission to the Purchaser for completing the Contract in accordance with its terms and conditions, and upon determination by the Purchaser and the Surety of the lowest responsive Bidder, arrange for a Contract between such Bidder and Purchaser and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term “Balance of the Contract Price,” as used in this paragraph, shall mean the total amount payable by Purchaser to Supplier under the Contract, less the amount properly paid by Purchaser to Contractor; or

(3) pay the Purchaser the amount required by Purchaser to complete the Contract in accordance with its terms and conditions up to a total not exceeding the amount of this Bond.

The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

Any suit under this Bond must be instituted before the expiration of one year from the date of the issuing of the Taking-Over Certificate.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Purchaser named herein or the heirs, executors, administrators, successors, and assigns of the Purchaser.

In testimony whereof, the Supplier has hereunto set his hand and affixed his seal, and the Surety has caused these presents to be sealed with his corporate seal duly attested by the signature of his legal representative, this day of 20 .

SIGNED ON on behalf of

By in the capacity of

In the presence of

SIGNED ON on behalf of

By in the capacity of

In the presence of

Advance Payment Security

*[Guarantor letterhead or SWIFT identifier code]*

**Beneficiary:** *[Insert name and Address of Purchaser]*

**Date:** *[Insert date of issue]*

**ADVANCE PAYMENT GUARANTEE No.:** *[Insert guarantee reference number]*

**Guarantor:**  *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that *[insert name of Supplier, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called “the Applicant”) has entered into Contract No. *[insert reference number of the contract]* dated *[insert date]* with the Beneficiary, for the execution of *[insert name of contract and brief description of Goods and related Services]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum *[insert amount in figures]* () *[insert amount in words]* is to be made against an advance payment guarantee.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]*( ) *[insert amount in words][[19]](#footnote-19)1* upon receipt by us of the Beneficiary’s complying demand supported by the Beneficiary’s statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the Applicant:

* + 1. has used the advance payment for purposes other than toward delivery of Goods; or
    2. has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.

A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary’s bank stating that the advance payment referred to above has been credited to the Applicant on its account number *[insert number]* at *[insert name and address of Applicant’s bank]*.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Applicant as specified in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety (90) percent of the Accepted Contract Amount, has been certified for payment, or on the *[insert day]* day of *[insert month]*, 2 *[insert year]*, whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No.758, except that the supporting statement under Article 15(a) is hereby excluded.

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\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   
*[signature(s)]*

***Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.***

Invitation for Bids

**Country:** The People’s Republic of Bangladesh

**Name of Project:** Bangladesh Weather and Climate Services Regional Project (Component-A: Strengthening Meteorological Information Services and Early Warning Systems)

**Credit No.:** 5837-BD

**Contract Title:**

Supply and Installation of Automatic Weather Stations (AWS) and Automatic Raingauges

**Reference No**. BMD-G-1

1. The People’s Republic of Bangladesh has received financing from the World Bank toward the cost of the Bangladesh Weather and Climate Services Regional Project (Component-A: Strengthening Meteorological Information Services and Early Warning Systems), and intends to apply part of the proceeds toward payments under the contract for Supply and Installation of Automatic Weather Stations (AWS) and Automatic Raingauges.

2. The Bangladesh Meteorological Department now invites sealed bids from eligible bidders for Supply, Installation, Testing and Commissioning of Synoptic Automatic Weather Stations (AWS), Agricultural Meteorological Stations (Ag-AWS) and Urban Automatic Rain Gauges (ARG)*.* TheAWS, Ag-AWS and ARG stations shall be installed in BMD Headquarters, Met Observatories (MO) of BMD, various Upazila Parisad Offices, Agricultural Extension Offices, Horticulture Centers, Rice/ Jute/ Sugarcrop/ Horticulture Research Centers, Cotton Development Board, Farmers Training Centre etc. across the country and Dhaka, Chattogram, Rajshahi and Khulna WASA sites.

3. Bidding will be conducted through the International Competitive Bidding procedures as specified in the World Bank’s [*Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers,*](http://www.worldbank.org/html/opr/procure/guidelin.html) January 2011 Revised July 2014 (“Procurement Guidelines”), and is open to all eligible bidders as defined in the Procurement Guidelines. In addition, please refer to paragraphs 1.6 and 1.7 setting forth the World Bank’s policy on conflict of interest.

4. Interested eligible bidders may obtain further information from the office of the undersigned and inspect the bidding documents during office hours [i.e. 09:00 to 17:00 hours] at the address given below*.*

5. A complete set of bidding documents in English may be purchased by interested eligible bidders upon the submission of a written application to the address below and upon payment of a nonrefundable fee of $100.00 (One Hundred US Dollar) or Local Currency BDT 8,500/= (Eight Thousand Five Hundred BDT). The method of payment will be Pay Order issued in favor of: *Project Director, Bangladesh Weather and Climate Services Regional Project (Component-A)*. The document will be sent by courier, for International Deliver, please add $100.00 (One Hundred US Dollar) to the price of Bidding Document.

6. Bids must be delivered to the address below on or before **15-Mar-2020 at 1400 BST***.* Electronic bidding will not be permitted. Late bids will be rejected. Bids will be publicly opened in the presence of the bidders’ designated representatives and anyone who choose to attend at the address below on **15-Mar-2020 at 1500**.

7. All bids must be accompanied by a Bid Security of USD 100,000.00 (US Dollar One Hundred Thousand) or equivalent in any freely convertible currency.

8. The address(es) referred to above is(are): The address(es) referred to above is(are): Project Director, Bangladesh Weather and Climate Services Regional Project (Component-A), Bangladesh Meteorological Department, Abhawa Bhaban, E-24, Agargaon, Dhaka-1207, Bangladesh, Phone: +880 2 48110705, E-mail: Project Director: [ahmedarifrashid@gmail.com](mailto:ahmedarifrashid@gmail.com), Deputy Project Director (Finance and Admin): [*momenulislam799@hotmail.com*](mailto:momenulislam799@hotmail.com)*,* Website: [www.bmd.gov.bd](http://www.bmd.gov.bd)

Ahmed Arif Rashid

Project Director

# Appendix

**Appendix A. Locations of Synoptic AWS, Ag-AWS, ARG (Urban Rainfall) Sites**

**Location of Synoptic AWS**

The following table contains the locations of 35 stations (35 Synoptic AWS). These are 35 Met Observatories (MO) of BMD across the country.

The supplier is responsible to deliver goods and related services as mentioned in the tables List of Goods and Delivery Schedule (Line Item 1 to 12) and List of Related Services and Completion Schedule (Line Item 9, 12, 17, 18, 20 and 24) in these 35 stations (Met Observatories of BMD).

| **No.** | **Station Name** | **Longitude** | **Latitude** | **Maintaining Office** |
| --- | --- | --- | --- | --- |
|  | Tangail MO | 89.9135 | 24.2551 | Dhaka |
|  | Dhaka MO | 90.3783 | 23.7799 | Dhaka |
|  | Faridpur MO | 89.8456 | 23.5989 | Dhaka |
|  | Madaripur MO | 90.2224 | 23.1618 | Dhaka |
|  | Mymensingh MO | 90.4261 | 24.7260 | Dhaka |
|  | Comilla MO | 91.1845 | 23.4345 | Chattogram |
|  | Chandpur MO | 90.6614 | 23.2262 | Chattogram |
|  | Feni MO | 91.4051 | 23.0283 | Chattogram |
|  | Maijdee Court MO | 91.1048 | 22.8631 | Chattogram |
|  | Hatiya MO | 91.1460 | 22.2949 | Chattogram |
|  | Swandeep MO | 91.4713 | 22.4857 | Chattogram |
|  | SitaKundo MO | 91.6643 | 22.6089 | Chattogram |
|  | Rangamati MO | 92.1547 | 22.6547 | Chattogram |
|  | Chattogram MO | 91.8084 | 22.3532 | Chattogram |
|  | Potenga MO | 91.8136 | 22.2451 | Chattogram |
|  | Kutubdia MO | 91.8533 | 21.8147 | Chattogram |
|  | Cox’s Bazar MO | 91.9662 | 21.4512 | Chattogram |
|  | Teknaf MO | 92.2936 | 20.8617 | Chattogram |
|  | Sylhet MO | 91.8841 | 24.9054 | Sylhet |
|  | Srimangal MO | 91.7439 | 24.2949 | Sylhet |
|  | Bogura MO | 89.3684 | 24.8403 | Rajshahi |
|  | Rajshahi MO | 88.6548 | 24.3605 | Rajshahi |
|  | Ishwardi MO | 89.0401 | 24.1497 | Rajshahi |
|  | Sayedpur MO | 88.9096 | 25.7632 | Rangpur |
|  | Rangpur MO | 89.2529 | 25.7329 | Rangpur |
|  | Dinajpur MO | 88.6544 | 25.6461 | Rangpur |
|  | Chuadanga MO | 88.8825 | 23.6390 | Khulna |
|  | Jashore MO | 89.1606 | 23.1770 | Khulna |
|  | Satkhira MO | 89.0824 | 22.7320 | Khulna |
|  | Khulna MO | 89.5305 | 22.7990 | Khulna |
|  | Mongla MO | 89.5948 | 22.4792 | Khulna |
|  | Barishal MO | 90.3492 | 22.7254 | Barishal |
|  | Bhola MO | 90.6439 | 22.6921 | Barishal |
|  | Patuakhali MO | 90.3363 | 22.3481 | Barishal |
|  | Khepupara MO | 90.2193 | 21.9881 | Barishal |

**Location of Ag-AWS**

The following table contains the locations of 125 stations (125 Ag-AWS). These are located in various Upazila Parisad Offices, Agricultural Extension Offices, Horticulture Centers, Rice/ Jute/ Sugarcrop/ Horticulture Research Centers, Cotton Development Board, Farmers Training Centre etc. across the country.

The supplier is responsible to deliver goods and related services as mentioned in the table List of Goods and Delivery Schedule (Line Item 13 to 24) and List of Related Services and Completion Schedule (Line Item 10 12, 17, 18, 20 and 24) in the 125 stations.

| **No.** | **Station Name** | **Upazila** | **Longitude** | **Latitude** | **Maintaining Office** |
| --- | --- | --- | --- | --- | --- |
|  | Upazila Parisad office | Sherpur | 89.4144 | 24.6730 | Rajshahi |
|  | Upazila Parisad office | Sariakandi | 89.5739 | 24.8937 | Rajshahi |
|  | Upazila Parisad office | Manda | 88.7057 | 24.7607 | Rajshahi |
|  | Upazila Parisad office | Patnitala | 88.7507 | 25.0490 | Rajshahi |
|  | Upazila Parisad office | Porsha | 88.4529 | 25.0232 | Rajshahi |
|  | Upazila Parisad office | Raninagar | 88.9615 | 24.7384 | Rajshahi |
|  | Agricultural Extension office | Atrai | 88.9820 | 24.6102 | Rajshahi |
|  | Upazila Parisad office | Lalpur | 88.9612 | 24.1778 | Rajshahi |
|  | Upazila Parisad office | Natore Sadar | 89.0032 | 24.4281 | Rajshahi |
|  | Agricultural Extension office | Singra | 89.1447 | 24.5058 | Rajshahi |
|  | Upazila Parisad office | Sujanagar | 89.4067 | 23.9435 | Rajshahi |
|  | Agricultural Extension office | Kazipur | 89.6435 | 24.6474 | Rajshahi |
|  | Agricultural Extension office | Sirajganj Sadar | 89.7144 | 24.4542 | Rajshahi |
|  | Upazila Parisad office | Ullahpara | 89.5700 | 24.3154 | Rajshahi |
|  | Upazila Parisad office | Bagmara | 88.8039 | 24.5595 | Rajshahi |
|  | Horticulture Centre | Nayanpur, Dinajpur | 88.6485 | 25.6544 | Rangpur |
|  | Upazila Parisad office | Birampur | 88.9943 | 25.3816 | Rangpur |
|  | Upazila Parisad office | Phulbari | 88.9553 | 25.4938 | Rangpur |
|  | Agricultural Extension office | Phulbari | 89.5533 | 25.9497 | Rangpur |
|  | Agricultural Extension office | Nilphamari Sadar | 88.8582 | 25.9314 | Rangpur |
|  | Upazila Parisad office | Jaldhaka | 89.0100 | 26.0200 | Rangpur |
|  | Agricultural Extension office | Kishoreganj | 89.0108 | 25.9086 | Rangpur |
|  | Upazila Parisad office | Panchagarh Sadar | 88.5596 | 26.3423 | Rangpur |
|  | Upazila Parisad office | Badarganj | 89.0490 | 25.6684 | Rangpur |
|  | Agricultural Extension office | Mithapukur | 89.2731 | 25.5699 | Rangpur |
|  | Agricultural Extension office | Pirganj | 89.3092 | 25.4190 | Rangpur |
|  | Regional Sugarcrop Reseach Station, Madarganj | Thakurgaon | 88.4549 | 26.0420 | Rangpur |
|  | Upazila Parisad office | Barhatta | 90.8812 | 24.8961 | Dhaka |
|  | Upazila Parisad office | Durgapur | 90.6799 | 25.1276 | Dhaka |
|  | Upazila Parisad office | Kendua | 90.8463 | 24.6615 | Dhaka |
|  | Bangladesh Sugarcrop Research Institute | Jamalpur Sadar | 89.9580 | 24.9216 | Dhaka |
|  | Upazila Parisad office | Nandail | 90.6879 | 24.5716 | Dhaka |
|  | Horticulture Centre (Category-3) | Barguna | 90.1453 | 22.1593 | Barishal |
|  | Upazila Parisad office | Wazirpur | 90.2516 | 22.8226 | Barishal |
|  | Upazila Parisad office | Nalchity | 90.2750 | 22.6357 | Barishal |
|  | Upazila Parisad office | Bauphal | 90.5632 | 22.4141 | Barishal |
|  | Upazila Parisad office | Galachipa | 90.4098 | 22.1659 | Barishal |
|  | Upazila Parisad office | Pirojpur Sadar | 89.9800 | 22.5790 | Barishal |
|  | Upazila Parisad office | Brahmanbaria Sadar | 91.1066 | 23.9860 | Chattogram |
|  | Upazila Parisad office | Nabinagar | 90.9686 | 23.8875 | Chattogram |
|  | Upazila Parisad office | Nasirnagar | 91.1946 | 24.1975 | Chattogram |
|  | Upazila Parisad office | Matlab Dakshin | 90.7070 | 23.3444 | Chattogram |
|  | Jute Research Regional Center,Chandina | Chandina | 91.0105 | 23.4904 | Chattogram |
|  | Upazila Parisad Nangolkot | Nangalkot | 91.1989 | 23.1620 | Chattogram |
|  | Hill Agricultural Research Station, BARI, Dighinala Road | Khagrachhari Sadar | 92.0006 | 23.1363 | Chattogram |
|  | Upazila Parisad office | Ramgati | 90.9200 | 22.6506 | Chattogram |
|  | Agricultural Extension office | Begumganj | 91.1014 | 22.9443 | Chattogram |
|  | Agricultural Extension office | Sonaimuri | 91.0948 | 23.0280 | Chattogram |
|  | Agricultural Extension office | Subarnachar | 91.1160 | 22.6598 | Chattogram |
|  | Upazila Parisad office | Baghaichhari | 92.1920 | 23.1604 | Chattogram |
|  | Upazila Parisad office | Barkal | 92.3806 | 22.7244 | Chattogram |
|  | Hill AgriculturalResearch Station Raikhali, Chondroghona | Kaptai | 92.1428 | 22.4685 | Chattogram |
|  | Horticulture Centre,Rajalakh, Savar Dhaka | Savar | 90.2563 | 23.8452 | Dhaka |
|  | Upazila Parisad office | Hossainpur | 90.7820 | 24.4590 | Dhaka |
|  | Upazila Parisad office | Itna | 91.1009 | 24.5269 | Dhaka |
|  | Jute Agri Testing Center, Jagir | Manikganj Sadar | 90.0314 | 23.8822 | Dhaka |
|  | Ifaztahia Agrofirm Vill + PO. : Rajapur PS. : Dhamrai | Saturia | 90.0461 | 24.0235 | Dhaka |
|  | Tuber Crop Research Sub Center Munshigonj | Munshiganj Sadar | 90.5257 | 23.5524 | Dhaka |
|  | Agricultural Extension office | Rajbari Sadar | 89.6507 | 23.7402 | Dhaka |
|  | Agricultural Extension office | Baliakandi | 89.5483 | 23.6340 | Dhaka |
|  | Rice Research Institute | Bhanga | 89.9894 | 23.3884 | Dhaka |
|  | Upazila Parisad office | Raipura | 90.8696 | 23.9927 | Dhaka |
|  | Upazila Parisad office | Abhaynagar | 89.3954 | 23.0222 | Khulna |
|  | Cotton Development Board, Chaugachha | Chaugachha | 89.0208 | 23.2663 | Khulna |
|  | Upazila Parisad office | Maheshpur | 88.9245 | 23.3617 | Khulna |
|  | Horticulture Centre | Jhenaidah | 89.1722 | 23.5397 | Khulna |
|  | Upazila Parisad office | Phultala | 89.4764 | 22.9678 | Khulna |
|  | Upazila Parisad office | Daulatpur | 89.1147 | 23.9001 | Khulna |
|  | Upazila Parisad office | Kumarkhali | 89.2418 | 23.8635 | Khulna |
|  | Agricultural Research Sub Station, Benarpota | Satkhira Sadar | 89.1059 | 22.7500 | Khulna |
|  | Rice Research Institute, Regional Office Nagura | Habiganj Sadar | 91.4287 | 24.4162 | Sylhet |
|  | Agricultural Extension office | Nabiganj | 91.5135 | 24.5753 | Sylhet |
|  | Horticulture Centre (Category-3) | Kulaura | 92.0347 | 24.5255 | Sylhet |
|  | Upazila Parisad office | Barlekha | 92.1841 | 24.6919 | Sylhet |
|  | Upazila Parisad office | Derai | 91.3531 | 24.7930 | Sylhet |
|  | Upazila Parisad office | Chhatak | 91.6595 | 25.0307 | Sylhet |
|  | Upazila Parisad office | Fenchuganj | 91.9368 | 24.6976 | Sylhet |
|  | Upazila Parisad office | Bishwanath | 91.7575 | 24.8147 | Sylhet |
|  | Agricultural Extension office | Golapganj | 92.0198 | 24.8474 | Sylhet |
|  | Regional Horticulture Research Center Lebukhali | PatuakhaliSadar | 90.3388 | 22.4474 | Barishal |
|  | Regional Horticulture Research Center Shibpur | Shibpur | 90.7182 | 24.0510 | Dhaka |
|  | On-Farm Research Division Shampur, Rajshahi | Shampur, Rajshahi | 88.6618 | 24.3688 | Rajshahi |
|  | Regional Agricultural Research Station Akbarpur | Moulvibazar Sadar | 91.7588 | 24.4194 | Sylhet |
|  | Cotton Development Board,Sripur | Sripur | 90.4302 | 24.1776 | Dhaka |
|  | Cotton Research Center, Balaghata | Bandarban Sadar | 92.2050 | 22.2197 | Chattogram |
|  | Horticulture Centre | Banani, Bagura | 89.3809 | 24.8132 | Rajshahi |
|  | Horticulture Centre (Category-2) | Gouripur | 90.5743 | 24.7559 | Dhaka |
|  | Horticulture Centre (Category-2) | Aziznagar | 92.0670 | 21.9019 | Chattogram |
|  | Horticulture Centre (Category-2) | Naikhangchori | 92.1803 | 21.4215 | Chattogram |
|  | Horticulture Centre | Hathazari | 91.7918 | 22.5007 | Chattogram |
|  | Horticulture Centre | Ramu | 92.0044 | 21.4287 | Chattogram |
|  | Horticulture Center | Shasongasa | 91.1618 | 23.4673 | Chattogram |
|  | Horticulture Centre (Category-2) | Dhiginala | 92.0688 | 23.2452 | Chattogram |
|  | Horticulture Centre (Category-2) | Ramgarh | 91.7452 | 22.9864 | Chattogram |
|  | Horticulture Centre (Category-2) | Asambosti | 92.1808 | 22.6383 | Chattogram |
|  | Horticulture Centre | Jamalgonj | 89.0289 | 25.0310 | Rajshahi |
|  | Horticulture Centre | Mouchak | 90.2992 | 24.0211 | Dhaka |
|  | Horticulture Centre | Kashiani | 89.7356 | 23.1933 | Dhaka |
|  | Horticulture Centre | Madaripur | 90.1355 | 23.1632 | Dhaka |
|  | Horticulture Center | Dhanbari | 89.9495 | 24.6814 | Dhaka |
|  | Horticulture Centre | Khoertola | 89.1904 | 23.1850 | Khulna |
|  | Horticulture Centre | Daulatpur | 89.5139 | 22.8759 | Khulna |
|  | Horticulture Centre (Category-3) | chuadanga | 88.8495 | 23.6408 | Khulna |
|  | Horticulture Center | Badalgachi | 88.9077 | 24.9570 | Rajshahi |
|  | Horticulture Centre | Magura | 89.4016 | 23.4850 | Khulna |
|  | Horticulture Centre | Baradhi, Meherpur | 88.7384 | 23.7289 | Khulna |
|  | Horticulture Centre | Mehedibag, Sylhet | 91.8824 | 24.8847 | Sylhet |
|  | Horticulture Centre | Tebunia, Pabna | 89.1375 | 24.1058 | Rajshahi |
|  | Horticulture Centre | Burirhat, Rangpur | 89.2326 | 25.8240 | Rangpur |
|  | Jute Research Sub-Center, Madarganj | Madarganj | 89.6877 | 24.9115 | Dhaka |
|  | Jute Research Regional Center, Mahiganj | Rangpur Sadar | 89.2725 | 25.7426 | Rangpur |
|  | Jute Research Regional Center, Goalchamot, Sriangon | Faridpur Sadar | 89.8111 | 23.5898 | Dhaka |
|  | Jute Research Sub-Center, Durgapur | Manirampur | 89.2344 | 23.0185 | Khulna |
|  | Jute Research Sub-Center, Tatki, Tarobo | Rupganj | 90.5114 | 23.7196 | Dhaka |
|  | Jute Research Sub-Center, Nilganj, Pakhimara | Kalapara | 90.1780 | 21.9501 | Barishal |
|  | Jute seed Research center, Nashipur | Dinajpur Sadar | 88.6635 | 25.7191 | Rangpur |
|  | Upazila Parisad office | Pirgacha | 89.4134 | 25.6566 | Rangpur |
|  | Sugarcrop Research institute, HQ | Ishwardi | 89.0819 | 24.1157 | Rajshahi |
|  | Regional Sugarcrop Research Station, Joydebpur | Gazipur Sadar | 90.4005 | 23.9818 | Dhaka |
|  | Bangladesh Sugarcrop Research Station, Rahmatpur | Babuganj | 90.2892 | 22.7899 | Barishal |
|  | Bangladesh Sugarcrop Research Station, Darshana | Damurhuda | 88.8104 | 23.5224 | Khulna |
|  | Bangladesh Sugarcrop Research Institute | Rowangchhari | 92.2333 | 22.1833 | Chattogram |
|  | Atomic Energy Research Establishment Ganak Bari | Savar | 90.2796 | 23.9549 | Dhaka |
|  | SDI Farmers Training Centre Sutipara,PO. Kalampur | Dhamrai | 90.1395 | 23.9167 | Dhaka |
|  | Bangataj College Khirati, Kapasia, Gazipur | Kapasia | 90.6843 | 24.1529 | Dhaka |

**Location of ARG (WASA Sites)**

The following table contains the locations of 65 stations (65 ARG). These are located (within urban areas) in the premises of Dhaka, Chattogram, Rajshahi and Khulna WASA Offices of Bangladesh.

The supplier is responsible to deliver goods and related services as mentioned in the table List of Goods and Delivery Schedule (Line Item 25 to 31) and List of Related Services and Completion Schedule (Line Item 11, 12, 14, 17, 18, 20 and 24) in the 65 stations.

| **No.** | **Station Name** | **Longitude** | **Latitude** | **Maintaining Office** |
| --- | --- | --- | --- | --- |
|  | Khulna Wasa Head office | 89.5528 | 22.8322 | Khulna |
|  | Boro Boyra GoalKhali | 89.2811 | 22.8542 | Khulna |
|  | Afilgate Giilatola | 89.4863 | 22.9328 | Khulna |
|  | Moheshor Pasa Regional Office | 89.5119 | 22.8926 | Khulna |
|  | Diana, Pabla Daulotpur | 89.5077 | 22.8624 | Khulna |
|  | Charer Hat | 89.5544 | 22.8507 | Khulna |
|  | Rayer Mahal (Primary School) | 89.5239 | 22.8384 | Khulna |
|  | Choto Boyra, Al-Faruk, Sonadanga | 89.5382 | 22.8229 | Khulna |
|  | Laban Chora | 89.5773 | 22.7855 | Khulna |
|  | KWASA Old Office | 89.5658 | 22.8151 | Khulna |
|  | Haragram Natun Para Water Pump | 88.5824 | 24.3878 | Rajshahi |
|  | Bohorompur Water Pump | 88.5590 | 24.3878 | Rajshahi |
|  | Kesobpur Water Pump | 88.6350 | 24.3674 | Rajshahi |
|  | Mothur Danga Mosque Water Pump | 88.6032 | 24.3884 | Rajshahi |
|  | Chayanir Housing Society Water Pump | 88.6164 | 24.4011 | Rajshahi |
|  | Asam Colony Water Pump | 88.6002 | 24.3886 | Rajshahi |
|  | Chotobongram Eidgah Water Pump 7 | 88.6223 | 24.3755 | Rajshahi |
|  | Kalighata House Colony Water Pump 8 | 88.6017 | 24.3672 | Rajshahi |
|  | Chakpara Water Pump | 88.6294 | 24.3909 | Rajshahi |
|  | Kajala Water Pump 10 | 88.6293 | 24.3642 | Rajshahi |
|  | Diabari Water Pump | 90.3421 | 23.7964 | Dhaka |
|  | Uttara Sector 10 Water Pump | 90.3906 | 23.8799 | Dhaka |
|  | Shah Kabir Majar Water Pump | 90.4222 | 23.8721 | Dhaka |
|  | Duaripara WASA Qtr. Water Pump | 90.3575 | 23.8244 | Dhaka |
|  | Manikdi Bazar Water Pump | 90.3939 | 23.8275 | Dhaka |
|  | Kawla-1 Water Pump | 90.4225 | 23.8477 | Dhaka |
|  | 2/I Kidni Foundation Water Pump | 90.3604 | 23.8029 | Dhaka |
|  | Vasantek Audit Bhaban Water Pump | 90.3912 | 23.8145 | Dhaka |
|  | Basundhara no.2 Water Pump | 90.4265 | 23.8073 | Dhaka |
|  | Bagan Bari Water Pump | 90.4401 | 23.7389 | Dhaka |
|  | G M Bari Water Pump | 90.4460 | 23.7860 | Dhaka |
|  | Shamoli Ring Road Water Pump | 90.3585 | 23.7672 | Dhaka |
|  | Old Assembli Water Pump | 90.3936 | 23.7687 | Dhaka |
|  | Mods Zone 8 Office Compound | 90.4248 | 23.7971 | Dhaka |
|  | Gikatala Staff Qtr. Water Pump | 90.3739 | 23.7385 | Dhaka |
|  | Zimkhana Water Pump | 90.4000 | 23.7330 | Dhaka |
|  | Pirjangi Majar Water Pump | 90.4330 | 23.7330 | Dhaka |
|  | Madartek Water Pump | 90.4392 | 23.7430 | Dhaka |
|  | IG Bagan Water Pump | 90.4210 | 23.6988 | Dhaka |
|  | Matuyail MridhaBari Water Pump | 90.4527 | 23.7132 | Dhaka |
|  | WASA gate, Dhaka-Narayanganj Hwy, Dhaka 1204 | 90.4448 | 23.6769 | Dhaka |
|  | Dhaka WASA Purba Jurain, Dhaka | 90.4494 | 23.6812 | Dhaka |
|  | Kodam tola Water pump Kadamtala, Dhaka | 90.4310 | 23.7375 | Dhaka |
|  | Hatkhula WASA Water pump, Ward-75, Dhaka | 90.4211 | 23.7184 | Dhaka |
|  | New Elephant Road WASA Water Pump, | 90.3897 | 23.7391 | Dhaka |
|  | Dhanmondi WASA Rd No. 8A, Dhaka 1209 | 90.3717 | 23.7504 | Dhaka |
|  | Tejkunipara WASA Pump W Nakhalpara Rd, Dhaka 1215 | 90.3951 | 23.7652 | Dhaka |
|  | Pirerbug Wasa Pump Pirerbag Rd, Dhaka | 90.3674 | 23.7892 | Dhaka |
|  | Wasa Pump Jhilpar Rd, Dhaka 1206 | 90.3815 | 23.7929 | Dhaka |
|  | Dhaka WASA Rd No 3, Dhaka 1230 | 90.3820 | 23.8689 | Dhaka |
|  | Chattogram WASA Office | 91.4224 | 22.3515 | Chattogram |
|  | Batali Hill Reservoir | 91.8173 | 22.3445 | Chattogram |
|  | Almas Pump House | 91.8254 | 22.3497 | Chattogram |
|  | Mehedibug WASA Officer’s Quarter | 91.8248 | 22.3571 | Chattogram |
|  | Nasirabad WASA Staff Quarter | 91.8166 | 22.3728 | Chattogram |
|  | Khulshi Pump House | 91.8139 | 22.3615 | Chattogram |
|  | Holly Criscent Pump House | 91.8091 | 22.3619 | Chattogram |
|  | World Bank Clolony, P-Block | 91.7846 | 22.3751 | Chattogram |
|  | D.T. Road Booster | 91.7820 | 22.3629 | Chattogram |
|  | WASA Halishahar Store (Water Tank) | 91.7789 | 22.3422 | Chattogram |
|  | Noyabazar WASA Staff Quarter | 91.7899 | 22.3445 | Chattogram |
|  | Monsurabad Pump House | 91.8032 | 22.3433 | Chattogram |
|  | Potenga Booster Station | 91.7987 | 22.3120 | Chattogram |
|  | Agrabad WASA Staff Quarter | 91.8076 | 22.3264 | Chattogram |
|  | MOD-1 WASA Office | 91.8126 | 22.3299 | Chattogram |

**Appendix B. Items for which Manufacturer’s Authorizations are required.**

The Supplier shall arrange Manufacturer’s Authorizations for the following items:

|  |  |  |
| --- | --- | --- |
| **S.N.** | **Description of Goods** | **Ref. to Line Items in List of Goods and Delivery Schedule Table** |
|  | Data Collection Platform (DCP) | 1, 12, 23 |
|  | Temperature/Relative Humidity Sensor | 3, 14 |
|  | Wind Speed and Direction Sensor | 4, 15 |
|  | Automatic Rain Gauge (Tipping Bucket Rain Gauge) | 5, 16 |
|  | Solar Radiation Sensor | 6, 17 |
|  | Sunshine Duration Sensor | 7 |
|  | Atmospheric Pressure Sensor | 8, 18 |
|  | Soil Temperature Sensor | 19 |
|  | Field Temperature and Relative Humidity Reference Standard (for field calibration purpose) | 29 |
|  | Field Rain Gauge Check Standard (for field calibration purpose) | 30 |
|  | Field Atmospheric Pressure Check Standard (for field calibration purpose) | 31 |
|  | Meteorological Data Collection Server (Server-1) | 32 |
|  | Meteorological Data Processing and Data Exchange Physical Server (Server-2, Server-3(Redundant)) | 33 |
|  | Cloud server for web and visualization software (Server 4 on cloud) | 34 |
|  | Web Server (Server-5) | 35 |
|  | Network Assistant Server (NAS) (For data archiving) | 36 |
|  | Network Router | 37 |

**Appendix-C**

**Draft AMC (Supplementary Contract)**

**Annual Maintenance Contract (AMC)**

between

**Bangladesh Meteorological Department**

and

**< to be inserted >**

for

Operation, Troubleshooting, Maintenance, Repairing, Servicing, Support and Overall Management of Synoptic AWS, Ag-AWS and ARG

<DAY><MONTH><YEAR>

Annual Maintenance Contract (AMC) For Operation, Troubleshooting, Maintenance, Repairing, Servicing, Support and Overall Management of Synoptic AWS, Ag-AWS and ARG

Agreement No. BMD/BWCSRP (Comp-A)/BMD-G-1/

THIS AGREEMENT made

the *[ insert:* ***number****]* day of *[ insert:* ***month****]*, *[ insert:* ***year****]*.

BETWEEN

(1) Bangladesh Meteorological Department, an agency of Ministry of Defence of the Government of the People’s Republic of Bangladesh and having its principal place of business at E-24, Agargaon, Dhaka-1207, Bangladesh (hereinafter called “*the Purchaser*”), of the one part, and

(2) *[ insert name of Supplier ]*, a corporation incorporated under the laws of *[ insert: country of Supplier]* and having its principal place of business at *[ insert: address of Supplier ]* (hereinafter called “*the Supplier*”), of the other part :

WHEREAS *the Purchaser* invited bids for certain services, viz., Operation, Troubleshooting, Maintenance, Repairing, Servicing, Support and Overall Management of Synoptic AWS, Ag-AWS and ARG and has accepted a Bid by *the Supplier* for the supply of those and Services.

*The Purchaser* and *the Supplier* reach an agreement (hereinafter called “Service Level Agreement”, SLA for short), as follows:

|  |  |
| --- | --- |
| **1. Effectiveness of the Agreement** | This agreement shall become effective –   1. Once *the Purchaser* has issued a letter of commencement of the services to be rendered by *the Supplier* mentioning availability of fund, *the Purchaser’s* satisfaction on services rendered & necessity of *the Supplier’s* further services; AND 2. *The Supplier* has submitted a Performance Security as stated in clause no.16 of this agreement. |
| **2. Purpose of the agreement** | The purpose of this SLA is to formalize an arrangement between *the* *Purchaser* and *the* *Supplier* to deliver Operation, Troubleshooting, Maintenance, Repairing, Servicing, Support and Overall Management of Synoptic AWS, Ag-AWS and ARG at specific levels of support, and at an agreed-upon cost. |
| **3. Core activity under the agreement** | To keep the systems (Operation, Troubleshooting, Maintenance, Repairing, Servicing, Support and Overall Management of Synoptic AWS, Ag-AWS and ARG) 100% functional during 03 (three) years after completion of 02 (two) year mandatory warranty period. *The Supplier* should take appropriate action to repair any faulty instrument and should not wait for a complaint from *the Purchaser* to initiate action. |
| **4. Definition** | 1. **Remote Site –** Remote site is the site at remote location where sensors, equipment, IT system and necessary appliances regarding Synoptic AWS, Ag-AWS and ARG are installed. 2. **Server (Data Centre) –** Server (Data Center) is the respective server where data is expected to be received. In case of GSM & GPRS based telemetry, the data center is the server installed in BMD data center for receiving GSM & GPRS transmission. 3. **Invalid Data –** A data would be considered **invalid** if  * The value recorded / transmitted is beyond permissible limit for that variable. The examples of invalid data are negative Temperature, Relative Humidity (RH) above 100% etc. The valid permissible upper limits and lower limits for each monitoring variable for each site would be provided to *the Supplier* by *the Purchaser*. * If the sensor value recorded / transmitted is having frequent / periodic gapes, then the data shall be considered as invalid data. * If the sensor value recorded / transmitted is remain constant, even if there is variation in the physical parameters. * If the sensor value recorded / transmitted is not in line with the value of co-located automatic / manual observation of the same sensor parameter.  1. **Failed Data Transmission –** For each remote station, each scheduled transmission (for all variables including battery voltage) would consist of one data transmission. A data transmission would be considered failed if any of the following conditions are true  * There is no transmission of data from remote site. * Data is transmitted from remote site but not received at Server (Data Center). * Data is recorded in datalogger but not transmitted. * Data is not recorded by datalogger. * Battery voltage and / or GPS status not transmitted. * Only battery voltage is transmitted without any actual data from sensors. * Data is transmitted but data values are **invalid.**  1. **Faulty Station -**A station would be considered faulty if:  * In case of daily transmission cycle, there are three or more than three failed daily data transmissions. * In case Datalogger is not recording any of the sensor Data / Battery voltage OR recording the **invalid** data of any of the sensor / Battery voltage for three or more than three days.  1. **Faulty Server (Data Center) –** A Server (Data Center) shall be treated as Faulty if  * Vital Hardware Equipment’s installed by *the Supplier* at Server (Data Center) Viz. Server, GSM modem, online UPS, Firewall system etc. are not functioning properly. * Supplier has failed to pay the communication charges (SIM, internet, GSM/GPRS etc.) & system is not in function due to unpaid communication charges. * Unauthorized absence of Supplier’s Operator/ Service Engineer at Server (Data Center).  1. **Maximum response time for Repair (MRTR)-**  * The MRTR for Remote station would be 72 hours. * The MRTR for Server (Data Center) would be 48 hours.  1. **Minimum time between repairs per Station--**The minimum time between repairs is six months. If a station went faulty for reasons attributed to Supplier and availed of MRTR once, it would not be eligible to avail the free repair period within payment period (six months). |
| 5. Corrupt and Fraudulent Practices | The Bank requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Appendix to the GCC Bank’s Policy- Corrupt and Fraudulent Practices. |
| 6. Services and Requests Covered Under this Agreement | The following services shall be provided by *the Supplier* to *the Purchaser*:  Operation, Troubleshooting, Maintenance, Repairing, Servicing, Support and Overall Management of Synoptic AWS, Ag-AWS and ARG |
| 7. Scope of Services | The scope of services includes the following activities.   1. Undertake services of Operation, Troubleshooting, Maintenance, Repairing, Servicing, Support and Overall Management of Synoptic AWS, Ag-AWS and ARG stations 100 % functional. 2. Provide training (class room training, on-job training etc.) and capacity building activities for *the Purchaser* nominated personnel for Operation, Troubleshooting, Maintenance, Repairing, Servicing, Support and Overall Management of Synoptic AWS, Ag-AWS and ARG stations so that the trained-up personnel can keep the stations 100 % functional. 3. Replace spare parts as and when required. 4. Develop reports and products as directed by *the Purchaser*. 5. Provide documentation. |
| 8. Scheduled Maintenance visits | *The Supplier* shall make sure that preventive maintenance is carried out at all stations for at least twice a year whereby the Supplier shall furnish a schedule.  During maintenance visit, *the Supplier’s* personnel should follow standard maintenance procedures, the procedures to be developed and submitted by *the Supplier*.  During the maintenance visits, *the Supplier’s* nominated representative should make sure that:   * Desiccant is replaced * The battery is in proper operating condition, and free from leads/corrosion * All the sensors and devices are working * Confirmation of weather sensor data * All wires are tight with no loose connection * Any damage to the equipment by environment, animal or human factors or any other factor * The site is clean and free from any kind of grass, debris, waste and any unnecessary elements including inflammable substances.   *The Supplier’s* representative shall take time stamped geo-tagged photographs during each such maintenance visits for each site. The pictures should clearly show 1) Status before maintenance, 2) status during maintenance and 3) status after maintenance. All these three photographs along with maintenance report should be submitted to *the Purchaser*. |
| 9. Notice | *The Purchaser* shall not be obliged to give any notice to *the Supplier* regarding any non-functional station. *The Supplier* shall pro-actively detect any such fault and act through service engineer provided under this contract to correct the problem. |
| 10. Penalty | The failure of *the Supplier* to make the equipment fully functional within 72 hours of such fault would attract a penalty of BDT 2000/= (Tk. Two Thousand Only) per station per day. The amount of penalty would be recovered from the bank guarantee or from pending payments. |
| **11. Settlement of Dispute** | 1. *The Purchaser* and *the Supplier* shall make every effort to resolve any disagreement/ dispute arising between them under and/or in connection with the Contract amicably by direct informal negotiation. 2. If, after twenty-eight (28) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either *the Purchaser* or *the Supplier* may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given. Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the services under the Contract. Arbitration proceedings shall be conducted in accordance with the following rules of procedure. 3. **Contract with foreign Supplier:** Any dispute, controversy or claim arising out of or relating to this Contract, or breach, termination or invalidity thereof, shall be settled by arbitration in accordance with the UNCITRAL Arbitration Rules as at present in force. 4. **Contracts with Supplier national of the Purchaser’s country:** In the case of a dispute between *the Purchaser* and a Supplier who is a national of *the Purchaser’s* country, the dispute shall be referred to adjudication or arbitration in accordance with the laws of *the Purchaser’s* country. 5. Notwithstanding any reference to arbitration herein, 6. the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and 7. *the Purch*aser shall continue the payment to *the Supplier* as per payment condition. |
| **12. Nature of Agreement in terms of Price** | **It is a total price contract for Operation, Troubleshooting, Maintenance, Repairing, Servicing, Support and Overall Management of Synoptic AWS, Ag-AWS and ARG (Comprehensive Annual Maintenance Contract) for a period of 03 (three) years.** The prices charged for the Goods supplied and the related Services performed shall not be adjustable. |
| **13. Agreement Price** | **Total Agreement price is :**  **Bangladesh Taka** – <to be inserted>  **Foreign currency** – <to be inserted> |
| **14. Payment Mode** | **Annual Maintenance Contract (AMC) price inclusive of AIT & VAT payable on it shall be paid in 06 (six) equal installments on half yearly basis within 30 (thirty) days upon** submission of claim supported by agreed documents. |
| **15. Payment Condition** | The payment would be released proportion to data received at the Server (Data Center). A table below presents the percentage of data reception and corresponding payment:   |  |  | | --- | --- | | **Percentage of data received** | **Payment to be made to the Supplier** | | 98% to 100% | 100% of (16.66% of contract price to be paid six monthly) | | 95% to below 98% | 90% of (16.66% of contract price to be paid six monthly) | | 90% to below 95% | 80 % of (16.66% of contract price to be paid six monthly) | | 85% to below 90% | 70 % of (16.66% of contract price to be paid six monthly) | | Below 85% | No payment allowed | |
| **16. Performance Security** | 1. A Performance Security shall be required (within 21 days of receiving the letter of Commencement for rendering services issued by *the Purchaser*). 2. The amount of the Performance Security shall be: 10% of the Contract price valid up to 28 days after the date of completion of performance obligations. 3. The Performance Security shall be in the form of Bank Guaranty. 4. The Performance security shall be denominated in the currencies of payment of the Contract, in accordance with their portions of the Contract Price. If the bank guarantee issued by a commercial bank located outside *the Purchaser’s* country, the bank guarantee shall be endorsed by a local commercial bank of *the Purchaser’s* country. 5. The Performance Security shall be discharged by *the Purchaser* and returned to *the Supplier* not later than twenty-eight (28) days following the date of Completion of *the Supplier’s* performance obligations under the contract. |
| **17. Supplier’s Liability** | The following limitation of *the Supplier’s* Liability towards *the Purchaser*:  **“Limitation of** *the Supplier’s* **Liability towards** *the Purchaser***:**   1. Except in the case of gross negligence or willful misconduct on the part of *the Supplier* or on the part of any person or a firm acting on behalf of *the Supplier* in carrying out the Services, *the Supplier*, with respect to damage caused by *the Supplier* to *the Purchaser’s* property, shall not be liable to the Client:   (i) for any indirect or consequential loss or damage;   1. This limitation of liability shall not   (i) affect the Supplier’s liability, if any, for damage to Third Parties caused by the Supplier or any person or firm acting on behalf of the Suppliers in carrying out the Services;  (ii) be construed as providing *the Suppliers* with any limitation or exclusion from liability which is prohibited by the **Applicable Law.** |
| **18. Insurance** | The insurance coverage against the risks shall be as follows:  **(**a) Professional liability insurance, with a minimum coverage of 110% of the total Annual Maintenance Contract ceiling. |
| **19. Reporting obligation of the Supplier** | *The Supplier* is responsible to submit monthly report.  *The Supplier* in consultation with *the Purchaser* shall develop appropriate format for monthly report which shall comprise the summary of Synoptic AWS, Ag-AWS and ARG stations including (but not limited to) the followings of the reported month:   1. Station summary: 2. Number of days stations (Synoptic AWS, Ag-AWS and ARG) shut down with reason 3. Number of penalty days 4. Equipment theft/ damaged/ replaced 5. Any risks assumed and any issues identified 6. Any recommendations/ suggestions 7. Summary of field maintenance activities: 8. Number of stations visited for preventative maintenance including problem and action taken 9. Number of stations visited for emergency maintenance including problem and action taken 10. Details activities of *the Supplier’s* nominated personnel such as station wise number of days worked, vacation, sick, types of work performed etc. 11. Summary of Data Center/ Server/ IT activities including: 12. Server downtime and reason for downtime 13. Software/ hardware upgrades 14. Troubleshooting of software/ hardware 15. Maintenance activity log   The monthly report shall be submitted by *the Supplier* to *the Purchaser* within 07 days of every month.  Engineers/ Technicians/IT Personnel and other staffs deployed by the *Supplier* shall be responsible for using the time series database to perform quality control and establish a “data for record” database. Data shall be processed and stored no later than two months after the data is received at the server. |
| **20. Documentation** | *The Supplier* shall provide complete written documentation, including data sheets and operating manuals of the data logger, sensor and ancillary equipment including solar panels, batteries etc. This shall be bound in binder(s) with 05 (five) copies of this written material provided to *the Purchaser*.  The documentation shall also be provided in electronic form on USB drives supplied by *the Supplier*. *The Supplier* shall prepare 05 (five) such USB drives with all required documentation on each of the 05 USB drives. |
| **21. Responsibility of Purchaser under the Agreement** | 1. *The Purchaser* is responsible for taking permissions for land to be used to install the stations. The space required is free from obstacles. 2. *The purchaser* is responsible for food, per-diem and incidental charges for *the Purchaser’s* personnel during field visits for monitoring and supervision of *the Supplier’s* activities regarding installation/ configuration/ administration/ commissioning/ Operation/ Troubleshooting/ Maintenance/ Repairing/ Servicing/ Support/ Management of Synoptic AWS, Ag-AWS and ARG stations. 3. *The Purchaser* shall provide list and location details of Synoptic AWS, Ag-AWS and ARG stations. 4. *The Purchaser* shall provide training venue with related facilities (training room, computer, projector, white board, desk etc.) |
| **22. Responsibility of Supplier under the Agreement** | 1. *The Supplier* shall be responsible for obtaining all tools and equipment necessary to install/ configure/ administer/ commission/ operate/ troubleshoot/ maintain/ repair/ service/ support/ manage the Synoptic AWS, Ag-AWS and ARG stations and keep the stations 100 % functional. 2. *The Supplier* shall be responsible in acquiring vehicles for field use and paying all expenses related to these vehicles. It is recommended that the vehicles be 4x4 trucks. It is required that there will be a minimum of one vehicle for each two-person team that is stationed at divisional (field) offices. 3. *The Supplier* shall be responsible for arranging the vehicles for transport during preventive maintenance and emergency maintenance visits to remote sites, which includes *the Supplier’s* personnel and accompanying *the Purchaser’s* representatives. 4. *The Supplier* shall be responsible for obtaining office devices and supplies for their use, such as computer printers, paper stock, pen, pencil, marker etc. 5. *The Supplier* shall be responsible for acquiring computers for field use, and prepare reports, necessary documents etc. 6. *The Supplier* shall be responsible for acquiring internet connectivity at the field offices for their own staff (Engineers, Technicians, IT Personnel etc.). 7. *The Supplier* shall be responsible for paying all the GSM mobile charges for SIM cards and data at remote sites. 8. *The Supplier* shall be responsible for paying all the data and telemetry charges, subscriptions for satellite telemetry (if any) at remote sites and BMD headquarters. 9. *The Supplier* shall be responsible for paying all the salaries, per-diem, travel and all incidental charges for their personnel deployed at BMD headquarters and field offices. 10. *The Supplier* shall be responsible for paying all transport and shipping, packing / unpacking, installation / un-installation charges for replacement / repair of defective equipment. 11. *The Supplier* shall be responsible for paying all replacement spare parts, batteries, etc. whenever required. 12. *The Supplier* shall be responsible to submit Geo-tagged time stamped photographs during maintenance visits. |
| **23. Inspection and Audit by the Bank** | 1. *The Supplier* shall keep, and shall make all reasonable efforts to cause its Sub-contractors to keep, accurate and systematic accounts and records in respect of the Goods in such form and details as shall clearly identify relevant time changes and costs. 2. *The Supplier* shall permit, and shall cause its Sub-contractors to permit, the Bank and/or persons appointed by the Bank to inspect *the Supplier’s* offices and all accounts and records relating to the performance of the Contract and the submission of the bid, and to have such accounts and records audited by auditors appointed by the Bank if requested by the Bank. *The Supplier’s* and its Sub-contractors and consultants’ attention is drawn to Clause 5 [Corrupt and Fraudulent Practices], which provides, inter alia, that acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under this Clause constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank’s prevailing sanctions procedures). |
| **24. General Terms** | 1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them. 2. In consideration of the payments to be made by *the Purchaser* to *the Supplier* as specified in this Agreement, *the Supplier* hereby covenants with *the Purchaser* to provide the Services and to remedy defects therein in conformity in all respects with the provisions of the Contract. 3. *The Purchaser* hereby covenants to pay *the Supplier* in consideration of the provision of the Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract (Clause 15) at the times and in the manner prescribed by the Contract. |

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of Bangladesh on the day, month and year indicated above.

|  |  |
| --- | --- |
| **For the Purchaser:** | **For the Supplier:** |
|  |  |
| In the presence of |  |
| 1. | 1. |
| 2. | 2. |

**End of Document**

1. [↑](#footnote-ref-1)
2. *Bidder to use as appropriate* The amount of the Bond shall be denominated in the currency of the Purchaser’s country or the equivalent amount in a freely convertible currency. [↑](#footnote-ref-2)
3. In this context, any action to influence the procurement process or contract execution for undue advantage is improper. [↑](#footnote-ref-3)
4. For the purpose of this sub-paragraph, “*another party*” refers to a public official acting in relation to the procurement process or contract execution. In this context, “*public official*” includes World Bank staff and employees of other organizations taking or reviewing procurement decisions. [↑](#footnote-ref-4)
5. For the purpose of this sub-paragraph, “party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution. [↑](#footnote-ref-5)
6. For the purpose of this sub-paragraph, “parties” refers to participants in the procurement process (including public officials) attempting either themselves, or through another person or entity not participating in the procurement or selection process, to simulate competition or to establish bid prices at artificial, non-competitive levels, or are privy to each other’s bid prices or other conditions. [↑](#footnote-ref-6)
7. For the purpose of this sub-paragraph, “party” refers to a participant in the procurement process or contract execution. [↑](#footnote-ref-7)
8. A firm or individual may be declared ineligible to be awarded a Bank financed contract upon: (i) completion of the Bank’s sanctions proceedings as per its sanctions procedures, including, inter alia, cross-debarment as agreed with other International Financial Institutions, including Multilateral Development Banks, and through the application the World Bank Group corporate administrative procurement sanctions procedures for fraud and corruption; and (ii) as a result of temporary suspension or early temporary suspension in connection with an ongoing sanctions proceeding. See footnote 14 and paragraph 8 of Appendix 1 of these Guidelines. [↑](#footnote-ref-8)
9. A nominated sub-contractor, consultant, manufacturer or supplier, or service provider (different names are used depending on the particular bidding document) is one which has either been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower. [↑](#footnote-ref-9)
10. In this context, any action to influence the procurement process or contract execution for undue advantage is improper. [↑](#footnote-ref-10)
11. For the purpose of this sub-paragraph, “*another party*” refers to a public official acting in relation to the procurement process or contract execution. In this context, “*public official*” includes World Bank staff and employees of other organizations taking or reviewing procurement decisions. [↑](#footnote-ref-11)
12. For the purpose of this sub-paragraph, “party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution. [↑](#footnote-ref-12)
13. For the purpose of this sub-paragraph, “parties” refers to participants in the procurement process (including public officials) attempting either themselves, or through another person or entity not participating in the procurement or selection process, to simulate competition or to establish bid prices at artificial, non-competitive levels, or are privy to each other’s bid prices or other conditions. [↑](#footnote-ref-13)
14. For the purpose of this sub-paragraph, “party” refers to a participant in the procurement process or contract execution. [↑](#footnote-ref-14)
15. A firm or individual may be declared ineligible to be awarded a Bank financed contract upon: (i) completion of the Bank’s sanctions proceedings as per its sanctions procedures, including, inter alia, cross-debarment as agreed with other International Financial Institutions, including Multilateral Development Banks, and through the application the World Bank Group corporate administrative procurement sanctions procedures for fraud and corruption; and (ii) as a result of temporary suspension or early temporary suspension in connection with an ongoing sanctions proceeding. See footnote 14 and paragraph 8 of Appendix 1 of these Guidelines. [↑](#footnote-ref-15)
16. A nominated sub-contractor, consultant, manufacturer or supplier, or service provider (different names are used depending on the particular bidding document) is one which has either been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower. [↑](#footnote-ref-16)
17. *1 The Guarantor shall insert an amount representing the percentage of the Accepted Contract Amount specified in the Letter of Acceptance, and denominated either in the currency(ies) of the Contract or a freely convertible currency acceptable to the Beneficiary.* [↑](#footnote-ref-17)
18. *2 Insert the date twenty-eight days after the expected completion date as described in GC Clause 18.4. The Purchaser should note that in the event of an extension of this date for completion of the Contract, the Purchaser would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Purchaser might consider adding the following text to the form, at the end of the penultimate paragraph: “The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Beneficiary’s written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.”* [↑](#footnote-ref-18)
19. 1 *The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Purchaser.* [↑](#footnote-ref-19)