



ISO 9001:2015, ISO 14001:2015 &
ISO 45001:2018 CERTIFIED

BANGLADESH RURAL ELECTRIFICATION BOARD (BREB)

TENDER DOCUMENT FOR THE

Design, Supply, Installation, Testing & Commissioning etc. All Complete as
Required for Establishment of SCADA System for 4 Sub-stations inclusion with
Existing SCADA at Narsingdi PBS-1 (Turn-key).

UNDER

MCEP (DMD) (Modernization and Capacity Enhancement of BREB Network
(Dhaka - Mymensingh Division), BREB.

Tender Package No.: “MCEP/BREB/DMD-W-391”

ISSUED TO:

M/S..... Tender Ref.

No:27.12.0000.224.11.030.23.572; Date: 19-04-2026 ON

BEHALF OF THE OFFICE OF

Project Director

Modernization and Capacity Enhancement of BREB Network (Dhaka- Mymensingh
Division) (1st Revised) Project, **BREB**.

Address: Bangladesh Rural Electrification Board, Head Office, Training Academy
Building, Nikunja-2, Khilkhet, Dhaka-1229.

Floor: 6th Floor, City: Dhaka-1229, Country:

Bangladesh. Telephone: +88-028900070

Electronic mail address: pdmcepdmd@gmail.com

Seal & Signature

 বাংলাদেশ পল্লী বিদ্যুতায়ন বোর্ড Bangladesh Rural Electrification Board বাপবিবো/জন-()/২০২৫-২০২৬			
Invitation for Tender [(OSTETM) ICT] Bangladesh Rural Electrification Board			
1	Ministry/Division	Power Division, Ministry of Power, Energy and Mineral Resources.	
2	Agency	Bangladesh Rural Electrification Board.	
3	Procuring Entity Name & District	Project Director, “Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) (1 st Revised) Project”, BREB, Dhaka, Bangladesh.	
4	Invitation for Tender Name	Design, supply, installation, testing, and commissioning etc all Complete as Required for Establishment of SCADA System for 4 Sub-stations inclusion with existing SCADA at Narsingdi PBS-1 on Turn-key basis.	
5	Invitation Ref No. & date	27.12.0000.224.11.030.23.572; Date: 19-04-2026	
KEY INFORMATION			
6	Procurement Method	One Stage Two Envelope Tendering Method (OSTETM) (ICT)	
FUNDING INFORMATION			
7	Budget and Source of Funds	GOB, BREB Project Aid	
8	Development Partners (if applicable)	World Bank, IDA	
PARTICULAR INFORMATION			
9	Project/ Programme/Name/ Code	“Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) Project (1 st Revised)”, BREB, Dhaka, Bangladesh.	
10	Tender Package No.	MCEP/BREB/DMD-W-391	
11	Tender Publication Date	Within 21-04-2026	
12	Tender Last Selling Date/Closing Date & Time	03-06-2026 up to office time (BST)	
13	Last date for Submission of Tender & Time	04-06-2026 up to 12.00 noon(BST)	
14	Date and Time for opening of Tender & Time	04-06-2026 at 12.30 noon(BST)	
15	Date and Time for Pre-Tender Meeting & Time	06-05-2026 at 11.00 AM(BST)	
16	Tender Document including Profile & Typical Drawing will be available for information only in the BREB website.	BREB website: www.reb.gov.bd , BPPA website	
17	Name & Address of the office	Address	
	- For Selling Tender Document	Office of The Project Director	
	- For Receiving Tender Document	“Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) (1 st Revised) Project”, 6 th Floor, Training Academy Building, BREB, Nikunja-2, Khilkhet, Dhaka-1229, Bangladesh.	
	- For Opening Tender Document		
	-For Pre-Tender Meeting		
INFORMATION FOR TENDERER (Details provided in respective tender document)			
18	Eligibility of Tenderers	Specific Experience: The Tenderer or in case of JVCA, any partner shall have the minimum specific experience as an EPC turnkey contractor or as a Contractor or Subcontractor or Management Contractor in similar to the proposed plant and services of at least one/more contracts for construction of maximum 3 (Three) numbers of Substation or Switching station with installation of SCADA or Substation automation system and integration with SCADA/SAS system for 33/11kV or highest voltage substation successfully completion within last 10 (Ten) years with total value as below:	
		Package No.	Amount (USD/ Equivalent)
		MCEP/BREB/DMD-W-391	400,000.00 USD or Equivalent.
• Details provided as in Tender documents			
19	Price of Tender Document (Tk.)	Tk.8,000.00 (non-refundable) for Per Document in the form of Pay Order / Bank Draft in favor of PD, Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) Project (1 st Revised)”, BREB, Dhaka, Bangladesh, from any schedule Bank of Bangladesh.	
20 Brief Description of the Services:			
Tender Package No.		ID	Description & Location of Works
MCEP/BREB/DMD-W-391		391/1	Design, supply, installation, testing, and commissioning etc all Complete as Required for Establishment of SCADA System for 4 Sub-stations inclusion with existing SCADA at Narsingdi PBS-1 on Turn-key basis.
21		Regarding Tender Document	Tender Document can be purchased by the interested tenderer on submission of a written application to the address below upon the payment of non-refundable Tk. 8,000.00 (Taka Eight Thousand) for each package/per document in the form of Pay Order / Bank Draft in favor of Project Director “Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) (1 st Revised) Project” BREB, Dhaka, Bangladesh. No tender document will be sent by courier or by mail.
22		Special Instruction	Tender document can be viewed at BREB website that is www.reb.gov.bd for information only. (2) Tenderer and their authorized representatives shall be allowed to attend at the time of opening tender, (3)Tenderer shall submit their tender following the requirements as specified in the tender document
PROCURING ENTITY DETAILS			
23	Name of official Inviting Tender		Mohammad Ali
24	Designation of official Inviting Tender		Project Director, “Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) (1 st Revised) Project”, BREB
25	Address of official Inviting Tender		Training Academy Building, 6 th Floor, Bangladesh Rural Electrification Board, Nikunja-2, Khilkhet, Dhaka-1229.
26	Contract details of official Inviting Tender		Tel. # 02-8900070, E-mail: pdmcepdmd@gmail.com
27	The Purchaser reserves the right to reject all tenders or annul the tender documents.		
 ISO:9001, ISO: 14001 & ISO45001 Certified		Project Director, Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) (1st Revised) Project”, 6th Floor, Training Academy Building, BREB, Nikunja-2, Khilkhet, Dhaka -1229, Bangladesh. Phone: 02-8900070.	

Guidance Notes on the Use of The Standard Tender Document

These guidance notes have been prepared by the BPPA to assist a Purchaser in the preparation, using the Standard Tender Document (STD), for the Supply & Installation of Plant & Equipment. The Purchaser should also refer to the Public Procurement Act 2006 (PPA 2006) and the Public Procurement Rule 2025 (PPR2025), issued to supplement the ACT, available on BPPA's website www.bppa.gov.bd/. All concerned are advised to refer to the aforementioned Act and Rules, while participating in any Tendering process.

The use of STD (PG5A) applies when a Purchaser (Procuring Entity) wishes to select a Tenderer (a Supplier/contractor) for the Supply & Installation of Plant & Equipment under Turnkey Contract (**combination of goods, works and services**) in international competition for which the Contract award is being determined on the basis of the responsive lowest evaluated Tender.

STD(PG5A) is based upon internationally acceptable model formats, which have been adapted to suit the particular needs of procurement for Bangladesh. STD (PG5A) has Seven (7) Sections, of which Section 1 (Instructions to Tenderers) and Section 3 (General Conditions of Contract) **shall not be altered or modified under any circumstances.** The **Invitation for Tenders (IFT)** is provided in the Tender Document for information only.

The way in which a Purchaser/Procuring Entity addresses its specific needs is through the information provided in the **Tender Data Sheet (TDS)** and the **Particular Conditions of Contract (PCC)** as well as in the detailed requirements of the procurement in the **Procuring Entity's Requirements**, and/or the **Drawings**.

Guidance notes in brackets and italics are provided for both the Purchaser and the Tenderer and the Purchaser should carefully decide what notes need to remain and what other guidance notes might be required to assist the Tenderer in preparing its Tender Submission so as to minimise an inept Tendering process.

STD (PG5A) provides all the information that a Tenderer needs in order to prepare and submit a Tender. This should provide a sound basis on which a Purchaser/Procuring Entity can fairly, transparently and accurately carry out a Tender evaluation process on the Tenders submitted by the Tenderers.

The following briefly describes the Sections of the **STD (PG5A)** and how a Purchaser should use these when preparing a particular Tender Document.

Section 1. Instructions to Tenderers (ITT)

This Section provides relevant information to help Tenderers prepare their Tenders. Information is also provided on the submission, opening, and evaluation of Tenders and on the award of Contract. The Instructions to Tenderer (ITT) specify the instruction and procedure that govern the tendering process. This Section also contains the criteria to be used by the Purchaser in order to determine the responsive lowest evaluated Tender and the qualifications of the Tenderer to perform the Contract. The Instructions to Tenderer are not a Contract document and, therefore, are not a part of the Contract.

(The text of the clauses in this Section shall not be modified.)

Section 2. Tender Data Sheet (TDS)

This Section provides the information that is specific to each object of procurement and that supplements the information or requirements included in Section 1: Instructions to Tenderers.

The Purchaser shall specify in the TDS only the information that the ITT instruct, be specified in the TDS.

To facilitate the preparation of the TDS, its clause numbers are numbered with the same numbers of corresponding ITT Clauses.

Section 3. General Conditions of Contract (GCC)

This Section provides the General Conditions of Contract that will apply to the Contract for which the Tender document is issued.

The GCC clearly identify the provisions that may normally need to be specified for a particular tendering process and need to be addressed through the PCC. The GCC is a Contract document and, therefore, is a part of the Contract
(The text of the clauses in this Section shall not be modified.)

Section 4. Particular Conditions of Contract (PCC)

This Section provides clauses specific to the particular Contract that modify or supplement Section 3: General Conditions of Contract.

The Purchaser/Procuring Entity should include at the time of issuing the Tender Documents all information that the GCC indicate shall be provided in the PCC. No PCC Clause should be left blank.

To facilitate the preparation of the PCC, its clause numbers are numbered with the same numbers of the corresponding GCC Clauses.

Section 5. Tender and Contract Forms

This Section provides the standard form for the **Tender Submission Letter (Form PG5A-1a, PG5A-1b)**, **Tenderer Information Sheet (PG5A-2a)**, **JVCA Partner Information Sheet (PG5A-2b)**, **Sub-contractor Information (PG5A-2c)**, **Price Schedule for Plant and Services (Form PG5A-3)**, **Technical Proposal (Form PG5A-4)**, **Manufacturer's Authorisation Letter (Form PG5A-5)** and **Bank Guarantee for Tender Security (Form PG5A-6)** **Letter of Commitment for Bank's undertaking for Line of Credit (Form PG5A-6a)** to be submitted by the Tenderer. [Note: Reference to rules, no joint venture is allowed for procurement of goods but it may be applicable in this document due to turnkey contract is the combination of goods, works and services]

This Section also contains the form of the **Notification of Award (Form PG5A-7)** and **Contract Agreement (Form PG5A-8)**, which when completed, incorporates any corrections or modifications to the accepted Tender relating to amendments permitted by the Instructions to Tenderers, the General Conditions of Contract (GCC), and the Particular Conditions of Contract (PCC).

The forms of **Bank Guarantee for Performance Security (Form PG5A-9)** and **Bank Guarantee for Advance Payment Security (Form PG5A-10)** and **Bank Guarantee for Retention Money Security (Form PG5A-11)** if applicable, are to be submitted by the successful Tenderer.

Section 6. Procuring Entity's Requirements

This Section contains the Scope of supply and installation services by the Contractor, Specification, and supplementary information that describe the Plant and Installation Services to be procured.

Section 7. Drawings

This Section contains any Drawings that supplement the Technical Specifications for the Plant and Services to be procured.

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Design, Supply, Installation, Testing & Commissioning etc. All Complete as Required for Establishment of SCADA System for 4 Sub-stations inclusion with Existing SCADA at Narsingdi PBS-1 (Turn-key).

UNDER

MCEP (DMD) (Modernization and Capacity Enhancement of BREB Network (Dhaka - Mymensingh Division), BREB.

[Enter here the nature of the plants, works and physical services to be procured]

Invitation for Tender No: 27.12.0000.224.11.030.23.572

Issued on:

Tender Package No: “MCEP/BREB/DMD-W-391”

Tender Lot No: Single Lot

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Section-1: Instructions to Tenderer

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A. General

1. Scope of Tender	1.1	The Procuring Entity, as indicated in the Tender Data Sheet (TDS) issues this Tender Document for the supply and installation of plant and equipment incidental thereto as specified in the TDS and as detailed in Section 6: Schedule of Requirements . The name of the Tender and the number and identification of its constituent lot(s) are stated in the TDS .
	1.2	The successful Tenderer shall be required to execute the Plant and Equipment as specified in the General Conditions of Contract and Particular Conditions of Contract.
2. Interpretation	2.1	(a) the term “in writing” means communication written by hand or machine duly signed and includes properly authenticated messages by facsimile or electronic mail; (b) if the context so requires, singular means plural and vice-versa; (c) “day” means calendar days unless otherwise specified as working days; (d) “Person” means and includes an individual, body of individuals, sole proprietorship, partnership, company, association or cooperative society, NGO that wishes to participate in Procurement proceedings; (e) “Tenderer” means a Person who submits a Tender; (f) “Tender Document” means the Document provided by a Procuring Entity to a Tenderer as a basis for preparation of the Tender; and (g) “Tender” depending on the context, means a Tender submitted by a Tenderer for delivery of Goods to a Procuring Entity in response to an Invitation for Tender. (h) “BPPA” means the Bangladesh Public Procurement Authority formed under the Bangladesh Public Procurement Authority Act, 2023.
3. Source of Funds	3.1	The Procuring Entity has been allocated public funds as indicated in the TDS and intends to apply a portion of the funds to eligible payments under the Contract for which this Tender Document is issued.
	3.2	For the purpose of this provision, “public funds” means any monetary resources appropriated to the Procuring Entity under Government budget, or financing, grants and credits placed at the disposal of the Procuring Entity through the Government by the development partners or foreign states or organisations and also includes any fund of a government, semi-government or a statutory body established by law.
	3.3	Payments by the development partner, if so, indicated in the TDS , will be made only at the request of the Government and upon approval by the development partner or foreign state or Organisation in accordance with the applicable Financing/Credit/Grant Agreement, and will be subject in all respects to the terms and conditions of that Agreement.

4. Corrupt, Fraudulent, Collusive, Coercive or Obstructive Practices	4.1	The Government, and the Development Partner, if applicable, requires that the Procuring Entity as well as the Tenderers and Contractors (including sub-contractors, agents, personnel, consultants, and service providers) shall observe the highest standard of ethics during implementation of procurement proceedings and the execution of Contracts under public funds.
	4.2	For the purposes of ITT Sub Clause 4.3, the terms set forth below as follows: (a) “Corrupt practice” means offering or promising to offer, directly or indirectly, any bribe, employment, valuable item or service, or financial benefit to any officer or employee of the Procuring Entity or of any other public or private authority, with the intent to influence any act, decision, or procedure of the Procuring Entity in the course of the procurement process or contract execution, or the acceptance or solicitation of such by any officer or employee of the Procuring Entity. It shall also include any involvement of the Procuring Entity or any of its employees in corrupt, fraudulent, collusive, coercive, or obstructive practices as mentioned in this Rule; (b) “Fraudulent practice” means any act of providing false statements, dishonestly concealing information, or omitting or misrepresenting or distorting facts by any person to influence a decision in the procurement process or contract execution; (c) “Collusive practice” means a scheme or arrangement between two (2) or more Persons, knowingly or unknowingly involving the Procuring Entity or any of its employees, that is designed to arbitrarily reduce the number of Tenders submitted or fix Tender prices at artificial, non-competitive levels, thereby denying the Procuring Entity the benefits of competitive price arising from genuine and open competition; (d) “Coercive practice” means harming or threatening to harm, directly or indirectly, Persons or their property to influence a decision to be taken in the Procurement proceeding or the execution of a Contract, and this will include creating obstructions in the normal submission process used for Tenders. (e) “Obstructive practice” means deliberately destroying, falsifying, altering, or concealing evidence related to a procurement-related investigation, or providing false statements to an investigator so as to impede the investigation of allegations of corrupt, fraudulent, collusive, coercive, or obstructive practices; or intimidating, harassing, or threatening an investigator so as to discourage the disclosure of information or prevent the investigator from carrying out their duties, or directly or indirectly obstructing any action undertaken by the Bangladesh Public Procurement Authority (BPPA) in discharging its responsibilities assigned under the Bangladesh Public Procurement Authority Act, 2023.
	4.3	Should any corrupt, fraudulent, collusive, coercive or obstructive practice of any kind be determined by the Procuring Entity or the Development Partner, if applicable, this will be dealt in accordance with the provisions of the Public Procurement Act 2006 and Public Procurement Rules, 2025 and Guidelines of the Development Partners as stated in the ITT sub-clause 3.3.

	4.4	If corrupt, fraudulent, collusive, coercive or obstructive practices of any kind is determined by the Procuring Entity against any Tenderer or Contractors (including sub-contractors, agents, personnel, consultants, and service providers) in competing for, or in executing, a contract under public fund: (a) Procuring Entity and/or the Development Partner shall exclude the concerned Tenderer from further participation in the concerned procurement proceedings; (b) Procuring Entity and/or the Development Partner shall reject any recommendation for award that had been proposed for that concerned Tenderer; (c) Procuring Entity and/or the Development Partner shall declare, at its discretion, the concerned Tenderer to be ineligible to participate (debarment) in any Public Procurement proceedings for a specific period of time; (d) Procuring Entity shall suspend the concerned Tenderer from participating in any other procurement proceedings within the PE organization for the period of finalizing the debarment process; (e) Development Partner shall sanction the concerned Tenderer or individual, at any time, in accordance with prevailing Development Partner' sanctions procedures, including by publicly declaring such Tenderer or individual ineligible, either indefinitely or for a stated period of time: (i) to be awarded a Development Partner-financed contract; and (ii) to be a nominated sub-contractor, consultant, manufacturer or Contractor, or service provider of an otherwise eligible firm being awarded a Development Partner-financed contract; and (f) Development Partner shall cancel the portion of the financing allocated to a contract if it determines at any time that representatives of the Procuring Entity or of a beneficiary of the financing engaged in corrupt, fraudulent, collusive, coercive or obstructive practices during the procurement or the execution of that Development Partner financed contract, without the Procuring Entity having taken timely and appropriate action satisfactory to the Development Partner to remedy the situation.
	4.5	Tenderer shall be aware of the provisions on corruption, fraudulence, collusion, coercion and obstruction of the Public Procurement Act, 2006, the Public Procurement Rules, 2025 and others as stated in GCC Clause 38.
	4.6	In further pursuance of this policy, Tenderers, Contractors and their sub-contractors, agents, personnel, consultants, service providers shall permit the Government, the BPPA and the Development Partner to inspect any accounts and records and other documents relating to the Tender submission and contract performance, and to have them audited by auditors appointed by the Government, the BPPA and/or the Development Partner during the procurement or the execution of that Development Partner financed contract.

5. Eligible Tenderers	5.1	This Invitation for Tenders is open to all potential Tenderers from all countries, except for any specified in the TDS .
	5.2	Tenderers shall have the legal capacity (not barred by Public Procurement Act or any other law(s) to sign the contract) to enter into the Contract under the Applicable law.
	5.3	Tenderers shall be enrolled in the relevant professional or trade organisations registered in its own country.
	5.4	Tenderers may be a physical or juridical individual or body of individuals, or company, association or any combination of them in the form of a Joint Venture (JV) invited to take part in public procurement or seeking to be so invited or submitting a Tender in response to an Invitation for Tenders.
	5.5	Tenderers shall have fulfilled its obligations to pay taxes and social security contributions, if any, under the provisions of laws and regulations of the country of its origin.
	5.6	Tenderers should not be associated, or have been associated in the past, directly or indirectly, with a consultant or any of its Partners which have been engaged by the Procuring Entity to provide consulting services for the preparation of the design, specifications, and other documents to be used for the procurement of the works to be performed under this Invitation for Tenders.
	5.7	Tenderers in its own name or its other names or also in the case of its Persons in different names shall not be under a declaration of ineligibility due to suspension or debarment for corrupt, fraudulent, collusive, coercive or obstructive practices as stated under ITT Sub Clause 4.4.
	5.8	Tenderers are not currently restrained due to suspension or debarred from participating in Public Procurement on grounds of fundamental breach of contract under any Contract.
	5.9	Tenderers shall not be insolvent, be in receivership, be bankrupt, be in the process of bankruptcy, be not temporarily barred from undertaking business and it shall not be the subject of legal proceedings for any of the foregoing.
	5.10	Government-owned enterprise in Bangladesh may also participate in the Tender if it is legally and financially autonomous, it operates under commercial law, and it is not a dependent agency of the Procuring Entity.
	5.11	Tenderers shall provide such evidence of their continued eligibility satisfactory to the Procuring Entity, as the Procuring Entity will reasonably request.
	5.12	These above requirements for eligibility will extend, as applicable, to each JV partner and Subcontractor proposed by the Tenderers.

	5.13	A Tenderer shall not have a conflict of interest. Any Tenderer found to have a conflict of interest shall be disqualified. A Tenderer may be considered to have a conflict of interest for the purpose of this Tendering process, if the Tenderer: a) directly or indirectly controls, is controlled by or is under common control with another Tenderer; or b) receives or has received any direct or indirect subsidy from another Tenderer; or c) has the same legal representative as another Tenderer; or d) has a relationship with another Tenderer, directly or through common third parties, that puts it in a position to influence the Tender of another Tenderer, or influence the decisions of the procuring entity regarding this tendering process; or e) any of its partners participated as a consultant in the preparation of the design or technical specifications of the Goods that are the subject of the Tender.
	5.14	A Tenderer shall provide its/their Beneficial Ownership related information, as the specified in Form PG5A-2 , if it/they will be awarded the contract and declare their consent on publishing that information publicly following the signing of contract.
	5.15	A tenderer has not been under restriction imposed by any Development Partner operating in Bangladesh on grounds related to their procurement affairs.
6. Eligible Plants and Services	6.1	All plants and services to be supplied under the Contract are from eligible sources, unless their origin is from a country specified in the TDS and all expenditures under the contract will be limited to such plant, and services.
	6.2	For purposes of this Clause, the term “Plant” means permanent plant, equipment, machinery, apparatus, articles and things of all kinds to be provided in the facilities; and “installation services” means all those services ancillary to the supply of the Plant for the Facilities, such as transportation and provision of marine or other similar insurance, inspection, expediting, site preparation, installation, testing, pre-commissioning, commissioning, operations, maintenance, the provision of operations and maintenance manuals, training etc. For the purposes of this Clause, “origin” means the country where the plant, or component parts thereof are mined, grown, produced or manufactured, and from which the services are provided. Plant components are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that is substantially different in its basic characteristics or in purpose or utility from its components or 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 or the place from which the related services are supplied.
	6.3	The origin of plant and equipment and associated services is distinct from the nationality of the Tenderer. The nationality of the firm that produces, assembles, distributes, or sells the goods shall not determine their origin.

7. Site Visit	7.1	The Tenderer is advised to visit and examine the site where the plant is to be installed and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the tender and entering into a contract for the provision of Plant and Installation Services.
	7.2	The Tenderer and any of its personnel or agents will be granted permission by the Procuring Entity to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Tenderer, its personnel, and agents will release and indemnify the Procuring Entity and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
	7.3	The Tenderer should ensure that the Purchaser is informed of the visit in adequate time to allow it to make appropriate arrangements.
	7.4	The costs of visiting the Site shall be at Tenderer's own expense.

B. Tender Document

8. Tender Document: General	8.1	The Sections comprising the Tender Document are listed below, and should be read in conjunction with any Addendum issued under ITT Clause 11. • Section 1 Instructions to Tenderers (ITT) • Section 2 Tender Data Sheet (TDS) • Section 3 General Conditions of Contract (GCC) • Section 4 Particular Conditions of Contract (PCC) • Section 5 Tender and Contract Forms • Section 6 Procuring Entity's Requirements • Section 7 Drawings
	8.2	The Procuring Entity is not responsible for the completeness of the Tender Document and their addenda, if these were not purchased directly from the Procuring Entity, or through its agent as specified in the TDS .
	8.3	Tenderers are expected to examine all instructions, forms, terms, and specifications in the Tender Document as well as in addendum to Tender, if any.
9. Clarification of Tender Document	9.1	A prospective Tenderer requiring any clarification of the Tender Document shall contact the Procuring Entity in writing at the Procuring Entity's address and within time as specified in the TDS .
	9.2	The Procuring Entity is not obliged to answer any clarification request received after that date as stated under ITT Sub Clause 9.1.
	9.3	The Procuring Entity shall respond in writing within five (5) working days of receipt of any such request for clarification received under ITT Sub Clause 9.1.
	9.4	The Procuring Entity shall forward copies of its response to all those who have purchased the Tender Document, including a description of the enquiry but without identifying its source.
	9.5	Should the Procuring Entity deem it necessary to amend the Tender Document as a result of a clarification, it will do so following the procedure under ITT Clause 11.
10. Pre-Tender Meeting	10.1	To clarify issues and to answer questions on any matter arising in the Tender Document, the Procuring Entity may, if stated in the TDS , hold a pre-Tender Meeting at the place, date and time as specified in the TDS . All potential Tenderers are encouraged and invited to attend the meeting, if it is held.
	10.2	Tenderers are requested to submit any questions in writing so as to reach the Procuring Entity not later than one day prior to the date of the meeting.

	10.3	Minutes of the pre-Tender meeting, including the text of the questions raised and the responses given, together with any responses prepared after the meeting, will be transmitted within five (5) working days after holding the meeting to all those who purchased the Tender document and to even those who did not attend the meeting. Any revision to the Tender Document listed in ITT Sub Clause 8.1 that may become necessary as a result of the pre-Tender meeting will be made by the Procuring Entity exclusively through the issue of an Addendum pursuant to ITT Sub Clause 11 and not through the minutes of the pre-Tender meeting.
	10.4	Non-attendance at the Pre-Tender meeting will not be a cause for disqualification of a Tenderer.
11. Addendum to Tender Document	11.1	At any time prior to the deadline for submission of Tenders, the Procuring Entity, on its own initiative or in response to an inquiry in writing from a Tenderer, having purchased the Tender Document, or as a result of a pre-Tender meeting may revise the Tender Document by issuing an Addendum.
	11.2	The Addendum issued under ITT Sub Clause 11.1 shall become an integral part of the Tender Document and shall have a date and an issue number and must be circulated by mail or e-mail, to Tenderers who have purchased the Tender Documents, within five (5) working days of issuance of such Addendum, to enable Tenderers to take appropriate action
	11.3	The Procuring Entity shall also ensure posting of the relevant addenda with the reference number and date on their websites including notice boards, where the Procuring Entity had originally posted the IFTs.
	11.4	The Tenderer shall acknowledge receipt of an addendum.
	11.5	Tenderers who have purchased the Tender Documents but have not received any addendum issued under ITT Sub-clause 11.1 shall inform the Purchaser of the fact by fax, mail or e-mail before two-third of the time allowed for the submission of Tenders has elapsed.
	11.6	To give a prospective Tenderer reasonable time in which to take an addendum into account in preparing its Tender, the Procuring Entity may, at its discretion, extend the deadline for the submission of Tenders, pursuant to ITT Sub Clause 41.2.
	11.7	If an addendum is issued when time remaining is less than one-third of the time allowed for the preparation of Tenders, the Procuring Entity at its discretion shall extend the deadline by an appropriate number of days for the submission of Tenders, depending upon the nature of the Procurement requirement and the addendum. In any case, the minimum time for such extension shall not be less than three (3) working days.

C. Qualification Criteria

12. General Criteria	12.1	Tenderers shall possess the necessary professional and technical qualifications and competence, financial resources, equipment and other physical facilities, managerial capability, specific experience, reputation and the personnel, to perform the contract, which entails setting pass/fail criteria, which if not met by the Tenderers, will result in consideration of its Tender as non-responsive.
	12.2	In addition to meeting the eligibility criteria, as stated in ITT Clause 5, Tenderers must satisfy the other criteria stated in ITT Clauses 13 to 18 inclusive.
	12.3	To qualify for multiple number of contracts/lots in a package made up of this and other individual contracts/lots for which Tenders are invited in the Invitation for Tenders, the Tenderers shall demonstrate having resources and experience sufficient to meet the aggregate of the qualifying criteria for the individual contracts. The requirement of general experience as stated under ITT Sub Clause 13.1(a) and specific experience, unless otherwise of different nature, as stated under ITT Sub Clause 13.1(b) shall not be separately applicable for each individual lot.
13. Experience Criteria	13.1	Tenderers shall have the following minimum level of supply experience to qualify for the supplying of Goods under the Contract: (a) a minimum number of years of general experience in the role of Contractor or Subcontractor or Management Contractor as specified in the TDS ; and (b) specific experience as a Contractor or Subcontractor or Management Contractor that are similar to the proposed plant and services in at least a number of contract(s) and, each with a minimum value, over the period, as specified in TDS .
14. Financial Criteria	14.1	Tenderers shall have the following minimum level of financial capacity to qualify for the supply, execution and performance of plant and services under the Contract: (a) satisfactory resolution of all claims under litigation cases and shall not have serious negative impact on the financial capacity of the Tenderers. All pending litigation shall be treated as resolved against the Tenderers; (b) availability of minimum financial resources in any form or combination of forms of liquid assets or credit line(s) or working capital, net of other contractual commitments of the amount as specified in the TDS ; and (c) the average annual turnover as specified in the TDS calculated as total certified payments received for contracts in progress or completed, during the period specified in the TDS .
15. Personnel Capacity	15.1	The Tenderer shall have the following minimum level of personnel capacity to qualify for the performance of the plant and services under the Contract. A Project Manager, Engineers, and other key staff with qualifications and experience as specified in the TDS ;
16. Equipment Capacity	16.1	The Tenderer shall own suitable equipment and other physical facilities or have proven access through contractual arrangement to hire or lease such equipment or facilities for the desired period, where necessary or have assured access through lease, hire, or other such method, of the essential equipment, in full working order, as specified in the TDS .

17. Joint Venture (JV)	17.1	Tenderers may participate in the procurement proceedings forming a Joint Venture(JV) by an agreement, without alterations, in the format as specified in the Format PG5A-2b , executed case by case on a non-judicial stamp of value as specified in the TDS or alternately with the intent to enter into such an agreement supported by a Letter of Intent along with the proposed agreement duly signed by all legally authorised partners of the intended JV and authenticated by a Notary Public, with the declaration that the partners will execute the JV agreement in the event the Tenderer is successful.
	17.2	The figures for each of the partners of a JV shall be added together to determine the Tenderer's compliance with the minimum qualifying criteria; however, for a JV under ITT Sub Clause 17.1, with number of partners as specified in the TDS to qualify, Lead partner and other partners must meet the criteria as specified in the TDS . Failure to comply with these requirements will result in non-responsiveness of the JV Tender.
	17.3	Each partner of the JV shall be jointly and severally liable for the execution of the Contract, all liabilities and ethical and legal obligations in accordance with the Contract terms.
	17.4	JV shall nominate the Lead Partner as Representative or Partner-in-charge being entrusted with the Contract administration and management at Site who shall have the authority to conduct all business for and on behalf of any and all the partners of the JV during the Tendering process and, in the event the JV is awarded the Contract, during contract execution including the receipt of payments for and on behalf of the JV.
	17.5	The business share of the Lead Partner shall be the highest among all the partners. Other partner(s) shall have at least 25% of business share each.
18. Subcontractor (s)	18.1	Tenderers may intend to subcontract an activity or portion of the Plant and Services that will be subcontracted, if any, including the entity (i.e.) to whom each portion will be subcontracted to, subject to maximum allowable limit for subcontracting of Plant and Services specified in the TDS , in which case such item(s) and the proposed Subcontractor shall be clearly identified in the Form PG5A-2c .
	18.2	The Procuring Entity may require Tenderers to provide more information about their subcontracting arrangements. If any Subcontractor is found ineligible or unsuitable to carry out the subcontracted tasks, the Procuring Entity may request the Tenderers to propose an acceptable substitute.
	18.3	A Subcontractor may participate in more than one Tender, but only in that capacity.
	18.4	The Procuring Entity may also select in advance Nominated Subcontractor(s) to execute certain specific components of the Works and if so, those will be specified in the TDS .
	18.5	If a contractor wishes to subcontract an activity or part of the works according to the provision of ITT Clause 18.1 after entering into the contract, it can only be done after approval of Head of the Procuring Entity (HOPE) or an officer authorized by him or her (AO).
	18.6	Any unauthorised subcontracting after entering into the contract shall be considered as fundamental breach of contract.

D. Tender Preparation

19. Only one Tender	19.1	If a Tender for Plants and Services is invited for a number of lots on a "lot-by-lot" basis, each such lot shall constitute a Tender. Tenderers shall submit only one (1) Tender for each lot, either individually or as a JVCA. Tenderer who submits or participates in more than one (1) Tender in one (1) lot of the package will cause all the Tenders of that particular Tenderer to be rejected.
20. Cost of Tendering	20.1	Tenderers shall bear all costs associated with the preparation and submission of its Tender, and the Procuring Entity shall not be responsible or liable for those costs, regardless of the conduct or outcome of the Tendering process.
21. Issuance and Sale of Tender Document	21.1	The Procuring Entity shall make Tender Documents available immediately to the potential Tenderers, requesting and willing to purchase at the corresponding price by the date the advertisement has been published in the newspaper.
	21.2	Full contact details with mailing address, telephone and facsimile numbers and electronic mail address, as applicable, of those to whom Tender Documents have been issued shall be recorded with a reference number by the Procuring Entity.
	21.3	There shall not be any pre-conditions whatsoever, for sale of Tender Documents and the sale of such Document shall be permitted up to the day prior to the day of deadline for the submission of Tender.
22. Language of Tender	22.1	Tenders shall be written in the English language. Correspondences and documents relating to the Tender may be written in English or <i>Bangla</i> . Supporting documents and printed literature furnished by the Tenderers that are part of the Tender may be in another language, provided they are accompanied by an accurate translation of the relevant passages in the English or <i>Bangla</i> language, in which case, for purposes of interpretation of the Tender, such translation shall govern.
	22.2	Tenderers shall bear all costs of translation to the governing language and all risks of the accuracy of such translation.
23. Contents of Tender	23.1	The Tender prepared by the Tenderers shall comprise Two Envelope submitted simultaneously, one called the Technical Offer (Envelope -01) containing the documents listed in ITT Sub Clause 23.2 and other called the Financial Offer (Envelope -02) containing the documents listed in 23.3, both envelopes enclosed together in an outer Single envelope.
	23.2	The Technical Offer (Envelope-01) prepared by the Tenderers will comprise the following: (a) the Tender Submission Letters (Form PG5A-1a), as stated under ITT Sub Clause 24.1 ; (b) the Tenderer Information as stated under ITT Clauses 5, 28 and 31 (Form PG5A-2a); (c) the Tender Security as stated under ITT Clauses 34, 35 and 36. (d) the alternatives, if permissible, as stated under ITT Clause 25;

		(e) the written confirmation authorizing the signatory of the Tender including National ID to commit the Tenderer if applicable, as stated under ITT Sub Clause 39.4; (f) the Valid Trade license; (g) The Tenderer shall submit with its Tender the following documents as a proof of fulfilling taxation obligations in accordance with ITT Sub Clause 5.5; i. TIN certificate; ii. Acknowledgement slip issued by the competent income tax authority as a proof of submission of income tax return for the Assessment Year as mentioned in the TDS; and iii. Value Added Tax registration certificate/ Business Identification Number. (h) the Technical Proposal describing work plan & method, personnel, equipment and schedules as stated under ITT Clause 30; (i) documentary evidence as stated under ITT Clause 28 and 31 establishing the Tenderer's eligibility and the minimum qualifications of the Tenderers required to be met for due performance of the Works under the Contract; (j) An affidavit confirming the legal capacity stating that there are no existing orders of any judicial court that prevents either the Tenderer or employees of a Tenderer entering into or signing a Contract with the Procuring Entity as stated under ITT clause 5; (k) An affidavit confirming that the Tenderer is not insolvent, in receivership or not bankrupt or not in the process of bankruptcy, not temporarily barred from undertaking their business for financial reasons and shall not be the subject of legal proceedings for any of the foregoing as stated under ITT Clause 5; (l) Documentary evidence demonstrating that they are enrolled in the relevant professional or trade organizations registered in Bangladesh or in case of foreign tenderer in their country of origin or a certificate concerning their competency issued by a professional institution in accordance with the law of the country of their origin, as stated under ITT Clause 5; (m) The country-of-origin declarations, to establish the eligibility of the Plant and Services as stated under ITT Clause 6, in the Price Schedule for Plant and Services (Form PG5A-3) as, applicable, furnished in Section 5: Tender and Contract Forms; (n) Documentary evidence as stated under ITT Clauses 29, that the Goods and Related Services conform to the Tender Documents;

		(o) Documentary evidence as stated under ITT Clause 31 that the Tenderer's qualifications conform to the Tender Documents; (p) document establishing legal and financial autonomy and compliance with commercial law, as stated under ITT Sub Clause 5.10 in case of government owned entity; (q) In addition to the requirements stated under ITT Sub Clause 18.1, Tenders submitted by a JVCA or proposing a Subcontractor shall include. i. a Joint Venture Agreement entered into by all partners, executed on a non-judicial stamp of value or equivalent as stated under ITT Sub Clause 17.1; or ii. a Letter of Intent along with the proposed agreement duly signed by all partners of the intended JV with the declaration that it will execute the Joint Venture agreement in the event the Tenderer is successful; iii. the JV Partner Information (Form PG5A-2b); iv. the Subcontractor Information (Form PG5A-2c). (r) the completed Specifications Submission and Compliance Sheet (Form PG5A-5) as stated under ITT clause 29.1; (s) Any other document as specified in the TDS.
	23.3	The Financial Offer (Envelope-02) prepared by the Tenderers will comprise the following: (a) the Financial Offer Submission Letter (Form PG5A-1b), as stated under ITT Sub Clause 23.3; (b) the completed Price Schedule for Plant and Services for each lot in accordance with ITT Clauses 24, 26 and 27; (c) the written confirmation authorizing the signatory of the Tender to commit the Tenderer, as stated under ITT Sub Clause 39.4; (d) any other document as specified in the TDS.
24. Tender Submission Letter and Price Schedule	24.1	Tenderers shall submit the Technical Offer Submission Letter (Form PG5A-1a), which shall be completed without any alterations to its format, filling in all blank spaces with the information requested, failing which the Tender may be rejected as being incomplete.
	24.2	Tenderers shall submit the Financial Offer submission letter (Form PG5A-1b) along with priced Schedule using the form(s) furnished in Section 5: Form PG5A-3 (Price Schedule)
	24.3	If in preparing its Tender, the Tenderer has made errors in the unit rate or the total price, and wishes to correct such errors prior to submission of its Tender, it may do so, but shall ensure that each correction is initialed by the authorised person of the Tenderer.

25. Alternatives	25.1	Unless otherwise specified in the TDS , Technical alternatives shall not be considered.
	25.2	When specified in ITT clause 25.1 , Tenderers are permitted to submit alternative technical solutions for specified parts of the Works, and such parts will be identified in the TDS .
	25.3	Only the technical alternatives, if any, of the lowest evaluated Tenderer conforming to the basic technical requirements will be considered by the Procuring Entity.
26. Tender Prices, Discounts and Price Adjustment	26.1	The prices and discounts quoted by the Tenderers in the Tender Submission Letter (Form PG5A-1a and PG5A-1b) and Price Schedule (Form PG5A-3) shall conform to the requirements specified below.
	26.2	Tenderers shall fill in unit rates for all items of the Goods both in figures and in words as described in the Price Schedule, excluding any discount offered.
	26.3	Unless otherwise specified in the TDS , tenderers shall quote for the entire Plant and Installation Services on a “single responsibility” basis such that the total tender price covers all the Contractor’s obligations mentioned in or to be reasonably inferred from the tender document in respect of the design, manufacture, including procurement and subcontracting (if any), delivery, construction, installation and completion of the plant. This includes all requirements under the Contractor’s responsibilities for testing, pre-commissioning and commissioning of the plant and, where so required by the tender document, the acquisition of all permits, approvals and licenses, etc.; the operation, maintenance and training services and such other items and services as may be specified in the Tender Document, all in accordance with the requirements of the General Conditions of Contract. Items against which no price is entered by the Tenderer will not be paid for by the Purchaser when executed and shall be deemed to be covered by the prices for other items.
	26.4	Tenderers are required to quote the price for the commercial, contractual and technical obligations outlined in the tender document.
	26.5	Tenderers shall give a breakdown of the prices in the manner and detail called for in the Price Schedules included in Section 5, Tender and Contract Forms.
	26.6	Depending on the scope of the Contract, the Price Schedules may comprise up to the seven (7) schedules listed below. Separate numbered Schedules included in Section 5, Tender Forms, from those numbered 1-4 below, shall be used for each of the elements of the Plant and Installation Services. The total amount from each Schedule corresponding to an element of the Plant and Installation Services shall be summarized in the schedule titled Grand Summary, (Schedule 6), giving the total tender price(s) to be entered in the Letter of Tender. Schedule No. 1 Plant (including Mandatory Spare Parts) Supplied from Abroad Schedule No. 2 Plant (including Mandatory Spare Parts) Supplied from within the Purchaser’s Country Schedule No. 3 Design Services Schedule No. 4 Civil works part Schedule No. 5 Installation and other Services Schedule No. 6 Grand Summary (Schedule Nos. 1 to 4) Schedule No. 7 Recommended Spare Parts Tenderers shall note that the plant and equipment included in Schedule Nos. 1 and 2 above exclude materials used for civil, building and other construction works. All such materials shall be included and priced under Schedule No. 4, Installation Services.

	26.7	In the Schedules, tenderers shall give the required details and a breakdown of their prices as follows: a) Plant to be supplied from abroad (Schedule No. 1): The price of the plant shall be quoted on CIP-named place of destination/CIF basis as specified in the TDS and as applicable. (b) Plant manufactured within the Purchaser's country (Schedule No. 2): i) The price of the plant shall be quoted on an EXW INCOTERM basis (such as "ex-works," "ex-factory," "ex-warehouse" or "off-the-shelf," as applicable), ii) Sales tax and all other taxes payable in the Procuring Entity's country on the plant if the contract is awarded to the Tenderer, and iii) The total price for the item. (c) Design Services (Schedule No. 3). (d) Installation Services shall be quoted separately (Schedule No. 4) and shall include rates or prices for local transportation to named place of final destination as specified in the TDS, insurance and other services incidental to delivery of the plant, all labor, contractor's equipment, temporary works, materials, consumables and all matters and things of whatsoever nature, including operations and maintenance services, the provision of operations and maintenance manuals, training, etc., where identified in the Tender Document, as necessary for the proper execution of the installation and other services, including all taxes, duties, levies and charges payable in the Procuring Entity's country as of twenty-eight (28) days prior to the deadline for submission of tenders. (e) Recommended spare parts shall be quoted separately (Schedule 6) as specified in either subparagraph (a) or (b) above in accordance with the origin of the spare parts
	26.8	The current edition of INCOTERMS, published by the International Chamber of Commerce shall govern.
	26.9	The prices shall be either fixed or adjustable as specified in the TDS .
	26.10	In the case of Fixed Price , prices quoted by the Tenderer shall be fixed during the Tenderer's performance of the contract and not subject to variation on any account. A tender submitted with an adjustable price quotation will be treated as non-responsive and rejected.
	26.11	In the case of Adjustable Price , prices quoted by the Tenderer shall be subject to adjustment during performance of the contract to reflect changes in the cost elements such as labor, material, transport and contractor's equipment in accordance with the procedures specified in the corresponding Appendix to the Contract Agreement. A tender submitted with a fixed price quotation will not be rejected, but the price adjustment will be treated as zero. Tenderers are required to indicate the source of labor and material indices in the corresponding Form in Section 5, Tender and Contract Forms.

	26.12	If so, indicated in ITT 19.1, tenders are to be invited for individual lots or for any combination of lots (packages). Tenderers wishing to offer any price reduction (discount) for the award of more than one lot shall specify in their Tender Submission Letter the price reductions applicable to each package, or alternatively, to individual Contracts within the package, and the manner in which the price reductions will apply.
	26.13	Tenderers wishing to offer any unconditional discount shall specify in their Letter of Tender the offered discounts and the manner in which price discounts will apply.
	26.14	All items or lots in Section 6: Schedule of Requirements must be listed and priced separately on the Price Schedule following the Form PG5A-3 .
	26.15	The price to be quoted in Tender Submission Letter (Form PG5A-1a and PG5A-1b) shall be the total price of the Tender, excluding any discounts offered.
	26.16	Tenderers shall quote any unconditional discounts and the methodology for application of that discount in the Tender Submission Letter as stated under ITT Sub Clause 24.1.
	26.17	Tenderers wishing to offer any unconditional discount for the award of more than one lot shall specify the discount applicable to each lot, or alternatively, to any combination of lots within the package in their Tender. Discounts will be submitted as stated under ITT Sub Clause 26.12, provided the Tenders for all lots are submitted and opened together.
	26.18	All applicable taxes, custom duties, VAT and other levies payable by the Contractor under the Contract, or for any other causes, as of the date twenty-eight (28) days prior to the deadline for submission of Tenders, shall be included in the unit rates and the total Tender price submitted by the Tenderers.
	26.19	If so, indicated under ITT Sub Clause 26.9, Tenders are being invited with a provision for price adjustments. The unit rates or prices quoted by the Tenderer are subject to adjustment during the performance of the Contract in accordance with the provisions of the relevant GCC Clause and, in such case the Procuring Entity shall provide the indexes and weightings or coefficients in Appendix to the Tender for the price adjustment formulae specified in the PCC .
	26.20	The Procuring Entity may require the Tenderer to justify its proposed indexes, if any of those as stated under ITT Sub Clause 26.11, are instructed to be quoted by the Tenderer in Appendix to the Tender .
	26.21	The price adjustment stated under ITT Sub Clause 26.9 and 26.11 shall be dealt with in accordance with the provisions in Section 12 and 22 of the Public Procurement Act, 2006 and Rule 4 and 51 of the Public Procurement Rules, 2025.
27. Tender Currency	27.1	For expenditures that will be incurred in Bangladesh, the Tenderer shall quote the prices in Bangladeshi Taka (BDT).
	27.2	Suppliers offering Goods manufactured or assembled in Bangladesh, are permitted to submit their Tender in a combination of local and foreign currencies.
	27.3	In case of National Tender, all quoted price shall be in local currency.
	27.4	In case of international competitive tender, for expenditures that will be incurred outside Bangladesh, the Tenderer may quote the prices as specified in TDS .

28. Documents Establishing Eligibility of the Tenderer	28.1	Tenderers, if applying as a sole Tenderer, shall submit documentary evidence to establish its eligibility as stated under ITT Clause 5 and, in particular, it shall: (a) complete the eligibility declarations in the Tender Submission Letter (Form PG5A-1a and PG5A-1b); (b) complete the Tenderer Information (Form PG5A-2a); (c) complete Subcontractor Information (Form PG5A-2c), if it intends to engage any Subcontractor(s).
	28.2	Tenderers, if applying as a partner of an existing or intended JV shall submit documentary evidence to establish its eligibility as stated under ITT Clause 5 and, in particular, in addition to as stated under ITT Sub Clause 28.1, it shall: (a) provide for each JV partner, completed JV Partner Information (Form PG5A-2b); (b) provide the JV agreement as per Format PG5A-2b or Letter of Intent along with the proposed agreement of the intended JV as stated under ITT Sub Clause 17.1.
29. Documents Establishing the Eligibility and Conformity of Plant and Services	29.1	Tenderers shall complete the country-of-origin declarations in the Price Schedule Forms and, submit documentary evidence to establish the origin of all Goods to be supplied under the Contract as stated under ITT Clause 6.
	29.2	To establish the conformity of the plant and services to the Tender Documents, the Tenderer shall furnish, as part of its Tender, the documentary evidence (which may be in the form of literature, specifications and brochures, drawings or data) that the Goods and Related Services conform to the technical specifications and standards specified in Section 7, Technical Specifications .
	29.3	Documentary evidence of conformity of the Goods to the Tender Documents may be in the form of literature, drawings, and data, and shall consist of: (a) a detailed description of the essential technical and performance characteristics of the plant and services, including the functional guarantees of the proposed plant and services, in response to the Specification; (b) a list giving full particulars, including available sources, of all spare parts and special tools necessary for the proper and continuing functioning of the plant for the period named in the TDS , following completion of plant and services in accordance with provisions of contract; and (c) a commentary on the Procuring Entity's Technical Specifications demonstrating substantial responsiveness of the plant and services to those specifications. Tenderers shall note that standards for workmanship, materials and equipment designated by the Procuring Entity in the Tender Document are intended to be descriptive (establishing standards of quality and performance) only and not restrictive. The Tenderer may substitute alternative standards, brand names and/or catalog numbers in its tender, provided that it demonstrates to the Procuring Entity's satisfaction that the substitutions are substantially equivalent or superior to the standards designated in the Specification.
30. Documents Establishing Technical Proposal	30.1	Tenderers shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule, risks involved and measures thereagainst and any other information as stipulated in TDS, in sufficient detail to demonstrate the adequacy of the Tenderer's proposal to meet the work requirements and the completion time.

31. Documents Establishing the Tenderer's Qualification	31.1	Tenderers shall complete and submit the Tenderer Information (Form PG5A-2a) and shall include documentary evidence, as applicable to satisfy the following: a) general experience in the supply of Goods as stated under ITT Sub Clause 13.1(a), substantiated by the year of Tenderer's registration/constitution/licensing in its country of origin; b) specific experience of satisfactory completion of supply of Goods under public or private sector of similar nature and size as stated under ITT Sub Clause 13.1(b), substantiated by Completion Certificate (s) issued or duly certified, by the relevant Procuring Entity(s); c) information regarding claims under litigation, current or during the last years as specified in the TDS, in which the Tenderer is involved, the parties concerned, and value of claim as stated under ITT Sub Clause 14.1(a), substantiated by statement in its letter-head pad; d) adequacy of minimum liquid asset substantiated by bank statement having previous date's closing balance with three (3) months transaction details; or (ii) updated balance statement on previously approved credit line; or (iii) unconditional specific credit commitment letter issued in the format as specified in Form PG5A-8 without alteration from any scheduled bank of Bangladesh, and issued not earlier than twenty-eight (28) days prior to the day of the initial (if applicable) deadline for submission of Tenders for this Contract as stated under ITT Sub Clause 14.1(b) or (iv) working capital substantiated by audited financial statements mentioned in (h) below.; e) if required in the TDS, a Tenderer that does not manufacture or produce the Goods shall submit the Manufacturer's Authorization Letter (Form PG5A-6); f) authority to seek references from the Tenderer's Bankers or any other sources in its letter-head pad; g) reports on the financial standing of the Tenderers, such as profit and loss statements and audited balance sheet for the previous years as specified in the TDS, substantiated by Audit Reports; h) information regarding technical and administrative personnel along with their qualification and experience proposed for the Contract as stated under ITT Clause 15; and i) major items of construction equipment proposed to carry out the Contract as stated under ITT Clause 16, substantiated by statement(s) of the entity(s) participating in the Tender in its letter-head pad declaring source of its availability and documents related to ownership or hiring or leasing.
32. Validity Period of Tender	32.1	Tender validities shall be determined on the basis of the complexity of the Tender and the time needed for its examination, evaluation, approval of the Tender and issuance of the Notification of Award (NOA).
	32.2	Tenders shall remain valid for the period as specified in the TDS after the date of Tender submission deadline. A Tender valid for a period shorter than that specified will be considered, non- responsive.
33. Extension of Tender Validity and Tender Security	33.1	In exceptional circumstances, prior to the expiration of the Tender Validity period, the Procuring Entity may solicit all the Tenderers' consent to an extension of the period of validity of their Tenders, subject to a maximum of two times; provided that those Tenderers have passed the preliminary examination as stated under ITT Sub Clauses 46.2.
	33.2	The request for extension of Tender Validity period shall state the new date of the validity of the Tender.

	33.3	The request and the responses shall be made in writing. Validity of the Tender Security provided under ITT Clause 34 shall also be suitably extended for twenty-eight (28) days beyond the new date for the expiry of the Tender Validity. If a Tenderer does not respond or refuses the request it shall not forfeit its Tender Security, but its Tender shall no longer be considered in the evaluation proceedings. A Tenderer agreeing to the request will not be required or permitted to modify its Tender.
34. Tender Security	34.1	Tenderers shall furnish as part of its technical offer (envelope-1) Tender, in favour of the Procuring Entity or as otherwise directed on account of the Tenderer, a Tender Security in original form (not copy) and in the amount, as specified in the TDS .
	34.2	If the Tender is a Joint Venture, the Tenderer shall furnish as part of its Tender, in favour of the Procuring Entity or as otherwise directed on account of the title of the existing or intended JV or any of the partners of that JV or in the names of all future partners as named in the Letter of Intent of the JV, a Tender Security in original form and in the amount as stated under ITT Sub Clause 34.1.
	34.3	In case of substitution of the Tender as stated under ITT Clause 43.3 a new Tender Security shall be required in the substituted Tender.
35. Form of Tender Security	35.1	The Tender Security shall: (a) at the Tenderer's option, be either; i. in the form of a Bank Draft or Pay Order, or ii. in the form of an irrevocable unconditional Bank Guarantee issued by any scheduled Bank of Bangladesh, in the format (Form PG5A-7) without any alteration, furnished in Section 5: Tender and Contract Forms; (b) In case of ICT, in the form of an irrevocable bank guarantee issued by an internationally reputable bank and shall require to be endorsed by its any correspondent bank located in Bangladesh, to make it enforceable, in the format (Form PG5A-7) furnished in Section 5: Tender and Contract Forms; (c) be payable promptly upon written demand by the Procuring Entity in the case of the conditions as stated under ITT Sub Clause 38.1 being invoked; and (d) remain valid for at least twenty-eight (28) days beyond the expiry date of the Tender Validity in order to make a claim in due course against a Tenderer in the circumstances as stated under ITT Sub Clause 38.1.
36 Authenticity of Tender Security	36.1	The authenticity of the Tender Security submitted by a Tenderer may be examined and verified by the Procuring Entity at its discretion in writing from the Bank issuing the security, prior to finalization of the Evaluation Report.
	36.2	If a Tender Security is found to be not-authentic, the Procuring Entity may proceed to take measures against that Tenderer as stated under ITT Sub Clause 4.4.
	36.3	A Tender not accompanied by a valid Tender Security will be considered non-responsive.
37. Return of Tender Security	37.1	No Tender Security shall be returned to the Tenderers before Approval of Evaluation Report.
	37.2	Non-responsive Tenderer's Tender Security will be returned after approval of Evaluation Report but within twenty-eight (28) days of the expiry of the Tender Validity period as stated under ITT Sub Clauses 32.1. The Tender Security of the responsive Tenderers except the 1 st , 2 nd , and 3 rd lowest responsive Tenderers may be returned, in the same manner, upon written request from them to the Procuring Entity.
	37.3	The Tender Security of the 1 st , 2 nd , and 3 rd lowest responsive Tenderers (as the case may be) will be returned upon the successful Tenderer's furnishing of the performance security and signing of the Contract Agreement, if not otherwise subject to ITT Clause 38.1.

38. Forfeiture of Tender Security	38.1	The Tender Security may be forfeited, if a Tenderer: (a) withdraws its Tender after opening of Tenders but within the validity of the Tender as stated under ITT Clause 32 and 33; or (b) does not accept the correction of the Tender price following the correction of the arithmetic errors as stated under ITT Clause 53; or (c) fails to furnish Performance Security or tenderer's submitted Performance Security has been found unauthentic as stated under ITT Sub Clauses 66.1 and 66.2; or (d) refuses or fails to sign the Contract as stated under ITT Sub Clause 71.2. (e) involves in any corrupt, fraudulent, collusive, coercive or obstructive practice of any kind as defined in ITT Clause 4.
39. Format and Signing of Tender	39.1	Tenderers shall prepare one (1) original of the documents comprising the Technical Offer as described in ITT Clause 23.2 and clearly mark it "ORIGINAL OF TECHNICAL OFFER" In addition, the Tenderers shall prepare the number of copies of the Technical Offer, as specified in the TDS and clearly mark each of them "COPY OF THE TECHNICAL OFFER." In the event of any discrepancy between the original and the copies, the ORIGINAL shall prevail.
	39.2	Tenderers shall prepare one (1) original of the documents comprising the Financial Offer as described in ITT Clause 23.3 and clearly mark it "ORIGINAL OF FINANCIAL OFFER" In addition, the Tenderers shall prepare the number of copies of the Financial Offer, as specified in the TDS and clearly mark each of them "COPY OF THE FINANCIAL OFFER" In the event of any discrepancy between the original and the copies, the ORIGINAL shall prevail.
	39.3	Alternatives, if permitted as stated under ITT Clause 22, shall be clearly marked "Alternative".
	39.4	The original and each copy of the Offer shall be typed or written in indelible ink and shall be signed by the Person duly authorized to sign on behalf of the Tenderer. This Tender specific authorization shall be attached to the Technical Offer Submission Letter (Form PG5A-1a) and Financial Offer Submission Letter (Form PG5A-1b). The name and position held by each Person(s) signing the authorization must be typed or printed below the signature. All pages of the original and of each copy of the Tender, except for un-amended printed literature, shall be numbered sequentially and signed by the person signing the Tender. The original and each copy of the Tender shall be typed or written in indelible ink and shall be signed by the Person duly authorized to sign on behalf of the Tenderer. This Tender specific authorization document shall be attached to the Tender Submission Letter (Form PG5A-1c). The name and position held by each Person(s) signing the authorization must be typed or printed below the signature. All pages of the original and of each copy of the Tender, except for un-amended printed literature, shall be numbered sequentially and signed by the person signing the Tender.
	39.5	Any interlineations, erasures, or overwriting will be valid only if they are signed or initialled by the Person(s) signing the Tender.

E. Tender Submission

40. Sealing, Marking and Submission of Tender	40.1	Tenderers shall enclose the original of Technical Offer in one (1) envelope and all the copies of the Technical Offer , including the alternatives, if permitted under ITT Clause 25 , in another envelope, duly marking the envelopes as “ ORIGINAL OF TECHNICAL OFFER ” “ ALTERNATIVES ” (if permitted), “ COPY OF TECHNICAL OFFER ,” “ ALTERNATIVES ” (if permitted) These sealed envelopes for the original and copies of the technical Tender shall then be enclosed and sealed in one single envelope and clearly mark it “ Envelope-01: TECHNICAL OFFER ”. Tenderers shall enclose the original in one (1) envelope and all the copies of the Tender, including the alternatives, if permitted under ITT Clause 25 , in another envelope, duly marking the envelopes as “ ORIGINAL (O) ” “ ALTERNATIVE (A) ” (if permitted) and “ COPY .” These sealed envelopes will then be enclosed and sealed in one (1) single outer envelope.
	40.2	The inner and outer envelopes of Technical Offer shall: (a) be addressed to the Procuring Entity at the address as stated under ITT Sub Clause 41.1 ; (b) bear the name of the Tender and the Tender Number as stated under ITT Sub Clause 1.1 ; (c) bear the name and address of the Tenderer; (d) bear a statement “ DO NOT OPEN BEFORE ----- ” the time and date for Tender opening as stated under ITT Sub Clause 44.1 ; (e) bear any additional identification marks as specified in the TDS .
	40.3	Tenderers shall enclose the original of Financial Offer in one (1) envelope and all the copies of the Financial Offer in another envelope, duly marking the envelopes as “ ORIGINAL OF FINANCIAL OFFER ” & “ COPY OF FINANCIAL OFFER ”. These sealed envelopes for the original and copies of the Financial Tender shall then be enclosed and sealed in one single envelope and clearly mark it “ ENVELOPE-02: FINANCIAL OFFER ”.
	40.4	The inner and outer envelopes of Financial Offer shall: (a) be addressed to the Procuring Entity at the address as stated under ITT Sub Clause 41.1 ; (b) bear the name of the Tender and the Tender Number as stated under ITT Sub Clause 1.1 ; (c) bear the name and address of the Tenderer; (d) bear a statement “ DO NOT OPEN BEFORE THE TECHNICAL OFFER EVALUATION AND APPROVAL ”. (e) bear any additional identification marks as specified in the TDS .
	40.5	The Envelope-01 as stated in ITT Clause 40.1 and Envelope-02 as in ITT Clause 40.3 shall then be enclosed and sealed in one single outer envelope which shall contain the information as stated under ITT Clause 40.2 (a) to (e) & ITT Clause 40.4 (a) to (e) .
	40.6	Tenderers are solely and entirely responsible for pre-disclosure of Tender information if the envelope(s) are not properly sealed and marked.
	40.7	Tenders shall be delivered by hand or by mail, including courier services at the address(s) as stated under ITT Sub Clause 41.1 .
	40.8	The Procuring Entity will, on request, provide the Tenderer with acknowledgement of receipt showing the date and time when it's Tender was received.

41. Deadline for Submission of Tender	41.1	Tenders shall be delivered to the Procuring Entity at the address specified in the TDS and not later than the date and time specified in the TDS .
	41.2	The Procuring Entity may, at its discretion, extend the deadline for submission of Tender as stated under ITT Sub Clause 41.1, in which case all rights and obligations of the Procuring Entity and Tenderers previously subject to the deadline will thereafter be subject to the new deadline as extended.
	41.3	Tenders shall be received at only one place as specified under ITT Sub Clause 41.1.
42. Late Tender	42.1	Any Tender received by the Procuring Entity after the deadline for submission of Tenders as stated under ITT Sub Clause 41.1 shall be declared LATE and returned unopened to the Tenderer.
43. Modification, Substitution or Withdrawal of Tender	43.1	Tenderers may modify, substitute or withdraw its Tender after it has been submitted by sending a written notice duly signed by the authorized signatory and properly sealed, and shall include a copy of the authorization; provided that such written notice including the affidavit is received by the Procuring Entity prior to the deadline for submission of Tenders as stated under ITT Clause 41.
	43.2	Tenderers shall not be allowed to retrieve its original Tender, but shall be allowed to submit corresponding modification to its original Tender marked as “ MODIFICATION (M) ”.
	43.3	Tenderers shall not be allowed to retrieve its original Tender, but shall be allowed to submit another Tender marked as “ SUBSTITUTION (S) ”.
	43.4	Tenderers shall be allowed to withdraw its Tender by a Letter of Withdrawal marked as “ WITHDRAWAL(W) ”.

F. Tender Opening and Evaluation

44. Tender Opening	44.1	Only the Technical Offer (Envelope-1) shall be opened immediately after the deadline for submission of Tenders at the primary place as specified in the TDS but not later than ONE HOUR, Tenders shall be opened immediately after the deadline for submission of Tenders at the place as specified in the TDS but not later than ONE HOUR after expiry of the submission deadline. Financial offer (Envelope-02) shall not be opened with technical offer (Envelop-1) and shall be kept unopened at the Custody of the Head of the Procuring Entity or his Authorised Officer (AO).
	44.2	Persons not associated with the Tender may not be allowed to attend the public opening of Tenders.
	44.3	Tenderers' representatives shall be duly authorised by the Tenderer. Tenderers or their authorised representatives will be allowed to attend and witness the opening of Tenders, and will sign a register evidencing their attendance.
	44.4	The authenticity of withdrawal or substitution of, or modifications to original Tender, if any made by a Tenderer in specified manner, shall be examined and verified by the Tender Opening Committee (TOC) based on documents submitted as stated under ITT Sub Clause 43.1.
	44.5	Verify (M), (S), (W), (A), (O) by following step by steps (a) Step 1: envelopes marked "Withdrawal (W)" shall be opened and "Withdrawal" notice read aloud & recorded in the opening sheet. After verify the withdrawal letter is genuine, corresponding tender shall not be opened, but returned unopened to the Tenderer by Procuring Entity (PE) at a late time. No Tender withdrawal shall be permitted unless the corresponding withdrawal notice shall be as stated in 43.4 and in such case the Tender shall be opened and recorded. (b) Step 2: the remaining Tenders will be sorted out and those marked "SUBSTITUTION (S)" or "MODIFICATION (M)" of Tender will be linked with their corresponding Original Tender. (c) Step 3: outer envelopes marked "SUBSTITUTION (S)" shall be opened. The inner envelopes containing the "Substitution of Technical Offer (STO)" and/or "Substitution of Financial Offer (SFO)" shall be exchanged for the corresponding envelopes being substituted, which are to be returned to the Tenderer unopened by the Procuring Entity at a later time immediately after opening of Technical Offers. Only the Substitution of Technical Offer, if any, shall be opened, read out, and recorded. Substitution of Financial Offer will remain unopened in accordance with ITT Sub Clause 45.1. No envelope shall be substituted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out and recorded at Technical Offer opening.

		(d) Step 4: outer envelopes marked “MODIFICATION (M)” shall be opened. No Technical Offer and/or Financial Offer shall be modified unless the corresponding modification notice contains a valid authorization to request the modification and is read out and recorded at the opening of Technical Offers. Only the Technical Offers, both Original as well as Modification, are to be opened, read out, and recorded at the opening. Financial Offers, both Original as well as Modification, will remain unopened in accordance with ITT Sub Clause 45.1 (e) Step 5: if so specified in this Tender Document, the envelopes marked “Alternative of Technical Offer (ATO)” shall be opened and read aloud with the corresponding Technical Offer and recorded.
	44.6	Ensuring that only the correct (MTO), (STO), (ATO), (OTO) envelopes are opened, details of each Technical Offer will be dealt with as follows: (a) the Chairperson of the TOC will read aloud each Technical Offer and record in the Technical Offer Opening Sheet (TOOS): (i) the name and address of the Tenderer; (ii) state if it is a withdrawn, modified, substituted or original Technical Offer; (iii) any alternatives; (iv) record the rejection of the Tender which submitted Technical Offer and Financial Offer together in one envelope. (v) the presence or absence of any requisite Tender Security; and (vi) such other details as the Procuring Entity, at its discretion, may consider appropriate. (b) Only Technical Offer and alternatives read aloud at the Technical Offer Opening will be considered in evaluation. (c) all pages of the original version of the Technical Offer, except for un-amended printed literature, will be initialled by members of the TOC. Remember, no financial Offer shall be opened with the Technical Offer.
	44.7	Upon completion of Tender opening, all members of the TOC and the Tenderers or Tenderer’s duly authorised representatives attending the Tender opening shall sign by name, address, designation, the TOS, copies of which shall be issued to the Head of the Procuring Entity or an officer authorised by him or her and also to the members of the TOC and any authorised Consultants Representatives and, to the Tenderers immediately.
	44.8	The omission of a Tenderer’s signature on the record shall not invalidate the contents and effect of the record under ITT Sub Clause 44.7.
	44.9	No Tender i.e., Technical or Financial Offer will be rejected at the Tender opening stage except the LATE Tenders as stated in the ITT Clause 42.

45. Evaluation of Tenders	45.1	Technical Offers shall be examined and evaluated only on the basis of the criteria specified in the Tender Document.
	45.2	Tender Evaluation Committee (TEC) shall examine, evaluate and compare Tenders that are responsive to the requirements of Tender Documents in order to identify the successful Tenderer.
	45.3	TEC may consider a Tender Offer as responsive in the Evaluation, only if it is submitted in compliance with the mandatory requirements set out in the Tender Document. The evaluation process should begin immediately after Technical Offer opening following two steps: (a) Preliminary examination (b) Technical examination and responsiveness
46. Preliminary Examination	46.1	TEC shall examine the Tenders to confirm that all documentations as stated under ITT Clause 23 have been provided, to determine the completeness of each document submitted.
	46.2	TEC shall confirm that the following documents and information have been provided in the Tender. If any of these documents or information is missing, the Tender shall be considered rejected. (a) All Forms, as applicable, duly filled-in and signed, as in Tender Forms (Section 5); (b) Priced Schedule; (c) Written confirmation authorizing the signatory of the Tender to commit the Tenderer; and (d) Valid Tender Security.
47. Technical Responsiveness and Technical Evaluation	47.1	Only those Tenders surviving preliminary examination need to be examined in this phase.
	47.2	Secondly, the TEC will examine the adequacy and authenticity of the documentary evidence which may follow the order below: (a) verification of the completeness of the country-of-origin declaration in the Price Schedule for Plant and Services (Form PG5A-3) as furnished in Section 5: Tender and Contract Forms to determine the eligibility of the Goods and Related Services as stated under ITT Sub Clause 23.2(n). (b) verification and examination of the documentary evidence and completed Technical Proposal (Form PG5A-4) as furnished in Section 5: Tender and Contract Forms to establish the conformity of the Goods and Related Services to the Tender Documents as stated under ITT Sub Clause 23.2 (d) and 23.2(o). (c) verification and examination of the documentary evidence that the Tenderer's qualifications conform to the Tender Documents and the Tenderer meets each of the qualification criterion specified in Sub-Section C, Qualification Criteria as stated under ITT Sub Clause 23.2(p). (d) verification and examination of the documentary evidence that Tenderer has met all the requirements in regards under Section 6, Procuring Entity's Requirements, without any material deviation or reservation. (e) verification and examination of the documentary evidence and completed Specification Submission Sheet (Form PG5A-5) to determine the conformity of the Goods and related services.

	47.3	TEC may consider a Tender as responsive in the evaluation, only if comply with the mandatory requirements as stated under Clause 47.2.
	47.4	The TEC's determination of a Tender's responsiveness is to be based on the documentary evidence as requested in Clause 47.2 without recourse to extrinsic evidence.
	47.5	Information contained in a Tender, that was not requested in the Tender Document shall not be considered in evaluation of the Tender.
	47.6	A responsive Tender is one that conforms in all respects to the requirements of the Tender Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that: (a) affects in any substantial way the scope, quality, or supply of goods specified in the Contract; or (b) limits in any substantial way, or is inconsistent with the Tender Documents, the Procuring Entity's rights or the Tenderer's obligations under the Contract; or (c) if rectified would unfairly affect the competitive position of other Tenderers presenting responsive Tenders. During the evaluation of Tenders, the following definitions shall apply: "Deviation" is a departure from the requirements specified in the Tender Document; "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Tender Document; and "Omission" is the failure to submit part or all of the information or documentation required in the Tender Document.
	47.7	If a Tender is not responsive to the mandatory requirements set out in the Tender Document, shall not subsequently be made responsive by the Tenderer by correction of the material deviation, reservation, or omission.
	47.8	There shall be no requirement as to the minimum number of responsive Tenders.
	47.9	Provided that a Tender is responsive, TEC may request that the Tenderer submit the necessary information or documentation, within a reasonable period of time to rectify nonmaterial nonconformities or omissions in the Tender related to documentation requirements. Such omission shall not be related to any aspect of the rates of the Tender reflected in the Priced Schedule or any mandatory criteria. Failure of the Tenderer to comply with the request may result in the consideration of its Tender as non-responsive.
	47.10	TEC may regard a Tender as responsive even if it contains: (a) minor or insignificant deviations which do not meaningfully alter or depart from the technical specifications, characteristics and commercial terms and, conditions or other mandatory requirements set out in the Tender Document; or (b) errors or oversights, that if corrected, would not alter the key aspects of the Tender.

48. Clarification on Tender	48.1	TEC may ask Tenderers for clarification of their Technical Offers in order to facilitate the examination and evaluation of Technical Offers. The request for clarification by the TEC and the response from the Tenderer shall be in writing, and Technical Offers clarifications which may lead to a change in the substance of the Technical Offers or in any of the key elements of the Technical Offers as stated under ITT Sub Clause 47.2, will neither be sought nor be permitted.
	48.2	Any request for clarifications by the TEC shall not be directed towards making an apparently non-responsive Tender responsive and reciprocally the response from the concerned Tenderer shall not be articulated towards any addition, alteration or modification to its Tender.
	48.3	The Tenderer shall be provided a reasonable timeline, but not less than three (3) working days, to respond against a clarification request. If a Tenderer does not provide clarifications of its Technical Offer by the date and time, its Tender shall not be considered in the evaluation.
49. Restrictions on Disclosure of Information	49.1	Following the opening of Tenders until issuance of Notification of Award no Tenderer shall, unless requested to provide clarification to its Tender or unless necessary for submission of a complaint, communicate with the concerned Procuring Entity.
	49.2	Tenderers shall not seek to influence in anyway, the examination and evaluation of the Tenders.
	49.3	Any effort by a Tenderer to influence the Procuring Entity in its decision concerning the evaluation of Tenders, Contract awards may result in the non-responsiveness of its Tender as well as further action in accordance with Section 64 (5) of the Public Procurement Act, 2006.
	49.4	All clarification requests shall remind Tenderers of the need for confidentiality and that any breach of confidentiality on the part of the Tenderer may result in their Tender being non-responsive.
50. Approval of Technical Evaluation Report	50.1	TEC shall prepare the Technical Evaluation Report and shall directly submit the Evaluation Report to the Head of the Procuring Entity (HOPE) or Authorized Officer for approval.
51. Financial Offer Opening	51.1	After getting approval of the Technical Offer Evaluation Report, Financial Offer (Envelope-02) of only the Responsive Tenderers who have been determined as qualified to the requirements of the Technical Offer, shall be opened publicly, the date, time and place of Financial Offer Opening shall be communicated to the Responsive Tenderers in writing by issuing a Financial Offer Opening notice not less than seven days before the opening.
	51.2	Ensuring that only the correct MFO, SFO, OFO envelopes of the Responsive Tenderers shall be opened, in the presence of the Responsive Tenderer's representatives who choose to attend, on the date, time and at the place as notified by the Procuring Entity in accordance with ITT Clause 51.1. Details of each Technical Offer will be dealt with as follows: (a) the Chairperson of the Tender Evaluation Committee will read aloud each Financial Offer and record in the Financial Offer Opening Sheet (FOOS): (vii) the name and address of the Tenderer; (viii) state if it is a modified, substituted or original Financial Offer;

		(ix) the Tender Price; (x) the number of initialed corrections; (xi) any discounts; and (xii) any other details as the Procuring Entity, at its discretion, may consider appropriate (b) only the discounts and alternatives read aloud and recorded at the Financial Offer Opening will be considered in Financial Offer Evaluation. No Tenders shall be rejected at the opening of the Financial Offer. (c) all pages of the original version of the Financial Offer, except for un-amended printed literature, will be initialled by members of the Tender Evaluation Committee. The Procuring Entity shall, in writing, notify the Non-responsive Tenderers who have not been determined as qualified to the requirements of the Technical Offer and shall return their Financial Offers (Envelope-02) unopened after signing the Contract Award with the evaluated lowest responsive Tenderer.
52. Clarification on Financial Offer	52.1	TEC may ask Tenderers for clarification of their Financial Offers, about the breakdowns of unit rates, in order to facilitate the examination and evaluation of Financial Offers. The request for clarification by the TEC and the response from the Tenderer shall be in writing.
	52.2	Changes in the Tender price shall not be sought or permitted, except to confirm the correction of arithmetical errors discovered by the TEC in the evaluation of the Tenders, as stated under ITT Sub Clause 55.1.
	52.3	If a Tenderer does not provide clarifications of its Financial Offer by the date and time, its Tender shall not be considered in the evaluation.
	52.4	Requests for clarifications on Financial Offers shall be duly signed only by the TEC Chairperson.
53. Correction of Arithmetical Errors	53.1	Provided that the Tender is responsive, the TEC shall correct arithmetical errors on the following basis: (a) if there is a discrepancy between the unit price and the line item total price that is obtained by multiplying the unit price and quantity, the unit price will prevail and the line item total price shall be corrected, unless in the opinion of the TEC there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted will govern and the unit price will be corrected; and (b) 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; and (c) if 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.
	53.2	TEC shall correct the arithmetic errors and shall promptly notify the concerned Tenderer(s). If the Tenderer does not accept the correction of arithmetic errors, its Tender shall be rejected.

54. Conversion to Single Currency	54.1	For evaluation and comparison purpose, TEC shall convert all Tender prices expressed in the amounts in various currencies into an amount in Bangladeshi Taka currency, using the selling exchange rates established by the Bangladesh Bank, on the date of Tender opening .
55. Financial Evaluation	55.1	TEC will evaluate each Financial Offer that has been opened duly.
	55.2	To evaluate a Tender, the TEC will consider the following: (a) the Tender price for Item(s) or Lot (b) adjustments for correction of arithmetical errors, as stated under ITT Sub Clause 53.1; (c) Adjustment in order to take into consideration the unconditional discounts and methodology for application of the discount offered for being awarded more than one lot, as stated under ITT Sub Clauses 23.10 and 23.11, if any.
	55.3	If Tenders are invited for a single lot or for a number of lots as stated under ITT Sub-clauses 26.10, TEC shall evaluate only lots that have included at least the percentage of items per lot. The TEC shall evaluate and compare the Tenders taking into account: (a) Lowest evaluated tender for each lot ; (b) The price discount/reduction per lot; (c) Least cost combination for the Purchaser, considering discounts and the methodology for its application as stated under ITT Sub-clauses 26.16 and 26.17 offered by the Tenderer in its Tender.
	55.4	Only those spare parts and tools which are specified as a item in the List of Goods and Related Services in Section 6, Procuring Entity's Requirement or adjustment as stated under ITT Sub-clause 55.6, shall be taken into account in the Tender evaluation. Supplier-recommended spare parts for a specified operating requirement as stated under ITT Sub-clause 29.3(b) shall not be considered in Tender evaluation.
	55.5	Variations, deviations, alternatives and other factors which are in excess of the requirements of the Tender Document or otherwise result in unsolicited benefits for the Procuring Entity will not be considered in Tender evaluation.
	55.6	The Procuring Entity's evaluation of a Tender may require the consideration of other factors, in addition to the Tender price quoted as stated under ITT Clause 26. The effect of the factors selected, if any, shall be expressed in monetary terms to facilitate comparison of Tenders. The factors, methodologies and criteria to be used shall be as specified in TDS . The applicable economic factors, for the purposes of evaluation of Tenders shall be: (a) adjustment for deviations in the Delivery and Completion Schedule; (b) cost of major replacement components, mandatory spare parts and service.
	55.7	TEC may recommend to increase the amount of the Performance Security above the amounts as stated under ITT Sub Clause 66.1 but not exceeding twenty-five (25) percent of the Contract Price, if in the opinion of the TEC, it is found that the item prices are unbalanced.

56. Identifying Significantly Low-priced Tenders (SLT)	56.1	Prices of all technically responsive Tenderers shall be checked to identify Significantly Low-priced Tender through a specified manner mentioned in the following Sub Clauses.
	56.2	During the evaluation of tenders, the proposed prices of all technically responsive tenderers (at least two tenders) shall be used to determine a Weighted Average, considering: - the official cost estimate, - the prices obtained from the recent Price Index in public procurement processes following ITT Sub Clause 56.4 and - the tenderers quoted prices. The weights shall be as follows: - official cost estimate = 0.20 - Prices obtained from the recent Price Index = 0.30 - Prices quoted by all responsive tenderers = 0.50 The formula shall be: $\bar{x} = 0.5 * \frac{1}{n} \sum_{i=1}^n x_i + 0.2 * x_{OCE} + 0.3 * x_{NPPI}$ Thereafter, the Weighted Standard Deviation (sd) of the quoted prices of all responsive tenders shall be determined using the following formula: $sd = \sqrt{\frac{(x_i - \bar{x})^2}{n}}$ Where: x_i = Quoted prices of tenderers $\bar{x}$ = Weighted Average n = Number of responsive tenderers.
	56.3	Finally, the lower limit of acceptable prices shall be $[\bar{x} - sd]$. Any tender quoted below this limit shall be considered as a significantly low-priced tender and shall be treated as financially non-responsive and rejected.
	56.4	For determining the recent National Public Procurement Price Index, a national average percentage deviation for Goods procurement category shall be calculated from the e-GP system over a period of 28 days-consisting of the day of tender opening and the preceding 27 days.
	56.5	To determine the NPPI, in all procurement processes (except for cases under the Limited Tendering Method in National procurement) where a Notice of Award has been issued during 28-days period, the percentage deviation between the officially estimated price and the awarded tender price shall be calculated, and the national average of such deviations shall be determined. X_{NPPI} shall be determined through multiplication between officially estimated price and NPPI derived from the e-GP system.
	56.6	In the case of only one technically responsive tender, the above methodology shall not be applied; instead, the lowest evaluated price obtained shall be directly compared with the official cost estimate. If the deviation of the evaluated price of the responsive tender from the official estimate exceeds twenty percent (20%), such tender shall be deemed non-responsive. If the deviation of the evaluated price from the official cost estimate is twenty percent (20%) or less, the said tenderer may be recommended for issuance of the Notification of Award subject to successful post-qualification verification under ITT Sub Clause 59.

57. Price Comparison	57.1	The lowest-priced Tender among the technically and financially responsive Tenders through ITT Clause 52 shall be determined as the Lowest Evaluated Responsive Tender and shall be recommended for issuance of the Notification of Award subject to successful post-qualification verification under ITT Sub Clause 59.
	57.2	In the extremely unlikely event that there is a tie for the lowest evaluated price, the Tender Evaluation Committee shall initially examine the possible presence of collusive practices, and if such practices are found, further actions shall be taken in accordance with Rule 149 of the PPR 2025.
	57.3	Where there is a tie in the lowest evaluated bid but no case of the collusive practice is identified, the Tenderer with the superior past performance with the Procuring Entity shall be selected, whereby factors such as delivery period, quality of Goods delivered, complaints history and performance indicators could be taken into consideration.
	57.4	In the event that there is a tie for the lowest price and none of the Tenderers has the record of past performance with the Procuring Entity as stated under ITT Sub Clause 57.3, then the Tenderer shall be selected, subject to firm confirmation through the post-qualification process, after consideration as to whether the quality of Goods that is considered more advantageous by the end-users.
	57.5	The successful Tenderer shall not be selected through lottery under any circumstances.
58. Negotiations	58.1	No negotiations shall be held during the financial offer evaluation or award, with the lowest or any other Tenderer.
	58.2	The Procuring Entity through the TEC may, however, negotiate with the lowest evaluated Tenderer with the objective to reduce the Contract Price by reducing the scope of works or a reallocation of risks and responsibilities, only when it is found that the lowest evaluated Tender is significantly higher than the official estimated cost; the reasons for such higher price being duly investigated.
	58.3	If the Procuring Entity decides to negotiate for reducing the scope of the requirements under ITT Sub Clause 58.2, it will be required to guarantee that the lowest Tenderer remains the lowest Tenderer even after the scope of work has been revised and shall further be ensured that the objective of the Procurement will not be seriously affected through this reduction.
	58.4	In the event that the Procuring Entity decides because of a high Tender price to reduce the scope of the requirements to meet the available budget, the Tenderer is not obliged to accept the award and shall not be penalised in any way for un-accepting the proposed award.

59. Post-qualification	59.1	The determination on post-qualification shall be based upon an examination and verification of the documentary evidence of the Tenderer's eligibility and qualifications submitted by the Tenderer, pursuant to ITT Clauses 28, 30 and 31, clarifications as stated under ITT Clause 48 and the qualification criteria indicated in ITT Clauses 12 to 18. Factors not included therein shall not be used in the evaluation of the Tenderer's qualification.
	59.2	An affirmative determination shall be a prerequisite for award of the Contract to the Tenderer. A negative determination shall result in non-responsiveness of the Tenderer's Tender, in which event the Procuring Entity shall proceed to the next lowest evaluated Tender to make a similar determination of that Tenderer's capabilities to perform the Contract satisfactorily, if awarded.
	59.3	TEC may verify information contained in the Tender by visiting the premises of the Tenderer as a part of the post qualification process, if practical and appropriate.
	59.4	The objective of any visit under ITT Sub-Clause 59.3 shall be limited to a general and visual inspection of the Tenderer's facilities and its plant and equipment, and there shall be no discussion concerning the Tender or its evaluation with the Tenderer during such visit(s).
60. Procuring Entity's Right to Accept any or to Reject Any or All Tenders	60.1	The Procuring Entity reserves the right to accept any Tender or to reject any or all the Tenders any time prior to contract award and, to annul the Procurement proceedings with prior approval of the Head of the Procuring Entity, any time prior to contract award following specified procedures, without thereby incurring any liability to Tenderers, or any obligations to inform the Tenderers of the grounds for the Procuring Entity's action.
61. Rejection of All Tenders	61.1	The Procuring Entity may, in the circumstances as stated under ITT Sub Clause 61.2 reject all Tenders following recommendations from the TEC only after the approval of such recommendations by the Head of the Procuring Entity.
	61.2	All Tenders can be rejected, if - (a) the price of the lowest evaluated Tender exceeds the official estimated cost, provided the estimate is realistic, or (b) there is evidence of lack of effective competition; such as non-participation by a number of potential Tenderers; or (c) the Tenderers are unable to propose completion of the contract within the stipulated time in its Tender, though the stipulated time is reasonable and realistic; or (d) all Tenders are non-responsive; or (e) If, in the tendering process or in the tender documents, any defect, deviation, or inconsistency is observed, which appears to hinder the objective of public procurement should the procurement process be continued; or (f) evidence of professional misconduct, affecting seriously the Procurement process, is established pursuant to Rule 149 of the Public Procurement Rules, 2025.
	61.3	Notwithstanding anything contained in ITT Sub-Clause 61.2 Tenders may not be rejected if the lowest evaluated price is in conformity with the market price.
62. Informing Reasons for Rejection	62.1	Notice of the rejection will be given promptly within three (3) working days of decision taken by the Head of the Procuring Entity to all Tenderers and, the Procuring Entity will, upon receipt of a written request, communicate to any Tenderer the reason(s) for its rejection but is not required to justify those reason(s).

G. Contract Award

63. Award Criteria	63.1	The Procuring Entity shall award the Contract to the Tenderer whose Tender is responsive to all the requirements of the Tender Document and that has been determined to be the lowest evaluated Tender, provided further that the Tenderer is determined to be post-qualified in accordance with ITT Clause 59.
	63.2	Tenderer will not be required, as a condition for award, to undertake responsibilities not stipulated in the Tender Documents, to change its price, or otherwise to modify its Tender.
64. Notification of Award	64.1	Prior to the expiry of the Tender Validity period and within three (3) working days of receipt of the approval of the award by the Approving Authority, the Procuring Entity shall issue the Notification of Award (NOA) to the successful Tenderer.
	64.2	The NOA, (Form PG5A-9) attaching the Contract Agreement as per the sample (Form PG5A-10) to be signed, shall state: (a) the acceptance of the Tender by the Procuring Entity; (b) the price at which the contract is awarded; (c) the amount of the Performance Security and its format; (d) the date and time within which the Performance Security shall be furnished; and (e) the date and time within which the Contract shall be signed.
	64.3	In the event, the Tenders were invited for one (1) or more items on an “item-by-item” basis, contract(s) will comprise the corresponding item(s) awarded to the successful Tenderer(s) and, Contract(s) will be signed per each of the successful Tenderer(s) covering the corresponding item(s).
	64.4	In the event, the Tenders were invited for a single lot, contract will comprise the corresponding items in the lot awarded to the successful Tenderer and, Contract will be signed with the successful Tenderer of the lot, covering the item(s).
	64.5	In the event, the Tenders were invited for a number of lots on a “lot-by-lot” basis, contracts will comprise the corresponding items in a lot awarded to the successful Tenderer(s) and, Contract(s) will be signed per each of the successful Tenderer(s) per lot, covering the corresponding item(s).
65. Reporting on Contract Awarding	65.1	Immediately, but no later than 24 hours, after issuing the Notification of Award, the Procuring Entity shall, for the information of other tenderers and procurement-related stakeholders, publish the contract award details Format PG5A-B on the his/her notice board or on its own website, as well as on the BPPA website. Such information shall remain displayed on the notice board or retained on the website for at least twenty-eight (28) days.
66. Performance Security	66.1	Performance Security shall be provided by the successful Tenderer in BDT currency and within the timeline as mentioned in the TDS .
	66.2	The proceeds of the Performance Security shall be payable to the Procuring Entity unconditionally upon first written demand as compensation for Contractor’s failure to complete its obligations under the Contract.
	66.3	In the event a Government owned enterprise as stated under ITT Sub Clause 5.10 is the successful Tenderer, there shall be Security Deposit as specified in the TDS , in lieu of the Performance Security, as stated under ITT Sub Clause 66.1

67. Form and Time Limit for Furnishing of Performance Security	67.1	Performance Security, as stated under ITT Clause 66, may be in the form of a Bank Draft, or a Pay Order or an irrevocable unconditional Bank Guarantee in the format (Form PG5A-11), without any alteration, issued by any Scheduled Bank of Bangladesh acceptable to the Procuring Entity.
	67.2	Within the timeline mentioned in the TDS from the issuance of the NOA but not later than the date specified therein, the successful Tenderer shall furnish the Performance Security for the due performance of the Contract in the amount as stated under ITT Sub Clauses 66.1 or 66.2.
68. Validity of Performance Security	68.1	Performance Security shall be required to be valid until a date twenty-eight (28) days beyond the Intended Completion Date as specified in Tender Document.
69. Authenticity of Performance Security	69.1	The Procuring Entity shall verify the authenticity of the Performance Security submitted by the successful Tenderer by sending a written request to the branch of the Bank issuing the Pay Order or Bank Draft or irrevocable unconditional Bank Guarantee in specified format.
	69.2	In case of Performance Security being found unauthentic, measures shall be taken following ITT Sub Clause 4.4.
70. Retention Money and Contractual Security	70.1	Upon the completion of delivery of Goods and subsequent acceptance by the TEAC, the Procuring Entity shall deduct from the payment certificate, a retention amount at the percentage rate as mentioned in TDS .
	70.2	The Performance Security mentioned in ITT Sub Clause 66.1 and the money to be retained as per ITT Sub Clause 70.1 will together be considered as the Contractual Security.
	70.3	The Contractual Security against the contract shall not go beyond the amount mentioned in the TDS unless it is recommended by the TEC to extend as mentioned in ITT Sub Clause 70.4.
	70.4	The Procuring Entity shall increase the amount of the Contractual Security on the recommendation of TEC above the amounts as per Rule 36(2) of the PPR 2025.
71. Contract Signing	71.1	At the same time as the Procuring Entity issues the NOA, the Procuring Entity will send the draft Contract Agreement and all documents forming the Contract to the successful Tenderer.
	71.2	Within the timeline mentioned in the TDS from the issuance of the NOA but not later than the date specified therein, the successful Tenderer and the Procuring Entity shall sign the contract.
	71.3	Failure of the successful Tenderer to submit the Performance Security, as stated under ITT Sub Clause 66.1, or to sign the Contract, as stated under ITT Sub Clauses 71.1 and 71.2, shall constitute sufficient grounds for the annulment of the award and forfeiture of the Tender Security. In that event the Procuring Entity may award the Contract to the next lowest evaluated responsive Tenderer, who is determined by the TEC to be qualified to perform the Contract satisfactorily.

72. Notification of Contract Signing	72.1	Immediately, but no later than three (3) days after the signing of contract, the Procuring Entity shall publish the contract-related information, in the format prescribed in Format PG5A-C on the his/her notice board or on its own website. The Procuring Entity shall also publish, on the BPPA website or web portal, the contract-related information together with details of the beneficial ownership of the successful Tenderer. This information shall be kept posted in the notice board or websites for at least thirty (30) days.
73. Debriefing of Tenderers	73.1	Debriefing of Tenderers by the Procuring Entity shall outline the relative status and weakness only of his or her Tender requesting to be informed of the grounds for not accepting the Tender submitted by him or her, without disclosing information about any other Tenderer.
	73.2	In the case of debriefing, confidentiality of the evaluation process shall be maintained.
74. Adjudicator	74.1	The Procuring Entity proposes the person named in the TDS to be appointed as Adjudicator under the Contract, at an indicative hourly fee and for those reimbursable expenses as specified in the TDS .
75. Right to Complain and appeal	75.1	Tenderer has the right to complain and appeal in accordance with the Sections 29 and 30 of Public Procurement Act 2006 and the Rule 72 of Public Procurement Rules, 2025. The Procuring Entity shall cause to dispose of the complaint and appeal in accordance with the provisions of Section 30 of Public Procurement Act 2006 and Rules 72-77 of Public Procurement Rules, 2025.

Section-2: Tender Data Sheet

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Section 2.Tender Data Sheet

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Section 2. Tender Data Sheet	
<i>Instructions for completing the Tender Data Sheet are provided, as needed, in the notes in italics and under lined mentioned for the relevant ITT clauses.</i>	
ITT Clause	Amendments of, and Supplements to, Clauses in the Instruction to Tenderers
A. General	
ITT 1.1	The Procuring Entity is : Project Director Modernization and Capacity Enhancement of BREB Network (Dhaka- Mymensingh Division) (1st Revised) Project, BREB. Address: Bangladesh Rural Electrification Board, Head Office, Training Academy Building, Nikunja-2, Khilkhet, Dhaka-1229. Floor: 6th Floor, City: Dhaka-1229, Country: Bangladesh. Telephone: +88-028900070 Electronic mail address: pdmcepdmd@gmail.com
ITT 1.1	The number, identification and name of lots comprising the Tender are: Design, Supply, Installation, Testing & Commissioning etc. All Complete as Required for Establishment of SCADA System for 4 Sub-stations inclusion with Existing SCADA at Narsingdi PBS-1 on Turn-key basis. Tender Ref.: 27.12.0000.224.11.030.23.572 Package No.: MCEP/BREB/DMD-W-391
ITT 3.1	The source of public fund is GOB, BREB & World Bank (IDA)
ITT 3.3	The name of the Development Partner is The World Bank (International Development Association).
ITT 5.1	Tenderers from the following countries are not eligible: A list of debarred firms and individuals is available on the Bank's external website: http://www.worldbank.org/debarr, and Bangladesh – Bangladesh Public Procurement Authority (BPPA) website: www.bppa.gov.bd
ITT 6.1	Materials, Equipment and associated services from the following counties are not eligible: Israel .

B. Tender Document	
ITT 8.2	The following are authorised agents/offices of the Procuring Entity for the purpose of issuing the Tender Document: Bangladesh Rural Electrification Board The Procuring Entity is: Project Director Modernization and Capacity Enhancement of BREB Network (Dhaka- Mymensingh Division) (1st Revised) Project, BREB. Address: Bangladesh Rural Electrification Board, Head Office, Training Academy Building, Nikunja-2, Khilkhet, Dhaka-1229. Floor: 6th Floor, City: Dhaka-1229, Country: Bangladesh. Telephone: +88-028900070 Electronic mail address: pdmcepdmd@gmail.com
ITT 9.1	For clarification of Tender Document purposes only, the Procuring Entity's address is: Attention: Project Director Modernization and Capacity Enhancement of BREB Network (Dhaka- Mymensingh Division) (1st Revised) Project, BREB. Address: Bangladesh Rural Electrification Board, Head Office, Training Academy Building, Nikunja-2, Khilkhet, Dhaka-1229. Floor: 6th Floor, City: Dhaka-1229, Country: Bangladesh. Telephone: +88-028900070 Electronic mail address: pdmcepdmd@gmail.com The clarification time & date: 11:00 AM (BST), 06-05-2026.
ITT 10.1	The Pre- Tender meeting shall be held at 06-05-2026. Address: Bangladesh Rural Electrification Board, Head Office, Training Academy Building, Nikunja-2, Khilkhet, Dhaka-1229. Floor: 6th Floor, City: Dhaka-1229, Country: Bangladesh. Telephone: +88-028900070 Cell Phone: +88-01717790507 Electronic mail address: pdmcepdmd@gmail.com Time & Date: 11:00 AM (BST)
C. Qualification Criteria	
ITT 13.1 (a)	The minimum of years of general experience of the Tenderer in the role of contractor, subcontractor, or management contractor shall be 03 years. <i>[years counting backward from the date of publication of IFB in the newspaper]</i>
ITT 13.1(b)	The Tenderer or in the case of JVCA, any partner, shall have the minimum specific experience as an EPC turnkey contractor or as a Contractor or Subcontractor or Management Contractor in similar to the proposed plant and services of at least one/ more contracts for construction of maximum 3 (three) numbers of Substation or

	Switching Station with installation of SCADA or Substation Automation System and integration with SCADA/SAS system for 33/11 KV or highest voltage Substation, successfully completion within last 10 Years with total value as below <table><tr><td>Package No.</td><td>Amount in USD</td></tr><tr><td>MCEP/BREB/DMD-W-391</td><td>400,000.00 USD or equivalent</td></tr></table> [years counting backward from the date of publication of IFB in the newspaper]	Package No.	Amount in USD	MCEP/BREB/DMD-W-391	400,000.00 USD or equivalent																				
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ITT 14.1(a)	The maximum three (03) number of arbitrations against the Tenderer over a period of the last Five (05) years.																								
ITT 14.1 (b)	The required liquid assets or credit line(s) or working capital, net of other contractual commitments of the amount as below: <table><tr><td>Package No.</td><td>Amount in USD</td></tr><tr><td>MCEP/BREB/DMD-W-391</td><td>628,000.00 USD or equivalent</td></tr></table>	Package No.	Amount in USD	MCEP/BREB/DMD-W-391	628,000.00 USD or equivalent																				
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ITT 14.1(c)	The required average annual turnover shall be greater than Tk. mentioned below over the best three (3) years in the last five (5) years. Year will be considered from the date of IFB <table><tr><td>Package No.</td><td>Amount in USD</td></tr><tr><td>MCEP/BREB/DMD-W-391</td><td>620,000.00 USD or equivalent</td></tr></table>	Package No.	Amount in USD	MCEP/BREB/DMD-W-391	620,000.00 USD or equivalent																				
Package No.	Amount in USD																								
MCEP/BREB/DMD-W-391	620,000.00 USD or equivalent																								
ITT 15.1	A Project Manager, Engineer, and other key staff shall have the following qualifications and experience: <table><tr><th>No</th><th>Position</th><th>Total Works Experience (Years)</th><th>Experience in similar works (Years)</th></tr><tr><td>1.</td><td>Project Manager-01 (B. Sc. in Electrical & Electronic Engineering)</td><td>10 Years</td><td>5 Years</td></tr><tr><td>2.</td><td>Electrical Design/ Testing & Commissioning Engineer - 1Nos. (B. Sc. in Electrical & Electronic Engineering)</td><td>5 Years</td><td>3 Years</td></tr><tr><td>3.</td><td>Site Engineer-1 Nos. (B.Sc./ Diploma in Electrical Engineering)</td><td>5 Years</td><td>3 Years</td></tr><tr><td>4.</td><td>Electricians - 1 Nos.</td><td>5 Years</td><td>3 Years</td></tr><tr><td>5.</td><td>Site Supervisor, Foreman -1 Nos.</td><td>5 Years</td><td>3 Years</td></tr></table> The number of key staff mentioned above may require to increase according to the site condition.	No	Position	Total Works Experience (Years)	Experience in similar works (Years)	1.	Project Manager-01 (B. Sc. in Electrical & Electronic Engineering)	10 Years	5 Years	2.	Electrical Design/ Testing & Commissioning Engineer - 1Nos. (B. Sc. in Electrical & Electronic Engineering)	5 Years	3 Years	3.	Site Engineer-1 Nos. (B.Sc./ Diploma in Electrical Engineering)	5 Years	3 Years	4.	Electricians - 1 Nos.	5 Years	3 Years	5.	Site Supervisor, Foreman -1 Nos.	5 Years	3 Years
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1.	Project Manager-01 (B. Sc. in Electrical & Electronic Engineering)	10 Years	5 Years																						
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4.	Electricians - 1 Nos.	5 Years	3 Years																						
5.	Site Supervisor, Foreman -1 Nos.	5 Years	3 Years																						
ITT 16.1	The Tenderer shall own or have proven access to hire or lease of the major equipment, in full working order as follows: <table><tr><th>No</th><th>Equipment Type and Characteristics</th><th>Minimum Number Required</th></tr><tr><td>1.</td><td></td><td></td></tr><tr><td>2.</td><td></td><td></td></tr></table>	No	Equipment Type and Characteristics	Minimum Number Required	1.			2.																	
No	Equipment Type and Characteristics	Minimum Number Required																							
1.																									
2.																									

ITT 17.1	The value of non-judicial stamp for execution of the Joint Venture Agreement shall be Tk 300 only.		
	Maximum number of partners in the JV shall be 3 (<i>Three</i>)		
ITT 17.2	The minimum qualification requirements of Leading Partner, other Partner(s) and requirements by summation of a JV shall be as follows:		
	ITT Clauses References	Requirements by summation	Requirements for Leading Partner
	ITT-13.1(a)	Summation not applicable	Same as stated in TDS
	ITT-13.1(b)	100%	At least one Contract
	ITT-14.1(b)	100%	40%
	ITT-14.1(c)	100%	40%
	ITT-15.1	100%	Minimum requirement not applicable
	ITT-16.1	100%	Minimum requirement not applicable
	ITT-17.5	100%	Maximum among the Partners

D. Preparation of Tender	
ITT 18.1	The maximum percentage of Goods allowed to be subcontracted: (Not Applicable)
ITT 18.4	The Nominated Subcontractor(s) named <i>[insert name(s)]</i> shall execute the following specific components of the proposed Works: (Not Applicable)
ITT 19.1	Tenders are being invited for Tender Ref: 27.12.0000.224.11.030.23.572 Date: Package No: MCEP/BREB/DMD-W-391
ITT 23.2(f)	Tenderers shall have the following up to date valid License: • Trade License / Certificate of Incorporation. • TIN Certificate. • VAT Registration. • Income Tax Certificate. • ISO Certificate (if any). • ABC License and etc.
ITT 23.2(s)	The Tenderer shall submit with its technical offer the following additional documents: - Letter of Authorization to the effect that the bidder is authorized to submit the bid on behalf of the respective manufacturer and that the Bidder has the authority to supply such equipment to the Employer as per the Form given in Section-5: Tender and Contract Forms in Manufacturer's Letter head from the proposed manufacturer of - Complete Substation Automation System (SAS) and SCADA-Component/Equipment 3 kVA Inverter System (Input-110V DC, Output-230V AC, 50Hz, Single Phase). - Bidder shall furnish copies of valid ISO 9001/ISO 9002 or equivalent certificate for the proposed manufacturers for individual equipment: - Complete Substation Automation System (SAS) and SCADA-Component/ Equipment 3 kVA Inverter System (Input-110V DC, Output-230V AC, 50Hz, Single Phase). - Tenderer/ Manufacturer shall Tie up with ADMS, SCADA software from a world class SCADA/ADMS supplier with at least 10 years manufacturing experience with proven performance worldwide. Manufacture shall guarantee system support for at least 10 years. - The tenderer shall submit satisfactory type test certificates of all the equipment to be supplied under this contract (if applicable). - The tender shall submit along with offer all type & routine test reports of offered equipment as mentioned in the specification enclosed in the tender document from internationally recognized independent testing laboratory (where necessary). For the test reports from the laboratories the tenderer must furnish evidence in support of the status of the laboratories, which should be acceptable to BREB. The Manufacturer's own test report will not be accepted. - Type & Routing test reports for the Substation Automation System (SAS) & others as specified in the specifications shall be submitted along with the bid. Tests reports other than in English language must be translated into English and the translation shall be certified by the Notary public or Government Authorized agency of the bidder's country. All such type test reports are to be supplied from internationally recognized independent testing laboratory

	such <u>as K.EMA NETHERLANDS; CES1- ITALY; Under writers Laboratory (UL)-U.S. A; CPRI-INDIA or from any member of STL for the equipment to be offered.</u> The Manufacturer's own test report will not be accepted. The client's policy is to independently verify the submitted test reports directly with the testing authority which requires the contact details of the respective testing laboratory such as contact person's name, designation, phone number, fax no and e-mail address, which shall also be provided in the bid. 6. The Bidder will provide typical prototype drawings (single line diagrams, plans and layout) of a sample of SCADA System with Substation Automation System to fully describe the Bid and to demonstrate that the Bidder understands the requirements. 7. The Bidder shall provide technical literature (pamphlets, brochures, booklets, leaflets) of all plant, equipment, relays, instruments, meters and materials being supplied in the works to fully demonstrate the type and quality of all items and the national or international standards to which they will be manufactured. Catalogue I reference numbers in the technical literature shall clearly relate to items in the bid. 8. The manufacturer shall have the experience mentioned in section-6 of the bidding document in manufacturing the offered goods. Bidder shall submit such evidence along with the bid. 9. The manufacturer must have experience of manufacturing and supply of Supply records of Substation Automation System (SAS)/SCADA- Component/ Equipment, FPI System- Component/Equipment for last 10 years from the date of tender opening. Documentary evidence must be submitted with the offers. 10. End User's Certificate: 1. The Bidder shall have evidence of successful completion and 1 (one) year successful operation of the Substation Automation System (SAS)/SCADA for of 33/11 kV (AIS/GIS) Substations or above ratings. 2. Evidence from end user for a minimum of 3 (three) years satisfactory service/ operation within the last 10 (Ten) years in humid tropical climate of similar specifications required by this bid for the equipment of the respective manufacturer. a. Substation Automation System (SAS)/SCADA – Components/Equipment b. 3 KVA Inverter System – Component/Equipment 11. All bidders must have operation and maintenance facilities in Employer's Country for after sales service support. However, bidder from outside the Employer's country shall submit the name & address of a local agent who is able to liaise with the Employer. And also, the local agent shall be responsible along with bidder to provide proper service up to extended warranty period. Such local agent must have enough similar experience (including qualified expert who has experience on installation, testing and commissioning works for SAS) to provide services as per the Employer's requirements up to the extended warranty period. Bidder shall submit along with the bid a confirmation letter issued from that local agent and also relevant documents of experience. The bidder shall submit an agreement copy with the local agent before signing this contract if the contract is awarded. 12. Transcript of registration of the incorporation of the Bidder's company (with English translation, if applicable) defining the constitution or legal status, scope of business, place of registration and principal place of business. 13. The Tenderer also need to submit the financial standing, such as profit and loss statements and audited balance sheet for the last 5 years. 14. Performance certificates of the above equipment 15. Tender Capacity / Bank solvency certificate from their banker showing capability of handling the projects.

	16. Table of contents with page no. xiv. Tender purchased receipt/Document. xv. Power of attorney in favour of the tender signatory. 17. A written confirmation of Authorization to sign on behave of the tenderer xvii. Warranty certificate from both Tenderer and manufacturer. 18. Statement of works in hand to be completed next 01(one) year including its value of uncompleted portion. The required Technical Proposal shall include the following additional information. 19. Work plan 20. Statement of working method 21. Technical specification and brochures of machineries plant to be incorporated in the works. 22. Time Schedule in bar chart. 23. Organogram of the required man power for implementing of this project. . 24. Personnel required for the work. 25. . Equipment's required for the work				
ITT 23.2(g) ii.	Income Tax Assessment Year shall be (2024-2025).				
ITT 23.3(d)	The Tenderer shall submit with its financial offer the following additional documents: The required reports on the financial standing, such as profit and loss statements and audited balance sheet shall be for the last 5 years.				
ITT 25.1	Alternatives will not be permitted.				
ITT 26.3	Tenderers shall quote for the entire Plant and Installation Services on a single responsibility basis.				
ITT 26.7(a)	Place of Final Destination: (1) Algi, (2) Amdia, (3) Gazaria (4) Shilmandi & (5) Godairchar 33/11kV Substation under Narsingdi PBS-1				
ITT 26.7(d)	Local transportation to named place of final destination is: Algi, Amdia, Gazaria & Shilmandi 33/11kV Substation under Narsingdi PBS-1				
ITT 26.9	The prices quoted by the Tenderer shall be fixed for the duration of the Contract.				
ITT 27.1	For expenditures that will be incurred in Bangladesh, the Tenderer shall quote the prices in Bangladeshi Taka (BDT).				
ITT 27.4	The prices shall be quoted by bidder in currency USD or BDT.				
ITT 29.3 (b)	Spare parts are required. Period of time the Equipment are expected to be functioning (for the purpose of spare parts): 10 Years. <i>[Note: Such spare parts as the Purchaser may elect to purchase from the supplier, provided that this election shall not relieve the supplier of any warranty obligations under the contract; Such spare parts that the Procuring Entity may be able to purchase from other supplier/manufacturers but are compatible with the goods procured]</i>				
ITT 31.1(d)	The required information regarding claims under litigation shall be current or during the last 3 years. <i>[years should be consistent with the years of general experience required]</i>				
ITT 31.1(e)	Manufacturer's Authorisation is required for all the items listed in Section 6: Schedule of Requirements				
ITT 31.1(g)	The required reports on the financial standing, such as profit and loss statements and audited balance sheet shall be for the past 5 years . <i>[years should be consistent with the years of general experience required]</i>				
ITT 32.2	The Tender Validity period shall be 180 days .				
ITT 34.1	The amount of the Tender Security shall be: <table border="1"> <tr> <th>Package No.</th><th>Amount in USD</th></tr> <tr> <td>MCEP/BREB/DMD-W-391</td><td>17000.00 USD or equivalent</td></tr> </table>	Package No.	Amount in USD	MCEP/BREB/DMD-W-391	17000.00 USD or equivalent
Package No.	Amount in USD				
MCEP/BREB/DMD-W-391	17000.00 USD or equivalent				
ITT 39.1	In addition to the original of the Tender, 2 copies , The Bidder will also provide the soft copy of the Bid in PDF format in USB flash drive/ CD with copying provision. In case of discrepancy, submitted paper-based Bid will be prevailed.				

E. Submission of Tender	
ITT 40.2	The inner and outer envelopes shall bear the following additional identification marks: The Procuring Entity is : Project Director Modernization and Capacity Enhancement of BREB Network (Dhaka- Mymensingh Division) (1st Revised) Project, BREB. Address: Bangladesh Rural Electrification Board, Head Office, Training Academy Building, Nikunja-2, Khilkhet, Dhaka-1229. Floor: 6th Floor, City: Dhaka-1229, Country: Bangladesh. Telephone: +88-028900070 Electronic mail address: pdmcepdmd@gmail.com The deadline for submission is: Date: 04-06-2026 at 12:00 Noon (BST). <u>Do not open before 04-06-2026 on 12:30 Noon (BST)</u>
ITT 40.4(e)	(a) The inner and outer envelopes shall bear the following additional identification marks : Be addressed to the Employer at the following address: Attention: Project Director Address: Bangladesh Rural Electrification Board, Head Office, Training Academy Building, Nikunja-2, Khilkhet, Dhaka-1229. Floor: 6th Floor, City: Dhaka-1229, Country: Bangladesh. Telephone: +88-028900070 Electronic mail address: pdmcepdmd@gmail.com (b) bear the following identification: Tender for Package No.: "MCEP/BREB/ DMD-W-391" Design, supply, installation, testing & commissioning etc. all complete as required for establishment of SCADA System for 4 Sub-stations inclusion with Existing SCADA at Narsingdi PBS-1 on Turn-key basis Tender Ref: 27.12.0000.224.11.030.23.572 Date: <i>"DO NOT OPEN BEFORE THE TECHNICAL OFFER EVALUATION AND APPROVAL"</i>.
ITT 41.1	For Tender submission purposes, the Procuring Entity's address is: Attention: Project Director Address: Bangladesh Rural Electrification Board, Head Office, Training Academy Building, Nikunja-2, Khilkhet, Dhaka-1229. Floor: 6th Floor, City: Dhaka-1229, Country: Bangladesh. Telephone: +88-028900070 Electronic mail address: pdmcepdmd@gmail.com The deadline for submission of Tenders is: Time & Date: 04-06-2026 at 12:00 Noon (BST).

F. Opening and Evaluation of Tenders	
ITT 44.1	The Tender opening shall take place at:
	Address: Bangladesh Rural Electrification Board, Head Office, Training Academy Building, Nikunja-2, Khilkhet, Dhaka-1229. Floor: 6th Floor, City: Dhaka-1229, Country: Bangladesh. Time & Date: 04-06-2026 at 12:30 Noon (BST). The Technical envelope will be opened first. The Financial Proposal will be kept in safe custody of purchaser. Financial Proposal of only technically responsive tender will be opened at date to be notified later to the respective tenderer. The Financial Proposal of the technically non-responsive tenderer will be returned unopened to the respective tenderer.
ITT 55.6	The applicable economic factors, for the purposes of evaluation of Tenders shall be: (a) <u>Adjustment for Deviations in the Delivery and Completion Schedule</u> “The Goods covered by this Tendering process are required to be delivered in accordance with and completed within, the Delivery and Completion Schedule specified in Section 6, Schedule of Requirements. No credit will be given for earlier completion. Tender offering late contract performance schedules within acceptable period will be accepted but the Tenders shall be adjusted in the evaluation by adding to the Tender Price at the rate of [specify percentage] of the Tender Price for each day of delay. Tender offering delivery schedules beyond [specify time limit] of the date specified in Section 6, Schedule of Requirement, shall be rejected.” [not applicable] (b) <u>Cost of major replacement components, mandatory spare parts, and service</u> List of high-usage and high-value items of components and spare parts [specify (spare parts, tools, major assemblies, estimated quantities)] of usage in the initial period [specify period] of operation. The total cost of these items and quantities will be computed from spare parts unit prices submitted by the Tenderer and added to the Tender price, for evaluation purposes only. [not applicable] (c) <u>Other factors affecting the true economic value</u> The Procuring Entity will draw up other factors affecting the true economic value of the Tender price may be life span costs, such as cost of fuel, performance or productivity of the equipment, etc. The total cost of these items and quantities will be computed from submitted Tender and added to the tender price, for evaluation purposes only. [not applicable]

G. Award of Contract	
ITT 66.1	The amount of Performance Security shall be ten (10) percent of the Contract Price.
	The successful Tenderer shall furnish the Performance Security for the due performance of the Contract within 10 working days of issuance of the Notification of Award (NoA).
ITT 66.3	The Security Deposit shall be deducted at the percentage rate of ten (10) percent from the successful Tenderer's (any government enterprise) payable invoices during Contract implementation, if awarded the Contract.
ITT 70.1	The Procuring Entity shall deduct from the payment certificate, a retention amount at the percentage rate of ten (10) percent from the payment certificate as Retention Money.
ITT 70.3	The Contractual Security against the contract shall not go beyond ten (10) percent of the contract price.
ITT 71.2	The successful Tenderer shall sign the contract with the Procuring Entity within 21 days of issuance of the Notification of Award (NoA).
ITT 74.1	The Adjudicator proposed by the Procuring Entity is <i>[insert name and address]</i>. The hourly fee shall be <i>[state the currency(ies) and amount]</i> and the reimbursable expenses shall be limited to <i>[state nature of reimbursable expenses, and limitations in value, if any]</i> The biographical data of the Adjudicator is: • The President of Engineers Institute of Bangladesh (IEB), Bangladesh. • Chief Engineer (Project), Bangladesh Rural Electrification Board ,BREB. Address: Office of the Chief Engineer (Project), 4th Floor, BREB Head-office Building, BREB, Dhaka. Country: Bangladesh. Telephone: +88-028900310 Electronic mail address: cepbreb@gmail.com <i>[provide relevant information, such as education, experience, age, nationality, and present position; attach additional pages as necessary]</i>

Section-3: General Conditions of Contract

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Section-3: General Conditions of Contract

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A. General

1. Definitions	1.1	In the Conditions of Contract, which include Particular Conditions and these General Conditions, the following words and expressions shall have the meaning hereby assigned to them. Boldface type is used to identify the defined terms: (a) Act means The Public Procurement Act, 2006 (Act 24 of 2006). (b) Adjudicator is the expert appointed jointly by the Procuring Entity and the Contractor to resolve disputes in the first instance, as provided for in GCC Sub Clause 82.2. (c) Completion means that the Facilities (or a specific part thereof where specific parts are specified in the Contract) have been completed operationally and structurally and put in a tight and clean condition, that all work in respect of Pre-Commissioning of the Facilities or such specific part thereof has been completed, and that the Facilities or specific part thereof are ready for Commissioning (d) Completion Schedule means the fulfilment of the Related Services by the Contractor in accordance with the terms and conditions set forth in the Contract; (e) Start Date is the date defined in the PCC and it is the last date when the Contractor shall commence execution of the goods/works/services under the Contract. (f) Intended Completion Date is the date calculated from the Commencement Date as specified in the PCC, on which it is intended that the Contractor shall complete the Works and Physical services as specified in the Contract and may be revised only by the Project Manager by issuing an extension of time or an acceleration order. (g) Effective Date means the date of fulfilment of all conditions of the Contract Agreement, from which the Time for Completion shall be counted. (h) Completion Certificate means the Certificate issued by the Project Manager as evidence that the Contractor has executed the services in all respects as per design, drawing, specifications and Conditions of Contract. (i) Time for Completion means the time within which Completion of the Facilities as a whole (or of a part of the Facilities where a separate Time for Completion of such part has been prescribed) is to be attained, in accordance with the relevant provisions of the Contract. (j) Variation means any change to the plant and services directly procured from the original Contractor to cover increases or decreases in quantities, including the introduction of new work items that are either due to change of plans, design or alignment to suit actual field conditions, within the general scope and physical boundaries of the contract. (k) Schedules means the document(s) entitled schedules, completed by the Contractor and submitted with the Tender Submission Letter, as included in the Contract. Such document may include the data, lists and schedules of rates and/or prices.

		(l) the Procuring Entity and the Contractor, together with the Contract Documents referred to therein, including all attachments, appendices, and all documents incorporated by reference therein; (m) Contract Documents means the documents listed in GCC Clause 7.1, including any amendments thereto. (n) Contract Price means the price stated in the Notification of Award and thereafter as adjusted in accordance with the provisions of the Contract and further clearly determined in the PCC; (o) Operational Acceptance means the acceptance by the Procuring Entity of the Facilities (or any part of the Facilities where the Contract provides for acceptance of the Facilities in parts), which certifies the Contractor's fulfillment of the Contract in respect of Functional Guarantees of the Facilities (or the relevant part thereof) in accordance with the provisions of contract (p) Site Investigation Reports are those that were included in the Tender Document and are factual and interpretative reports about the surface and subsurface conditions at the Site. (q) Pre-Commissioning means the testing, checking and other requirements specified in the Procuring Entity's Requirements that are to be carried out by the Contractor in preparation for Commissioning; (r) Commissioning means operation of the Facilities or any part thereof by the Contractor following Completion, which operation is to be carried out by the Contractor for the purpose of carrying out Guarantee Test(s). (s) Guarantee Test(s) means the test(s) specified in the Procuring Entity's Requirements to be carried out to ascertain whether the Facilities or a specified part thereof is able to attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, in accordance with the provisions of GCC Sub-Clause 43.2 (Guarantee Test) hereof. (t) Installation Services means all those services ancillary to the supply of the Plant for the Facilities, to be provided by the Contractor under the Contract, such as transportation and provision of marine or other similar insurance, inspection, expediting, site preparation works (including the provision and use of Contractor's Equipment and the supply of all construction materials required), installation, testing, pre-commissioning, commissioning, operations, maintenance, the provision of operations and maintenance manuals, training, etc. as the case may require. (u) Cost means all expenditures reasonably incurred or to be incurred by the Contractor, whether on or off the point of delivery, including overhead, taxes, duties, fees and such other similar levies including corresponding incidental charges and premiums for banking and insurances, as applicable; (v) Day means calendar day unless otherwise specified as working days. (w) Dayworks means work carried out following the instructions of the Procuring Entity or the authorised Project Manager and is paid for on the basis of time spent by the Contractor's workers and equipment at the rates specified in the Schedules, in addition to payments for associated Materials and Plant.

		(x) Defect is any part of the Works not completed in accordance with the Contract ; (y) Defect Liability Period means the period of validity of the warranties given by the Contractor commencing at Completion of the Facilities or a part thereof, during which the Contractor is responsible for defects with respect to the Facilities (or the relevant part thereof) as provided in contract document. (z) Defects Correction Certificate is the certificate issued by the Project Manager upon correction of defects by the Contractor (aa) Force Majeure means an event or situation beyond the control of the Contractor that is not foreseeable, is unavoidable, and its origins not due to negligence or lack of care on the part of the Contractor; such events may include, but not be limited to, acts of the Government in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes or more as included in GCC Clause 56; (bb) GCC means the General Conditions of Contract. (cc) Government means the Government of the People’s Republic of Bangladesh. (dd) Goods means raw materials, products and equipment and objects in solid, liquid or gaseous form, electricity, and related Services if the value of such Services does not exceed that of the Goods themselves. It also means mean the Contractor’s Plant, Equipment, Materials or any of them as appropriate; (ee) Works means all works associated with the construction, reconstruction, site preparation, demolition, repair, maintenance or renovation of railways, roads, highways, or a building, an infrastructure or structure or an installation or any construction work relating to excavation, installation of equipment and materials, decoration, as well as physical services ancillary to works as detailed in the PCC, if the value of those services does not exceed that of the Works themselves. (ff) Plant means permanent plant, equipment, machinery, apparatus, materials, articles, ancillary buildings/structure and things of all kinds to be provided and incorporated in the Facilities by the Contractor under the Contract (including the spare parts to be supplied by the Contractor), but does not include Contractor’s Equipment; (gg) Equipment means all facilities, equipment, machinery, tools, apparatus, appliances or things of every kind required in or for installation, completion and maintenance of Facilities that are to be provided by the Contractor, but does not include Plant, or other things intended to form or forming part of the Facilities. (hh) Facilities means the Plant to be supplied and installed, as well as all the Installation Services to be carried out by the Contractor under the Contract. It also includes any ancillary building or infrastructure that needs to be constructed/built/erected to support the plant.

		(ii) Specification means the Specification of the goods/works/related services included in the Contract and any modifications or additions to the specifications made or approved by the Project Manager in accordance with the Contract. (jj) Materials means things of all kinds other than Plant intended to form or forming part of the Permanent Works, including the supply-only materials, if any, to be supplied by the Contractor under the Contract (kk) "Head of the Procuring Entity" means the Secretary of a Ministry or a Division, the Head of a Government Department or Directorate; or the Chief Executive, or as applicable, Divisional Commissioner, Deputy Commissioner, District Judge; or by whatever designation called, of a local Government agency, an autonomous or semi-autonomous body or a corporation, or a corporate body established under the Companies Act; (ll) Procuring Entity/Employer/Purchaser means an Entity having administrative and financial powers to undertake Procurement of Goods, Works or Services using public funds, as specified in the PCC; (mm) Project Manager is the person named in the PCC or any other competent person appointed by the Procuring Entity and notified to the Contractor who is responsible for supervising the execution and completion of the plant and services and administering the Contract (nn) PCC means the Particular Conditions of Contract; (oo) Approving Authority means the authority which, in accordance with the Delegation of Financial powers, approves the award of Contract for the Procurement of Goods, Works and Services; (pp) Subcontractor means any natural 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 Contractor; (qq) Contractor/supplier means the Person under contract with the Procuring Entity for the supply and installation of Plant & Equipment under the Rules and the Act as stated in the PCC. (rr) Contractor's Representative means any person nominated by the Contractor and approved by the Procuring Entity to perform the duties delegated by the Contractor. (ss) Drawings include calculations and other information provided in Section 7 or as approved by the Project Manager for the execution and completion of the Contract ; (tt) Site means the point(s) of delivery named in the PCC. (uu) Writing means communication written by hand or machine duly signed and includes properly authenticated messages by facsimile or electronic mail.

2. Interpretation	2.1	In interpreting the GCC, singular also means plural, male also means female or neuter, and the other way around. Headings in the GCC shall not be deemed part thereof or be taken into consideration in the interpretation or construction of the Contract. Words have their normal meaning under the language of the Contract unless specifically defined.
	2.2	Entire Agreement: The Contract constitutes the entire agreement between the Procuring Entity and the Contractor and supersedes all communications, negotiations and agreements (whether written or verbal) of parties with respect thereto made prior to the date of Contract Agreement; except those stated under GCC Sub Clause 7.1(k).
	2.3	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 authorised representative of each party thereto.
	2.4	Non-waiver: (a) Subject to GCC Sub Clause 2.4(b), 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. (b) 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.
	2.5	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.
	2.6	Sectional completion: If sectional completion is specified in the PCC, references in the GCC to the Works, the Completion Date, and the Intended Completion Date apply to any section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).
3. Communications & Notices	3.1	Communications between Parties (notice, request or consent required or permitted to be given or made by one party to the other) pursuant to the Contract shall be in writing to the addresses specified in the PCC .
	3.2	A notice shall be effective when delivered or on the notice's effective date, whichever is later.
	3.3	A Party may change its address for notice hereunder by giving the other Party notice of such change to the address.
4. Governing Law	4.1	The Contract shall be governed by and interpreted in accordance with the laws of the People's Republic of Bangladesh.

5. Governing Language	5.1	The Contract shall be written in English. All correspondences and documents relating to the Contract may be written in English or <i>Bangla</i> . 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 English, in which case, for purposes of interpretation of the Contract, such translation shall govern.
	5.2	The Contractor shall bear all costs of translation to the governing language and all risks of the accuracy of such translation.
6. Corrupt, Fraudulent, Collusive, Coercive or Obstructive Practices	6.1	The Government, and the Development Partner, if applicable, requires that the Procuring Entity as well as the Tenderers and Contractors (including sub-contractors, agents, personnel, consultants, and service providers) shall observe the highest standard of ethics during implementation of procurement proceedings and the execution of Contracts under public funds.
	6.2	For the purpose of GCC Sub Clause 6.2 the terms set forth below as follows– (a) “Corrupt practice” means offering or promising to offer, directly or indirectly, any bribe, employment, valuable item or service, or financial benefit to any officer or employee of the Procuring Entity or of any other public or private authority, with the intent to influence any act, decision, or procedure of the Procuring Entity in the course of the procurement process or contract execution, or the acceptance or solicitation of such by any officer or employee of the Procuring Entity. It shall also include any involvement of the Procuring Entity or any of its employees in corrupt, fraudulent, collusive, coercive, or obstructive practices as mentioned in this Rule; (b) “Fraudulent practice” means any act of providing false statements, dishonestly concealing information, or omitting or misrepresenting or distorting facts by any person to influence a decision in the procurement process or contract execution; (c) “Collusive practice” means a scheme or arrangement between two (2) or more Persons, knowingly or unknowingly involving the Procuring Entity or any of its employees, that is designed to arbitrarily reduce the number of Tenders submitted or fix Tender prices at artificial, non-competitive levels, thereby denying the Procuring Entity the benefits of competitive price arising from genuine and open competition; (d) “Coercive practice” means harming or threatening to harm, directly or indirectly, Persons or their property to influence a decision to be taken in a Procurement proceeding or the execution of a Contract, and this will include creating obstructions in the normal submission process used for Tenders (e) “Obstructive practice” means deliberately destroying, falsifying, altering, or concealing evidence related to a procurement-related investigation, or providing false statements to an investigator so as to impede the investigation of allegations of corrupt, fraudulent, collusive, coercive, or obstructive practices; or intimidating, harassing, or threatening an investigator so as to discourage the disclosure of information or prevent the investigator from carrying out their duties, or directly or indirectly obstructing any action undertaken by the Bangladesh Public Procurement Authority (BPPA) in discharging its responsibilities assigned under the <i>Bangladesh Public Procurement Authority Act, 2023</i>.

	6.3	Should any corrupt, fraudulent, collusive, coercive or obstructive practice of any kind, in competing for or in executing the Contract, is determined by the Procuring Entity, then the Procuring Entity may, upon giving 14 days' notice to the Contractor, terminate the Contractor's employment under the Contract and the provisions of Clause 73 shall apply as if such expulsion had been made under Sub-Clause 73.1 (Termination for Default).
	6.4	If corrupt, fraudulent, collusive, coercive or obstructive practice of any kind, determined by the Procuring Entity or the Development Partner (if applicable) against the Contractor alleged to have carried out such practices, the Procuring Entity and/or the Development Partner shall; (a) exclude the Contractor from further participation in the particular Procurement proceeding; or (b) declare, at its discretion, the Contractor to be ineligible to participate in further Procurement proceedings, either indefinitely or for a specific period of time.
	6.5	The Contractor shall be aware of the provisions on corruption, fraudulence, collusion, coercion and of the Public Procurement Act, 2006, the Public Procurement Rules, 2025 and in case of Development Partner financed contract, the Procurement Guidelines of the Development Partner.
	6.6	The Contractor (including its manufacturers, sub-contractors, agents, personnel, consultants and service providers) shall permit the Government and/or the Development Partner to inspect the Contractor's accounts and records and other documents relating to the submission of Tender and contract performance, and to have them audited by auditors appointed by the Government and/or the Development Partner, if so required.
7. Documents Forming the Contract and Priority of Documents	7.1	The following documents forming the Contract shall be in the following order of precedence, namely: (a) The signed Contract Agreement; (b) The Notification of Award; (c) The Completed Tender and the Appendix to the Tender ; (d) Particular Conditions of Contract; (e) General Conditions of Contract; (f) Technical Specifications; (g) Personnel Information; (h) Equipment Information; (i) Drawings; (j) Priced Schedule for Plant and Services (PG5A-3) and Schedule of Requirements and; (k) Other Documents including correspondences listed in the PCC forming part of the Contract.
8. Assignment	8.1	The Contractor shall not assign his rights or obligations under the Contract, in whole or in part, except with the Procuring Entity's prior written consent.
9. Eligibility	9.1	The Supplier/Contractor and its Subcontractor(s) shall have the nationality of a country other than that specified in the PCC .
	9.2	All Goods and related services to be supplied under the Contract shall have their origin in the countries except any specified in the PCC .

10. Gratuities / Agency fees	10.1	No fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the Tender or in the Contract, have been given or received in connection with the procurement process or in the Contract execution.
11. Confidential Details	11.1	The Procuring Entity and the Contractor 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 Contractor may furnish to its Subcontractor such documents, data, and other information it receives from the Procuring Entity to the extent required for the Subcontractor to perform its work under the Contract, in which event the Contractor shall obtain from such Subcontractor an undertaking of confidentiality similar to that imposed on the Contractor under GCC Clause 11.
	11.2	The Procuring Entity shall not use such documents, data, and other information received from the Contractor for any purposes unrelated to the Contract. Similarly, the Contractor shall not use such documents, data, and other information received from the Procuring Entity for any purpose other than the design, construction, or other work and services required for the performance of the Contract.
	11.3	The obligations of a party under GCC Sub Clauses 11.1 and 11.2 above, however, shall not apply to information that: the Procuring Entity or Contractor needs to share with 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; or otherwise lawfully becomes available to that party from a third party that has no obligation of confidentiality.
	11.4	The above provisions of GCC Clause 11 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 Works or any part thereof.
	11.5	Any document, other than this Contract itself, enumerated in GCC Clause 12.1 shall remain the property of the Procuring Entity and shall be returned (all copies) to the Procuring Entity on completion of the Contractor's performance under this Contract if so required by the Procuring Entity.
	11.6	The provisions of GCC Clause 11 shall survive completion or termination, for whatever reason
12. Trademark, Patent and Intellectual Property Rights	12.1	The Procuring Entity should not be liable for any infringement of intellectual property rights arising from use of the goods procured. In case there are third-party claims of such infringement of patent, trademark, or industrial design rights, the Contractor must indemnify and hold the Procuring Entity free and harmless against such claims and shall not be in contravention of Trademark Act, 2009 and Patent and Design Act, 1911.

13. Copyright	13.1	The copyright in all drawings, documents, and other materials containing data and information furnished to the Procuring Entity by the Contractor herein shall remain vested in the Contractor, or, if they are furnished to the Procuring Entity directly or through the Contractor by any third party, including suppliers of materials, the copyright in such materials shall remain vested in such third party.
14. License/ Use of Technical Information	14.1	For the operation and maintenance of the Plant, the Contractor hereby grants a non-exclusive and non-transferable license (without the right to sub-license) to the Procuring Entity under the patents, utility models or other industrial property rights owned by the Contractor or by a third Party from whom the Contractor has received the right to grant licenses thereunder, and shall also grant to the Procuring Entity a non-exclusive and non-transferable right (without the right to sub-license) to use the know-how and other technical information disclosed to the Procuring Entity under the Contract. Nothing contained herein shall be construed as transferring ownership of any patent, utility model, trademark, design, copyright, know-how or other intellectual property right from the Contractor or any third Party to the Procuring Entity.
15. Joint Venture (JV)	15.1	If the Contractor is a JV, (a) each partner of the JV shall be jointly and severally liable for all liabilities and ethical or legal obligations to the Procuring Entity for performance of the Contract; (b) the JV partners shall nominate the Leading Partner as Representative or Partner-in-charge being entrusted with the Contract administration and management at Site who shall have the authority to conduct all business including the receipt of payments for and on behalf of all partners of the JV; (c) If there is a dispute that results in legal action being taken in court then action will be taken against all partners of the JV, if they are available and, if only one partner is available, then that partner alone shall answer on behalf of all partners and, if the complaint lodged is proven, the penalty shall be applicable on that partner alone as whatever penalty all the partners would have received; provided that if the other partners of the JV subsequently become available before the legal action has been completed, the Procuring Entity shall have the right to take action against those other partners of that JV as well. (d) the composition or constitution and legal status of the JV shall not be altered without the prior approval of the Procuring Entity; (e) alteration of partners, except the Leading partner, shall only be allowed if any of them is found to be incompetent or has any serious difficulties which may impact the overall implementation of the Works, whereby the incoming partner shall require to possess qualifications higher than that of the outgoing partner; (f) The business share of the Leading Partner shall be the highest among all the partners. Other partner(s) shall have at least 25% of business share each.

16. Nominated Subcontractor	16.1	Nominated Subcontractor named in the Contract shall be entitled to execute the specific components of the Works stated in the PCC .
	16.2	The Contractor shall not be under obligations to employ a Nominated Subcontractor against whom the Contractor raises reasonable objection by notice to the Engineer as soon as practicable, with supporting particulars while there are reasons to believe that the Subcontractor does not have sufficient competence, resources or financial strength, or does not accept to indemnify the Contractor against and from any negligence or misuse of Goods by the nominated Subcontractor, or does not accept to enter into a subcontract which specifies that, for the subcontracted work including design, if any, the Nominated Subcontractor shall undertake to the Contractor such obligations and liabilities as will enable the contractor to discharge his or her liabilities under the Contract.
17. Other Contractors	17.1	The Contractor shall cooperate and share the Site with other Contractors, public authorities, utilities, the Engineer and the Procuring Entity between the dates given in the Schedule of other Contractors. The Contractor shall also provide facilities and services for them as described in the Schedule. The Procuring Entity may modify the Schedule of other Contractors, and shall notify the Contractor of any such modification.
18. Possession of the Site	18.1	The Procuring Entity shall give possession of the Site or part(s) of the Site, to the Contractor on the date(s) stated in the PCC . If possession of a part of the Site is not given by the date stated in the PCC , the Procuring Entity will be deemed to have delayed the start of the relevant activities, and this will be a Compensation Event.
19. Access to the Site	19.1	The Contractor shall allow the Engineer and any person authorised by the Engineer access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.
20. Safety, Security and Protection of the Environment	20.1	The Contractor shall throughout the execution and completion of the Works and the remedying of any defects therein: (a) take all reasonable steps to safeguard the health and safety of all workers working on the Site and other persons entitled to be on it, and to keep the Site in an orderly state; (b) provide and maintain at the Contractor's own cost all lights, guards, fencing, warning signs and watching for the protection of the Works or for the safety on-site; and (c) take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of the Contractors methods of operation.
21. Working Hours	21.1	The Contractor shall not perform any work on the Site on the weekly holidays, or during the night or outside the normal working hours, or on any religious or public holiday, without the prior written approval of the Project Manager.

22. Welfare of Laborers	22.1	The Contractor shall comply with all the relevant labour Laws applicable to the Contractor's personnel relating to their employment, health, safety, welfare, immigration and shall allow them all their legal rights.
	22.2	The Contractor, in particular, shall provide proper accommodation to his or her labourers and arrange proper water supply, conservancy and sanitation arrangements at the site for all necessary hygienic requirements and for the prevention of epidemics in accordance with relevant regulations, rules and orders of the government.
	22.3	The Contractor, further in particular, shall pay reasonable wages to his or her labourers, and pay them in time. In the event of delay in payment the Procuring Entity may effect payments to the labourers and recover the cost from the Contractor.
	22.4	The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take appropriate protective measures to prevent accidents that could result in injury. Throughout the execution of the Works, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.
23. Subcontractor	23.1	Subcontracting the whole of the Plant and Service by the Contractor shall not be permissible. The Contractor shall be responsible for the acts or defaults of any Subcontractor, his or her agents or employees, as if they were the acts or defaults of the Contractor.
	23.2	Any subcontracting arrangements made during contract implementation and not disclosed at the time of the Tendering shall not be allowed.
	23.3	Subcontracting of any portion of the works shall not relieve the Contractor from any liability or obligations that may arise from its performance.
	23.4	Contractor shall retain full responsibility for the contract and cannot pass any contractual obligations to the Subcontractor and under no circumstances assignment of the contract to the Subcontractor be allowed.
	23.5	The Contractor shall not be required to obtain consent from the Project Manager or his representative, for suppliers solely of Materials or to a subcontract for which the Specialist Subcontractor(s) is already named in the Contract.
	23.6	The prior consent, in writing, of the Engineer shall however be obtained for other proposed Subcontractor(s).
	23.7	Subcontractors shall comply with the provisions of GCC Clause 6 and 11.
24. Dayworks	24.1	If applicable, the Dayworks rates in the Contractor's Tender shall be used for small additional amounts of work only when the Project Manager has given written instructions in advance for additional work to be paid for in that way.
	24.2	All works to be paid for as Dayworks shall be recorded by the Contractor on forms approved by the Project Manager. Each completed form shall be certified and signed by the Project Manager within seven (7) days of the works being done.
	24.3	The Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.

25. Child Labor	25.1	The Contractor shall not employ any child to perform any work that is economically exploitative, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development in compliance with the applicable laws and other relevant treaties ratified by the government.
26. Fossils& antiquities	26.1	All fossils, coins, articles of value or antiquity, and structures and other remains or items of geological or archaeological interest found on the Site shall be placed under the care and authority of the Procuring Entity. The Contractor shall take reasonable precautions to prevent Contractor's Personnel or other persons from removing or damaging any of these findings.
	26.2	The Contractor shall, upon discovery of any such finding, promptly give notice to the Project Manager, who shall issue instructions for dealing with it. If the Contractor suffers delay and/or incurs cost from complying with the instructions, the Contractor shall give a further notice to the Project Manager and shall be entitled subject to Claims under GCC Clause 81.

B. Subject Matter of Contract

27. Scope of Facilities	27.1	Unless otherwise expressly limited in the Procuring Entity's Requirements, the Contractor's obligations cover the provision of all Plant and the performance of all Installation Services required for the design, and the manufacture (including procurement, quality assurance, construction, installation, associated civil works, Pre Commissioning and delivery) of the Plant, and the installation, completion and commissioning of the Facilities in accordance with the plans, procedures, specifications, drawings, codes and any other documents as specified in the Section, Procuring Entity's Requirements. Such specifications include, but are not limited to, the provision of supervision and engineering services; the supply of labor, materials, equipment, spare parts and accessories; Contractor's Equipment; construction utilities and supplies; temporary materials, structures and facilities; transportation (including, without limitation, unloading and hauling to, from and at the Site); and storage, except for those supplies, works and services that will be provided or performed by the Procuring Entity, as set forth in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Procuring Entity
	27.2	The Contractor shall, unless specifically excluded in the Contract, perform all such work and/or supply all such items and materials not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Completion of the Facilities as if such work and/or items and materials were expressly mentioned in the Contract
	27.3	In addition to the supply of Mandatory Spare Parts included in the Contract, the Contractor agrees to supply spare parts required for the operation and maintenance of the Facilities for the period specified in the PCC and the provisions, if any, specified in the PCC . However, the identity, specifications and quantities of such spare parts and the terms and conditions relating to the supply thereof are to be agreed between the Procuring Entity and the Contractor, and the price of such spare parts shall be that given in Price Schedule No.1 & 2 under form PG5A-3 , which shall be added to the Contract Price. The price of such spare parts shall include the purchase price therefor and other costs and expenses (including the Contractor's fees) relating to the supply of spare parts.

28. Time for Commencement	28.1	The Contractor shall attain Completion of the Facilities or of a part where a separate time for Completion of such part is specified in the Contract, within the time stated in the PCC or within such extended time to which the Contractor shall be entitled under GCC Clause 70.2 hereof
29. Time for Completion	29.1	The Contractor shall attain Completion of the Facilities or of a part where a separate time for Completion of such part is specified in the Contract, within the time stated in the PCC or within such extended time to which the Contractor shall be entitled under GCC Clause 70.2 hereof.
30. Procuring Entity's Responsibilities	30.1	Whenever the performance of the obligations in this Contract requires that the Contractor obtain permits, approvals and other license from local public authorities, the Procuring Entity may, if so needed by the Contractor, make its best effort to assist the Contractor in complying with such requirements in a timely and expeditious manner. However, the Contractor shall bear the costs of such permits and/or licenses.
	30.2	The Procuring Entity shall be responsible for acquiring and providing legal and physical possession of the Site and access thereto, and for providing possession of and access to all other areas reasonably required for the proper execution of the Contract, including all requisite rights of way, as specified in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Procuring Entity. The Procuring Entity shall give full possession of and accord all rights of access thereto on or before the date(s) specified in that Appendix.
	30.3	The Procuring Entity shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located which (a) such authorities or undertakings require the Procuring Entity to obtain in the Procuring Entity's name, (b) are necessary for the execution of the Contract, including those required for the performance by both the Contractor and the Procuring Entity of their respective obligations under the Contract, and (c) are specified in the Appendix (Scope of Works and Supply by the Procuring Entity).
	30.4	If requested by the Contractor, the Procuring Entity shall use its best endeavours to assist the Contractor in obtaining in a timely and expeditious manner all permits, approvals and/or licenses necessary for the execution of the Contract from all local, state or national government authorities or public service undertakings that such authorities or undertakings require the Contractor or Subcontractors or the personnel of the Contractor or Subcontractors, as the case may be, to obtain
	30.5	Unless otherwise specified in the Contract or agreed upon by the Procuring Entity and the Contractor, the Procuring Entity shall provide sufficient, properly qualified operating and maintenance

		personnel; shall supply and make available all raw materials, utilities, lubricants, chemicals, catalysts, other materials and facilities; and shall perform all work and services of whatsoever nature, including those required by the Contractor to properly carry out Pre Commissioning, Commissioning and Guarantee Tests, all in accordance with the provisions of the Appendix to the Contract Agreement titled Scope of Works and Supply by the Procuring Entity, at or before the time specified in the program furnished by the Contractor under the provisions of contract specified or as otherwise agreed upon by the Procuring Entity and the Contractor.
	30.6	The Procuring Entity shall be responsible for the continued operation of the Facilities after Completion, in accordance with GCC Sub-Clause 42.8, and shall be responsible for facilitating the Guarantee Test(s) for the Facilities, in accordance with GCC Sub-Clause 43.2.
	30.7	All costs and expenses involved in the performance of the obligations under this GCC Clause 30 shall be the responsibility of the Procuring Entity, save those to be incurred by the Contractor with respect to the performance of Guarantee Tests, in accordance with GCC Sub-Clause 43.2.
	30.8	In the event that the Procuring Entity shall be in breach of any of his obligations under this Clause, the additional cost incurred by the Contractor in consequence thereof shall be determined by the Project Manager and added to the Contract Price
31. Contractor's Responsibilities	31.1	The Contractor shall design, manufacture including associated purchases and/or subcontracting, install and complete the Facilities in accordance with the Contract. When completed, the Facilities should be fit for the purposes for which they are intended as defined in the Contract.
	31.2	The Contractor confirms that it has entered into this Contract on the basis of a proper examination of the data relating to the Facilities including any data as to boring tests provided by the Procuring Entity, and on the basis of information that the Contractor could have obtained from a visual inspection of the Site if access thereto was available and of other data readily available to it relating to the Facilities as of the date twenty-eight (28) days prior to tender submission. The Contractor acknowledges that any failure to acquaint itself with all such data and information shall not relieve its responsibility for properly estimating the difficulty or cost of successfully performing the Facilities
	31.3	The Contractor shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located which such authorities or undertakings require the Contractor to obtain in its name and which are necessary for the performance of the Contract, including, without limitation, visas for the Contractor's and Subcontractor's personnel and entry permits for all imported Contractor's Equipment. The Contractor shall acquire all other permits, approvals and/or licenses that are not the responsibility of the Procuring Entity under GCC Sub-Clause 30.3 hereof and that are necessary for the performance of the Contract.

32. Procuring Entity's and Contractor's Risk	32.1	The Procuring Entity carries the risks that the Contract states are Procuring Entity's risks and the Contractor carries the risks that the Contract states are Contractor's risks
33. Procuring Entity's Risks	33.1	From the Start Date until the Defects Correction Certificate has been issued, the following are Procuring Entity's risks: (g) the risk of personal injury, death, or loss of or damage to property (excluding the Works, Plant, Materials, and Equipment), which are due to i. use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works or ii. negligence, breach of statutory duty, or interference with any legal right by the Procuring Entity or by any person employed by or contracted to him except the Contractor. iii. the risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Procuring Entity or in the Procuring Entity's design, or due to war or radioactive contamination directly affecting the country where the Works are to be executed.
	33.2	From the Completion Date until the Defects Correction Certificate has been issued, the risk of loss of or damage to the Works, Plant, and Materials is Procuring Entity's risk, except loss or damage due to: (a) a Defect which existed on the Completion Date; (b) an event occurring before the Completion Date, which was not itself Procuring Entity's risk; or (c) the activities of the Contractor on the Site after the Completion Date.
34. Contractor's Risks	34.1	From the Start Date until the Defects Correction Certificate has been issued the risks of personal injury, death, and loss of or damage to property including without limitation, the Works, Plant, Materials, and Equipment, which are not Procuring Entity's risks are Contractor's risks.

C. Execution of the Facilities

35. Representatives: Project Manager	35.1	If the Project Manager is not named in the Contract, then within fourteen (14) days of the Effective Date, the Procuring Entity shall appoint and notify the Contractor in writing of the name of the Project Manager. The Procuring Entity may from time to time appoint some other person as the Project Manager in place of the person previously so appointed, and shall give a notice of the name of such other person to the Contractor without delay. No such appointment shall be made at such a time or in such a manner as to impede the progress of work on the Facilities. Such appointment shall only take effect upon receipt of such notice by the Contractor. The Project Manager shall represent and act for the Procuring Entity at all times during the performance of the Contract. All notices, instructions, orders, certificates, approvals and all other communications under the Contract shall be given by the Project Manager, except as herein otherwise provided.
	35.2	All notices, instructions, information and other communications given by the Contractor to the Procuring Entity under the Contract shall be given to the Project Manager, except as herein otherwise provided.
36. Representatives: Contractor's Representative & Construction Manager	36.1	If the Contractor's Representative is not named in the Contract, the Contractor's Representative shall be deemed to have been approved. If the Procuring Entity objects to the appointment within fourteen (14) days giving the reason therefor, then the Contractor shall appoint a replacement within fourteen (14) days of such objection, and the foregoing provisions of this GCC Sub-Clause 39.2.1 shall apply thereto.
	36.2	The Contractor's Representative shall represent and act for the Contractor at all times during the performance of the Contract and shall give to the Project Manager all the Contractor's notices, instructions, information and all other communications under the Contract. The Contractor shall not revoke the appointment of the Contractor's Representative without the Procuring Entity's prior written consent, which shall not be unreasonably withheld. If the Procuring Entity consents thereto, the Contractor shall appoint some other person as the Contractor's Representative, pursuant to the procedure set out in GCC Sub-Clause 39.2.1.
	36.3	The Contractor's Representative may, subject to the approval of the Procuring Entity which shall not be unreasonably withheld, at any time delegate to any person any of the powers, functions and authorities vested in him or her. Any such delegation may be revoked at any time. Any such delegation or revocation shall be subject to a prior notice signed by the Contractor's Representative, and shall specify the powers, functions and authorities thereby delegated or revoked. No such delegation or revocation shall take effect unless and until a copy thereof has been delivered to the Procuring Entity and the Project Manager. Any act or exercise by any person of powers, functions and authorities so delegated to him or her in accordance with this GCC Sub-Clause 39.2.3 shall be deemed to be an act or exercise by the Contractor's Representative.

	36.4	From the commencement of installation of the Facilities at the Site until Completion, the Contractor's Representative shall appoint a suitable person as the Construction Manager. The Construction Manager shall supervise all work done at the Site by the Contractor and shall be present at the Site throughout normal working hours except when on leave, sick or absent for reasons connected with the proper performance of the Contract. Whenever the Construction Manager is absent from the Site, a suitable person shall be appointed to act as the Construction Manager's deputy.
	36.5	The Procuring Entity may by notice to the Contractor object to any Clause 40.4. The Procuring Entity shall provide evidence of the same, whereupon the Contractor shall remove such person from the Facilities.
	36.6	If any representative or person employed by the Contractor is removed in accordance with GCC Sub-Clause 36.5, the Contractor shall, where required, promptly appoint a replacement.
37. Work Program	37.1	<u>Contractor's Organization</u> The Contractor shall supply to the Procuring Entity and the Project Manager a chart showing the proposed organization to be established by the Contractor for carrying out work on the Facilities within twenty-one (21) days of the Effective Date. The chart shall include the identities of the key personnel and the curricula vitae of such key personnel to be employed shall be supplied together with the chart. The Contractor shall promptly inform the Procuring Entity and the Project Manager in writing of any revision or alteration of such an organization chart.
	37.2	<u>Program of Performance</u> Within twenty-eight (28) days after the Effective Date, the Contractor shall submit to the Project Manager a detailed program of performance of the Contract, made in a form acceptable to the Project Manager and showing the sequence in which it proposes to design, manufacture, transport, assemble, install and Pre Commission the Facilities, as well as the date by which the Contractor reasonably requires that the Procuring Entity shall have fulfilled its obligations under the Contract so as to enable the Contractor to execute the Contract in accordance with the program and to achieve Completion, Commissioning and Acceptance of the Facilities in accordance with the Contract. The program so submitted by the Contractor shall accord with the Time Schedule included in the Appendix to the Contract Agreement titled Time Schedule, and any other dates and periods specified in the Contract. The Contractor shall update and revise the program as and when appropriate or when required by the Project Manager, but without modification in the Times for Completion specified in the PCC pursuant to Sub-Clause 29.1 and any extension granted in accordance with GCC Clause 70.2, and shall submit all such revisions to the Project Manager.

	37.3	<u>Progress Report</u> The Contractor shall monitor progress of all the activities specified in the program referred to in GCC Sub-Clause 31.2 above, and supply a progress report to the Project Manager every month. The progress report shall be in a form acceptable to the Project Manager and shall indicate: (a) percentage completion achieved compared with the planned percentage completion for each activity; and (b) where any activity is behind the program, giving comments and likely consequences and stating the corrective action being taken.
	37.4	<u>Progress of Performance</u> If at any time the Contractor's actual progress falls behind the program referred to in GCC Sub-Clause 37.2, or it becomes apparent that it will so fall behind, the Contractor shall, at the request of the Procuring Entity or the Project Manager, prepare and submit to the Project Manager a revised program, taking into account the prevailing circumstances, and shall notify the Project Manager of the steps being taken to expedite progress so as to attain Completion of the Facilities within the Time for Completion under GCC Sub-Clause 29.1, any extension thereof entitled under GCC Sub-Clause 70.1, or any extended period as may otherwise be agreed upon between the Procuring Entity and the Contractor.
	37.5	<u>Procedures</u> The Contract shall be executed in accordance with the Contract Documents including the procedures given in the Forms and Procedures of the Procuring Entity's Requirements. The Contractor may execute the Contract in accordance with its own standard project execution plans and procedures to the extent that they do not conflict with the provisions contained in the Contract.
38. Design and Engineering	38.1	<u>Specifications and Drawings</u> (a) The Contractor shall execute the basic and detailed design and the engineering work in compliance with the provisions of the Contract, or where not so specified, in accordance with good engineering practice. The Contractor shall be responsible for any discrepancies, errors or omissions in the specifications, drawings and other technical documents that it has prepared, whether such specifications, drawings and other documents have been approved by the Project Manager or not, provided that such discrepancies, errors or omissions are not because of inaccurate information furnished in writing to the Contractor by or on behalf of the Procuring Entity. (b) The Contractor shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designated by or on behalf of the Procuring Entity, by giving a notice of such disclaimer to the Project Manager.
	38.2	<u>Codes and Standards</u> Wherever references are made in the Contract to codes and standards in accordance with which the Contract shall be executed, the edition or the revised version of such codes and standards current at the date twenty-eight (28) days prior to date of tender submission shall apply unless otherwise specified. During Contract execution, any changes in such codes and standards shall be applied subject to approval by the Procuring Entity and shall be treated in accordance with GCC Clause 69.

	38.3	<u>Approval/Review of Technical Documents by Project Manager</u> 38.3.1 The Contractor shall prepare or cause its Subcontractors to prepare, and furnish to the Project Manager the documents listed in the Appendix to the Contract Agreement titled List of Documents for Approval or Review, for its approval or review as specified and in accordance with the requirements of GCC Sub-Clause 37.2 (Program of Performance). Any part of the Facilities covered by or related to the documents to be approved by the Project Manager shall be executed only after the Project Manager's approval thereof. GCC Sub-Clauses 38.3.2 through 38.3.6 shall apply to those documents requiring the Project Manager's approval, but not to those furnished to the Project Manager for its review only 38.3.2 Within fourteen (14) days after receipt by the Project Manager of any document requiring the Project Manager's approval in accordance with GCC Sub-Clause 38.3.1, the Project Manager shall either return one copy thereof to the Contractor with its approval endorsed thereon or shall notify the Contractor in writing of its disapproval thereof and the reasons therefor and the modifications that the Project Manager proposes. If the Project Manager fails to take such action within the said fourteen (14) days, then the said document shall be deemed to have been approved by the Project Manager. 38.3.3. The Project Manager shall not disapprove any document, except on the grounds that the document does not comply with the Contract or that it is contrary to good engineering practice. 38.3.4 If the Project Manager disapproves the document, the Contractor shall modify the document and resubmit it for the Project Manager's approval in accordance with GCC Sub-Clause 38.3.2. If the Project Manager approves the document subject to modification(s), the Contractor shall make the required modification(s), whereupon the document shall be deemed to have been approved. 38.3.5 The Project Manager's approval, with or without modification of the document furnished by the Contractor, shall not relieve the Contractor of any responsibility or liability imposed upon it by any provisions of the Contract except to the extent that any subsequent failure results from modifications required by the Project Manager. 38.3.6 The Contractor shall not depart from any approved document unless the Contractor has first submitted to the Project Manager an amended document and obtained the Project Manager's approval thereof, pursuant to the provisions of this GCC Sub-Clause 38.3. If the Project Manager requests any change in any already approved document and/or in any document based thereon, the provisions of GCC Clause 70 shall apply to such request.

39. Procurement	39.1	<u>Plant</u> Subject to GCC Sub-Clause 65.2, the Contractor shall procure and transport all Plant in an expeditious and orderly manner to the Site.
	39.2	<u>Procuring Entity-Supplied Plant</u> If the Appendix to the Contract Agreement titled Scope of Works and Supply by the Procuring Entity, provides that the Procuring Entity shall furnish any specific items to the Contractor, the following provisions shall apply: i. The Procuring Entity shall, at its own risk and expense, transport each item to the place on or near the Site as agreed upon by the Parties and make such item available to the Contractor at the time specified in the program furnished by the Contractor, pursuant to GCC Sub-Clause 37.2, unless otherwise mutually agreed. ii. Upon receipt of such item, the Contractor shall inspect the same visually and notify the Project Manager of any detected shortage, defect or default. The Procuring Entity shall immediately remedy any shortage, defect or default, or the Contractor shall, if practicable and possible, at the request of the Procuring Entity, remedy such shortage, defect or default at the Procuring Entity's cost and expense. After inspection, such item shall fall under the care, custody and control of the Contractor. The provision of this GCC Sub-Clause 39.2.ii. shall apply to any item supplied to remedy any such shortage or default or to substitute for any defective item, or shall apply to defective items that have been repaired. iii. The foregoing responsibilities of the Contractor and its obligations of care, custody and control shall not relieve the Procuring Entity of liability for any undetected shortage, defect or default, nor place the Contractor under any liability for any such shortage, defect or default whether under GCC Clause 45 or under any other provision of Contract.

	39.3	<u>Transportation</u> i. The Contractor shall at its own risk and expense transport all the materials and the Contractor's Equipment to the Site by the mode of transport that the Contractor judges most suitable under all the circumstances. ii. Unless otherwise provided in the Contract, the Contractor shall be entitled to select any safe mode of transport operated by any person to carry the materials and the Contractor's Equipment. iii. Upon dispatch of each shipment of materials and the Contractor's Equipment, the Contractor shall notify the Procuring Entity by telex, cable, facsimile or electronic means, of the description of the materials and of the Contractor's Equipment, the point and means of dispatch, and the estimated time and point of arrival in the country where the Site is located, if applicable, and at the Site. The Contractor shall furnish the Procuring Entity with relevant shipping documents to be agreed upon between the Parties. iv. The Contractor shall be responsible for obtaining, if necessary, approvals from the authorities for transportation of the materials and the Contractor's Equipment to the Site. The Procuring Entity shall use its best endeavors in a timely and expeditious manner to assist the Contractor in obtaining such approvals, if requested by the Contractor. The Contractor shall indemnify and hold harmless the Procuring Entity from and against any claim for damage to roads, bridges or any other traffic facilities that may be caused by the transport of the materials and the Contractor's Equipment to the Site.
	39.4	<u>Customs Clearance</u> The Contractor shall, at its own expense, handle all imported materials and Contractor's Equipment at the point(s) of import and shall handle any formalities for customs clearance, subject to the Procuring Entity's obligations under GCC Sub-Clause 65.2, provided that if applicable laws or regulations require any application or act to be made by or in the name of the Procuring Entity, the Procuring Entity shall take all necessary steps to comply with such laws or regulations. In the event of delays in customs clearance that are not the fault of the Contractor, the Contractor shall be entitled to an extension in the Time for Completion, pursuant to GCC Clause 70.

40. Installation	40.1	<u>Setting Out/Supervision</u> Bench Mark: The Contractor shall be responsible for the true and proper setting-out of the Facilities in relation to bench marks, reference marks and lines provided to it in writing by or on behalf of the Procuring Entity. If, at any time during the progress of installation of the Facilities, any error shall appear in the position, level or alignment of the Facilities, the Contractor shall forthwith notify the Project Manager of such error and, at its own expense, immediately rectify such error to the reasonable satisfaction of the Project Manager. If such error is based on incorrect data provided in writing by or on behalf of the Procuring Entity, the expense of rectifying the same shall be borne by the Procuring Entity. Contractor's Supervision: The Contractor shall give or provide all necessary superintendence during the installation of the Facilities, and the Construction Manager or its deputy shall be constantly on the Site to provide full-time superintendence of the installation. The Contractor shall provide and employ only technical personnel who are skilled and experienced in their respective callings and supervisory staff who are competent to adequately supervise the work at hand.
	40.2	Labor: 40.2.1 Engagement of Staff and Labor (a) Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labor, local or otherwise, and for their payment, housing, feeding and transport. (b) The Contractor shall provide and employ on the Site in the installation of the Facilities such skilled, semi-skilled and unskilled labor as is necessary for the proper and timely execution of the Contract. The Contractor is encouraged to use local labor that has the necessary skills. (c) The Contractor shall be responsible for obtaining all necessary permit(s) and/or visa(s) from the appropriate authorities for the entry of all labor and personnel to be employed on the Site into the country where the Site is located. The Procuring Entity will, if requested by the Contractor, use his best endeavors in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national or government permission required for bringing in the Contractor's personnel. (d) The Contractor shall at its own expense provide the means of repatriation to all of its and its Subcontractor's personnel employed on the Contract at the Site to the place where they were recruited or to their domicile. It shall also provide suitable temporary maintenance of all such persons from the cessation of their employment on the Contract to the date programmed for their departure. In the event that the Contractor defaults in providing such means of transportation and temporary maintenance, the Procuring Entity may provide the same to such personnel and recover the cost of doing so from the Contractor.

		40.2.2 Persons in the Service of Procuring Entity The Contractor shall not recruit, or attempt to recruit, staff and labor from amongst the Procuring Entity's Personnel. 40.2.3 Facilities for Staff and Labor Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel. The Contractor shall also provide facilities for the Procuring Entity's Personnel as stated in the Specification. The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.
	40.3	<u>Contractor's Equipment</u> 40.3.1 All Contractor's Equipment brought by the Contractor onto the Site shall be deemed to be intended to be used exclusively for the execution of the Contract. The Contractor shall not remove the same from the Site without the Project Manager's consent that such Contractor's Equipment is no longer required for the execution of the Contract. 40.3.2 Unless otherwise specified in the Contract, upon completion of the Facilities, the Contractor shall remove from the Site all Equipment brought by the Contractor onto the Site and any surplus materials remaining thereon. 40.3.3 The Procuring Entity will, if requested, use its best endeavors to assist the Contractor in obtaining any local, state or national government permission required by the Contractor for the export of the Contractor's Equipment imported by the Contractor for use in the execution of the Contract that is no longer required for the execution of the Contract.
	40.4	<u>Site Regulations and Safety</u> The Procuring Entity and the Contractor shall establish Site regulations setting out the rules to be observed in the execution of the Contract at the Site and shall comply therewith. The Contractor shall prepare and submit to the Procuring Entity, with a copy to the Project Manager, proposed Site regulations for the Procuring Entity's approval, which approval shall not be unreasonably withheld. Such Site regulations shall include, but shall not be limited to, rules in respect of security, safety of the Facilities, gate control, sanitation, medical care, and fire prevention. reasonable costs incurred by the Procuring Entity in connection therewith shall be paid by the Contractor to the Procuring Entity. Otherwise, the cost of such remedial work shall be borne by the Procuring Entity.

40.5	<u>Site Clearance</u> Site Clearance in Course of Performance: In the course of carrying out the Contract, the Contractor shall keep the Site reasonably free from all unnecessary obstruction, store or remove any surplus materials, clear away any wreckage, rubbish or temporary works from the Site, and remove any Contractor's Equipment no longer required for execution of the Contract.
40.6	<u>Opportunities for Other Contractors</u> 40.6.1 The Contractor shall, upon written request from the Procuring Entity or the Project Manager, give all reasonable opportunities for carrying out the work to any other contractors employed by the Procuring Entity on or near the Site. 40.6.2 If the Contractor, upon written request from the Procuring Entity or the Project Manager, makes available to other contractors any roads or ways the maintenance for which the Contractor is responsible, permits the use by such other contractors of the Contractor's Equipment, or provides any other service of whatsoever nature for such other contractors, the Procuring Entity shall fully compensate t41. he Contractor for any loss or damage caused or occasioned by such other contractors in respect of any such use or service, and shall pay to the Contractor reasonable remuneration for the use of such equipment or the provision of such services.
40.7	<u>Emergency Work</u> 40.7.1 If, by reason of an emergency arising in connection with and during the execution of the Contract, any protective or remedial work is necessary as a matter of urgency to prevent damage to the Facilities, the Contractor shall immediately carry out such work. If the Contractor is unable or unwilling to do such work immediately, the Procuring Entity may do or cause such work to be done as the Procuring Entity may determine is necessary in order to prevent damage to the Facilities. In such event the Procuring Entity shall, as soon as practicable after the occurrence of any such emergency, notify the Contractor in writing of such emergency, the work done and the reasons therefor. If the work done or caused to be done by the Procuring Entity is work that the Contractor was liable to do at its own expense under the Contract. 40.7.2 Clearance of Site after Completion: After Completion of all parts of the Facilities, the Contractor shall clear away and remove all wreckage, rubbish and debris of any kind from the Site, and shall leave the Site and Facilities in a clean and safe condition.
40.8	<u>Watching and Lighting</u> The Contractor shall provide and maintain at its own expense all lighting, fencing, and watching when and where necessary for the proper execution and the protection of the Facilities, or for the safety of the owners and occupiers of adjacent property and for the safety of the public.

41. Test & Inspection	41.1	The Contractor shall at its own expense carry out at the place of manufacture and/or on the Site all such tests and/or inspections of the Plant and any part of the Facilities as are specified in the Contract.
	41.2	The Procuring Entity and the Project Manager or their designated representatives shall be entitled to attend the aforesaid test and/or inspection, provided that the Procuring Entity shall bear all costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses.
	41.3	Whenever the Contractor is ready to carry out any such test and/or inspection, the Contractor shall give a reasonable advance notice of such test and/or inspection and of the place and time thereof to the Project Manager. The Contractor shall obtain from any relevant third Party or manufacturer any necessary permission or consent to enable the Procuring Entity and the Project Manager or their designated representatives to attend the test and/or inspection.
	41.4	The Contractor shall provide the Project Manager with a certified report of the results of any such test and/or inspection. If the Procuring Entity or Project Manager or their designated representatives fails to attend the test and/or inspection, or if it is agreed between the Parties that such persons shall not do so, then the Contractor may proceed with the test and/or inspection in the absence of such persons, and may provide the Project Manager with a certified report of the results thereof.
	41.5	The Project Manager may require the Contractor to carry out any test and/or inspection not required by the Contract, provided that the Contractor'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 impede the progress of work on the Facilities and/or the Contractor's performance of its other obligations under the Contract, due allowance will be made in respect of the Time for Completion and the other obligations so affected.
	41.6	If any Plant or any part of the Facilities fails to pass any test and/or inspection, the Contractor shall either rectify or replace such Plant or part of the Facilities and shall repeat the test and/or inspection upon giving a notice under GCC Sub-Clause 41.3.
	41.7	If any dispute or difference of opinion shall arise between the Parties in connection with or arising out of the test and/or inspection of the Plant or part of the Facilities that cannot be settled between the Parties within a reasonable period of time, it may be referred to an 82.3.
	41.8	The Contractor shall afford the Procuring Entity and the Project Manager, at the Procuring Entity's expense, access at any reasonable time to any place where the Plant are being manufactured or the Facilities are being installed, in order to inspect the progress and the manner of manufacture or installation, provided that the Project Manager shall give the Contractor a reasonable prior notice.

	41.9	The Contractor agrees that neither the execution of a test and/or inspection of Plant or any part of the Facilities, nor the attendance by the Procuring Entity or the Project Manager, nor the issue of any test certificate pursuant to GCC Sub-Clause 41.4, shall release the Contractor from any other responsibilities under the Contract.
	41.10	No part of the Facilities or foundations shall be covered up on the Site without the Contractor carrying out any test and/or inspection required under the Contract. The Contractor shall give a reasonable notice to the Project Manager whenever any such parts of the Facilities or foundations are ready or about to be ready for test and/or inspection; such test and/or inspection and notice thereof shall be subject to the requirements of the Contract.
	41.11	The Contractor shall uncover any part of the Facilities or foundations, or shall make openings in or through the same as the Project Manager may from time to time require at the Site, and shall reinstate and make good such part or parts.
	41.12	If any parts of the Facilities or foundations have been covered up at the Site after compliance with the requirement of GCC Sub-Clause 41.10 and are found to be executed in accordance with the Contract, the expenses of uncovering, making openings in or through, reinstating, and making good the same shall be borne by the Procuring Entity, and the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been delayed or impeded in the performance of any of its obligations under the Contract.
42. Completion of the Facilities	42.1	As soon as the Facilities or any part thereof has, in the opinion of the Contractor, been completed operationally and structurally and put in a tight and clean condition as specified in the Procuring Entity's Requirements, excluding minor items not materially affecting the operation or safety of the Facilities, the Contractor shall so notify the Procuring Entity in writing.
	42.2	Within seven (7) days after receipt of the notice from the Contractor under GCC Sub-Clause 42.1, the Procuring Entity shall supply the operating and maintenance personnel specified in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Procuring Entity for Pre-Commissioning of the Facilities or any part thereof. Pursuant to the Appendix to the Contract Agreement titled Scope of Works and Supply by the Procuring Entity, the Procuring Entity shall also provide, within the said seven (7) day period, the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Pre-Commissioning of the Facilities or any part thereof.

	42.3	As soon as reasonably practicable after the operating and maintenance personnel have been supplied by the Procuring Entity and the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters have been provided by the Procuring Entity in accordance with GCC Sub-Clause 42.2, the Contractor shall commence Pre-commissioning of the Facilities or the relevant part thereof in preparation for Commissioning, subject to GCC Sub-Clause 43.5.
	42.4	The Project Manager shall, within fourteen (14) days after receipt of the Contractor's notice under GCC Sub-Clause 39.4, either issue a Completion Certificate in the form specified in the Procuring Entity's Requirements (Forms and Procedures), stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's notice, or notify the Contractor in writing of any defects and/or deficiencies. If the Project Manager notifies the Contractor of any defects and/or deficiencies, the Contractor shall then correct such defects and/or deficiencies, and shall repeat the procedure.
	42.5	If the Project Manager is satisfied that the Facilities or that part thereof have reached Completion, the Project Manager shall, within seven (7) days after receipt of the Contractor's repeated notice, issue a Completion Certificate stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's repeated notice.
	42.6	If the Project Manager is not so satisfied, then it shall notify the Contractor in writing of any defects and/or deficiencies within seven (7) days after receipt of the Contractor's repeated notice, and the above procedure shall be repeated.
	42.7	If the Project Manager fails to issue the Completion Certificate and fails to inform the Contractor of any defects and/or deficiencies within fourteen (14) days after receipt of the Contractor's notice or within seven (7) days after receipt of the Contractor's repeated notice under GCC Sub-Clause 42.4, or if the Procuring Entity makes use of the Facilities or part thereof, then the Facilities or that part thereof shall be deemed to have reached Completion as of the date of the Contractor's notice or repeated notice, or as of the Procuring Entity's use of the Facilities, as the case may be.
	42.8	As soon as possible after Completion, the Contractor shall complete all outstanding minor items so that the Facilities are fully in accordance with the requirements of the Contract, failing which the Procuring Entity will undertake such completion and deduct the costs thereof from any monies owing to the Contractor.
	42.9	Upon Completion, the Procuring Entity shall be responsible for the care and custody of the Facilities or the relevant part thereof, together with the risk of loss or damage thereto, and shall thereafter take over the Facilities or the relevant part thereof.

43. Commissioning and Operational Acceptance	43.1	<u>Commissioning</u> 43.1.1 Commissioning of the Facilities or any part thereof shall be commenced by the Contractor immediately after issue of the Completion Certificate by the Project Manager, pursuant to GCC Sub-Clause 42.4, or immediately after the date of the deemed Completion, under GCC Sub-Clause 42.5. 43.1.2 The Procuring Entity shall supply the operating and maintenance personnel and all raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Commissioning. 43.1.3 In accordance with the requirements of the Contract, the Contractor's and Project Manager's advisory personnel shall attend the Commissioning, including the Guarantee Test, and shall advise and assist the Procuring Entity.
	43.2	<u>Guarantee Test</u> 43.2.1 Subject to GCC Sub-Clause 43.5, the Guarantee Test and repeats thereof shall be conducted by the Contractor during Commissioning of the Facilities or the relevant part thereof to ascertain whether the Facilities or the relevant part can attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees. The Procuring Entity shall promptly provide the Contractor with such information as the Contractor may reasonably require in relation to the conduct and results of the Guarantee Test and any repeats thereof. 43.2.2 If for reasons not attributable to the Contractor, the Guarantee Test of the Facilities or the relevant part thereof cannot be successfully completed within the period from the date of Completion specified in the PCC or any other period agreed upon by the Procuring Entity and the Contractor, the Contractor shall be deemed to have fulfilled its obligations with respect to the Functional Guarantees, and GCC Sub-Clauses 46.2 and 46.3 shall not apply.

	43.3	<u>Operational Acceptance</u> 43.3.1 The Contractor may give a notice to the Project Manager requesting the issue of an Operational Acceptance Certificate in the form provided in the Procuring Entity's Requirements (Forms and Procedures) in respect of the Facilities or the part thereof specified in such notice as of the date of such notice. 43.3.2 The Project Manager shall, after consultation with the Procuring Entity, and within seven (7) days after receipt of the Contractor's notice, issue an Operational Acceptance Certificate. 43.3.3 If within seven (7) days after receipt of the Contractor's notice, the Project Manager fails to issue the Operational Acceptance Certificate or fails to inform the Contractor in writing of the justifiable reasons why the Project Manager has not issued the Operational Acceptance Certificate, the Facilities or the relevant part thereof shall be deemed to have been accepted as of the date of the Contractor's said notice.
	3.4	<u>Partial Acceptance</u> 43.4.1 If the Contract specifies that Completion and Commissioning shall be carried out in respect of parts of the Facilities, the provisions relating to Completion and Commissioning including the Guarantee Test shall apply to each such part of the Facilities individually, and the Operational Acceptance Certificate shall be issued accordingly for each such part of the Facilities. 43.4.2 If a part of the Facilities comprises facilities such as buildings, for which no Commissioning or Guarantee Test is required, then the Project Manager shall issue the Operational Acceptance Certificate for such facility when it attains Completion, provided that the Contractor shall thereafter complete any outstanding minor items that are listed in the Operational Acceptance Certificate.

	43.5	<u>Delayed Pre-commissioning and/or Guarantee Test</u> 43.5.1 In the event that the Contractor is unable to proceed with the Pre-commissioning of the Facilities pursuant to Sub-Clause 42.3, or with the Guarantee Test pursuant to Sub-Clause 43.2, for reasons attributable to the Procuring Entity either on account of non-availability of other facilities under the responsibilities of other contractor(s), or for reasons beyond the Contractor's control, the provisions leading to "deemed" completion of activities such as Completion, pursuant to GCC Sub-Clause 42.6, and Operational Acceptance, pursuant to GCC Sub-Clause 43.3.3, and Contractor's obligations regarding Defect Liability Period, pursuant to GCC Sub-Clause 45.2, Functional Guarantee, pursuant to GCC Clause 46, and Care of Facilities, pursuant to GCC Clause 50, and GCC Clause 71.1, Suspension, shall not apply. In this case, the following provisions shall apply. 43.5.2 When the Contractor is notified by the Project Manager that he will be unable to proceed with the activities and obligations pursuant to clauses 62, 63 & 64, the Contractor shall be entitled to the following: (a) the Time of Completion shall be extended for the period of suspension without imposition of liquidated damages pursuant to GCC Sub-Clause 44.2; (b) payments due to the Contractor in accordance with the provision specified in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, which would not have been payable in normal circumstances due to non-completion of the subject activities, shall be released to the Contractor against submission of a security in the form of a bank guarantee of equivalent amount acceptable to the Procuring Entity, and which shall become null and void when the Contractor will have complied with its obligations regarding those payments, subject to the provision of Sub-Clause 43.5.3 below; (c) the expenses towards the above security and extension of other securities under the contract, of which validity needs to be extended, shall be reimbursed to the Contractor by the Procuring Entity; (d) the additional charges towards the care of the Facilities pursuant to GCC Sub-Clause 50.1 shall be reimbursed to the Contractor by the Procuring Entity for the period between the notification mentioned above and the notification mentioned in Sub-Clause 43.5.4 below. The provision of GCC Sub-Clause 49.2 shall apply to the Facilities during the same period. 43.5.3 In the event that the period of suspension under above Sub-Clause 43.5.1 actually exceeds one hundred eighty (180) days, the Procuring Entity and Contractor shall mutually agree to any additional compensation payable to the Contractor. 43.5.4 When the Contractor is notified by the Project Manager that the plant is ready for Pre-commissioning, the Contractor shall proceed without delay in performing Pre-commissioning, in accordance with Clause 42.

D. Guarantees and Liabilities

44. Completion Time Guarantee	44.1	The Contractor guarantees that it shall attain Completion of the Facilities (or a part for which a separate time for completion is specified) within the Time for Completion specified in the PCC pursuant to GCC Sub-Clause 29.1, or within such extended time to which the Contractor shall be entitled under GCC Clause 70 hereof.
	44.2	If the Contractor fails to attain Completion of the Facilities or any part thereof within the Time for Completion or any extension thereof under GCC Clause 70, the Contractor shall pay to the Procuring Entity liquidated damages in the amount specified in the PCC as a percentage rate of the Contract Price or the relevant part thereof. The aggregate amount of such liquidated damages shall in no event exceed the amount specified as “Maximum” in the PCC as a percentage rate of the Contract Price. Once the “Maximum” is reached, the Procuring Entity may consider termination of the Contract, pursuant to GCC Sub-Clause 73.1. Such payment shall completely satisfy the Contractor’s obligation to attain Completion of the Facilities or the relevant part thereof within the Time for Completion or any extension thereof under GCC Clause 70. The Contractor shall have no further liability whatsoever to the Procuring Entity in respect thereof. However, the payment of liquidated damages shall not in any way relieve the Contractor from any of its obligations to complete the Facilities or from any other obligations and liabilities of the Contractor under the Contract. Save for liquidated damages payable under this GCC Sub-Clause 44.2, the failure by the Contractor to attain any milestone or other act, matter or thing by any date specified in the Appendix to the Contract Agreement titled Time Schedule, and/or other program of work prepared pursuant to GCC Sub-Clause 37.2 shall not render the Contractor liable for any loss or damage thereby suffered by the Procuring Entity.
	44.3	If the Contractor attains Completion of the Facilities or any part thereof before the Time for Completion or any extension thereof under GCC Clause 70, the Procuring Entity shall pay to the Contractor a bonus in the amount specified in the PCC . The aggregate amount of such bonus shall in no event exceed the amount specified as “ Maximum ” in the PCC.

45. Defect Liability	45.1	The Contractor warrants that the Facilities or any part thereof shall be free from defects in the design, engineering, materials and workmanship of the Plant supplied and of the work executed.
	45.2	The Defect Liability Period shall be five hundred and forty (540) days from the date of Completion of the Facilities (or any part thereof) or one year from the date of Operational Acceptance of the Facilities (or any part thereof), whichever first occurs, unless specified otherwise in the PCC pursuant to GCC Sub-Clause 45.10. If during the Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Plant supplied or of the work executed by the Contractor, the Contractor shall promptly, in consultation and agreement with the Procuring Entity regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good as the Contractor shall determine at its discretion, such defect as well as any damage to the Facilities caused by such defect. The Contractor shall not be responsible for the repair, replacement or making good of any defect or of any damage to the Facilities arising out of or resulting from any of the following causes: (a) improper operation or maintenance of the Facilities by the Procuring Entity; (b) operation of the Facilities outside specifications provided in the Contract; or (c) Normal wear and tear.
	45.3	The Contractor's obligations under this GCC Clause 45 shall not apply to: (a) any materials that are supplied by the Procuring Entity under GCC Sub-Clause 39.2, are normally consumed in operation, or have a normal life shorter than the Defect Liability Period stated herein; (b) any designs, specifications or other data designed, supplied or specified by or on behalf of the Procuring Entity or any matters for which the Contractor has disclaimed responsibility herein; or (c) Any other materials supplied or any other work executed by or on behalf of the Procuring Entity, except for the work executed by the Procuring Entity under GCC Sub-Clause 45.7.
	45.4	The Procuring Entity shall give the Contractor a notice stating the nature of any such defect together with all available evidence thereof, promptly following the discovery thereof. The Procuring Entity shall afford all reasonable opportunity for the Contractor to inspect any such defect.

	45.5	The Procuring Entity shall afford the Contractor all necessary access to the Facilities and the Site to enable the Contractor to perform its obligations under this GCC Clause 45. The Contractor may, with the consent of the Procuring Entity, remove from the Site any Plant or any part of the Facilities that are defective if the nature of the defect, and/or any damage to the Facilities caused by the defect, is such that repairs cannot be expeditiously carried out at the Site.
	45.6	If the repair, replacement or making good is of such a character that it may affect the efficiency of the Facilities or any part thereof, the Procuring Entity may give to the Contractor a notice requiring that tests of the defective part of the Facilities shall be made by the Contractor immediately upon completion of such remedial work, whereupon the Contractor shall carry out such tests. If such part fails the tests, the Contractor shall carry out further repair, replacement or making good, as the case may be, until that part of the Facilities passes such tests. The tests shall be agreed upon by the Procuring Entity and the Contractor.
	45.7	If the Contractor fails to commence the work necessary to remedy such defect or any damage to the Facilities caused by such defect within a reasonable time (which shall in no event be considered to be less than fifteen (15) days), the Procuring Entity may, following notice to the Contractor, proceed to do such work, and the reasonable costs incurred by the Procuring Entity in connection therewith shall be paid to the Procuring Entity by the Contractor or may be deducted by the Procuring Entity from any monies due the Contractor or claimed under the Performance Security.
	45.8	If the Facilities or any part thereof cannot be used by reason of such defect and/or making good of such defect, the Defect Liability Period of the Facilities or such part, as the case may be, shall be extended by a period equal to the period during which the Facilities or such part cannot be used by the Procuring Entity because of any of the aforesaid reasons.
	45.9	Except as provided in GCC Clauses 45 and 52, the Contractor shall be under no liability whatsoever and howsoever arising, and whether under the Contract or at law, in respect of defects in the Facilities or any part thereof, the Plant, design or engineering or work executed that appear after Completion of the Facilities or any part thereof, except where such defects are the result of the gross negligence, fraud, or criminal or willful action of the Contractor.
	45.10	In addition, any such component of the Facilities, and during the period of time as may be specified in the PCC, shall be subject to an extended defect liability period. Such obligation of the Contractor shall be in addition to the defect liability period specified under GCC Sub-Clause 45.2.

46. Functional Guarantees	46.1	The Contractor guarantees that during the Guarantee Test, the Facilities and all parts thereof shall attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, subject to and upon the conditions therein specified.
	46.2	If, for reasons attributable to the Contractor, the minimum level of the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, are not met either in whole or in part, the Contractor shall at its cost and expense make such changes, modifications and/or additions to the Plant or any part thereof as may be necessary to meet at least the minimum level of such Guarantees. The Contractor shall notify the Procuring Entity upon completion of the necessary changes, modifications and/or additions, and shall request the Procuring Entity to repeat the Guarantee Test until the minimum level of the Guarantees has been met. If the Contractor eventually fails to meet the minimum level of Functional Guarantees, the Procuring Entity may consider termination of the Contract, pursuant to GCC Sub-Clause 69.2.2.
	46.3	If, for reasons attributable to the Contractor, the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, are not attained either in whole or in part, but the minimum level of the Functional Guarantees specified in the said Appendix to the Contract Agreement is met, the Contractor shall, at the Contractor's option, either (a) make such changes, modifications and/or additions to the Facilities or any part thereof that are necessary to attain the Functional Guarantees at its cost and expense, and shall request the Procuring Entity to repeat the Guarantee Test or (b) pay liquidated damages to the Procuring Entity in respect of the failure to meet the Functional Guarantees in accordance with the provisions in the Appendix to the Contract Agreement titled Functional Guarantees.
	46.4	The payment of liquidated damages under GCC Sub-Clause 46.3, up to the limitation of liability specified in the Appendix to the Contract Agreement titled Functional Guarantees, shall completely satisfy the Contractor's guarantees under GCC Sub-Clause 46.3, and the Contractor shall have no further liability whatsoever to the Procuring Entity in respect thereof. Upon the payment of such liquidated damages by the Contractor, the Project Manager shall issue the Operational Acceptance Certificate for the Facilities or any part thereof in respect of which the liquidated damages have been so paid.

47. Patent Indemnity	47.1	The Contractor shall, subject to the Procuring Entity's compliance with GCC Sub-Clause 47.2, indemnify and hold harmless the Procuring Entity and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Procuring Entity 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: (a) the installation of the Facilities by the Contractor or the use of the Facilities in the country where the Site is located; and (b) the sale of the products produced by the Facilities in any country. Such indemnity shall not cover any use of the Facilities or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, any infringement resulting from the use of the Facilities or any part thereof, or any products produced thereby in association or combination with any other equipment, plant or materials not supplied by the Contractor, pursuant to the Contract Agreement.
	47.2	If any proceedings are brought or any claim is made against the Procuring Entity arising out of the matters referred to in GCC Sub-Clause 34.1, the Procuring Entity shall promptly give the Contractor a notice thereof, and the Contractor may at its own expense and in the Procuring Entity's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim. If the Contractor fails to notify the Procuring Entity within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Procuring Entity shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Procuring Entity within the twenty-eight (28) day period, the Procuring Entity shall make no admission that may be prejudicial to the defense of any such proceedings or claim. The Procuring Entity shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.
	47.3	The Procuring Entity shall indemnify and hold harmless the Contractor 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 whatsoever nature, including attorney's fees and expenses, which the Contractor 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 Procuring Entity.

48. Limitation of Liability	48.1	Except in cases of criminal negligence or willful misconduct, (a) neither Party shall be liable to the other Party, 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, which may be suffered by the other Party in connection with the Contract, other than specifically provided as any obligation of the Party in the Contract, and (b) the aggregate liability of the Contractor to the Procuring Entity, whether under the Contract, in tort or otherwise, shall not exceed the amount resulting from the application of the multiplier specified in the PCC, to the Contract Price or, if a multiplier is not so specified, 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 Contractor to indemnify the Procuring Entity with respect to patent infringement..

E. Risk Distribution

49. Transfer of Ownership	49.1	Ownership of the Plant (including spare parts) to be imported into the country where the Site is located shall be transferred to the Procuring Entity upon loading on to the mode of transport to be used to convey the Plant from the country of origin to that country.
	49.2	Ownership of the Plant (including spare parts) procured in the country where the Site is located shall be transferred to the Procuring Entity when the Plant are brought on to the Site.
	49.3	Ownership of the Contractor's Equipment used by the Contractor and its Subcontractors in connection with the Contract shall remain with the Contractor or its Subcontractors.
	49.4	Ownership of any Plant in excess of the requirements for the Facilities shall revert to the Contractor upon Completion of the Facilities or at such earlier time when the Procuring Entity and the Contractor agree that the Plant in question are no longer required for the Facilities.
	49.5	Notwithstanding the transfer of ownership of the Plant, the responsibility for care and custody thereof together with the risk of loss or damage thereto shall remain with the Contractor pursuant to GCC Clause 50 (Care of Facilities) hereof until Completion of the Facilities or the part thereof in which such Plant are incorporated.
50. Care of Facilities	50.1	The Contractor shall be responsible for the care and custody of the Facilities or any part thereof until the date of Completion of the Facilities pursuant to GCC Clause 42 or, where the Contract provides for Completion of the Facilities in parts, until the date of Completion of the relevant part, and shall make good at its own cost any loss or damage that may occur to the Facilities or the relevant part thereof from any cause whatsoever during such period. The Contractor shall also be responsible for any loss or damage to the Facilities caused by the Contractor or its Subcontractors in the course of any work carried out, pursuant to GCC Clause 45. Notwithstanding the foregoing, the Contractor shall not be liable for any loss or damage to the Facilities or that part thereof caused by reason of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Sub-Clauses 50.2.

	50.2	If any loss or damage occurs to the Facilities or any part thereof or to the Contractor's temporary facilities by reason of (a) insofar as they relate to the country where the Site is located, nuclear reaction, nuclear radiation, radioactive contamination, pressure wave caused by aircraft or other aerial objects, or any other occurrences that an experienced contractor could not reasonably foresee, or if reasonably foreseeable could not reasonably make provision for or insure against, insofar as such risks are not normally insurable on the insurance market and are mentioned in the general exclusions of the policy of insurance, including War Risks and Political Risks, taken out under GCC Clause 17 hereof; or (b) any use or occupation by the Procuring Entity or any third Party other than a Subcontractor, authorized by the Procuring Entity of any part of the Facilities; or (a) (c) any use of or reliance upon any design, data or specification provided or designated by or on behalf of the Procuring Entity, or any such matter for which the Contractor has disclaimed responsibility herein,
	50.3	the Procuring Entity shall pay to the Contractor all sums payable in respect of the Facilities executed, notwithstanding that the same be lost, destroyed or damaged, and will pay to the Contractor the replacement value of all temporary facilities and all parts thereof lost, destroyed or damaged. If the Procuring Entity requests the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Contractor shall make good the same at the cost of the Procuring Entity in accordance with GCC Clause 64. If the Procuring Entity does not request the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Procuring Entity shall either request a change in accordance with GCC Clause 69, excluding the performance of that part of the Facilities thereby lost, destroyed or damaged, or, where the loss or damage affects a substantial part of the Facilities, the Procuring Entity shall terminate the Contract pursuant to GCC Sub-Clause 71.1 hereof.
	50.4	The Contractor shall be liable for any loss of or damage to any Contractor's Equipment, or any other property of the Contractor used or intended to be used for purposes of the Facilities, except (i) as mentioned in GCC Sub-Clause 45.2 with respect to the Contractor's temporary facilities, and (ii) where such loss or damage arises by reason of any of the matters specified in GCC Sub-Clauses 50.2 (b) and (c).

51. Loss of or Damage to Property; Accident or Injury to Workers; Indemnification	51.1	Subject to GCC Sub-Clause 51.3, the Contractor shall indemnify and hold harmless the Procuring Entity and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, in respect of the death or injury of any person or loss of or damage to any property other than the Facilities whether accepted or not, arising in connection with the supply and installation of the Facilities and by reason of the negligence of the Contractor or its Subcontractors, or their employees, officers or agents, except any injury, death or property damage caused by the negligence of the Procuring Entity, its contractors, employees, officers or agents.
	51.2	If any proceedings are brought or any claim is made against the Procuring Entity that might subject the Contractor to liability under GCC Sub-Clause 51.1, the Procuring Entity shall promptly give the Contractor a notice thereof and the Contractor may at its own expense and in the Procuring Entity's, name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.
	51.3	If the Contractor fails to notify the Procuring Entity within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Procuring Entity shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Procuring Entity within the twenty-eight (28) day period, the Procuring Entity shall make no admission that may be prejudicial to the defense of any such proceedings or claim. The Procuring Entity shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.
	51.4	The Procuring Entity shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from any liability for loss of or damage to property of the Procuring Entity, other than the Facilities not yet taken over, that is caused by fire, explosion or any other perils, in excess of the amount recoverable from insurances procured under GCC Clause 52, provided that such fire, explosion or other perils were not caused by any act or failure of the Contractor.
	51.5	The Party entitled to the benefit of an indemnity under this GCC Clause 51 shall take all reasonable measures to mitigate any loss or damage which has occurred. If the Party fails to take such measures, the other Party's liabilities shall be correspondingly reduced.

52. Insurance	52.1	To the extent specified in the Appendix and in PCC to the Contract Agreement titled Insurance Requirements, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified in the said Appendix. The identity of the insurers and the form of the policies shall be subject to the approval of the Procuring Entity, who should not unreasonably withhold such approval. (a) <u>Cargo Insurance During Transport</u> Covering loss or damage occurring while in transit from the Contractor's or Subcontractor's works or stores until arrival at the Site, to the Plant (including spare parts therefor) and to the Contractor's Equipment. (b) <u>Installation All Risks Insurance</u> Covering physical loss or damage to the Facilities at the Site, occurring prior to Completion of the Facilities, with extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the Defect Liability Period while the Contractor is on the Site for the purpose of performing its obligations during the Defect Liability Period. (c) <u>Third Party Liability Insurance</u> Covering bodily injury or death suffered by third Parties including the Procuring Entity's personnel, and loss of or damage to property occurring in connection with the supply and installation of the Facilities. (d) <u>Automobile Liability Insurance</u> Covering use of all vehicles used by the Contractor or its Subcontractors, whether or not owned by them, in connection with the execution of the Contract. (e) <u>Workers' Compensation</u> In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed. (f) <u>Procuring Entity's Liability</u> In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed. (g) <u>Other Insurances</u> Such other insurances as may be specifically agreed upon by the Parties hereto as listed in the Appendix to the Contract Agreement titled Insurance Requirements.
	52.2	The Procuring Entity shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 52.1, except for the Third Party Liability, Workers' Compensation and Procuring Entity's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insureds under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 52.1 except for the Cargo Insurance during Transportation, Workers' Compensation and Procuring Entity's Liability Insurances. All insurer's rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.
	52.3	The Contractor shall, in accordance with the provisions of the Appendix to the Contract Agreement titled Insurance Requirements, deliver to the Procuring Entity certificates of

		insurance or copies of the insurance policies as evidence that the required policies are in full force and effect. The certificates shall provide that no less than twenty-one (21) days' notice shall be given to the Procuring Entity by insurers prior to cancellation or material modification of a policy.
	52.4	The Contractor shall ensure that, where applicable, its Subcontractor(s) shall take out and maintain in effect adequate insurance policies for their personnel and vehicles and for work executed by them under the Contract, unless such Subcontractors are covered by the policies taken out by the Contractor.
	52.5	The Procuring Entity shall at its expense take out and maintain in effect during the performance of the Contract those insurances specified in the Appendix to the Contract Agreement titled Insurance Requirements, in the sums and with the deductibles and other conditions specified in the said Appendix. The Contractor and the Contractor's Subcontractors shall be named as co-insured under all such policies. All insurers' rights of subrogation against such co-insured for losses or claims arising out of the performance of the Contract shall be waived under such policies. The Procuring Entity shall deliver to the Contractor satisfactory evidence that the required insurances are in full force and effect. The policies shall provide that not less than twenty-one (21) days' notice shall be given to the Contractor by all insurers prior to any cancellation or material modification of the policies. If so requested by the Contractor, the Procuring Entity shall provide copies of the policies taken out by the Procuring Entity under this GCC Sub-Clause 52.5.
	52.6	If the Contractor fails to take out and/or maintain in effect the insurances referred to in GCC Sub-Clause 51.1, the Procuring Entity may take out and maintain in effect any such insurances and may from time to time deduct from any amount due to the Contractor under the Contract any premium that the Procuring Entity shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Contractor. If the Procuring Entity fails to take out and/or maintain in effect the insurances referred to in GCC 49.5, the Contractor may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Procuring Entity under the Contract any premium that the Contractor shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Procuring Entity. If the Contractor fails to or is unable to take out and maintain in effect any such insurances, the Contractor shall nevertheless have no liability or responsibility towards the Procuring Entity, and the Contractor shall have full recourse against the Procuring Entity for any and all liabilities of the Procuring Entity herein.
	52.7	Unless otherwise provided in the Contract, the Contractor shall prepare and conduct all and any claims made under the policies affected by it pursuant to this GCC Clause 52, and all monies payable by any insurers shall be paid to the Contractor. The Procuring Entity shall give to the Contractor all such reasonable assistance as may be required by the Contractor. With respect to insurance claims in which the Procuring Entity's interest is involved, the Contractor shall not give any release or make any compromise with the insurer without the prior written consent of the Procuring Entity. With respect to insurance claims in which the Contractor's interest is involved, the Procuring Entity shall not give any release or make any compromise with the insurer without the prior written consent of the Contractor.

53. Limitation of Liability	53.1	Except in cases of criminal negligence or wilful misconduct, (a) the Contractor shall not be liable to the Procuring Entity, 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 Contractor to pay liquidated damages to the Procuring Entity; and (b) the aggregate liability of the Contractor to the Procuring Entity, 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 Contractor to indemnify the Procuring Entity with respect to patent infringement.
54. Unforeseen Conditions	54.1	If, during the execution of the Contract, the Contractor shall encounter on the Site any physical conditions other than climatic conditions, or artificial obstructions that could not have been reasonably foreseen prior to the date of the Contract Agreement by an experienced contractor on the basis of reasonable examination of the data relating to the Facilities including any data as to boring tests, provided by the Procuring Entity, and on the basis of information that it could have obtained from a visual inspection of the Site if access thereto was available, or other data readily available to it relating to the Facilities, and if the Contractor determines that it will in consequence of such conditions or obstructions incur additional cost and expense or require additional time to perform its obligations under the Contract that would not have been required if such physical conditions or artificial obstructions had not been encountered, the Contractor shall promptly, and before performing additional work or using additional Plant or Contractor's Equipment, notify the Project Manager in writing beforehand: (a) the physical conditions or artificial obstructions on the Site that could not have been reasonably foreseen; (b) the additional work and/or Plant and/or Contractor's Equipment required, including the steps which the Contractor will or proposes to take to overcome such conditions or obstructions; (c) the extent of the anticipated delay; and (d) the additional cost and expense that the Contractor is likely to incur.) On receiving any notice from the Contractor under this GCC Sub-Clause 54.1, the Project Manager shall promptly consult with the Procuring Entity and Contractor and decide upon the actions to be taken to overcome the physical conditions or artificial obstructions encountered. Following such consultations, the Project Manager shall instruct the Contractor, with a copy to the Procuring Entity, of the actions to be taken.
	54.2	Any reasonable additional cost and expense incurred by the Contractor in following the instructions from the Project Manager to overcome such physical conditions or artificial obstructions referred to in GCC Sub-Clause 54.1 shall be paid by the Procuring Entity to the Contractor as an addition to the Contract Price.
	54.3	If the Contractor is delayed or impeded in the performance of the Contract because of any such physical conditions or artificial obstructions referred to in GCC Sub-Clause 54.1, the Time for Completion shall be extended in accordance with GCC Clause 65.

55. Adjustment for Changes in Legislation	55.1	Unless otherwise specified in the Contract, if after the Contract, any law, regulation, ordinance, order or by law having the force of law is enacted, promulgated, abrogated, or changed in Bangladesh (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 Contractor has thereby been affected in the performance of any of its obligations under the Contract.
56. Force Majeure	56.1	Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below: (i) war, hostilities (whether war be declared or not), invasion, act of foreign enemies; (ii) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war; (iii) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel; (iv) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and (v) natural catastrophes such as cyclone, hurricane, typhoon, tsunami, storm surge, floods, earthquake, landslides, fires, epidemics, quarantine restrictions, or volcanic activity; (vi) freight embargoes; (vii) acts of the Government in its sovereign capacity.
	56.2	The Head of Procuring Entity decides the existence of a Force Majeure that will be the basis of the issuance of order for suspension of Supply as stated under GCC Sub Clause 59.2.
57. Notice of Force Majeure	57.1	If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice within fourteen (14) days after the party became aware, to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented.
	57.2	Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.
58. Duty to Minimise Delay	58.1	Each Party shall at all times use all reasonable endeavours to minimise any delay in the performance of the Contract as a result of Force Majeure.
	58.2	A Party shall give notice to the other Party when it ceases to be affected by the Force Majeure.
59. Consequences of Force Majeure	59.1	The Contractor shall not be liable for forfeiture of its 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
	59.2	The Procuring Entity may suspend the delivery or contract implementation, wholly or partly, by written order for a certain period of time, as it deems necessary due to Force Majeure as defined in the Contract.
	59.3	Delivery shall be made either upon the lifting or the expiration of the suspension order. However, if the Procuring Entity terminates the contract as stated under GCC Clause 59, resumption of delivery cannot be done.
	59.4	After receiving notice under GCC Sub Clause 57.1, the Procuring Entity shall proceed to determine these matters under the provisions of the Contract.

F. Payment

60. Contract Price	60.1	The Contract Price shall be paid as specified in the Contract Agreement Form PG5A- 8.
	60.2	Unless an adjustment clause is provided for in the PCC , the Contract Price shall be a firm lump sum not subject to any alteration, except in the event of a Change in the Facilities or as otherwise provided in the Contract.
	60.3	Subject to GCC Sub-Clauses 30.2, 31.1 and 54 hereof, the Contractor shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price, which shall, except as otherwise provided for in the Contract, cover all its obligations under the Contract.
	60.4	Prices shall be adjusted for fluctuations in the cost of inputs only if provided for in the PCC. If so provided, the amounts as certified in each payment certificate, before deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amount. The generic formula indicated below in the form as specified in the PCC applies: $P = A + B (I_m/I_o)$ where: P is the adjustment factor A and B are Coefficients specified in the PCC, representing the nonadjustable and adjustable portions, respectively, of the Contract; and I_m is the Index during the month the work has been executed and I_o is the Index prevailing twenty-eight (28) days prior to the deadline for submission of Tender. The Indexes to be used is as published by the Bangladesh Bureau of Statistics (BBS) on a monthly basis. In case not available, then other countries or authorities of the sources mentioned in Appendix to the Tender may be used.
	60.5	If the value of the Index is changed after it has been used in a calculation, the calculation shall be corrected and an adjustment made in the next or in the final payment certificate. The Index value shall be deemed to take account of all changes in price due to fluctuations.

61. Terms of Payment	61.1	The Contract Price, including any Advance Payments specified in PCC , if applicable, shall be paid in the manner as specified in the PCC and in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, which also outlines the procedures to be followed in making application for and processing payments.
	61.2	No payment made by the Procuring Entity herein shall be deemed to constitute acceptance by the Procuring Entity of the Facilities or any part(s) thereof.
	61.3	Payments shall be made promptly by the Procuring Entity after submission of an invoice or request for payment by the Contractor, and after the Procuring Entity has accepted it.
	61.4	The currency or currencies in which payments are made to the Contractor under this Contract shall be specified in the Appendices to the Contract Agreement titled Terms and Procedures of Payment, subject to the general principle that payments will be made in the currency or currencies in which the Contract Price has been stated in the Contractor's tender.
	61.5	In the event that the Procuring Entity fails to pay the Contractor any payment by its respective due date or within the period as stated under GCC Sub Clause 61.3, the Procuring Entity shall pay to the Contractor interest on the amount of such delayed payment at the rate specified in the PCC , for the period of delay until payment has been made in full.
	61.6	If an amount certified is increased in a subsequent certificate as a result of an award by the Adjudicator or an Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.
62. Advance Payment Security	62.1	The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide a security in an amount equal to the advance payment calculated in accordance with the Appendix to the Contract Agreement titled Terms and Procedures of Payment, and in the same currency or currencies.
	62.2	The security shall be in the form provided in the tender documents or in another form acceptable to the Procuring Entity. The amount of the security shall be reduced in proportion to the value of the Facilities executed by and paid to the Contractor from time to time, and shall automatically become null and void when the full amount of the advance payment has been recovered by the Procuring Entity. The security shall be returned to the Contractor immediately after its expiration.

63. Performance Security	63.1	The Procuring Entity shall notify the Contractor of any claim made against the Bank issuing the Performance Security. in the amount specified in the PCC .
	63.2	The Procuring Entity may claim against the security if any of the following events occurs for fourteen (14) days or more. i. The Contractor is in breach of the Contract and the Procuring Entity has duly notified him or her; and ii. The Contractor has not paid an amount due to the Procuring Entity and the Procuring Entity has duly notified him or her.
	63.3	In the event as stated under GCC Sub Clause 63.2, the Contractor is liable to pay compensation under the Contract amounting to the full value of the Performance Security or more, the Procuring Entity may call the full amount of the security.
	63.4	Unless otherwise specified in the PCC , the security shall be reduced by half on the date of the Operational Acceptance. The Security shall become null and void, or shall be reduced pro rata to the Contract Price of a part of the Facilities for which a separate Time for Completion is provided, five hundred and forty (540) days after Completion of the Facilities or three hundred and sixty five (365) days after Operational Acceptance of the Facilities, whichever occurs first; provided, however, that if the Defects Liability Period has been extended on any part of the Facilities pursuant to GCC Sub-Clause 45.8 hereof, the Contractor shall issue an additional security in an amount proportionate to the Contract Price of that part. The security shall be returned to the Contractor immediately after its expiration, provided, however, that if the Contractor, pursuant to GCC Sub-Clause 45.10, is liable for an extended defect liability obligation, the performance security shall be extended for the period specified in the PCC pursuant to GCC Sub-Clause 45.10 and up to the amount specified in the PCC.
	63.5	If there is no reason to call the security, the security shall be discharged by the Procuring Entity and returned to the Contractor not later than seven (7) days following the date of making the final payment to the Contractor under the Contract and subject to the issuance of the Acceptance Certificate by the Procuring Entity,
64. Retention Money	64.1	The Procuring Entity shall retain an amount from the payable amount due to the Contractor at the percentage specified in the PCC until successful expiration of the Defect Liability period.
	64.2	The total amount retained under GCC Sub Clause 64.1 shall be kept to meet any claims during the Defect Liability Period and shall be returned after the successful expiration of Defects Liability Period and the Project Manager has certified in the form of Defects Corrections Certificate .

65. Taxes and Duties	65.1	The Contractor shall be entirely responsible for all kinds of taxes, customs duties, VAT, fees, levies, and such other charges assessed on the Contractor, its Subcontractors or their employees by all municipal, state or national government authorities in connection with the Facilities in and outside of the country where the Site is located.
	65.2	Notwithstanding GCC Sub-Clause 65.1 above, the Procuring Entity shall bear and promptly pay (a) all customs and import duties for the Plant specified in Price Schedule No. 1; and (b) other domestic taxes such as, sales tax and value added tax (VAT) on the Plant specified in Price Schedules No. 1 and No. 2 and that is to be incorporated into the Facilities, and on the finished goods, imposed by the law of the country where the Site is located.
	65.3	In the event that the rate of any direct or indirect tax (including, but not limited to, income tax, VAT, customs duties, etc.) is altered by virtue of any law, regulation, order, or other legal instrument, the Contract Price shall, subject to the approval of the Head of the Procuring Entity, be adjusted (either upward or downward) so as to ensure that the net amount payable to the Contractor remains unaffected by such legal changes.
66. Payments to Nominated Subcontractor(s)	66.1	The Contractor shall pay to the Nominated Subcontractor(s) the amounts shown on the Nominated Subcontractor's invoices approved by the Contractor in accordance with the subcontract included under the Contract.
67. Price Adjustment	67.1	Where the Contract Period (excluding the Defects Liability Period) exceeds eighteen (18) months, it is normal procedure that prices payable to the Contractor shall be subject to adjustment during the performance of the Contract to reflect changes occurring in the cost of labor and material components. In such cases the tender documents shall include in the Appendix 2, a formula of such price adjustment.
	67.2	Where Contracts are of a shorter duration than eighteen (18) months or in cases where there is to be no Price Adjustment, the following provision shall not be included. Instead, it shall be indicated under this Appendix 2 that the prices are to remain firm and fixed for the duration of the Contract.
	67.3	If the value of the Index is changed after it has been used in a calculation, the calculation shall be corrected and an adjustment made in the next or in the final payment certificate. The Index value shall be deemed to take account of all changes in price due to fluctuations.
68. Liquidated Damages	68.1	Except as provided under GCC Sub Clause 56, if the Contractor fails to complete the Plant and Equipment Works within the Intended Completion Date or extended Intended Completion Date of the contract or Intended Sectional Completion Date or extended sectional completion date of any section under the contract, the Procuring Entity shall, as Liquidated Damages, deduct from the Contract Price, a sum at the percent-rate per day of delay as specified in the PCC , of the contract value of the uncompleted works or part thereof completed after the Intended Completion Date or extended Intended Completion Date, as applicable. The total amount of Liquidated Damages or Delay Damages shall not exceed the amount specified in the PCC . The Procuring Entity may deduct Liquidated Damages from payments due to the Contractor. Payment of Liquidated damages shall not affect the Contractor's liabilities.

G. Change in Contract Elements

69. Change in the Facilities	69.1	<u>Introducing a Change</u> 69.1.1 Subject to GCC Sub-Clauses 69.2.5 and 69.2.7, the Procuring Entity shall have the right to propose, and subsequently require, that the Project Manager order the Contractor from time to time during the performance of the Contract to make any change, modification, addition or deletion to, in or from the Facilities hereinafter called “Change”, provided that such Change falls within the general scope of the Facilities and does not constitute unrelated work and that it is technically practicable, taking into account both the state of advancement of the Facilities and the technical compatibility of the Change envisaged with the nature of the Facilities as specified in the Contract 69.1.2 The Contractor may from time to time during its performance of the Contract propose to the Procuring Entity with a copy to the Project Manager, any Change that the Contractor considers necessary or desirable to improve the quality, efficiency or safety of the Facilities. The Procuring Entity may at its discretion approve or reject any Change proposed by the Contractor, provided that the Procuring Entity shall approve any Change proposed by the Contractor to ensure the safety of the Facilities. 69.1.3 Notwithstanding GCC Sub-Clauses 64.1.1 and 64.1.2, no change made necessary because of any default of the Contractor in the performance of its obligations under the Contract shall be deemed to be a Change, and such change shall not result in any adjustment of the Contract Price or the Time for Completion. 69.1.4 The procedure on how to proceed with and execute Changes is specified in GCC Sub-Clauses 64.2 and 64.3, and further details and forms are provided in the Procuring Entity’s Requirements (Forms and Procedures)

	69.2	<u>Changes Originating from Procuring Entity</u> 69.2.1 If the Procuring Entity proposes a Change pursuant to GCC Sub-Clause 69.1.1, it shall send to the Contractor a “Request for Change Proposal,” requiring the Contractor to prepare and furnish to the Project Manager as soon as reasonably practicable a “Change Proposal,” which shall include the following: (a) brief description of the Change (b) effect on the Time for Completion (c) estimated cost of the Change (d) effect on Functional Guarantees (if any) (e) effect on the Facilities (f) effect on any other provisions of the Contract. 69.2.2 Prior to preparing and submitting the “Change Proposal,” the Contractor shall submit to the Project Manager an “Estimate for Change Proposal,” which shall be an estimate of the cost of preparing and submitting the Change Proposal. Upon receipt of the Contractor’s Estimate for Change Proposal, the Procuring Entity shall do one of the following: (a) accept the Contractor’s estimate with instructions to the Contractor to proceed with the preparation of the Change Proposal (b) advise the Contractor of any part of its Estimate for Change Proposal that is unacceptable and request the Contractor to review its estimate (c) advise the Contractor that the Procuring Entity does not intend to proceed with the Change. 69.2.3 Upon receipt of the Procuring Entity’s instruction to proceed under GCC Sub-Clause 69.2.2 (a), the Contractor shall, with proper expedition, proceed with the preparation of the Change Proposal, in accordance with GCC Sub-Clause 69.2.1. 69.2.4 The pricing of any Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If such rates and prices are inequitable, the Parties thereto shall agree on specific rates for the valuation of the Change 69.2.5 If before or during the preparation of the Change Proposal it becomes apparent that the aggregate effect of compliance therewith and with all other Change Orders that have already become binding upon the Contractor under this GCC Clause 69 would be to increase or decrease the Contract Price as originally set forth in Article 2 (Contract Price) of the Contract Agreement by more than fifteen percent (15%), the Contractor may give a written notice of objection thereto prior to furnishing the Change Proposal as aforesaid. If the Procuring Entity accepts the Contractor’s objection, the Procuring Entity shall withdraw the proposed Change and shall notify the Contractor in writing thereof. The Contractor’s failure to so object shall neither affect its right to object to any subsequent requested Changes or Change Orders herein, nor affect its right to take into account, when making such subsequent objection, the percentage increase or decrease in the Contract Price that any Change not objected to by the Contractor represents.

		69.2.6 Upon receipt of the Change Proposal, the Procuring Entity and the Contractor shall mutually agree upon all matters therein contained. Within fourteen (14) days after such agreement, the Procuring Entity shall, if it intends to proceed with the Change, issue the Contractor with a Change Order. If the Procuring Entity is unable to reach a decision within fourteen (14) days, it shall notify the Contractor with details of when the Contractor can expect a decision. If the Procuring Entity decides not to proceed with the Change for whatever reason, it shall, within the said period of fourteen (14) days, notify the Contractor accordingly. Under such circumstances, the Contractor shall be entitled to reimbursement of all costs reasonably incurred by it in the preparation of the Change Proposal, provided that these do not exceed the amount given by the Contractor in its Estimate for Change Proposal submitted in accordance with GCC Sub-Clause 69.2.2. 69.2.7 If the Procuring Entity and the Contractor cannot reach agreement on the price for the Change, an equitable adjustment to the Time for Completion, or any other matters identified in the Change Proposal, the Procuring Entity may nevertheless instruct the Contractor to proceed with the Change by issue of a “Pending Agreement Change Order.” Upon receipt of a Pending Agreement Change Order, the Contractor shall immediately proceed with effecting the Changes covered by such Order. The Parties shall thereafter attempt to reach agreement on the outstanding issues under the Change Proposal.
	69.3	Changes Originating from Contractor 69.3.1 If the Contractor proposes a Change pursuant to GCC Sub-Clause 69.1.2, the Contractor shall submit to the Project Manager a written “Application for Change Proposal,” giving reasons for the proposed Change and including the information specified in GCC Sub-Clause 69.2.1. Upon receipt of the Application for Change Proposal, the Parties shall follow the procedures outlined in GCC Sub-Clauses 69.2.6 and 69.3.2. However, should the Procuring Entity choose not to proceed, the Contractor shall not be entitled to recover the costs of preparing the Application for Change Proposal.

70. Extension of Delivery and Completion Schedule	70.1	The Contractor must deliver the Plant and the services procured within the period prescribed by the Procuring Entity, as specified in the TDS .
	70.2	The Time(s) for Completion specified in the PCC pursuant to GCC Sub-Clause 29.1 shall be extended if the Contractor is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following: (a) any Change in the Facilities as provided in GCC Clause 69 (b) any occurrence of Force Majeure as provided in GCC Clause 56, unforeseen conditions as provided in GCC Clause 54, or other occurrence of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Sub-Clause 50.2 (c) any suspension order given by the Procuring Entity under GCC Clause 44 hereof or reduction in the rate of progress pursuant to GCC Sub-Clause 71.2 or (d) any changes in laws and regulations as provided in GCC Clause 55 or (e) any default or breach of the Contract by the Procuring Entity, Appendix to the Contract Agreement titled, or any activity, act or omission of the Procuring Entity, or the Project Manager, or any other contractors employed by the Procuring Entity, or (f) any delay on the part of a sub-contractor, provided such delay is due to a cause for which the Contractor himself would have been entitled to an extension of time under this sub-clause, or (g) delays attributable to the Procuring Entity or caused by customs, or (h) any other matter specifically mentioned in the Contract by such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Contractor.
	70.3	Except where otherwise specifically provided in the Contract, the Contractor shall submit to the Project Manager a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Procuring Entity and the Contractor shall agree upon the period of such extension. The Contractor shall at all times use its reasonable efforts to minimize any delay in the performance of its obligations under the Contract.
	70.4	In all cases where the Contractor has given a notice of a claim for an extension of time under GCC 65.2, the Contractor shall consult with the Project Manager in order to determine the steps (if any) which can be taken to overcome or minimize the actual or anticipated delay. The Contractor shall there after comply with all reasonable instructions which the Project Manager shall give in order to minimize such delay. If compliance with such instructions shall cause the Contractor to incur extra costs and the Contractor is entitled to an extension of time under GCC 65.1, the amount of such extra costs shall be added to the Contract Price.
	70.5	Within twenty-one (21) days of receipt of the Contractor's notice, the Procuring Entity shall evaluate the situation and may grant time extensions, if based on justifiable grounds, without liquidated damages.

	70.6	The Procuring may extend up to thirty percent (30%) of the original contract time. above 30% of the original contract time as mentioned in GCC Sub Clause 70.1.
	70.7	In the case an extension of the original delivery schedule required under GCC Sub Clause 70.1 is or will be more than thirty (30) percent but not beyond one hundred (100) percent additional to the original Contract time, approval of the Head of the Procuring Entity or an officer authorized by him or her for the same shall be required.
	70.8	In exceptional cases, where an extension of the original contract time required under GCC Sub Clause 70.1 is or will be more than one hundred (100) percent of the original Contract time, approval of the Secretary of the concerned ministry or division for the same shall be required.
	70.9	Except in case of Force Majeure, as provided under GCC Clause 56, a delay by the Contractor in the performance of its delivery and completion obligations shall render the Contractor liable to the imposition of Liquidated Damages pursuant to GCC Clause 68, unless an extension of the Delivery and Completion Schedule is agreed upon, pursuant to GCC Clause 70.
71. Suspension	71.1	The Procuring Entity may request the Project Manager, by notice to the Contractor, to order the Contractor to suspend performance of any or all of its obligations under the Contract. Such notice shall specify the obligation of which performance is to be suspended, the effective date of the suspension and the reasons thereof. The Contractor shall thereupon suspend performance of such obligation, except those obligations necessary for the care or preservation of the Facilities, until ordered in writing to resume such performance by the Project Manager. If, by virtue of a suspension order given by the Project Manager, other than by reason of the Contractor's default or breach of the Contract, the Contractor's performance of any of its obligations is suspended for an aggregate period of more than ninety (90) days, then at any time thereafter and provided that at that time such performance is still suspended, the Contractor may give a notice to the Project Manager requiring that the Procuring Entity shall, within twenty-eight (28) days of receipt of the notice, order the resumption of such performance or request and subsequently order a change in accordance with GCC Clause 69, excluding the performance of the suspended obligations from the Contract. If the Procuring Entity fails to do so within such period, the Contractor may, by a further notice to the Project Manager, elect to treat the suspension, where it affects a part only of the Facilities, as a deletion of such part in accordance with GCC Clause 69 or, where it affects the whole of the Facilities

	71.2	If (a) the Procuring Entity has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment, or commits a substantial breach of the Contract, the Contractor may give a notice to the Procuring Entity that requires payment of such sum, with interest thereon as stipulated in GCC Sub-Clause 61.6, requires approval of such invoice or supporting documents, or specifies the breach and requires the Procuring Entity to remedy the same, as the case may be. If the Procuring Entity fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, or fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice or (b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Procuring Entity, including but not limited to the Procuring Entity's failure to provide possession of or access to the Site or other areas in accordance with GCC Sub-Clause 30.2, or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities, then the Contractor may by fourteen (14) days' notice to the Procuring Entity suspend performance of all or any of its obligations under the Contract, or reduce the rate of progress.
	71.3	If the Contractor's performance of its obligations is suspended or the rate of progress is reduced pursuant to this GCC Clause 71, then the Time for Completion shall be extended in accordance with GCC Sub-Clause 43.1, and any and all additional costs or expenses incurred by the Contractor as a result of such suspension or reduction shall be paid by the Procuring Entity to the Contractor in addition to the Contract Price, except in the case of suspension order or reduction in the rate of progress by reason of the Contractor's default or breach of the Contract.
	71.4	During the period of suspension, the Contractor shall not remove from the Site any Plant, any part of the Facilities or any Contractor's Equipment, without the prior written consent of the Procuring Entity.

H. Termination and Settlement of Disputes

72. Notice to Correct	72.1	If the Contractor fails to carry out any obligation under the Contract the Project Manager may, by giving a Notice to the Contractor, require the Contractor to make good the failure and to remedy it within a specified time ('Notice to Correct' in these Conditions). The Notice to Correct shall: (a) describe the Contractor's failure to comply with any contractual obligations; (b) state the Sub-Clause and/or provisions of the Contract under which the Contractor has the obligation; and specify the time within which the Contractor shall remedy the failure, which shall be reasonable, taking due regard of the nature of the failure and the work and/or other action required to remedy it.
	72.2	After receiving a Notice to correct the Contractor shall immediately respond but not later than 5 (five) days by giving a reply to the Project Manager describing the measures the Contractor will take to remedy the failure, and stating the date on which such measures will be commenced in order to comply with the time specified in the notice to correct. The time specified in the notice to correct shall not imply any extension of the Time for Completion.
73. Termination for Default	73.1	The Procuring Entity or the Contractor, without prejudice to any other remedy for breach of Contract, by giving fourteen (14) working-days written Notice of Termination mentioning the clause of breach to the other party, may terminate the Contract in whole or in part if the other party causes a fundamental breach of Contract. Fundamental breaches of the Contract shall include, but shall not be limited to, the following: i. the Contractor stops work for twenty-eight (28) days when no stoppage of work is shown on the current Programme or the Contractor stops works repeatedly without any valid ground and the stoppage has not been authorized by the Project Manager. ii. the Contractor fails to commence the work within the Start date; iii. the Contractor does not maintain a Security, which is required; iv. the Contractor fails to comply with instructions of the Notice to Correct as specified in GCC Clause 72; v. the Project Manager instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within eighty-four (84) days; vi. the Procuring Entity fails to handover the full works-site or a substantial portion of the works-site to the Contractor within eighty-four (84) days of contract signing. vii. the Project Manager gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager; viii. the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of Liquidated Damages can be paid, as specified in GCC Sub Clause 68;

		ix. the Contractor has subcontracted the Works exceeding the percentage as mentioned in GCC Sub Clause 23.1 or any subcontractor has been engaged during contract implementation without the prior approval of the Head of Procuring Entity or Authorized Officer as specified in GCC Sub Clause 23.6. x. the Contractor, in the judgment of the Procuring Entity has engaged in corrupt or fraudulent or collusive or coercive or obstructive practices, in case development partner, as defined in GCC Clause 6, in competing for or in executing the Contract. xi. A payment certified by the Project Manager is not paid by the Procuring Entity to the Contractor within eighty-four (84) days of the date of the Project Manager's certificate.
	73.2	If any of the events pointed out under GCC Sub Clause 72.1 or any such event that is not listed in that clause but can be deemed as a fundamental breach of a contract happens, the affected party shall notify (first notice- Notice of Default) the defaulted party of such event and its intention to terminate the contract making reference(s) to the relevant GCC Clauses and ask the defaulted party the reason why the affected party will not terminate the contract with a 21-day timeline from the issuance of the first notice to provide any clarification.
	73.3	If the Procuring Entity receives a reasonable clarification on the breaching event from the Contractor or the Contractor attempts and accomplishes any remedial action to mitigate the breach event, the Procuring Entity may affirm the contract without limiting its right to terminate the contract for any other fundamental breach by the Contractor.
	73.4	If the Procuring Entity does not receive any response or receive an unacceptable clarification on the breach event, it may terminate the contract mentioning an immediate effective date through a final notice.
	73.5	The final notice (Notice of Termination) will be issued by the Procuring Entity getting approval from the Head of the Procuring Entity and the Contractor shall not perform any activity after issuance of that notice.
	73.6	The Head of the Procuring Entity may create a Contract Termination Review Committee (CTRC) to assist him in the discharge of this function. All decisions recommended by the CTRC shall be subject to the approval of the Head of the Procuring Entity.
	73.7	In the event the Procuring Entity terminates the Contract in whole or in part, as stated under GCC Clause 73.1, the Procuring Entity may procure, upon such terms and in such manner as it deems appropriate, Plant similar to those not completed or not performed, and the Contractor shall be liable to the Procuring Entity for any additional costs as mentioned in the PCC for such similar Goods. However, the Contractor shall continue performance of the Contract to the extent not terminated.

74. Termination for Insolvency	74.1	The Procuring Entity shall terminate this Contract if the Contractor is declared bankrupt or insolvent as determined with finality by a court of competent jurisdiction. In this event, termination will be without compensation to the Contractor, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Procuring Entity and/or the Contractor.
75. Termination for Convenience	75.1	The Procuring Entity, by giving twenty-one (21) days written notice sent to the Contractor, may terminate this Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that the termination is for the procuring Entity's convenience, the extent to which performance of the Contractor under the contract is terminated, and the date upon which such termination becomes effective.
	75.2	The Goods that have been delivered and/or performed or are ready for delivery or performance within twenty-one (21) days after the Contractor's receipt of Notice to Terminate shall be accepted by the Procuring Entity at the contract terms and prices. For Goods not yet performed and/or ready for delivery, the Procuring Entity may elect: (a) to have any portion delivered and/or performed and paid at the contract terms and prices; and/or (b) to cancel the remainder and pay to the Contractor an agreed amount for partially completed and/or performed goods and for materials and parts previously procured by the Contractor
	75.3	The expiration of the Delivery and Completion Schedule, initiation of amicable settlement of disputes, adjudication and arbitral proceedings under the set terms and conditions shall not be deemed a termination of the contract.
76. Payment upon Termination	76.1	If the Contract is terminated because of a fundamental breach of Contract under GCC Sub Clause 73.1 by the Contractor, the Project Manager shall issue a certificate for the value of the Works done and Plant and Materials ordered less advance payments received up to the date of the issue of the certificate and less the amount from percentage to apply to the contract value of the works not completed, as indicated in the PCC. If the total amount due to the Procuring Entity exceeds any payment due to the Contractor, the difference shall be a debt payable to the Procuring Entity.
	76.2	If the Contract is terminated for the Procuring Entity's convenience or because of a fundamental breach of Contract by the Procuring Entity, the Project Manager shall issue a payment certificate for the value of the work done, Materials ordered, the reasonable cost of removal of Equipment, repatriation of the Contractor's foreign personnel employed solely on the Works and recruited specifically for the Works, and the Contractor's costs of protecting and securing the Works, and less advance payments received up to the date of the certificate.

	76.3	If the Contract is terminated for reasons of Force Majeure, The Project Manager shall determine the value of the work done and issue a Payment Certificate which shall include. (a) the amounts payable for any work carried out for which unit rates or prices are stated in the Contract; (b) the cost of Plant and Materials ordered for the Works which have been delivered to the Contractor, or of which the Contractor is liable to accept delivery: this Plant and Materials shall become the property of (and be at the risk of) the Procuring Entity when paid for by the Procuring Entity, and the Contractor shall place the same at the Procuring Entity's disposal; (c) other costs or liabilities which in the circumstances were reasonably and necessarily incurred by the Contractor in the expectation of completing the Works; (d) the cost of removal of Temporary Works and Contractor's Equipment from the Site; and (e) the cost of repatriation of the Contractor's staff and labour employed wholly in connection with the Works at the date of termination.
77. Property	77.1	All Materials on the Site, Plant, Equipment, Temporary Works, and Works shall be deemed to be the property of the Procuring Entity if the Contract is terminated because of the Contractor's default stated under GCC Sub Clause 73.1.
78. Frustration	78.1	If the Contract is frustrated by the occurrence of a situation of Force Majeure as defined in GCC Sub Clause 56, the Engineer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all works carried out before receiving it and for any work carried out afterwards to which a commitment was made.
79. Amendment to Contract	79.1	The amendment to Contract shall generally include equitable adjustments in original Contract price, Delivery and Completion Schedule and, any other changes acceptable under the conditions of the Contract.
	79.2	The Procuring Entity shall amend the Contract, incorporating the changes approved in accordance with the Delegation of Financial Power or sub-delegation thereof and, introduced to the original terms and conditions of the Contract.

80. Compensation Events	80.1	The following shall be Compensation Events: (a) The Procuring Entity does not give access to or possession of the Site or part of the Site by the Site Possession Date stated in the GCC Sub Clause 18.1; (b) The Procuring Entity modifies the Schedule of other Contractors in a way that affects the works of the Contractor under the Contract; (c) The Project Manager orders a delay or does not issue Drawings, Specifications, or instructions required for execution of the Works on time; (d) The Project Manager instructs the Contractor to uncover or to carry out additional tests upon work, which is then found to have no Defects; (e) The Project Manager unreasonably does not approve a subcontract to be let, if applicable; (f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Notification of Award from the information issued to Tenderers (including the Site Investigation Reports), from information available publicly and from a visual inspection of the Site; Other Contractors, public authorities, utilities, or the Procuring Entity do not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor; (g) The advance payment is delayed; (h) The effects on the Contractor of any of the Procuring Entity's Risks; (i) The Project Manager unreasonably delays issuing a Completion Certificate; (j) A situation of Force Majeure has occurred, as defined in GCC Clause 56; and (k) Other Compensation Events described in the Contract or determined by the Project Manager in the PCC shall apply.
	80.2	If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date shall be extended. The Project Manager shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended, only on justifiably acceptable grounds duly recorded.
	80.3	As soon as the Contractor has provided information demonstrating the effect of each Compensation Event upon the Contractor's forecast cost, the Project Manager shall assess it, and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager's own forecast. The Project Manager will assume that the Contractor will react competently and promptly to the event.
	80.4	The Contractor shall not be entitled to compensation to the extent that the Procuring Entity's interests are adversely affected by the Contractor not having given early warning or not having cooperated with the Project Manager.

81. Contractor's Claims	81.1	If the Contractor considers himself to be entitled to any extension of the Completion Time and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give notice to the Procuring Entity, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than twenty-eight (28) days after the Contractor became aware, or should have become aware, of the event or circumstance
	81.2	If the Contractor fails to give notice of a claim within such period of twenty-eight (28) days, the Intended Completion Date shall not be extended, the Contractor shall not be entitled to additional payment, and the Procuring Entity shall be discharged from all liability in connection with the claim.
	81.3	Within forty-two (42) days after the Contractor became aware or should have become aware of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Engineer, the Contractor shall send to the Engineer a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed, for settlement.
82. Settlement of Disputes	82.1	<u>Amicable Settlement:</u> The Procuring Entity and the Contractor shall use their best efforts to settle amicably all disputes arising out of or in connection with this Contract or its interpretation.
	82.2	<u>Adjudication</u> (a) If the Contractor /Procuring Entity believe that amicable settlement of dispute is not possible between the two parties, the dispute shall be referred to the Adjudicator within fourteen (14) days of first written correspondence on the matter of disagreement; (b) The Adjudicator named in the PCC is jointly appointed by the parties. In case of disagreement between the parties, the Appointing Authority designated in the PCC shall appoint the Adjudicator within fourteen (14) days of receipt of a request from either party; (c) The Adjudicator shall give its decision in writing to both parties within twenty-eight (28) days of a dispute being referred to it; (d) The Contractor shall make all payments (fees and reimbursable expenses) to the Adjudicator, and the Procuring Entity shall reimburse half of these fees through the regular progress payments; (e) Should the Adjudicator resign or die, or should the Procuring Entity and the Contractor agree that the Adjudicator is not functioning in accordance with the provisions of the Contract; a new Adjudicator will be jointly appointed by the Procuring Entity and the Contractor. In case of disagreement between the Procuring Entity and the Contractor the Adjudicator shall be designated by the Appointing Authority designated in the PCC at the request of either party, within fourteen (14) days of receipt of a request from either Party.
	82.3	<u>Arbitration</u> (a) If the Parties are unable to reach a settlement under GCC Clause 82.1 or 82.2 within twenty-eight (28) days of the first written correspondence on the matter of disagreement or within twenty-eight (28) days of the date of decision made by the Adjudicator as per GCC Sub Clause 82.2(c), then either Party may give notice to the other party of its intention to commence arbitration in accordance with GCC Sub Clause 82.3(b); (b) The arbitration shall be conducted in accordance with the Arbitration Act (Act No 1 of 2001) of Bangladesh as at present in force and in the place shown in the PCC .

Section 4. Particular Conditions of Contract

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<i>Instructions for completing the Particular Conditions of Contract are provided, as needed, in the notes in italics mentioned for the relevant GCC clauses.</i>	
GCC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
GCC 1.1(ll)	The Procuring Entity is Project Director Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) (1st Revised) Project BREB. Address: Bangladesh Rural Electrification Board, Head Office, Training Academy Building, Nikunja-2, Khilkhet, Dhaka-1229. Floor: 6th Floor, City: Dhaka-1229, Country: Bangladesh. Telephone: +88-028900070 Electronic mail address: pdmcepdmd@gmail.com
GCC 1.1(tt)	The sites are located at (1) Algi (2) Amdia (3) Gazaria (4) Shilmandi & (5) Godairchar 33/11kV Substations under NPBS-1. Also, in NPBS-1 HQ, Madhobdi, Narsingdi and BREB HQ, Dhaka and is defined in drawings No: (Section 7)
GCC 3.1	For notices, the Procuring Entity's contact details shall be: Attention: Project Director Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) (1st Revised), BREB. Address: Bangladesh Rural Electrification Board, Head Office, Training Academy Building, Nikunja-2, Khilkhet, Dhaka-1229. Floor: 6th Floor, City: Dhaka-1229, Country: Bangladesh. Telephone: +88-028900070 Electronic mail address: pdmcepdmd@gmail.com
	For notices, the Contractor's contact details shall be: Attention: Address: Telephone: Facsimile number: Electronic mail address:
GCC 7.1(k)	The following documents shall also be part of the Contract: i) Tenderer's Eligibility Certificate ii) Discount Declaration Sheet iii) Origin & Source Certificate iv) Declaration Form about Test Report v) Tenderer's / Manufacturer's Warranty Certificate
GCC 9.1	The Contractor or the Subcontractor that is a national of, or registered in, the following countries are not eligible: Israel
GCC 9.2	Materials, Equipment and associated services from the following countries are not eligible: Israel
GCC 16.1	Nominated Subcontractor(s) named below; (Not applicable)
GCC 18.1	Possession of the Site or part(s) of the Site, to the Contractor shall be given on the following date(s): Within 28 (twenty-eight) days from the date of Contract signing

GCC 27.3	The Contractor agrees to supply spare parts for a period of 10 years Sample Addition to PCC 27.3 <i>The Contractor shall carry sufficient inventories to ensure an ex-stock supply of consumable spares for the Plant. Other spare parts and components shall be supplied as promptly as possible, but at the most within six (6) months of placing the order and opening the letter of credit. In addition, in the event of termination of the production of spare parts, advance notification will be made to the Procuring Entity of the pending termination, with sufficient time to permit the Procuring Entity to procure the needed requirement. Following such termination, the Contractor will furnish to the extent possible and at no cost to the Procuring Entity the blueprints, drawings and specifications of the spare parts, if requested</i> [Not Applicable]
GCC 28.1	The Contractor shall commence work on the Facilities within 28 days from the Effective Date for determining Time for Completion as specified in the Contract Agreement.
GCC 29.1	The time for completion of the whole of the facilities within 10 months/Project Completion period which comes earlier from the effective date as described in the contract agreement.
GCC 41.2	Factory Acceptance Test (FAT)/Pre-shipment Inspection(PSI): i) Pre-shipment Inspection will be carried out by the purchaser's nominated Inspection Team of 03(Three) official for 7 Days or Pre-shipment Inspection (PSI) agent. All decision will be taken by the employer regarding this matter. All cost will be borne by the supplier. ii) The pre-shipment inspection and testing of the materials shall be carried out by Inspection Team at the supplier's factory/show room/warehouse. Also costing related to travel including visa fees, accommodation, fooding, Daily Allowance as per Government Rules, Transportation and subsidence of the purchaser's nominated inspectors shall be borne by the supplier as per schedule. PSI agent fee (if applicable) will be borne by the supplier. Shipment clearance will be given after satisfactory completion of pre-shipment inspection of the materials/Equipment. iii) The Supplier shall notify the purchaser at least Four (04) weeks in advance of the date or dates when the products and /or components will be ready for inspection. Such date must be fixed at least 15 (fifteen) days prior to the due delivery date. iv) In case the purchaser or its representative does not get the product ready for inspect ion on the specified date as per inspection notice of the tenderer, the fee for any further visit /visits will be borne by the contractor, in addition to liquidated damage applicable as per terms & conditions of the schedule. v) Any factory/warehouse inspection prior to or delivery or final inspection at the destination of delivery shall not relieve the supplier from full responsibility for furnishing material and / or equipment conforming to the technical specifications contained herein, nor prejudice any claim, right or privilege which the purchaser may have under the warranty furnished by the manufacturer/contractor in accordance with Tender Document. vi) Under any circumstances if the FAT/PSI will not occur then the quoted price against FAT will deducted from the tender price. But a virtual FAT/PSI or FAT/PSI by 3rd party have to performed if the physical FAT/PSI will not happen

	and for this time no extra money will pay to the Tenderer. Post Landing Inspection: Post Landing Inspection (PLI) shall be done after the arrival of goods/equipment at site. The PLI shall be conducted by BREB engineers in presence of contractor. The purchaser has right to inspect, test where necessary and reject the goods arrived in the project site shall in no way be limited or waived by reason of the goods having previously been tested and passed by manufacturer/supplier, The purchaser can test the goods in any third party laboratory if necessary. Contractor shall bear all the cost regarding all the test, transportation, loading/unloading. The contractor shall bear all costs regarding all testing.	
GCC 43.2.2	The Guarantee Test of the Facilities shall be successfully completed within 30 days from the date of Completion.	
GCC 44.3	Applicable (<i>amount or rate</i>) for the bonus for early Completion: $\frac{\text{USD/GBP/EUR/JPY}}{\text{delete not appropriate}}$ <i>[insert amount]</i> and/or $\frac{\text{BDT}}{\text{delete if not appropriate}}$ – Maximum bonus: [Not Applicable] Or, No bonus will be given for earlier Completion of the Facilities or part thereof.	
GCC 45.2	The Defects Liability Period is 36 (Thirty Six) months from the date of operational acceptance of the works.	
GCC 45.3	The contractor shall submit the updated programme within 30 days in case of delaying in submission updated programme the employer may impose penalty or the amount to be withheld as per decision of Employer-if required as justified.	
GCC 45.10	The critical components covered under the extended defect liability are 36 (Thirty Six) months from the commercial acceptance of the works. Also, the critical components covered under the extended defect liability are Substation Automation System (SAS)/SCADA - Equipment/Component, applicable soft ware with component and Inverter system with component and accssories.	
GCC 48.1 (b)	The multiplier of the Contract Price is: $\frac{\text{USD/GBP/EUR/JPY}}{\text{delete not appropriate}}$ <i>[insert amount]</i> and/or $\frac{\text{BDT}}{\text{delete if not appropriate}}$ – (Not Applicable)	
GCC 52.1	The insurance cover shall be: Insurance shall be As per GoB rule and from Sadharon Bima Corporation. Bangladesh.	
	(a)	The minimum cover for the Works and of Plant and Materials is 110% of the value of the works, plant and materials.
	(b)	The maximum deductible for insurance of the Works and of Plant and Materials is [state amount]. <i>[the Contractor shall state this amount at the time of Contract signing. Amount could be 3-5%t of the sum insured]</i>

	(c)	The minimum cover for loss or damage to Equipment is 110% of the replacement value of the equipment
	(d)	The maximum deductible for insurance of Equipment is <i>[state amount]</i> . <i>[the Contractor shall state this amount at the time of Contract signing. Amount could be 3-5% of the sum insured]</i> .
	(e)	The minimum cover for other property is 10% of the Contract Price.
	(f)	The maximum deductible for insurance of other property is <i>[state amount]</i> . <i>[the Contractor shall state this amount at the time of Contract signing. Amount could be 3-5% of sum insured]</i>
	(g)	The minimum cover for personal injury or death: (i) for the Contractor's employees is as per the law and common practice in Bangladesh. (ii) and for third parties is as per the law and common practice in Bangladesh.
GCC 60.2		The Contract Price shall be adjusted in accordance with the provisions of the Appendix to the Contract Agreement titled Adjustment Clause.
GCC 60.4		The Contract is not subject to price adjustment. The Contract is subject to price adjustment, the formulae and weightings or coefficients of indexes for adjustment are: [Not Applicable] <i>[Price Adjustment Formulae to be applicable if stated under ITT Sub Clause 27.8 and ITT Sub Clause 27.9 shall be specified here]</i> <u>Example:</u> $P = A + a (Lm/Lo) + b (BIm/BIo) + c (CEm/CEo) + d (RSm/RSo) + e (STm/STo) + f (BRm/BRo) + g (MIm/MIo) + h (FUm/FUo) + \text{etc}$ where; L= Labor, BI=Bitumen, CE=Cement, RS=Reinforcing Steel, ST=Stone, BR=Bricks, MI=Miscellaneous, FU= Fuel] Weighting or Coefficient A equals between 0.20 and 0.25 and, B (a+b+c+d+e+f+g+h+etc) equals between 0.80 and 0.75. <i>[insert figure] non-adjustable component (coefficient A)</i> <i>[insert figure] adjustable component (coefficient B)</i> <i>[The sum of A+B shall equal ONE (1). It is usual to have value of A between 0.20 and 0.25 and that of B between 0.80 and 0.75. Breakdown of B shall be provided in Appendix to the Tender.]</i> <i>[delete not appropriate.]</i>
GCC 61.1		The original Contract price is: <i>[insert the amount in the NOA]</i>
GCC 61.1		The Advance Payment shall be ten (10) percent of the original Contract Price against an irrevocable unconditional Bank Guarantee and shall be paid to the Contractor not later than 28 days.
GCC 61.5		The rate of interest shall be the prevailing rate of interest for commercial borrowing established in the country. [Not Applicable]
GCC 63.1		The amount of performance security, as a percentage of the Contract Price for the Facility or for the part of the Facility for which a separate Time for Completion is provided, shall be 10 % (ten percentage) of the contract price.

GCC 63.4	The performance security shall not be reduced on the date [28 Days] of the Operational Acceptance.
GCC 63.4	The performance security shall be reduced to 10 percent (10%) of the value of the component covered by the extended defect liability to cover the Contractor's extended defect liability in accordance with the provision in the PCC, pursuant to GCC Sub-Clause 42.10.
GCC 64.1	The portion of payments to be retained is five (5) percent of the contract price. In case of front loading or unbalanced price loading, PE may extend this proportion up to twenty (20) percent of the contract price. In such cases, money retained for meeting any claims during Defect Liability Period shall be half of the total money retained but not less than five (5) percent of the contract price.
GCC 68.1	The amount of Liquidated Damages is [0.10] of ONE (1) percent of the contract value of the undelivered Goods or any part thereof delivered after expiry of the Delivery and Completion Schedule or extended Delivery and Completion Schedule, as applicable, per day of delay. The maximum amount of Liquidated Damages for the incompleted works or any part thereof is 10% (ten percent) of the final contract price of the whole of the works.
GCC 80.1(k)	The following additional events shall also be the Compensation Events: None
GCC 82.2(b)&(e)	The Adjudicator jointly appointed by the Parties is: Name: Address: Tel No: Fax No: e-mail address: The arbitration shall be conducted in accordance with the Arbitration Act (Act No 1 of 2001) of Bangladesh as at present in force and the place of arbitration will be Dhaka, Bangladesh.
	In case of disagreement between the parties, the Appointing Authority for the Adjudicator is the President of the Institution of Engineers, Bangladesh (IEB).
GCC 82.3	the case of a dispute between the Procuring Entity and the foreign Contractor , <i>[insert any of the following options]</i> 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 United Nations Commission on International Trade Law (UNCITRAL) Arbitration Rules of 1976 as at present in force. OR All disputes arising in connection with the present Contract shall be finally settled under the Rules of Conciliation and Arbitration of the International Chamber of Commerce by one or more arbitrators in accordance with the said rules.

Appendix to the Tender

[In Tables below, the Procuring Entity shall indicate the source and base values with dates of Indexes, unless otherwise instructed to be quoted by the Tenderer, for the different Cost Components and mention its Weightings or Coefficients]

Table 1.1: Price Adjustment Data

[ITT Sub Clause 26: To be provided by the Procuring Entity]

Index Descriptions	Base Value	Sources of Index

Note:

1. The sources of Indexes and its values with dates shall be Bangladesh Bureau of Statistics (BBS) unless otherwise mentioned by the Procuring Entity or instructed to be quoted by the Tenderer.
2. The Procuring Entity may require the Tenderer to justify its proposed Indexes, if quoted by the Tenderer.
3. The Base Value of the Indexes shall be those prevailing twenty-eight (28) days prior to the deadline for submission of the Tenders.

Table 1.2: Price Adjustment Data**[GCC Sub Clause 67: To be provided by the Procuring Entity]**

Item Group	Bill No. if applicable	Index Descriptions	Coefficients or Weightings for non-adjustable Cost Component	Coefficients or Weightings for adjustable Cost Components										Total
				a	b	c	d	e	f	g	h	i	j	
														1
														1
														1
														1
														1
														1

Note:

The Weightings or Coefficients of the Cost Components shall be mentioned by the Procuring Entity based on the proportion of components involved in the items caused to be impacted by rise and fall in its prices.

APPENDICES [These appendices shall be the part of the contract]

- Appendix 1 - Terms and Procedures of Payment
- Appendix 2 - Price Adjustment
- Appendix 3 - Insurance Requirements as per GoB and Sadharon Bima Corporation, Bangladesh.
- Appendix 4 - Time Schedule
- Appendix 5 - List of Major Items of Plant and services and List of Approved Subcontractors
- Appendix 6 - Scope of Works and Supply by the Procuring Entity
- Appendix 7 - List of Documents for Approval or Review
- Appendix 8 - Functional Guarantees

Appendix 1. Terms and Procedures of Payment

The following Terms and Procedures of Payment are given as a guideline suitable for Supply and Installation Contracts. In the event that the Procuring Entity wishes to introduce different terms of payment to the following, it shall first obtain the written approval of the Procuring Entity/authority as deemed appropriate, if beyond the financial power, for the terms it intends to use. If additional Price Schedules are introduced, suitable terms of payment in respect of such additional schedules must be added.

In accordance with the provisions of GCC Clause 61 (Terms of Payment), the Procuring Entity shall pay the Contractor in the following manner and at the following times, on the basis of the Price Breakdown given in the section on Price Schedules. Payments will be made in the currencies quoted by the Tenderer unless otherwise agreed between the parties. Applications for payment in respect of part deliveries may be made by the Contractor as work proceeds.

(A) Terms of Payment

Schedule No. 1 - Plant and Equipment Supplied from Abroad

In respect of plant and equipment supplied from abroad, the following payments shall be made:

- Ten percent (10%) of the total CIF or CIP amount as an advance payment against receipt of invoice and upon submission of an irrevocable unconditional advance payment security for the equivalent amount made out valid until the Goods are delivered in favour of the Procuring Entity. The advance payment security may be reduced in proportion to the value of the plant and equipment shipped FOB or delivered to the site, as evidenced by shipping and delivery documents. If the bank guarantee issuing bank located outside the Purchaser's country, it shall have a correspondent bank located in the Purchaser's Country to make it enforceable with full risk and liability.
- Seventy percent (70%) of the total or pro rata CIP amount shall be payable upon delivery to the respective site after satisfactory Post landing inspection reports within 56 (Fifty-six) days after receipt of invoice [with required documents such as negotiable bill of lading, a non-negotiable sea way bill, an airway bill, a railway consignment note, a road consignment note, insurance certificate, PLI report, etc.].
- Ten percent (10%) of the total or pro rata CIP amount upon issue of the Completion Certificate, within forty-five (45) days after receipt of invoice.
- Ten percent (10%) of the total or pro rata CIP amount upon issue of the Operational Acceptance Certificate, within forty-five (45) days after receipt of invoice.

Schedule No. 2 - Plant and Equipment Supplied from within the Procuring Entity's Country

In respect of plant and equipment supplied from within the Procuring Entity's country, the following payments shall be made:

- (A) Ten percent (10%) of the total EXW amount as an advance payment against receipt of invoice, and an irrevocable unconditional advance payment security for the equivalent amount made out in favor of the Procuring Entity. The advance payment security may be reduced in proportion to the value of the plant and equipment delivered to the site, as evidenced by shipping and delivery documents if necessary.
- (B) Seventy percent (70%) of the total or pro rata EXW amount upon Incoterm "Ex-Works," shall be payable upon delivery to the respective site after satisfactory Post landing inspection reports within 56 (Fifty-six) days after receipt of invoice.
- (C) Ten percent (10%) of the total or pro rata EXW amount upon issue of the Completion Certificate, within forty-five (45) days after receipt of invoice.
- (D) Ten percent (10%) of the total or pro rata EXW amount upon issue of the Operational Acceptance Certificate, within forty-five (45) days after receipt of invoice.

Schedule No. 3 - Design Services

In respect of design services for both the foreign currency and the local currency portions, the following payments shall be made:

- (A) Ten percent (10%) of the total design services amount as an advance payment against receipt of invoice and an irrevocable advance payment security for the equivalent amount made out in favor of the Procuring Entity.

- (B) Seventy percent (70%) of the total or pro rata design services amount upon acceptance of design in accordance with GCC Clause 48 by the Project Manager within forty-five (45) days after receipt of invoice.
- (C) Twenty percent (20%) of the total or pro rata design services amount upon acceptance of As-build design in accordance with GCC Clause 48 by the Project Manager within forty-five (45) days after receipt of invoice.

Schedule No. 4 - Installation and other Services

In respect of installation services for both the foreign and local currency portions, the following payments shall be made:

- (A) Ten percent (10%) of the total installation and other services amount as an advance payment against receipt of invoice and an irrevocable unconditional advance payment security for the equivalent amount made out in favor of the Procuring Entity. The advance payment security may be reduced in proportion to the value of work performed by the Contractor as evidenced by the invoices for installation services **if necessary**.
- (B) Seventy percent (70%) of the measured value of work performed by the Contractor, as identified in the said Program of Performance, during the preceding month, as evidenced by the Procuring Entity's authorization of the Contractor's application, will be made monthly within forty-five (45) days after receipt of invoice.
- (C) Ten percent (10%) of the total or pro rata value of installation services performed by the Contractor as evidenced by the Procuring Entity's authorization of the Contractor's monthly applications, upon issue of the Completion Certificate, within forty-five (45) days after receipt of invoice.
- (D) Ten percent (10%) of the total or pro rata value of installation services performed by the Contractor as evidenced by the Procuring Entity's authorization of the Contractor's monthly applications, upon issue of the Operational Acceptance Certificate, within forty-five (45) days after receipt of invoice.

(B) Payment Procedures

The procedures to be followed in applying for certification and making payments shall be as follows:

1. Payment shall be certified by the Design and Supervision Consultant appointed for the Project, and subsequently submitted to the Employer for approval and necessary processing.
2. The payment of the contract price for goods supplied from outside Bangladesh will be made through an irrevocable commercial Letter of Credit to be opened by the Employer in favor of the Contractor as appropriate. All costs in connection with the Letter of Credit inside Bangladesh shall be borne by the Employer and costs outside Bangladesh shall be borne by the Contractor.
 - a. For foreign currency payments, the contractor must submit documentary evidences that the expenditure was incurred in foreign currency including shipping documents. The foreign currency portion with advance payment will be paid through an irrevocable commercial Letter of Credit.
 - b. Applicable CD, VAT etc. for 'Schedule 1: Machinery and Equipment supplied from outside Employer's country' shall be paid by the Employer. C&F Agent will be engaged by the contractor informing the purchaser. However, the Supplier shall do customs formalities, including the appointment of, and payment to, clearing and forwarding (C&F) agent. The Supplier shall bear port dues and all other charges, transportation to the final destination.
3. The local currency portion with advance payment of the contract price will be made through Employer's designated Bank.
4. Applicable VAT, taxes, and other statutory deductions shall be made by the Employer from invoices submitted for the prices quoted for "Schedule 2: Machinery and Equipment Supplied from the Employer's Country," "Schedule 3: Design Services," and "Schedule 4: Civil Works, Installation, and Other Services."
5. However, in both currency portion mention the above 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.
6. Ten percent (10%) of the Contract Price shall be retained for the Defect Liability Period (Warranty Period), either entirely from the Performance Guarantee, or as a combination of retention money and the Performance Guarantee, as decided by the Employer.

Appendix 2. Price Adjustment (Not Applicable)

Prices payable to the Contractor, in accordance with 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 following formula:

The Contract is subject to price adjustment applying the following formulae and the weightings or coefficients:

[Price Adjustment Formulae to be applicable if stated under ITT Sub Clause 26.9 shall be specified here]

Example:

$P = A + a (Lm/Lo) + b (BIm/BIo) + c (CEm/CEo) + d (RSm/RSo) + e (STm/STo) + f (BRm/BRo) + g (MIm/MIo) + h (FUm/FUo) + \text{etc}$

where;

L= Labor, BI=Bitumen, CE=Cement, RS=Reinforcing Steel, ST=Stone, BR=Bricks, MI=Miscellaneous, FU= Fuel]

Weighting or Coefficient A equals between 0.10 and 0.15 and, B (a+b+c+d+e+f+g+h+etc) equals between 0.90 and 0.85.

[insert figure] non-adjustable component (**coefficient A**)

[insert figure] adjustable component (**coefficient B**)

*[The sum of A+B shall equal ONE (1). It is usual to have value of A between 0.10 and 0.15 and that of B between 0.90 and 0.85. Breakdown of B shall be provided in **Appendix to the Tender.**]*

[delete as appropriate]

The date of adjustment shall be the mid-point of the period of manufacture or installation of component or Plant.

The following conditions shall apply:

- (a) No price increase will be allowed beyond the original delivery date unless covered by an extension of time awarded by the Procuring Entity under the terms of the Contract. No price increase will be allowed for periods of delay for which the Contractor is responsible. The Procuring Entity will, however, be entitled to any price decrease occurring during such periods of delay.
- (c) No price adjustment shall be payable on the portion of the Contract price paid to the Contractor as an advance payment.

For complex plant supply and installation involving several sources of supply and/or a substantial amount of installation works, a family of formulas may be necessary, with provision for the usage of Contractor's equipment in the works formula.

Appendix 3. Insurance Requirements As per GoB and Sadharon Bima Corporation, Bangladesh.

(Note: This form is recommended for application in a contract after consultation with the Scheduled Insurance Companies. A different structure/ method can be applied after approval of competent authority, but should be incorporated in the Tender documents to be sold/ issued to the prospective tenderers).

Details are to be completed by the Procuring Entity prior to issuing the tender documents. In the event that the Procuring Entity provides any insurances under the Contract, appropriate details must also be given.

Insurances To Be Taken Out by The Contractor

In accordance with the provisions of GCC Clause 52, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified. The identity of the insurers and the form of the policies shall be subject to the approval of the Procuring Entity, such approval not to be unreasonably withheld.

(a) Cargo Insurance

Covering loss or damage occurring, while in transit from the supplier's or manufacturer's works or stores until arrival at the Site, to the Facilities (including spare parts therefore) and to the construction equipment to be provided by the Contractor or its Subcontractors.

Amount	Deductible limits	Parties insured	From	To
[in currency(ies)]	[in currency(ies)]	[names]	[place]	[place]
110%		Bangladesh Rural Electrification Board	Supplier's or manufacturer's works or stores	Final destination/Site

(b) Installation All Risks Insurance

Covering physical loss or damage to the Facilities at the Site, occurring prior to completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the defect liability period while the Contractor is on the Site for the purpose of performing its obligations during the defect liability period.

Amount	Deductible limits	Parties insured	From	To
[in currency(ies)]	[in currency(ies)]	[names]	[place]	[place]
110%		Bangladesh Rural Electrification Board		

(c) Third Party Liability Insurance

Covering bodily injury or death suffered by third parties (including the Procuring Entity's personnel) and loss of or damage to property (including the Procuring Entity's property and any parts of the Facilities that have been accepted by the Procuring Entity) occurring in connection with the supply and installation of the Facilities.

Amount	Deductible limits	Parties insured	From	To
[in currency(ies)]	[in currency(ies)]	[names]	[place]	[place]

(d) Automobile Liability Insurance

Covering use of all vehicles used by the Contractor or its Subcontractors (whether or not owned by them) in connection with the supply and installation of the Facilities. Comprehensive insurance in accordance with statutory requirements.

(e) Workers' Compensation

In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

(f) Procuring Entity's Liability

In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

(g) Other Insurances

The Contractor is also required to take out and maintain at its own cost the following insurances:

Details:

Amount [in currency(ies)]	Deductible limits [in currency(ies)]	Parties insured [names]	From [place]	To [place]

The Procuring Entity shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 52.1, except for the Third-Party Liability, Workers' Compensation and Procuring Entity's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insureds under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 52.1, except for the Cargo, Workers' Compensation and Procuring Entity's Liability Insurances. All insurer's rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.

Insurances to be Taken Out by The Procuring Entity

If the Procuring Entity is proposing to take out any or all of the above insurances itself, or any other insurances in respect of the Facilities, either in its own name or in the joint names of itself and the Contractor, it shall give details below prior to issuing the tender documents. Under the terms of the Contract, the Contractor and the Contractor's Subcontractors shall be named as co-insured under all such policies.

The Procuring Entity shall at its expense take out and maintain in effect during the performance of the Contract the following insurances.

Details:

Amount [in currency(ies)]	Deductible limits [in currency(ies)]	Parties insured [names]	From [place]	To [place]

Appendix 4. Time Schedule

The Procuring Entity should normally provide a Time Schedule to be followed by the Contractor during the performance of the Contract. This schedule should be provided with the tender documents under this Appendix. All completion times indicated must be in accordance with the information regarding Time(s) for Completion given in the Tender Data Sheet.

Except under exceptional circumstances, the Time Schedule should indicate periods of time (e.g., weeks or months) and not specify calendar dates. All periods should be shown from the Effective Date of the Contract.

Should it become necessary to amend the Time Schedule to reflect any agreements made with the selected Tenderer prior to award of Contract, the amended Time Schedule shall replace the original Time Schedule prior to signature of the Contract Agreement.

If the tender documents contain no Time Schedule, the Tenderer shall be required to submit with its tender a detailed program, normally in the form of a bar chart, showing how and the order in which it intends to perform the Contract and showing the key events requiring action or decision by the Procuring Entity. In preparing this Program, the Tenderer shall adhere to the Time(s) for Completion given in the Tender Data Sheet or give its reasons for not adhering thereto. The Time Schedule submitted by the selected Tenderer and amended as necessary prior to award of Contract shall be included as Appendix to the Contract Agreement before the Contract is signed

Appendix 5. List of Major Items of Plant and Services and List of Approved Subcontractors

Prior to issuing the Tender Document, the Procuring Entity has established a list of major items of plant and services for which approval of the Procuring Entity is required. Prior to award of Contract, the details of approved subcontractor, including manufacturers shall be completed, indicating those subcontractors proposed by the Tenderer in the corresponding Attachment to its tender that are approved by the Procuring Entity for engagement by the Contractor during the performance of the Contract.

A list of major items of plant and services is provided below.

The following Subcontractors and/or manufacturers are approved for carrying out the item of the facilities indicated. Where more than one Subcontractor is listed, the Contractor is free to choose between them, but it must notify the Procuring Entity of its choice in good time prior to appointing any selected Subcontractor. In accordance with GCC Sub-Clause 23.1, the Contractor is free to submit proposals for Subcontractors for additional items from time to time. No Subcontracts shall be placed with any such Subcontractors for additional items until the Subcontractors have been approved in writing by the Procuring Entity and their names have been added to this list of Approved Subcontractors.

Major Items of Plant and Services	Approved Subcontractors/Manufacturers	Nationality
SAS:		
Server		
Server		
Gateway		
Firewall		
Inverter		
RTU/BCU		
11kV FPI (Not Applicable)		
33kV FPI (Not Applicable)		
DCU (Not Applicable)		
Desktop PC with Monitor and Laptop Computer		

Appendix 6. Scope of Works and Supply by the Procuring Entity

Prior to issuing the tender documents, the Procuring Entity shall indicate in this Appendix details of all personnel and Facilities it will provide for use by the Contractor and indicate, where applicable, the charges that it will make in respect of their use.

The Procuring Entity shall also identify any part(s) of the facilities it intends to carry out itself (or by other contractors), and any plant, equipment, or materials that it proposes to purchase itself and supply to the Contractor for incorporation in the facilities, indicating, where applicable, the charges that it will make in respect thereof.

The following personnel, facilities, works and supplies shall apply as appropriate.

All personnel, facilities, works and supplies will be provided by the Procuring Entity in good time so as not to delay the performance of the Contractor, in accordance with the approved Time Schedule and Program of Performance pursuant to GCC Sub-Clause 37.2.

Unless otherwise indicated, all personnel, facilities, works and supplies will be provided free of charge to the Contractor.

Personnel	Charge to Contractor (if any)

Facilities	Charge to Contractor (if any)

Works	Charge to Contractor (if any)

Supplies	Charge to Contractor (if any)

Appendix 7. List of Documents for Approval or Review

Pursuant to GCC Sub-Clause 38.3.1, the Contractor shall prepare, or cause its Subcontractor to prepare, and present to the Project Manager in accordance with the requirements of GCC Sub-Clause 37.2 (Program of Performance), the following documents for

(A) Approval

- 1.
- 2.
- 3.

(B) Review

- 1.
- 2.
- 3.

Appendix 8. Functional Guarantees

1. General

This Appendix sets out

- (a) the functional guarantees referred to in GCC Clause 46 (Functional Guarantees)
- (b) the preconditions to the validity of the functional guarantees, either in production and/or consumption, set forth below
- (c) the minimum level of the functional guarantees
- (d) the formula for calculation of liquidated damages for failure to attain the functional guarantees.

2. Preconditions

The Contractor gives the functional guarantees (specified herein) for the facilities, subject to the following preconditions being fully satisfied: *[List any conditions for the carrying out of the Guarantee Test referred to in GCC Sub-Clause 43.2]*

3. Functional Guarantees

Subject to compliance with the foregoing preconditions, the Contractor guarantees as follows:

- 3.1 Production Capacity** *[List here the production capacity that the Contractor is to guarantee, making sure to use, as functional guarantees, the figures offered by the Contractor in its tender]*
- 3.2 Raw Materials and Utilities Consumption** *[List here the guaranteed items of consumption per unit of production (e.g., kg, tons, kcal, kWh, etc.) that the Contractor is to guarantee, making sure to use, as functional guarantees, the figures offered by the Contractor in its tender]*

4. Failure in Guarantees and Liquidated Damages

4.1 Failure to Attain Guaranteed Production Capacity

If the production capacity of the facilities attained in the guarantee test, pursuant to GCC Sub-Clause 43.2, is less than the guaranteed figure specified in para. 3.1 above, but the actual production capacity attained in the guarantee test is not less than the minimum level specified in para. 4.3 below, and the Contractor elects to pay liquidated damages to the Procuring Entity in lieu of making changes, modifications and/or additions to the Facilities, pursuant to GCC Sub-Clause 46.3, then the Contractor shall pay liquidated damages at the rate of *[amount in the contract currency]*.for every complete one percent (1%) of the deficiency in the production capacity of the Facilities, or at a proportionately reduced rate for any deficiency, or part thereof, of less than a complete one percent (1%)

4.2 Raw Materials and Utilities Consumption in Excess of Guaranteed Level

[To be specified in the appropriate wording for the type of facilities if there are consumption guarantee]

If the actual measured figure of specified raw materials and utilities consumed per unit (or their average total cost of consumption) exceeds the guaranteed figure specified in para. 3.2 above (or their specified average total cost of consumption), but the actual consumption attained in the guarantee test, pursuant to GCC Sub-Clause 43.2, is not more than the maximum level specified in para. 4.3 below, and the Contractor elects to pay liquidated damages to the Procuring Entity in lieu of making changes, modifications and/or additions to the Facilities pursuant to GCC Sub-Clause 46.3, then the Contractor shall pay liquidated damages at the rate of *[amount in the contract currency]* for every complete one percent (1%) of the excess consumption of the Facilities, or part thereof, of less than a complete one percent (1%).

[The rate of liquidated damages specified in paras. 4.1 and 4.2 above shall be at least equivalent to the rate specified in Section 3 (General Conditions of Contract) for the comparison of functional guarantees provided by the Tenderers]

4.3 Minimum Levels

Notwithstanding the provisions of this paragraph, if as a result of the guarantee test(s), the following minimum levels of performance guarantees (and consumption guarantees) are not attained by the Contractor, the Contractor shall at its own cost make good any deficiencies until the Facilities reach any of such minimum performance levels, pursuant to GCC Sub-Clause 46.2:

- (a) production capacity of the Facilities attained in the guarantee test: ninety-five percent (95%) of the guaranteed production capacity

and/or
- (b) average total cost of consumption of all the raw materials and utilities of the Facilities: one hundred and five percent (105%) of the guaranteed figures.

4.4 Limitation of Liability

Subject to para. 4.3 above, the Contractor's aggregate liability to pay liquidated damages for failure to attain the functional guarantees shall not exceed *[the percentage specified shall not exceed ten percent (10%)]*. percent (. . . %) of the Contract price

Section 5. Tender and Contract Forms

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Form	Title
Tender Forms	
PG5A-1a	Tender Submission Letter for Technical Offer
PG5A-1b	Tender Submission Letter for Financial Offer
PG5A-1c	Letter of Authorization
PG5A-2a	Tenderer Information
PG5A-2b	JV Partner Information (<i>if applicable</i>)
PG5A-2c	Subcontractor Information (<i>if applicable</i>)
PG5A-3	Price Schedule for Plant and Services
PG5A-4	Technical Proposal
PG5A-5	Specifications Submission and Compliance Sheet
PG5A-6	Manufacturer's Authorisation Letter
PG5A-7	Bank Guarantee for Tender Security (<i>when this option is chosen</i>)
PG5A-8	Bank's Letter of Commitment for Line of Credit (<i>when this option is chosen</i>)
Contract Forms	
PG5A-9	Notification of Award
PG5A-10	Contract Agreement
PG5A-11	Bank Guarantee for Performance Security (<i>when this option is chosen</i>)
PG5A-12	Bank Guarantee for Advance Payment (<i>if applicable</i>)
PG5A-13	Bank Guarantee for Retention Money Security (<i>when this option is chosen</i>)
PG5A-14	Contract Amendment

Forms PG5A-1 to PG5A-8 are the contents of the Tender Forms and should be completed as stated in ITT Clauses 23.

Forms PG5A-9 to PG5A-14 are the contents of the Contract Forms as stated in GCC Clause 7.

Tender Submission Letter for Technical Offer (Form PG5A-1a)

[This format shall be completed and signed by the Tenderer or his/her Authorised Signatory, without alterations, on the Letter-head pad of the Tenderer]

To: [Contact Person] [Name of the Procuring Entity] [Address of the Procuring Entity]	Date:
Invitation for Tender No:	IFT. No. _____
Tender Package No:	Package No. _____
Lot No: (when applicable)	Lot No. _____

We, the undersigned, offer to design, manufacture, test, deliver, install, pre-commission and commission in conformity with the Tender Document, the following Plant and Services, viz:

In signing this letter, and in submitting our Tender, we also confirm that:

- (a) our Tender shall be valid for the period stated in the Tender Data Sheet (ITT Sub Clause 32.1) and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (b) a Tender Security is attached in the form of a *[state Pay Order, Bank Draft, Bank Guarantee]* in the amount stated in the Tender Data Sheet (ITT Sub Clause 34.1) and valid for a period of twenty-eight (28) days beyond the Tender Validity date;
- (c) we have examined and have no reservations to the Tender Document, issued by you on *[insert date]*; including Addendum to Tender Document No(s) *[state numbers]*, issued in accordance with the Instructions to Tenderers (ITT Clause 11). *[insert the number and issuing date of each addendum; or delete this sentence if no Addendum has been issued]*;
- (d) we, including as applicable, any JV partner or Subcontractor for any part of the contract resulting from this Tender process, have nationalities from eligible countries, in accordance with ITT Sub Clause 5.1;
- (e) we are submitting this Tender as a sole Tenderer in accordance with ITT Sub Clause 19.1
or
we are submitting this Tender as the partners of a JV, comprising the following other partners in accordance with ITT Clause 17;

	Name of Partner	Location & District of Partner
1		
2		
3		
4		

- (f) *we are not a Government owned entity as defined in ITT Sub Clause 5.10*
or
we are a Government owned entity, and we meet the requirements of ITT Sub Clause 5.10;
- (g) we, including as applicable any JV partner, declare that we are not associated, nor have been associated in the past, directly or indirectly, with a consultant or any other entity that has prepared the design, specifications and other documents in accordance with ITT Sub Clause 5.6;

- (h) we, including as applicable any JV partner or Subcontractor for any part of the contract resulting from this Tender process, have not been declared ineligible by the Government of Bangladesh on charges of engaging in corrupt, fraudulent, collusive, coercive or obstructive practices in accordance with ITT Sub Clause 5.7;
- (i) furthermore, we are aware of ITT Clause 4 concerning such practices and pledge not to indulge in such practices in competing for or in executing the Contract;
- (j) we intend to subcontract an activity or part of the Works, in accordance with ITT Clause 18.1 to the following Subcontractor(s);

Activity or part of the Plant and services	Name of Subcontractor with Location and District

- (k) we, including as applicable any JV partner, confirm that we are not currently suspended or debarred in connection with ITT Clause 5.8,
- (l) we are not participating as Tenderer in more than one Tender in this Tendering process. We understand that your written Notification of Award shall constitute the acceptance of our Tender and shall become a binding Contract between us, until a formal Contract is prepared and executed;
- (m) we, including as applicable any JV partner, confirm that we do not have a record of insolvency, receivership, bankrupt or being wound up, our business activities were not been suspended, and it was not been the subject of legal proceedings in accordance with ITT Sub Clause 5.9;
- (n) we, including as applicable any JV partner, confirm that we have fulfilled our obligations to pay taxes and social security contributions applicable under the relevant national laws and regulations of Bangladesh in accordance with ITT Sub Clause 5.5;
- (o) we understand that you reserve the right to reject all the Tenders or annul the Tender proceedings, without incurring any liability to Tenderer, in accordance with ITT Clause 60.

Signature:	<i>[insert signature of authorised representative of the Tenderer]</i>
Name:	<i>[insert full name of signatory with National ID Number]</i>
In the capacity of:	<i>[insert capacity of signatory]</i>
Duly authorised to sign the Tender for and on behalf of the Tenderer	

[If there is more than one (1) signatory, or in the case of a JV, add other boxes and sign accordingly].

Attachment 1:

[ITT Sub Clause 39.4]

Written confirmation authorising the above signatory(ies) to commit the Tenderer

[and, if applicable]

Attachment 2:

[ITT Sub Clause 28.2(b)]

Copy of the JV Agreement / Letter of Intent to form JV with draft proposed Agreement

Tender Submission Letter for Financial Offer (Form PG5A-1b)

[This format shall be completed and signed by the Tenderer or his/her Authorised Signatory, without alterations, on the Letter-head pad of the Tenderer]

To: <i>[Contact Person]</i> <i>[Name of the Procuring Entity]</i> <i>[Address of the Procuring Entity]</i>	Date:
Invitation for Tender No:	<i>IFT No.</i> _____
Tender Package No:	<i>Package No.</i> _____
Lot No: (when applicable)	<i>Lot No.</i> _____

We, the undersigned, offer to design, manufacture, test, deliver, install, pre-commission and commission in conformity with the Tender Document, the following Plant and Services, viz:

In accordance with ITT Clause 26 and 27, the following price applies to our Tender:

The Tender price is: (ITT Sub Clause 26.4 and 27)	Amount_____ <i>[in figures]</i> Amount_____ <i>[in words]</i>
Plant (including Mandatory Spare Parts) Supplied from abroad	Amount_____ <i>[in figures]</i> Amount_____ <i>[in words]</i>
Plant (including Mandatory Spare Parts) supplied from within the Procuring Entity's Country	Tk. _____ <i>[in figures]</i> Taka _____ <i>[in words]</i>
Design Services	Amount_____ <i>[in figures]</i> Amount_____ <i>[in words]</i>
Installation and Other Services	Amount_____ <i>[in figures]</i> Amount_____ <i>[in words]</i>
Recommended Spare parts Price (If economic Factor is applicable)	Amount_____ <i>[in figures]</i> Amount_____ <i>[in words]</i>

The advance payment (when applicable) is: <i>[insert the amount based on percentage of the Tender Price]</i> (GCC Sub Clause 61.1)	Taka _____ <i>[in words]</i> Taka _____ <i>[in words]</i>
and we shall accordingly submit an Advance Payment Guarantee in the format shown in Form PW3A-11 .	
In accordance with ITT Clause 28, the following discounts shall apply to our Tender:	
The unconditional discount proposed in this package/Lot/other lot(s) of the Tender is:	In Percentage (%).-----
The discount shall be equally applicable on all the items of Schedule of requirements within each lot after arithmetical correction.	

In signing this letter, and in submitting our Tender, we also confirm that:

- (a) our Tender shall be valid for the period stated in the Tender Data Sheet (ITT Sub Clause 32.1) and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (b) a Tender Security is attached in the form of a *[state Pay Order, Bank Draft, Bank Guarantee]* in the amount stated in the Tender Data Sheet (ITT Sub Clause 34.1) and valid for a period of twenty-eight (28) days beyond the Tender Validity date;
- (c) if our Tender is accepted, we commit to furnishing a Performance Security within the time stated under ITT Sub Clause 67.2 in the amount stated in the Tender Data Sheet (ITT Sub Clause 66.1) and in the form specified in the Tender Data Sheet (ITT Sub Clause 66.1) valid for a period of twenty-eight (28) days beyond the date of issue of the Completion Certificate of the Works;
- (d) we have examined and have no reservations to the Tender Document, issued by you on *[insert date]*; including Addendum to Tender Document No(s) *[state numbers]*, issued in accordance with the Instructions to Tenderers (ITT Clause 11). *[insert the number and issuing date of each addendum; or delete this sentence if no Addendum has been issued]*;
- (e) we, including as applicable, any JV partner or Subcontractor for any part of the contract resulting from this Tender process, have nationalities from eligible countries, in accordance with ITT Sub Clause 5.1;
- (f) we are submitting this Tender as a sole Tenderer in accordance with ITT Sub Clause 19.1
or
we are submitting this Tender as the partners of a JV, comprising the following other partners in accordance with ITT Clause 17;

	Name of Partner	Location & District of Partner
1		
2		
3		
4		

- (g) *we are not a Government owned entity as defined in ITT Sub Clause 5.10*
or
we are a Government owned entity, and we meet the requirements of ITT Sub Clause 5.10;

- (h) we, including as applicable any JV partner, declare that we are not associated, nor have been associated in the past, directly or indirectly, with a consultant or any other entity that has prepared the design, specifications and other documents in accordance with ITT Sub Clause 5.6;
- (i) we, including as applicable any JV partner or Subcontractor for any part of the contract resulting from this Tender process, have not been declared ineligible by the Government of Bangladesh on charges of engaging in corrupt, fraudulent, collusive, coercive or obstructive practices in accordance with ITT Sub Clause 5.7;
- (j) furthermore, we are aware of ITT Clause 4 concerning such practices and pledge not to indulge in such practices in competing for or in executing the Contract;
- (k) we intend to subcontract an activity or part of the Works, in accordance with ITT Clause 18.1 to the following Subcontractor(s);

Activity or part of the Plant and Services	Name of Subcontractor with Location and District

- (l) we, including as applicable any JV partner, confirm that we are not currently suspended or debarred in connection with ITT Clause 5.8,
- (m) we are not participating as Tenderer in more than one Tender in this Tendering process. We understand that your written Notification of Award shall constitute the acceptance of our Tender and shall become a binding Contract between us, until a formal Contract is prepared and executed;
- (n) we, including as applicable any JV partner, confirm that we do not have a record of insolvency, receivership, bankrupt or being wound up, our business activities were not been suspended, and it was not been the subject of legal proceedings in accordance with ITT Sub Clause 5.9;
- (o) we, including as applicable any JV partner, confirm that we have fulfilled our obligations to pay taxes and social security contributions applicable under the relevant national laws and regulations of Bangladesh in accordance with ITT Sub Clause 5.5;
- (p) we understand that you reserve the right to reject all the Tenders or annul the Tender proceedings, without incurring any liability to Tenderer, in accordance with ITT Clause 60.

Signature:	<i>[insert signature of authorised representative of the Tenderer]</i>
Name:	<i>[insert full name of signatory with National ID Number]</i>
In the capacity of:	<i>[insert capacity of signatory]</i>
Duly authorised to sign the Tender for and on behalf of the Tenderer	

[If there is more than one (1) signatory, or in the case of a JV, add other boxes and sign accordingly].

Attachment 1:

[ITT Sub Clause 39.4]

Written confirmation authorising the above signatory(ies) to commit the Tenderer

[and, if applicable]

Attachment 2:

[ITT Sub Clause 28.2(b)]

Copy of the JV Agreement / Letter of Intent to form JV with draft proposed Agreement

Letter of Authorization (Form PG5A-1c)

[This is the format for the Letter of Authorization submitted by the tenderer in accordance with ITT Clause 39.4]

Invitation for Tender No:

Date:

Tender Package No:

Lot No (when applicable)

To:

[Name and address of the Procuring Entity]

I/We, the undersigned, as the Sole Proprietor/Authorized Partner/Partner-in-Charge/Managing Director/Chairman/Chief Executive Officer of the firm titled *[Insert Name and Address of the firm]*, do hereby authorize *[Insert name, designation, address and NID of the person being authorized]* to sign all the documents related with the tender on behalf of the firm. His/her specimen signatures are given below:

(signature)

1.....

(signature)

2.....

(signature)

3.....

Date:

(Signature)
Name, designation, address and NID

Note:

1. Relevant documentary evidence of authorizing capacity of the signatory of this authorization letter shall be attached.

Tenderer Information (Form PG5A-2a)

[This format shall be completed and signed by the Tenderer or his/her Authorised Signatory, without alterations, on the Letter-head pad of the Tenderer]

Invitation for Tender No:

IFT No]

Tender Package No:

[Package No]

Lot No (*when applicable*)

[Lot No)]

1.	Eligibility Information of the Tenderer [ITT –Clauses 5 & 28]	
1.1	Nationality of individual or country of registration	
1.2	Tenderer's legal title	
1.3	Tenderer's registered address	
1.4	Tenderer's legal status <i>[complete the relevant box]</i>	
	Proprietorship (Please mention name and NID of the proprietor)	
	Partnership (Please mention name and NID of the partners)	
	Limited Liability Concern (Please mention name and NID of CEO or MD and the Directors (members of Board of Directors) and/ or Shareholders (at least 10% shares) of the concern)	
	Government-owned Enterprise	
	Others [please describe, if applicable]	
1.5	Tenderer's year of registration	
1.6	Tenderer's authorised representative details	
	Name	
	National ID number	
	Address	
	Telephone / Fax numbers	
	e-mail address	

1.7	Litigation [ITT Sub Cause 14.1(a)]			
	A. No pending litigation ☐ [if no pending litigation put Tick Mark in Box]			
	B. Pending litigation			
	Month/ Year	Matter in dispute	Value of Pending Claim in Taka	
1.8	Tenderer to attach photocopies of the original documents mentioned aside		[All documents required under ITT Clauses 5 and 28]	
The following two information are applicable for National Tenderers				
1.9	Tenderer's Value Added Tax Registration (VAT) Number			
1.10	Tenderer's Tax Identification Number (TIN)			
[The foreign Tenderers, in accordance with ITT Sub Clause 5.1, shall provide evidence by a written declaration to that effect to demonstrate that it meets the criterion]				
2. Qualification Information of the Tenderer [ITT Clause 31]				
2.1	General Experience in the Supply of Goods [State years of experience]			
2.2	Specific Experience of satisfactory completion of supply of similar Goods			
	Contract No		[insert reference no] of [insert year]	
	Name of Contract		[insert name]	
	Role in Contract [tick relevant box].		Prime Contractor	Subcontractor
	Award date		[insert date]	
	Completion date		[insert date]	
Total Contract Value		[insert amount]		
Procuring Entity's Name Address Tel <u>e-mail</u>				
Brief description with justifications of the similarity compared to the Procuring Entity's requirements		[state justification in support of its similarity compared to the proposed supply]		

2.3	Supply and/or production capacity of Goods are:		
	Year	Quantity	Type of Goods
2.4	Liquid assets available [ITT Sub Clause 14.1(b)]		
	No	Source of Financing	Amount Available
In order to confirm the above statements, the Tenderer shall submit, as applicable, the documents mentioned in ITT Sub Clause 31.1(d)			
2.5	Contact Details [ITT Sub Clause 31.1 (f)]		
	Name, address, and other contact details of Tenderer Bankers and other Procuring Entity(s) that may provide references, if contacted by this Procuring Entity		

JV Partner Information (Form PG5A-2b)

[This Form should be completed and signed by each JV partner without alterations, preferably on its Letter-Head Pad]

Invitation for Tender No:

[IFT No]

Tender Package No:

Package No]

Lot No. (when applicable)

[Lot No)]

1. Eligibility Information of the JV Partner [ITT –Clauses 5 & 28]		
1.1	Nationality of individual or country of registration	
1.2	JV Partner's legal title	
1.3	JV Partner's registered address	
1.4	JV Partner's legal status <i>[complete the relevant box]</i>	
	Proprietorship (Please mention name and NID of the proprietor)	
	Partnership (Please mention name and NID of the partners)	
	Limited Liability Concern (Please mention name and NID of CEO or MD and the Directors (members of Board of Directors) and/or Shareholders (at least 10% shares) of the concern)	
	Government-owned Enterprise	
1.5	JV Partner's year of registration	
1.6	JV Partner's authorised representative details	
	Name	
	National ID number	
	Address	
	Telephone / Fax numbers	
	e-mail address	

1.7	Litigation [ITT Cause 13]			
	A. No pending litigation ☐ [if no pending litigation put Tick Mark in Box]			
	B. Pending litigation			
	Year	Matter in dispute	Value of Pending Claim in Taka	Value of Pending Claim as Percentage of Net Worth
1.8	JV Partner to attach photocopies of the original documents mentioned aside		[All documents required under ITT Clauses 5 and 29]	
The following two information are applicable for national JV Partners only				
1.9	JV Partner's Value Added Tax Registration (VAT) Number			
1.10	JV Partner's Tax Identification Number (TIN)			
[The foreign JV Partners, in accordance with ITT Sub Clause 5.1, shall provide evidence by a written declaration to that effect to demonstrate that it meets the criterion]				
2.	Key Activity(ies) for which it is intended to be joint ventured, if it can be specified [ITT Sub Clause 17.2]			
	Elements of Activity		Brief description of Activity	
3.	Qualification Information of the JV Partners [ITT Clause 31]			
3.1	General Experience in Construction Works of JV Partners [State years of experience]			
3.2	Specific Experience in Construction Works of JV Partners Completed Contracts of similar nature, complexity and methods/construction technology			
	Contract No	[insert reference no] of [insert year]		
	Name of Contract	[insert name]		
	Role in Contract [tick relevant box].	Prime Contractor	Subcontractor	Management Contractor
	Award date	[insert date]		
	Completion date	[insert date]		
	Total Contract Value	[insert amount]		
	Procuring Entity's Name Address Tel / Fax <u>e-mail</u> Brief description with justifications of the similarity compared to the Procuring Entity's requirements	[state justification in support of its similarity compared to the proposed works]		

3.3 Average Annual Construction Turnover

[Select one option from below and delete the italics]

[Option 1: Based on Profit and Loss Account or Audit Report duly conducted by Registered Chartered Accountancy Firm, Exchange Rate shall be rate at the end of the period reported by the concerned central bank of the country]

Period or Year	Amount and Currency	Amount in Equivalent BDT.
1	2	3

Option 2: Based on total certified payments received for contracts in progress or completed under public sector for a period as stated under ITT Sub Clause 14.1(b) [applicable for local tenderer]

Sl.	Period or Year	Tender ID or Ref. No.	Received Date	Amount	Business Share	Turnover					
1	2	3	4	5	6	7					
					Total						
					AACT						
3.4	Liquid assets available to meet the construction cash flow [ITT Sub Clause 14.1(b)]										
	No	Source of Financing		Amount Available							
In order to confirm the above statements, the JV Partners shall submit, as applicable, the documents mentioned in ITT Sub Clause 31.1(d)											
3.5	Contact Details [ITT Sub Clause 31.1 (f)]										
	Name, address, and other contact details of JV Partner's Bankers and other Procuring Entity(s) that may provide references, if contacted by this Procuring Entity										
3.6	Qualifications and experience of key technical and administrative personnel proposed for Contract administration and management [ITT Sub Clause 31.1(h)]										
	Name	Position	Years of General Experience	Years of Specific Experience							
[JV Partners to complete details of as many personnel as are applicable. Each personnel listed above should complete the Personnel Information (Form PG5A-2b)]											

3.7	Major Construction Equipment proposed to carry out the Contract [ITT Sub Clause 31.1(i)]		
	Item of Equipment	Condition (new, good, average, poor)	Owned, leased or to be purchased (state owner, lessor or seller)
<i>[Tenderer to list details of each item of major construction equipment, as applicable]</i>			

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorized to sign the Tender for and on behalf of the Tenderer		

Subcontractor Information (Form PG5A-2c)

[This Form should be completed and signed by each Subcontractor, without alterations, preferably on its Letter-Head Pad]

Invitation for Tender No:

[IFT No]

Tender Package No

[Package No]

Lot No. (when applicable)

[Lot No]

1.	Eligibility Information of the Subcontractor <i>[ITT –Clauses 5 & 28]</i>	
1.1	Nationality of Individual or country of Registration	
1.2	Subcontractor's legal title	
1.3	Subcontractor's registered address	
1.4	Subcontractor's legal status <i>[complete the relevant box]</i>	
	Proprietorship (Please mention name and NID of the proprietor)	
	Partnership (Please mention name and NID of the partners)	
	Limited Liability Concern (Please mention name and NID of CEO or MD and the Directors (members of Board of Directors) and/ or Shareholders (at least 10% shares) of the concern)	
	Government-owned Enterprise	
1.5	Subcontractor's year of registration	
1.6	Subcontractor's authorised representative details	
	Name	
	Address	
	Telephone numbers	
	e-mail address	
1.7	Subcontractor to attach copies of the following original documents	All documents to the extent relevant to ITT Clause 5 and 28 in support of its qualifications
The following two information are applicable for national Subcontractors		

1.8	Subcontractor's Value Added Tax Registration (VAT) Number		
1.9	Subcontractor's Tax Identification Number (TIN)		
[The foreign Subcontractors, in accordance with ITT sub Clause 5.1, shall provide evidence by a written declaration to that effect to demonstrate that it meets the criterion]			
2. Key Activity(ies) for which it is intended to be Subcontracted [ITT Sub Clause 18.1]			
2.1	Elements of Activity	Brief description of Activity	
2.2	List of Similar Contracts in which the proposed Subcontractor had been engaged		
	Name of Contract and Year of Execution		
	Value of Contract		
	Name of Procuring Entity		
	Contact Person and contact details		
	Type of Work performed		

Price Schedule for Plant and Service (Form PG5A-3)

(This form should be completed and submitted by the tenderer and appended in the financial proposal envelope)

Invitation for Tender No:	
Tender Package No	
This Package is divided into the following Number of Lots	

General

1. The Price Schedules are divided into separate Schedules as follows:
Schedule No. 1: Plant (including Mandatory Spare Parts) Supplied from Abroad
Schedule No. 2: Plant (including Mandatory Spare Parts) Supplied from within the Procuring Entity's Country
Schedule No. 3: Design Services
Schedule No. 4: Civil Works part
Schedule No. 5: Installation and Other Services
Schedule No. 6: Grand Summary
Schedule No. 7: Recommended Spare Parts
2. The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Tenderers shall be deemed to have read the Procuring Entity's Requirements and other sections of the Tender Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.
3. If tenderers are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITT 9.1 prior to submitting their tender.

Pricing

4. Prices shall be filled in indelible ink, and any alterations necessary due to errors, etc., shall be initialed by the Tenderer.
As specified in the Tender Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement.
5. Tender prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Tenderers in the Tender Document.
For each item, tenderers shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.
Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Procuring Entity's Requirements) or elsewhere in the Tender Document.
6. Payments will be made to the Contractor in the currency or currencies indicated under each respective item.
7. When requested by the Procuring Entity for the purposes of making payments or partial payments, valuing variations or evaluating claims, or for such other purposes as the Procuring Entity may reasonably require, the Contractor shall provide the Procuring Entity with a breakdown of any composite or lump sum items included in the Schedule.

**Design, Supply, Installation, Testing & Commissioning etc. all Complete as
Required for Establishment of SCADA System for 4 Sub-stations Inclusion with
Existing SCADA at Narsingdi PBS-1 (Turn-key)**

Schedules of Rates and Prices

Package No.: MCEP/BREB/DMD-W-391

Schedule No. 1 - Plant and Mandatory Spare Parts Supplied from Abroad

Line Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price CIP[insert place of destination] Or CIF[insert port of destination] [Foreign Currency]	CIF/CIP price per Line Item [Foreign Currency]	Taxes and Duties In Local Currency
<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7 = 5x 6</u>	<u>8</u>
	Schedule No.-1: Plant and Mandatory Spare Parts to be Supplied						
A-1	Integration with SCADA Master Station and Backup Display: Supply of necessary equipment/parts for integration of 4 Nos. 33/11kV Substation with SCADA Master Station, Installation, Modification, Adaptation, Testing and Commissioning of SCADA control station including ADMS at Narsingdi PBS-1 HQ & Backup Display at BREB HQ as per instructions of Engineer –in-charge/Employer.		Lot	1			
A-2	Substation Automation System: Supply, Installation, Adaptation, Modification, Testing & Commissioning of Complete Substation Automation System (Server, Engineering / Operator Workstation, SCADA Gateway/RTU, Firewall, Monitor, Event Printer & Laser Color Printer) at Algi, Amdia, Gazaria & Shilmandi 33/11kV Substation as per instructions of Engineer –in-charge/Employer.		Lot	4			
A-3	Inverter System for Uninterruptable Power Supply: Supply, installation, testing & commissioning of the Inverter system for uninterruptable power supply for Substation Automation System (SAS) and Central Control Station (CCS) at Algi, Amdia, Gazaria, Shilmandi & Godairchar 33/11kV Substation as per instructions of Engineer –in-charge/Employer.		Lot	5			
A-4	Fiber Optic Communication: Construction of four leased fiber optic line (Optical fiber/Ethernet communication) for interconnection between SCADA Control rooms to Substation Gateway including necessary modems with 1 st year rent cost as per instructions of Engineer –in-charge/Employer. N.B: The preliminary leased contract period should be 3 (Three) years and it may be renewable with the consent of employer.		Lot	4			
A-5	Supply of 3 FPI sensors + 1 DCU with all accessories as per instructions of Engineer –in-charge/Employer. (Not Applicable)		Set				

A-6	Installation, testing & commissioning cost of 3 FPI sensors + 1 DCU with all accessories as per instructions of Engineer –in-charge/Employer. (Not Applicable)		Lot				
A-7	Supply of Server, Central Control Station (CCS), all accessories with necessary software & license in each substation as per instructions of Engineer –in-charge/Employer. (Not Applicable)		Lot				
A-8	Installation, testing & commissioning of Central Control Station (CCS) of SCADA System with all accessories in each substation as per instructions of Engineer –in-charge/ Employer. (Not Applicable)		Lot				
A-9	Supply of VPN Sim-card with 1 st month data cost as per instructions of Engineer –in-charge/Employer. (Not Applicable)		Each				
A-10	Supply Desktop Computer including all accessories/components (Monitor, CPU, Printer, UPS, Scanner and etc.) as per approved design & drawing and as per instructions of Engineer-in charge / Employer.		Lot	1			
A-11	Supply of Laptop Computer including all accessories/components as per approved design & drawing and as per instruction of Engineer-in-charge/Employer.		Lot	1			
A-12	Other & minor civil works as per requirements and instructions of Engineer-in charge / Employer.		Lot	1			
A-13	Ancillary System: Revolving chair as per instruction of Engineer-in-charge/Employer (Dimension: L-63*W-63*H-95-105CM) (Brand: Otobi/Regal/Navana/Hatil/Akhter/Brothers)		Each	4			
	Visitor Chair as per instruction of Engineer-in-charge/Employer (Dimension: L-56.5*W-52.8*H-86 CM) (Brand: Otobi/Regal/Navana/Hatil/Akhter/Brothers)		Each	8			
	Executive Table with Side Desk and Three Drawers as per instruction of Engineer-in-charge/Employer (Dimension:1600mm*900mm*750mm) (Brand: Otobi/Regal/Navana/Hatil/Akhter/Brothers)		Each	4			
B	Schedule -2: Design, Training and other services:						
B-1	Basic and Detail Design as per specification and requirement for entire scope of the Contract and as built drawing as per instruction of Engineer-in-charge/Employer		Lot	1			

B-2	Training Schedule-1 Local Technical Training: Technical Training for 7 days for 8 Nos. BREB/PBS Personnel on operation, maintenance of SCADA/Substation Automation System (SAS) as per instruction of the employers/ engineering - in – charge and section 6.39		Lot	1			
C-3	Training Schedule-2 Foreign Technical Training: Technical Training for 7 days for 4 Nos. BREB/PBS Personnel on operation, maintenance of SCADA/Substation Automation System (SAS),Gateway/ RTU Configuration & Data Engineering as per instruction of the employers/ engineering - in – charge and section 6.39		Lot	1			
C-4	Factory Acceptance Test (FAT) Factory Acceptance Test (FAT) for the requirement of the equipment as per instruction of the employers/ engineering - in – charge and section 6.40.		Lot	1			
C-5	Environmental (ESMF Related) Works: Supply of First Aid Box with standard contents. Site cleaning, dust control, solid and organic waste management, temporary fencing at construction area, site leveling, dressing etc. Provide PPE, supply drinking water and arrange accommodation with proper sanitation facilities to the labors. Find the depth of ground water level at least two locations of the site to meet the requirement of all parameters for drinking water standard		Lot	1			
D	Schedule-3: Mandatory Spare parts:		Lot	1			
1.	Necessary Spare Parts for SAS						
2.	Necessary Spare Parts for Inverter						
3.	Fault Passage Indicator (FPI) (Not Applicable)						
4.	Data Concentrator Unit (DCU) (Not Applicable)						
Column 7 to be carried forward to Schedule No. 6. Grand Summary							

Note: 1. The Procuring Entity may also use other INCOTERMS, if deemed necessary, In such case Form PG5A-6, will require to be customized by the Procuring Entity

2. Specify currencies in accordance with ITT 27. Create and use as many columns for Unit Price and Total Price as there are currencies.

Country of Origin Declaration Form

Item	Description	Country
Name:	[insert full name of signatory]	Signature with Date and Seal
In the capacity of:	[insert designation of signatory]	[Sign]
Duly authorized to sign the Tender for and on behalf of the Tenderer		

Schedule No. 2 - Plant and Mandatory Spare Parts Supplied from within the Procuring Entity's Country

Line Item No.	Description of Item	Unit	Quantity	Unit Price EXW (Foreign Currency or Taka)	Total EXW Price (Foreign Currency or Taka)	Sales Tax (Foreign Currency or Taka)	Total Price (Foreign Currency or Taka)
1	2	3	4	5	6 = 4x 5	7	8= 6 + 7
A-1	Integration with SCADA Master Station and Backup Display: Supply of necessary equipment/parts for integration of 4 Nos. 33/11kV Substation with SCADA Master Station, Installation, Modification, Adaptation, Testing and Commissioning of SCADA control station including ADMS at Narsingdi PBS-1 HQ & Backup Display at BREB HQ as per instructions of Engineer –in-charge/Employer.	Lot	1				
A-2	Substation Automation System: Supply, Installation, Adaptation, Modification, Testing & Commissioning of Complete Substation Automation System (Server, Engineering / Operator Workstation, SCADA Gateway/RTU, Firewall, Monitor, Event Printer & Laser Color Printer) at Algi, Amdia, Gazaria & Shilmandi 33/11kV Substation as per instructions of Engineer –in-charge/Employer.	Lot	4				
A-3	Inverter System for Uninterruptable Power Supply Supply, installation, testing & commissioning of the Inverter system for uninterruptable power supply for Substation Automation System (SAS) and Central Control Station (CCS) at Algi, Amdia, Gazaria, Shilmandi & Godairchar 33/11kV Substation as per instructions of Engineer –in-charge/Employer.	Each	5				
A-4	Fiber Optic Communication: Construction of four leased fiber optic line (Optical fiber/Ethernet communication) for interconnection between SCADA Control rooms to Substation Gateway including necessary modems with 1 st year rent cost as per instructions of Engineer –in-charge/Employer. N.B: The preliminary leased contract period should be 3 (Three) years and it may be renewable with the consent of employer.	Lot	1				
A-5	Supply of 3 FPI sensors + 1 DCU with all accessories as per instructions of Engineer –in-charge/Employer. (Not Applicable)	Set					

A-6	Installation, testing & commissioning cost of 3 FPI sensors + 1 DCU with all accessories as per instructions of Engineer –in-charge/Employer. (Not Applicable)	Lot					
A-7	Installation, testing & commissioning of Central Control Station (CCS) as per instructions of Engineer –in-charge/Employer. (Not Applicable)	Lot					
A-8	Supply of Central Control Station (CCS), all accessories with necessary software & license as per instructions of Engineer –in-charge/Employer. (Not Applicable)	Set					
A-9	Supply of VPN Sim-card with 1 st month data cost as per instructions of Engineer –in-charge/Employer. (Not Applicable)	Each					
A-10	Supply Desktop Computer including all accessories/components (Monitor, CPU, Printer, UPS and etc.) as per approved design & drawing and as per instructions of Engineer-in charge / Employer.	Set	1				
A-11	Supply Laptop Computer including all accessories/components as per approved design & drawing and as per instruction of Engineer-in-charge/Employer.	Set	1				
B-1	Ancillary System: Revolving chair as per instruction of Engineer-in-charge/Employer (Dimension: L-63*W-63*H-95-105CM) (Brand: Otobi/Regal/Navana/Hatil/Akhter/Brothers)	Lot	4				
	Visitor Chair as per instruction of Engineer-in-charge/Employer (Dimension: L-56.5*W-52.8*H-86 CM) (Brand: Otobi/Regal/Navana/Hatil/Akhter/Brothers)	Lot	8				
	Executive Table with Side Desk and Three Drawers as per instruction of Engineer-in-charge/Employer (Dimension:1600mm*900mm*750mm) (Brand: Otobi/Regal/Navana/Hatil/Akhter/Brothers)	Lot	4				
B-2	Other & minor civil works (As per Requirement)	Lot	1				

C	Design, Training and other services:						
C-1	Basic and Detail Design as per specification and requirement for entire scope of the Contract and as built drawing as per instruction of Engineer-in-charge/Employer	Lot	1				
C-2	Training Schedule-1 Local Technical Training: Technical Training for 7 days for 8 Nos. BREB/PBS Personnel on operation, maintenance of SCADA/Substation Automation System (SAS) as per instruction of the employers/ engineering - in – charge and section 6.39	Lot	1				
C-3	Training Schedule-2 Foreign Technical Training: Technical Training for 7 days for 4 Nos. BREB/PBS Personnel on operation, maintenance of SCADA/Substation Automation System (SAS), Gateway/ RTU Configuration & Data Engineering as per instruction of the employers/ engineering - in – charge and section 6.39	Lot	1				
C-4	Factory Acceptance Test (FAT) Factory Acceptance Test (FAT) for the requirement of the equipment as per instruction of the employers/ engineering - in – charge and section 6.40.	Lot	1				
C-5	Environmental (ESMF Related) Works: Supply of First Aid Box with standard contents. Site cleaning, dust control, solid and organic waste management, temporary fencing at construction area, site leveling, dressing etc. Provide PPE, supply drinking water and arrange accommodation with proper sanitation facilities to the labors. Find the depth of ground water level at least two locations of the site to meet the requirement of all parameters for drinking water standard	Lot	1				
D-1	Mandatory Spare parts:						
	Necessary Spare Parts for SAS						
	Necessary Spare Parts for Inverter						
	Fault Passage Indicator (FPI) (Not Applicable)						
	Data Concentrator Unit (DCU) (Not Applicable)						
TOTAL Column 6 to be carried forward to Schedule No. 6. Grand Summary							

Note: 1. Specify currencies in accordance with ITT 27. Create and use as many columns for Unit Price and Total Price as there are currencies

Name:	<i>[insert full name of signatory]</i>	Signature with Date and Seal
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorized to sign the Tender for and on behalf of the Tenderer		

Schedule No. 3 - Design Services (Not Applicable)

Item	Description of Item	Unit	Quantity	Unit Price		Total Price	
				Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion
(1)	(2)	(3)	(4)	(5)	(6)	(7) = (4x 5)	(8) = (4 x 6)
		TOTAL Columns 7 and 8 to be carried forward to Schedule No. 6. Grand Summary					

¹Note: 1. Specify currencies in accordance with ITT 27. Create and use as many columns for Unit Price and Total Price as there are currencies

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorised to sign the Tender for and on behalf of the Tenderer		

Schedule No. 4 – Civil works part (Not Applicable)

Item	Description of items	Unit	Quantity	Rate	Amount
1	2	3	4	5	6 = 4*5

Note: 1. Specify currencies in accordance with ITT 27. Create and use as many columns for Unit Price and Total Price as there are currencies

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorised to sign the Tender for and on behalf of the Tenderer		

Schedule No. 5- Installation and Other Services (Not Applicable)

Item	Description	Unit	Quantity	Unit Price		Total Price	
				Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion
1	2	3	4	5	6	7 = 5x 6	8 = 6x 7
TOTAL Columns 7 and 8 to be carried forward to Schedule No. 6. Grand Summary							

Note: 1. Specify currencies in accordance with ITT 27. Create and use as many columns for Unit Price and Total Price as there are currencies

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorised to sign the Tender for and on behalf of the Tenderer		

Schedule No. 6 - Grand Summary

Schedule No.	Title	Total Price	
		Foreign Currency	Local Currency
1	Plant and Mandatory Spare Parts Supplied from Abroad		
2	Plant and Mandatory Spare Parts Supplied from Within the Procuring Entity's Country		
3	Design Services		
4	Installation and Other Services		
GRAND TOTAL to be carried forward to Form PG5A-1b			

*Note: 1. Specify currencies in accordance with ITT 27. Create and use as many columns for Unit Price and Total Price as there are currencies
2. Create additional columns for up to a maximum of 3 Foreign Currencies if so required*

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorised to sign the Tender for and on behalf of the Tenderer		

Schedule No. 7 - Recommended Spare Parts (Not Applicable)

Item	Description	Unit	Qty	Unit Price		Total Price	
				EXW Local Parts Local Currency	CIP Imported Parts Foreign Currency	Local Currency Portion	Foreign Currency Portion
1	2	3	4	5	6	7 = 4x 5	8 = 4x 6
TOTAL							

Note: 1. Specify currencies in accordance with ITT 27. Create and use as many columns for Unit Price and Total Price as there are currencies

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorised to sign the Tender for and on behalf of the Tenderer		

Schedule No. 8 – Annual Maintenance Contract

Item No.	Item Name	Description	Years of Contract	Price per year (Taka)	Total Price (Taka)
1	2	3	4	5	6=4*5
8.1	Annual Maintenance Contract for SAS	Operation & Maintenance Support, Additional Engineering Work as needed and access to software update	3		
8.2	Annual Maintenance Contract for Master Station	Operation & Maintenance Support, Additional Engineering Work as needed and access to software update	3		
Total Price:					

Note 1: Price shall include all customs duties, VAT and other taxes already paid or payable if contract is awarded and shall be delivered price in final destination or at point of delivery.

Note 2: The Tenderer will complete these columns as appropriate following the details specified in section 6: Procuring Entity's Requirement.

Note 3: Annual maintenance contract will happen considering the above per year price. Under any circumstances, purchaser can dismiss the contract.

Technical Proposal (Form PG5A-4)

[The Revised Technical Proposal, if any, shall follow the same format and structure]

Site Organization

Method

Statement

Mobilization

Structure

Construction

Structure Plant

Safe

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Plan

Pers

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Equ

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Proposed subcontractors for Major Items of Plant and

Services Time Schedule

Site Organization

[insert technical proposal for site organization]

[The Tenderer shall include in the tender an appropriate organization chart. This shall include head office as well as site components and clearly demonstrate that the Tenderer possesses the staff and organizational resources to complete the Supply and Installation of Plant & Equipment.]

Method Statement

[insert technical proposal for Method Statement]

[The Tenderer shall furnish an overall description covering all activities and processes from inception to site works and commissioning.

In particular methods of minimizing the impact on the environment in accordance with the relevant laws and regulations during the construction phase shall be described.]

Mobilization Schedule

[insert technical proposal for Mobilization Schedule]

[This shall be included in the overall time schedule to be provided by the Tenderer as per “Time Schedule” in Section 5.Tendering Forms

Construction Schedule

[insert technical proposal for Construction Schedule]

[This shall be included in the overall time schedule to be provided by the Tenderer as per

“Time Schedule” in Section 5. Tendering Forms]

Plant

*[insert technical proposal for **Plant**]*

[The Tenderer shall provide the plant and equipment it intends to use in the construction process to demonstrate that it has the capability to complete the Supply and Installation of Plant & Equipment.]

Safety Plan

*[insert technical proposal for **Safety Plan**]*

[The Tenderer shall demonstrate that it has a comprehensive safety system that will be used during the construction and installation phase. This system shall meet all safety requirements in accordance with all relevant laws, rules and regulations]

Personnel Information

[This Form should be completed for each person proposed by the Tenderer on Form PG5A-2a& PG5A-2b, where applicable]

Invitation for Tender No:	[IFT No]
Tender Package No	[Package No]
Lot No. (when applicable)	[Lot No]

A. Proposed Position (tick the relevant box)			
☐ Construction Project Manager	☐ Prime Candidate	☐ Alternative Candidate	
☐ Key Personnel	☐ Prime Candidate	☐ Alternative Candidate	
B. Personal Data			
Name			
Date of Birth			
Years overall experience			
National ID Number			
Years of employment with the Tenderer			
Professional Qualifications:			
1.			
2.			
C. Present Employment <i>[to be completed only if not employed by the Tenderer]</i>			
Name of Procuring Entity (working under):			
Address of Procuring Entity (working under):			
Present Job Title:			
Years with present Procuring Entity:			
Tel No:	Fax No:	e-mail address:	
Contact <i>[manager/personnel officer]</i> :			
D. Professional Experience			
Summarise professional experience over the past twenty years, in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.			
	From	To	Company / Project / Position / Relevant technical and management experience.
1			
2			

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorised to sign the Tender for and on behalf of the Tenderer		

Equipment Information

[The Tenderer shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in TDS . A Separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Tenderer]

Invitation for Tender No:	<i>[indicate IFT No]</i>
Tender Package No	<i>[indicate Package No]</i>
This Package is divided into the following Number of Lots	<i>[indicate number of Lot(s)]</i>

Item of equipment		
Equipment information	Name of manufacturer	Model and power rating
	Capacity	Year of manufacture
Current status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment ☐ Owned ☐ Rented ☐ Leased ☐ Specially manufactured	

Omit the following information for equipment owned by the Tenderer.

Owner	Name of owner	
	Address of owner	
	Telephone	Contact name and title
	Fax	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the project	

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorised to sign the Tender for and on behalf of the Tenderer		

Proposed Subcontractors for Major Items of Plant and Installation Services

A list of major items of Plant and Installation Services is provided below.

The following Subcontractors and/or manufacturers are proposed for carrying out the item of the facilities indicated. Tenderers are free to propose more than one for each item

Major Items of Plant and Installation Services	Proposed Subcontractors/Manufacturers	Nationality

Form Functional Guarantee

The Tenderer shall copy in the left column of the table below, the identification of each functional guarantee required in the Specification and stated by the Procuring Entity in ITT 24(n) and in the right column, provide the corresponding value for each functional guarantee of the proposed plant and equipment.

Invitation for Tender No:	<i>[indicate IFT No]</i>
Tender Package No	<i>[indicate Package No]</i>
This Package is divided into the following Number of Lots	<i>[indicate number of lot(s)]</i>

Required Functional Guarantee	Value of Functional Guarantee of the Proposed Plant and Equipment
1.	
2.	
3.	
4.	
5.	
6.	

Specifications Submission and Compliance Sheet (Form PG5A-5)

Invitation for Tender No:

Tender Package No:

Tender Lot No:

Date:

Package Description: *[enter description as specified in Section 6]*

Lot Description: *[enter description as specified in Section 6]*

Item No.	Name of Goods or Related Service	Country of Origin	Make and Model (when applicable)	Full Technical Specifications and Standards
1	2	3	4	5
	For Goods			Note 1
	FOR RELATED SERVICES			

[The Tenderer should complete all the columns as required]

Signature:	<i>[insert signature of authorised representative of the Tenderer]</i>
Name:	<i>[insert full name of signatory with National ID]</i>
In the capacity of:	<i>[insert designation of signatory]</i>
Duly authorised to sign the Tender for and on behalf of the Tenderer	

Manufacturer's Authorisation Letter (Form PG5A - 6)

[The Tenderer 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 Tenderer shall include it in its Tender, if so indicated in the **TDS as stated under ITT Sub Clause***

31.1 (e)]

Invitation for Tender No:	Date:
Tender Package No:	
Tender Lot No(<i>when applicable</i>):	
To: [Name and address of Procuring Entity]	

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 Tenderer]* to supply the following Plant and Equipment, manufactured by us *[insert name and or brief description of the Goods]*.

We hereby extend our full guarantee and warranty as stated under GCC Clause 45 of the General Conditions of Contract, with respect to the Goods offered by the above Tenderer.

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

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

Address: *[insert full address including Fax and e-mail]*

Title: *[insert title]*

Date: *[insert date of signing]*

Bank Guarantee for Tender Security (Form PG5A-7)

[This is the format for the Tender Security to be issued by any scheduled Bank of Bangladesh without alteration, in accordance with ITT Clause 34 & 35]

Invitation for Tender No:

Date:

Tender Package No:

Lot No (when applicable)

To:

[Name and address of the Procuring Entity]

TENDER GUARANTEE No: [insert number]

We have been informed that *[name of Tenderer]* (hereinafter called “the Tenderer”) intends to submit to you its Tender dated *[date of Tender]* (hereinafter called “the Tender”) for the supply of *[description of Goods]* under the above Invitation for Tenders (hereinafter called “the IFT”).

Furthermore, we understand that, according to your conditions, the Tender must be supported by a Bank Guarantee for Tender Security.

At the request of the Tenderer, we *[name of Bank]* hereby irrevocably unconditionally undertake to pay you, without cavil or argument, any sum or sums not exceeding in total an amount of Tk *[insert amount in figures and words]* upon receipt by us of your first written demand accompanied by a written statement that the Tenderer is in breach of its obligation(s) under the Tender conditions, because the Tenderer:

- a. has withdrawn its Tender after opening of Tenders but within the validity of the Tender Security; or
- b. failed to furnish Performance Security within the period stipulated in the NOA; or
- c. refused to sign the Contract Agreement by the time specified in the NOA; or
- d. did not accept the correction of the Tender price following the correction of the arithmetic errors as stated under ITT.
- e. involves in any corrupt, fraudulent, collusive, coercive or obstructive practice of any kind as defined in ITT Clause 4.

This guarantee will expire

- (a) if the Tenderer is the successful Tenderer, upon our receipt of a copy of the Contract Agreement signed by the Tenderer or a copy of the Performance Security issued to you in accordance with the ITT; or
- (b) if the Tenderer is not the successful Tenderer, twenty-eight (28) days after the expiration of the Tenderer’s Tender Validity period, being *[date of expiration of the Tender Validity plus twenty-eight (28) days]*.

Consequently, we must receive at the above-mentioned office any demand for payment under this guarantee on or before that date.

Signature

Signature

Bank's Letter of Commitment for Line of Credit (Form PG5A-8)

[This is the format for the Credit Line to be issued by any scheduled Bank of Bangladesh, without alterations, in accordance with ITT Clause 31.1(d).]

Invitation for Tender No:

Date:

Tender Package No:

Lot No (when applicable)

To:

[Name and address of the Procuring Entity]

CREDIT COMMITMENT No: [insert number]

We have been informed that *[name of Tenderer]* (hereinafter called “the Tenderer”) intends to submit to you its Tender (hereinafter called “the Tender”) for the execution of the Supply of *[description of Goods]* under the above Invitation for Tenders (hereinafter called “the IFT”).

Furthermore, we understand that, according to your conditions, the Tenderer’s Financial Capacity i.e. Liquid Asset must be substantiated by a Letter of Commitment of Bank’s Undertaking for Line of Credit.

At the request of, and arrangement with, the Tenderer, we *[name and address of the Bank]* do hereby agree and undertake that *[name and address of the Tenderer]* will be provided by us with a revolving line of credit, in case awarded the Contract, for the delivery of Goods viz.*[insert name of Goods]*, for an amount not less than BDT*[in figure]* (*in words*) for the sole purpose of the execution of the above Contract. This Revolving Line of Credit will be maintained by us until issuance of “Acceptance Certificate” by the Procuring Entity.

In witness whereof, authorised representative of the Bank has hereunto signed and sealed this Letter of Commitment.

Signature

Signature

Notification of Award (Form PG5A-9)

Reference No:

Date:

To:

[Name of the successful tenderer]

This is to notify you that your Tender dated [*insert date*] for the supply of the Goods for [*name of Contract*] for the Contract Price of BDT [*state amount in figures and in words*] as evaluated in accordance with the Instructions to Tenderers, has been approved by the competent authority.

You are, thus, requested to take following actions:

- i. furnish a Performance Security in the specified format and in the amount of Tk [*state amount in figures and words*], within [*mention number of days as per Rule 123(7)*] working days of issuance of this letter but no later than [*specify the date of the last working day of the allowed time*] in accordance with ITT Clause No 66;
- ii. sign the Contract within [*mention number of days as per Rule 123(11)*] days of issuance of this letter but no later than [*specify the date of the last working day of the allowed time*] in accordance with ITT Clause 71.

You may proceed with the supply of the Goods only upon completion of the above tasks. You may also please note that this Notification of Award shall constitute the formation of this Contract which shall become binding upon you.

We attach the draft Contract and all other documents for your perusal and signature.

Signed
Duly authorized to sign for and or behalf of
[name of Procuring Entity]
Date:

Contract Agreement (Form PG5A-10)

THIS AGREEMENT made the [day] day of [month][year] between [name and address of Procuring Entity] (hereinafter called “the Procuring Entity”) of the one part and [name and address of Contractor] (hereinafter called “the Contractor”) of the other part:

WHEREAS the Procuring Entity invited Tenders for certain goods and related services, viz, [brief description of goods] and has accepted a Tender by the Contractor for the execution of those Goods in the sum of Taka [Contract Price in figures and in words] (hereinafter called “the Contract Price”).

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the General Conditions of Contract hereafter referred to.
2. The documents forming the Contract shall be interpreted in the following order of priority:
 - (a) the signed Contract Agreement
 - (b) the Notification of Award
 - (c) the completed Tender and the Appendix to the Tender
 - (d) the Particular Conditions of Contract
 - (e) the General Conditions of Contract
 - (f) the Technical Specifications
 - (g) the General Specifications
 - (h) the Drawings
 - (i) the Priced Schedules of Plant and Equipment
 - (j) any other document including correspondence listed in the **PCC** forming part of the Contract.
3. In consideration of the payments to be made by the Procuring Entity to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Procuring Entity to provide the plants and related services and to remedy any defects therein in conformity in all respects with the provisions of the Contract.
4. The Procuring Entity hereby covenants to pay the Contractor in consideration of the provision of the plant 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.
5. The Appendices listed in the attached List of Appendices shall be deemed to form an integral part of this Contract Agreement. Reference in the Contract to any Appendix shall mean the Appendices attached hereto, and the Contract shall be read and construed accordingly.

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 first written above.

For the Procuring Entity

For the Contractor

Signature

Name

National ID No.

Title

In the presence of Name

Address

Bank Guarantee for Performance Security (Form PG5A-11)

[This is the format for the Performance Security to be issued by any scheduled Bank of Bangladesh, without alteration, in accordance with ITT Clause 66]

Contract No: [insert reference number]

Date: [insert date]

To:

[insert Name and address of Procuring Entity]

PERFORMANCE GUARANTEE No: [insert number]

We have been informed that *[name of Contractor]* (hereinafter called “the Contractor”) has undertaken, pursuant to Contract No *[insert reference number of Contract]* dated *[insert date of Contract]* (hereinafter called “the Contract”), the execution of Goods *[description of Goods]* under the Contract.

Furthermore, we understand that, according to your conditions, the Contract must be supported by a Bank Guarantee for Performance Security.

At the request of the Contractor, we *[name of Bank]* hereby irrevocably unconditionally undertake to pay you, without cavil or argument, any sum or sums not exceeding in total an amount of Tk *[insert amount in figures and in words]* upon receipt by us of your first written demand accompanied by a written statement that the Contractor is in breach of its obligation(s) under the Contract conditions, without you needing to prove or show grounds or reasons for your demand of the sum specified therein.

This guarantee is valid until *[date of validity of guarantee]*, consequently, we must receive at the above-mentioned office any demand for payment under this guarantee on or before that date.

Signature

Signature

Bank Guarantee for Advance Payment (Form PG5A-12)

[This is the format for the Advance Payment Guarantee to be issued by any scheduled Bank of Bangladesh, without alteration, in accordance with GCC Clause 61.1]

Contract No: [insert reference number]

Date: [insert date]

To:

[insert Name and address of the Procuring Entity]

ADVANCE PAYMENT GUARANTEE No: [insert number]

We have been informed that *[name of Contractor]* (hereinafter called “the Contractor”) has undertaken, pursuant to Contract No *[insert reference number of Contract]* dated *[insert date of Contract]* (hereinafter called “the Contract”), the execution of Goods *[description of Goods]* under the Contract.

Furthermore, we understand that, according to your Conditions of Contract under GCC Clause 61.1, the Advance Payment on Contract must be supported by a Bank Guarantee.

At the request of the Contractor, we *[insert name of Bank]* hereby irrevocably unconditionally undertake to pay you, without cavil or argument, any sum or sums not exceeding in total an amount of Tk *[insert amount in figures and in words]* upon receipt by us of your first written demand accompanied by a written statement that the Contractor is in breach of its obligation(s) under the Contract conditions, without you needing to prove or show grounds or reasons for your demand of the sum specified therein.

We further agree that no change, addition or other modification of the terms of the Contract to be performed, or of any of the Contract documents which may be made between the Procuring Entity and the Contractor, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee is valid until *[insert date of validity of guarantee]*, consequently, we must receive at the above-mentioned office any demand for payment under this guarantee on or before that date.

Signature

Signature

Bank Guarantee for Retention Money Security (Form PG5A-13)

[This is the format for the Retention Money Guarantee to be issued by any scheduled Bank of Bangladesh in accordance with GCC Clause 64]

Demand Guarantee

[Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: [insert Name and Address of the Procuring

Entity] **Date:** [insert date]

RETENTION MONEY GUARANTEE No.: [insert number]

We have been informed that [insert name of Contractor] (hereinafter called "the Contractor") has entered into Contract Number [insert reference number of the Contract] dated [insert date] with you, for the execution of [insert name of Contract and brief description of Works] (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, when the Taking-Over Certificate has been issued for the Works and the first half of the Retention Money has been certified for payment, payment of Tk. [insert the amount of the second half of the Retention Money] which becomes due after the Defects Liability Period has passed and certified in the form of Defects Correction Certificate, is to be made against a Retention Money Guarantee.

At the request of the Contractor, we [insert name of Bank] hereby irrevocably unconditionally undertake to pay you any sum or sums not exceeding in total an amount of Tk. [insert amount in figures] (Taka [insert amount in words]) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor failed to properly correct the defects duly notified in respect of the Supply and Installation of Plant & Equipment.

It is a condition for any claim and payment under this guarantee to be made that the payment of the second half of the Retention Money referred to above must have been received by the Contractor on its account number [insert A/C no] at [name and address of Bank].

This guarantee is valid until [insert the date of validity of Guarantee that being twenty-eight (28) days beyond the Defects Liability Period]. Consequently, we must receive at the above-mentioned office any demand for payment under this guarantee on or before that date.

Contract Amendment (Form PG5A-14)

**[Insert Full Contact Details of the Procuring
Entity]**

CONTRACT AMENDMENT

Contract No.	
Amendment No.	
Approval Reference No.	

Contract No. [insert number/year] by and between the [insert Procuring Entity's name] and [insert Contractor's legal title] for the contract named [insert name of the Goods] is amended as follows:

1. GCC Clause [insert clause no], is hereby revised as _____

2. GCC Clause [insert clause no], is hereby revised as _____

and so on.

The effective date of this Amendment is [insert effective date] or upon execution whichever is later.

**ALL OTHER TERMS AND CONDITIONS OF THE ORIGINAL CONTRACT SHALL
REMAIN IN FULL FORCE AND EFFECT**

THIS AMENDMENT, consisting of [insert number] page(s) and [insert number] attachment(s), is executed by the persons signing below who warrant that they have the authority to execute this Amendment under the original Contract.

IN WITNESS WHEREOF, the Procuring Entity and the Contractor have signed this Amendment.

[Contractor's Authorized Signatory]

[Procuring Entity's Authorized Signatory]

Signature

Signature

Title

Date

Title

Date

Section-6: Procuring Entity's Requirements

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Section-6: Procuring Entity's Requirements

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SCADA Establishment:
Design, Supply, Installation, Testing & Commissioning etc.
All Complete as Required for Establishment of SCADA
System for 4 Sub-stations Inclusion with Existing SCADA at
Narsingdi PBS-1 (Turn-key)

Section 6.1: Scope of Works

1. Brief Description of the Project

BREB has established a new SCADA system at Narsingdi PBS-1 with the potential capacity to ultimately cover all BREB substations, however the present scope is limited to a capacity of 150 substation and a back-up display system at BREB Headquarters (BREB (HQ)).

BREB Distribution network is divided into 80 PBSs, each being a distribution area with about total 1305 Substations with present capacity 17,735 MVA, highest demand 10,548 MW. BREB has a vision to build a world class, reliable, robust and resilient SCADA (ADMS) system which connects, monitors and controls the entire 1305 substations of BREB spread over 80 PBSs enabling distribution of quality power to the people of Bangladesh.

For many reasons it is not feasible to build a SCADA (ADMS) capable of this in one single project. Instead BREB has decided to formulate a vision to achieve this into several steps or stages. So that, in first phase, BREB has established SCADA system by connecting only 1(one) 33/11kV AIS Substation (Godairchar). Now, BREB is going to extend the SCADA system by adding 4 numbers of existing 33/11kV AIS substation (Algi, Amdia, Gazaria & Shilmandi) with existing SCADA master station through Fiber Optic Communication to control, supervise and monitoring those substations.

The scope of work includes design, manufacture, quality assurance, inspection & testing, training, packing for export, insurance & shipment to site, complete construction & installation setting to work, site testing & commissioning all the equipment necessary for integration of Substation Automation System (SAS) through Gateway with SCADA (ADMS) Master Station at Narsingdi PBS-1 HQ and backup display at BREB HQ of Algi, Amdia, Gazaria & Shilmandi 33/11kV Substation. The contractor will monitor & troubleshoot any type of technical problem/fault during the warranty period as per tender document.

1.1 Integration of New Substation with Existing SCADA (ADMS) Master Station Control Facilities

BREB has already implemented a SCADA project at Narsingdi PBS-1, with the potential capacity to cover all BREB substation but present capacity is limited to control the 150 substation and also set up a backup display system of BREB Headquarter (BREB (HQ))

Present SCADA system is now connected with one (1) 33/11kV substation at Godairchar. Now BREB is going to add another 4 numbers of 33/11kV Substation (Algi, Amdia, Gazaria & Shilmandi) to the existing SCADA (ADMS) server at Narsingdi PBS-1 and backup display system at BREB Headquarter (BREB HQ).

In Order to provide the tele-control & tele-metering facilities required at the existing SCADA (ADMS) Master Station at Narsingdi PBS-1, the complete design, supply, delivery, installation, testing & commissioning of new hardware and software, extension of the existing equipment, necessary adjustment, adaptation, modification, integration and configuration of new and existing equipment in existing SCADA (ADMS) Master Station at Narsingdi PBS-1 & Backup Display System at BREB Headquarter (BREB HQ), shall be provided for integration of existing 4 numbers of existing 33/11kV substations (Algi, Amdia, Gazaria & Shilmandi), which are in the scope of the work, under this contract.

1.2 Substation Automation System (SAS) and SCADA Gateway

BREB is going to procure the works for connecting the 4 numbers of existing 33/11kV (Algi, Amdia, Gazaria & Shilmandi) Indoor Substation to the SCADA (ADMS) system. Algi, Amdia, Gazaria & Shilmandi Substation have to introduce a Substation Automation System (SAS) with SCADA Gateway and Firewall considering the existing equipment. So that, the contractor has to visit the Substation before introducing the Substation Automation System at above mentioned 4 numbers of substation. Any type of change, modification, adjustment, adaptation, configuration and supply of any equipment like RTU/BCU/BU/MU/BCPU/(EF/OC) Relays/OLTC Controlled Relays (IEC-61850 Protocol type) in the substation to establish the Substation Automation System (SAS) at above mentioned 4 number of

substations, bidder will fully responsible to do that. The SCADA (ADMS) project Contractor shall supply, install, test and commission the materials and services for the substation adaptation works as a part of SCADA extension project.

The Substation gateway shall aggregate data received from the substation and perform the task of a gateway to exchange the required signals to the BREB SAS Master station. The SAS shall communicate to the BREB Control Centre using the IEC 60870-5-104 tele-control protocol.

Item	Qty	Description
1.	4	- Introduction of a World class, robust and complete Substation Automation System - SCADA Gateway/RTU - Firewall - SW to connect with existing relays-
2.	6*	OLTC control Relay from MR, Germany (where necessary) IEC-61850 protocol type
3.	4	Delivery, installation, testing, documentation and Commissioning as part of the SCADA (ADMS) project.

*The quantity will be finalized after detail engineering.

1.3 Communication Lines

BREB is going to procure the works for installing the Substation Automation System (SAS) at Algi, Amdia, Gazaria & Shilmandi 33/11 kV AIS S/S for the extension of existing SCADA (ADMS) system. For connecting the Substation Automation System (SAS) and Gateway of Algi, Amdia, Gazaria & Shilmandi 33/11 kV AIS S/S to SCADA (ADMS) Master Station at Narsingdi PBS-1 HQ, Fiber Optic Communication is required. Hence the extension of existing SCADA (ADMS) project Contractor shall supply, install, test and commission the materials and services for the communication lines specified in this chapter.

The final quantity may vary upon the practical situation and engineering agreed between the contractor and BREB. The Contractor's Scope of Supply shall include:

Item	Qty	Description
1	4	• Leased FO line including modems for the connection of the Algi, Amdia, Gazaria & Shilmandi Substation with the new SCADA (ADMS) system located in Narsingdi PBS-1 substation building. The leased contract should be 3 (Three) years period and it may be renewable with the consent of employer. • Modems in both ends ready to connect with the LAN equipment proposed. Communication capacity shall be a minimum of 10 Mbit/s. This line shall be possible for a future upgrade to a capacity of 1 Gbit/s.

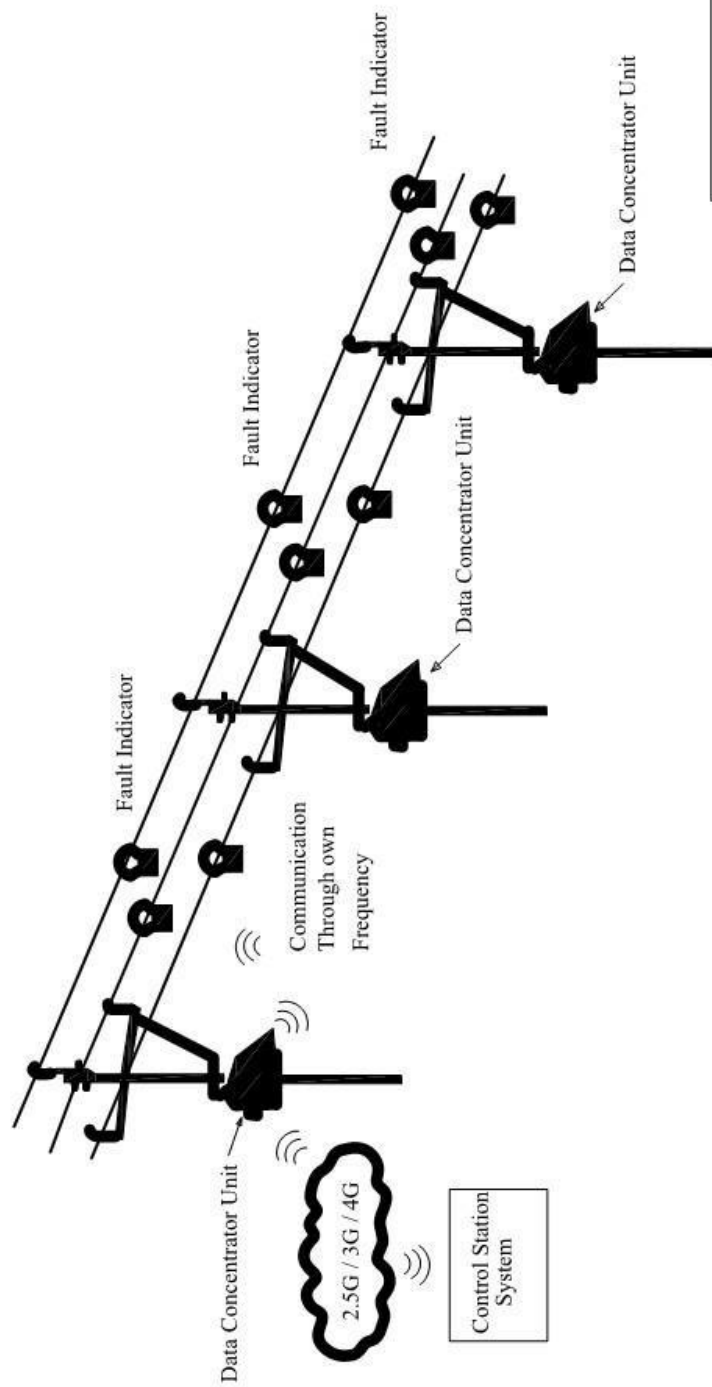
Note:

*The quantity may vary during detail engineering or during project execution.

1.4 Communication Philosophy

Leased optical fiber (main & redundant) will be used to communicate among sub-station (Algi, Amdia, Gazaria & Shilmandi), main control room (Narsingdi PBS-1 HQ, Madhabdi) and backup display center (BREB HQ). Bidder have to propose a name of an Internet service provider (ISP) as vendor who is capable to provide optical fiber connectivity having uptime 99.95%. Multiprotocol Label Switching (MPLS) is the routing technique in communications network. Each and every communication device should be compatible with Multiprotocol Label Switching (MPLS) technology. For communication between substations Gateway to SCADA Master Station, bidder can propose FO/RF/WLAN etc. But the final decision will be taken by the employer/engineer-in-charge.

Communication Philosophy for Fault Passage Indicator (FPI)



Tender Purpose Only

1.5 Fault Passage Indicator (Not Applicable)

BREB is going to procure Fault Passage Indicator (FPI), Data Concentrator Unit (DCU) and Central Station System with software to install in Algi, Amdia, Gazaria & Shilmandi 33/11kV AIS Substation for the extension of existing SCADA (ADMS) system. “Design, Supply, Installation, Testing & Commissioning etc. All Complete as Required for Establishment of SCADA System for 4 Sub-stations Inclusion with Existing SCADA at Narsingdi PBS-1” project Contractor shall supply, install, test and commission the materials and services for the FPI system with required communication channel/GPRS system specified in this chapter. All the DCU will report both central control station and SCADA master station simultaneously. All the central station system shall be integrated with Substation Automation System (SAS). The contractor shall install, testing, commission of Central Stations System in each substation with display monitor (21") and necessary accessories. This description is based upon an indicative design. The final quantity and design may vary upon the practical situation and engineering agreed between the contractor and BREB.

The fault location indicator shall be installed in 33kV line. Total length of 33kV line is 53.61Km. There are 22 nos. 11kV feeder.

The Contractor's Scope of Supply shall include:

SL No.	Description	Unit	Qty
1	Supply of 3 FPI sensors + 1 DCU with all accessories	Set	9
2	Installation, testing & commissioning cost of 3 FPI sensors + 1 DCU with all accessories	Lot	9
3	Installation, testing & commissioning of Central Control Station (CCS)	Lot	4
4	Supply of Central Control Station (CCS), all accessories with necessary software & license	Set	4
5	Supply of VPN Sim-card with 1 st month data cost	Each	9

Note:

*The quantity may vary during detail engineering or during project execution. The FPI supplier shall take the full turnkey responsibility for the FPI portion. The PC will be located in each control room of the substation. DCU will report to both substation server PC and SCADA Master Station. Delivery, installation, testing, documentation and commissioning of the FPI System as part of the Modernization Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) (Special Revised) project.

1.6 Inverter System for Uninterruptable Power Supply

BREB is going to procure a redundant 3 kVA capacity Inverter system for all the 5 Substations (Algi, Amdia, Gazaria, Shilmandi & Godairchar) for Substation Automation System (SAS) and Central Station System (CSS) for FPI. The contractor shall supply, install, testing and commission of One (1) set of Online 230V, 50Hz, 3 kVA Inverter, powered from 110V DC distribution board & AC distribution board as bypass circuit for Substation Automation System (SAS) in each substation. The Inverter shall work in Voltage Frequency Independent mode.

1.7 Documentation

Documentation shall be comprised of below principal elements:

- Equipment should have a complete set of manuals for installation, operation, maintenance, block diagrams, schematics and implemented software documentation (including operating system, etc.);
- Manuals shall describe in detail the function, design and construction of each section of equipment (software and hardware) and the recommended procedure for operation, servicing, maintenance and Upgrade equipment to meet the future needs on paper and CD, DVD or Flash Drive;
- All the equipment internal connections should be given in detail;
- All the schematic drawings for the printed circuits boards and part locators should be given in detail;
- Software documents for all the firmware should be given;
- Configuration and test software manuals and documents should be provided both in electronic format and hard copies;
- All the documents, configuration and test software tools should be in English.

Note: All documentation shall be in English and on paper.

For each substation:

3sets of preliminary drawings, connection diagrams etc.

3 sets of system manuals

3 sets of As Built drawings within 3 months after successfully performed SAT.

In addition to this electronic media (.PDF files) shall be supplied.

1.7.1 Documentation Format

All documents including Vendor-generated drawings, original equipment manufacture's documentation and drawings shall be provided both in electronic format and as hard copies in three (3) copies. The requirement to provide hard and electronic copies applies to all the revisions of the documentation; initial and interim revisions that are delivered for review as well as final documentation.

- Electronic documents shall be supplied in a format that can be edited by the Purchaser. Documents delivered as electronic format shall be in the Purchaser's standard software format.
- All documents shall be searchable.
- All documentation shall be type written in English.
- Purchaser shall have the full property rights on all documentations submitted for the project.
- All documentation shall be provided on standard "A4" size sheets and shall be presented in a durable binding which shall be suitable for stacking on shelves. The title of each document shall be clearly marked on the front cover and spine.
- Where available, a copy of all documentation shall be provided in an electronic machine- readable form (CD, DVD or Flash Drive), in an industry standard format.
- Each document shall include a table of contents. If a document is divided into several physical volumes, each volume shall contain the complete table of contents of the whole document.

All documentation submitted by the vendor to purchaser shall be accompanied by a letter of transmittal. Furthermore, each document shall be identified by the Contract number, document number, drawing number, revision or issue number, date of release, and revision. The revision record shall include the date of the change, a brief description of the change, an indication that the change has been reviewed and approved in accordance with the vendor's quality assurance procedures, the version or release of the hardware or software to which the document applies.

1.8 Quality

The Contractor shall be ISO 9001 or equivalent certified.

The Contractor shall describe the Quality System and a copy of the Contractors Quality Manual shall be provided on request from the Employer.

2. Staff Training

Training for the following categories of staff shall be included in the contract.

SCADA Staff to be involved in development of Technological data for BREB system (from start to finish), Hardware training on Substation Automation System (SAS) with SCADA and Master Station in Narsingdi PBS, Remote Station in Algi, Amdia, Gazaria & Shilmandi 33/11kV AIS substation, Modem etc. and software training in data entry and database maintenance/data engineering. Herewith an indicative training plan is given. The training should start immediately after the signing of contract & the training must be finished before starting works at Algi, Amdia, Gazaria & Shilmandi 33/11kV AIS substation or agreed upon the purchaser. The overseas training should be arranged at manufacturer's Global center i.e. manufacturer's own laboratory in its principal country.

The target of the training is to prepare users, administrators and maintenance personal to take responsibility for the operations, maintenance, extensions and upgrading of the system. The Contractor shall provide a training program that meets the following criteria:

The training shall be organized in such a way as to offer all round training for the BREB/PBS's personnel.

3. Guarantee/Warranty

The vendor shall provide complete warranty on all equipment for a period of 3 (three) years from the issue date of acceptance certificate.

The manufacturer shall offer an annual test and maintenance agreement, consisting of the following:

- Regularly and systematically examine, test and adjust all system components.
- Submit test reports, which certify that all components have been tested and that the system is in proper working order and functions in accordance with this specification.
- All technical activities within future maintenance agreement with the contractor should be structured and shared with BREB/PBS operation personal as another on-job-training.

4. Project Execution & System Testing

4.1 Project Execution

The contractor shall include a plan for the project execution and delivery including all proposed test activities. As a minimum the following activities must be included in this plan:

- System Implementation Specification
- Factory Acceptance Test (FAT)
- System Integration
- System Acceptance Test (SAT)
- Availability test
- Training plan
- Acceptance Certificates
- Proposed maintenance plan

4.2 System Implementation Specification

The Contractor shall initiate and lead a system implementation workshop with the project team of the Client, based on the contracted Scope of Work. This specification is subject to review and comments by the Client before further project execution. The review shall be done without delay but shall not take longer than 30 days. The resulting specification should document all details needed for the Contractor to start the implementation of the contracted project.

4.3 Test

The scope of supply shall include extensive testing of all of the proposed equipment/systems, both as independent equipment/system and as an integrated unit. The Contractor shall be responsible for demonstrating the required reliability, maintainability, functionality and inter-operability of all of the proposed equipment/systems.

For the necessary tests including Pre-FAT/FAT/SAT/Point-to-Point/Availability/performance, etc., test procedures shall be provided by contractor. Required tests are explained in the “Technical Specification Section”.

The Employer reserves the right to request the additional tests on the system and/or its elements at no extra charge on any work the Employer determinates not to be in accordance with these specifications. Whenever the result of any inspection or test performed or requested by the Employer in accordance with the requirements of this section indicates that the specific hardware, software, firmware or documentation does not meet the specification requirements, the Contractor shall replace, modify or add, at no cost to the Employer, adequate hardware, software, firmware or documentation as necessary to correct the noted deficiencies.

4.3.1 Test Procedures

The Contractor shall submit the substation control and supervision test plans for approval six (6) weeks prior to the start of FAT/SAT. Fully approved FAT/SAT test procedures shall be submitted to the Employer at least two (2) weeks prior to the commencement of the tests. The Employer will only approve test procedures if they are inclusive, thoroughly testing each section of the equipment. The Contractor shall use IEC standards as a guide in preparing the substation control and supervision test procedures.

The test procedures shall include the following:

- (a) The test schedule, including provision for eight hours of unstructured tests to be performed by Employer,
- (b) The purpose of each test,
- (c) The function to be tested,
- (d) The plans/ procedures to be followed,
- (e) Specific references to project documentation for correlation with the procedures and for verification of the documentation,
- (f) The test set -up, equipment, and conditions for each part of the test,
- (g) All test inputs and outputs,
- (h) Test software/firmware descriptions and listings,
- (i) A copy of any certified test data to be used in lieu of testing,
- (j) Expected results,
- (k) The acceptance criteria,
- (l) Procedures for handling the variances that are identified during testing.

4.3.2 Test Equipment

Basic tools and test equipment are necessary to perform general maintenance and troubleshooting tasks on the equipment. Contractor shall supply all test equipment that are required for installation, acceptance testing, commissioning and maintenance.

- The supplier must provide hardware and software testing tools
- All test equipment and material shall be considered by the Contractor

4.3.3 Test Records

The Contractor shall maintain a complete record of all test results. This record shall be keyed to the steps enumerated in the previously approved test procedures.

The record shall include the following items:

- (a) Reference to the appropriate section of the test plan,
- (b) Description of any special test conditions or special action taken,
- (c) Test results (pass/fail).

4.4 Routine Tests

The Contractor shall perform routine tests in accordance with the requirements of the Contractor's test specification approved by the Employer. The Contractor shall permit the Employer access to the equipment and software to determine or assess compliance with the provisions of these specifications and to witness the Contractor's routine tests. The Contractor shall submit test reports of routine tests.

The routine tests shall include:

- (a) Visual check for completeness
- (b) Wiring check
- (c) Test of conformity with IEC standards
- (d) Functional test of the individual systems at the works and commissioning

5. Factory Acceptance Test (FAT)

Prior to shipping

The Substation Automation System (SAS) & Gateway shall be made available for a system testing at overseas factory site of the manufacturer. This testing shall be demonstrating that all contracted parts have been properly integrated and is ready for shipping and deployment at site. The Implementation Specification will detail what will be the necessary inputs to the testing. If no customer data is available at the time of testing or if the system is strictly base line with no or only very little customer specific code it shall be enough to do the testing based on reference data supplied by the Contractor. Prior to testing the Contractor shall share a copy of the intended test procedure to the Client, these are subject for approval by the Client only if there are custom specific development involved in the project.

The Client shall have a right to ask for own time and testing using his own test procedures, however time and extend shall be agreed in advance with the Contractor but not limited to as per tender document.

The FAT shall be conducted at the SCADA OEM (Original Equipment Manufacturer) overseas offices. In case this cannot be held overseas due to international travel restrictions it shall be conducted remotely following international best practice. FAT should be conducted at manufacturer's country of origin which is declared in the tender document.

5.1 System Integration

The system shall be finally integrated after installation at site(s). All supporting systems such as, but not limited to, suitable facility, furniture, electrical power, air-conditioned environment, correct lightning, LAN/WAN and other communication and substation adaptation equipment and work etc. that are not explicitly included in the Scope of Work shall be the responsibility of the Client.

5.2 System Acceptance Test (SAT) & System Cut Over

A second system testing shall be executed of the system at site(s) (SAT). This testing will be covering all parts of the system and is done using end user data. The system shall be announced ready for testing by the Contractor and the Client shall read and comment the test specifications as agreed in the System Implementation Specification.

The Client will make available part of its operational resources to assist with the system testing.

The SAS & SCADA system shall have a function to connect to the current data acquisition process and act in listening mode.

Any deviations from the specified functions shall be documented and a plan for their corrections shall be agreed. All deviations shall be classified as essential or non-essential. The new SAS & SCADA system may not be taking into commercial operation until all essential deviations are eliminated.

The new SAS & SCADA system shall be deemed accepted when the SAT has been approved by the Client or if it is taken into commercial operation.

The system is said to be in commercial operations when data acquisition is ongoing, and commands can be sent to the substations and this is not specifically for test purposes.

5.3 Availability Test

Once the system is in commercial use, a 30-day period shall be established where the system uptime is measured, and any errands noted. The system shall be fully accepted when the availability criteria as defined in the System Implementation specifications are met. Upon such acceptance a Preliminary Acceptance Certificate will be issued.

5.4 Acceptance Certificates

The Client will issue a Partial Acceptance Certificate (PAC) upon the successful completion of the availability test period. After the warranty period expires with no remaining errands, noted from the project execution nor the warranty period, are left unresolved, a Final Acceptance Certificate (FAC) will be issued.

5.5 Maintenance Plan

The Contractor shall initiate and lead a system implementation workshop with the project team of the Client, based on the contracted Statement of Work document where additional details are decided. This specification is subject to approval by the Client before further project execution.

5.6 Recommended Spares & Software Patches

The contractor shall include spare parts as well as patches and software fixes for the proposed system. If contracted scope includes hardware, a list of spare hardware parts should be proposed by the Contractor. Alternatively, this could be covered by an OEM spare part agreement as offered by the Contractor.

6. Time Schedule

The tenderer shall provide a detailed implementation time schedule to the BREB for discussion and approval. The schedule shall include the entire project; SCADA (ADMS) adaptation, SAS installation with station adaptation, telecommunication and Fault Passage Indicator system.

7. Transport of Materials

The Contractor shall be responsible for transport of all equipment to the various substation sites including importation, off-loading, warehouse storage etc. and all costs and expenses involved in transport from the manufacturer's works to the sites with proper insurance.

The Contractor shall inform himself fully at the tender stage of all available facilities and restrictions involved in the complete transport operation.

The Contractor shall make all necessary arrangements for the reception of equipment and material at the work sites.

8. Annual Maintenance Contract

The Employer needs to have a Support and Maintenance agreement with the Contractor for initially three years. But this contract will be effective after the successful completion of warranty period. This shall cover operation and maintenance support; additional engineering work as needed during normal operation of the contracted system and access to software updates. All the costing regarding the annual maintenance contract will consider with the bid price. This contract will be treated as a separate contract. The Contractor shall use his normal offering for these services but as a minimum it shall include the following;

- Designated contact person at the manufacturers factory with a good knowledge of the Employer's organization as well as the delivered system. At least once a year this person shall initiate a meeting where the performance of the system as well as services executed, during the past 12 months, shall be reviewed.
- The Contractor shall engage Two Local Engineer for repair and maintenance: One for Master Station and another for Substation Automation System (SAS).
- A copy of the delivered system for test and fault analysis. This system shall reside in an in-house environment maintained by the Contractor support organization.
- A remote connection to the Employer's system. The access to the Employer's system is subject to approval by the Employer and shall follow industry standard Cyber Security policies.

- Access to patches and updates of the delivered software.
- A pool of engineering hours that can be used for any type of remote or on-site, consultancy, training or other work on the delivered system. This pool of hours shall be at least 40 h per annum.
- If desired, access to the Contractor's R&D and or Product Management teams to discuss future functions planned for the delivered system.

The Contractor shall have an existing set up in the supplier's country for the annual maintenance contract for at least past 3 years with a registered office and engineers. Details of this information should be furnished with the bid.

Any kind of additional work (such as SLD buildup, data acquisition, connectivity with the control room etc.) for integration of new substation up to 150 Nos. will be free of cost during the maintenance period though the licensee of the ADMS software will be free for 20 years from the date of commissioning.

The contractor shall provide a list of necessary spare parts for SCADA and SAS system for repair, maintenance and operation with rates in local currency including VAT & Tax. Within the period of AMC, any spare parts required for repair, maintenance and operation the contractor shall bound to supply that spare parts as per quoted rates within the bids and that time BREB/ Narsingdi PBS-1 will pay only for these spare parts. But this spare parts installation, configuration is the responsibility of the bidder.

Note:

1. Bidder are highly encouraged to visit the concerned places where the SAS & SCADA are going to implemented as described at the above clauses. Any types of additional works or equipment or connection or services or engineering or technology which is needed to execute or to run the scope of the project is the responsibility of the bidder.
2. Any GIS information that is needed to execute this project will be supplied by BREB. It is noted that nor hardware or software related to GIS is not the concern of BREB. It is the responsibility of the bidder to accumulate all the GIS information to the SCADA System.
3. The warranty period is 03 (three) years from the date of acceptance. During this warranty period, any kind of substation adaptation works, SLD draw at control room and backup control room, adaptation of additional fault location system, connection establishment to other ICCP or any types of work related to complete substation/SAS (may be from different manufacturer) integration with the control center is the responsibility of the bidder.
4. Bidder is responsible to pay all the cost to the contracted ISP regarding the communication connectivity during the warranty period i.e. 03(three) years from the date of acceptance. During this warranty period, the quality of services which is provided by the ISP will be evaluated with the help of Directorate of ICT, BREB. After completing the satisfactory performance during this warranty period, the concern PBS will sign a contract with that ISP on the basis of operation cost. BREB/PBS can change the ISP if there is any dissatisfactory performance. Each & every contract with the ISP may valid for minimum 03 (three) years.

Section 6.2: Technical Specifications

1. SCADA (ADMS) Master Station Control Facilities

The SCADA (ADMS) Master Station is located at Narsingdi PBS-1 & Backup Display Station is located at BREB Headquarter (BREB HQ) and connected through fiber optic communication to Industrial Gateway of SAS system of Godairchar 33/11kV substation.

The SCADA (ADMS) system of Narsingdi PBS-1 is based on Linux7.x or later.

The industrial gateway will be implemented at each 33/11kV substation for remote monitoring & control from the Master SCADA (ADMS) Center at Narsingdi PBS-1. It will provide all necessary control and monitoring facilities for all voltage level lines, transformers and auxiliaries, Load shed feeders.

All plant supplied under this contract shall be equipped with potential-free auxiliary contacts for indications and alarms, CT and VT circuits shall be fitted, where required.

Supply & installation of necessary equipment such as IED/relay, transducers, DI, DO card etc. for integrating new bay through existing RTU /Gateway at far end substation is supplier scope of work.

All 33/11kV breakers, motorized disconnectors, tap changers, Load shed feeders etc. shall be controlled from SCADA (ADMS) Centre through the gateway /RTU of the substation automation system using IEC 60870-5-104 protocol. Cabling between the substation automation gateway and the communication equipment shall be included in this contract.

Necessary modification in the software and hardware at SCADA (ADMS) master station is also to be done under this contract to accommodate all the new system extended under this contract.

In order to provide the telecontrol facilities required at the SCADA (ADMS) the contractor shall supply & install 1(one) number of industrial gateway at existing 33/11kV substation those to be integrated with SCADA (ADMS) master station.

Data communication from switch to Gateway & switch to SAS server will independent.

All required electrical quantities (digital and analog) shall be transmitted to SCADA (ADMS) through the Industrial Gateway of the substation automation system (SAS).

The communication protocol to be used for data exchange between the SCADA (ADMS) and the substation shall be **IEC 60870-5-104**.

The gateway shall be capable of reporting to master station at Narsingdi PBS-1 through fiber optic communication. It will be configured according to the signal list, communication parameter, IP address, station address etc. provided by BREB.

Analog data measurement scaling shall be done at RTU or Relay (Preferable at relay). Analog data should be floating point. Analog data should be deadband with 0 %. Frequency dead band should be 0%. Digital data should be time stamp at field.

GPS is required at substation, so that RTU/Gateway can get exact time.

For securing SCADA system, hardware firewall device is required between RTU/Gateway and communication device at field, so any type of cyber intrusion or malware can be prohibited.

Necessary SCADA interfacing equipment such as Transducers, Digital input/output card, Cabling etc. is required for far end substation related to the substation.

1.1 Integration Work

Integrating RTU/ Gateway with SCADA (ADMS) following work shall be done at existing Master Station Narsingdi PBS-1, and Backup Display System at BREB Headquarter (BREB HQ) Pre database work:

- a) Collection of network data for EMS application
- b) Modeling, database creation, verification and update should be done at both SCADA (ADMS)
- c) Modification and update of database for far end substation related to the new substation
- d) The following should be done at Master station at Narsingdi PBS-1.
 - (i) SCADA Database Modelling
 - (ii) Substation Display
 - (iii) Network database Modelling
 - (iv) Generation Database Modelling
 - (v) DTS Database Modelling
 - (vi) Alarm database Modelling

1.2 Validation

- Cross validation of all databases and create update copy of those databases.
- On-lining of databases in DTS (Simulator) server
- Checking and modifying (if require) topology of Substations, Devices, Network etc.

1.3 RTU/ Gateway Configuration

Configuring the RTU / Gateway according to signal list (Provided by BREB), mapping address, data communication parameter, Source IP, Destination IP etc.

1.4 Local Test

The following test will be carried out at site using Master SCADA (ADMS) Station by Software.

- Verification of all Analog Measurement and checking of Limit, Deadband, Polling Time
- Verification of Digital signals Status (OPEN, CLOSE, BETWEEN, INVALID)
- Verification of ALARMS, EVENTS etc.
- Verification of Control and Interlock

1.5 Database Update

The following activities will be carried out in Master SCADA (ADMS) after successful site test.

- On-lining of all databases in Running Servers
- IP/VLAN Configuration on Polling servers and switch
- Compilation & On-lining of all the displays on WEB servers

1.6 End to End Test

The following activities will be carried out in Master SCADA (ADMS).

- Verification of all Analog Measurement,
- Verification of Digital signals and Controls
- Verification of displays including Single line, Pop up, alarms etc.
- Verification of communication line for Redundancy
- Verification of continuous and complete integration of the RTU/Gateway.

1.7 Tuning of Power System Application

- If necessary, Tuning will be do required for all available Network in SCADA/EMS server and DTS (Dispatcher Training Simulator)

Notes:

- Integrating RTU/Gateway with Master SCADA (ADMS) should be in the scope of work.
- Data communication path creation for both Main station & Backup display system is scope of Integration
- Collection of Network data required for modeling network database is in contractor's scope of work
- Contractor will conduct necessary work for both at Master SCADA (ADMS) & Substation (if required)
- Training is essential to realize the full potential of the Gateway/RTU. It is most efficient way to learn about the important features and operational procedures of the system.

1.8 Requirements

1.8.1 Indications: Digital Input (Double Point)

The following indications shall be provided

- Circuit Breaker, Isolator & Earth Switch Open/ Close for line, transformer, bus coupler
- Circuit Breaker for Reactor/Capacitor bank & 33kV load shed feeder

1.8.2 Load Flows, System Voltage and frequency

Electrical quantities shall be provided to enable the following measurements

- Voltage (kV), Frequency (Hz) for Busbar
- Megawatt (MW), MegaVar (MVar), Amperes (AMP), Voltage (kV) for line
- MW, MVAR, Amperes, kV at both sides, Tap Position Indication (TPI) for Transformer
- MegaVar, Amp & KV for Reactor/Capacitor bank

1.9 Alarms: Digital Input (Single Point)

- Remote/ Local Switch for all Circuit Breakers.
- Bay Fault (DC Fail for Transformer Panel).
- Breaker Fault (OR gate Spring Charge, SF6 Low).
- Protection Class-1 (Distance, Differential).
- Protection Class-2 (Over current, Earth fault).
- Protection Class-3 (bus bar).
- Transformer Alarm (Buchholz Alarm, Oil Level Low).
- Transformer Trip (Buchholz Trip, PRD Trip)
- Transformer Temperature Alarm (Oil Temp Alarm, Winding Temperature).
- Transformer Temperature Trip (Oil Temp trip, Winding Temperature trip).
- Tap Changer Alarm.
- Tap changer trip.
- Tap changer high limit.
- Tap changer low limit.
- Auto reclose operated
- DC fail
- AC fail
- Auto Reclose Block/OFF, Voltage Status, Ready Signal for Load shed feeder

1.10 Controls-Digital Output (Double point)

The following facilities shall be controlled from the Master SCADA (ADMS)

- Circuit Breaker and Motorized Isolator Open/ Close for Line, Transformer Bay & bus coupler,
- Circuit Breaker Open/ Close for 33kV load shed feeder
- Tap Changer Raise/ Lower for Transformer

1.11 Network Parameters

Line length, Line Conductor type, Short Circuit data for Zero sequence (%R, %X, % of full charging Susceptance) etc.

1.12 Interfaces

This contract includes Industrial grade Gateway to the Master SCADA (ADMS). The Gateway shall have adequate capacity to cater to the future extensions of substation. The cabling between the Gateway and the communication equipment shall be provided under this contract.

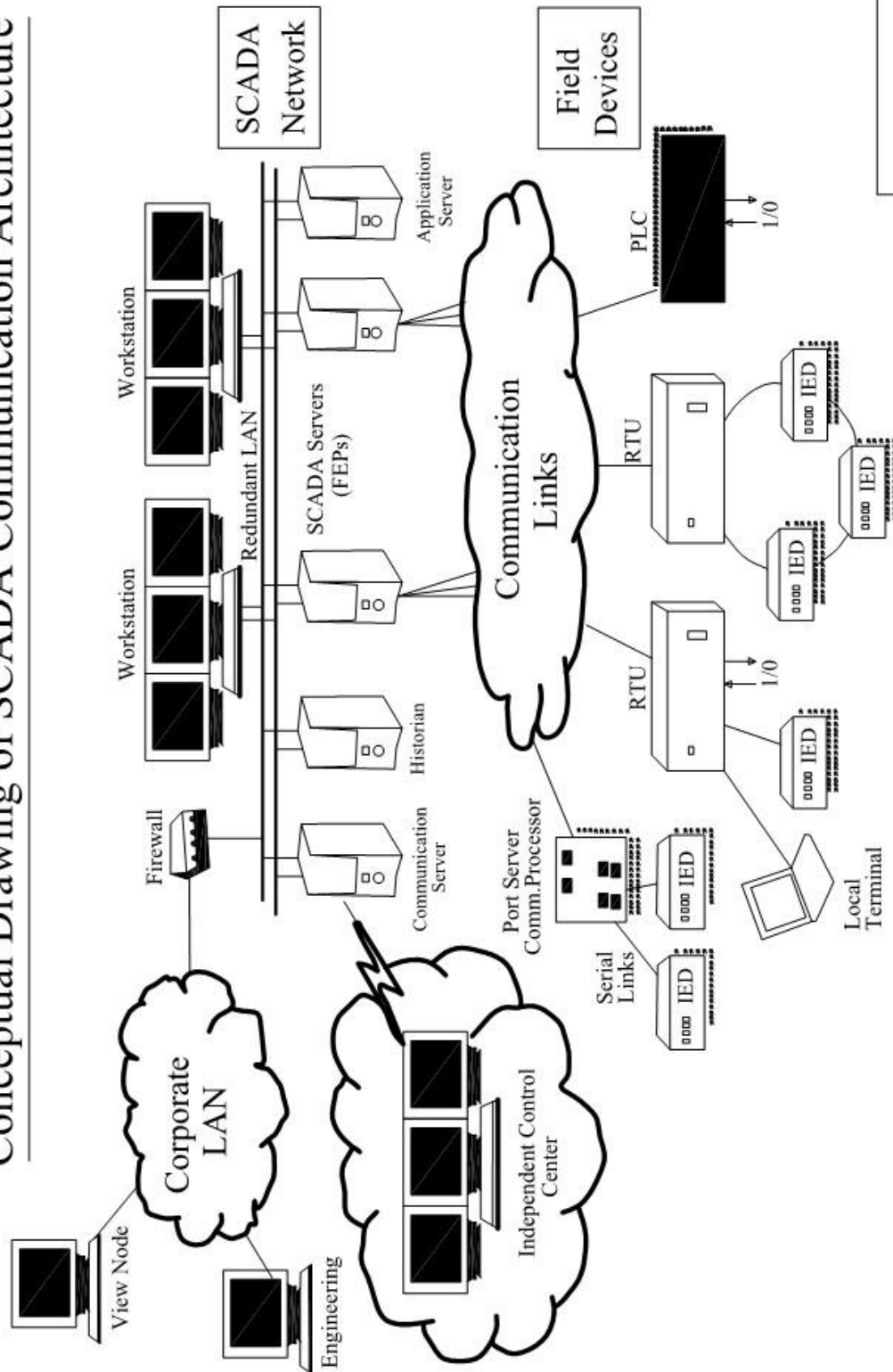
In case of Windows operating system based gateway, there should be USB port, VGA & HDMI Port, HDD/flash memory with one spare, TFT monitor with mouse and key board etc. Hard disk should be 50% free and CPU loading maximum of 30% at any condition. If gateway is firmware based then 02(two) Nos. of control card is required. Gateways also have 08 Nos. LAN port & Dual supply for both Firewall & Gateway. There should be GPS facilities for time synchronization. Also, cyber security has to be ensured at field SCADA interface level. Supported Protocol shall be IEC 60870-5-104, 61850 & MODBUS etc.

Operating System, all necessary software and system back up & restoration software (Acronis true image or Ghost or similar software) should be licensed and supplied in CD/Flash Disc.

Note:

- ✓ SCADA Gateway and SAS Gateway shall be independent of each other.
- ✓ SCADA Gateways shall be capable of reporting to Master station in HOT and STANDBY mode using IEC-104 protocol.
- ✓ Firewall shall be capable of communicating with at least 2 different set of networks viz.
 - Substation internal network
 - Master Station

Conceptual Drawing of SCADA Communication Architecture



Tender Purpose Only

2. Substation Automation System (SAS) with Gateway & Firewall

In this scope, BREB is going to procure 4 numbers of Substation Automation System (SAS) with physical gateway, physical Firewall, Engineering Workstation and Operator Workstation for Algi, Amdia, Gazaria and Shilmandi 33/11 KV AIS Substations. This specification covers the design, manufacture, inspection, testing at the Manufacturer's works, erection and commissioning of a Substation Automation System (SAS) to control and operate the Algi, Amdia, Gazaria and Shilmandi 33/11kV AIS substation and integrating with existing SCADA Master station at Narsingdi PBS-1 and backup display station at BREB Headquarter.

This describes the facilities required to provide the control of plant and system within a substation and outlines the facilities to be provided on site, interface requirements and performance criteria.

2.1 Typical Substation Control System requirements

2.1.1 Overview

The Substation Automation System (SAS) shall comprise of the following subcomponents:

- Substation Control System (SCS)
- Communications Network
- Time Synchronization
- Substation Human Machine Interface (HMI)
- Engineering Workstation (EWS)
- SAS Integration with Substation

Note that in all design aspects, cyber security principles shall underpin the SAS implementation.

The SAS shall be responsible for all data acquisition, automation, monitoring and control of the substation electrical infrastructure which is largely based on a modern substation automation system design. The SAS shall use the internationally recognized IEC 61850 suite of standards for protection, automation & control. The gateway and substation HMI shall communicate with all the protection IEDs for SAS data using its embedded IEC 61850 MMS Client. The Gateway shall be a separate device with redundancy, not built in with the HMI (MPLS Technology). Physical firewall must be provided.

The physical device name of the IED in the CID file is critical and used as part of the object model defined in the IEC 61850 standard. The naming convention that will be used will be applied consistently across all Software Configuration Tools.

The substation gateway, mounted in a dedicated gateway cabinet, shall subscribe to the configured report control blocks (RCBs) in each IED in order to retrieve SAS data contained in predefined datasets. There are two types of reporting schemes detailed in the standard as part of the IEC 61850 MMS Client which shall be used. These are the buffered and un-buffered report control blocks. All digital inputs (alarms/indications/protection trips) that must be sent to the gateway shall be assigned to two datasets associated with Buffered Report Control Blocks (BRCBs). All analogue data (power, voltage, current, etc.) that must be sent to the gateway shall be configured in datasets associated with Un-buffered Report Control Blocks (URCB). URCB's do not buffer any state changes during a communication failure between the gateway and the IED. The varying nature of analogue quantities justifies the use of URCBs in order to optimize the memory resources of the IED for other critical tasks. Furthermore, the use of BRCB's ensures that critical indications/trips are preserved/buffered should a communication loss between the substation gateway and the IED occur. The connection from the IED's shall be redundant.

The list of signals for the substation will be made available during the Factory Acceptance Test (FAT) of the SAS.

The Substation gateway shall aggregate data received from the substation and perform the task of a gateway

to exchange the required signals to the BREB SAS Master station. The SAS shall communicate to the BREB Control Centre using the IEC 60870-5-104 tele-control protocol.

The Protection IED's shall comply fully with the IEC 61850 Edition 2.1 standards or later edition, as applicable.

The managed Ethernet network that is to be installed shall be substation hardened to IEC 61850-3 and shall accommodate redundant 48 Vdc power supplies. 19" rack-mountable switches are preferred, with the prerequisite that the network shall accommodate all the devices that will connect to it and provide for 25% spare port capacity. The devices shall be mounted in the gateway cabinet. All fiber optic connections to the switches will be realized via rodent-resistant ruggedized fiber optic cables using LC connectors and at least four copper ports shall be included for engineering use.

Critical station alarms monitoring is achieved by means of an IEC 61850 compliant remote I/O unit which will be mounted in the gateway cabinet. These alarms include but are not limited to VT fail alarms, DC fail alarms, charger alarms, AC fail alarms, IED (relay) watchdog alarms, etc. The complete list of station alarms which are hard-wired to the I/O unit will be made available during the Factory Acceptance Test (FAT) of the SAS.

The I/O unit(s) shall communicate to the gateway via IEC 61850 MMS and shall be treated as substation IEDs in the SAS. The capacity of I/O Units must be ≥ 1000 .

While IEC 61850 is the preferred communications standard for all substation devices, it is acknowledged that some devices may only support alternative communications standards. As such, Modbus/TCP will be acceptable for intelligent battery chargers and the integration of meter readings into the Substation Automation System.

Every meter, battery charger, MCCB status of ACDB & DCDB shall be incorporated with SAS through MODBUS/DLMS COSEM protocol.

Detailed GTPs for the SAS, every component in the control room (relay, meter trip relay, trip coil, supervision coil, energy meter), as well as the requirements of the 11kV PCM panel and 33kV PCM panel (Feeder, Transformer, Indoor AIS) shall be included with the tender documents long with the corresponding GTPs.

It must be noted that the design requirements of the 33 kV control, signaling and relay panel and the design requirements of the SAS system shall be different.

2.1.2 Naming and Conventions

An IEC 61850 dataset containing Functionally Constrained Data Attribute items shall be named according to its intended purpose once associated with a GOOSE Control Block. For example, a dataset containing items to be used for interlocking may be called CTRL or ILOCK and a dataset containing items to be used for tripping purposes (including breaker fail) may be called TRIPS.

A GOOSE Control Block shall be configured according to the following:

- The MAC address shall reflect the source bay number in the last byte of the multicast MAC address. The number shall depict the decimal number of the bay. This is done to assist in locating GOOSE messages in monitoring tools such as Wireshark.
- The App ID field shall be structured to indicate the source bay number in the first byte and the GOOSE instance in the second byte.
- The GOOSE VLAN ID and Priority shall be as shown agreed in the detailed design phase.
- The GOOSE Application ID (GoID) shall be named by using a unique bay identifier.

Furthermore, if the primary purpose of the GOOSE message is for trip signaling, then the name shall reflect such.

2.1.3 IEC- 61850 GOOSE Dataset contents

The items in a dataset to be associated to a GOOSE Control Block shall be sourced from the logical node that describes the functionality and shall not be taken via any other signal manipulation (e.g. the Disturbance Recorder function block) first. For example, an earth switch position shall be sourced from the Pos DPC (ST FC) of the XSWI or CSWI logical node.

2.1.4 IEC- 61850 GOOSE Control Block and Dataset locations

All Datasets and GOOSE Control Blocks for an IED shall be located in LLN0 of Logical Device 0 (LD0), or equivalent logical device, of said IED.

2.1.5 IED Logic requirements

The logic associated with an IED shall be performed in the IED itself. No logic shall be partially implemented in the GOOSE transmitting IED as this makes troubleshooting extremely cumbersome. All inputs (physical as well as GOOSE virtual inputs) shall be modelled by passing the inputs to the appropriate function block reflecting the IEC 61850 Logical Node that represent the signal.

3. Substation Control

3.1 General

Local control at the substations is achieved by means of the user interface of the IED in each protection scheme as described above. A touchscreen capable IED is therefore preferred with a color display. In addition, a substation HMI shall be available at the substation for centralized local control and monitoring.

The IEDs shall be required to present a bay “mimic” for monitoring and operating purposes.

Any switching sequencing as well as interlocking functionalities are also the responsibility of the IEDs. Accurately time stamped alarms and indications are to be made available to the substation gateway by means of IEC 61850 MMS reports.

Inter-device signaling to be achieved by means of IEC 61850 GOOSE messaging. The use of GOOSE provides for simplified data exchange.

3.2 Local Control

Control from the bay control and/or protection IEDs shall be realized by means of the graphical bay mimics displayed on the IEDs. IED faceplate pushbuttons shall be used to control switchgear positions provided the Local/Remote selection is in the Local position.

The following additional safety measures shall be employed when operating the MV switchgear board:

- Manual control shall only be possible by means of a stand-off pendant switch with a long cable (umbilical cord) to allow the operator to stand a safe distance away from the board;
- Control from the IED pushbutton shall be time-delayed for example by 15 seconds to allow the operator to initiate the control and have enough time to clear the vicinity and stand a safe distance away from the board.

3.3 Substation HMI

A substation HMI is the preferred operating interface to be used for monitoring and control with the aim of ensuring safety and minimizing operating errors.

The HMI shall be an independent system and may be an integral component of the gateway devices provided the HMI functionality is not impeded due to its integration.

3.4 Remote Control

Remote control shall be facilitated by means of a communication gateway that will be connected to the BREB Control Centre by means of the IEC 60870-5-104 communications standard.

Cyber security in the form of electronic perimeter protection shall be realized by means of a network security appliance that is recognized as a leader in the industry-recognized Gartner Magic Quadrant.

The device shall be capable of deep packet inspection of IP traffic including Industrial Control System protocols such as IEC 60870-5-104, and IEC 61850, packets. The proposed cyber security device shall be compliant with IEC 61850-3 and must be centrally manageable.

The HMI/gateway cabinet shall house an IEEE 1588v2 Power Profile capable, GPS synchronized clock with IRIG-B, NTP and PTP capabilities for substation-wide time synchronization purposes.

3.5 Engineering Workstation

The Engineering Workstation (EWS) shall be a substation-hardened industrial computer that shall provide the necessary functionality and graphical interface for configuring, managing and collecting information and records from the Substation Automation System (SAS).

The EWS shall be required to:

Provide a central “on-site” repository of the configuration management for the entire substation system.

This includes drawings, manuals and component configurations.

Storage and display of disturbance records - All recorded data from the IEDs with integrated disturbance recorders shall be automatically uploaded via IEC 61850 (event triggered or once per day) to the EWS and stored on the mass storage device. Retrieval may be facilitated via the gateway device.

Disturbance analysis – The EWS shall have all the necessary software to evaluate all the required information for comprehensive post-fault analysis.

IED parameter settings – It shall be possible to access all the Protection IEDs from the EWS. The setting of parameters or the activation of parameter sets shall only be allowed from the EWS after authenticating and authorizing the user appropriately.

The EWS shall be rack-mountable and shall be mounted in the Gateway Panel.

The EWS shall communicate via IEC 61850 to all the IEDs in the SAS. SNMP shall be used to communicate with the substation LAN equipment.

4. Sub-station Communications Infrastructure (Sub-station LAN)

A fiber optic network will be deployed within the substation building for local communications to all the IEDs, HMIs and Gateway.

An industrial-grade, substation hardened, switched Ethernet network shall be used to manage the fiber optic network infrastructure at the substations.

The network topology shall be such that each IED shall connect directly to the network switches using both network interfaces in a parallel redundancy configuration (using PRP). No ring topologies shall be permitted particularly where the IEDs are required to be an integral part of the network topology.

The substation switches shall support the Precision Timing Protocol as per the IEEE 1588v2 Power Profile standard. Non-PRP capable equipment shall integrate via a suitable Redbox solution. No proprietary redundancy solutions shall be acceptable.

The switches shall be configured to isolate the different traffic types into dedicated Virtual Local Area Networks (VLANs).

GOOSE messages shall take full advantage of traffic separation using VLAN IDs and data prioritization. Multicast MAC addresses must be significant and must relate to the source IED. Other GOOSE parameters shall also be significant and shall relate to the source IED.

The fundamental design criteria for the implementation of a communications networks in a SAS is high availability, high reliability and maintainability. The system design shall provide a solution employing the abovementioned design criteria to derive the maximum benefits from an IEC 61850 Substation Automation System. High availability shall be realized by means of a design using redundant devices and redundant cabling where this is practically achievable. High reliability is achieved by product selection based on industrial networking principles and guidelines. The product selection shall exceed minimum build-quality and design-quality criteria. Maintainability shall be realized through suitable network monitoring and configuration management. These switches are shall be ruggedized industrial Ethernet devices which shall be compliant to the following typical requirements:

- Rated for reliable operation in harsh electrical environments:
 - IEC 61850-3 and IEEE 1613 (Electric power substations)
 - IEC 61000-4
 - IEC 60068-2
 - IEC 60255-21
- Rated for error free operation in high EMI environments:
 - IEEE 1613 Class 2 error free performance under EMI stress for fiber-based networking devices
 - IEC 60255-26
 - IEC 61000-4
- Fibre optic ports should support both short (SX) and long-haul fibre (LX)
- Rated for operation over a wide temperature range:
 - -40°C to 85°C (+185°F)
 - Passive cooling – no fans.
- Rated for high availability:
 - Dual redundant power supplies
- Industrial terminal blocks for power and I/O connections

5. IP address allocations

All IP addresses configured for the Substation Automation Systems shall be within the private range (RFC1918 – Address Allocation for private internets) of available IPv4 addresses as assigned by the Internet Assigned Numbers Authority (IANA).

The allocation shall be done according to the Classless Inter-Domain Routing (CIDR) method as defined by the Internet Engineering Task Force (IETF).

A typical IP address range that shall be used for the Substation Automation systems shall take the form of a typical range such as 172.16.X.0/22 and this range shall be further sub netted and allocated as described in table below.

Network Address	Allocation
172.16.X.0/25	Network Management
172.16.X.128/25	Engineering Access
172.16.X.0/24	Substation Automation System (SAS) Network
172.16.X.0/24	Tariff meters
172.16.X.0/24	Unallocated at present

6. Virtual Local Area Networks (VLANs)

Virtual local Area Networks (VLANs) shall be applied on the system to manage the efficiency on the network. The managed Ethernet switches will be configured with a weighted round robin (WRR) Quality of Service (QoS) regime.

The following VLANs are used on the system:

Substation Automation System VLAN
GOOSE VLAN
Management VLAN
Engineering VLAN
Metering VLAN

7. Time Synchronization

Time Synchronization forms a critical component of the SAS. A rack-mounted GPS Clock (residing in the Gateway cabinet) shall be the reference clock (NTP stratum 0) in the SAS. The GPS clock shall be designed to operate in substation environments with ± 100 ns accuracies. This clock synchronizes to UTC using GPS satellite transmissions that are received via the GPS antenna. A surge arrestor shall be mounted and earthed in the substation gateway panel and shall be connected to the antenna on one side and the GPS clock on the other side thereby providing protection for the GPS clock.

The SAS shall incorporate two-time servers, a main and a backup time server (which may be located at the control center) for time synchronization redundancy. The time servers shall distribute the time to all IEDs using the Network Time Protocol (NTP). Each IED shall be configured with a main and backup NTP server with a 60s refresh rate. Should the main NTP server fail, the IEDs will request time from the backup NTP server. In addition, the managed Ethernet switches, I/O units, Engineering Server, etc., shall be time synchronized using NTP. The following settings and philosophies will be applied in the SAS:

- Bangladesh is in the Bangladesh Standard Time (BST) time zone with an offset of +6 hours from UTC.
- Each IED in the SAS will be configured with the BST time-zone offset.
- All time distribution shall be done in UTC time.
- Daylight savings is not observed in Bangladesh. Hence, no Daylight Savings Time (DST) subtraction from UTC time will be done.

Loss of satellite communications will actuate the alarm contact which is wired to the I/O unit.

8. Substation Human Machine Interface (HMI)

The Substation Human Machine Interface (HMI) system in the substations shall be responsible for meeting the following objectives required for a Substation Automation System (SAS):

- Provides a user interface for the engineer/operator to safely monitor and control the electrical infrastructure at the substation.
- Provides limited visualization and analysis capabilities for power system measured and disturbances.
- Centrally managed annunciator system, historical alarm summary/sequence of events (SoE) and control operation logs.

9. Typical Relay Protection System requirements

The substation automation system solution will comprise of the following configuration of IEDs per switchgear panel with each IED incorporating protection and control functionality.

- 33 kV and 11kV outgoing feeder panel: 1 IED
- 11V Incoming Feeder: 2 IEDs (Overcurrent & Earth Fault, Standby Earth)
- 33kV Transformer: 3 IEDs (Overcurrent & Earth Fault, Transformer Differential, Automatic Voltage Regulation)

The IEDs shall be based on microprocessor technology and shall use numerical techniques for the calculation and evaluation of externally input analogue signals. They shall perform all bay related functions, such as protection, commands, bay interlocking, data acquisition, data storage and event recording and shall provide inputs for status indication and outputs for commands.

The IEDs will be mounted on the LV compartment panel door of the switchgear panels and shall be directly connected without any need for separate interposing equipment or transducers. The IEDs shall have the following features as a minimum:

- Minimum of 8 analogue channels
- Binary inputs, signal relays and command relays shall be provided as per respective feeder protection scheme
- 8 programmable LEDs on the front of the unit for indications
- Instantaneous Phase Overcurrent Protection
- Instantaneous Earth Fault Protection
- Inverse Time Phase Overcurrent Protection
- Inverse Time Earth Fault Overcurrent Protection
- Standby Earth Fault Protection (for 11 kV Incoming Feeders) which must be provided as a separate IED
- Automatic Voltage Regulation (for 33 kV Transformers) which must be provided as a separated IED
- Transformer Differential Protection and Restricted Earth Fault Protection for 33 kV transformer protection
- Integrated Arc-Flash protection for IEDs used in metal clad switchgear applications
- Breaker Fail Protection
- Overvoltage/ under voltage Protection
- Synchro check function
- Built-in mimic display with controls for operating the switchgear. In the event of failure of the bay unit a backup system for emergency operation should be provided.
- Sequence of Events Recorder with a buffer for 256 events and a resolution of 1ms. The events that are to be recorded shall be freely programmable. These can be alarm/trip signals, external signals connected to opt coupler inputs, internal signals, etc. Once events are defined, they are recorded in chronological order as they occur.
- Disturbance Recorder function which can record 9 analogue values, 16 Binary signals and 12 analogue channels for internal measurement values. It shall be possible for the Disturbance Recorder function to be triggered by any internal or external binary signal or internal protective function.
- Comprehensive self-supervision
- Battery-free memory back-up of Event and Disturbance Records
- Logic functions (AND, OR, bistable flip flop, etc.)
- Delay/Integrator function
- Energy meters to be provided as separated devices

Please see the annexures for examples of a typical signal list for the various bay types. Faults in the bay control IED shall be indicated on a front HMI and a message shall be sent to the station level HMI. The time for fault tracing and replacement of a faulty unit shall be reduced to a minimum.

The supervision shall also cover the power supply system, the internal system bus and the ability of the central processing module to communicate with different printed circuit boards.

Failure of any single component within the equipment shall neither cause unwanted operation nor lead to a complete system breakdown.

The N-1 criterion shall be maintained in worst case scenarios also. Further, a single failure must not have any effect on the primary system, which is monitored and controlled. Directional overcurrent and earth fault protection is used on all incomers and outgoing feeders.

The IED's switch on to fault (SOTF) function shall be enabled for a minimum period of 200 ms during any close operation of a circuit breaker.

In the event of a breaker failure the bus bar connected to this equipment will be cleared a communication assisted protection solution which is implemented using IEC 61850 GOOSE.

Integrated arc flash sensors shall perform arc flash detection and trip output to the bus bar protection IED in less than 5 ms. A selectable time delay filter is also required (from zero for instantaneous light detection up to 2 s).

The optical light sensors for the arc flash scheme shall be capable of withstanding temperatures above 100°C. On-sensor health indication shall be included for visual verification during maintenance work.

IED time synchronization accurate to 1 MS or better by means of IEEE 1588v2 Power Profile (preferred), IRIG-B or (S)NTP.

Alarms and indications are to be made available to the substation gateway by means of IEC 61850 MMS reports.

Inter-device IED signaling to be achieved by means of IEC 61850 GOOSE messaging.

Local breaker close and trip controls on the IED shall be time-delayed in order to facilitate evacuation of the building prior to operation. Circuit breaker close and trip operations shall also be made available via "Umbilical cord", in order to allow for these operations to be done safely from a distance preferably outside the switching room. MV bay protection will comprise of 1 IED incorporating protection and control functionality. The IEDs will be installed on-board and have integrated arc-flash detection capability.

Dedicated disturbance recording is not required as the IEDs will provide this functionality.

10. 11 kV Arc-flash bus bar protection

An arc-flash event (with simultaneous current flow through the bay's breaker) in the bus bar and circuit breaker chambers shall trigger a bus strip via GOOSE to all bays connected to the same bus bar segment. An arc-flash event in the cable chamber shall only trip the affected bay;

In the event of a breaker failure the connected bus bar segment will be cleared by the GOOSE-based bus protection;

11. 11 kV bus section protection

Overcurrent and earth fault protection is only to be used during energization of a bus bar and/or energizing of the medium voltage equipment; The IED shall be capable of synchronizing when closing the breaker. As such, the IED shall be capable of an additional voltage input to facilitate the sync function.

Switch On To Fault (SOTF) protection is enabled for a minimum period of 200 ms during any breaker close operation. In the event of a breaker failure the bus bar connected to this equipment will be cleared by the GOOSE-based bus protection.

Arc flash protection shall be incorporated in the IED as a standard requirement. Five optical light sensors shall be installed to detect an arc event. The chambers to be monitored are the circuit breaker chamber and the two bus bar chambers for the bus section (and bus riser) switchgear panels.

An arc-flash event with simultaneous current flow in a bus bar chamber shall trigger a bus strip via GOOSE to all panels connected to the same bus bar segment. An arc flash event with simultaneous current flow in the circuit breaker chamber shall trigger a bus strip via GOOSE to all the 11 kV switchgear panels;

12. Low Impedance Differential Protection

Low Impedance differential protection is only required for Gas Insulated Switchgear (GIS) applications.

Local control at the scheme shall be provided by:

- Zone isolation switches or pushbutton selection
- Breaker failure isolation switches or pushbutton selection

Each bay's current transformer inputs shall be directed to the relay via a current transformer test block.

The test block shall short circuit the current transformer inputs when a test handle or plug is inserted. This action shall not cause any trip.

The scheme shall be equipped with an isolation switch to disable all tripping functionality to bays but still measure all currents for testing and commissioning purposes.

The Breaker failure isolation switch is used to isolate any signals that may cause a low impedance protection operation as a result of testing on a feeder, bus coupler, capacitor bank and transformer incomer bay.

The low impedance differential protection scheme shall accommodate two current transformer measurements per phase for the bus section. These shall be sourced from one current transformer but separate independent and overlapping cores for these bays.

13. Technical Specification of Substation Automation System (SAS)

13.1 Scope of Supply

This specification covers the design, manufacture, inspection, testing at the manufacturer's works and erection and commissioning of a Substation Automation System described in the following sections, to control and operate the 33/11kV AIS substation.

This describes the facilities required to provide the control of plants and systems within a substation and outlines the facilities to be provided on site, interface requirements and performance criteria. The Substation Automation System (SAS) shall comprise full station and bay protection, control, monitoring and communication functions and its capacity must be ≥ 1000 - I/O. It shall enable local station control via PC by means of a human machine interface (HMI) and control software package and perform the necessary system control and data acquisition functions. It shall include communication gateway to inter-bay-bus, intelligent electronic devices (IED) for bay control and protection as shown in the enclosed general system architecture drawing.

The communication gateway shall secure control from and information flow to remote network control centers. The inter-bay bus, configured as a star connection (via star couplers) shall provide independent station-to-bay and bay-to-bay data exchange. The bay level intelligent electronic devices (IED) for protection and control shall be directly connected to the instrument transformer without any interposing equipment and perform control, protection and monitoring functions subject to a detail proposal approved by the Engineer. The physical Gateway and firewall shall be provided separately with redundancy, not built in with the HMI Technology.

The IED's for protection and control functions shall maintain high availability and reliability together with bay independence through extensive self-supervision and state-of-the-art technology. The system shall be capable of having its computing power increased in the future by the addition of additional computing systems.

The system design life shall be not less than 20 years.

The bidder shall provide-

- i. IEC 61850 compliance report for the offered system with IEDs
- ii. Interoperability test report for the offered system with ABB, Siemens, Alstom and SEL IEDs with IEC 61850 protocol from any UCA approved system verification and validation center along with the bid document.

The capacity of the SA system shall be sufficient (1000-I/O) for the ultimate development of the substation as set out in the project requirements.

The SA supplier shall demonstrate that the system proposed has been designed, installed and commissioned in accordance with relevant international standards and the specification shall provide evidence of satisfactory service experience during the past 5 years.

The contractor shall provide the installation software for the substation automation system. Installation, testing and commissioning of substation automation system shall be done by the automation Engineer(s) of the substation automation manufacturer(s).

The software architecture and the database structure shall be finalized with the Purchaser. The facilities shall be incorporated in order to access the database from the backend by the authorized user of the Purchaser. Object-oriented technology shall be used in software development.

The Source Codes of the software standard documentation shall be handed over to the Purchaser. The standard database like Oracle, MySQL, SQL shall be used.

Cyber Security of this system shall be built in with the system. The objective of cyber security is to protect information and physical assets from damage caused by theft, corruption or natural disasters while allowing the information and assets to remain accessible and productive to employers. All potential causes of cyber-attacks need to be considered when employing a defense in depth approach.

13.2 Compliance with Standards

For design and type testing of the protection and control equipment, the following standards shall

be applicable:

General List of Specifications

Specification Code	Description
IEC255	Electrical Relays
IEC60038	IEC Standard voltages
IEC68068	Environmental testing
IEC60664	Insulation co-ordination for equipment within low-voltage systems
IEC61850	Standard for Substation integrated protection and control data communication

Detailed List of Specifications

Specification Code	Description
IEC255-6	Measuring relays and protection equipment
IEC255-7	Test and measurement procedures for electromechanical all-or-nothing relays
IEC68-2-3	Test Ca: Damp heat steady state
IEC68-2-30	Test D band guidance; Damp heat, cyclic
IEC255-5	Insulation tests for electrical relays
IEC255-22	Electrical disturbance tests for measuring relays and protection equipment:
IEC255-22-1	1 MHz burst disturbance test
IEC255-22-2	Electrostatic discharge test
IEC255-22-3	Radiated electromagnetic field disturbance test
IEC255-22-4	Fast transient disturbance test
IEC255-11	Interruptions to and alternating component (ripple) in D.C. auxiliary energizing quantity to measuring relays
IEC255-6	Measuring relays and protection equipment
IEC255-21	Vibration, shock, bump and seismic tests on measuring relays and protection equipment:
IEC255-21-1	Vibration tests (sinusoidal)
IEC255-21-2	Shock and bump tests
IEC255-21-3	Seismic tests
IEC255-0-20	Contact performance of electrical relays
IEC870-3class2	Digital I/O, Analogue I/O dielectric tests
IEC801-5/class3	Digital I/O Surge withstand test
IEC870-3/class2	Radio interference test
IEC801-4/4	Transient fast burst test
IEC801-2/4	Static discharge
IEC801-3/3	Electromagnetic fields

14. Design and Operating Requirements

14.1 General

The SA (Substation Automation) shall be suitable for the operation and monitoring of the complete substation including future extensions. The offered products shall be suitable for efficient and reliable operation and maintenance support of the substations.

The SA system shall be state-of-the art design suitable for operation in high voltage substation environment, follow the latest engineering practice, ensure long term compatibility requirements and continuity of equipment supply and the safety of the operating staff.

Protection is an integral part of the SA system and protective relays shall be directly connected to the Interbay bus in order to provide unrestricted access to all data and information stored in the relays and for changing protection parameters from the remote-control location.

Failure behavior of the hardware and software functions shall be addressed and related diagnostic and rectification working instructions shall be provided. The system performance, if failure of communication to main and redundant computer-based workstations, central functions, data model, control and protection IED's, station and bay level communication shall also be clearly addressed (shall be provided by the manufacturer).

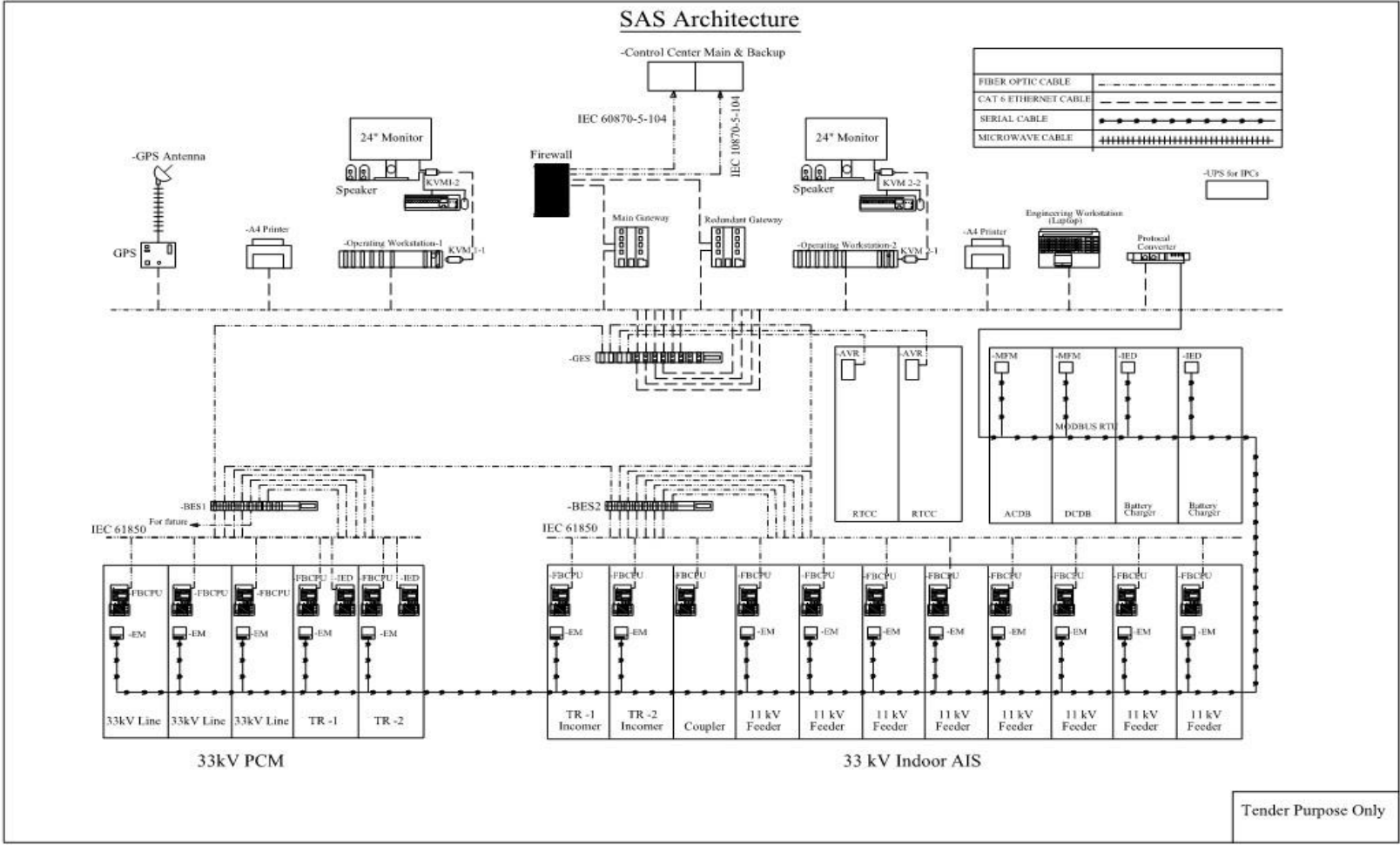
The substation can also be controlled by the Local Control Panel. The following modes of operation shall be possible.

Emergency operation of breaker, disconnector, earthing switch etc. from the Local Panel. Emergency operation of breaker, disconnector, earthing switch etc. from the backup mimic panel located in the control room on the 1st floor/Ground floor. Both bay controller guided and unguided operation shall be possible from this panel.

Normal operation of breaker, disconnector, earthing switch etc. from the Station Automation System HMI located in the 1st floor/Ground floor.

The SAS architecture provided is for indication purpose only. Signal list is to be submitted by the contractor which will be finalised and approved by BREB.

SAS Architecture



15. Modes of Operation

The operator stations and specified remote users shall have the following operational modes, each password protected. Monitoring Ability to select graphic displays and lists for viewing only. No capability to acknowledge alarms, complete controls or select items for inclusion in program functions.

Control: Selection of graphic display and lists. Able to acknowledge station and SA alarms, complete controls, dressing etc. associate with normal real time of the control of the substation.

SA Engineering: Provides all the SA monitoring functions, together with online facilities for program/database/format modifications and checking without the possibility of executing power system controls.

System Manager: Provides access to all system functions, including assignment of passwords and system maintenance activities.

In addition, a facility to provide access to the numerical Protection relays, change / modify relay settings & AVR parameters and Fault Recorder data shall be provided

A series of passwords shall be personally assigned to operators in each of the above categories.

It shall be possible for substation operators to log on to either of the substation workstation and to be allocated the appropriate mode of operation relevant to the password. SA System Engineering work and access to the protection relay and disturbance reorder information shall generally be carried out at the Engineering workstation or remote master station.

All the workstation and the system database shall function as a system. It shall not be necessary for example to acknowledge an alarm at more than one workstation.

Similarly, an operator manual entry applied at a workstation shall be immediately displayed at other workstations where this data is presented.

16. Project Specifications

Specific functions required and boundary conditions of the SA are detailed elsewhere in this specification. The project specific drawings are attached:

- i. Overall single line diagram
- ii. General system architecture
- iii. Location of substation buildings
- iv. Control and operation principles
- v. Protection schemes

17. Vendor's Experience and Local Support

Only experienced and technically capable manufacturers with minimum 5 years' experience in design and supply of control and protection systems for electricity transmission and distribution utility in Bangladesh applications will be accepted. The preferred manufactures will be those who have experience in deliveries of the full scope of station automation systems and services. This experience has to be substantiated by means of reference installations being in service under similar environmental conditions for at least 5 years. Local assembly or engineering of SAS from Bangladesh is not accepted. All SAS-related design, engineering, and Factory Acceptance Testing (FAT) must be conducted by factory engineers in the manufacturer's factory premises. Local engineering is not accepted. In order to assess the vendor's experience with similar projects, the vendor is required to submit the following with his Bid:

- i. Technical design specifications and description of SA
- ii. Catalogues and brochures of equipment and devices offered.
- iii. Reference list
- iv. The vendor shall ensure long-term maintenance and availability of spares. Moreover, a guarantee shall be submitted for the availability of spares during the lifetime of the SA equipment (not less than 10 years).

18. General System Design

The system shall be so designed that personnel without any background in microprocessor-based technology can operate the system easily after they have been provided with some basic training. System control from the substation control room will be with the help of an Industrial Computer (PC) operated by a mouse. The following HMI (Human Machine Interface) functions shall be provided:

- a) Acquisition and plausibility check of switchgear status
- b) Control of switchgear
- c) Remote checking of device parameters and activation of alternative parameter sets in the connected protective relays
- d) Display of actual measured values (U, I, P, Q, f, PF)
- e) Display of Energy (kWh and KVARh export and import)
- f) Display of events
- g) Display of alarms
- h) Display of trends
- i) Sequence control functions
- j) Disturbance records and fault location
- k) System self-supervision
- l) Hard copy printing

Maintenance, modification or extension of components shall not require a shutdown of the whole station automation system. Self-monitoring of single components, modules and communication shall be incorporated to increase the availability of the equipment while minimizing maintenance time to repair.

The data exchange between the electronic devices shall take place via an inter-bay bus using IEC 61850 protocol. The high-speed bus shall permit peer-to-peer communication between the connected devices with democratic access. The entire station shall be controlled and supervised from the station level PC. It shall also be possible to control, monitor and protect each individual bay from the respective bay level equipment for maintenance purposes or if communication to a particular bay should fail. Clear control priorities shall prevent initiation of operation of a single switch at the same time from more than one of the various control levels viz., station level, bay level or switchgear (apparatus) level. The priority shall always be with the lowest enabled control level.

Each bay control and protection unit shall be independent of each other, and its functioning shall not be affected by any fault occurring in any of the other bay control and protection units of the station.

The SAS shall contain the following main functional parts:

- a) Human Machine Interface (HMI) with process database.
- b) Gateway function for remote control via an industrial grade hardware.
- c) Dial in facility/laptop workstation for protection relay parameterization, disturbance analysis and d. SA system fault analysis.
- d) Data exchange between the different system components via high-speed bus.
- e) Bay level devices for control, monitoring and protection.
- f) Bay oriented local control and protection panels with mimic inserts.
- g) Facility for emergency operation of all the switchgear, if bay controller fails. (Key/ master key system.)

The main process information of the station shall be stored in distributed databases. The system shall be based on a de-centralized concept with bay oriented distributed intelligence for safety and availability reasons. Functions shall be decentralized, object oriented and located as close as possible to the process.

The substation monitoring/protection system shall supply data for maintenance, repair and remote parameter setting of protection and control devices in the switchyard.

In the event of a fault in the electrical network, the substation monitoring shall provide a quick means for collecting the relevant and critical data of the fault.

The monitoring system shall be suitable for the supervision and monitoring of all the secondary (IED) and primary devices in a substation including future extensions.

Maintenance, modification or extension of components shall not cause a shut-off of the whole station monitoring system. Self-monitoring of single components, modules and communication shall be incorporated to increase the availability and the reliability of the equipment and minimize maintenance.

It shall be possible to access all protection and control devices for reading the terminal parameters (settings). The setting of parameters or activation of parameter sets shall be restricted by password to the protection engineer.

19. Flexibility and Scalability

The offered SA system concept shall be flexible and shall permit future extensions to be realized easily. Preference will be given to those suppliers who are in a position to provide protection and control devices which can be freely adapted to the application functions required.

20. System Hardware

20.1 Operator Station

The main operator station shall be based on industrial PC hardware and high-resolution full- graphics screen with manufacturers standard type tested software operating under Windows NT environment. An Event printer and a Hard Copy printer shall be connected via a printer server and LAN to the operator station. The CPU shall be installed in the automation panel.

Dual station computers shall control the SA system and drive the workstations and other peripherals. One of the station computers shall operate the system in the “online” state while the other acts as a “redundant hot standby”. The standby computer shall be continuously updated and shall immediately take over the SA system duties without interruption or transfer mechanism should the online operator workstation fail.

Disturbance Records shall be analyzed using the installed Disturbance Record Analysis programs. The Disturbance Records will be collected over the Interbay bus, from the connected IED’s by the system software. All necessary facilities shall be provided to allow the system to perform spontaneous upload of Disturbance data or upload them in a pre-scheduled manner. The Event printer shall print events spontaneously as they arrive at the main operator station.

Each uploaded data report file shall be reported on one line that shall contain:

- a) The event date and time
- b) The name of the event object
- c) A descriptive text
- d) The state or value of the object

The information fields above shall be structured in columns for maximum readability.

The hard copy printer shall permit printing of any picture (or part thereof) from the station level PC’s using easily accessible commands from the window menus.

The main Station PC’s shall be supplied by the station DC battery and a UPS system with a supply duration of not less than 30 minutes shall be provided to supply the monitor and the printers.

20.2 Station Inter-Bay Bus

The LAN connecting the industrial computer-based operator workstations, printers shall be Ethernet 802.3 LAN, Protocol TCP/IP (10 Mbits/ sec or higher) and the physical medium shall be thin Ethernet or fiber optic bus, provided this LAN is kept within the confines of the control room. The bay control and protection units shall be connected via glass fiber optic cables to a station inter- bay bus, operating on high-speed bus, via star couplers. The star coupler shall permit the data exchange between the different system components. Glass Fiber optic connections are used in order to avoid EMI in the switchgear and substation environment.

All protection and control units with serial communication facilities are connected in a star topology via glass fiber optics to the star coupler. Under no circumstances shall events from the protections be taken into the system via bay control unit hardware i.e., each protection device should have its own independent fiber optic communication channel to the star coupler. The star couplers shall be mounted in a separate communication cubicle.

20.3 Protection and Control IED's on 33kV Level and 11kV level

The control IED's, based on microprocessor technology, shall use numerical techniques for the calculation and evaluation of externally input analogue signals. They shall incorporate select- before-operate control principles as safety measures for operation via the HMI. They shall perform all bay related functions, such as protection, commands, bay interlocking, data acquisition, data storage and event recording and shall provide inputs for status indication and outputs for commands. They shall be mounted in the LV compartment of the switchgear and shall be directly connected to it without any need for separate interposing equipment or transducers.

The 33 kV bay control & protection IED shall have the following features depending on the requirement:

- a) Minimum of 8 analogue channels
- b) At least 15 binary inputs, 5 signal relays and 2 command relays
- c) 8 nos. programmable LEDs on the front of the unit for indication
- d) Instantaneous Phase Overcurrent Protection
- e) Instantaneous Earth Fault Protection
- f) Inverse Time Phase Over Current Protection
- g) Inverse Time Earth Fault Overcurrent Protection
- h) Overvoltage/ under voltage Protection
- i) Synchro check function
- j) Built-in mimic display with controls for operating the switchgear. In the event of failure of the bay unit a backup system for emergency operations should be provided.
- k) High speed bus serial communication port
- l) Sequence of Events Recorder with a buffer for 256 events and a resolution of 1msec. The events that are to be recorded should be freely programmable. These could be alarm/trip signals, external signals connected to optocoupler inputs, internal signals, etc. Once events are defined, they are recorded in chronological order as they occur.
- m) Disturbance Recorder function which can record 9 analogue values, 16 Binary signals and 12 analogue channels for internal measurement values. It shall be possible for the Disturbance Recorder function to be triggered by any internal or external binary signal or internal protective function.
- n) Comprehensive self-supervision
- o) Battery-free memory back-up of Event and Disturbance Records
- p) Logic functions (AND, OR, bistable flip flop, etc.)
- q) Delay/Integrator function

The numerical bay control IED's shall be mounted together with all the relevant bay protective relays in cubicles of Protection Class IP54 or better. Distributed back-up control mimics with associated switches meters and Indicating LEDs shall also be provided on these cubicles. These cubicles shall be installed in an air-conditioned room in the substation.

The distributed backup mimic for Local Control shall be installed next to the bay controller IED, which can be used in case of maintenance or emergency or if bay control IED fails. Local bay control via the back-up control mimic on the Control & Protection cubicles shall incorporate the same user safety measures e.g. bay interlocking, synchro check, interlock override user guidance etc. as the station HMI. Local bay control shall be key-locked and the control either from AIS local control panel or station HMI or from remote shall be disabled if the local/remote selector switch on the back up control mimic is in the 'local' position.

The electronic system has to be provided with functions for self-supervision and testing. Each circuit board shall contain circuits for automatic testing of its own function.

Faults in the bay control IED shall be indicated on a front HMI and a message shall be sent to the station level HMI. The time for fault tracing and replacement of a faulty unit shall be reduced to a minimum. The supervision shall also cover the power supply system, the internal system bus and the ability of the central processing module to communicate with different printed circuit boards. Failure of any single component within the equipment shall neither cause unwanted operation nor lead to a complete system breakdown. The n-1 criteria must be maintained in worst case scenarios also. Further, a single failure must not have any effect on the primary system, which is monitored and controlled.

Only the backup protection can be incorporated in the bay control unit and not the main protection. Main protection shall be provided separately.

All IED's shall have at least 5 years of successful proven experience in HV applications and the MTBF for the offered units shall be provided.

21. Software Structure

The software package shall be structured according to the SA architecture and strictly divided in various levels. It shall be possible to extend the station with the minimum possible effort. Maintenance, modification or extension of components of any feeder may not force a shut-down of the parts of the system which are not affected by the system adaptation.

Confirmation that the software programs will be supported for a minimum of 20 years is required to be submitted with the Bid. The license provided for all kind of software related to SAS must be lifetime duration.

It shall be the responsibility of the contractor to obtain any license required for the operation software. The contractor shall indemnify the client against all claims of infringement of any patent, Registered design, copyright, t

21.1 Station Level Software

21.1.1 Human Machine Interface (HMI)

The base HMI software package for the operator station shall include the main SA functions and it shall be independent of project specific hardware version and operating system. It shall further include tools for picture editing, engineering and system configuration. The system shall be easy to use, to maintain, and to adapt according to specific user requirements. The System shall contain a library with standard functions and applications.

21.1.2 Operating System

Windows operating system shall be used for the operator station as it supports several standard system features, e.g. support for several Windows office applications, multitasking, security levels, data exchange mechanisms (DDE, OLE), open data base communication standards (ODBC) and a standardized, user-friendly look & feel HMI. The licensed copy of the operating system backup software shall be provided.

21.2 Bay Level Software

21.2.1 System Software

The system software shall be structured in various levels. This software shall be placed in a non- volatile memory. Its lowest level shall assure system performance and contain basic functions, which shall not be accessible by the application and maintenance engineer for modifications. The system shall support the generation of typical control macros and a process database for user specific data storage.

21.2.2 Application Software

In order to ensure robust quality and reliable software functions, the main part of the application software shall consist of standard software modules built as functional block elements. The functional blocks shall be documented and thoroughly tested. They shall form part of a library. The application software within the control/protective devices shall be programmed in a functional block language.

21.2.3 System Testing

The supplier shall submit a test specification for factory acceptance test (FAT) and commissioning tests of the station automation system for approval. For the individual bay level IED's, applicable Type Test certificates shall be submitted. FAT should be conducted by concern factory engineer in Manufacturer's premises . Local engineering is not accepted.

The manufacturing phase of the SA shall be concluded by a Factory Acceptance Test (FAT). The purpose is to ensure that the Contractor has interpreted the specified requirements correctly. The general philosophy shall be to deliver a system to site only after it has been thoroughly tested and its specified performance has been verified with site conditions simulated to the extent possible in a test lab. If the FAT involves only a certain portion of the system for practical reasons, it has to be assured that this test configuration contains at least one unit of each, and every type of equipment incorporated in the delivered system.

If the complete system consists of parts from various suppliers, the supplier shall arrange interoperability test at factory during stage inspection or FAT. The complete system test shall also be performed at site in the Site Acceptance Test (SAT).

22. System Functions

22.1 Control Unit Functions

22.1.1 Control

The different high voltage apparatuses within the station shall either be operated manually by the operator or automatically by programmed switching sequences.

The control function shall comprise:

- a) Commands from different operator places, e.g. from the station HMI, or local control panel according to the operating principle
- b) Select before executing commands
- c) Operation from only one operator place at a time.
- d) Operation depending on conditions from other functions, such as interlocking, synchro check, operator mode, or external status conditions.

The control function shall also include:

- a) Prevention of double operation
- b) Command supervision
- c) Selection of operator place
- d) Block/deblock of operation
- e) Block/deblock of updating of position indications
- f) Manual setting of position indications
- g) Overriding of the interlocking function (Second key switch)
- h) Switchgear run time supervision

22.1.2 Status Supervision

The position of each switchgear, e.g. circuit breaker, isolator, earthing switch, etc., shall be permanently supervised. Every detected change of position shall be immediately visible on the screen in the single-line diagram, recorded in the event list, and a hard copy printout shall be produced. Alarms shall be initiated in cases when spontaneous position changes have taken place.

Each position of an apparatus shall be indicated using two binary auxiliaries normally closed (NC) and normally open (NO) contacts. An alarm shall be initiated if these position indications are inconsistent or indicate an excessive running time of the operating mechanism to change position.

22.1.3 Interlocking

The interlocking function prevents unsafe operation of apparatuses such as isolators and earthing switches within a bay or station wide. The operation of the switchgear shall only be possible when certain conditions are fulfilled. The interlocking function is required to be decentralized so that it does not depend on a central control device. Communication between the various bays for the station interlocking shall take place via bay communication system. An override function shall be provided, which can be enabled to bypass the interlocking function via a key/password, in cases of maintenance or emergency situations.

22.1.4 Measurements

Analogue inputs for voltage and current measurements shall be connected directly to the voltage transformers (VT) and the current transformers (CT) without intermediate transducers. The correlated values of active power (W), reactive power (VAR), frequency (Hz), and the rms values for voltage (U) and current (I) shall be calculated.

22.1.5 Event and Alarm Handling

Events and alarms shall be generated either by the switchgear, by the control devices and by the station level unit. They shall be recorded on an event list in station HMI. Alarms shall be recorded in a separate alarm list and appear on the screen. All or a freely selectable group of events and alarms shall also be printed out on an event printer. The alarms and events shall be time tagged with a time resolution of 1ms. The time tagging shall be done at the lowest level where the event occurs, and the information shall be distributed with the time tagging.

22.1.6 Time Synchronization

The time within the SA shall be set via a GPS Clock Receiver connected directly to the Bay Level LAN. The time shall then be distributed to the control/protective devices via the high-speed optic fiber bus. An accuracy of ± 1 MS within the station is required.

22.1.7 Synchronism and Energizing Check

The synchronism and energizing check functions shall be distributed to the control and/or protective devices and shall have the following features:

- a) Adjustable voltage, phase angle, and frequency difference.
- b) Energizing for deadline - live bus, or live line - dead bus
- c) Settings for manual close command and auto-reclose command shall be adaptable to the operating times of the specific switchgear.

22.1.8 Voltage Selection

The voltages, which are relevant for the synchro check functions, depend on the station topology i.e. on the positions of the circuit breakers and/or the isolators. The correct voltage for synchronizing and energizing is derived from the auxiliary switches of the circuit breakers, isolator, and earthing switch and shall be selected automatically by the control and protection IED.

23. HMI Functions

23.1 General

The operator station HMI shall provide basic functions for supervision and control of the substation. The operator shall give commands to the switchgear via the station monitor with the help of mouse clicks on soft keys.

The HMI shall provide the operator with access to alarms and events displayed on the screen. Besides these lists on the screen, there shall be a printout of hard copies of alarms or events in an event log. The Alarm List shall indicate persisting and fleeting alarms separately. An acoustic alarm shall indicate abnormalities, and all unacknowledged alarms shall be accessible from any screen selected by the operator.

The following standard pictures shall be available from the HMI:

- a) Single line diagram showing the switching status and measured values.
- b) Control dialogues
- c) Measurement dialogues
- d) Blocking dialogues
- e) Alarm list, station / bay oriented
- f) Event list, station / bay oriented
- g) System status
- h) Checking of parameter settings

23.2 HMI Design Principles

Consistent design principles shall be provided with the HMI concerning labels, colors, dialogues and fonts. Non-valid selections shall be dimmed out.

Object status shall be indicated using different status colors for:

- a) Selected object under command
- b) Selected on the screen
- c) Not updated, obsolete value, not in use or not sampled
- d) Alarm or faulty state
- e) Warning or blocked
- f) Update blocked or manually updated
- g) Control blocked
- h) Normal state
- i) Busbar coloring to show live & dead bus

23.3 Process Status Displays and Command Procedures

The process status of the substation in terms of actual values of currents, voltages, frequency, active and reactive powers as well as the positions of circuit breakers, isolators and transformer tap changers are displayed in the station single line diagram.

In order to ensure a high degree of security against unwanted operation, a special "select before-execute" command procedure shall be provided. After the "selection" of a switch, the operator shall be able to recognize the selected device on the screen and all other switchgear shall be blocked.

After the "execution" of the command, the operated switch symbol shall blink until the switch has reached its final new position. The system shall permit the operator to execute a command only if the selected object is not blocked and if no interlocking condition is going to be violated the interlocking conditions shall be checked by the interlocking scheme which is implemented on bay level.

After command execution, the operator shall receive confirmation that the new switching position is reached or an indication that the switching procedure was unsuccessful with the indication of the reason for non-functioning.

23.4 System Supervision Display

The SA system shall feature comprehensive self-supervision such that faults are immediately indicated to the operator before they possibly develop into serious situations. Such faults are recorded as faulty status in a system supervision display. This display shall cover the status of the entire substation including all switchgear, IED's, communication links, and printers at the station level etc.

23.5 Reports

The SA shall generate reports that provide time-related information on measured values and calculated values. The data displayed shall comprise:

Trend reports:

- a) Day (mean, peak)
- b) Month (mean, peak)
- c) Semi-annual (mean, peak)
- d) Year (mean, peak)
- e) Historical reports:
 - i. Day
 - ii. Week
 - iii. Month
 - iv. Year

It shall be possible to select displayed values from the database on-line in the process display. Scrolling between e.g. days shall be possible. Unsure values shall be indicated. It shall be possible to select the time period for which the specific data are kept in the memory.

This report shall be printed automatically at pre-selected times. It shall also be possible to print this report on request.

23.6 Trend Display (Historical Data)

A trend is a time-related follow-up of process data. The analogue channels of all the connected bay level devices on the 33 kV level shall be illustrated as trends. The trends shall be displayed in graphical form as columns or curve diagrams with 10 trends per screen as maximum. It shall be possible to change the type of value logging (direct, mean, sum, or difference) on-line in the window. It shall also be possible to change the update intervals on-line in the picture as well as the selection of threshold values for alarming purposes.

23.7 Event List

The event list shall contain events which are important for the control and monitoring of the substation. The time has to be displayed for each event.

The operator shall be able to call up the chronological event list on the monitor at any time for the whole substation or sections of it. A printout of each display shall be possible on the hard copy printer.

The events shall be registered in a chronological event list in which the type of event and its time of occurrence are specified. It shall be possible to store all events in the computer. The information shall be obtainable also from printed event log.

The chronological event list shall contain:

- a) Position changes of circuit breakers, isolators and earthing devices.
- b) Indication of protective relay operations
- c) Fault signals from the switchgear
- d) Violation of upper and lower limits of analogue measured value.
- e) Loss of communication

Filters for the selection of a certain type or group of events shall be available.

The filters shall be designed to enable viewing of events grouped per:

- a) Date and time.
- b) Bay
- c) Device
- d) Function
- e) Alarm class

23.8 Alarm List

Faults and errors occurring in the substation shall be listed in an alarm list and shall be immediately transmitted to the control center. The alarm list shall substitute a conventional alarm tableau and shall constitute an evaluation of all station alarms. It shall contain unacknowledged alarms and persisting faults.

Date and time of occurrence shall be indicated. The alarm list consists of a summary display of the present alarm situation.

Each alarm shall be reported on one line that contains:

- a) The alarm date and time
- b) The name of the alarming object
- c) A descriptive text
- d) The acknowledgement state

The operator shall be able to acknowledge alarms, which shall be either audible or only displayed on the monitor. Acknowledged alarms shall be marked on the list. Faults that appear and disappear without being acknowledged shall be specially presented in a separate list for fleeting alarms. For example, due to bad contacts or intermittent operation. Filters for selection of a certain type or group of alarms shall be available as for events.

23.9 Object Picture

When selecting an object such as a circuit breaker or isolator in the single line diagram, first the associated bay picture shall be presented.

In the selected object picture, all attributes shall be displayed such as-

- type of blocking,
- authority
- local / remote control
- SA control
- errors, etc.,

23.10 Control Dialogues

The operator shall give commands to the system by means of soft keys located on the single line diagram. It shall also be possible to use the keyboard for soft key activation. Data entry is performed with the keyboard.

23.11 User Authority Levels

It shall be possible to restrict the activation of the process pictures of each object (bays, apparatus, etc.) to a certain user authorization group.

Each user shall then be given access rights to each group of objects, e.g.:

- Display only
- Normal operation (e.g. open/close apparatus)
- Restricted operation (e.g. by-passed interlock)
- System administrator

For maintenance and engineering purposes of the station HMI, the following authorization levels shall be available:

- a) No engineering allowed
- b) Engineering/configuration allowed
- c) Entire system management allowed

The access rights shall be defined by passwords assigned during the log-in procedure. Only the system administrator shall be able to add/remove users and change access rights.

24. System Performance

The refresh/ update times on the operator station PC under normal and calm conditions in the substation shall be according to the levels specified below:

Functions	Typical values
1. Exchange of display (first reaction)	< 1s
2. Presentation of a binary change in the process display	< 0.5 s
3. Presentation of an analogue change in the process display	< 1s
4. From order to process output	< 0.5 s
5. From order to update of display	< 1.5 s

24.1 System Reliability

The SA system shall be designed to satisfy very high demands for reliability and availability concerning:

- 1) Solid mechanical and electrical design
- 2) Security against electrical interference (EMI)
- 3) High quality components and boards
- 4) Modular, well-tested hardware
- 5) Thoroughly developed and tested modular software
- 6) Easy-to-understand programming language for application programming
- 7) Detailed graphical documentation, according to IEC 1131-3, of the application software
- 8) Built-in supervision and diagnostic functions
- 9) After sales service
- 10) Security
- 11) Experience of security requirements
- 12) Process know-how
- 13) Select before execute at operation
- 14) Process at user presentation as double indications
- 15) Distributed solution
- 16) Independent units connected to the local area network
- 17) Back-up functions
- 18) Panel design appropriate to the harsh electrical environment and ambient conditions.
- 19) Panel grounding to provide immunity against transient ground potential rise

24.2 Configuration Tools

The configuration of the station HMI shall be made using the operator station working in a Windows environment. The various functions shall be customized by easy-to-use interactive configuration tools. Configuration shall include the visual presentation of the object; adaptations needed in process database and adaptations of the communication configuration data.

A portable Personal Computer (PC) as a service unit shall be foreseen for on-site modifications of the control and protection devices. The service unit shall be used for documentation, test and commissioning.

The PC based service & support system shall be used for the following purposes:

- System configuration
- System testing
- Help functions
- Program documentation
- Down-and up-loading of programs System commissioning
- Data base management
- Changing peripheral parameters

The service & support system shall be able to monitor data in the running substation control system and to present changing variables on the display screen in graphic representation.

24.3 Information Required

The following documentation shall be provided for the system during the course of the project and they shall be consistent, CAD supported, and of similar look/feel:

- List of Drawings
- Control Room Lay-out
- Assembly Drawing
- Single Line Diagram
- Block Diagram
- Circuit Diagram
- List of Apparatus
- List of Labels
- Functional Design Specification (FDS)
- Test Specification for Factory Acceptance Test (FAT)
- Logic Diagram
- List of Signals
- Manual
- Product Manuals
- Calculation for uninterrupted power supply (UPS) dimensioning
- Licensed Copy of all software
- Third Party cyber security certification

24.4 Documentation Required

The following documents shall be submitted with the offer otherwise the bid will be rejected.

- a) Letter of authorization from the Manufacturers, in case the bidder is not the manufacturer.
- b) Manufacturer's authorization Letter for relay and other protection equipment as mentioned in the technical specification.
- c) Manufacturer's supply record for at least 3 years within the last 10 years specifically mentioning purchaser's name, address, telephone number, fax number, contract number with date, supply quantity with ratings, date of commencement & completion of supply, in format below. Supply record will be equipped with the same offered type of SAS.

	Name, address, phone & Fax No. of the Consumer	Contract No. & Date	Contract value	Description of materials with quantity	Date of completion of supply

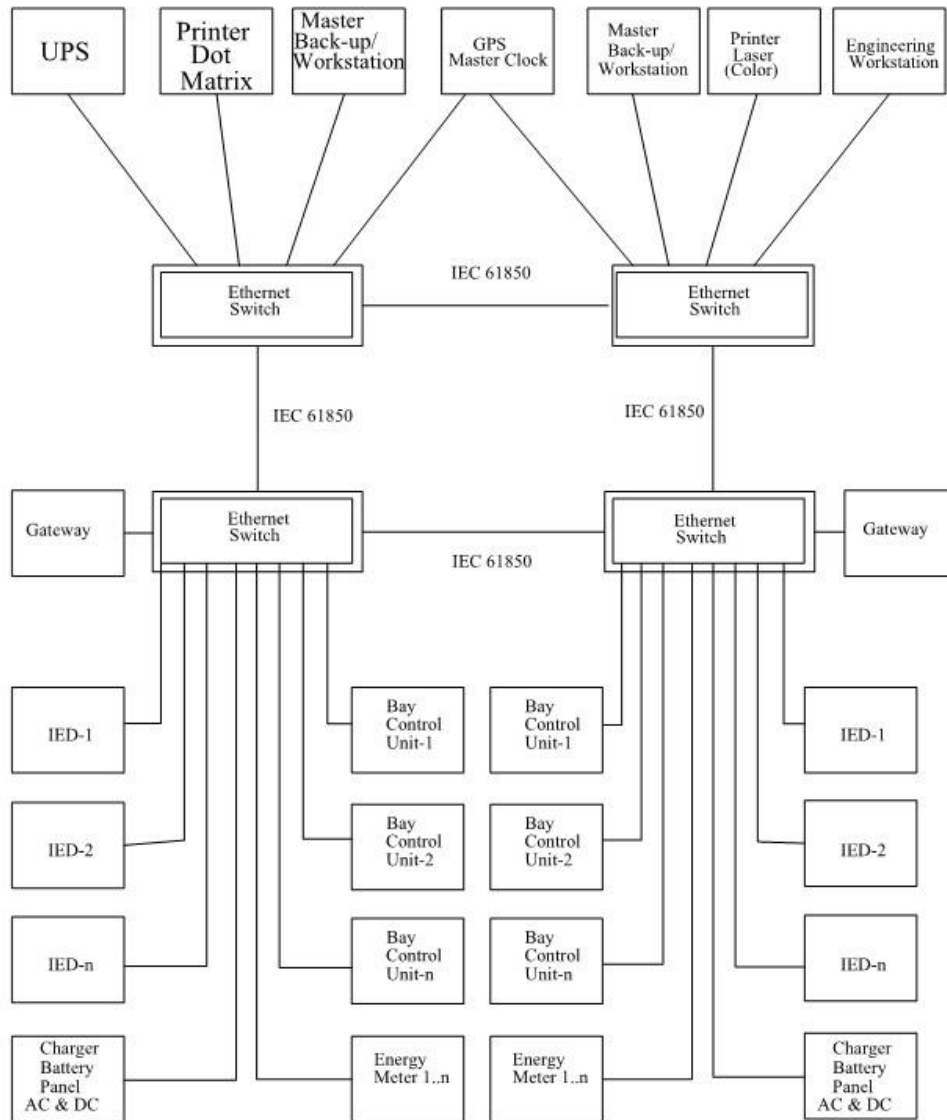
- d) Satisfactory Performance certificates (SPC) issued within the last 10 years from at least 3 End users depicting that the offered type of automation system.
- e) Submission of Type Test Reports/ Certificate as stated in per relevant IEC from recognized independent laboratories.

25. Indicative Architectural Drawing of SAS

Following architectural drawing of SAS is attached as an indicative drawing. Bidder will submit an architecture drawing in accordance with technical specifications & guaranteed technical parameter along with the bid. Drawing will be finalized by the employer prior execution.

SAS Architecture (Indicative)

Note: SAS Architecture will be finalized at Design Approval Stage



Tender Purpose Only

26. Technical Requirement for Substation Automation System

Description	Unit	BREB's Requirement
1. Name & address of the Manufacturer	-	To be mentioned
2. Country of Origin and Manufacture (Shall be the same)	-	To be mentioned
3.General Requirement:		
3.1 Communication protocol at all levels	-	IEC61850. Fully complying with the standard.
3.2 Temperature range (min/max) Computer	° C	0 to 50
3.3 Relative humidity	%	20 to 93 non- condensing
3.4 System performance, interoperability and interchangeability test among ABB (Switzerland/Sweden/Finland)/ Hitachi (Switzerland/Sweden)/Siemens (Germany)/ Alstom (France/UK) and SEL (USA) IEDs done in the system verification center.	-	Yes
3.5 All updated SCD, ICD and CID files shall be provided in portable hard drives and CD/DVD	-	YES
4. Detailed Requirements		
4.1 Manufacturer of the Automation Panel		To be mentioned
4.2 Country of Origin of the Automation Panel		To be mentioned
4.3 The Automation Panel shall be from the origin of the manufacturer of the system	-	Yes
4.4 Name of the Substation Automation System Software	-	To be mentioned
4.5 Name and Address of the Substation Automation System Software manufacturer	-	To be mentioned
4.6 Engineering and Assembling of the substation automation system shall be from the origin of the system		Yes
4.7 Automation equipment Manufacturer's experience	Year	10
4.8 Number of years of proven field experience of offered system. (Note: proof of experience should be furnished. The components used in the offered system and those with field experience should be the same)	Year	5
4.9 Model of the Substation Automation System		To be mentioned
4.10 Design life of Substation Automation System	Year	≥20
4.11 Manufacturers quality assurance system	-	ISO 9001/9002 or equivalent
4.12 Dimensions of cubicle	mm	To be mentioned
4.13 Floor load	N/m ²	max. 600

5. Station Level Equipment:		
5.1 Station Computer	-	Industrial PC (From Internationally Reputed Manufacturer)
5.2 Power supply to the servers	-	230V AC from Inverter
5.3 Operating System	-	Windows
5.4 All standard picture as per Tspec included in HMI	-	To be provided
5.5 Process Status Procedures	-	To be provided
5.6 Event processing as per Tsp Ec	-	To be provided
5.7 Alarm processing as per Tspec	-	To be provided
5.8 Trend Display as per Tspec	-	To be provided
5.9 User Authority levels as per spec	-	To be provided
5.10 System supervision & monitoring as per Tspec	-	To be provided
5.11 Automatic sequence control as per Tspec	-	To be provided
5.12 High quality SCD file complete with ICD files& station topology	-	To be provided
5.13 Operator Work Station (Master/Backup workstation) shall have separately connection o different Ethernet switch		Yes
5.14 MTBF (Mean time between Failures)	Hrs.	Shall be mentioned
5.15 MTTR (Mean time to repair)	Hrs.	Shall be mentioned
5.16 Dual Station Computers Provided in redundant hot standby configuration		YES
5.17 Number of years of proven field experience of offered software	Yrs.	5
6. Gateway to Central Control Room		
6.1 Name of manufacturer, Address & Country of origin	-	To be mentioned
6.2 Model no.	-	To be provided
6.3 Number of years of proven field experience of offered unit	Year	5
6.4 Insulation tests	-	As per IEC60255-5
6.5 Fast disturbance tests	-	IEC 61000-4-4, Calss 4
6.6 Industrial environment	-	EN50081-2ClassA
6.7 Industrial grade hardware with no moving parts (PC-based gateway is not accepted)	-	To be provided
6.8 Design life of offered equipment	Year	20
6.9 Redundant communication channel	-	To be provided
6.10 Redundant CPU	-	To be provided
6.11 Redundant DC/DC Supply	-	To be provided
6.12 MTBF (Mean time between Failures)	Hrs	To be mentioned
6.13 MTTR (Mean time to repair)	Hrs	To be mentioned
7. Station Bus:		
7.1 Connection between Ethernet switches		Glass fiber optic
7.2 Connection between Ethernet switches and IPC, Gateway, Firewall, Printer etc.		Ethernet

8. Inter bay Bus		
8.1 Physical Medium		Glass fiber optic
5. Event Printer		
9.1 MTBF	Hrs	To be mentioned
10. Hard Copy Colour Printer		
10.1 MTBF	Hrs	To be mentioned
11. Master Clock GPS (Global Positioning System) Receiver:		
11.1 Name of the manufacturer & country of origin	-	To be mentioned
11.2 Manufacturer's address	-	To be mentioned
11.3 Model		Shall be mentioned
11.4 MTBF	Hrs.	Shall be mentioned
12. Ethernet Switch		
12.1 Name of manufacturer &. address	-	To be mentioned
12.2 Model number	-	To be mentioned
12.3 Type		Industrial Grade, rackmount
12.4 Redundant Power supply	-	To be provided
12.5 Ethernet switch shall have dual connection to each other.		Yes
12.6 Communication Port		Optical with LC connector & Ethernet (Must be compatible with IED Communication Port)
13. Operator Work Station (OWS)		
13.1 Brand	-	Any International reputed brand.
13.2 Model	-	To be mentioned
13.3 Type	-	Industrial PC
13.4 Country of Manufacture	-	To be mentioned
13.5 Processor	GHz	Intel core i7/ Core Ultra 7 13th generation or latest generation
13.6 Clock Speed	GHz	3.0 GHz (min), 30 MB Cache Memory (min)
13.7 Bus Speed	MHz	Min. 3200 MHz or higher
13.8 RAM	GB	16 GB, Expandable to 32 GB (min.)
13.9 HDD	TB	2 x 1 TB NVMe SSD (RAID)
13.10 OS	-	Licensed windows with Software recovery kit
13.11 Software	-	Lifetime Licensed Anti-Virus Software
13.12 Mouse	-	Reputed Brand Wireless Optical Mouse
13.13 Keyboard	-	Integrated standard Keyboard
13.14 Monitor	inch	32", Full HD (min)
13.15 Battery	-	Lithium-ion battery
13.16 Battery Backup	-	6 hours or higher with AC Adapter
14. Engineer Work Station (EWS)		
14.1 Brand	-	Any International reputed brand.
14.2 Model	-	To be mentioned

14.3 Country of Origin	-	To be mentioned
14.4 Processor	GHz	Intel Core i5 Processor, 13th generation or latest
14.5 Clock Speed	GHz	3.0 GHz (min), 20 MB Cache Memory (min)
14.6 Bus Speed	MHz	Min. 3200 MHz or higher
14.7 RAM	GB	16 GB DDR4
14.8 HDD	GB	1 TB NVMe SSD
14.9 Mouse	-	Reputed Brand Wireless Optical Mouse
14.10 Keyboard	-	Integrated standard Keyboard
14.11 Monitor	inch	32", Full HD (min)
14.12 Battery	-	Lithium-ion battery
14.13 Battery Backup	-	6 hours or higher with AC Adapter
14.14 OS Support	-	Windows 11 professional or latest
14.15 OS	-	License windows with recovery kit
14.16 Software	-	All types of configuration software with licenses for SAS and IED, Licensed Anti-Virus Software, Licensed OS & other necessary software
15.Laser Color Printer		
15.1 Brand	-	Any International reputed brand.
15.2 Model	-	To be mentioned
15.3 Country of origin	-	To be mentioned
15.4 Toner type	-	Toner and associated drum unit in single case, No starter toner. output tray, 250-sheet facedown output tray purpose
15.5 Media Sizes	-	Letter, Legal, A4, A5, B5 and custom sizes
15.6 Media Types	-	Paper (Plain, Preprinted, Letterhead, Bond, Paper (Plain Color, Recycled, Rough), Transparencies, Labels
16. Event Printer		
16.1 Brand	-	Any International reputed brand.
16.2 Model	-	To be mentioned
16.3 Country of origin	-	To be mentioned
16.4 Print Method	Pin	9 Pin Serial Impact Dot Matrix.
16.5 Print Speed	Lps	Min. 6.0 LPS (30 Columns:16 CPI).
16.6 Data Buffer	KB	4KB.
16.7 Inked Ribbon	-	ERC-38(Black/Red).
16.8 Interface	-	USB Interface, Bi- directional parallel.
17. System Performance:		
17.1 Exchange of display (First reaction)	Sec	<1
17.2 Presentation of a binary change in the Process display	Sec	< 0.5
17.3 Presentation of an analogue change in the process display	Sec	<1

17.4 From order to process output	Sec	< 0.5
17.5 From order to updated of display	Sec	< 1.5
18. Protocol Converter / IO module, if required		
18.1 Brand	-	To be mentioned
18.2 Model	-	To be mentioned
18.3 Country of Manufacturer	-	To be mentioned
18.4 Detail Signaling & Interlocking system		To be included
18.5 Capacity of I/O Module	-	≥ 1000
19. Firewall		
19.1 Name of Manufacturer		To be mentioned
19.2 Brand		To be mentioned
19.3 Model/Type		To be mentioned
19.4 Origin		To be mentioned
19.5 IP Filtering Port Filtering MAC Filtering Port Forwarding DMZ Denial of Service NAT Mapping		To be provided
19.6 Packet throughput of at least 150 Mbps		To be mentioned
19.7 3DES Encryption throughput of 20 Mbps		To be mentioned
19.8 Support for 200 VPNs		To be mentioned
19.9 Maximum concurrent sessions, with AVC		To be mentioned
19.10 Maximum new connections per second, with AVC		To be mentioned
19.11 Local On-device Management		Yes
19.12 Application Visibility and Control (AVC)		Standard
19.13 Security Intelligence		Standard, with IP, URL, and DNS threat intelligence
19.14 List (Name & version) of all types of software required for SAS configuration, operation, monitoring and Remote control individually for Both OWS and EWS		To be mentioned
20. Others Requirement		
20.1 All Licenses required for the system including future SCADA connection with physical communication port ready installed		To be provided as per requirement of employer
20.2 The Communication device shall support for future SCADA connection		IEC 60870-5-104
20.3 Facility for measuring SAIDI SAIFI		To be included
20.4 The license provided for all kind of software related to SAS must be lifetime duration.		

27. Gateway to Control Center Specification

27.1 Technical Specification

27.1.1 General

This section specifies the scope of supply, essential features and characteristics and design requirements for gateway and associated equipment.

Gateway shall be fully equipped with input/output modules, Sequence of Event recording, interposing relays and other features called for later in this section.

27.1.2 Equipment Design & Performance

Gateway equipment shall meet the specifications laid down in the general technical requirements. Failure rates for each item of gateway equipment shall be determined and declared in the reply to this specification.

In gateway supplies, power interruptions in the A.C. supply or D.C. supplies shall not cause equipment damage, and interruptions in the D.C. supply of less than 20 ms shall not cause a break in normal operation of the gateway. Power supply shall be protected from input power polarity reversal and output short circuit.

e
Protection devices and alarm circuits shall be the approved by the Engineer and shall minimize equipment outages and facilitate rapid fault location.

The equipment shall not cause interference with other equipment and the noise and vibration levels shall be stated. The performance of the equipment shall be such as to meet the requirements specified elsewhere in this specification for information update times and speed of execution of commands.

Gateway design shall be based on microprocessor-controlled equipment and shall include the following mandatory facilities:

1. Gateway shall be designed using the latest available and the most advanced technology, and shall provide a combination of state-of-the-art capability and reliability;
2. The system shall comprise the following in-built features namely failsafe control (i.e. in- built check-before-execute feature), Control system, SOE buffer, interfacing with third party IEDs if required (e.g. Multifunction Meters etc.), interfacing with third party computer system.
3. Communication protocols for communicating (Master/Slave) are IEC60870-5-101(Master and Slave), IEC60870-5-104 (Client and Server), Modbus (Master) and IEC 61850 (Client).
4. Serial Port for gateway RS 232 or RS 485 should be available.
5. Gateway shall have SNMP port for hardware and software management.
6. Gateway shall not have any moving parts for data storage, heat dissipation etc.
7. Gateway shall have multi-processors capability within rack mounted chassis, CPU, Power Supply and Communication shall be provided in the same gateway rack/chassis.

8. Gateway shall have the capability to support simultaneous communications with two or more independent remote master (redundant) stations.
9. Gateway shall use suitable port for storing program/database.
10. Automatic start-up and initialization following power restoration.
11. Gateway shall be able to receive time synchronize packets from the master station over IEC- 60870-5-104 protocol or from the slave clock provided in the respective time server on SNTP Protocol.
12. In case of power supply failure, auto start-up and restoration of the Gateway shall be possible without manual intervention.
13. Remote database downloading and uploading of Gateway from master station shall be possible.
14. It shall be possible to increase the number of communication ports in the Gateway by addition of plug-in modules, if required in future. The Gateway shall support the use of a different communication data exchange rate and scanning cycle on each port and different database for each master station.
15. LED indications should be provided on the front to know the status of communication by looking at the front view of the gateway.
16. Vendors shall provide at least 4 serial ports for each gateway for interfacing to other devices with the below specification of the serial interface:
 - Each serial port RS-232, RS-485 selectable;
 - Port connector according to standard gateway specification;
 - Full serial and modem signals;
 - Speed 300 – 56K;
 - Flow control None, RTS/CTS;
 - Protection ESD and short circuit;
 - Cable distance 30 meters;
17. Gateway should acknowledge the polling cycle of less than 1 sec of a master station;
18. Gateway shall be able to report its internal status to the master Centre(s). additionally, self- monitoring for individual modules and components, such as memory and communication module, to diagnose defective parts and transmit corresponding alarms to control centers (Via communication protocols);
19. Watch-dog monitoring for modules should be available;
20. The vendor shall supply any required equipment, software, and toolbox in order to download firmware to gateway processor and communication cards. In addition, vendor shall deliver all security passwords (if it is applicable) without any restriction;
21. The clock shall have an accuracy of ± 2 PPM i.e. 7.2m sec per hour or better, and minimum gateway clock resolution shall not be more than 1 msec;

27.1.3 Standardization

As far as economically and technically practicable gateway shall be equipped with identical boards or modules in a standard backplane. The layout of equipment in cabinets shall be standardized, but each gateway may not necessarily be fitted with the same number of plug-in modules or interface modules. Each gateway shall be easily expandable to a common maximum capacity without the necessity of additional wiring. Deviation from the above requirements will be acceptable and preferred where cost or other considerations indicate compliance is not in the purchaser's best interest.

The Vendor must recognize that the gateway will be exposed to relatively severe electrical transients. The Vendor shall therefore, make adequate provision for the protection of all input and output circuits, including power supply and signal circuits, to prevent improper operation or damage of equipment as a result of such transients. Gateway shall comply with the following operating standards: (test, Reference standard, Test level)

- a. Electrostatic discharge IEC 61000-4-2, level 4
- b. RF immunity, IEC 61000-4-3, Level 3
- c. Fast transient Disturbance, IEC 61000-4-4, level 4
- d. Surge immunity, IEC 61000-4-5, level 4
- e. Conducted RF Immunity, IEC 61000-4-6, level 3
- f. Conducted RF Immunity 0-150khz, IEC 61000-4-16 Level 4
- g. Radiated & Conducted Emissions, CISPR22 & CISPR32, Class A
- h. High frequency disturbance EC 255-22-1 level 3
- i. Impulse voltage withstands, EN 60255-27, 5 kV
- j. Power frequency interference: CM 500 Vac @ 2 sec
- k. Interference CISPR 11 class A.
- l. Damped Oscillatory, IEC 61000-4-18 100kHz & 1Mhz 2.5kV CM, 1kV DM
- m. Sinusoidal Vibration, IEC 60255-21-1, Class 1
- n. Shock & Bump, IEC 60255-21-2, Class 1
- o. Seismic, IEC 60255-21-3, Class 2
- p. Power magnetic Immunity IEC 61000-4-8 Level 5
- q. SAFETY, EN/IEC 60950-1: 2005, Per standard
- r. Voltage Dip & interruption, IEC 61000-4-11, 0,40,70,80% dips, 250/300cycle interrupts
- s. Change of Temperature, IEC 60068-2-14 Dual Core: -40°C to 70°C, Quad Core: -40°C to 60°C

Vendors are required to state specifically and in detail the differences if the proposed gateway has been designed and tested according to any other standards than the above.

27.1.4 Availability

The availability of the gateway shall be 99.9% over the 12-month period of maintenance exclusive of communication channel and other purchaser caused down time

$$A = \text{MTBF} / (\text{MTBF} + \text{MTTR})$$

Where:

A = Availability

MTBF = Mean Time between Failure

MTTR = Mean Time to Repair

The system hardware architecture shall be fault tolerant to ensure that any single hardware failure does not result in the loss of a critical function.

Vendors shall submit their proposed design for achieving the high availability of critical functions and data requirements specified above.

Vendors are required to describe the failover/back to normal process in detail.

The Vendor is required to provide details covering all possible aspects of maintenance of their equipment and recommended maintenance routines and schedules as well as safety procedures for problem- free gateway operation.

The method and procedures recommended should be effective and suitable for the equipment under actual operational environment conditions.

27.1.5 Equipment Installation and Construction

Equipment shall be mounted in freestanding and steel cabinet. Cabinets housing electronic equipment shall be so arranged that access to front and rear is provided; this shall be accomplished by providing swing-out unit. Cabinets which exclusively contain terminations of cabling from the process may have front only access. Cable access shall normally be from below. Cabinets shall be to uniform dimensions and finish.

In addition, cabinet shall have degree of protection provided by enclosure according to IEC 529 as Outdoor IP54 (minimum);

Capacity sufficient for the envisaged ultimate development shall be provided for each type of termination employed in each cabinet. In addition, spare terminations shall be provided as specified in datasheet.

All terminations shall be at least 300 mm above floor level. All cabinets, bays, shelves, modules, cards and other components including terminals shall be clearly marked for identification purposes. All cabinets shall be equipped with lighting and a.c. mains convenience sockets. All metalwork which is or can be made accessible and which is not live circuitry shall be earthed in accordance with the "Guide for Safety in Alternating Current Substation Grounding" IEEE No. 80, January 2000.

28. Gateway Features & Facilities

28.1 Capacity

Gateway shall initially be equipped to cater for the ultimate development as detailed in the station single line diagrams, documents and the point's list tables. Provision shall be made for expansion above these quantities by the addition, in the future, of extra plug-in modules as specified in datasheet. The Vendor shall indicate the capacity of each gateway, "as delivered", and the absolute expansion possibilities of each gateway, stating the points at which additional racks/cabinets are required.

28.2 Sequence of Event Recording (SOE)

SOE shall be provided for gateway forming part of this Contract. The SOE shall time-stamp events on occurrence in the gateway prior to their transmission to the control centers.

The resolution between any two events occurring anywhere in the power network shall be the same as the time specified in datasheet or better. The Resolution between recorded events within each substation shall be the same as the time specified in datasheet or better. The Vendor shall provide details of how the gateway time clocks are synchronized with the control center time system. This shall preferably be carried out over the communications channel. The Vendor shall state how often synchronization is carried out and shall indicate how communications transmission delays are allowed for in the synchronization procedure. Alternatively, the Vendor may provide some means of off-air time synchronization such as "Global Positioning System (GPS).

Based on the above requirements The Vendor shall provide calculations to indicate the worst possible system-wide time resolution for the control center i.e. the Vendor shall state the maximum time error which could be recorded between two simultaneous events occurring anywhere in the system under conditions of very high activity.

Gateway shall be capable of storing events in the order in which they occur. The number of time- stamped events which can be stored shall be the amount as specified in datasheet. Overflow events from time tagged memory shall be stored in non-time tagged memory.

As an option the vendor shall quote for an SOE system which provides a resolution as specified in datasheet within any gateway and a system wide resolution as specified in datasheet.

The Vendor shall state whether local time-tagging of events (i.e., at the gateway) can be carried out for non-SOE points. If so, the resolution and accuracy of the non-SOE time-tagging shall be stated.

28.3 Maintenance Port

1. At a gateway, Ethernet port shall be used for maintenance port that allow user to configure the gateway data base and program any gateway function. All necessary software shall be furnished
2. The maintenance port shall allow downloading and uploading of all programmable gateway parameters from data files generated by the gateway configuration system
3. The gateway system software shall be adequately protected against any inadvertent modification via the maintenance port during reconfiguration and, maintenance of the gateway. Additionally, data base modification and all control operations via the maintenance port shall be password protected
4. The maintenance port shall provide the ability to examine the real time state, communication and contents of memory. Simulation of status inputs, local operation of control of outputs, revision of database parameters, set time and other functionality shall be supplied via the port.

28.4 Gateway Configuration

Gateway configuration software shall be supplied to configure and program any gateway function locally and remotely.

The system shall include information on operating parameters, physical arrangement of external communication lines, module type and their parameters.

28.5 Program, Database and configuration update

The gateway database and configuration shall be editable locally or remotely with a GUI1 application or other secure means, it shall be possible to save/restore and replicate the complete configuration of the gateway on persistent external storage.

To minimize human errors, the gateway database (configuration) shall be programmatically generated (script or equivalent) from the Master database. As such the gateway configuration and database shall be integral part of the SCADA database management system.

During each start-up the gateway shall verify the integrity and the version of its local persistent database and configuration, and if necessary, shall request an update from the current active control center.

28.6 Remote Access security

All remote access and configuration transmission to the gateway shall be secured and encrypted regardless of the type connection LAN or WAN.

28.7 Test Equipment

The gateway test set shall be suitable for testing, exercising and performing fault diagnosis on a gateway. It shall be possible for the gateway test set operator to use the device to fully replicate the dialogue that would take place with the master station. Commands may be issued or interrogations engaged in as seen from the gateway. The dialogue shall be identical with that entered into in normal operations. The operator of the gateway test set shall be able to selectively access and display the contents of gateway memory.

The gateway test set shall be housed in a rugged portable carrying case. It shall have a 3-meter power lead for connection to a local power source. A keyboard for command input and a logging printer for recording the results of tests shall be provided. All inputs shall have a surge withstand capability as defined in ANSI 35.90a or IEC 255.5. It shall be possible to simulate gateway behavior such as normal response, or to simulate frequently encountered error conditions e.g. noisy communications line, vibrating contact indications etc.

All of the above test and maintenance equipment's price shall be included in the total contract price.

29. Ethernet Switch Technical Specification

In order to implement the LAN connection on the services, one Ethernet switch for each power plant is required.

The Ethernet switch shall meet the following requirements:

1. Rack-mountable in a 19" rack
2. Provide management functions through a Web interface
3. The switch shall be delivered with an installed port capacity that is 50% above the number of ports required to interconnect the delivered servers, workstations and peripherals
4. The ports shall be auto-sensing supports speeds of 10, 100 and 1000 Mbps

30. Firewall Technical Specification

Firewalls shall be deployed for all external network interfaces. For guidelines on Firewalls and Firewall Policy, NIST SP 800-41 standard provides general guidance for selection of firewalls and firewall policies. Firewalls shall include the demilitarized zone, detailed event logging, routing policy, and access levels and lists.

Firewalls are used to stop unauthorized connections between two networks or from a network to a networked device.

- a) The Contractor shall provide firewalls and firewall rule sets between network zones or provide firewall rule sets if the firewalls are not provided by the Contractor.
- b) The Contractor shall provide firewall rule sets and/or other equivalent documentation. The basis of the rule set shall be “deny all,” with exceptions explicitly identified by the Contractor. Note that this information is deemed business sensitive and shall be protected as such.
- c) Post-contract award, the Contractor shall provide detailed information on all communications (including protocols) required through a firewall, whether inbound or outbound, and identify each network device initiating a communication.
- d) Network Intrusion Detection and Prevention System: A network intrusion detection system (NIDS) is used to identify unauthorized or abnormal network traffic. In addition, network intrusion prevention system (NIPS) is able to block or stop intrusion attempts.
- e) Pre-contract award, the Contractor shall provide a recommended placement of the NIDS/NIPS within the control network.
- f) The Contractor shall provide traffic profiles with expected communication paths, network traffic, and expected utilization boundaries, for anomaly-based NIDSs.
- g) The Contractor shall provide appropriate signatures, for signature-based NIDSs.
- h) Post-contract award, the Contractor shall provide configured NIDS/NIPS and provide the information to configure NIDS/NIPS.

31. Remote Terminal Unit (RTU)

A Remote Terminal Unit (RTU) is a ruggedized, microprocessor-based electronic device used in industrial control systems to interface physical field equipment with a centralized SCADA (Supervisory Control and Data Acquisition) system.

31.1 Key Specification Areas

31.1.1 Core Hardware Specifications

- **Processor:** Typically, a high-powered 32-bit RISC or ARM Cortex processor capable of local autonomous logic execution.
- **Memory:** Common configurations include 16MB to 512MB RAM and up to 1GB Flash storage for data logging and application software.
- **Power Supply:** Often 24V DC or 48V DC (nominal), with typical operating ranges from 18V to 72V DC. AC-to-DC converters are used where only 120/240V AC is available.
- **Redundancy:** High-availability systems feature redundant CPUs and dual power supply units with transparent failover (often within 30 seconds).

31.1.2 Input/Output (I/O) Capabilities

- **Digital Inputs (DI):** Opto-isolated (up to 2.5kV) for status monitoring (e.g., breaker open/closed)

with sensing voltages typically is less than or equal to $\leq 48\text{V DC}$.

- **Analog Inputs (AI):** Supports standard ranges like 4–20 mA, 0–10V, and $\pm$ plus or minus 5V. Precision is usually 12-bit or better (e.g., resolution of 2048 counts).
- **Digital Outputs (DO):** Relay-based outputs (often 5A to 10A at 220V DC) for controlling field devices like valves or motors.
- **Pulse Accumulators:** 24-bit or 32-bit counters for tracking pulses from flow meters or energy meters.

31.1.3 Communication Protocols & Ports

- **Upstream (To Master):** Primarily uses **IEC 60870-5-104** (Ethernet) or **IEC 60870-5-101** (Serial). Other common protocols include **DNP3** and **Modbus TCP**.
- **Downstream (To IEDs/Sensors):** Uses **Modbus RTU/TCP**, **IEC 61850**, or **SNMP** to collect data from intelligent electronic devices (IEDs) and multifunction transducers.
- **Physical Ports:** Typically equipped with at least two 10/100 Mbps Ethernet ports (RJ45) and multiple RS-232/RS-485 serial ports.

31.1.4 Operational & Environmental Standards

- **Temperature Range:** Designed for harsh conditions, typically -5°C to $+55^{\circ}\text{C}$ (or -40°C to $+75^{\circ}\text{C}$ for specialized units).
- **Humidity:** 5% to 95% relative humidity, non-condensing.
- **Time Synchronization:** Internal clock stability of $\sim 1\text{--}10$ ppm, synchronized via GPS (IRIG-B/NTP) or master station messages with 1ms resolution for Sequence of Events (SOE) recording.
- **Compliance:** Built to international standards such as **IEC 61000** (EMC), **IEC 60255** (Relays), and **IEC 60870** (Tele-control).

32. SCADA Features:

- **Data Handling:** Alarming, event logging (SOE), data archiving, remote download/upload.
- **Redundancy:** CPU and power supply redundancy.
- **Diagnostics:** LEDs, local fault diagnosis.
- **Example I/O Configuration**
- **Analog:** 4-20mA (e.g., 8 points) for flow, pressure, temperature.
- **Digital:** Status inputs (e.g., 8 points) for circuit breakers, alarms; Digital outputs (e.g., 4 points) for controlling pumps, valves.

33. Data Sheet for RTU

Specification	Description	Employer's Requirement
1. Communication	IEC60870-5-	Must be supported for communication with SCADA

Protocol	104 & MODBUS protocol	systems.
2. Temperature Range	-40 to 75°C (-40 to 167°F)	Must be compliant with specified temperature range.
3.Input Output Modules (IOM)	Must include all necessary I/O functions	Must be compliant with specified IOM requirements.
4.Control Processor Module (CPM)	Must include all necessary control functions	Must be compliant with specified CPM requirements.
5.Modems and Weather Sensors	Must be provided for communication and monitoring	Must be compliant with specified modems and weather sensors requirements.

34. 3 kVA Inverter

The contractor shall supply, install, testing and commission of One (1) set of Online 240V, 50Hz, 3 kVA Inverter, powered from 110V DC distribution board/battery system and AC distribution board as bypass circuit for substation automation system in each substation, total 5(five) number of Inverter.

Technical specifications for an inverter include input voltage (the DC voltage from a power source like a battery), output voltage and frequency (the AC voltage and frequency it provides), wattage (both continuous and surge/peak power), efficiency and protection features. Key parameters like DC input voltage, AC output voltage, and wattage are crucial for compatibility with connected devices and power sources. Other specifications include physical characteristics (size, weight, protection rating), operating temperature range, and communication options.

34.1 Input Specifications

- **DC Input Voltage:** The inverter's required input voltage, typically 110V, 24V or 48V. This must match the power source, such as a battery bank in the substation.
- **Input Current:** The maximum current the inverter draws from the DC source, which is important for choosing the correct wire size.
- **Input Frequency:** For grid-tied inverters, the range of the AC grid frequency (e.g., 50 Hz or 60 Hz) that the inverter can accept.

34.2 Output Specifications

- **AC Output Voltage:** The AC voltage the inverter produces, which should match the regional standard for connected appliances (e.g., 230V).
- **Output Frequency:** The frequency of the AC output, usually 50 Hz or 60 Hz.

- **Wattage (Power):**
- **Continuous Wattage:** The power the inverter can supply continuously over a long period.
- **Peak/Surge Wattage:** The short-term power, often needed for starting up appliances with motors (e.g., refrigerators, pumps).
- **Output Waveform:** The shape of the AC output wave. A "pure sine wave" is ideal for sensitive electronics.

34.3 Efficiency & Performance

- **Efficiency:** The ratio of output power to input power, typically expressed as a percentage. A higher percentage means less energy is wasted as heat.
- **Zero Load Power:** The amount of power the inverter consumes when no load is connected.
- **Power Derating:** The reduction in output power at higher temperatures or altitudes.

34.4 Protection & Safety Features

- **Overload Protection:** Shuts down the inverter to prevent damage if too much power is drawn.
- **Short-Circuit Protection:** Protects against damage from short circuits in the output.
- **Over/Under Voltage Protection:** Protects against input and output overvoltage and under voltage.
- **Over-Temperature Protection:** Shuts down the inverter if it gets too hot.
- **Anti-Islanding Protection:** In grid-tied systems, this feature prevents the inverter from feeding power into the grid during a power outage to protect utility workers.
- **Low Battery Shutdown:** Automatically disconnects the load when the battery voltage drops to a critically low level.

34.5 Physical and Other Specifications

- **Dimensions and Weight:** Physical size and weight, important for installation planning.
- **Enclosure Protection (IP Rating):** An Ingress Protection rating, such as IP21 or IP54, indicates the degree of protection against dust and water.
- **Operating Temperature and Humidity:** The range of temperatures and humidity levels the inverter can operate within.
- **Communication Ports:** Data communication interfaces like VE. Direct, VE. Can, Bluetooth, or others for monitoring and control.
- **Warranty:** The length of the warranty period, which can be a good indicator of the product's expected lifespan.

Parameter	Specification Range/Value
1. Input Nominal Voltage	110 VDC

2. Input Voltage Range	77 VDC to 154 VDC (wide range for battery tolerance)
3. Output Nominal Voltage	230 VAC, 1-phase
4. Output Voltage Stability	$\pm 1.5\%$ to $\pm 5\%$
5. Output Frequency	50 Hz or 60 Hz (selectable/adjustable)
6. Output Waveform	Pure Sine Wave (THD $\leq 3\%$ for linear load)
7. Continuous Power Rating	Varies widely by model (e.g., 800 W to 6000 W or more)
8. Peak/Surge Power Rating	Typically, 1.5 to 2 times the continuous power for a short duration (e.g., 3000 W peak for a 2000 W continuous unit)
9. Efficiency	Typically, $>85\%$ to 91%
6. Auto switch function:	DC to AC, AC bypass
11. Transfer Time (AC Bypass)	≤ 6 ms (for models with a static transfer switch)
12. Monitoring	Real-time monitoring of the system operating status, Audible and visual alarm
13. Recording	Record the historical alarm message and can be queried
14. Stabilizer	Built in voltage regulator for Stabilize AC voltage
15. Bypass	Maintenance bypass /DC available
16. Power-On	Power-on self-test, soft output start, start auto restart while Ac or Dc is recovering
17. Operating Temperature	-25°C to $+55^{\circ}\text{C}$ (industrial/railway grade)
18. Cooling Method	Natural convection or fan-assisted (temperature controlled)
19. Protection Features	Overload, short circuit, input over/under voltage, over temperature, reverse polarity protection, low battery.
20. Communication	RS232, RS485, SNMP optional, or dry contacts for alarms
21. Mounting	Chassis mount, wall mount, or 19-inch rack mount options
22. Display	Large 128*64 digital LCD display data information, 4 led display working;
23. Dry contact	5 Routes Dry contact for (DC input fault, AC input fault, overload information, by-pass information and output fault)
24. Enclosure Protection (IP Rating)	An Ingress Protection rating, such as IP21 or IP54, indicates the degree of protection against dust and water
25. Warranty	1(One) year after the date of commercial operation
26. Standards Met	Standards like EN 50155, EN 50121, EN 61373 for shock and vibration

35. Passive Equipment

Passive equipment is included:

- 19-inch Rack
- Optical Patch panel
- Electrical Patch panel
- Required materials such as patch cord and cable management and supply of all control/data/power cables, etc.

The bidder should provide the following passive equipment for each substation.

35.1. 19-inch Rack

- The rack shall meet the following requirements that are based on Item 1.2.7 of Section IV Technical Particulars and Guarantees.
- Racks and passive equipment should be according to the chassis of equipment and should have high quality
- Rack air entrance Should be equipped with efficient filter

35.2 Optical Patch panel

The optical patch panel shall meet the following requirements:

- Cat6
- Have sufficient slots
- Rack mountable on a 19 rack (1U of space)
- Should have fiber management provision inside
- Have earthing lugs and other accessories.
- Panel cover should be slide out for easy maintenance
- Provide self-adhesive, clear label holders (transparent plastic window type) and white designation labels with the panel, for front panel labelling
- Ports clearly numbered both on front and back
- Labels on front enable each port to be named
- Color coded labels on back should offer both EIA/TIA 568A & 568B wiring
- Metal frame
- EIA/TIA 2/32 spacing

35.3 Electrical Patch panel

The electrical patch panel should fulfil following features and requirements:

- Standard 19 inches and height 1U
- Have sufficient ports for installing
- Has a sliding tray for easy access to the equipment
- Have cable ties to keep the cables fixed
- metal body for greater strength and security
- Can be installed in all racks with a depth of 60 cm
- Should have a cable guide channel in front of the patch panel in order to arrange the cables
- Prevent damage to fiber optic patch cords (Support Bar)

35.4 Test Equipment

Basic tools and test equipment are necessary to perform general maintenance and troubleshooting tasks on the equipment. Contractor shall supply all test equipment that are required for installation, acceptance testing, commissioning and maintenance.

- The supplier must provide hardware and software testing tools
- All test equipment and material shall be considered by the Contractor

35.5 Redundancy

Network availability goal is five nines so vendor should propose solution and select proper equipment with accommodable MTBF and MTTR to achieve required high availability.

There is no Alternative path and/or additional link between two stations/substations in PGCB station connectivity, so redundancy should be seen in equipment according to following:

- Full Redundancy (Processor, Power, Card Lines, Access Cards) for Aggregation Routers
- Redundancy in Processor, Power for Access Routers

35.6 Documentation

Documentation shall be comprised of below principal elements:

1. Equipment should have a complete set of manuals for installation, operation, maintenance, block diagrams, schematics and implemented software documentation (including operating system, etc.);
2. Manuals shall describe in detail the function, design and construction of each section of equipment (software and hardware) and the recommended procedure for operation, servicing, maintenance and Upgrade equipment to meet the future needs on paper and CD/DVDs;
3. All the equipment internal connections should be given in detail;
4. All the schematic drawings for the printed circuits boards and part locators should be given in detail;
5. Software documents for all the firmware should be given;
6. Configuration and test software manuals and documents should be provided both in electronic format and hard copies;
7. All the documents, configuration and test software tools should be in English.

35.7 Documentation Format

All documents including Vendor-generated drawings, original equipment manufacture's documentation and drawings shall be provided both in electronic format and as hard copies in three (3) copies. The requirement to provide hard and electronic copies applies to all the revisions of the documentation; initial and interim revisions that are delivered for review as well as final documentation.

- Electronic documents shall be supplied in a format that can be edited by the Purchaser. Documents delivered as electronic format shall be in the Purchaser's standard software format.
- All documents shall be searchable.
- All documentation shall be type written in English.
- Purchaser shall have the full property rights on all documentations submitted for the project.
- All documentation shall be provided on standard "A" size sheets and shall be presented in a durable binding which shall be suitable for stacking on shelves. The title of each document shall be clearly marked on the front cover and spine.
- Where available, a copy of all documentation shall be provided in an electronic machine- readable form (CD or DVD), in an industry standard format.
- Each document shall include a table of contents. If a document is divided into several physical volumes, each volume shall contain the complete table of contents of the whole document.

All documentation submitted by the vendor to purchaser shall be accompanied by a letter of transmittal. Furthermore, each document shall be identified by the Contract number, document number, drawing number, revision or issue number, date of release, and revision. The revision record shall include the date of the change, a brief description of the change, an indication that the change has been reviewed and approved in accordance with the vendor's quality assurance procedures, the version or release of the hardware or software to which the document applies.

36. **Fault Passage Indicator (Not Applicable)**

36.1 **Scope**

This specification covers minimum technical requirements for the design, manufacture, supply, installation, testing and commissioning of Fault Passage Indicator (FPI) to Bangladesh Rural Electrification Board (BREB) for using at distribution line.

36.2 **General**

Fault Passage Indicator (FPI) shall conform in all respects to the physical and performance requirements of this specification. The text, specification and reference to other standards supplement each other and are considered part of this specification.

36.3 **Climate Data**

Fault Passage Indicator (FPI) to be supplied against this tender shall be suitable for satisfactory use under the following climatic conditions:

1. Climate	:	Tropical, intense sunshine, heavy rain & humid. Maximum humidity and temperature often occur simultaneously
2. Maximum Temperature	:	50° C
3. Minimum Temperature	:	0°C
4. Maximum yearly weighted average Temperature	:	35° C
5. Relative humidity	:	60-100%
6. Annual mean relative humidity	:	80%
7. Average annual rain falls	:	1,500 mm
8. Maximum wind velocity	:	160 km/ hour
9. Average isokeraunic level	:	80 days/ year
10. Maximum altitude above sea level	:	1,000 meters
11. Atmospheric, Mechanical and Chemical Impurities	:	Moderately polluted

Fault Passage Indicator (FPI) as specified shall be used in tropical locations and in a hot humid environment with presence of the insects and vermin. The information is given as a guide for the Bidder and no responsibility for its accuracy will be accepted nor will any claim based on the above be entertained.

36.4 System Particulars

Sl. No.	System Characteristics	Voltage Level			
High Voltage					
1	Normal System Voltage, kV (Voltage Class)	230	132	33	11
2	Maximum System Voltage, kV	245	145	36	12
3	System Frequency, Hz	50	50	50	50
4	Phase Rotation (Anti-Clock wise)	RST	RST	RST	RST
5	Type of System Grounding	Solid	Solid	Solid	Solid

Low Voltage 415/ 240v:		
6	Normal System Voltage, V (Voltage Class)	415/ 240
7	Type of System Grounding	Solid

36.5 Applied Standard

The FPI, DCU, and Server shall conform to the latest editions of the following standards (or equivalent):

- IEC 60255 - Measuring relays and protection equipment
- IEC 61010-1 - Safety requirements for electrical equipment
- IEC 60529 - Degree of protection (IP Code)
- IEC 60870-5-101/104 - Telecontrol using basic telecontrol tasks
- IEC 61850 - Communication networks and systems for power utility automation
- IEC 61000 series - Electromagnetic compatibility (EMC)
- IEC 60068 - Environmental testing

36.6 Technical Specification

- > This Fault Passage Indicator (FPI) should indicate and monitor faults on overhead distribution Network.
- > It shall include communicable FPI, Gateway/DCU, which localize faulty section & communicate data to FPI control room.
- > This FPI shall supports following abnormalities:
 - Phase-to-phase and phase-to-earth fault currents
 - Voltage presence or absence
 - Measurement of temperature of ambient and conductor
 - Transmission of information to the control center (incl. time-stamped events), and provides local fault indication via LEDs.
 - Transient & permanent faults.
- > FPI shall operates with following characteristics:
 - Operating Voltage: 5 KV to 38 KV
 - Continuous current: 0 to 1200 Amp.
 - Frequency: 50 Hz + 5%.
 - Conductor Type: ACSR (Bare & Insulated), AAAC
 - Conductor Size: #1/0 ACSR to Martin (Bare & Insulated)
 - Communication between DCU/Gateway to control center: GPRS (4G LTE).
 - Communication between DCU/Gateway to FPI: Radio frequency (License free)/ by any means.
 - Short circuit current withstands: 31.5 kA/1 sec.
 - Basic Insulation Level: 170 KV
 - Flashing duration: >1500 hrs.
 - Reset: Both automatic reset after restoration and manual reset option (from FPI & SCADA Server also)
- > FPI set shall contains following components:
 - Communicable FPI
 - DCU/ FPI cum gateway
 - FPI Server (IEC 60870-5-101/4, DNP 3.0/ TCP-IP protocol supported).
 - Brand HMI (Min 32" display)
 - Brand desktop with necessary software/ firmware (Upgradable) for life time license.
 - Power supply for DCU/ Gateway/FPI server.
 - PS for FPI server.
- > FPI shall contains following features:
 - Storing time-stamped events in DCU/ Gateway devices or FPI server.
 - Measurement of continuous current with periodic data transmission.
 - Restrain operation of Fault Passage Indicator to prevent wrong indication due to inrush / switching current or due to auto-reclose function
 - Auto threshold function which automatically sets the threshold based on line current. Timers shall be available to prevent continuous switching of threshold unnecessarily.
 - Feature for disabling second tripping criteria.

- > FPI Shall be easily noticeable both during the day & night. It shall be visible from 100 m (min) at day & 300 m (min) at night. Flashing duration shall be minimum 1500 hrs. Angle of visibility shall be 360 degrees.
- > Protection grade for FPI shall be IP68 & DCU/Gateway shall be IP54.
- > If any DCU needed, it will be supplied by bidder. The DCU shall contain following features:
 - DCU shall be pole mounted.
 - It shall be powered by solar panel. Minimum capacity of solar panel shall be 20W, operational temperature shall be (0 deg to 55 deg). Battery shall be li-ion battery & minimum 8 Ah. Backup time must be more than 72 hrs.
 - Communication protocol shall be IEC 60870-5-101/104, DNP3, MODBUS, GPRS
 - Communication between DCU to server shall be GPRS
 - It shall be compatible to integrate with FPI & server with other brands.
- > FPI server/software shall contains following features:
 - GIS Map
 - Live diagram & current flow chart.
 - Line status
 - Fault data record
 - Unlimited user integration for fault notification through SMS & server.
 - Alarm Warning
 - Data shall be store minimum 1 yrs (which can be archivable). If additional database/ server license needed, supplier will bear at own cost.
 - Server shall send notification/SMS (during fault & restoration) to registered user.
 - Server shall integrate minimum 5000 nos DCU/ Gateway.
 - User access: Unlimited users via secure web login (mobile/laptop/desktop)
 - Validity of all software shall be lifetime.
 - It shall be compatible to integrate with SCADA system, for that it will support necessary protocol of SCADA.
 - It shall be compatible to integrate with vendor of other brand's DCU/Communicable FPI.
 - Cybersecurity: Encrypted communication, firewall, role-based access control, user authentication, audit trail

Bidder will provide necessary accessories for power supply unit of minimum 500W (bronze/ gold/ platinum certified) for Server.

36.7 Accessories:

All necessary cables, connectors, clamps, power supply units, and mounting hardware shall be included in the supply.

36.8 Operating Manual

FPI Set, DCU, Server & all other accessories shall be provided with detailed operating manual and user's guide containing technical specifications, safety warnings, important data and operating procedure in English language.

36.9 Installation, Testing & Commissioning:

The supplier shall be responsible for installation, testing, calibration and commissioning of FPI set including operating software at BREB approved site.

Upon successful testing and commissioning, FPI set shall be handed over to the BREB nominated representatives in fully functional form. The supplier shall provide in advance the physical layout plan and civil works/foundation drawings for installation of testing equipment to BREB for approval.

36.10 Training and Safe Use

The Supplier shall also provide training to five (05) engineers nominated by BREB on full operation & maintenance of FPI set. The training shall be for three (03) days duration and will be carried out at the site of installation premises. Supplier shall be given training on Installation procedure, Operational Mechanism, Operation on Software, Maintenance of FPI/DCU/Server including other functions and features. All costs related to transportation, accommodation, subsistence and other expenses will be borne by the supplier. The cost of the training shall be deemed to be included in the bid price.

The training shall comprise of a balanced combination of classroom training and hands-on experience and shall cover all aspects of equipment operation.

36.11 Nameplate

The following information shall be given on the name plate of the FPI Set & DCU (If DCU needed):

- a) Manufacturer's name
- b) Model, year of manufacture and identifying number
- c) Manufacturer logo
- d) Power, voltage and frequency

36.12 Inspection

The manufacturer shall perform the necessary inspection and tests to determine that FPI Set comply with the performance requirements of this specification. Nonconformances are unacceptable and will be rejected. REB reserves the right to witness factory tests and shall request all relevant test reports.

36.13 Packing and Shipping

- > Export packaging and shipping shall be adequate for sea transport and handling up to delivery site in Bangladesh.
- > The material shall be sealed in plastic bags or other suitable moisture proof materials and packed in sturdy arrangement in completely assembled condition. Each crate shall contain test equipment and installation instructions.
- > The material shall be skidded, crated, boxed or otherwise suitably protected against damage or loss during shipment and to facilitate field hand storage. All openings shall be effectively sealed with temporary closures to prevent entry of dust, dirt, moisture and other foreign matter.
- > The cover of the main crate shall carry the following information written in English:
 - a) Number of test equipment contained therein
 - b) Manufacturer's catalog number
 - c) Description of the material
 - d) Manufacturer's name
 - e) Purchase order number
 - f) Gross weight in kg
 - g) Bar code

36.14 Warranty

- > The manufacturer/vendor shall warrant test equipment supplied under this specification to be free from defects in design, materials, or workmanship for a period of three (3) years from the date of commissioning, unless otherwise specified in tender documents. During the period of such warranty, defective units shall be repaired or replaced at manufacturer /vendor cost.
- > If no exceptions are taken to this specification and no list of deviations is submitted, it shall be deemed that in every respect the offered test equipment conforms to this specification. Purchaser's interpretation of this specification shall be accepted.

36.15 Other Standards: (Not Acceptable)

The physical and performance requirements of the FPI Set based on other international recognized standards are acceptable only if the requirements of such standard are equivalent to or exceed the requirements quoted in this document.

Technical Data Sheet for FPI System (Not Applicable)

SL	Description	BREB Requirement
Fault Passage Indicator (Not Applicable)		
01.	Model No	To be Mentioned
02.	Manufacturer's Name	To be Mentioned
03.	Country of Origin	To be mentioned
04.	Place of Manufacturer	To be mentioned
05.	Operating Voltage	5 KV to 38 KV
06.	Continuous current	0 to 1200 Amp.
07.	Frequency	50 Hz $\pm$ 5%
08.	Conductor Type	ACSR (Bare & Insulated), AAAC
09.	Conductor Size	#1/0 ACSR to Martin (Bare & Insulated)
10.	BIL	170 KV
11.	Short circuit withstand capacity	31.5 kA/1 sec
12.	Protection Grade	IP68
13.	Wind resistance Up to	150 km/hr
14.	Visibility of LED at day	Min 100 mtr.
15.	Visibility of LED at night	Min 300 mtr.
16.	Flashing duration	1500 hrs.
17.	Reset Type	Both automatic reset after restoration and manual reset option (from FPI & SCADA Server also)
18.	Operating temperature	0 deg to 55 deg
DCU (Not Applicable)		
19.	Communication between DCU/Gateway to Server	GPRS (4G LTE)
20.	Communication between DCU/Gateway to FPI	Radio frequency (License free)/ by any means.
21.	DCU/Server's Sim integration capability	Min 05 Nos.
22.	Capability of Server	Min 5000 nos DCU/ Gateway
23.	Data storage in Server	Min 01 years
24.	Operating temperature	0 deg to 55 deg
25.	Installation	Pole Mounted
26.	Protection Grade	IP54
27.	Power supply	Solar panel (>20 W) with Li-ion battery (>8 Ah, backup >72 h without sun)
28.	Protocol	IEC 60870-5-101/104, DNP3.0, Modbus
29.	Integration	Must support multi-vendor FPI and server interoperability

Technical Parameter for Central Control Station (CCS) (Not Applicable)		
30.	Brand	To be mentioned by the bidder
31.	Model	To be mentioned by the bidder
32.	Country of Origin	To be mentioned by the bidder
33.	Processor	Intel Xeon Silver 4410 Y or higher, Min 2 GHz, No of core min 12/24 T, Cache Min 2 x 30 MB
34.	No of Processor	02 Nos.
35.	NIC	Integrated Dual Port 1GbE BASE-T
36.	RAM	Minimum 2 x 32 GB (DDR5), Frequency 4800 MHz
37.	Hard Drive	Min 1 x 2.4 TB SAS
38.	OS	Minimum windows 11 (Licensed)
39.	Display	32 Inch LED/IPS from Dell/HP
40.	Product Warranty	03 Year
41.	Protocol	IEC-60870-5-101/104, DNP3.0
42.	Capacity	Minimum 5000 DCU/Gateway
43.	Data storage	1 year (archivable)
44.	User access	Unlimited users via secure web login (mobile/laptop/desktop)
45.	Cybersecurity	Encrypted communication, firewall, role-based access control, user authentication, audit trail
46.	Power Supply Unit	Minimum 800 W (bronze/gold/platinum certified), Dual, Hot Plug, Redundant Power Supply (1+1)
47.	Antivirus	Shall be Licensed

37. Environmental and Reliability Standards

Reliability: High Mean Time between Failure (MTBF) for continuous 24/7 operation.

Standards: Compliance with relevant IEC standards for electrical utility equipment and software (e.g., IEC 60870 series, IEC 61850).

Environmental: Suitable for a standard control room environment with appropriate HVAC (heating, ventilation, and air conditioning).

38. Inverter System for Uninterruptable Power Supply

The Contractor shall supply, install, testing and commissioning of Online 240V, 50Hz, 3kVA Inverter, powered from 110V DC distribution board and AC distribution board as bypass circuit for substation automation system and Central Control Station in each substation.

Parameter	Specification Range/Value
1. Name of the Manufacturer	To be mentioned
2. Country of Origin	To be mentioned
3. Input Nominal Voltage	110 VDC
4. Input Voltage Range	77 VDC to 154 VDC (wide range for battery tolerance)
5. Output Nominal Voltage	230 VAC, 1-phase
6. Output Voltage Stability	±1.5% to ±5%
7. Output Frequency	50 Hz or 60 Hz (selectable/adjustable)
8. Output Waveform	Pure Sine Wave (THD ≤ 3% for linear load)
9. Continuous Power Rating	Varies widely by model (e.g., 800 W to 6000 W or more)
10. Peak/Surge Power Rating	Typically, 1.5 to 2 times the continuous power for a short duration (e.g., 3000 W peak for a 2000 W continuous unit)
11. Efficiency	Typically, >85% to 91%
12. Auto switch function	DC to AC, AC bypass
13. Transfer Time (AC Bypass)	≤6 ms (for models with a static transfer switch)
14. Monitoring	Real-time monitoring of the system operating status, Audible and visual alarm
15. Recording	Record the historical alarm message and can be queried
16. Stabilizer	Built in voltage regulator for Stabilize AC voltage
17. Bypass	Maintenance bypass /DC available
18. Power-On	Power-on self-test, soft output start, start auto restart while Ac or Dc is recovering
19. Operating Temperature	-25°C to +55°C (industrial/railway grade)
20. Cooling Method	Natural convection or fan-assisted (temperature controlled)
21. Protection Features	Overload, short circuit, input over/under voltage, over temperature, reverse polarity protection, low battery.
22. Communication	RS232, RS485, SNMP optional, or dry contacts for alarms
23. Mounting	Chassis mount, wall mount, or 19-inch rack mount options
24. Display	Large 128*64 digital LCD display data information,4 led display working;
25. Dry contact	5 Routes Dry contact for (DC input fault, AC input fault, overload information, by-pass information and output fault)
26. Enclosure Protection (IP Rating)	An Ingress Protection rating, such as IP21 or IP54, indicates the degree of protection against dust and water
27. Warranty	3 (Three) years after the date of commercial operation
28. Standards Met	Standards like EN 50155, EN 50121, EN 61373 for shock and vibration

39. Staff Training

Training for the following categories of staff shall be included in the contract.

SCADA Staff to be involved in development of Technological data for BREB system (from start to finish), Hardware training on Substation Automation System (SAS) with SCADA and Master Station in Narsingdi PBS, Remote Station in Algi, Amdia, Gazaria & Shilmandi 33/11kV AIS substation, Modem etc. and software training in data entry and database maintenance/data engineering. Herewith an indicative training plan is given. The training should start immediately after the signing of contract & the training must be finished before starting works at Algi, Amdia, Gazaria & Shilmandi 33/11kV AIS substation or agreed upon the purchaser. The overseas training should be arranged at manufacturer's Global center i.e. manufacturer's own laboratory in its principal country

The target of the training is to prepare users, administrators and maintenance personal to take responsibility for the operations, maintenance, extensions and upgrading of the system. The Contractor shall provide a training program that meets the following criteria:

The training shall be organized in such a way as to offer all round training for the BREB/PBS's personnel.

The contractor shall include in the offer costs for BREB trainees' travel, accommodation and meals.

The Contractor shall propose a detail training plan suitable for the offered system.

39.1 Technical Training Schedule-1:

Course	Intended trainee	Course length, days	Number of trainees	Location	Qualification Criteria
Local technical training for BREB/PBS personnel on operation, maintenance of SCADA/Substation Automation System (SAS)	Maintenance and System responsible	7	8	In country	BREB/PBS personnel

39.2 Technical Training Schedule-2:

Course	Intended trainee	Course length, days	Number of trainees	Location	Qualification Criteria
Foreign technical training for BREB/PBS personnel on operation, maintenance of SCADA/Substation Automation System (SAS), Gateway/ RTU Configuration & Data Engineering	Maintenance and System responsible	7	4	SAS OEM overseas office	BREB/PBS personnel

Operator Training to be Held on Site using the Delivered System.

The contractor shall include in the offer costs for BREB trainees' travel, accommodation, meals and per day allowance which is described in the specification of the tender document and as per govt. rules. The training shall be arranged as classroom training in a facility suitable for the training purpose. Trainings to be held on site will require access to the delivered system. In case training events cannot be held overseas due to international travel restrictions it shall be conducted locally as per schedule 2. For the Schedule-2, Bidder should arrange the training in a very calm and quiet place so that trainees can fully concentrate on the training topics. There should have full facility to provide detail training on the course curriculum as per schedule-2.

This scope highly emphasis on training. After installing the SAS/ADMS system, BREB will operate the SAS/ADMS system with the help of the bidder as per the contract document within the specified time that is 03 (three) years from the commissioning date. During this period BREB will gather the experience of the different troubleshooting and will become expert on operation of SAS/SCADA system. Before that a basic training on operation, configuration, and maintenance of SAS/SCADA system is mandatory. Here describes 2 schedules of training. Schedule 1 & schedule 2 contain the same course curriculum. Schedule 1 is applicable for local training & schedule 2 is applicable for overseas training. BREB is looking onto the overseas training first to know how about the SAS/SCADA system from the manufacture end as there has a lot of facilities to simulate, to configure and to troubleshoot the hardware and the software which are using in that system. In Schedule-1, the training will be held in country where some experts will teach about the SAS/SCADA system through remote or by present. All the schedules are decorated as hands-on training. To fulfill this condition there need present local bidders from as described in document.

For Schedule -1:

The training should include SAS/SCADA system configuration, operation & data engineering, system maintenance, troubleshooting, simulation, fault analysis, report analysis, load flow study, demand side management, SAIDI & SAIFI study and report analysis, refreshment tour etc. It is too important to concentrate on the topics as well as to configure the full SAS/ADMS System by the trainees. Considering this the bidder needs to arrange the total training program. The training room should be fully decorated with high resolution projector screen, air conditioning training room facilities, high speed internet connectivity, individual laptop using facilities with comfortable seating arrangement, dining facilities etc. Also, the bidder should have ensured proper health & safety environment in training room. The bidder should provide single room for each and every participant with sufficient living facilities. The bidder should arrange refreshment tour on that holiday. There should also have refreshment facilities like common room, TV room etc. There shall payable honourarium of per diem allowance for each participant as per Bangladesh government rules.

For Schedule -2 :

The training should include SAS/SCADA system configuration, operation & data engineering, system maintenance, troubleshooting, simulation, fault analysis, report analysis, load flow study, demand side management, SAIDI & SAIFI study and report analysis, refreshment tour etc. The training will be held in overseas. All the cost of the participants included air ticket, VISA, accommodation, fooding, internal travelling (if needed) cost will be borne by bidder. This cost will be included in the bid price. Also, the bidder should provide per diem allowance for each participant as per government rules. The training will be held in manufacture's factory premises having proper troubleshooting and simulation facilities. The bidder has to provide accommodation for each participant having all basic facilities including single living room.

40. Factory Acceptance Test (FAT)

Prior to shipping

The Substation Automation System (SAS) & Gateway shall be made available for a system testing at overseas factory site of the manufacturer. This testing shall be demonstrating that all contracted parts have been properly integrated and is ready for shipping and deployment at site. The Implementation Specification will detail what will be the necessary inputs to the testing. If no customer data is available at the time of testing or if the system is strictly base line with no or only very little customer specific code it shall be enough to do the testing based on reference data supplied by the Contractor. Prior to testing the Contractor shall share a copy of the intended test procedure to the Client, these are subject for approval by the Client only if there are custom specific development involved in the project.

The Client shall have a right to ask for own time and testing using his own test procedures, however time and extend shall be agreed in advance with the Contractor but not limited to as per tender document.

The FAT shall be conducted at the SCADA OEM (Original Equipment Manufacturer) overseas offices. In case this cannot be held overseas due to international travel restrictions it shall be conducted remotely following international best practice. FAT should be conducted at manufacturer's country of origin which is declared in the tender document. All the cost of the participants included air ticket, VISA, accommodation, fooding, internal travelling (if needed) cost will be borne by bidder. The cost of the factory acceptance test (FAT) shall be deemed to be included in the bid price. Also, the bidder should provide per diem allowance for each participant as per Bangladesh government rules. Factory Acceptance Test (FAT) will be held in manufacture's factory premises having proper troubleshooting and simulation facilities. The bidder has to provide hotel accommodation for each participant having all basic facilities including single living room.

FAT Schedule

SL No	Description of FAT	Location	FAT Duration including travel time	No. of Participants	Qualification Criteria
1	The Substation Automation System (SAS), as per instruction of the employers/ engineering - in - charge	Manufacturer's factory premises	7 days/As per actual requirements	3	BREB/PBS Personnel

41. Technical Particulars and Guarantees

41.1 SCADA Server

Sl. No.	Description	Minimum Requirements		Guaranteed
		Unit	Data	
1	SCADA Server			
1.1	Manufacturer		Insert	
1.2	Country of origin		Insert	
1.3	Type		Insert	
1.4	Standards		IEC	
1.5	Type of housing		Industrial 19" rack	
2	Characteristics			
2.1	Auxiliary supply voltage			
2.1.1	Rated auxiliary supply voltage	V d.c.	110 ±15 %	
2.1.2	Dual power supply		Yes	
2.2	Processor type		Insert	
2.3	Processor clock	GHz	Insert	
2.4	Memory type		Insert	
2.5	Memory capacity	MB	Insert	
2.6	Video display adapter type		Insert	
2.7	Video display adapter memory		Insert	
2.8	Hard disc type		Insert	
2.9	Rotating hard disc	Yes/No	Insert	
2.10	Hard disc capacity	GB	Insert	
2.11	Number of hard discs	Pcs.	Insert	
2.12	RAID controller type		Insert	
2.13	DVD RW type		Insert	
2.14	Serial interface RS232		Yes	
2.15	Number of serial interfaces		Min. 2	
2.16	Fast Ethernet network interface card type		Insert	
2.17	Number of fast Ethernet network interface cards	Pcs.	4	
2.18	Fans	Yes/No	Insert	
2.19	Monitor 19"	Pcs.	1	
2.19.1	Manufacturer		Insert	
2.19.2	Country of origin		Insert	
2.19.3	Type		TFT	
2.19.4	Standards		IEC	
2.19.5	Supply voltage			
2.19.5.1	Rated auxiliary supply voltage	V a.c.	110 ±15 %	
2.19.5.2	Power consumption	W	Insert	
2.20	Vertical frequency	Hz	Insert	
2.21	Max. resolution		Insert	
	Overall compliance with the requirements (yes/no)			

41.2 Substation Automation System (SAS)

Description	Unit	Employer's Requirement	Guaranteed
1. Name & address of the Manufacturer	-	To be mentioned	
2. Country of Origin and Manufacture (Shall be the same)	-	To be mentioned	
3. General Requirement:			
3.1 Communication protocol at all levels	-	IEC61850. Fully complying with the standard.	
3.2 Temperature range (min/max) Computer	° C	0 to 50	
3.3 Relative humidity	%	20 to 93 non- condensing	
3.4 System performance, interoperability and interchangeability test among ABB (Switzerland/Sweden/Finland)/ Hitachi (Switzerland/Sweden)/Siemens (Germany)/ Alstom (France/UK) and SEL (USA) IEDs done in the system verification center.	-	Yes	
3.5 All updated SCD, ICD and CID files shall be provided in portable hard drives and CD/DVD	-	YES	
4. Detailed Requirements			
4.1 Manufacturer of the Automation Panel		To be mentioned	
4.2 Country of Origin of the Automation Panel		To be mentioned	
4.3 The Automation Panel shall be from the origin of the manufacturer of the system	-	Yes	
4.4 Name of the Substation Automation System Software	-	To be mentioned	
4.5 Name and Address of the Substation Automation System Software manufacturer	-	To be mentioned	
4.6 Engineering and Assembling of the substation automation system shall be from the origin of the system		Yes	
4.7 Automation equipment Manufacturer's experience	Year	10	
4.8 Number of years of proven field experience of offered system. (Note: proof of experience should be furnished. The components used in the offered system and those with field experience should be the same)	Year	5	

4.9 Model of the Substation Automation System		To be mentioned	
4.10 Design life of Substation Automation System	Year	≥ 20	
4.11 Manufacturers quality assurance system	-	ISO 9001/9002 or equivalent	
4.12 Dimensions of cubicle	mm	To be mentioned	
4.13 Floor load	N/m ²	max. 600	
5. Station Level Equipment			
5.1 Station Computer	-	Industrial PC (From Internationally Reputed Manufacturer)	
5.2 Power supply to the servers	-	230V AC from Inverter	
5.3 Operating System	-	Windows	
5.4 All standard picture as per Tspec included in HMI	-	To be provided	
5.5 Process Status Procedures	-	To be provided	
5.6 Event processing as per Tsp Ec	-	To be provided	
5.7 Alarm processing as per Tspec	-	To be provided	
5.8 Trend Display as per Tspec	-	To be provided	
5.9 User Authority levels as per spec	-	To be provided	
5.10 System supervision & monitoring as per Tspec	-	To be provided	
5.11 Automatic sequence control as per Tspec	-	To be provided	
5.12 High quality SCD file complete with ICD files& station topology	-	To be provided	
5.13 Operator Work Station (Master/Backup workstation) shall have separately connection o different Ethernet switch		Yes	
5.14 MTBF (Mean time between Failures)	Hrs.	Shall be mentioned	
5.15 MTTR (Mean time to repair)	Hrs.	Shall be mentioned	
5.16 Dual Station Computers Provided in redundant hot standby configuration		YES	
5.17 Number of years of proven field experience of offered software	Yrs.	5	
6. Gateway to Central Control Room			

6.1 Name of manufacturer, Address & Country of origin	-	To be mentioned	
6.2 Model no.	-	To be provided	
6.3 Number of years of proven field experience of offered unit	Year	5	
6.4 Insulation tests	-	As per IEC60255-5	
6.5 Fast disturbance tests	-	IEC 61000-4-4, Class 4	
6.6 Industrial environment	-	EN50081-2 Class A	
6.7 Industrial grade hardware with no moving parts (PC-based gateway is not accepted)	-	To be provided	
6.8 Design life of offered equipment	Year	20	
6.9 Redundant communication channel	-	To be provided	
6.10 Redundant CPU	-	To be provided	
6.11 Redundant DC/DC Supply	-	To be provided	
6.12 MTBF (Mean time between Failures)	Hrs	To be mentioned	
6.13 MTTR (Mean time to repair)	Hrs	To be mentioned	
7. Station Bus			
7.1 Connection between Ethernet switches		Glass fiber optic	
7.2 Connection between Ethernet switches and IPC, Gateway, Firewall, Printer etc.		Ethernet	
8. Inter bay Bus			
8.1 Physical Medium		Glass fiber optic	
9. Event Printer			
9.1 MTBF	Hrs	To be mentioned	
10. Hard Copy Colour Printer			
10.1 MTBF	Hrs	To be mentioned	
7. Master Clock GPS (Global Positioning System) Receiver			
11.1 Name of the manufacturer & country of origin	-	To be mentioned	
11.2 Manufacturer's address	-	To be mentioned	
11.3 Model		Shall be mentioned	
11.4 MTBF	Hrs.	Shall be mentioned	
8. Ethernet Switch			
12.1 Name of manufacturer & address	-	To be mentioned	
12.2 Model number	-	To be mentioned	
12.3 Type		Industrial Grade,	

		rackmount	
12.4 Redundant Power supply	-	To be provided	
12.5 Ethernet switch shall have dual connection to each other.		Yes	
12.6 Communication Port		Optical with LC connector & Ethernet (Must be compatible with IED Communication Port)	
13. Operator Work Station (OWS)			
13.1 Brand	-	Any International reputed brand.	
13.2 Model	-	To be mentioned	
13.3 Type	-	Industrial PC	
13.4 Country of Manufacture	-	To be mentioned	
13.5 Processor	GHz	Intel core i7/ Core Ultra 7 13th generation or latest generation	
13.6 Clock Speed	GHz	3.0 GHz (min), 30 MB Cache Memory (min)	
13.7 Bus Speed	MHz	Min. 3200 MHz or higher	
13.8 RAM	GB	16 GB, Expandable to 32 GB (min.)	
13.9 HDD	TB	2 x 1 TB NVMe SSD (RAID)	
13.10 OS	-	Licensed windows with Software recovery kit	
13.11 Software	-	Lifetime Licensed Anti-Virus Software	
13.12 Mouse	-	Reputed Brand Wireless Optical Mouse	
13.13 Keyboard	-	Integrated standard Keyboard	
13.14 Monitor	inch	32", Full HD (min)	
13.15 Battery	-	Lithium-ion battery	
13.16 Battery Backup	-	6 hours or higher with AC Adapter	
14. Engineer Work Station (EWS)			
14.1 Brand	-	Any International reputed brand.	

14.2 Model	-	To be mentioned	
14.3 Country of Origin	-	To be mentioned	
14.4 Processor	GHz	Intel Core i5 Processor, 13th generation or latest	
14.5 Clock Speed	GHz	3.0 GHz (min), 20 MB Cache Memory (min)	
14.6 Bus Speed	MHz	Min. 3200 MHz or higher	
14.7 RAM	GB	16 GB DDR4	
14.8 HDD	GB	1 TB NVMe SSD	
14.9 Mouse	-	Reputed Brand Wireless Optical Mouse	
14.10 Keyboard	-	Integrated standard Keyboard	
14.11 Monitor	inch	32", Full HD (min)	
14.12 Battery	-	Lithium-ion battery	
14.13 Battery Backup	-	6 hours or higher with AC Adapter	
14.14 OS Support	-	Windows 11 professional or latest	
14.15 OS	-	License windows with recovery kit	
14.16 Software	-	All types of configuration software with licenses for SAS and IED, Licensed Anti-Virus Software, Licensed OS & other necessary software	
15. Laser Color Printer			
15.1 Brand	-	Any International reputed brand.	
15.2 Model	-	To be mentioned	
15.3 Country of origin	-	To be mentioned	
15.4 Toner type	-	Toner and associated drum unit in single case, No starter toner. output tray, 250-sheet facedown output tray purpose	
15.5 Media Sizes	-	Letter, Legal, A4, A5, B5 and custom sizes	

15.6 Media Types	-	Paper (Plain, Preprinted, Letterhead, Bond, Paper (Plain Color, Recycled, Rough), Transparencies, Labels	
16. Event Printer			
16.1 Brand	-	Any International reputed brand.	
16.2 Model	-	To be mentioned	
16.3 Country of origin	-	To be mentioned	
16.4 Print Method	Pin	9 Pin Serial Impact Dot Matrix.	
16.5 Print Speed	Lps	Min. 6.0 LPS (30 Columns:16 CPI).	
16.6 Data Buffer	KB	4KB.	
16.7 Inked Ribbon	-	ERC-38(Black/Red).	
16.8 Interface	-	USB Interface, Bi-directional parallel.	
17. System Performance			
17.1 Exchange of display (First reaction)	Sec	<1	
17.2 Presentation of a binary change in the Process display	Sec	< 0.5	
17.3 Presentation of an analogue change in the process display	Sec	<1	
17.4 From order to process output	Sec	< 0.5	
17.5 From order to updated of display	Sec	< 1.5	
18. Protocol Converter / IO module, if required			
18.1 Brand	-	To be mentioned	
18.2 Model	-	To be mentioned	
18.3 Country of Manufacturer	-	To be mentioned	
18.4 Detail Signaling & Interlocking system		To be included	
19. Firewall			
19.1 Name of Manufacturer		To be mentioned	
19.2 Brand		To be mentioned	
19.3 Model/Type		To be mentioned	
19.4 Origin		To be mentioned	

19.5 IP Filtering Port Filtering MAC Filtering Port Forwarding DMZ Denial of Service NAT Mapping		To be provided	
19.6 Packet throughput of at least 150 Mbps		To be mentioned	
19.7 3DES Encryption throughput of 20 Mbps		To be mentioned	
19.8 Support for 200 VPNs		To be mentioned	
19.9 Maximum concurrent sessions, with AVC		To be mentioned	
19.10 Maximum new connections per second, with AVC		To be mentioned	
19.11 Local On-device Management		Yes	
19.12 Application Visibility and Control (AVC)		Standard	
19.13 Security Intelligence		Standard, with IP, URL, and DNS threat intelligence	
19.14 List (Name & version) of all types of software required for SAS configuration, operation, monitoring and Remote control individually for Both OWS and EWS		To be mentioned	
20. Others Requirement			
20.1 All Licenses required for the system including future SCADA connection with physical communication port ready installed		To be provided as per requirement of employer	
20.2 The Communication device shall support for future SCADA connection		IEC 60870-5-104	
20.3 Facility for measuring SAIDI SAIFI		To be included	
20.4 The license provided for all kind of software related to SAS must be lifetime duration.			

41.3 Remote Terminal Unit (RTU)

SL No.	Description	Employer's Requirement	Manufacturer's Guaranteed Particulars
1.	Name and Address of Manufacturer	To be mentioned	
2.	Country of Origin	To be mentioned	
3.	Manufacture's Model no.	To be mentioned	
4.	Standard	To be mentioned	
5.	Communication Protocol	IEC 60870-5-104 & MODBUS Protocol	
6.	Temperature Range	-40 to 75°C (-40 to 167°F)	
7.	Input Output Modules (IOM)	Must include all necessary I/O functions	
8.	Control Processor Module (CPM)	Must include all necessary control functions	
9.	Modems and Weather Sensors	Must be provided for communication and monitoring	

41.4 FPI System (Not Applicable)

Serial No.	Description	BREB Requirement	Bidder's Guaranteed Particulars
Fault Passage Indicator			
01.	Model No	To be Mentioned	
02.	Manufacturer's Name	To be Mentioned	
03.	Country of Origin	To be mentioned	
04.	Place of Manufacturer	To be mentioned	
05.	Operating Voltage	5 KV to 38 KV	
06.	Continuous current	0 to 1200 Amp.	
07.	Frequency	50 Hz $\pm$ 5%	
08.	Conductor Type	ACSR (Bare & Insulated), AAAC	
09.	Conductor Size	#1/0 ACSR to Martin (Bare & Insulated)	
10.	BIL	170 KV	
11.	Short circuit withstand capacity	31.5 kA/1 sec	
12.	Protection Grade	IP68	
13.	Wind resistance Up to	150 km/hr	
14.	Visibility of LED at day	Min 100 mtr.	
15.	Visibility of LED at night	Min 300 mtr.	
16.	Flashing duration	> 1500 hrs.	
17.	Reset Type	Both automatic reset after restoration and manual reset option (from FPI & SCADA Server also)	
18.	Operating temperature	0 deg to 55 deg	
DCU (Not Applicable)			
19.	Communication between DCU/Gateway to Server	GPRS (4G LTE)	
20.	Communication between DCU/Gateway to FPI	Radio frequency (License free)/ by any means.	
21.	DCU/Server's Sim integration capability	Min 05 Nos.	
22.	Capability of Server	Min 5000 nos DCU/ Gateway	
23.	Data storage in Server	Min 01 years	
24.	Operating temperature	0 deg to 55 deg	
25.	Installation	Pole Mounted	
26.	Protection Grade	IP54	
27.	Power supply	Solar panel (>20 W) with Li-ion battery (>8 Ah, backup >72 h without sun)	
28.	Protocol	IEC 60870-5-101/104, DNP3.0, Modbus	
29.	Integration	Must support multi-vendor FPI and server interoperability	
Technical Parameter for Central Control Station (CCS) (Not Applicable)			

30.	Brand	To be mentioned by the bidder	
31.	Model	To be mentioned by the bidder	
32.	Country of Origin	To be mentioned by the bidder	
33.	Processor	Intel Xeon Silver 4410 Y or higher, Min 2 GHz, No of core min 12/24 T, Cache Min 2 x 30 MB	
34.	No of Processor	02 Nos.	
35.	NIC	Integrated Dual Port 1GbE BASE-T	
36.	RAM	Minimum 2 x 32 GB (DDR5), Frequency 4800 MHz	
37.	Hard Drive	Min 1 x 2.4 TB SAS	
38.	OS	Minimum windows 11 (Licensed)	
39.	Display	32 Inch LED/IPS from Dell/HP	
40.	Product Warranty	03 Year	
41.	Protocol	IEC-60870-5-101/104, DNP3.0	
42.	Capacity	Minimum 5000 DCU/Gateway	
43.	Data storage	1 year (archivable)	
44.	User access	Unlimited users via secure web login (mobile/laptop/desktop)	
45.	Cybersecurity	Encrypted communication, firewall, role-based access control, user authentication, audit trail	
46.	Power Supply Unit	Minimum 800 W (bronze/gold/platinum certified), Dual, Hot Plug, Redundant Power Supply (1+1)	
47.	Antivirus	Shall be Licensed	

41.5 Communication System

Sl. No	Description	Unit	Employer's Requirement	Manufacturer's Guaranteed Particulars
1.	Name of ISP		To be mentioned	
2.	Communication Media		Fiber optic/RF/WLAN	
3.	Technology used in Communication		MPLS	
4.	Uptime		99.95%	
5.	Data Speed		10 Mbps (Minimum)	
6.	Capacity of Extension		up to 1 Gbps (Minimum)	
7.	Warranty		3 years from date of acceptance	

41.6 Inverter System for Uninterrupted Power Supply

Sl. No	Description	Unit	EMPLOYER'S Requirement	Manufacturer's Guaranteed Particulars
1.	Name and Address of Manufacturer		To be mentioned	
2.	Country of Origin		To be mentioned	
3.	Manufacture's Model no.		To be mentioned	
4.	Input Nominal Voltage		110 VDC	
5.	Input Voltage Range		77 VDC to 154 VDC (wide range for battery tolerance)	
6.	Output Nominal Voltage		230 VAC, 1-phase	
7.	Output Voltage Stability		±1.5% to ±5%	
8.	Output Frequency		50 Hz or 60 Hz (selectable/adjustable)	
9.	Output Waveform		Pure Sine Wave (THD ≤ 3% for linear load)	
10.	Continuous Power Rating		Varies widely by model (e.g., 800 W to 6000 W or more)	
11.	Peak/Surge Power Rating		Typically, 1.5 to 2 times the continuous power for a short duration (e.g., 3000 W peak for a 2000 W continuous unit)	
12.	Efficiency		Typically, >85% to 91%	
13.	Auto switch function:		DC to AC, AC bypass	
14.	Transfer Time (AC Bypass)		≤6 ms (for models with a static transfer switch)	
15.	Monitoring		Real-time monitoring of the system operating status, Audible and visual alarm	
16.	Recording		Record the historical alarm message and can be queried	
17.	Stabilizer		Built in voltage regulator for Stabilize AC voltage	
18.	Bypass		Maintenance bypass /DC available	
19.	Power-On		Power-on self-test, soft output start, Start auto restart while Ac or Dc is recovering	
20.	Operating Temperature		-25°C to +55°C (industrial/railway grade)	
21.	Cooling Method		Natural convection or fan-assisted (temperature controlled)	
22.	Protection Features		Overload, short circuit, input over/under voltage, over temperature, reverse polarity protection, low battery.	
23.	Communication		RS232, RS485, SNMP optional, or dry contacts for alarms	
24.	Mounting		Chassis mount, wall mount, or 19-inch rack mount options	
25.	Display		Large 128*64 digital Lcd display data information, 4 led display working;	
26.	Dry contact		5 Routes Dry contact for (DC input fault, AC input fault, overload information, by-pass information and output fault)	
27.	Enclosure Protection (IP Rating)		An Ingress Protection rating, such as IP21 or IP54, indicates the degree of protection against dust and water	
28.	Warranty		1(One) year after the date of commercial operation	
29.	Standards Met		Standards like EN 50155, EN 50121, EN 61373 for shock and vibration	

41.7 Cabinet

Sl. No.	Description		Minimum Requirements		Guaranteed
			Unit	Data	
1.	Mfg. and Model				
2.	Size (Rack Unit)	Based on the Proposed Solution			
3.	Mounting Frame Size	Based on the Proposed Solution			
4.	Dimension (WxHxD)	Based on the Proposed Solution			
5.	Minimum IP (Ingress Protection)	42 indoor 54 outdoor			
6.	Installation Type	Freestanding			
7.	Access	Front & Rear or sides			
8.	Number of Fans	Minimum 2			
9.	Digital Thermostat with Display	1			
10.	LED Lamp	Yes			
11.	Earthing	Yes			
12.	Security Lock	Yes			
13.	Patch Panels and Blank Panels	Yes			
14.	PDU with Earthing	Yes			
15.	PDU sockets is compatible with cabinet equipment plug and socket types	Yes			
16.	Number of PDUs	2 (If Dual AC power source) (If power unit of devices is AC)			
17.	Number of PDU sockets	≥ 10			
18.	With Required Accessories (including LED lamp, installation accessories, power-supply accessories, cable-holder, cable, gland, ...)	Yes			

41.8 19" inch rack

Sl. No.	Description		Minimum Requirements		Guaranteed
			Unit	Data	
1.	Materials	High quality SPCC cold rolled steel			
2.	Surface process	defatting; phosphating; spray color			
3.	thickness	Installation specifications 2.0 mm; Other sizes 1.2-1.5 mm			
4.	Color	RAL9004 (black); Other items may be required			
5.	Compliant standards	ANSI/EIA; RS-310-D; IEC297-2; DIN41491; Part1; DIN41494; PAR7; GB/T3047.2-92; ETSI			
6.	width	600 mm, 800 mm			
7.	Height	42U, 45U, 47U			
8.	Depth	800 mm, 900 mm, 1000 mm, 1100 mm, 1200 mm			
9.	Loading capacity	1000 kg (with Nine-fold frame)			
10.	Materials	High quality SPCC cold rolled steel			

Section 6.3: Form of Completion Certificate

Form of Completion Certificate

Contract No:

Date:

To:

[Name of Contractor]

Pursuant to GCC Clause 42 (Completion of the Facilities) of the General Conditions of the Contract entered into between yourselves and the Procuring Entity dated *[insert date]*, for the supply and installation of plant and Services for *[name of contract]*, we hereby notify you that the following part(s) of the Facilities was (were) complete on the date specified below, and that, in accordance with the terms of the Contract, the Procuring Entity hereby takes over the said part(s) of the Facilities, together with the responsibility for care and custody and the risk of loss thereof on the date mentioned below.

1. Description of the Facilities or part thereof: _____
2. Date of Completion: _____

However, you are required to complete the outstanding items listed in the attachment hereto as soon as practicable.

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

for and on behalf of the Procuring Entity

[***Signature***]

[***Title of the Project Manager***]

Section 6.4: Form of Operational Acceptance Certificate

Form of Operational Acceptance Certificate

Contract No:

Date:

To:

[Name of Contractor]

Pursuant to GCC Clause 43.3 (Operational Acceptance) of the General Conditions of the Contract entered into between yourselves and the Procuring Entity dated *[insert date]*, for the supply and installation of plant and Services for *[name of contract]*, we hereby notify you that the Functional Guarantees of the following part(s) of the Facilities were satisfactorily attained on the date specified below.

1. Description of the Facilities or part thereof: _____
2. Date of Operational Acceptance: _____

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

for and on behalf of the Procuring

Entity [***Signature***]

[***Title of the Project Manager***]

Section 6.5: Form of Change Order Procedure and Forms

Form of Change Order Procedure and Forms

Contract No:

Date:

To:

[Name of Contractor]

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1. General
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Annex 6 Pending Agreement Change

Order Annex 7 Application for

Change Proposal

Change Order Procedure

1. General

This section provides samples of procedures and forms for implementing changes in the Facilities during the performance of the Contract in accordance with GCC Clause 69 (Change in the Facilities) of the General Conditions.

2. Change Order Log

The Contractor shall keep an up-to-date Change Order Log to show the current status of Requests for Change and Changes authorized or pending, as Annex 8. Entries of the Changes in the Change Order Log shall be made to ensure that the log is up-to-date. The Contractor shall attach a copy of the current Change Order Log in the monthly progress report to be submitted to the Procuring Entity.

3. References for Changes

- (1) Request for Change as referred to in GCC Clause 69 shall be serially numbered CR-X-nnn.
- (2) Estimate for Change Proposal as referred to in GCC Clause 69 shall be serially numbered CN-X-nnn.
- (3) Acceptance of Estimate as referred to in GCC Clause 69 shall be serially numbered CA-X-nnn.
- (4) Change Proposal as referred to in GCC Clause 69 shall be serially numbered CP-X-nnn.
- (5) Change Order as referred to in GCC Clause 69 shall be serially numbered CO-X-nnn.

Note: (a) Requests for Change issued from the Procuring Entity's Home Office and the Site representatives of the Procuring Entity shall have the following respective references:

Home Office	CR-H-nnn
Site	CR-S-nnn

- (b) The above number "nnn" is the same for Request for Change, Estimate for Change Proposal, Acceptance of Estimate, Change Proposal and Change Order.

Annex 1. Request for Change Proposal

(Procuring Entity's Letterhead)

To:

Date:

Attention:

Contract Name:

Contract Number:

With reference to the captioned Contract, you are requested to prepare and submit a Change Proposal for the Change noted below in accordance with the following instructions within _____ days of the date of this letter _____.

1. Title of Change: _____
2. Change Request No. _____
3. Originator of Change: Procuring Entity: _____
Contractor (by Application for Change Proposal No. _____¹:
4. Brief Description of Change: _____
5. Facilities and/or Item No. of equipment related to the requested Change: _____
6. Reference drawings and/or technical documents for the request of
Change: Drawing No./Document No. Description
7. Detailed conditions or special requirements on the requested Change: _____
8. General Terms and Conditions:
 - (a) Please submit your estimate to us showing what effect the requested Change will have on the Contract Price.
 - (b) Your estimate shall include your claim for the additional time, if any, for completion of the requested Change.
 - (c) If you have any opinion negative to the adoption of the requested Change in connection with the conformability to the other provisions of the Contract or the safety of the Plant or Facilities, please inform us of your opinion in your proposal of revised provisions.
 - (d) Any increase or decrease in the work of the Contractor relating to the services of its personnel shall be calculated.
 - (e) You shall not proceed with the execution of the work for the requested Change until we have accepted and confirmed the amount and nature in writing.

Signature:	<i>[insert signature of authorised representative of the Procuring Entity]</i>
Name:	<i>[insert full name of signatory with National ID Number]</i>
Title of the Signatory:	<i>[insert title of the Signatory]</i>
Name of the Procuring Entity:	<i>[insert name of the Procuring Entity]</i>

Annex 2. Estimate for Change Proposal

(Contractor's Letterhead)

To:

Date:

Attention:

Contract Name:

Contract Number:

With reference to your Request for Change Proposal, we are pleased to notify you of the approximate cost of preparing the below-referenced Change Proposal in accordance with GCC Sub-Clause 69.2.1 of the General Conditions. We acknowledge that your agreement to the cost of preparing the Change Proposal, in accordance with GCC Sub-Clause 69.2.2, is required before estimating the cost for change work.

1. Title of Change: _____
2. Change Request No./Rev.: _____
3. Brief Description of Change: _____
4. Scheduled Impact of Change: _____
5. Cost for Preparation of Change Proposal: _____²

(a) Engineering (Amount)

- (i) Engineer _____ hrs x _____ rate/hr =
(ii) Draftsperson _____ hrs x _____
_____ rate/hr = Sub-total
_____ hrs

Total Engineering Cost

(b) Other

Cost Total Cost

(a) + (b)

Signature:	<i>[insert signature of authorised representative of the Procuring Entity]</i>
Name:	<i>[insert full name of signatory with National ID Number]</i>
Title of the Signatory:	<i>[insert title of the Signatory]</i>
Name of the Procuring Entity:	<i>[insert name of the Procuring Entity]</i>

² Costs shall be in the currencies of the Contract.

Annex 3. Acceptance of Estimate

(Procuring Entity's Letterhead)

To:

Date:

Attention:

Contract Name:

Contract Number:

We hereby accept your Estimate for Change Proposal and agree that you should proceed with the preparation of the Change Proposal.

1. Title of Change: _____
2. Change Request No./Rev.: _____
3. Estimate for Change Proposal No./Rev.: _____
4. Acceptance of Estimate No./Rev.: _____
5. Brief Description of Change: _____
6. Other Terms and Conditions: In the event that we decide not to order the Change accepted, you shall be entitled to compensation for the cost of preparation of Change Proposal described in your Estimate for Change Proposal mentioned in para. 3 above in accordance with GCC Clause 69 of the General Conditions.

Signature:	<i>[insert signature of authorised representative of the Procuring Entity]</i>
Name:	<i>[insert full name of signatory with National ID Number]</i>
Title of the Signatory:	<i>[insert title of the Signatory]</i>
Name of the Procuring Entity:	<i>[insert name of the Procuring Entity]</i>

Annex 4. Change Proposal

(Contractor's Letterhead)

To:

Date:

Attention:

Contract Name:

Contract Number:

In response to your Request for Change Proposal No. _____, we hereby submit our proposal as follows:

1. Title of Change: _____
2. Change Proposal No./Rev.: _____
3. Originator of Change: Procuring Entity: [_____] Contractor: _____
4. Brief Description of Change: _____
5. Reasons for Change: _____
6. Facilities and/or Item No. of Equipment related to the requested Change: _____
7. Reference drawings and/or technical documents for the requested Change:

<u>Drawing/Document No.</u>	<u>Description</u>
8. Estimate of increase/decrease to the Contract Price resulting from Change Proposal:³ (Amount)
 - (a) Direct material
 - (b) Major construction equipment
 - (c) Direct field labor (Total_____ hrs)
 - (d) Subcontracts
 - (e) Indirect material and labor
 - (f) Site supervision
 - (g) Head office technical staff salaries

Process engineer _____ hrs @ _____ rate/hr

³ Costs shall be in the currencies of the Contract.

Project engineer	_____ hrs	@
_____	rate/hr	Equipment engineer
_____	hrs @ _____	rate/hr Procurement
_____	_____ hrs	@
_____	rate/hr	
Draftsperson	_____ hrs @ _____	rate/hr
Total	_____ hrs	

(h) Extraordinary costs (computer, travel, etc.)

(i) Fee for general administration, _____ % of Items

(j) Taxes and customs duties

Total lump sum cost of Change Proposal
(Sum of items (a) to (j))

Cost to prepare Estimate for Change Proposal
(Amount payable if Change is not accepted)

9. Additional time for Completion required due to Change Proposal

10. Effect on the Functional Guarantees

11. Effect on the other terms and conditions of the Contract

12. Validity of this Proposal: within [Number] days after receipt of this Proposal by the Procuring Entity

13. Other terms and conditions of this Change Proposal:

(a) You are requested to notify us of your acceptance, comments or rejection of this detailed Change Proposal within _____ days from your receipt of this Proposal.

(b) The amount of any increase and/or decrease shall be taken into account in the adjustment of the Contract Price.

(c) Contractor's cost for preparation of this Change Proposal:²

Signature:	<i>[insert signature of authorised representative of the Contractor]</i>
Name:	<i>[insert full name of signatory with National ID Number]</i>
Title of the Signatory:	<i>[insert title of the Signatory]</i>
Name of the Contractor:	<i>[insert name of the Contractor]</i>

² Specify where necessary.

Annex 5. Change Order

(Procuring Entity's Letterhead)

To:

Date:

Attention:

Contract Name:

Contract Number:

We approve the Change Order for the work specified in the Change Proposal (No. _____), and agree to adjust the Contract Price, Time for Completion and/or other conditions of the Contract in accordance with GCC Clause 69 of the General Conditions.

1. Title of Change: _____

2. Change Request No./Rev.: _____

3. Change Order No./Rev.: _____

4. Originator of Change: Procuring Entity: _____
Contractor: _____

5. Authorized Price:

Ref. No.: _____ Date: _____
_____ Foreign currency portion ____ plus Local
currency portion _____

6. Adjustment of Time for Completion

None Increase _____ days Decrease _____ days

7. Other effects, if any

Authorized by: _____ Date: _____
(Procuring Entity)

Accepted by: _____ Date: _____
(Contractor)

Annex 6. Pending Agreement Change Order

(Procuring Entity's Letterhead)

To:

Date:

Attention:

Contract Name:

Contract Number:

We instruct you to carry out the work in the Change Order detailed below in accordance with GCC Clause 64 of the General Conditions.

1. Title of Change: _____
2. Procuring Entity's Request for Change Proposal No./Rev.: _____
dated: _____
3. Contractor's Change Proposal No./Rev.: _____ dated: _____
4. Brief Description of Change: _____
5. Facilities and/or Item No. of equipment related to the requested Change: _____
6. Reference Drawings and/or technical documents for the requested Change:

<u>Drawing/Document No.</u>	<u>Description</u>
7. Adjustment of Time for Completion:
8. Other change in the Contract terms:
9. Other terms and conditions:

Signature:	<i>[insert signature of authorised representative of the Procuring Entity]</i>
Name:	<i>[insert full name of signatory with National ID Number]</i>
Title of the Signatory:	<i>[insert title of the Signatory]</i>
Name of the Procuring Entity:	<i>[insert name of the Procuring Entity]</i>

Annex 7. Application for Change Proposal

(Contractor’s Letterhead)

To: Date:

Attention:

Contract Name:
Contract Number:

We hereby propose that the below-mentioned work be treated as a Change in the Facilities.

- 1. Title of Change: _____
- 2. Application for Change Proposal No./Rev.: _____ dated:

- 3. Brief Description of Change: _____
- 4. Reasons for Change:
- 5. Order of Magnitude Estimation (in the currencies of the Contract):
- 6. Scheduled Impact of Change:
- 7. Effect on Functional Guarantees, if any:
- 8. Appendix:

Signature:	<i>[insert signature of authorised representative of the Contractor]</i>
Name:	<i>[insert full name of signatory with National ID Number]</i>
Title of the Signatory:	<i>[insert title of the Signatory]</i>
Name of the Contractor:	<i>[insert name of the Contractor]</i>

Signature

Seal

Section 6.6: Supplementary Information

Supplementary Information

[The Tenderer shall furnish additional description/information covering all activities, if any]

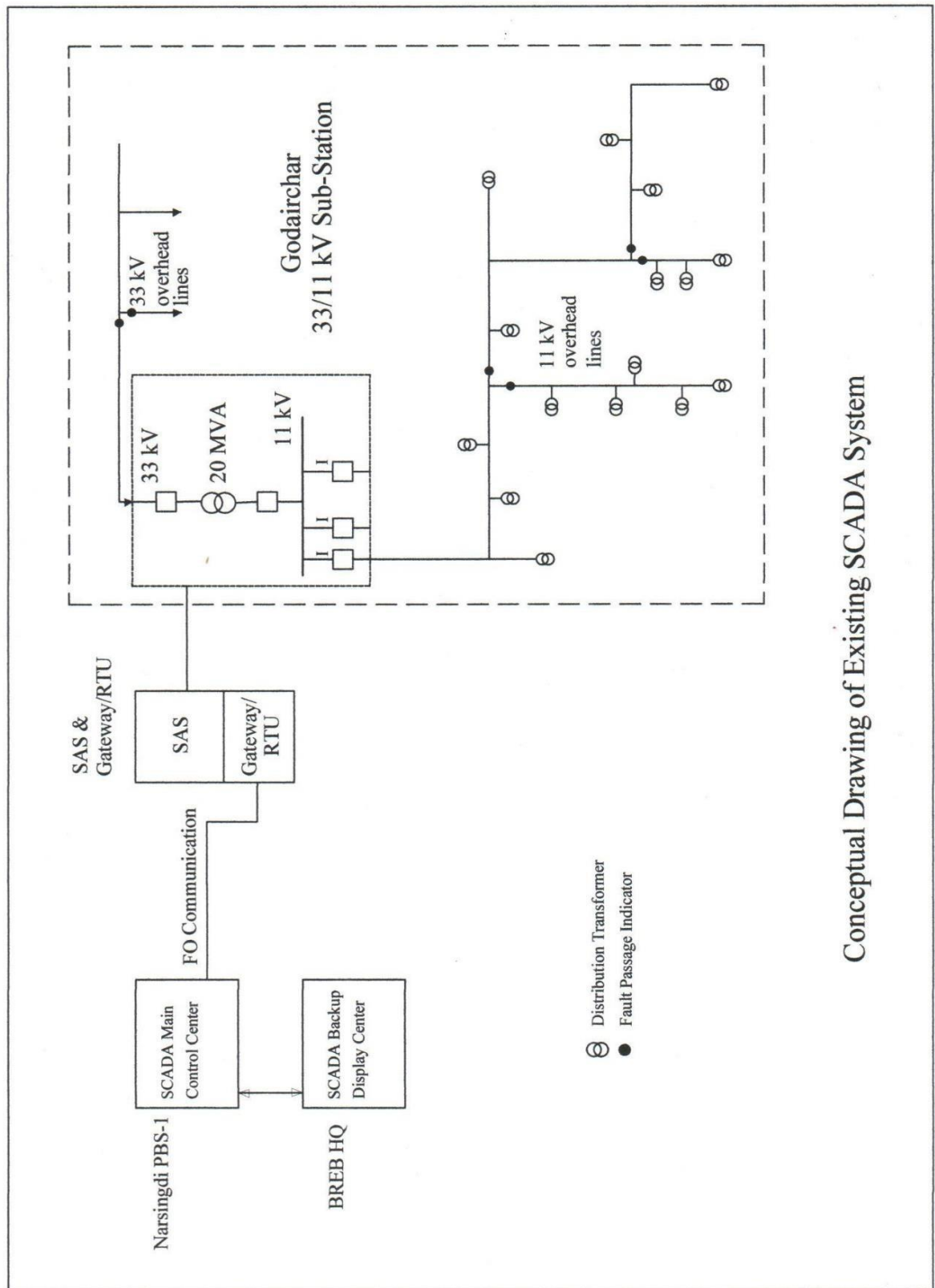
Section-7: Drawings

**Indicative
Drawings
(Tender
Purpose Only)**

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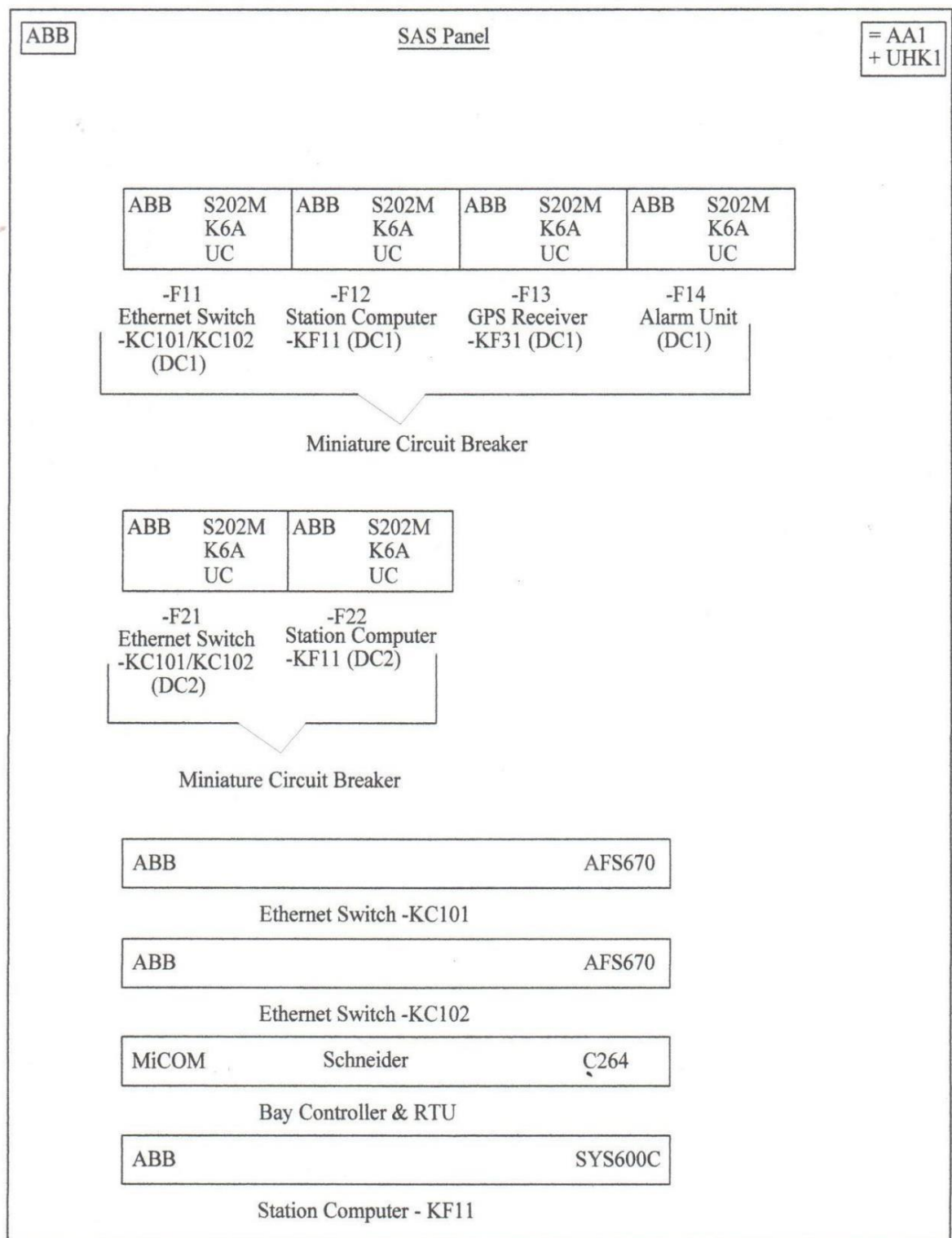
Section-7: Drawings

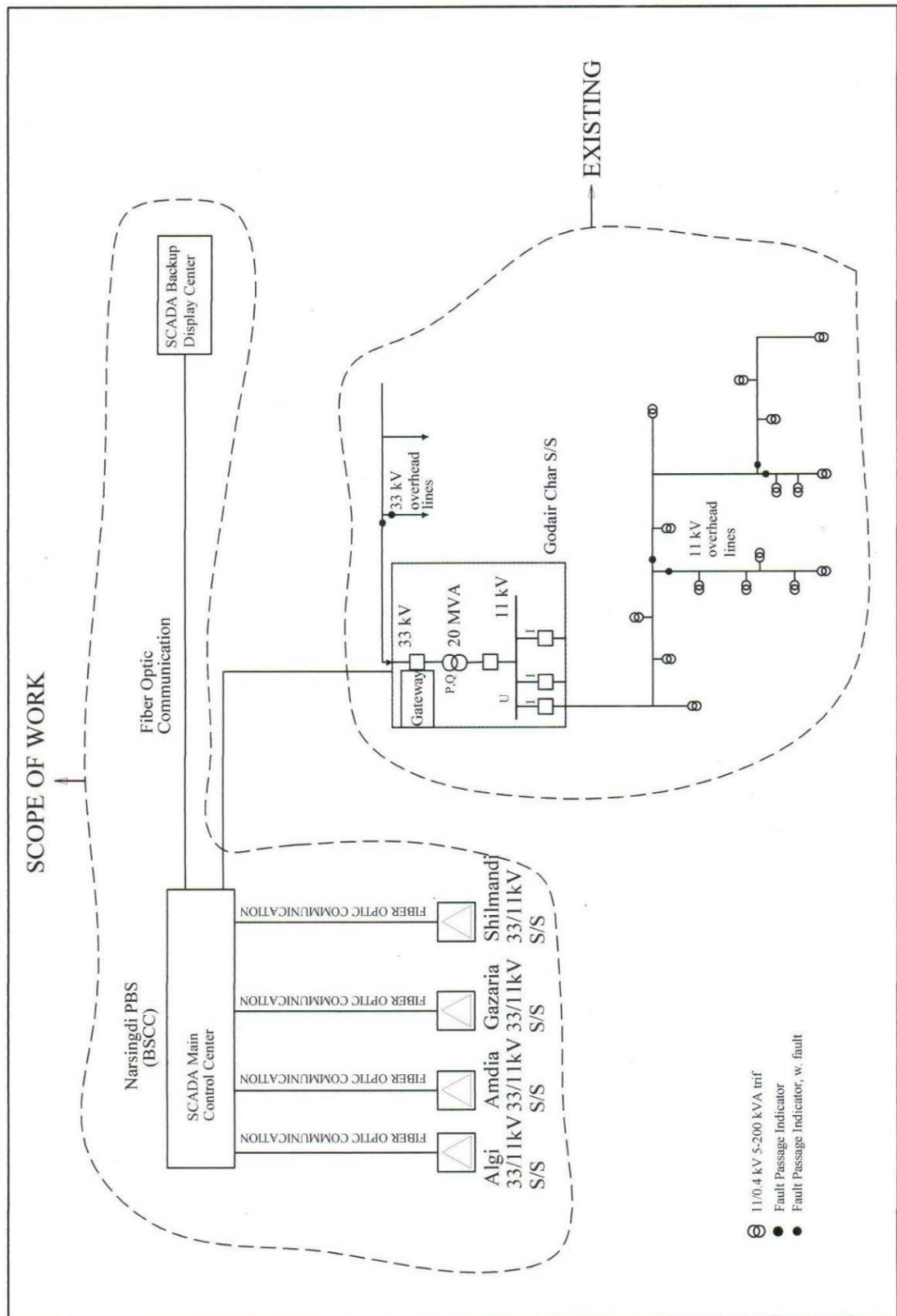
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- 2. Existing SAS Panel Architecture in Godairchar**
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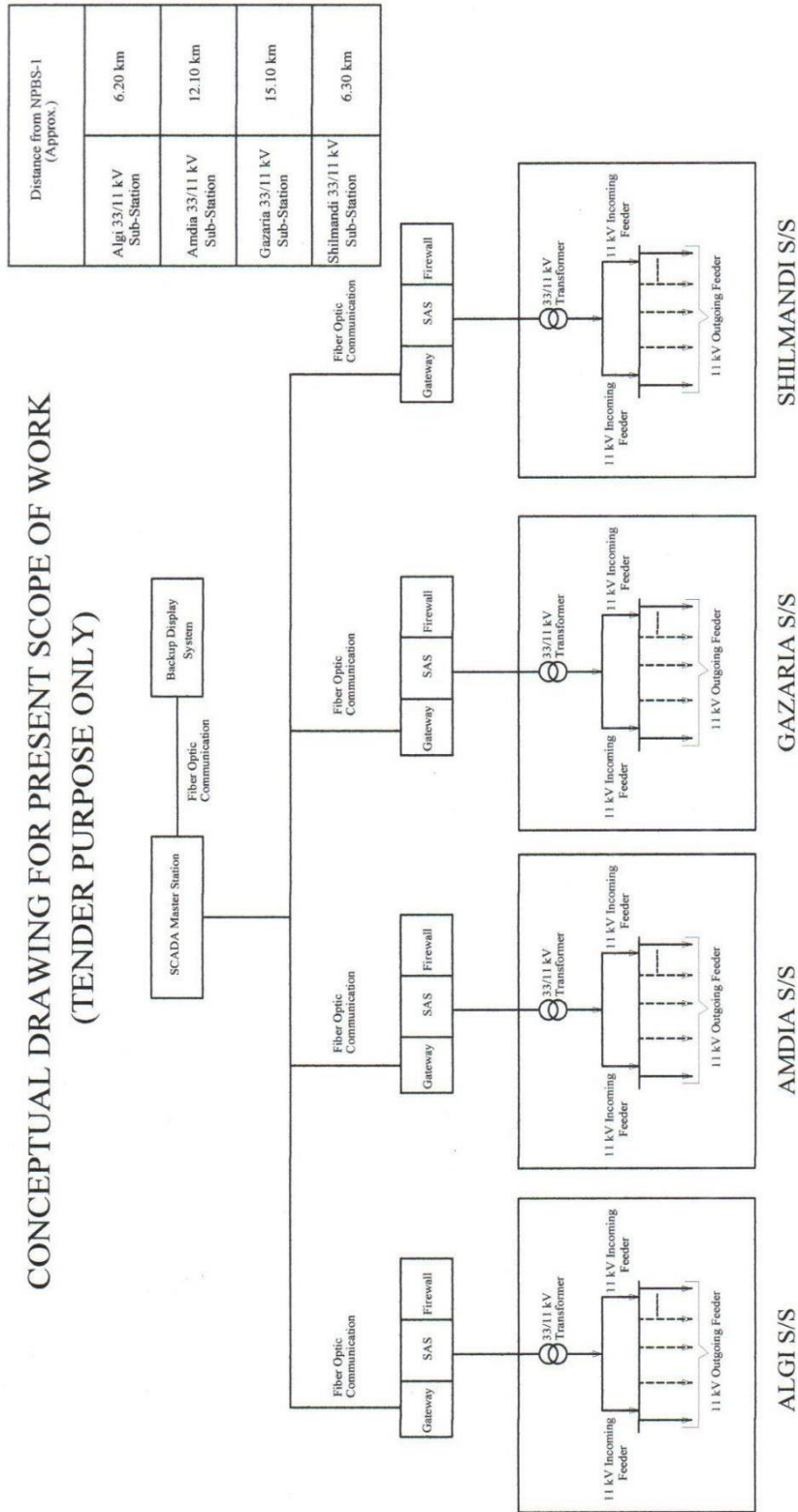
Conceptual Drawing of Existing SCADA System

Existing SAS Panel Architecture in Godairchar

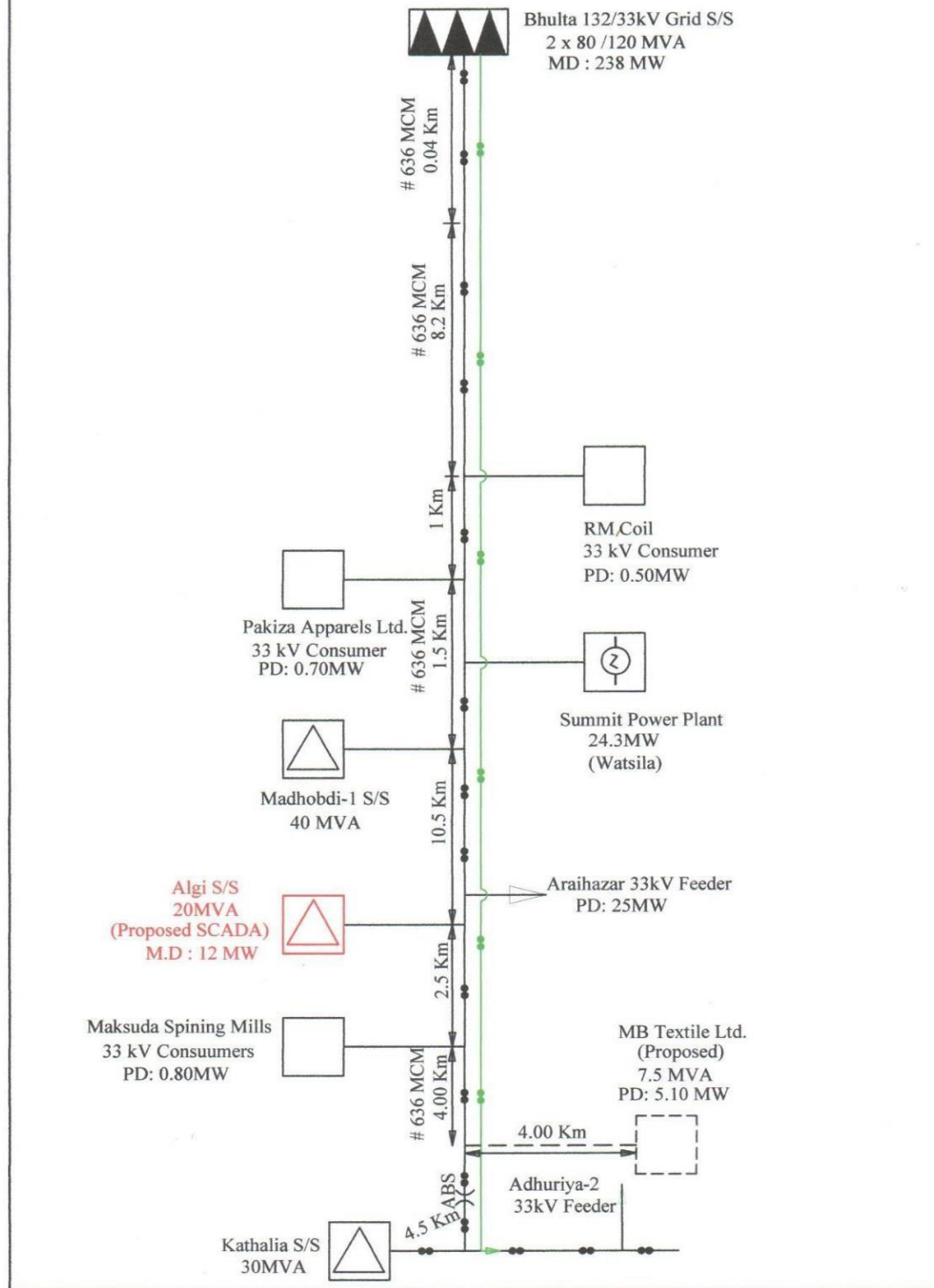




CONCEPTUAL DRAWING FOR PRESENT SCOPE OF WORK (TENDER PURPOSE ONLY)

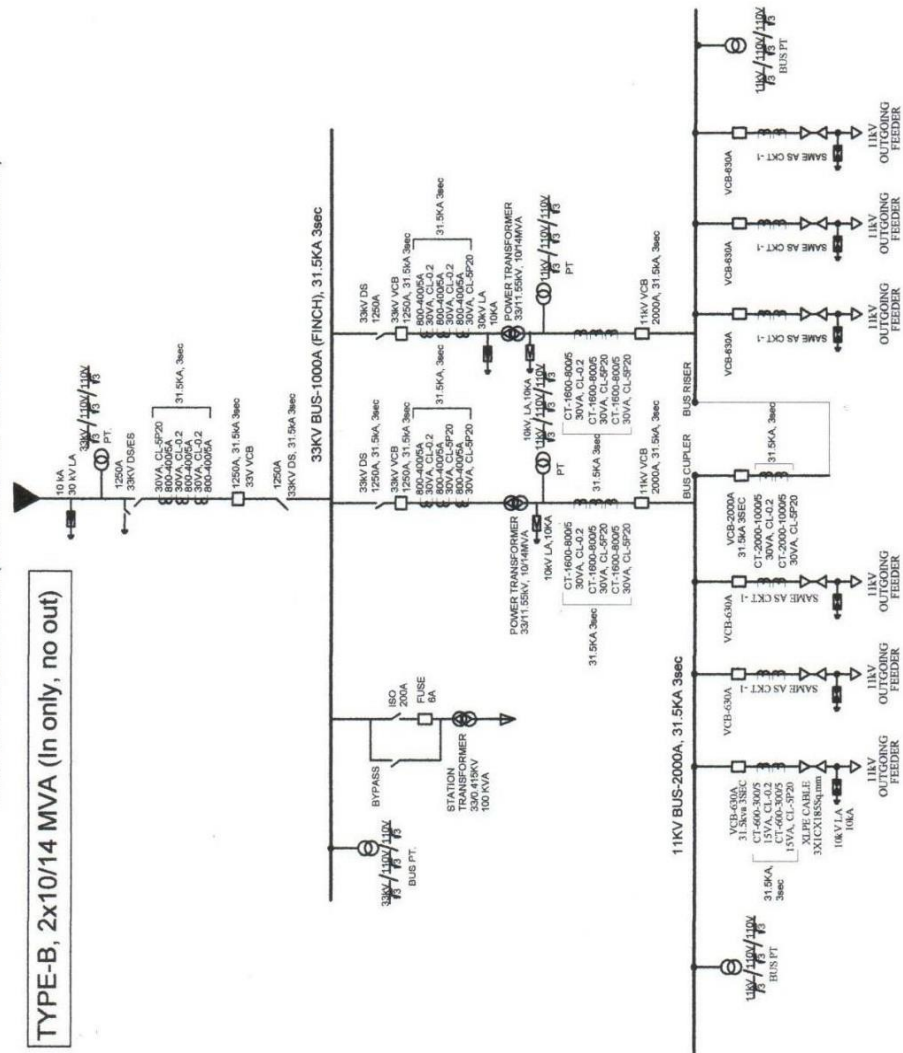


Single Line Diagram of Algi 33 kV Feeder with 33 /11 kV S/S

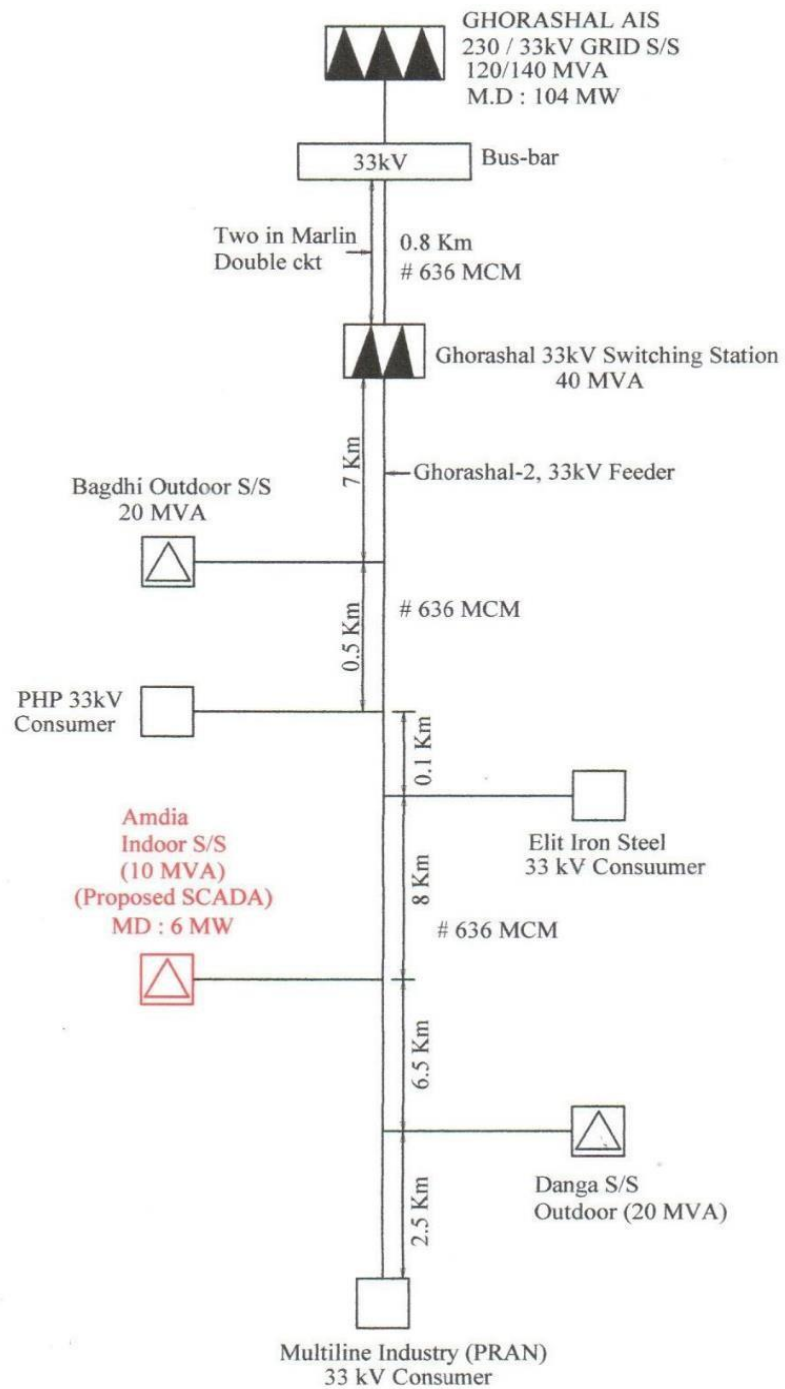


33 kV INCOMING FEEDER (FROM BHULTA 132 / 33 kV GRID SUB-STATION)

TYPE-B, 2x10/14 MVA (In only, no out)

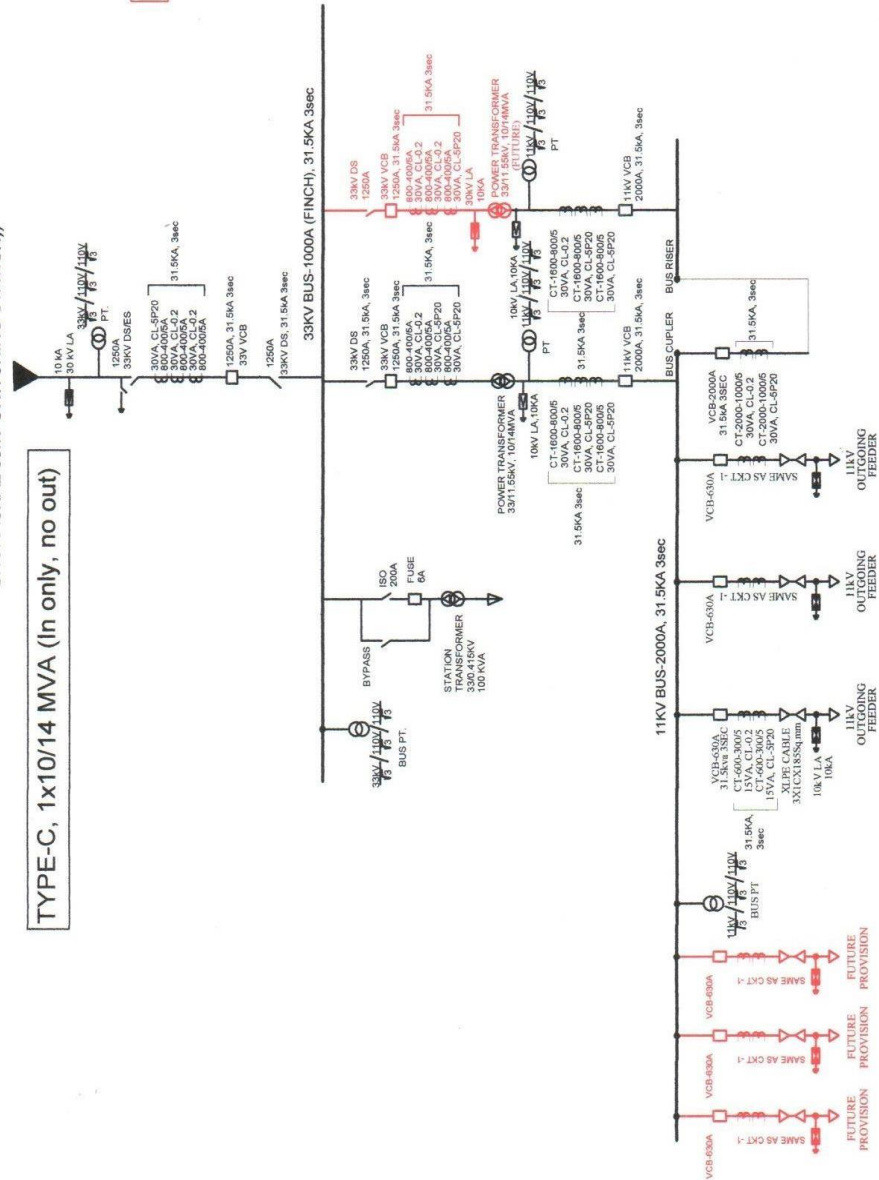


Single Line Diagram of Ghorashal 33 kV Feeder with 33/11 kV S/S

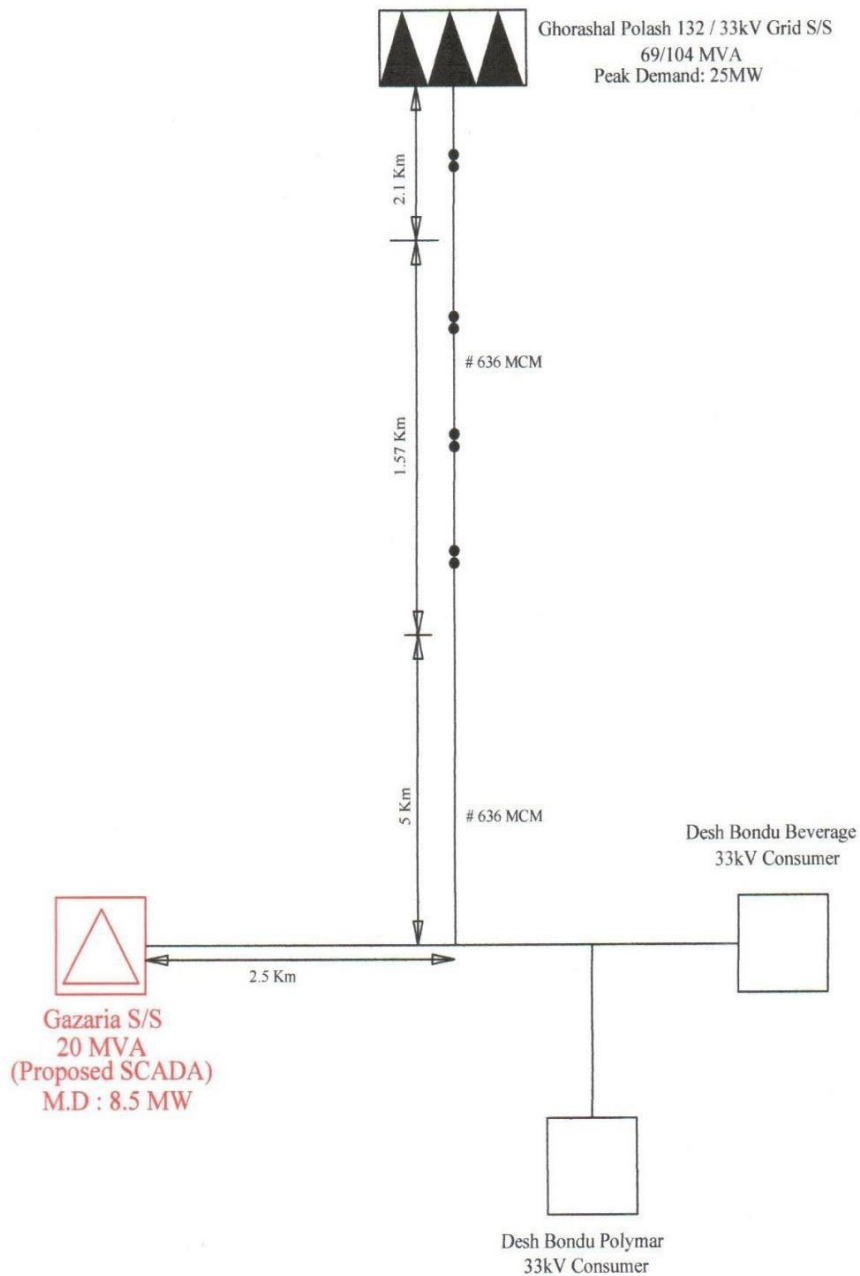


33 kV INCOMING FEEDER (FROM GHORASHAL 230 / 33 kV GRID SUB-STATION VIA
GHORASHAL 33kV SWITCHING STATION))

FUTURE PROVISION

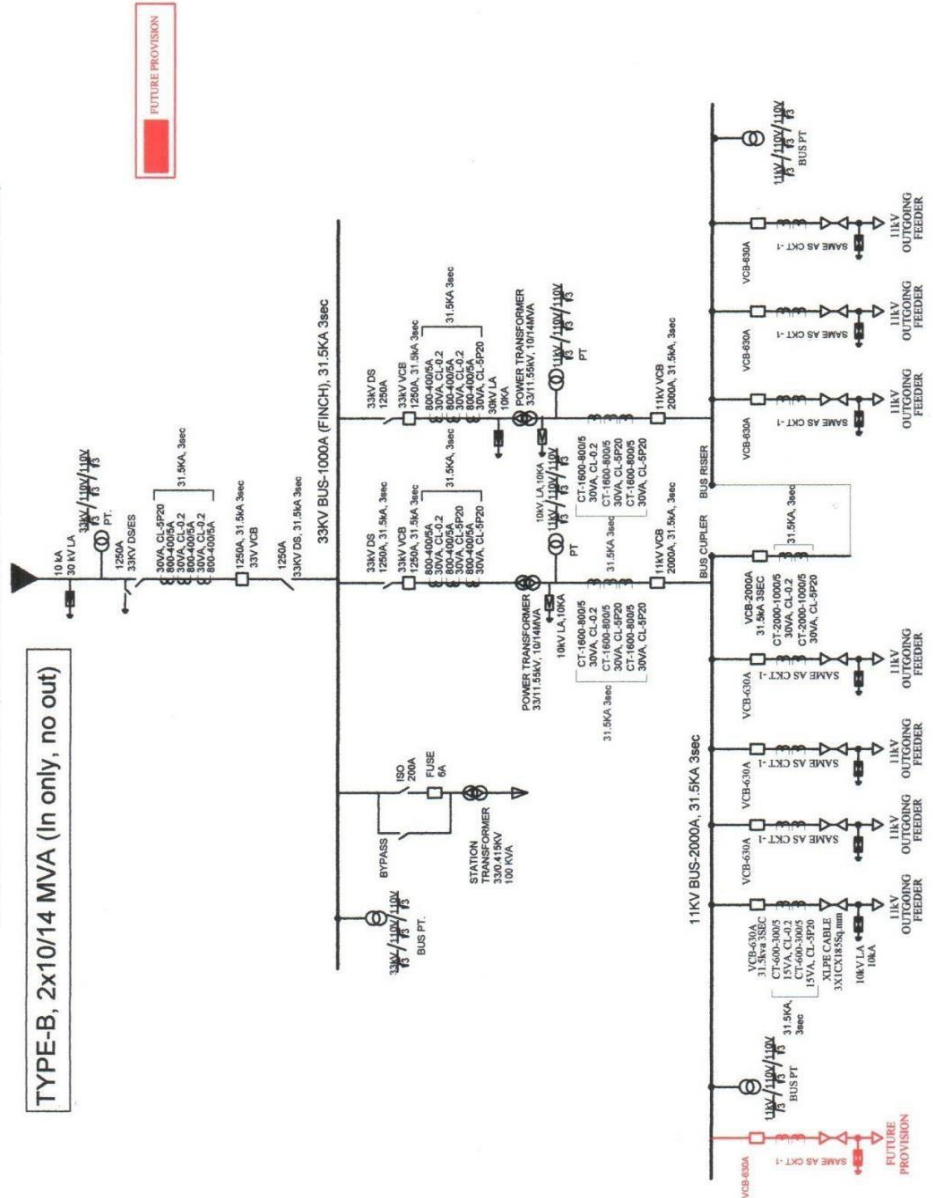


Single Line Diagram of Gazaria 33 kV Feeder with 33/11 kV S/S

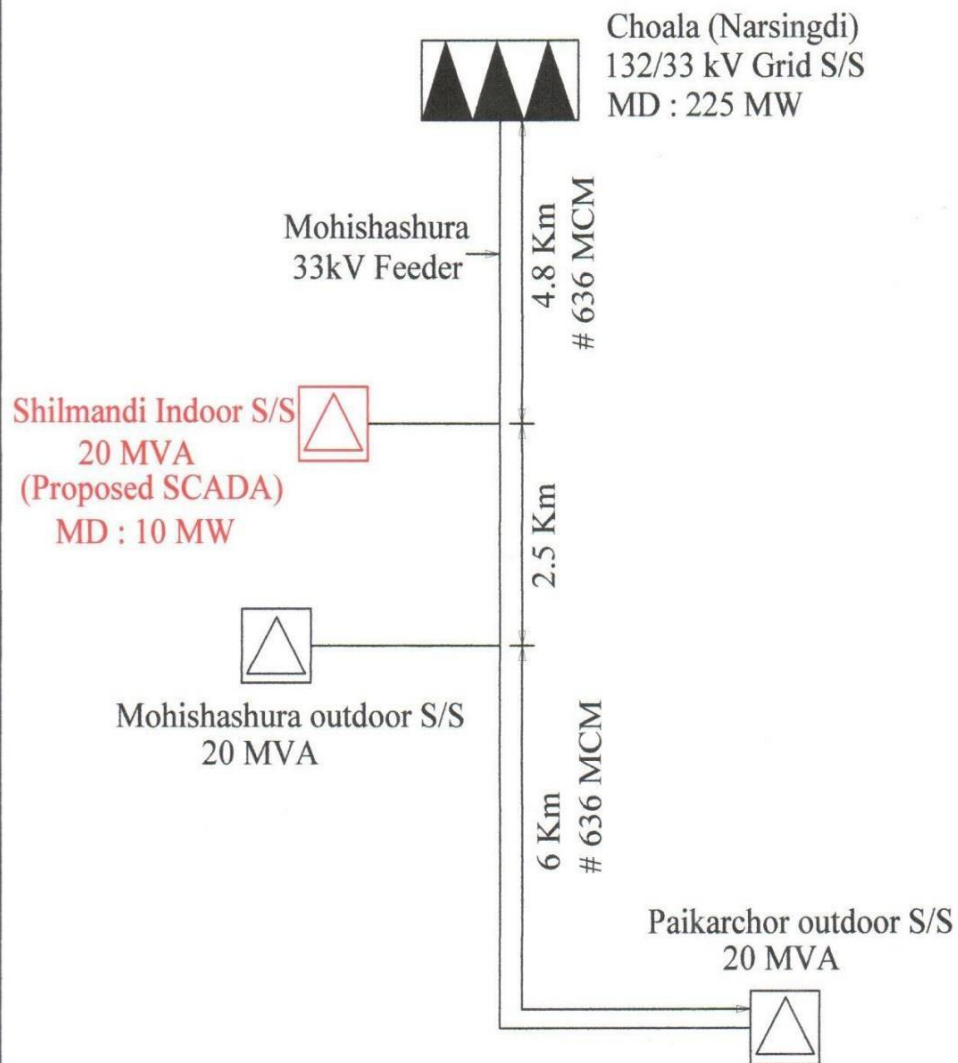


33 kV INCOMING FEEDER (FROM GHORASHAL POLASH 132 / 33 kV GRID SUB-STATION)

TYPE-B, 2x10/14 MVA (In only, no out)

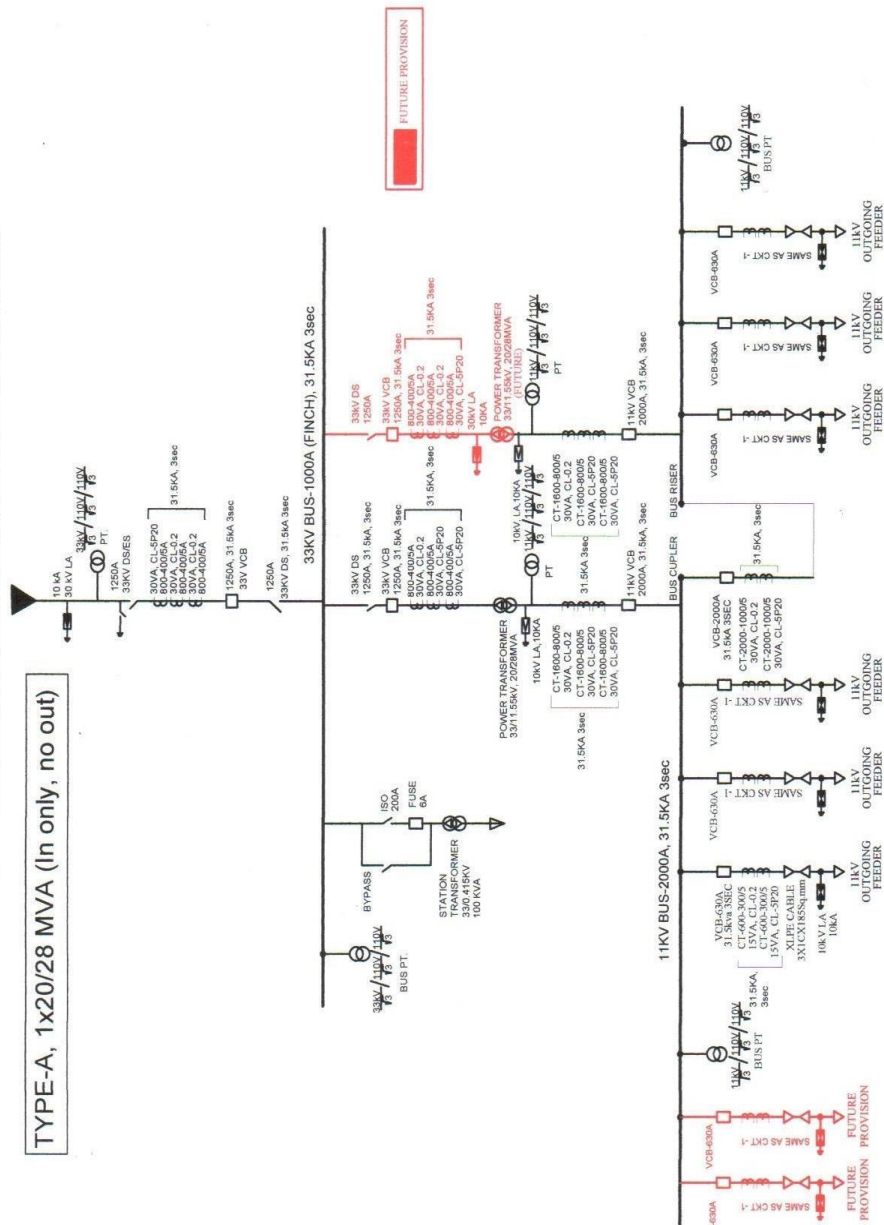


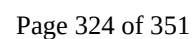
Single Line Diagram of Mohishashura 33 kV Feeder with 33/11 kV S/S

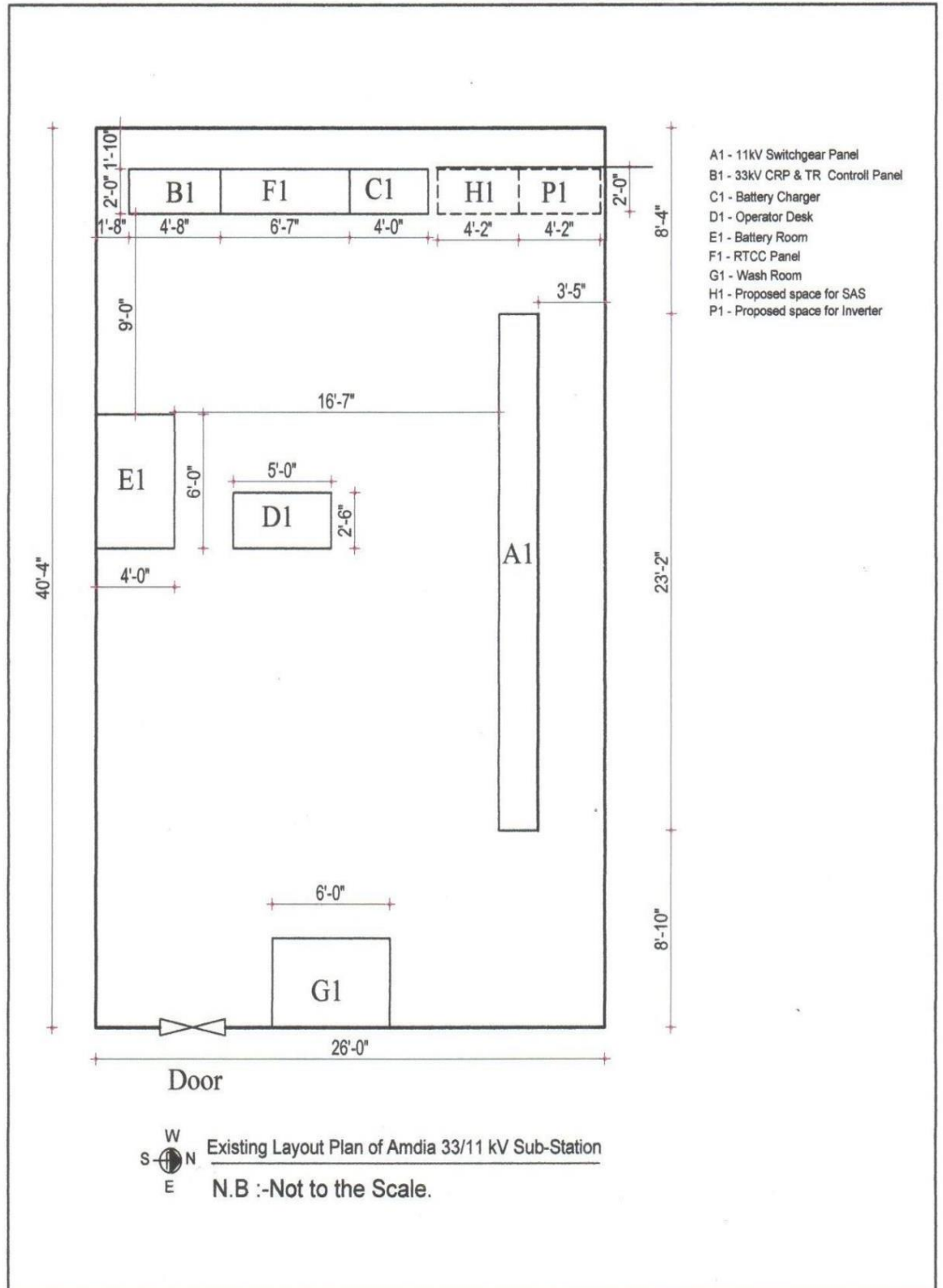


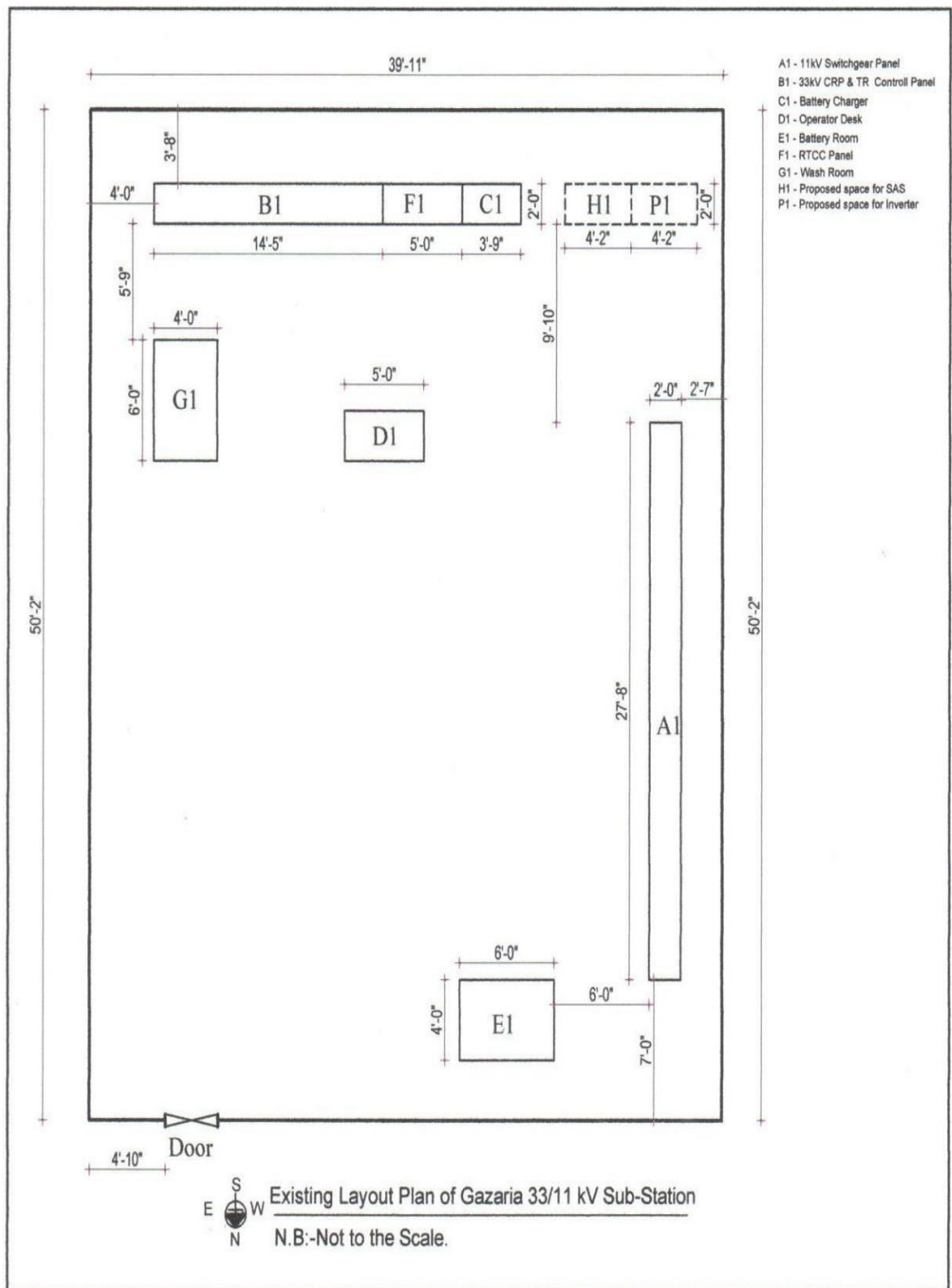
TYPE-A, 1x20/28 MVA (In only, no out)

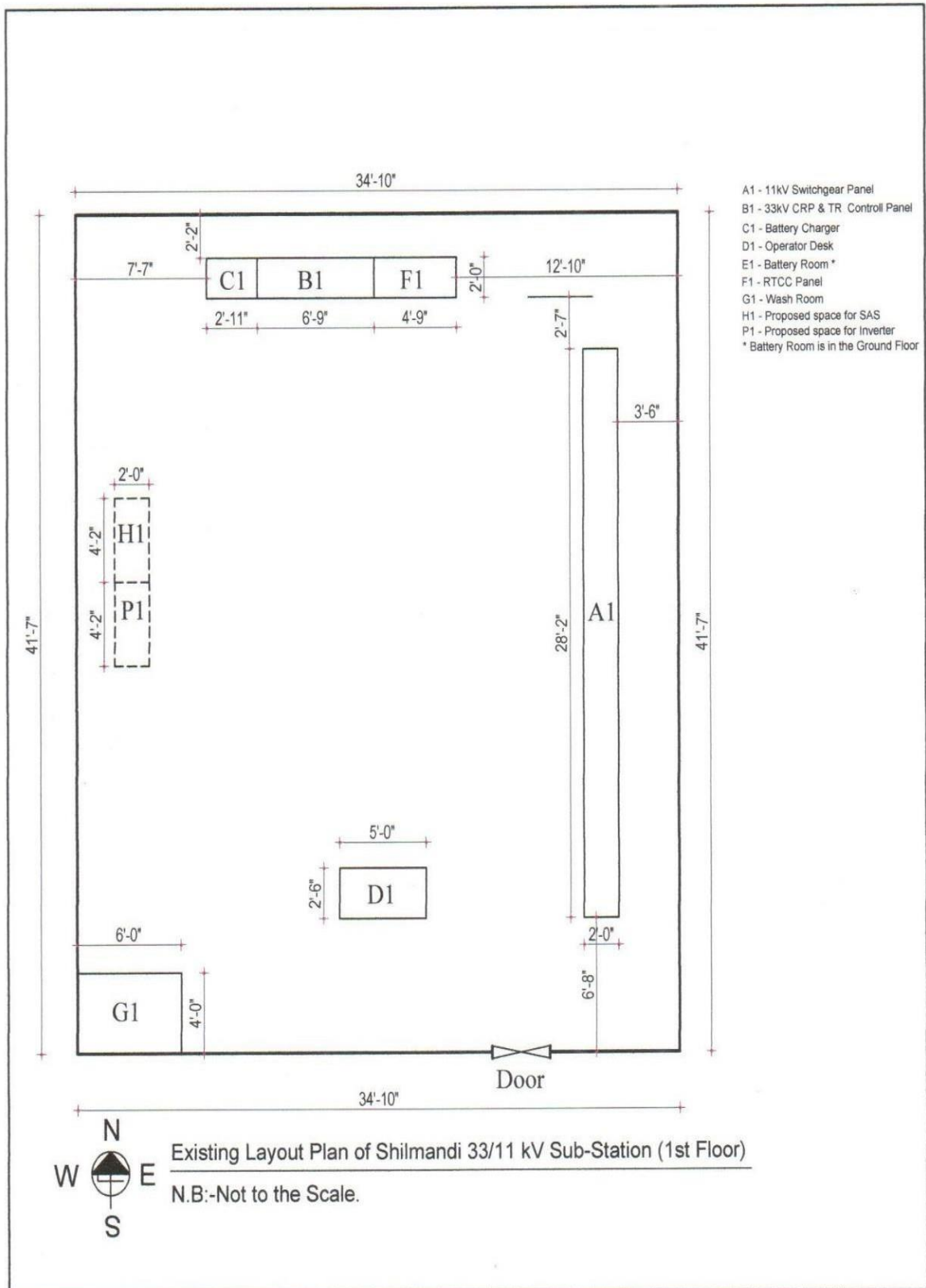
33 kV INCOMING FEEDER (FROM CHOALA 132 / 33 kV GRID SUB-STATION)



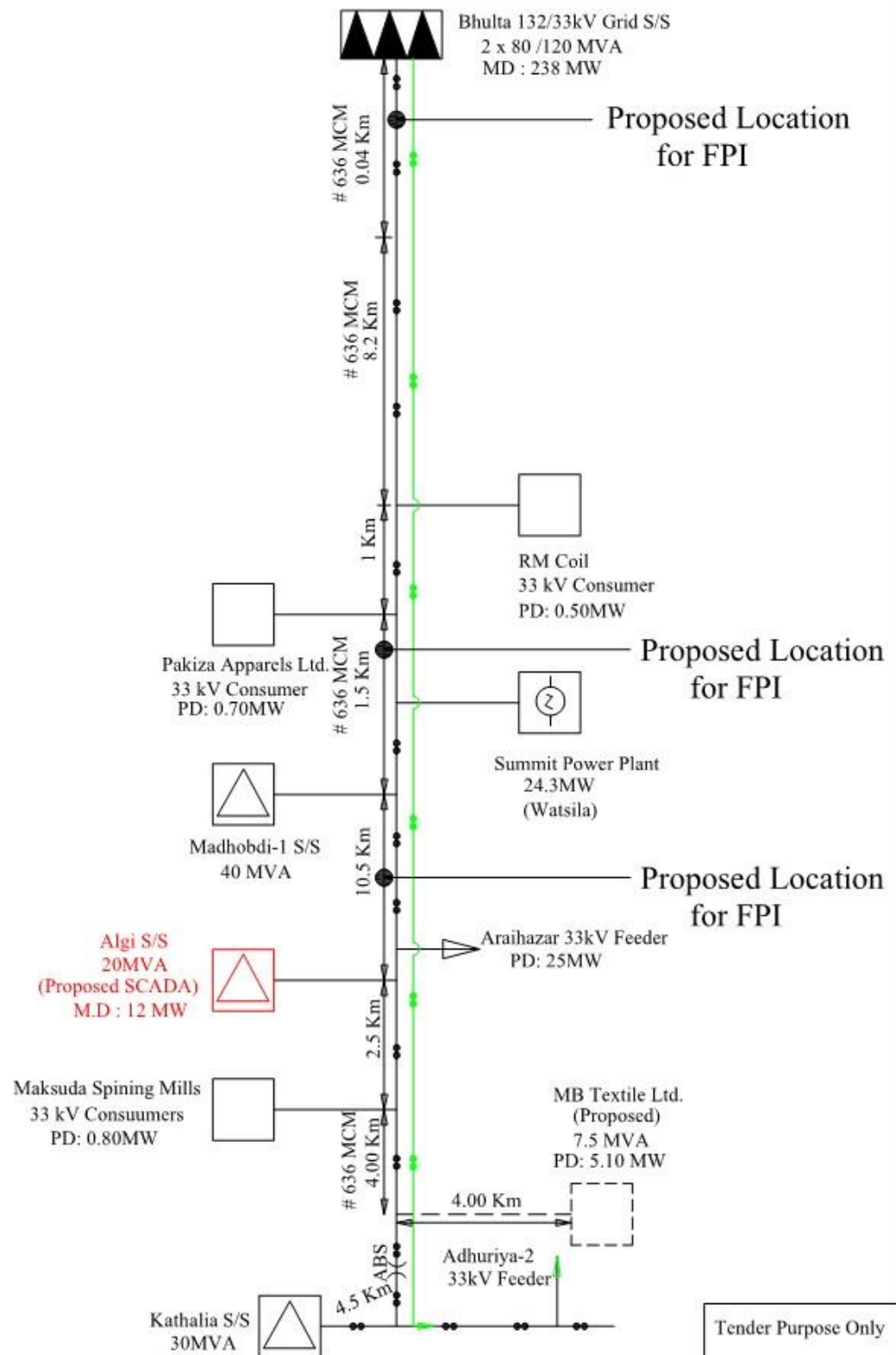




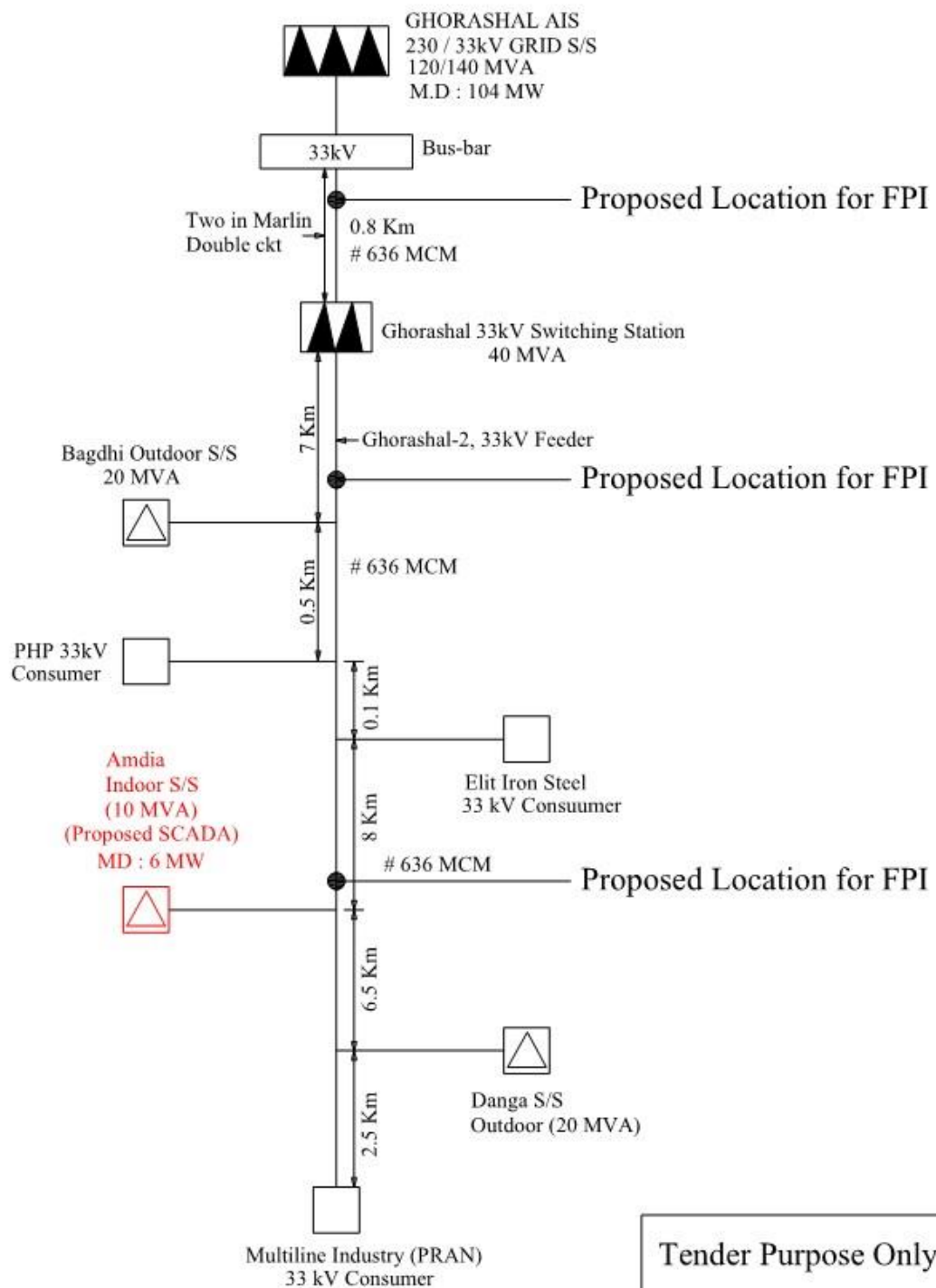




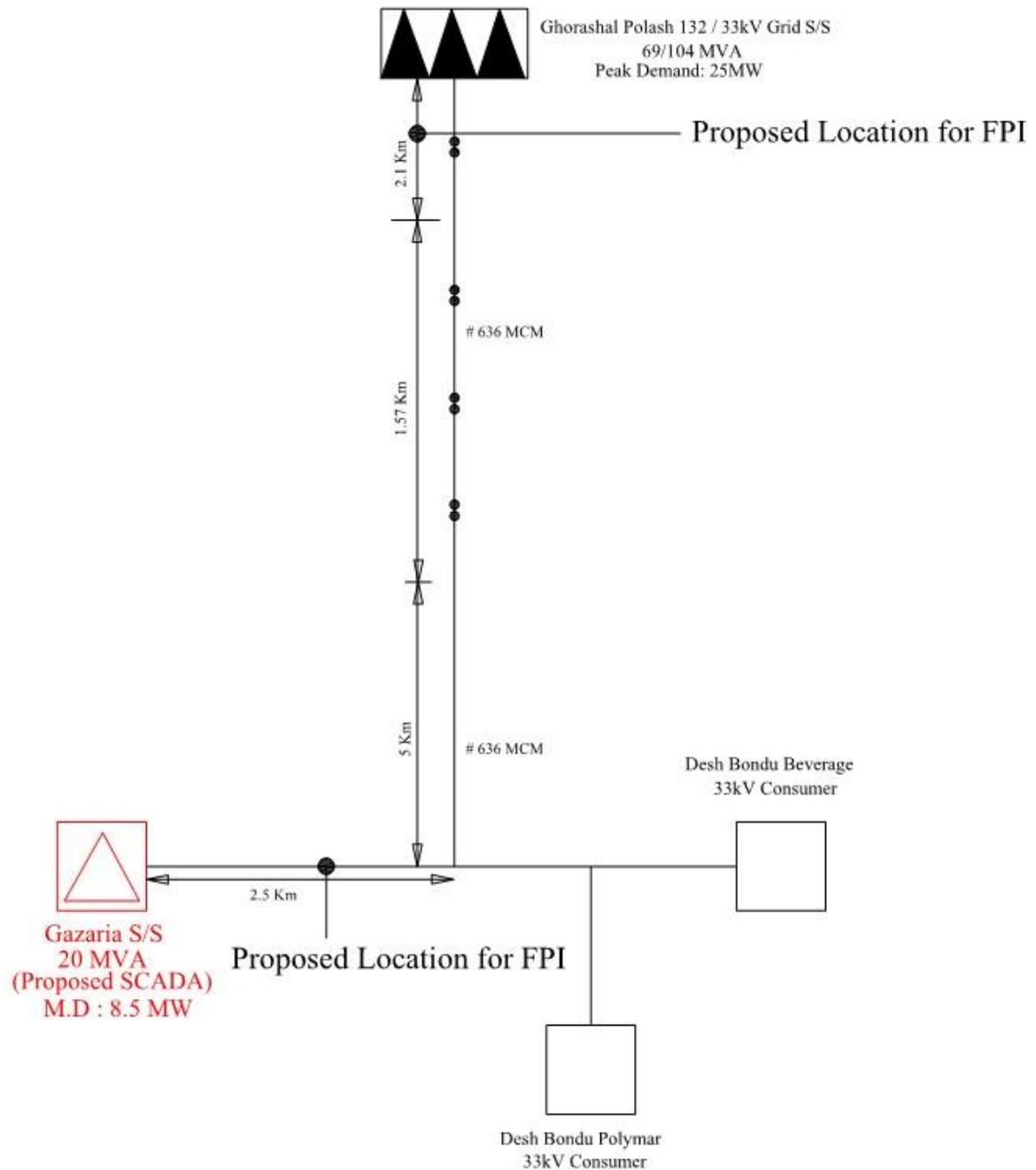
Proposed Single Line Diagram of Algi 33/11kV Sub-Station, 33 kV Feeder for FPI Installation



Proposed Single Line Diagram of Amdia 33/11kV Sub-Station, 33 kV Feeder for FPI Installation

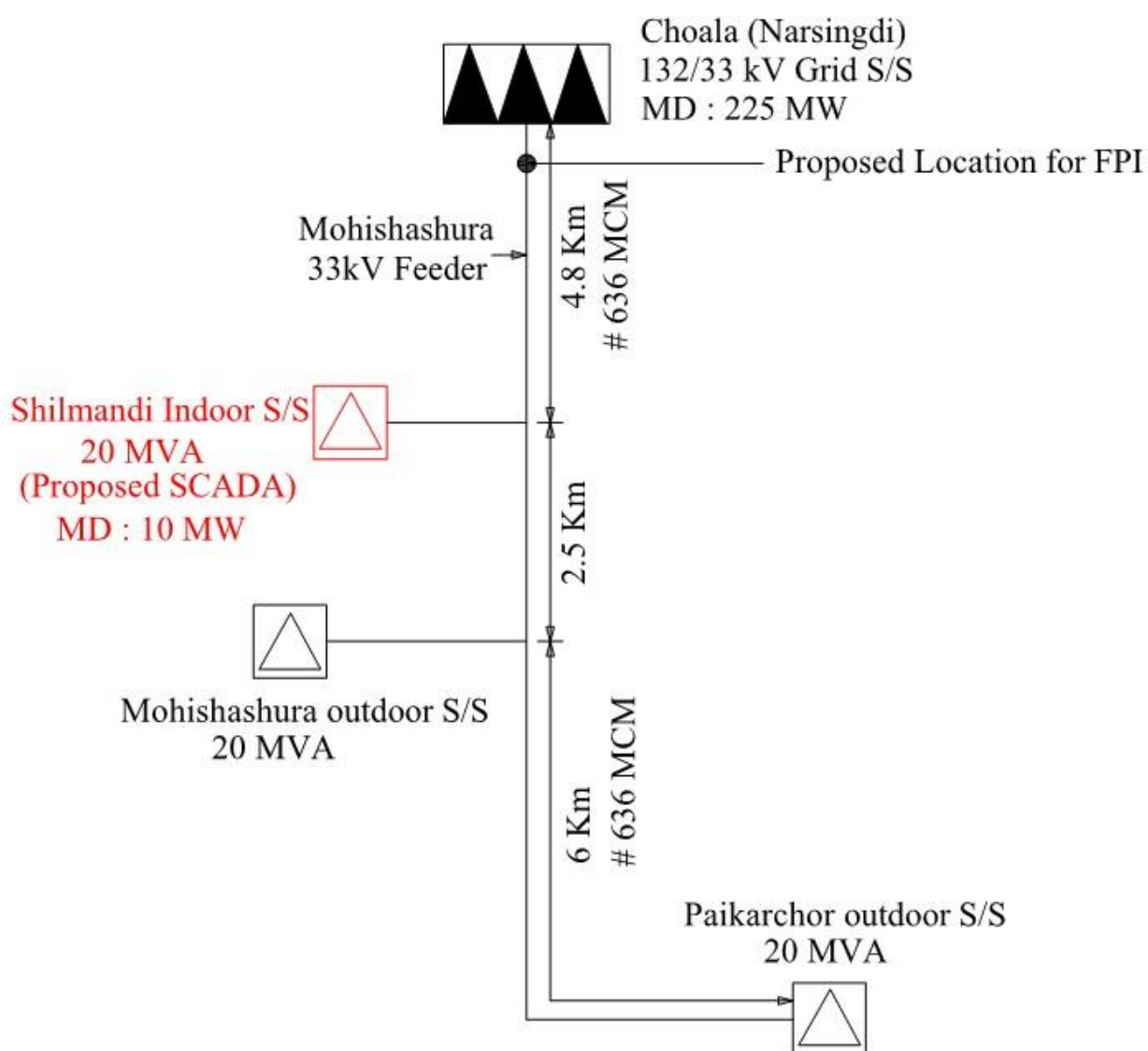


Proposed Single Line Diagram of Gazaria 33/11kV Sub-Station, 33 kV Feeder for FPI Installation



Tender Purpose Only

Proposed Single Line Diagram of Shilmandi 33/11kV Sub-Station, 33 kV Feeder for FPI Installation



Tender Purpose Only

Sub-station Information of Algi 33/11kV Substation

Serial No.	Description	Remarks
1	33 kV Feeder Length	21.24 km
2	No. of Poles/Towers in 33 kV line	665 Nos
3	Capacity of the Substation	20 MVA
4	No. of Power Transformers and Capacity	2*10/14 MVA
5	Present Max. Demand	12 MW
6	No. of 11 kV feeders	6 Nos.
7	No. of Distribution Transformers/Feeder	1. 46 Nos 2. 122 Nos 3. 75 Nos 4. 159 Nos 5. 345 Nos 6. 191 Nos
8	No. of Consumers (Feeder Wise)	1. 135 Nos 2. 160 Nos 3. 457 Nos 4. 680 Nos 5. 1203 Nos 6. 748 Nos
9	Length of 11kV Feeders (Feeder Wise)	1. 7 km 2. 4 km 3. 10 km 4. 12 km 5. 8 km 6. 14 km
10	Distance From Proposed Substation to NPBS-1 HQ SCADA Room (through line route)	6.2 km

Sub-station Information of Amdia 33/11kV Substation

Serial No.	Description	Remarks
1	33 kV Feeder Length	16.4 km
2	No. of Poles/Towers in 33 kV line	497 Nos
3	Capacity of the Substation	10 MVA
4	No. of Power Transformers and Capacity	1*10/14 MVA
5	Present Max. Demand	6 MW
6	No. of 11 kV Feeders	3 Nos.
7	No. of Distribution Transformers/Feeder	1. 245 Nos 2. 170 Nos 3. 257 Nos
8	No. of Consumers (Feeder Wise)	1. 2970 Nos 2. 5556 Nos 3. 9150 Nos
9	Length of 11kV Feeders (Feeder Wise)	1. 2B-38 km 2. 4D-51 km 3. 5E-62 km
10	Distance From Proposed Substation to NPBS-1 HQ SCADA Room (through line route)	12.10 km

Sub-station Information of Gazaria 33/11kV Substation

Serial No.	Description	Remarks
1	33 kV Feeder Length	11.17 km
2	No. of Poles/Towers in 33 kV line	351 Nos
3	Capacity of the Substation	20 MVA
4	No. of Power Transformers and Capacity	2*10/14 MVA
5	Present Max. Demand	8.5 MW
6	No. of 11 kV Feeders	7 Nos.
7	No. of Distribution Transformers/Feeder	1. 141 Nos 2. 335 Nos 3. 209 Nos 4. 137 Nos 5. 126 Nos 6. 136 Nos 7. 204 Nos
8	No. of Consumers (Feeder Wise)	1. 4054 Nos 2. 8925 Nos 3. 3455 Nos 4. 2794 Nos 5. 3025 Nos 6. 3044 Nos 7. 3492 Nos
9	Length of 11kV Feeders (Feeder Wise)	1. 2B- 70 km 2. 3C- 100 km 3. 4D- 70 km 4. 5E- 14 km 5. 6F- 55 km 6. 7G- 55 km 7. 8H- 48 km
10	Distance From Proposed Substation to NPBS-1 HQ SCADA Room (through line route)	15.10 km

Sub-station Information of Shilmandi 33/11kV Substation

Serial No.	Description	Remarks
1	33 kV Feeder Length	4.8 km
2	No. of Poles/Towers in 33 kV line	156 Nos
3	Capacity of the Substation	20 MVA
4	No. of Power Transformers and Capacity	1*20/28 MVA
5	Present Max. Demand	10 MW
6	No. of 11 kV Feeders	6 Nos.
7	No. of Distribution Transformers/Feeder	1. 52 Nos 2. 39 Nos 3. 66 Nos 4. 300 Nos 5. 142 Nos 6. 87 Nos
8	No. of Consumers (Feeder Wise)	1. 1020 Nos 2. 980 Nos 3. 743 Nos 4. 1720 Nos 5. 971 Nos 6. 1090 Nos
9	Length of 11kV Feeders (Feeder Wise)	1. 2B- 6 km 2. 3C- 6 km 3. 4D-12 km 4. 5E- 27 km 5. 6F- 10 km 6. 7G- 11 km
10	Distance From Proposed Substation to NPBS-1 HQ SCADA Room (through line route)	6.3 km

Relay Information of Algi 33/11kV Substation

SL No.	Name of Feeder	No. of Feeder	Relay Type	No. of Relays	Name of Manufacturer	Relay Model	Comments
1	2	3	4	5	6	7	8
1	33kV Control Panel & Relay Panel	1	O/C & E/F Relay	1	ABB	REF 615 (Numerical)	
			Trip Relay	1	GE	MVAJM (Electro-Mechanical)	
			Trip Circuit Supervision Relay	2	GE	MVAXM (Electro-Mechanical)	
2	33kV Incoming Feeder	2	Trip Circuit Supervision Relay	4	SIEMENS	7PJ13 (Electro-Mechanical)	
			Master Trip Relay	2	SIEMENS	7PJ12 (Electro-Mechanical)	
			Main Protection Relay	2	ABB	REF 615 (Numerical)	
3	33kV Transformer Feeder	2	Trip Circuit Supervision Relay	4	SIEMENS	7PJ13 (Electro-Mechanical)	
			Master Trip Relay	4	SIEMENS	7PJ12 (Electro-Mechanical)	
			Main Protection Relay	2	ABB	REF 615 (Numerical)	
			Backup Protection Relay	2	ABB	RET 615 (Numerical)	
			Auxiliary Relay	4	Ashida Electronics Private Ltd.	AVA 33-A (Electro-Mechanical)	
4	RTCC Panel	2	Voltage Regulator	2	MR	TAPCON 230 pro (Electronic)	
			Protection Relay	2	SIEMENS	DUOBIAS-M (Numerical)	
			Tripping Relay	2	ALSTOM	VAJ (Electro-Mechanical)	
5	11kV Incoming	2	Trip Circuit Supervision Relay	2	GE	VAX	

SL No.	Name of Feeder	No. of Feeder	Relay Type	No. of Relays	Name of Manufacturer	Relay Model	Comments
1	2	3	4	5	6	7	8
	Feeder Panel					(Electro-Mechanical)	
			Master Trip Relay	2	ALSTOM	VAJ (Electro-Mechanical)	
			Numerical Relay(50,50N,51,51N,74TC,27,59)	2	SIEMENS	ARGUS-7SR1102 (Numerical)	
6	11kV Outgoing Feeder Panel	6	Trip Circuit Supervision Relay	6	GE	VAX (Electro-Mechanical)	
			Tripping Relay	6	ALSTOM	VAJ (Electro-Mechanical)	
			Numerical Relay(50,50N,51,51N,74TC)	6	SIEMENS	ARGUS-7SR1102 (Numerical)	
7	11kV Bus Coupler	1	Trip Circuit Supervision Relay	1	GE	VAX (Electro-Mechanical)	
			Numerical Relay (50,50N,51,51N,74 TC)	1	SIEMENS	ARGUS-7SR1102 (Numerical)	
			Auxiliary Relay (DC Supply Supervision Relay)	1	ALSTOM	VAA (Electro-Mechanical)	
			Master Trip Relay	1	ALSTOM	VAJ (Electro-Mechanical)	

Relay Information of Amdia 33/11kV Substation

SL No.	Name of Feeder	No. of Feeder	Relay Type	No. of Relays	Name of Manufacturer	Relay Model	Comments
1	2	3	4	5	6	7	8
1	33kV Incoming Feeder	1	O/C & E/F Relay	1	ABB	REF 615 (Numerical)	
			Trip Relay	1	GE	MVAJM (Electro-Mechanical)	
			Trip Circuit Supervision Relay	2	GE	MVAXM (Electro-Mechanical)	
2	33kV Transformer Feeder	1	Trip Circuit Supervision Relay	2	GE	MVAXM (Electro-Mechanical)	
			Trip Relay	2	GE	MVAJM (Electro-Mechanical)	
			XFR. Differential Relay	1	ABB	RET 615 (Numerical)	
			O/C & E/F Relay	1	ABB	REF 615 (Numerical)	
			Auxiliary Relay	3	GE	MVAAM (Electro-Mechanical)	
3	RTCC Panel	1	Voltage Regulator	1	MR	TAPCON 230 pro (Electronic)	
4	11kV Incoming Feeder Panel	2	O/C & E/F Relay	2	ABB	REF 615 (Numerical)	
			Trip Relay	2	ALSTOM	VAJ (Electro-Mechanical)	
			Trip Circuit Supervision Relay	2	ALSTOM	VAX (Electro-Mechanical)	
5	11kV Outgoing Feeder Panel	6	O/C & E/F Relay	6	ABB	REF 615 (Numerical)	
			Trip Relay	6	ALSTOM	VAJ (Electro-Mechanical)	
			Trip Circuit Supervision Relay	6	ALSTOM	VAX (Electro-Mechanical)	
6	11kV Bus Coupler	1	O/C & E/F Relay	1	ABB	REF 615 (Numerical)	
			Trip Relay	1	ALSTOM	VAJ (Electro-Mechanical)	
			Trip Circuit Supervision Relay	1	ALSTOM	VAX (Electro-Mechanical)	

Relay Information of Gazaria 33/11kV Substation

SL No.	Name of Feeder	No. of Feeder	Relay Type	No. of Relays	Name of Manufacturer	Relay Model	Comments
1	2	3	4	5	6	7	8
1	33kV Incoming Feeder	2	O/C & E/F Relay	2	SIEMENS	ARGUS-7SR1102 (Numerical)	
			Trip Relay	2	ALSTOM	MVAJM (Electro-Mechanical)	
			Trip Circuit Supervision Relay	4	ALSTOM	MVAXM (Electro-Mechanical)	
2	33kV Transformer Feeder	2	Trip Circuit Supervision Relay	4	ALSTOM	MVAXM (Electro-Mechanical)	
			Trip Relay	4	ALSTOM	MVAJM (Electro-Mechanical)	
			XFR. Differential Relay	2	SIEMENS	DUOBIAS-M (Numerical)	
			O/C & E/F Relay	2	SIEMENS	ARGUS-7SR1102 (Numerical)	
			Auxiliary Relay	6	ALSTOM	MVAAM (Electro-Mechanical)	
3	RTCC Panel	2	Voltage Regulator	2	MR	TAPCON 230 pro (Electronic)	
4	11kV Incoming Feeder Panel	2	Lockout Relay	2	ALSTOM	VAJ (Electro-Mechanical)	
			Feeder Protection Relay	2	Easergy	MiCOM P141 (Numerical)	
5	11kV Outgoing Feeder Panel	8	Lockout Relay	8	ALSTOM	VAJ (Electro-Mechanical)	
			Feeder Protection Relay	8	Easergy	MiCOM P141 (Numerical)	
6	11kV Bus Coupler	1	Lockout Relay	1	ALSTOM	VAJ (Electro-Mechanical)	
			Feeder Protection Relay	1		Relay slot is empty	

Relay Information Shilmandi of 33/11kV Substation

SL No.	Name of Feeder	No. of Feeder	Relay Type	No. of Relays	Name of Manufacturer	Relay Model	Comments
1	2	3	4	5	6	7	8
1	33kV Incoming Feeder	1	O/C & E/F Relay	2	SIEMENS	ARGUS-7SR1102 (Numerical)	
			Trip Relay	2	ALSTOM	MVAJM (Electro-Mechanical)	
			Trip Circuit Supervision Relay	4	ALSTOM	MVAXM (Electro-Mechanical)	
2	33kV Transformer Feeder	1	Trip Circuit Supervision Relay	4	ALSTOM	MVAXM (Electro-Mechanical)	
			Trip Relay	4	ALSTOM	MVAJM (Electro-Mechanical)	
			XFR. Differential Relay	2	SIEMENS	DUOBIAS-M (Numerical)	
			O/C & E/F Relay	2	SIEMENS	ARGUS-7SR1102 (Numerical)	
			Auxiliary Relay	6	ALSTOM	MVAAM (Electro-Mechanical)	
3	RTCC Panel	1	Voltage Regulator	2	MR	TAPCON 230 pro (Electronic)	
4	11kV Incoming Feeder Panel	2	O/C & E/F Relay	2	SIEMENS	ARGUS-7SR1102 (Numerical)	
			Trip Relay	2	ALSTOM	VAJ (Electro-Mechanical)	
			Trip Circuit Supervision Relay	2	ALSTOM	VAX (Electro-Mechanical)	
5	11kV Outgoing Feeder Panel	8	O/C & E/F Relay	8	SIEMENS	ARGUS-7SR1102 (Numerical)	
			Trip Relay	8	ALSTOM	VAJ (Electro-Mechanical)	
			Trip Circuit Supervision Relay	8	ALSTOM	VAX (Electro-Mechanical)	

SL No.	Name of Feeder	No. of Feeder	Relay Type	No. of Relays	Name of Manufacturer	Relay Model	Comments
1	2	3	4	5	6	7	8
6	11kV Bus Coupler	1	O/C & E/F Relay	1	SIEMENS	ARGUS-7SR1102 (Numerical)	
			Trip Relay	1	ALSTOM	VAJ (Electro-Mechanical)	
			Trip Circuit Supervision Relay	1	ALSTOM	VAX (Electro-Mechanical)	

Annexures: Formats

Table and Contents

Format	Title
Format PG5A-A	Invitation for Tender (IFT)
Format PG5A-B	Reporting Contract Award
Format PG5A-C	Public Reporting on Contract Signing
Format PG5A-D	Acceptance Certificate

Format: PG5A-A: Invitation for Tenders (IFT)

The **Invitation for Tenders (IFT)** is a copy of the standard format as appears on the website and used for published advertisement that provides relevant and essential information to help Tenderers to decide whether or not to participate in the particular Tender. This is provided in the Tender Document for information only. This should not be included in the FINAL DOCUMENT.

Invitation for Tenders

[This is the website format and as used for published advertisement.

It is not part of the Tender Document and included in this Document for information only]

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH					
1	Ministry/Division	< select >			V
2	Agency	< select >			V
3	Procuring Entity Name	< type in name >			
4	Procuring Entity Code	Not used at present			
5	Procuring Entity District	< select >			V
6	Invitation for	< select >	V	< select >	V
7	Invitation Ref No	< type in name >			
8	Date	< select >			V
KEY INFORMATION					
9	Procurement Method	< select >			V < select > V
FUNDING INFORMATION					
10	Budget and Source of Funds	< select >			V
11	Development Partners (if applicable)	< type in name >			
PARTICULAR INFORMATION					
12	Project / Program Code (if applicable)	< use MOF code >			
13	Project / Program Name (if applicable)	< use MOF name >			
14	Tender Package No.	< type in name >			
15	Tender Package Name	< type in name >			
16	Tender Publication Date	Date			V
17	Tender Last Selling Date <i>[up to the day prior to the day of Deadline for Submission]</i>	< select >			V
18	Tender Closing Date and Time	Date			V
19	Tender Opening Date and Time	< select >			V
20	Name & Address of the office(s) - Selling Tender Document (Principal) - Selling Tender Document (Others)	Address			V
NO CONDITIONS APPLY FOR SALE, PURCHASE OR DISTRIBUTION OF TENDER DOCUMENTS					
21	- Receiving Tender Document - Opening Tender Document Place / Date / Time of Pre-Tender Meeting (Optional)	< type in name >			
		< type in name >			
		< type in name >			
		Date			V
		< select >			V
INFORMATION FOR TENDERER					
22	Brief Eligibility and Qualification of Tenderer	< type in name >			
23	Brief Description of Goods	< type in name >			
24	Brief Description of Related Services	< type in name >			
25	Price of Tender Document (Tk)	< type in price >			
	Lot No	Identification of Lot	Location	Tender Security Amount (Tk)	Completion Time in Weeks/Months
26	1	< type in name >	< type in name >	< type in >	< type in >
27	2	< type in name >	< type in name >	< type in >	< type in >
28	3	< type in name >	< type in name >	< type in >	< type in >
29	4	< type in name >	< type in name >	< type in >	< type in >
30	Name of Official Inviting Tender		< type in name >		
31	Designation of Official Inviting Tender		< type in name >		
32	Address of Official Inviting Tender		< type in name >		
33	Contact details of Official Inviting Tender		< Tel. No. > < Fax No. > < e-mail >		
34	The Procuring Entity reserves the right to reject all the Tenders or annul the Tender proceedings				

<select> : these fields are "pop-up" fields and the procuring entity will only have to select the correct name, address or date in order to complete the form. <type in name> : these fields are to be completed by typing in the relevant data.

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

Format: PG3-B: Reporting Contract Award

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH	
1	Ministry/Division
2	Agency
3	Procuring Entity Name
4	Procuring Entity Code
5	Procuring Entity District
6	Contract Award for
7	Invitation/Proposal Ref. No
KEY INFORMATION	
8	Procurement Method
FUNDING INFORMATION	
9	Budget and Source of Funds
10	Development Partners (if applicable)
PARTICULAR INFORMATION	
11	Project/Program Code (if applicable)
13	Project/Program Name (if applicable)
14	Tender/Proposal Package No.
15	Tender/Proposal Package Name
16	Date of Advertisement
17	No. of Tenders/Proposals Sold
18	No. of Tenders/Proposals Received
19	No. of Responsive Tenders/Proposals
20	Name of Responsive Tenderers
21	Date of Notification of Award
INFORMATION ON AWARD	
22	Accepted Tender/Proposal Price
23	Name of the Successful Tenderer
24	Tenderer ID of the Successful Tenderer (If any)
PROCURING ENTITY DETAILS	
25	Name of Authorized Officer
26	Designation of Authorized Officer

Format: PG3-C: Public Reporting on Contract Signing

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH	
1	Ministry/Division
2	Agency
3	Procuring Entity Name
4	Procuring Entity Code
5	Procuring Entity District
6	Contract Award for
7	Invitation/Proposal Ref. No
KEY INFORMATION	
8	Procurement Method (National/International)
FUNDING INFORMATION	
9	Budget and Source of Funds
10	Development Partners (if applicable)
PARTICULAR INFORMATION	
11	Project/Program Code (if applicable)
13	Project/Program Name (if applicable)
14	Tender/Proposal Package No.
15	Tender/Proposal Package Name
16	Date of Advertisement
17	Date of Notification of Award
18	Date of Contract Signing
19	Expected Date of Contract Completion
INFORMATION ON CONTRACT AND BENEFICIAL OWNERSHIP	
20	Contract Price
21	Name of the Economic Operator (Supplier/Contractor/Service Provider/ Consultant)
22	Tenderer ID of the Economic Operator (If any)
23	Name of the Owner/Partners/CEO or MD/ Directors/Shareholders of the Economic Operator (As per NID)
24	NID Number of the Owner/Partners/ CEO or MD/ Directors/Shareholders of the Economic Operator
25	Business Address of the Economic Operator
26	Location of Delivery/Goods/Service Delivery
PROCURING ENTITY DETAILS	
27	Name of Authorized Officer
28	Designation of Authorized Officer

Note: 1. For any contract above BDT 10.00 Lac, Information on Beneficial Ownership need to be provided.

2. For the purposes of this Form, a Beneficial Owner of a Tenderer or Consultant is any natural person who ultimately owns or controls the Tenderer or Consultant.
3. Directors means the members of the Board of Directors for any incorporated body.
4. Shareholders are those who have 10% of issued shares for any incorporated body.
5. State-Owned Enterprises (SOEs) will be excused from providing such information.

Format: PG3-D: Acceptance Certificate
LOGO
[Insert Full Contact Details of Issuing Authority]
ACCEPTANCE CERTIFICATE

Office Memo no: _____

Date: _____

01	Procuring Entity Details	
	(a) Division	:
	(b) Circle/Directorate	:
	(c) Zone/Region	:
	(d) Others (<i>specify</i>)	:
02	Name of Goods	:
03	Contract No	:
04	Contractor's Legal Title	:
05	Contractor's Contact Details	:
06	Contractor's Trade License/Enlistment/Registration Details	:
07	Reference to NOA with Date	:
08	Original Contract Price as in NOA	:
09	Revised Contract Price	:
10	Final Contract Price as Executed	:
	Original Contract Period	
11	(a) Date of Commencement	:
	(b) Date of Completion	:
	Actual Delivery Period	
12	(a) Date of Actual Commencement	:
	(b) Date of Actual Completion	:
13	Days/Months Contract Period Extended	:
14	Amount of Bonus for Early Completion	:
15	Amount of LD for Delayed Completion	:
16	Physical Progress in Percent (<i>in terms of value</i>)	:
17	Financial Progress in Amount (<i>in terms of payment</i>)	:
18	Special Note (<i>if any</i>)	:

Certified that the Goods under the Contract has been executed and completed in all respects in strict compliance with the provisions of the Contract including all plans, designs, drawings, specifications and all modifications thereof as per direction and satisfaction of the Project Manager/Engineer-in Charge/Other (*specify*). All defects in workmanship and materials reported during construction have been duly corrected.

Name and Signature of the Issuing Authority with Designation

please turn over

Details of Delivery Completed

Contractor: [insert legal title]		
No	Major Components of Goods	Total Value (in Contract Currency)

Subcontractor

[delete, if not appropriate]

Subcontractor: [insert legal title] [delete, if not appropriate]		
No	Items/ Components/Activities [reference drawn to Sub-Contractor Information]	Value (in Contract Currency)

Name and Signature of the Issuing Authority with Designation