



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

BANGLADESH RURAL ELECTRIFICATION BOARD (BREB)

TENDER DOCUMENT

For Supply & Installation of Plant & Equipment

[One Stage Two Envelope Tendering for Turnkey Contract (OSTETM), ICT]

DESIGN, SUPPLY, INSTALLATION, TESTING, AND COMMISSIONING etc. ALL COMPLETE AS REQUIRED FOR ESTABLISHMENT OF ENERGY STORAGE SYSTEM IN FOUR SUBSTATIONS EACH WITH 10 MWh CAPACITY (DHAKA-1, MYMENSINGH-2, KISHOREGANJ AND NARSINGDI-1 PBS) ON A TURN-KEY BASIS.

Invitation for Tender No :
Issued on :
Tender Package No : MCEP/BREB/DMD-W-392
Tender Lot No : MCEP/BREB/DMD-W-392

ON BEHALF OF THE OFFICE OF

Project Director,

Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) Project

Bangladesh Rural Electrification Board, Head office, Training Academy Building, Nikunja-2, Khilkhet, Dhaka-1229. Floor: 6th Floor, City: Dhaka-1229, Country: Bangladesh.

Telephone: +88-02-8900070

Electronic mail address: pdmcepdmd@gmail.com

SEAL & SIGNATURE

দিনের আলো ব্যবহার করি, বিদ্যুৎ সাশ্রয়ে অবদান রাখি

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 Energy Storage System in Four Substations Each With 10 MWh capacity (Dhaka-1, Mymensingh-2, Kishoreganj and Narsingdi-1 PBS) on A Turn-Key Basis.		
5	Invitation Ref No. & date	27.12.0000.224.11.031.24.573 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-392		
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 12.00 noon (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 under maximum 03 (Three) contract(s) of similar nature, complexity and methods/ construction technology successfully completed within last 10 (Ten) years with total value as below:		
		Package No.	Amount (USD/Equivalent)	
		MCEP/BREB/DMD-W-392	5,600,000.00 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	Tender security Completion time
	MCEP/BREB/DM D-W-392	392/1	Design, Supply, Installation, Testing, And Commissioning etc. All Complete as Required for Establishment of Energy Storage System in Four Substations Each With 10 MWh capacity (Dhaka-1, Mymensingh-2, Kishoreganj and Narsingdi-1 PBS) on A Turn-Key Basis.	250,000.00 USD or Equivalent 12 (Twelve) months
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 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, Dhaka.		
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.			
		বাংলাদেশ পল্লী বিদ্যুতায়ন বোর্ড Bangladesh Rural Electrification Board বাপবিবো/জন- ()/ 2025-2026		
		Project Director, 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.		

Abbreviations

ACDB	AC Distribution Board
AGC	Automatic Generation Control
AIS	Air Insulated Switchgear
ANSI	American National Standard Institute
O&M	Annual Maintenance Contract.
ASTM	American Society for Testing Materials
AVC	Automatic Voltage Control
BAMS	Battery Stack Management System
BAU	Battery Assembly Unit
BCU	Battery Control Unit
BESS	Battery Energy Storage System
BMS	Battery Management System
BMU	Battery Management Unit
CAN	Controller Area Network
CT	Current Transformer
CU AC	Control Unit responsible for the AC side
DC	Direct Current
DCDB	DC Distribution Board
DNP	Distributed Network Protocol
DOD	Depth of Discharge
EMC	Electromagnetic Compatibility
EMS	Energy Management System
ESMF	Environmental and Social Management Framework
ESS	Energy Storage System
GPS	Global Positioning System
HC	Harmonic Content
HDMI	High-Definition Multimedia Interface
HMI	Human Machine Interface
IEC	International Electrotechnical Commission
IED	Intelligent Electronic Device
IEEE	Institute of Electrical and Electronics Engineers
IGBT	Insulated Gate Bipolar Transistor
IP	Ingress Protection
LVAC	Low Voltage Alternating Current
MFM	Multifunction Modules
MGC	Microgrid Controller
MODBUS	Modular Data Bus
MSDS	Material Safety Data Sheet
NFPA	National Fire Protection Association
NMC	Nickel Manganese Cobalt Oxide
NTP	Network Time Protocol
OEM	Original Equipment Manufacturer
OFC	Optical Fiber Cable
ONAN	Oil Natural Air Natural
O&M	Operation & Maintenance.
OPC	OLE for Process Control
PCS	Power Conversion System
PEA	Procuring Entity's Agent

PSA	Power Supply Authority
PT	Potential Transformer
RAL	Reichs Ausschuss für Lieferbedingungen (Color Standard)
RTU	Remote Terminal Unit
SCADA	Supervisory Control and Data Acquisition
SLD	Single Line Diagram
SNMP	Simple Network Management Protocol
SOC	State of Charge
SOH	State of Health
TCP	Transmission Control Protocol
THDI	Total Harmonic Distortion - Current
UART	Universal Asynchronous Receiver Transmitter
UA	Voltage of Phase A (line-to-neutral or ground)
UL	Line Voltage: The voltage between two phases
UN	Nominal Voltage Rated design voltage of the BESS
XLPE	Cross-Linked Polyethylene

TENDER DOCUMENT FOR

DESIGN, SUPPLY, INSTALLATION, TESTING, AND COMMISSIONING etc. ALL COMPLETE AS REQUIRED FOR ESTABLISHMENT OF ENERGY STORAGE SYSTEM IN FOUR SUBSTATIONS EACH WITH 10 MWh CAPACITY (DHAKA-1, MYMENSINGH-2, KISHOREGANJ AND NARSINGDI-1 PBS) ON A TURN-KEY BASIS.

Table of Contents

Section-I: Instructions to Tenderers	10
A. General.....	10
1. Scope of Tender	10
2. Interpretation	10
3. Source of Funds	10
4. Corrupt, Fraudulent, Collusive, Coercive or Obstructive Practices	11
5. Eligible Tenderers	13
6. Eligible Plants and Services	14
7. Site Visit	15
B. Tender Document	16
8. Tender Document: General	16
9. Clarification of Tender Document	16
10. Pre-Tender Meeting	16
11. Addendum to Tender Document	17
C. Qualification Criteria	18
12. General Criteria	18
13. Experience Criteria	19
14. Financial Criteria	19
15. Personnel Capacity	19
16. Equipment Capacity	19
17. Joint Venture (JV)	19
18. Subcontractor (s)	20
D. Tender Preparation.....	21
19. Only one Tender	21
20. Cost of Tendering	21
21. Issuance and Sale of Tender Document	21
22. Language of Tender	21
23. Contents of Tender	21
24. Tender Submission Letter and Price Schedule	23
25. Alternatives	23
26. Tender Prices, Discounts and Price Adjustment	23
27. Tender Currency	26
28. Documents Establishing Eligibility of the Tenderer	27
29. Documents Establishing the Eligibility and Conformity of Plant and Services	27
30. Documents Establishing Technical Proposal	29
31. Documents Establishing the Tenderer's Qualification	29
32. Validity Period of Tender	30
33. Extension of Tender Validity and Tender Security	30
34. Tender Security	30
35. Form of Tender Security	31
36. Authenticity of Tender Security	31
37. Return of Tender Security	31
38. Forfeiture of Tender Security	32
39. Format and Signing of Tender	32
E. Tender Submission.....	34
40. Sealing, Marking and Submission of Tender	34

41. Deadline for Submission of Tender	35
42. Late Tender	35
43. Modification, Substitution or Withdrawal of Tender	35
F. Tender Opening and Evaluation	36
44. Tender Opening	36
45. Evaluation of Tenders	38
46. Preliminary Examination	38
47. Technical Responsiveness and Technical Evaluation	39
48. Clarification on Tender	40
49. Restrictions on Disclosure of Information	41
50. Approval of Technical Evaluation Report	41
51. Financial Offer Opening	41
52. Clarification on Financial Offer	42
53. Correction of Arithmetical Errors	42
54. Conversion to Single Currency	43
55. Financial Evaluation	43
56. Identifying Significantly Low-priced Tenders (SLT)	44
57. Price Comparison	45
58. Negotiations	46
59. Post-qualification	46
60. Procuring Entity's Right to Accept any or to Reject Any or All Tenders	47
61. Rejection of All Tenders	47
62. Informing Reasons for Rejection	47
G. Contract Award	48
63. Award Criteria	48
64. Notification of Award	48
65. Reporting on Contract Awarding	49
66. Performance Security	49
67. Form and Time Limit for Furnishing of Performance Security	49
68. Validity of Performance Security	49
69. Authenticity of Performance Security	49
70. Retention Money and Contractual Security	49
71. Contract Signing	50
72. Notification of Contract Signing	50
73. Debriefing of Tenderers	50
74. Adjudicator	50
75. Right to Complain and appeal	50
Section 2. Tender Data Sheet	51
A. General	51
B. Tender Document	51
C. Qualification Criteria	52
D. Preparation of Tender	54
E. Submission of Tender	58
F. Opening and Evaluation of Tenders	59
G. Award of Contract	66
Section-III: General Conditions of Contract	68
A. General	68
1. Definitions	68
2. Interpretation	72
3. Communications & Notices	73
4. Governing Law	73
5. Governing Language	73
6. Corrupt, Fraudulent, Collusive, Coercive or Obstructive Practices	74
7. Documents Forming the Contract and Priority of Documents	76
8. Assignment	76
9. Eligibility	76

10. Gratuities / Agency fees	76
11. Confidential Details.....	76
12. Trademark, Patent and Intellectual Property Rights	78
13. Copyright.....	78
14. License/ Use of Technical Information	78
15. Joint Venture (JV)	78
16. Nominated Subcontractor	79
17. Other Contractors	80
18. Possession of the Site	80
19. Access to the Site	80
20. Safety, Security and Protection of the Environment	80
21. Working Hours	80
22. Welfare of Laborers	80
23. Subcontractor	81
24. Dayworks	81
25. Child Labor	81
26. Fossils& antiquities	81
B. Subject Matter of Contract	82
27. Scope of Facilities	82
28. Time for Commencement.....	83
29. Time for Completion	83
30. Procuring Entity's Responsibilities	83
31. Contractor's Responsibilities	84
32. Procuring Entity's and Contractor's Risk	85
33. Procuring Entity's Risks	85
34. Contractor's Risks.....	86
C. Execution of the Facilities	86
35. Representatives: Project Manager	86
36. Representatives: Contractor's Representative & Construction Manager	86
37. Work Program	87
38. Design and Engineering	88
39. Procurement.....	90
40. Installation	91
41. Test & Inspection.....	94
42. Completion of the Facilities.....	95
43. Commissioning and Operational Acceptance	96
D. Guarantees and Liabilities	100
44. Completion Time Guarantee	100
45. Defect Liability	100
46. Functional Guarantees	102
47. Patent Indemnity	103
48. Limitation of Liability	104
E. Risk Distribution	104
49. Transfer of Ownership	104
50. Care of Facilities	105
51. Loss of or Damage to Property; Accident or Injury to Workers; Indemnification	106
52. Insurance	107
53. Limitation of Liability	109
54. Unforeseen Conditions.....	109
55. Adjustment for Changes in Legislation	110
56. Force Majeure.....	110
57. Notice of Force Majeure	111
58. Duty to Minimise Delay.....	111
59. Consequences of Force Majeure	111
F. Payment	111
60. Contract Price	111
61. Terms of Payment.....	112
62. Advance Payment Security.....	113
63. Performance Security	113

64. Retention Money	114
65. Taxes and Duties.....	114
66. Payments to Nominated Subcontractor(s)	114
67. Price Adjustment.....	114
68. Liquidated Damages	115
G. Change in Contract Elements	115
69. Change in the Facilities	115
70. Extension of Delivery and Completion Schedule.....	118
71. Suspension	120
H. Termination and Settlement of Disputes	121
72. Notice to Correct.....	121
73. Termination for Default	122
74. Termination for Insolvency.....	123
75. Termination for Convenience.....	123
76. Payment upon Termination	124
77. Property	125
78. Frustration	125
79. Amendment to Contract.....	125
80. Compensation Events	126
81. Contractor's Claims.....	127
82. Settlement of Disputes	127
Section 4. Particular Conditions of Contract	129
Appendix 1. Terms and Procedures of Payment.....	139
Appendix 2. Price Adjustment.....	142
Appendix 3. Insurance Requirements.....	143
- Not Applicable (Employer will not take out any Insurance)Appendix 4. Time Schedule	145
Appendix 5. List of Major Items of Plant and Services and List of Approved Subcontractors	147
Appendix 6. Scope of Works and Supply by the Procuring Entity	148
Appendix 7. List of Documents for Approval or Review	149
Appendix 8. Functional Guarantees	150
Section 5. Tender and Contract Forms	152
<i>Tender Submission Letter for Technical Offer (Form PG5A-1a)</i>	<i>153</i>
<i>Tender Submission Letter for Financial Offer (Form PG5A-1b).....</i>	<i>156</i>
<i>JV Partner Information (Form PG5A-2b).....</i>	<i>164</i>
<i>Personnel Information</i>	<i>204</i>
Specifications Submission and Compliance Sheet (Form PG5A-5)	209
Manufacturer's Authorisation Letter (Form PG5A - 6)	210
Section 6. Procuring Entity's Requirements	220
6.1 Scope of Supply of Plant and Installation Services by the Contractor	221
6.2 Technical Specification	253
6.2.1 Containerized Battery Energy Storage System (BESS) Design	253
6.2.2 Energy Management System (EMS)	263
6.2.3 Thermal Management System (TMS)	265
6.2.4 Switchgear, Interconnected System and Overall Protection	266
6.2.5 Battery Energy Storage System (BESS) Safety, Ventilation, and Fire Protection Design	275
6.2.6 Communication, Monitoring, and Control Architecture.....	279
6.2.7 Environmental Requirement.....	282
6.2.8 Civil Works	285
6.2.9 Detailed Technical Specifications	286
6.2.10 Safety.....	313

6.2.11 Miscellaneous Works	315
6.2.12 Management Systems.....	322
6.2.13 Technical Requirement and Guarantee Schedule to be filled up by the Tenderer	328
6.2.14: Miscellaneous	361
6.3 Form of Completion Certificate	379
6.4 Form of Operational Acceptance Certificate	380
6.5 Form of Change Order Procedure and Forms	381
Annex 1. Request for Change Proposal	383
Annex 2. Estimate for Change Proposal.....	385
Annex 3. Acceptance of Estimate.....	386
Annex 4. Change Proposal.....	387
Annex 5. Change Order	389
Annex 6. Pending Agreement Change Order.....	390
6.6 Supplementary Information.....	393
Section 7. Drawings.....	396
7.1 Site Layout of the Kaliakoir-6 substation	396
7.2 Existing Single Line Diagram of the Kaliakoir-6 Substation:	397
7.3 BESS connection proposal of the Kaliakoir-6 Substation.....	398
7.4 Panel rearrangement proposal of the Kaliakoir-6 Substation.....	399
7.5 Site layout of the Algi substation	400
7.6 Existing Single Line Diagram of the Algi Substation:	401
7.7 BESS connection proposal of the Algi substation.....	402
7.8 Panel rearrangement proposal of the Algi substation	403
7.9 Site Layout of the Trishal-2 substation	404
7.10 Existing Single Line Diagram of the Trishal-2 Substation	405
7.11 BESS connection proposal of the Trishal-2 substation	406
7.12 Panel rearrangement proposal of the Trishal-2 substation	407
7.13 Site Layout of the Pakundia-2 substation	408
7.14 Existing Single Line Diagram of the Pakundia-2 Substation.....	409
7.15 BESS connection proposal of the Pakundia-2 substation.....	410
7.16 Panel rearrangement proposal of the Pakundia-2 substation.....	411
7.17 Typical Civil Drawing.....	412
Annexures: Formats.....	418

Section-I: Instructions to Tenderers

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 (ies) 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 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 (Financial 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 initialled 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 5), 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. 4 Installation and other Services Schedule No. 5 Grand Summary (Schedule Nos. 1 to 4) Schedule No. 6 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; - in the form of a Bank Draft or Pay Order, or - 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 (Envelop-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. (a) 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;

56. Identifying Significantly Low-priced Tenders (SLT)		(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.
	56.1	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: i. the official cost estimate, ii. the prices obtained from the recent Price Index in public procurement processes following ITT Sub Clause 56.4 and iii. 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	
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. Address: Bangladesh Rural Electrification Board, Head office, Floor: 6th, Training Academy Building, Nikunja-2, Khilkhet, Dhaka-1229. City: Dhaka-1229, Country: Bangladesh. Telephone: +88-02-8900070 E-mail: pdmcepdmd@gmail.com The Name of the Tender is: Design, Supply, Installation, Testing, And Commissioning etc. All Complete as Required for Establishment of Energy Storage System in Four Substations Each With 10 MWh Capacity (Dhaka-1, Mymensingh-2, Kishoreganj and Narsingdi-1 PBS) on a Turn-Key Basis. Tender Ref: 27.12.0000.224.11.031.24.573 Date: 19-04-2026 Lot No(s): Single Lot: MCEP/BREB/DMD-W-G-392
ITT 1.1	The number, identification and name of lots comprising the Tender are: Tender Package No.: "MCEP/BREB/DMD-W-G-392"
ITT 3.1	The source of public fund is: GOB & World Bank (IDA).
ITT 3.3	The name of the Development Partner is: The World Bank (International Development Association) under Electricity Distribution Modernization Program.
ITT 5.1	Tenderers from the following countries are not eligible: Israel. 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: None
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. Address: Bangladesh Rural Electrification Board, Head office, Floor: 6th, Training Academy Building, Nikunja-2, Khilkhet, Dhaka-1229. City: Dhaka-1229, Country: Bangladesh. Telephone: +88-02-8900070 E-mail: pdmcepdmd@gmail.com and contact Procuring Entity within, 06 May, 2026; Time: 17:00 Hours (BST)

ITT 10.1	The Pre- Tender meeting shall be held at Address: Office of the Project Director Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) (1st Revised) Project. Address: Bangladesh Rural Electrification Board, Head office, Floor: 6th, Training Academy Building, Nikunja-2, Khilkhet, Dhaka-1229. City: Dhaka-1229, Country: Bangladesh. Telephone: +88-02-8900070 E-mail: pdmcepdmmd@gmail.com Time & Date: 12.00 noon (BST) & 06 May, 2026. Note: -No formal site visit will be organized by the Employer; however, the Employer will provide assistance if Tenderers wish to visit the site. -Tenderers are strongly advised to inspect the site and its surroundings to obtain all necessary information for Tender preparation and contract execution. -No claims for additional costs or extensions of time will be entertained on the grounds of insufficient site information, system requirements or unforeseen site conditions. -The costs and expenses associated with attending the pre-Tender meeting and/or site visit shall be borne by the Potential Tenderers.
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 (Three) years. <i>[years counting backward from the date of publication of IFT in the newspaper]</i>
ITT 13.1(b)	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 under maximum 03 (Three) contract(s) of similar nature, complexity and methods/ construction technology successfully completed within the last Ten (10) years, with a value of at least USD 5,600,000.00 (Five Million Six Hundred Thousand USD) or equivalent other currencies. Similar Nature Experience: (1) The Tenderer shall demonstrate successful completion of Battery Energy Storage System (BESS) with a minimum of 2MWh Storage Capacity or supply and installation of 33/11 KV or Higher voltage Substation with SCADA/integration and installation of SCADA or Substation Automation System Implementation in 33/11 KV or higher voltage or solar PV project with a minimum capacity of 10 MWp similar nature and complexity. In support of experience as mentioned above the tenderer must submit certificates from clients (End user certificates) specified above in end user's letterhead pad in English and mentioning that the system/plants are in operation at least for 01 (One) Year. The above certificates must contain end-user's full address, email address, website address and phone/ cell number for the convenience of authentication.

ITT 14.1 (a)	The maximum three (03) number of arbitrations against the Tenderer over a period of last Five (05) years.																																		
ITT 14.1(b)	The minimum amount of financial resources as liquid asset or working capital or credit line(s) or specific credit commitment or in any combination of them, of the Tenderers shall be at least 9,000,000.00 USD (Nine Million USD or equivalent other currencies).																																		
ITT 14.1(c)	The required average annual turnover shall be greater 8,770,000.00 USD (Eight Million Seven Seventy Thousand USD) or equivalent other currencies over the best three (3) years in the last five (5) years.																																		
ITT 15.1	A Project Manager, Engineer, and other key staff shall have the following qualifications and experience: <table border="1"> <thead> <tr> <th>No</th><th>Position and Minimum requirement</th><th>Total Works Experience</th><th>Experience in similar works</th></tr> </thead> <tbody> <tr> <td>1</td><td>Project Manager- 01 (B. Sc. In Electrical & Electronic /Mechanical Engineering/any discipline)</td><td>12 Years</td><td>Minimum of 07 years' experience in 33/11 kV substation projects, ideally at least 3 years in BESS projects.</td></tr> <tr> <td>2</td><td>Design Engineer- 01 No. (B. Sc. In Electrical & Electronic Engineering).</td><td>10 Years</td><td>Minimum of 07 years' experience in 33/11 kV substation design, ideally at least 3 years in BESS projects.</td></tr> <tr> <td>3</td><td>BESS Integration Engineer- 01 No</td><td>07 Years</td><td>Minimum of 05 years' experience in Battery Energy Storage System (BESS) projects.</td></tr> <tr> <td>4</td><td>Control & Communication Engineer-01</td><td>07 Years</td><td>Minimum of 05 years' experience in Communication Protocol, EMS-SCADA integration System.</td></tr> <tr> <td>5</td><td>Electrical Engineer - 01 No. (B. Sc. In Electrical Engineering)</td><td>07 Years</td><td>Minimum of 05 years' experience in 33/11 kV substation.</td></tr> <tr> <td>6</td><td>Site Engineer- 01 No (B. Sc. In Civil/Electrical Engineering)</td><td>05 Years.</td><td>03 Years experience in 33/11 kV substation project.</td></tr> <tr> <td>7</td><td>Foreman- 01 no (HSC)</td><td>07 Years</td><td>05 Years experience in Battery Energy Storage System (BESS) or 33/11 kV substation Installation.</td></tr> </tbody> </table> Tenderer shall provide manpower detail information in accordance of technical proposal (Form PG5A-4) and an undertaking certificate regarding manpower that mentioned manpower will be engaged in the proposed work on dedicated basis. The number of key staff mentioned above represents the minimum requirement, may require to increase according to the site condition and project needs.			No	Position and Minimum requirement	Total Works Experience	Experience in similar works	1	Project Manager- 01 (B. Sc. In Electrical & Electronic /Mechanical Engineering/any discipline)	12 Years	Minimum of 07 years' experience in 33/11 kV substation projects, ideally at least 3 years in BESS projects.	2	Design Engineer- 01 No. (B. Sc. In Electrical & Electronic Engineering).	10 Years	Minimum of 07 years' experience in 33/11 kV substation design, ideally at least 3 years in BESS projects.	3	BESS Integration Engineer- 01 No	07 Years	Minimum of 05 years' experience in Battery Energy Storage System (BESS) projects.	4	Control & Communication Engineer-01	07 Years	Minimum of 05 years' experience in Communication Protocol, EMS-SCADA integration System.	5	Electrical Engineer - 01 No. (B. Sc. In Electrical Engineering)	07 Years	Minimum of 05 years' experience in 33/11 kV substation.	6	Site Engineer- 01 No (B. Sc. In Civil/Electrical Engineering)	05 Years.	03 Years experience in 33/11 kV substation project.	7	Foreman- 01 no (HSC)	07 Years	05 Years experience in Battery Energy Storage System (BESS) or 33/11 kV substation Installation.
No	Position and Minimum requirement	Total Works Experience	Experience in similar works																																
1	Project Manager- 01 (B. Sc. In Electrical & Electronic /Mechanical Engineering/any discipline)	12 Years	Minimum of 07 years' experience in 33/11 kV substation projects, ideally at least 3 years in BESS projects.																																
2	Design Engineer- 01 No. (B. Sc. In Electrical & Electronic Engineering).	10 Years	Minimum of 07 years' experience in 33/11 kV substation design, ideally at least 3 years in BESS projects.																																
3	BESS Integration Engineer- 01 No	07 Years	Minimum of 05 years' experience in Battery Energy Storage System (BESS) projects.																																
4	Control & Communication Engineer-01	07 Years	Minimum of 05 years' experience in Communication Protocol, EMS-SCADA integration System.																																
5	Electrical Engineer - 01 No. (B. Sc. In Electrical Engineering)	07 Years	Minimum of 05 years' experience in 33/11 kV substation.																																
6	Site Engineer- 01 No (B. Sc. In Civil/Electrical Engineering)	05 Years.	03 Years experience in 33/11 kV substation project.																																
7	Foreman- 01 no (HSC)	07 Years	05 Years experience in Battery Energy Storage System (BESS) or 33/11 kV substation Installation.																																

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: The tendered shall submit list of tools & equipment owned by them or have to submit evidence that they own or letter of authorization that they are assured to hire the required equipment, so that they could engage the equipment from the day of starting of the work to ensure the completion of the Project within the specified completion time with the technical proposal. Contractor must have access to following equipment (But not limited to): ▪ Mobile Crane with adequate capacity for lifting and placement of heavy goods or other lifting systems for heavy equipment and other necessary equipment & Tools for the plant implementation. ▪ Minimum Number of system implementation equipment: As required. ▪ Minimum Number of system implementation tools: As required.			
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 three (03)			
ITT 17.2	Maximum number of partners in the JV shall be three (03)			
	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	Requirements for other Partner(s)
	ITT-13.1(a)	Summation not applicable	Same as stated in TDS	Same as for Leading Partner
	ITT-13.1(b)	100%	Maximum Three Contract	Minimum requirement not applicable
	ITT-14.1(b)	100%	40%	25%
	ITT-14.1(c)	100%	40%	25%
	ITT-14.1(d)	100%	40%	25%
	ITT-15.1	100%	Minimum requirement not applicable	Minimum requirement no applicable
	ITT-16.1	100%	Minimum requirement not applicable	Minimum requirement no applicable
	ITT-17.5	100%	Maximum among the Partners	Minimum 25%
<i>[it is suggested that the Procuring Entity adheres to the above proportion of minimum qualifying requirements to meet the specific procurement needs. Percent share of business of the JV partners shall not be considered in determining the qualifications of a JV]</i>				
D. Preparation of Tender				
ITT 18.1	The maximum of percentage [state 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 Single lot
ITT 23.2(f)	Tenderers shall have the following up to date valid License: -ABC Category Electrical Supervisory License issued by the Bangladesh Electrical Licensing Board or an equivalent internationally recognized certification authorizing supervision of electrical installations across low, medium, and high voltage systems.
ITT 23.2(s)	The Tenderer shall submit with its technical offer the following additional documents: i. Manufacturer Letter(s) of authorization confirming that the Tenderer is authorized to submit the tender on behalf of the respective manufacturers and has the authority to supply the proposed BESS equipment to the Employer ii. Technical specifications and brochures of all major BESS equipment and associated plant to be incorporated in the works iii. Satisfactory type test certificates of major equipment (Battery Cell, BMS, EMS, PCS, Breakers and bi-directional transformer) to be supplied under this contract. Type tests shall be performed by internationally accredited independent laboratories in accordance with the relevant IEC/IEEE/UL standards or equivalent international standards. iv. The tenderers shall submit evidence of successful operation from end user for a minimum 1year of BESS station/similar plants. v. The tenderers shall submit Three (03) years satisfactory service and operation certificate from end user within last 10 years in humid tropical climate of similar specification required by this BID for the equipment of battery cell, PCS, BMS, EMS, Transformer (each equipment matching to its similar application of required BESS system) of Respective Manufacturers. vi. The tenderers shall submit supply record of last ten (10) years for electrical equipment of respective manufacturers: battery cell, PCS, BMS, EMS, Transformer (each equipment matching to its similar application of required BESS system) etc. vii. Copies of ISO 9001:2015 or equivalent quality management certificates of proposed manufacturers of Major Equipment (Battery Cell, BMS, EMS, PCS, Breakers and bi-directional transformer) viii. Detail Specification, name of the manufacturer, country of origin & model of the offered equipment/spares/ items/ materials, port of shipment in Tender prescript format. "Equivalent" term shall not be acceptable. ix. End User certificate as documentary evidence to satisfy experience criteria as stated in ITT 14.1(b). x. The End User Certificates should be in end user's letterhead pad in English of the said equipment and shall contain end-user's full address, e-mail address, website address and phone/ cell number for the convenience of authentication. xi. All necessary technical papers, type/routine test reports (in English), catalogues, and data sheets as described in the technical specification of this Tender Document shall be submitted. (Physical samples are not required.) The required Technical Proposal shall also include the following additional information: ○ Work plan and implementation strategy.

	○ Statement of working method. ○ Methodology for foundation, erection, installation, and commissioning of BESS and associated equipment. ○ Project time schedule in bar chart form. ○ Organogram of required manpower for project implementation, including BESS engineers, EMS/SCADA specialists, electrical supervisors, and safety officers. ○ Letter(s) of authorization from the respective manufacturers. ○ Certificates from end users confirming that the said BESS systems have been in satisfactory service for at least three (3) years. The certificates shall be on company letterhead and include contact details of responsible persons. ○ All relevant type and routine test reports as mentioned in the specification enclosed in the Tender Document. ○ Statement of works in hand to be completed next 01 (one) year including its value of uncompleted portion. ○ A valid and up-to-date Trade License, or an equivalent business registration document issued in the Tenderer's country of origin. ○ Tax Identification Number (TIN) / Business Identification Number (BIN), or an equivalent taxpayer identification issued by the relevant authority in the Tenderer's country of origin. ○ A valid and up-to-date Income Tax certificate, or an equivalent tax compliance certificate, issued by the relevant authority. ○ Complete CV with detail experience of the key personnel, who will perform 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 Five (05) years. - Cash Flow Statement / Bank solvency certificate from their banker showing capability of project implementation.
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, including associated civil, electrical, mechanical works or other technical requirements. or Tenderers shall quote for the following components or services on a single responsibility basis: Not Applicable and/or The following components or services will be provided under the responsibility of the Procuring Entity: Not Applicable
ITT 26.6	Price Schedule-7 has been included in Section- 5 (Tender and Contract Forms-Schedule of Rates and Prices) based on the requirements of the O&M Contract "Operation and Maintenance (O&M) Services Contract for the BESS System of four (04) sites".
ITT 26.7(a)	Place of Final Destination: CIP (Any port of Bangladesh) To final destination The Purchaser shall pay customs duties, CD-VAT of the imported materials under the Contract (incurred at the port of entry). However, the Supplier shall do customs

	formalities, including the appointment of, and payment to, clearing and forwarding (C&F) agent. The Supplier shall also bear port duties and all other charges including transportation to the final destination of Project sites.
ITT 26.7(d)	Local transportation to named place of final destination is: Project sites and/or designated stores of BREB. List of Project Sites: 1. Kaliakoir-06 substation under Dhaka PBS-1. 2. Trishal -2 substation under Mymensingh PBS-2. 3. Pakundia-2 substation under Kishoreganj PBS 4. Algi under substation Narsingdi PBS-1
ITT 26.9	The prices quoted by the Tenderer shall be fixed for the duration of the Contract.
ITT 27.4	Name of the foreign currency: USD and 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): Twelve (12) years.
ITT 31.1(d)	The required information regarding claims under litigation shall be during the last Five (05) years.
ITT 31.1(e)	Manufacturer's Authorisation is required for all the items listed in Section 6: Schedule of Requirements. A Manufacturer's Authorisation Letter is required for the Equipment and Materials as per schedule no. 1 & 2 of Price Schedule for Plant and Service (Form PG5A-3).
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 Five (05) years.
ITT 32.2	The Tender Validity period shall be 180 days.
ITT 34.1	The amount of the Tender Security shall be 250,000.00 USD (Two hundred Fifty Thousand USD or Equivalent currency). In favour of Project Director Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) (1 st Revised) Project. BREB. Bangladesh Rural Electrification Board, Head office, 6th Floor, Training Academy Building, Nikunja-2, Khilkhet, City: Dhaka-1229, Country: Bangladesh. Telephone: +88-02-8900070 E-mail: pdmcepdmd@gmail.com
ITT 39.1	In addition to the original of the Tender, <i>[state number]</i> copy/copies shall be submitted. Technical Proposal: Two (2) copies , one (1) original and one (1) copy of the Technical Proposal including a soft copy in PDF on a USB Drive. Hard (original) copy shall prevail in case of discrepancy between hard (original) and soft copy. Financial Proposal: Two (2) copies , original one (1) hard copy and one (1) copy of the financial proposal including soft copy in Excel format on a USB Drive. Hard (original) copy shall prevail in case of discrepancy between hard (original) and

	soft copies. Both hard and soft copies shall submit in sealed envelope. * The tenderer shall enclose the original Technical Proposal and Financial Proposal in different envelope. The envelopes will be marked as Technical Proposal Original and Financial Proposal Original. Similarly copies of technical and financial proposal will be enclosed in two different envelopes and the envelope will be marked 'Copy Technical Proposal' and 'Copy Financial Proposal'. Then original Technical Proposal envelope and copy of the technical proposals will be put into another envelope and the envelope will be marked as technical proposal. Similarly Original of the Financial Proposal and Copy of the Financial Proposal will put into another envelope will be marked as Financial Proposal. These two envelopes of Technical Proposal and Financial proposal shall then be enclosed one single outer envelope. All envelopes should be duly sealed and signed by the bidder. Both Technical and Financial Proposals shall be submitted with proper book binding and with sequential page number.
E. Submission of Tender	
ITT 40.2 €	The inner and outer envelopes shall bear the following additional identification marks: Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) (1ST Revised) Project, BREB.
ITT 40.4(e)	The inner and outer envelopes shall bear the following additional identification marks: Be addressed to the Employer at the following address: Attention: Project Director Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) (1ST Revised) Project. BREB Address: Office of the Project Director Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) (1ST Revised) Project, BREB. Bangladesh Rural Electrification Board, Head office, 6th Floor, Training Academy Building, Nikunja-2, Khilket, City: Dhaka-1229, Country: Bangladesh. Telephone: +88-02-8900070 E-mail: pdmcepdmd@gmail.com Bear the following identification: a. Tender for Design, Supply, Installation, Testing, And Commissioning etc. All Complete as Required for Establishment of Energy Storage System in Four Substations Each With 10 MWh capacity (Dhaka-1, Mymensingh-2, Kishoreganj and Narsingdi-1 PBS) on A Turn-Key Basis. Tender Ref: 27.12.0000.224.11.031.24.573 Date: 19-04-2026 b. The Financial offer should be in a separate inner envelop bearing the following additional identification: "FINANCIAL OFFER" "DO NOT OPEN BEFORE THE TECHNICAL OFFER EVALUATION AND APPROVAL".

ITT 41.1	For <u>Tender submission purposes</u>, 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, 6th floor, Training Academy Building, Nikunja-2, Khilkhet, City: Dhaka-1229, Country: Bangladesh The deadline for submission of Tenders is: Time & Date: 04 June, 2026 up to 12:00 Hours (BST)
F. Opening and Evaluation of Tenders	
ITT 44.1	The Tender opening shall take place at: Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) (1ST Revised) Project. BREB Address: Bangladesh Rural Electrification Board, Head office, 6th floor, Training Academy Building, Nikunja-2, Khilkhet, City: Dhaka-1229, Country: Bangladesh Date & Time: June 04, 2026 on 12:30 Hours (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 [<i>specify percentage</i>] of the Tender Price for each day of delay. Tender offering delivery schedules beyond [<i>specify time limit</i>] 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 [<i>specify (spare parts, tools, major assemblies, estimated quantities)</i>] of usage in the initial period [<i>specify period</i>] 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. : Bidders with schedules that are not aligned with the requirements shall be rejected.

	(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 (d) <u>Operation & Maintenance (O&M) Service Cost:</u> The projected operating and maintenance costs during the life of the Facilities: - The Operation and Maintenance (O&M) costs for Years 6–12 (Phase 2: O&M Contract), as quoted in Schedule 7, shall be evaluated using the LCOS formula for the purpose of bid evaluation and determination of the successful bidder for Phase 1 (EPC Contract). - The purchaser shall consider the Verification and examination of the Price Schedule for Operation & Maintenance Service for the years 6-12.
ITT 57. Price Comparison	Tenders that fully comply with all mandatory technical requirements shall first be screened to eliminate any identified as Significantly Low-Priced Tenders (SLT) in accordance with ITT Clause 56. Only those Tenders not classified as SLT shall be considered for further evaluation. Among the remaining responsive Tenders, the Employer shall carry out the price comparison based on the lowest CAPEX (the EPC Price, including local and foreign training costs) to determine the lowest evaluated Tender. To Evaluate & determine the lowest CAPEX, the LCOS formula shall be applied, as detailed in below: Proposed Levelized Cost of Storage (LCOS) Formula: CAPEX: Total price offered by the bidder. OPEX: Provided by the bidder Yield: 1 cycle per day during every day for 12 years= x kwh for each bidder... The lowest= (CAPEX + OPEX)/Yield. $LCOS = \frac{C_{\text{capex}} + \sum_{t=1}^N \frac{OM_t + R_t}{(1+r)^t}}{\sum_{t=1}^N \frac{E_t}{(1+r)^t}}$

Here,

Symbol	Definition
C_{capex}	Total EPC turnkey price offered by the bidder
OM_t	Annual operation & maintenance cost in year t ; Provided by the bidder
R_t	Replacement cost in year t ; = 0
E_t	Usable energy delivered in year t = Nominal MWh $\times$ availability $\times$ efficiency $\times$ retention(t) $\times$ cycles $\times$ DoD; as per the manufacturer's values with 3 rd party verification; Table Provided by the bidder
N	Evaluation lifetime; 12 years
r	Discount rate for evaluation; 10 %

Bidders are to fill the table below as per the manufacturer's values with 3rd party verification:

Year	E_t : Usable Energy Delivered per year (kWh) considering 1 cycle per day	Total price (USD)
0	0	CAPEX as per schedule 5 total price
1	Energy year 1	
2	Energy year 2	
.....		
12	Energy year 12	

Example:

Let,

Let there be three bidders participating in the BESS project. The main financial parameters for each bidder are as follows:

1. Bidder 1: CAPEX = 10,000 USD; O&M per year = 800 USD
2. Bidder 2: CAPEX = 12,000 USD; O&M per year = 1,200 USD
3. Bidder 3: CAPEX = 12,500 USD; O&M per year = 700 USD

The project life for all bidders is 12 years, with an annual discount rate of 10% ($r = 0.1$).

Energy delivered by the battery degrades each year, with each bidder having a slightly different degradation profile, this table will be provided by the BIDDER.

Replacement cost is assumed zero ($R_t = 0$).

1. BIDDER 1 – LCOS CALCULATION

Given:

- CAPEX = 10,000 USD
- O&M each year = 800 USD
- Replacement cost in year, $R_t = 0$
- Discount rate, $r = 10\% \rightarrow 1 + r = 1.1$
- Project life = 12 years
- Energy delivered degrades from 12,000 kWh to 10,020 kWh over 12 years

Usable Energy Degradation Table:

Year	E _t (kWh)
1	12,000
2	11,820
3	11,640
4	11,460
5	11,280
6	11,100
7	10,920
8	10,740
9	10,560
10	10,380
11	10,200
12	10,020

Formula:

$$LCOS = \frac{C_{\text{capex}} + \sum_{t=1}^N \frac{OM_t + R_t}{(1+r)^t}}{\sum_{t=1}^N \frac{E_t}{(1+r)^t}}$$

Here,

Discount Factor:

$$DF_t = (1 + r)^t = 1.1^t$$

Discounted O&M:

$$O\&M_{\text{discounted}} = \frac{O\&M_t}{DF_t} = \frac{800}{1.1^t}$$

Because, $R_t = 0$

Discounted Energy:

$$E_{\text{discounted}} = \frac{E_t}{DF_t}$$

LCOS:

$$LCOS = \frac{CAPEX + \sum_{t=1}^{12} O\&M_{\text{discounted}}}{\sum_{t=1}^{12} E_{\text{discounted}}}$$

Calculation:

Year	E _t (kWh)	DF _t (1.1 ^{-t})	Discounted O&M (USD)	Discounted Energy (kWh)
1	12,000	1.1	$800 \div 1.1 = 727.27$	$12,000 \div 1.1 = 10,909.09$
2	11,820	1.21	$800 \div 1.21 = 661.16$	$11,820 \div 1.21 = 9,768.59$
3	11,640	1.331	$800 \div 1.331 = 601.05$	$11,640 \div 1.331 = 8,745.30$
4	11,460	1.4641	$800 \div 1.4641 = 546.41$	$11,460 \div 1.4641 = 7,824.07$
5	11,280	1.61051	$800 \div 1.61051 = 496.70$	$11,280 \div 1.61051 = 7,002.79$
6	11,100	1.771561	$800 \div 1.771561 = 451.92$	$11,100 \div 1.771561 = 6,279.81$
7	10,920	1.948717	$800 \div 1.948717 = 410.51$	$10,920 \div 1.948717 = 5,652.55$
8	10,740	2.143589	$800 \div 2.143589 = 373.36$	$10,740 \div 2.143589 = 5,011.83$
9	10,560	2.357948	$800 \div 2.357948 = 339.34$	$10,560 \div 2.357948 = 4,480.80$
10	10,380	2.593743	$800 \div 2.593743 = 308.39$	$10,380 \div 2.593743 = 4,002.88$
11	10,200	2.853117	$800 \div 2.853117 = 280.49$	$10,200 \div 2.853117 = 3,574.61$
12	10,020	3.138428	$800 \div 3.138428 = 254.98$	$10,020 \div 3.138428 = 3,192.68$

Total Discounted O&M:

$$\sum O\&M_{discounted} = 727.27 + 661.16 + 601.05 + 546.41 + 496.70 + 451.92 + 410.51 + 373.36 + 339.34 + 308.39 + 280.49 + 254.98 = 5,451.58 \text{ USD}$$

Total Discounted Energy:

$$\begin{aligned} \sum E_{discounted} &= 10,909.09 + 9,768.59 + 8,745.30 + 7,824.07 + 7,002.79 + 6,279.81 \\ &\quad + 5,652.55 + 5,011.83 + 4,480.80 + 4,002.88 + 3,574.61 + 3,192.68 \\ &= 76,445.00 \text{ kWh} \end{aligned}$$

Total Cost:

$$\text{Total Cost} = CAPEX + \sum O\&M_{discounted} = 10,000 + 5,451.58 = 15,451.58 \text{ USD}$$

LCOS:

$$LCOS = \frac{\text{Total Cost}}{\text{Total Discounted Energy}} = \frac{15,451.58}{76,445} = 0.2021 \text{ USD/kWh} = 202.1 \text{ USD/MWh}$$

BIDDER 2 – LCOS Calculation**Given:**

- CAPEX = 12,000 USD
- O&M each year = 1,200 USD
- Replacement cost, R_t = 0
- Discount rate r = 10% → 1 + r = 1.1
- Project life = 12 years

- Energy delivered degrades from 12,000 kWh → 10,680 kWh over 12 years
- Usable Energy Degradation Table:**

Year	E _t (kWh)
1	12,000
2	11,950
3	11,900
4	11,840
5	11,780
6	11,720
7	11,660
8	11,600
9	11,540
10	11,480
11	11,100
12	10,680

Formulas:

- Discount Factor: $DF_t = (1 + r)^t = 1.1^t$
- Discounted O&M: $O\&M_{discounted} = O\&M_t / DF_t = 1,200 / 1.1^t$
- Discounted Energy: $E_{discounted} = E_t / DF_t$
- LCOS: $LCOS = (CAPEX + \sum O\&M_{discounted}) / \sum E_{discounted}$

Calculation:

Year	E _t (kWh)	DF _t (1.1 ^t)	Discounted O&M (USD)	Discounted Energy (kWh)
1	12,000	1.1	1,200 ÷ 1.1 = 1,090.91	12,000 ÷ 1.1 = 10,909.09
2	11,950	1.21	1,200 ÷ 1.21 = 991.74	11,950 ÷ 1.21 = 9,876.03
3	11,900	1.331	1,200 ÷ 1.331 = 901.58	11,900 ÷ 1.331 = 8,940.05
4	11,840	1.4641	1,200 ÷ 1.4641 = 819.59	11,840 ÷ 1.4641 = 8,082.23
5	11,780	1.61051	1,200 ÷ 1.61051 = 745.05	11,780 ÷ 1.61051 = 7,314.06
6	11,720	1.771561	1,200 ÷ 1.771561 = 677.88	11,720 ÷ 1.771561 = 6,618.07
7	11,660	1.948717	1,200 ÷ 1.948717 = 615.78	11,660 ÷ 1.948717 = 5,984.36
8	11,600	2.143589	1,200 ÷ 2.143589 = 559.99	11,600 ÷ 2.143589 = 5,414.19
9	11,540	2.357948	1,200 ÷ 2.357948 = 509.01	11,540 ÷ 2.357948 = 4,894.23
10	11,480	2.593743	1,200 ÷ 2.593743 = 462.59	11,480 ÷ 2.593743 = 4,424.99
11	11,100	2.853117	1,200 ÷ 2.853117 = 420.74	11,100 ÷ 2.853117 = 3,890.72
12	10,680	3.138428	1,200 ÷ 3.138428 = 382.47	10,680 ÷ 3.138428 = 3,403.66

Totals

- **Total Discounted O&M** = 1,090.91 + 991.74 + 901.58 + 819.59 + 745.05 + 677.88 + 615.78 + 559.99 + 509.01 + 462.59 + 420.74 + 382.47 = **7,176.33 USD**
- **Total Discounted Energy** = 10,909.09 + 9,876.03 + 8,940.05 + 8,082.23 + 7,314.06 + 6,618.07 + 5,984.36 + 5,414.19 + 4,894.23 + 4,424.99 + 3,890.72 + 3,403.66 = **79,751.68 kWh = 79.75 MWh**
- **Total Cost** = 12,000 + 7,176.33 = **19,176.33 USD**

- $LCOS = 19,176.33 \div 79,751.68 = 0.2404 \text{ USD/kWh} = 240.4 \text{ USD/MWh}$

2. BIDDER 3 – LCOS Calculation

Given:

- CAPEX = 12,500 USD
- O&M each year = 700 USD
- Replacement cost, $R_t = 0$
- Discount rate $r = 10\% \rightarrow 1 + r = 1.1$
- Project life = 12 years
- Energy delivered degrades faster: 12,000 kWh $\rightarrow$ 9,580 kWh

Usable Energy Degradation Table:

Year	E_t (kWh)
1	12,000
2	11,900
3	11,780
4	11,660
5	11,540
6	11,420
7	11,300
8	11,180
9	11,060
10	10,840
11	10,210
12	9,580

Formulas:

- $DF_t = 1.1^t$
- Discounted O&M = $700 \div DF_t$
- Discounted Energy = $E_t \div DF_t$
- $LCOS = (CAPEX + \Sigma O\&M_{\text{discounted}}) \div \Sigma E_{\text{discounted}}$

Calculation:

Year	E_t (kWh)	DF_t (1.1^t)	Discounted O&M (USD)	Discounted Energy (kWh)
1	12,000	1.1	$700 \div 1.1 = 636.36$	$12,000 \div 1.1 = 10,909.09$
2	11,900	1.21	$700 \div 1.21 = 578.51$	$11,900 \div 1.21 = 9,834.71$
3	11,780	1.331	$700 \div 1.331 = 525.92$	$11,780 \div 1.331 = 8,849.35$
4	11,660	1.4641	$700 \div 1.4641 = 478.11$	$11,660 \div 1.4641 = 7,963.13$
5	11,540	1.61051	$700 \div 1.61051 = 434.61$	$11,540 \div 1.61051 = 7,168.28$
6	11,420	1.771561	$700 \div 1.771561 = 395.15$	$11,420 \div 1.771561 = 6,447.79$
7	11,300	1.948717	$700 \div 1.948717 = 359.17$	$11,300 \div 1.948717 = 5,798.22$
8	11,180	2.143589	$700 \div 2.143589 = 326.67$	$11,180 \div 2.143589 = 5,214.32$
9	11,060	2.357948	$700 \div 2.357948 = 296.87$	$11,060 \div 2.357948 = 4,692.86$
10	10,840	2.593743	$700 \div 2.593743 = 269.88$	$10,840 \div 2.593743 = 4,177.62$
11	10,210	2.853117	$700 \div 2.853117 = 245.31$	$10,210 \div 2.853117 = 3,576.69$

	<table><tr><td>12</td><td>9,580</td><td>3.138428</td><td>$700 \div 3.138428 = 223.09$</td><td>$9,580 \div 3.138428 = 3,053.11$</td></tr></table>	12	9,580	3.138428	$700 \div 3.138428 = 223.09$	$9,580 \div 3.138428 = 3,053.11$
12	9,580	3.138428	$700 \div 3.138428 = 223.09$	$9,580 \div 3.138428 = 3,053.11$		
	Totals • Total Discounted O&M = 5,426.90 USD • Total Discounted Energy = 76,684.00 kWh = 76.68 MWh • Total Cost = 12,500 + 5,426.90 = 17,926.90 USD • LCOS = $17,926.90 \div 76,684 = 0.2338$ USD/kWh = 233.8 USD/MWh <u>N.B.: The values shown in the table above are provided only as an example to illustrate the calculation method. These figures shall not be considered as required, indicative, real or limiting for the bidders. All bidders must submit their own guaranteed energy values as per the manufacturers' certificates and degradation curves as well as cost figures in accordance with their proposed system design and performance using the price schedules.</u>					
G. Award of Contract						
ITT 63	The Contract shall be awarded in two (2) distinct phases: a. Phase 1 – EPC Contract: BESS System Design & Implementation, including a Defects Liability Period (DLP)/Warranty of Five (05) years with associated Support Services. • The duration of implementation of the contract shall be 12 months from the date of commencement and 5 years of warranty period will start from the end of the completion of the contract/closeout. • Performance Security shall apply to Phase 1 in accordance with GCC Clause-66, Performance Security. b. Phase 2 – O&M Contract: Operation & Maintenance (O&M) Services for 7 years (starting from 6th year to 12th year), including the supply of spare parts during the O&M period, commencing upon the successful completion of the Defects Liability Period (DLP) under Phase 1. • Phase 2 may be awarded at the Employer's discretion based on the employer's satisfaction with the Support Services provided during the Warranty period. • Where Phase 2 is awarded, the Contractor shall be obligated to enter into a separate contract with the Employer and submit a separate Performance Security for O&M Contract, in an amount equal to ten percent (10%) of the Contract Price, no later than twenty-eight (28) days prior to the completion of the Defects Liability Period (DLP) under Phase 1. The Security shall remain valid for its full value until completion of the seven (7)-year O&M period plus an additional twenty-eight (28) days. • The contract shall be executed in accordance with the PPR 2025 rules and regulations and financed from BREB/PBS own budget.					
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 Twenty-Eight (28) working days of issuance of the Notification of Award (NoA)
ITT 66.3	In the event of Government owned enterprise there shall be Security Deposit shall be deducted @ ten (10) percent, in lieu of the Performance Security, as stated under ITT Sub Clause 66.1 from 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 twenty-eight (28) 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: Chief Engineer (Project) Bangladesh Rural Electrification Board <i>[provide relevant information, such as education, experience, age, nationality, and present position; attach additional pages as necessary]</i>

Section-III: General Conditions of Contract

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) Contract Agreement means the Agreement entered into between 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 Bangladesh Public Procurement Authority Act, 2023.
	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	1If the Contractor's Representative is not named in the Contract, fourteen (14) days, 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 an under GCC Sub-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 defect 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> i. 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. ii. 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	Operational Acceptance 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.
	43.4	<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 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.
	44.3	
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 (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 labour 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 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

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, 6th Floor, Training Academy Building, Nikunja-2, Khilkheth, City: Dhaka-1229, Country: Bangladesh. Telephone: +88-02-8900070 E-mail: pdmcepdm@gmail.com
GCC 1.1(mm)	Project managers 1. PD, MCEP (DMD), BREB 2. SE, Dhaka (North/South, Mymensingh) Zone, BREB 3. XEN, Dhaka (North) Narsingdi, BREB 4. XEN, Mymensingh (South), BREB 5. XEN, Kishoreganj, BREB
GCC 1.1(tt)	The site(s) is/are is located at: 1. Substation (Kaliakoir-06) under Dhaka PBS-1. 2. Substation (Trishal -2) under Mymensingh PBS-2. 3. Substation (Pakundia-2) under Kishoreganj PBS 4. Substation (Algi) under substation Narsingdi PBS-1 and is defined in drawings No: as provided in Section 7-Drawings.
GCC 3.1	For <u>notices</u>, the Procuring Entity's contact details shall be: Attention: Project Director, Modernization and Capacity Enhancement of BREB Network (Dhaka-Mymensingh Division) (1ST Revised) Project. BREB. Address: Bangladesh Rural Electrification Board, Head office, 6th Floor, Training Academy Building, Nikunja-2, Khilkheth, City: Dhaka-1229, Country: Bangladesh. Telephone: +88-02-8900070 E-mail: pdmcepdm@gmail.com
	For <u>notices</u>, 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: - Any other Clarification and Confirmation given by tenderer/supplier if required.

	- Additional Conditions of Particular Application in this Schedule, Schedule of Key personnel, Site investigation Reports, Relevant correspondences prior to signing of the contract in the tender shall form a part of the contract.
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 counties are not eligible: Israel .
GCC 16.1	Nominated Subcontractor(s) named below; Not Applicable shall be entitled to execute the following specific components of the Works None
GCC 18.1	Possession of the Site or part(s) of the Site, to the Contractor shall be given on the following date(s); Shall be from the date of signing of the contract.
GCC 27.3	The Contractor agrees to supply spare parts for a period of Seven (07) years, to support O&M requirements after completion of the Defects Liability Period (DLP), covering Years 7 to 12 of operation, in addition to the mandatory spare parts for the five (05) year DLP period. The Contractor shall carry sufficient inventories to ensure an ex-stock supply of consumable spares, Other spare parts and components for the Plant. Sample Addition to PCC27.3 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.
GCC 28.1	The commencement date shall be from the date of signing of the contract.
GCC 29.1	The time for completion of the whole of the facilities within Twelve (12) 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 per BESS 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 inspection 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 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 fifteen (15) days from the date of Completion.
GCC 44.3	Applicable (<i>amount or rate</i>) for the bonus for early Completion: Not Applicable
GCC 45.2	The Defects Liability Period is 60 (Sixty) months from the date of operational acceptance of the works.
GCC 45.3	The amount to be withheld for late submission of an updated Programme is: In the event of late submission of an updated programme, the employer shall withhold a lump-sum amount of USD 10,000/equivalent BDT from the progress payment (for each occurrence).
GCC 45.10	Defect liability of the plant: the period shall be Five (5) years from the date of operational acceptance of the works. Sub-Clause 45.2 The Defects Liability Period shall be Twelve (12) months for the associated civil works. However, for the Plant, including all system installations and equipment, the Defects Liability Period shall remain valid up to the warranty period, i.e., sixty (60) months from the date of Operational Acceptance.]

The following paragraph is added at the end of this sub clause:

Support Service:

- During entire Defect Liability/Warranty Period (60 months), minimum two (2) nos. Engineers, having experience in operation & maintenance of BESS System shall be made available at BREB for providing support service on Troubleshooting, Operation & Maintenance, capacity building and any other technical support related with this project.

- The contractor shall provide transportation facility (motorized vehicle) including driver, fuel, maintenance etc. for this support service for 24 hours during this plant DLP period. The cost of this support service shall be deemed included in Price schedule.

Responsibilities of Support Service Engineer (not limited to):

The Support Service Engineers shall submit reports to BREB/corresponding PBS on a quarterly basis and additionally as and when required by BREB/concerned PBS.

- The report shall include the followings but not limited to these:

- No. of site visited in the particular month along with findings during site visit
- No. of trouble shooting done in the particular month along with description of activities done
- Information of power factor at all tariff points in the particular month
- Information on support service activities done in the particular month
- Information on knowledge sharing/training provided to BREB/PBS personnel done in the particular month.

Sub-Clause 45.6

The following paragraph is added at the end of this sub clause:

The tests in character for repaired equipment / facilities shall be in accordance with the provisions of the Technical Specifications / Employer's Requirements. However, for replaced equipment / facilities, the tests in character shall in any case be not less than what has already been agreed by the Employer and the Contractor for the original equipment/part of the Facilities.

Sub-Clause 45.8

The following paragraph is added at the end of this sub clause:

Upon correction of the defects in the Facilities or any part thereof by repair/replacement during the Defect Liability Period, fresh Defect Liability Period mentioned in Sub-Clause 45.2 shall be counted for replaced Plant & Equipment from the date of repair, replacement, commissioning thereof.

Sub-Clause 45.9

"After Completion of the Facilities or any part thereof," will be replaced by "after issuance of Operational Acceptance Certificate," in line 5.

48.1 (b)	The multiplier of the Contract Price is: Not Applicable	
GCC 52.1	The insurance cover shall be: from Sadaron Bima Corporation, as per GoB rule.	
	(a)	The minimum cover for the Works and of Plant and Materials is Tk 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 3-5% of the sum insured.
	(c)	The minimum cover for loss or damage to Equipment is Tk 110% of the replacement value of the equipment.
	(d)	The maximum deductible for insurance of Equipment is 3-5% of the sum insured.
	(e)	The minimum cover for other property is 10% of the Contract Price
	(f)	The maximum deductible for insurance of other property is 3-5% of sum insured.
	(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: Not Applicable	
GCC 60.4	The Contract is not subject to price adjustment.	
GCC 61.1	The original Contract price is: <i>[insert the amount in the NOA]</i>	
GCC 61.1	The Advance Payment shall be Tk ten percent (10%) of the contract amount and shall be paid to the Contractor not later than forty-five (45) days of an unconditional Bank Guarantee submission	
GCC 61.5	The rate of interest shall be the prevailing rate of interest for commercial borrowing established in the country: None	
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 percent) of the contract price	
GCC 63.4	The Performance Security shall not be reduced on the date of the Operational Acceptance and shall remain valid for its full value until completion of the Defects Liability Period of sixty (60) months plus twenty-eight (28) days from the date of issuance of the Operational Acceptance Certificate. However, if the Defects Liability Period is extended for any part of the Facilities, the Contractor shall provide an additional security in an amount proportionate to the Contract Price of that part - A separate Performance Security for the Phase 2- O&M Contract shall be submitted in an amount equal to ten percent (10%) of the O&M Contract Price no later than twenty-eight (28) days prior to the completion of the Defects Liability Period (DLP) under Phase 1. The Security shall remain valid for its full	

	value until completion of the seven (7.)-year O&M period plus an additional twenty-eight (28) days. -Submission of the Phase 2- O&M Contract Performance Security is a precondition for release of the Phase 1 (EPC) Performance Security upon expiry of its validity.
GCC 64.1	The portion of payments to be retained is Ten (10) 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	Applicable rate for Liquidated Damages and Limitation of Liability (LD): The amount of liquidated damages or in other words Delay due to Damages for the uncompleted works or any part thereof is 0.075 of one (1%) percent of its contract price per day of delay. The above rate applies to the price of the part of the Facilities, as quoted in the Price Schedule, for that part for which the Contractor fails to achieve Completion within the particular Time for Completion. -The maximum deduction for Liquidated Damages: 10% (ten percent) of the final Contract Price of the whole of the Works. <u>Performance Liquidated Damages:</u> For energy/efficiency shortfall: $LD = (\text{Shortfall \%} / 100) \times \text{Contract Price} \times 0.5$ (per % shortfall) For availability shortfall: $LD = 0.1\%$ of Contract Price per 0.1% availability shortfall.
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: The appointment of the Adjudicator jointly by the Parties shall be determined during the pre-award contract meeting. Name: Address: Tel/Cell No: Fax No: e-mail address: 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	In the case of a dispute between the Procuring Entity and the foreign Contractor, 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. 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.

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 appendixes shall be the part of the contract]

Appendix 1 -	Terms and Procedures of Payment
Appendix 2 -	Price Adjustment
Appendix 3 -	Insurance Requirements
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

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:

- (A) Ten percent (10%) of the total CIF or CIP amount as an advance payment against receipt of invoice and upon submission 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.
- (B) 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.
- (C) 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.
- (D) 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 forty-five (45) 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. 10% (Ten Percent) money shall be retained for defect liability period either from retention money or from PG. It might be from both sources as per decision of employer's decision.

Appendix 2. Price Adjustment

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: **Not Applicable**

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

(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 [in currency(ies)]	Deductible limits [in currency(ies)]	Parties insured [names]	From [place]	To [place]
110% (One Hundred and ten percent) of Total and Full CIP amount quoted at schedule no 1 under section 5 Bid and Contract Forms.	3-5%	Banladesh Rural Electrification Board	Port of Shipment	Project Sites

(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 [in currency(ies)]	Deductible limits [in currency(ies)]	Parties insured [names]	From [place]	To [place]
110% (One Hundred and ten percent) of Total Contract Price	3-5%	Banladesh Rural Electrification Board	Port of Shipment	Project Sites

(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 [in currency(ies)]	Deductible limits [in currency(ies)]	Parties insured [names]	From [place]	To [place]
10% of the Contract Price	Nil	Banladesh Rural Electrification Board	Port of Shipment	Project Sites

(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]
10% of the Contract Price	Nil	Banladesh Rural Electrification Board	Project Sites	Project Sites

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.

Note: The Contractor shall obtain in-country insurances from Sadharan Bima Corporation of Bangladesh.

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]

- **Not Applicable** (Employer will not take out any Insurance)

Appendix 4. Time Schedule

The time for completion of whole facilities shall be as specified in the PCC against sub-clause GCC.

1.1 The Tenderer shall provide with its Tender a schedule for completion of each step of the work consistent with his proposed method of Project Implementation.

The schedule submitted shall indicate the start date and time duration of the principal activities to be undertaken during construction/Implement of the plant Work. Those activities shall be consistent with the proposed method statement of construction and shall include but not limited to the following:

- Design & Engineering
- Procurement
- Plants & equipment transportation to the site
- Mobilization & taking over of sites
- Site preparation
- Installation work (with detailed steps as mentioned in Employer's requirements)
- Testing & Commissioning of whole system
- Operation acceptance test
- Clean up, reinstatement of site and return of leftover materials to Employers store.
- De mobilization

1.2 It is required and forms part of this contract that the all Facilities to be completed and commissioned as per specifications within time frame as specified in GCC Clause.

1.3 System associated civil & electrical works to be completed before materials reach to the sites.

1.4 The Tenderer shall consider space constraints within the existing room, panels to determine suitable alternatives and ensure timely implementation.

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

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

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)
Employer's personnel will be engaged to supervise and certify the works and test. Name of the personnel will be informed latter on.	No charge to Contractor.

Facilities	Charge to Contractor (if any)
Provide Electricity supply for commissioning test (s) only	No charge to Contractor.
Provide spaces for installation & commissioning of stations.	No charge to Contractor.

Works	Charge to Contractor (if any)
Employer will not do any works. If Contractor do not re-instate the Employer's existing facilities (Civil, fencing, valves, parts there of etc.) and not deposit the unused and leftover materials to employer's store, Employer will complete it.	Will be deducted from contractor's payment.

Supplies	Charge to Contractor (if any)
The Employer will not generally supply any machinery/Equipment and materials to the Contractor. In the event of any such requirement and subject to availability, the Employer may extend the facilities to use such machinery and materials by the Contractor on rental charge/cost under normal terms and conditions.	The Contractor will be required to pay the amount to be determined by the Employer for such facilities.

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 (not limited to)

1. All Design, drawings and technical specifications of all equipment mentioned in the scope.
2. Inspection and Test Programme;
3. Performance and Test Procedures;
4. Layout and arrangement drawings;
5. Module arrangement drawings;
6. Performance Test Procedures and Records;
7. Electrical Drawing including Inverter, module structure with proper grounding;
8. Single Line Diagram;
9. Assumptions, design data, codes and standard;
10. Design calculation;
11. Test protocols for all equipment commissioning test;
12. Installation drawings;
13. Others as applicable for the plant.

(B) Review

1. Work Program, Milestone Reports & Progress Updates
2. Material Submittals, Delivery & Installation Schedules
3. Installation Inspection & Site Acceptance Records
4. Design (Type) Test Reports
5. FAT Reports
6. Technical Catalogues
7. Pre-Commissioning & Commissioning Reports
8. Calibration Certificates & Instrument Loop Checks
9. Functional Validation & Performance Test Reports
10. Operator & Maintenance Training Completion Reports
11. O&M Manuals with SOPs
12. As-Built Drawings & System Documentation
13. Final Handover Report & System Acceptance Certificate
14. Others as applicable for the plant.

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

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: <i>[Contact Person]</i> <i>[Name of the Procuring Entity]</i> <i>[Address of the Procuring Entity]</i>	Date:
Invitation for Tender No:	IFT No. _____
Tender Package No:	Package No. _____
Lot No: <i>(when applicable)</i>	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: <i>(when applicable)</i>	<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-1A)

[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-2)

[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]

I

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	[state justification in support of its similarity compared to the		

	similarity compared to the Procuring Entity's requirements	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 <i>to complete details of as many personnel as are applicable. Each personnel listed above should complete the Personnel Information (Form PG5A-2b)</i>]			
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 (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:	<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>

General

- 1) The Price Schedules are divided into separate Schedules as follows:

Project Phase	Price Schedule
Phase 1 (EPC Contract)	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: Installation and Other Services Schedule No. 5: Grand Summary Schedule No. 6: Recommended Spare Parts
Phase 2 (O&M Contract)	Schedule No. 7: Operation & Maintenance Service (including mandatory 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.
- 5) 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.

- 6) 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.
- 7) Prices entered in the Schedules for each item shall be deemed to cover the complete scope of that item and be sufficient to fully satisfy the Employer's Requirements as detailed in Section 6 (Procuring Entity's Requirements) and all obligations under the Bidding Documents. Such rates and prices shall include all materials, equipment, services, accessories, and incidental works necessary to comply with the item description, Specifications, design criteria, and Site conditions, whether expressly stated or reasonably implied for proper completion of the Works.
- 8) The rates and prices for all Equipment shall be deemed to include the costs of design, adequacy testing, factory and material inspections, manufacture, delivery to the Site including insurance, Value Added Tax (VAT), and all other applicable taxes, duties, and levies in the Employer's Country.
- 9) The rates and prices for the Works shall be deemed to include all costs required for the proper execution and completion of the Works in accordance with the Contract, including insurance, VAT, income tax, and all other applicable taxes, duties, and levies in the Employer's Country.
- 10) Any item, component, material, or activity required to meet the design criteria, Specifications, or Site requirements shall be deemed to be included in the relevant rates and prices of other applicable line items in the Schedule of Prices, and no additional payment shall be made on account of omission or non-separate listing in the Schedule.
- 11) Payments will be made to the Contractor in the currency or currencies indicated under each respective item.
- 12) When requested by the Employer for the purposes of making payments or partial payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.

Schedules of Rates and Prices

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

Line-Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price [Final Destination] [Foreign Currency]	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 = 5 x 6</u>	<u>8</u>
1	Battery Prefabricated Cabin. 5MWh Per container						
1.1	Supply of Battery cell 280Ah or more, Battery Module (Liquid cooling) 104S1P or equivalent and Battery Cluster (Liquid cooling) 416S1P or equivalent		Set	2 x 4			
1.2	Supply of Battery Management System (BMS) including BMU, BCU, BAU		Set	2 x 4			
1.3	Supply of High voltage control box including connectors, circuit breakers, relays, fuses, pre chargers, switching power supplies, etc. and boxes		Set	2 x 4			
1.4	Supply of Battery rack, including frame body, door panel, side panel, installation accessories and packaging.		Set	2 x 4			
1.5	Supply of Control and Current combining cabinet, including low-voltage power distribution unit, UPS, DC circuit breaker, bus bar, wiring, cabinet, etc. and packaging.		Set	2 x 4			
1.6	Supply of DC cables and accessories, including inner cluster and cluster to bus cabinet cable and accessories.		Set	2 x 4			
1.7	Supply of Battery Container, Standard 20 feet Container, IP 65 or higher, RAL7035, outdoor type or available size as per the site condition		Set	2 x 4			

Line-Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price [Final Destination] [Foreign Currency]	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 = 5 x 6</u>	<u>8</u>
1.8	Supply of Temperature control system, liquid cooling units, pipes and coolants.		Set	2 x 4			
1.9	Supply of Fire protection system, Perfluorohexanone and Water spray system		Set	2 x 4			
1.10	Supply of Video surveillance system, including infrared camera, switch etc. The video surveillance system shall consist of industrial-grade IP cameras with minimum 1080p resolution, built-in infrared illumination, PoE power (IEEE 802.3af/at), and IP54 or higher protection. Cameras shall be rated for 24/7 continuous operation in enclosed electrical environments as per manufacturer datasheet. An industrial-grade managed PoE switch shall be supplied.		Set	2 x 4			
2	Power Conversion System (PCS) Container, integrated with Medium Voltage (11kV) System						
2.1	Supply of Containerized solution with PCS and bi-directional transformers, outdoor type, IP65 or better, Color RAL7035, Standard 40 feet container or available size as per the site condition.		Set	1 x 4			
2.2	Supply of Power Conversion System (PCS)-Bidirectional Power Conversion System. Grid-forming mode.		Set	1 x 4			
2.3	Supply of Bi-directional Transformer: MV Transformer- Step Up/Step Down Transformer, 6.25 MVA, 11kV/ 0.69KV AC and vice versa, DYn11, Tap changer +/- 5 %.		Set	1 x 4			
3	Supply of Energy Management System (EMS) with complete solution for integration with existing substation and BESS.		Set	1 x 4			

Line-Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price [Final Destination] [Foreign Currency]	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 = 5 x 6</u>	<u>8</u>
4	Supply of 1500V DC, 690V AC & Communication cable as per requirements to complete the Installation work.		Set	1 x 4			
5	11KV Cables and OFC Cables						
5.1	Supply of 11kV 3-phase 185 mm ² , XLPE, Cu AC cable and OFC (Optic Fiber Cable) including their joints, earthing system, bonding etc. with all accessors required to complete the work (BESS output to Switchgear Panel inside the control room) and wherever required.		Lot	1 x 4			
5.2	Supply of Termination of 11kV 3-phase 185mm ² , XLPE Cu AC cable and OFC cable from BESS output to new switchgear panel inside control room with all accessories to complete the work and wherever required.		Lot	1 x 4			
6	Extension of existing 11kV Busbar						
6.1	Supply of 11kV Bus bar which shall be extended either side of existing panels to accommodate new bus section switchgear panel with/or without bus raiser, new BESS switchgear panel and 2 nos outgoing feeder panels, incoming panel wherever required after rearrangements of busbar components, similar/compatible with existing switchgear panel as per SLD. Should be Similar/Compatible with existing 11kV switchgear panels for integration.		Lot	1 x 4			
7	Supply of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser						

Line-Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price [Final Destination] [Foreign Currency]	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 = 5 x 6</u>	<u>8</u>
7.1	Supply of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration		No	1 x 4			
8	Supply of new 11kV Air Insulated Switchgear (AIS) Outgoing Panel for BESS Connection						
8.1	Supply of new 11kV Air Insulated Switchgear (AIS) Outgoing Panel for BESS connection, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables, OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration.		No	1 x 4			
9	LV AC cables/ DC Cables/ Control Wiring						

Line-Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price [Final Destination] [Foreign Currency]	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 = 5 x 6</u>	<u>8</u>
9.1	Supply of LV AC and DC Cables, Battery and Battery Chargers, Light and Lighting Protection equipment, Earthing system, ACDB, DCDB, SCADA, Equipment, RTUs, Control Cables etc. as per requirement to complete the work in new and existing switchgear panels and continuation with existing control wiring and wherever required. should be Similar/Compatible with existing switchgear panels for integration.		Lot	1 x 4			
10	11kV Cable Terminations						
10.1	Supply of 11kV cable terminations and jointing kits complete with all associated electrical equipment in new and existing switchgear Panels and wherever required. (Extra One incomer rearrangement in Trishal)		Set	2x4 +1x1 (Trishal)			
11	Auxiliary Supply for BESS System						
11.1	Supply of a complete auxiliary power system to ensure uninterrupted and reliable operation of the BESS under all operating conditions, including normal grid-connected operation and Critical Load Backup (CLB) to designated feeders during grid outages. This shall include, but not be limited to, suitable transformers and all associated equipment required to power auxiliary loads such as PCS units, battery enclosures, control systems, HVAC, lighting, safety, and protection systems. All components necessary to meet the functional, safety, and performance requirements of the PSA and applicable standards shall be provided, regardless of whether explicitly mentioned. No omission of any essential auxiliary provision will be accepted.		No	1 x 4			
12	SCADA Workstation & Software and modification						

Line-Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price [Final Destination] [Foreign Currency]	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 = 5 x 6</u>	<u>8</u>
12.1	Supply of SCADA system for Real time monitoring and control. which shall incorporate the existing substation's components for complete monitoring and control of the entire Substation & BESS system and Integration with power grid system		Set	1 x 4			
13	Earthing System						
13.1	Supply of Earthing system including grounding cables and accessories based on IEEE 80-2013. Chemical/plate/rod earthing for battery and encloser, PCS, transformers, lightning protection etc. wherever and whatever required to get earthing resistance less than 0.5 ohm.		Lot	1 x 4			
14	Fire Fighting System						
14.1	Supply of Fire Fighting system. Should comply with NFPA-855 requirements or any other relevant requirements.		Lot	1 x 4			
15	Miscellaneous Requirement						
15.1	Office Rooms, (1 nos. executive table, 1 nos. Revolving chair, 4 nos. visiting chair, 1 nos. file cabinet, 1 set computer table and as required) as per approved design & drawing and instruction of Engineer-in charge /Employer.		Lot	1 x 4			
15.2	Supply of Air Conditioning System (each 2.5 Ton) for Control Room including all accessories/ components required for fitting & fixing up to commissioning as per approved design & drawing and instruction of Engineer-in-charge /Employer.		Lot	1 x 4			
15.3	CCTV System with 06 IP Cameras suitable for place and necessary accessories required for fitting & fixing up to commissioning.		Lot	1 x 4			

Line-Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price [Final Destination] [Foreign Currency]	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 = 5 x 6</u>	<u>8</u>
15.4	Desktop Computer including all accessories/components (Monitor, CPU, Printer, UPS and etc.) as per approved design & drawing and instruction of Engineer-in-charge /Employer.		No	1 x 4			
15.5	Laptop Computer including all accessories/components		No	1 x 4			
16	Any other Miscellaneous requirements						
16.1	Any other items(s) considered necessary to comply with the scope of Works for completing the works.		L/S	1 x 4			
	Sub-Total Schedule No. 1 =						
Column 6 to be carried forward to Schedule No. 5. 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:	<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		

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 Price EXW (Foreign Currency or Taka)	Sales Tax (Foreign Currency or Taka)	Total Price (Foreign Currency or Taka)
1	2	3	4	5	6 = 4 x 5	7	8 = 6 + 7
1	Battery Prefabricated Cabin. 5MWh Per container						
1.1	Supply of Battery cell 280Ah or more, Battery Module (Liquid cooling) 104S1P or equivalent and Battery Cluster (Liquid cooling) 416S1P or equivalent	Set	2 x 4				
1.2	Supply of Battery Management System (BMS) including BMU, BCU, BAU	Set	2 x 4				
1.3	Supply of High voltage control box including connectors, circuit breakers, relays, fuses, pre chargers, switching power supplies, etc. and boxes	Set	2 x 4				
1.4	Supply of Battery rack, including frame body, door panel, side panel, installation accessories and packaging.	Set	2 x 4				
1.5	Supply of Control and Current combining cabinet, including low-voltage power distribution unit, UPS, DC circuit breaker, bus bar, wiring, cabinet, etc. and packaging.	Set	2 x 4				
1.6	Supply of DC cables and accessories, including inner cluster and cluster to bus cabinet cable and accessories.	Set	2 x 4				
1.7	Supply of Battery Container, Standard 20 feet Container, IP 65 or higher, RAL7035, outdoor type or available size as per the site condition	Set	2 x 4				
1.8	Supply of Temperature control system, liquid cooling units, pipes and coolants.	Set	2 x 4				
1.9	Supply of Fire protection system, Perfluorohexanone and Water spray system	Set	2 x 4				
1.10	Supply of Video surveillance system, including infrared camera, switch etc. The video surveillance system shall consist of industrial-grade IP cameras with minimum 1080p resolution, built-in infrared illumination, PoE power (IEEE 802.3af/at), and IP54 or higher protection. Cameras shall be rated for 24/7 continuous operation in enclosed electrical environments as per	Set	2 x 4				

Line-Item No.	Description of Item	Unit	Quantity	Unit Price EXW (Foreign Currency or Taka)	Total Price EXW (Foreign Currency or Taka)	Sales Tax (Foreign Currency or Taka)	Total Price (Foreign Currency or Taka)
1	2	3	4	5	6 = 4 x 5	7	8 = 6 + 7
	manufacturer datasheet. An industrial-grade managed PoE switch shall be supplied.						
2	Power Conversion System (PCS) Container, integrated with Medium Voltage (11kV) System						
2.1	Supply of Containerized solution with PCS and bi-directional transformers, outdoor type, IP65 or better, Color RAL7035, Standard 40 feet container or available size as per the site condition.	Set	1 x 4				
2.2	Supply of Power Conversion System (PCS)-Bidirectional Power Conversion System. Grid-forming mode.	Set	1 x 4				
2.3	Supply of Bi-directional Transformer: MV Transformer- Step Up/Step Down Transformer, 6.25 MVA, 11kV/ 0.69KV AC and vice versa, DYn11, Tap changer +/- 5 %.	Set	1 x 4				
3	Supply of Energy Management System (EMS) with complete solution for integration with existing substation and BESS.	Set	1 x 4				
4	Supply of 1500V DC, 690V AC & Communication cable as per requirements to complete the Installation work.	Set	1 x 4				
5	11KV Cables and OFC Cables						
5.1	Supply of 11kV 3-phase 185 mm ² , XLPE, Cu AC cable and OFC (Optic Fiber Cable) including their joints, earthing system, bonding etc. with all accessors required to complete the work (BESS output to Switchgear Panel inside the control room) and wherever required.	Lot	1 x 4				
5.2	Supply of Termination of 11kV 3-phase 185mm ² , XLPE Cu AC cable and OFC cable from BESS output to new switchgear panel inside control room with all accessories to complete the work and wherever required.	Lot	1 x 4				
6	Extension of existing 11kV Busbar						

Line-Item No.	Description of Item	Unit	Quantity	Unit Price EXW (Foreign Currency or Taka)	Total Price EXW (Foreign Currency or Taka)	Sales Tax (Foreign Currency or Taka)	Total Price (Foreign Currency or Taka)
1	2	3	4	5	6 = 4 x 5	7	8 = 6 + 7
6.1	Supply of 11kV Bus bar which shall be extended either side of existing panels to accommodate new bus section switchgear panel with/or without bus raiser, new BESS switchgear panel and 2 nos outgoing feeder panels, incoming panel wherever required after rearrangements of busbar components, similar/compatible with existing switchgear panel as per SLD. Should be Similar/Compatible with existing 11kV switchgear panels for integration.	Lot	1 x 4				
7	Supply of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser						
7.1	Supply of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration	No	1 x 4				
8	Supply of new 11kV Air Insulated Switchgear (AIS) Outgoing Panel for BESS Connection						
8.1	Supply of new 11kV Air Insulated Switchgear (AIS) Outgoing Panel for BESS connection, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables, OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration.	No	1 x 4				
9	LV AC cables/ DC Cables/ Control Wiring						

Line-Item No.	Description of Item	Unit	Quantity	Unit Price EXW (Foreign Currency or Taka)	Total Price EXW (Foreign Currency or Taka)	Sales Tax (Foreign Currency or Taka)	Total Price (Foreign Currency or Taka)
1	2	3	4	5	6 = 4 x 5	7	8 = 6 + 7
9.1	Supply of LV AC and DC Cables, Battery and Battery Chargers, Light and Lighting Protection equipment, Earthing system, ACDB, DCDB, SCADA, Equipment, RTUs, Control Cables etc. as per requirement to complete the work in new and existing switchgear panels and continuation with existing control wiring and wherever required. should be Similar/Compatible with existing switchgear panels for integration.	Lot	1 x 4				
10	11kV Cable Terminations						
10.1	Supply of 11kV cable terminations and jointing kits complete with all associated electrical equipment in new and existing switchgear Panels and wherever required. (Extra One incomer rearrangement in Trishal)	Set	2x4 +1x1 (Trishal)				
11	Auxiliary Supply for BESS System						
11.1	Supply of a complete auxiliary power system to ensure uninterrupted and reliable operation of the BESS under all operating conditions, including normal grid-connected operation and Critical Load Backup (CLB) to designated feeders during grid outages. This shall include, but not be limited to, suitable transformers and all associated equipment required to power auxiliary loads such as PCS units, battery enclosures, control systems, HVAC, lighting, safety, and protection systems. All components necessary to meet the functional, safety, and performance requirements of the PSA and applicable standards shall be provided, regardless of whether explicitly mentioned. No omission of any essential auxiliary provision will be accepted.	No	1 x 4				
12	SCADA Workstation & Software and modification						
12.1	Supply of SCADA system for Real time monitoring and control. which shall incorporate the existing substation's components for complete monitoring and control of the entire Substation & BESS system and Integration with power grid system	Set	1 x 4				
13	Earthing System						

Line-Item No.	Description of Item	Unit	Quantity	Unit Price EXW (Foreign Currency or Taka)	Total Price EXW (Foreign Currency or Taka)	Sales Tax (Foreign Currency or Taka)	Total Price (Foreign Currency or Taka)
1	2	3	4	5	6 = 4 x 5	7	8 = 6 + 7
13.1	Supply of Earthing system including grounding cables and accessories based on IEEE 80-2013. Chemical/plate/rod earthing for battery and encloser, PCS, transformers, lightning protection etc. wherever and whatever required to get earthing resistance less than 0.5 ohm.	Lot	1 x 4				
14	Fire Fighting System						
14.1	Supply of Fire Fighting system. Should comply with NFPA-855 requirements or any other relevant requirements.	Lot	1 x 4				
15	Miscellaneous Requirement						
15.1	Office Rooms, (1 nos. executive table, 1 nos. Revolving chair, 4 nos. visiting chair, 1 nos. file cabinet, 1 set computer table and as required) as per approved design & drawing and instruction of Engineer-in charge /Employer.	Lot	1 x 4				
15.2	Supply of Air Conditioning System (each 2.5 Ton) for Control Room including all accessories/ components required for fitting & fixing up to commissioning as per approved design & drawing and instruction of Engineer-in-charge /Employer.	Lot	1 x 4				
15.3	CCTV System with 06 IP Cameras suitable for place and necessary accessories required for fitting & fixing up to commissioning.	Lot	1 x 4				
15.4	Desktop Computer including all accessories/components (Monitor, CPU, Printer, UPS and etc.) as per approved design & drawing and instruction of Engineer-in-charge /Employer.	No	1 x 4				
15.5	Laptop Computer including all accessories/components	No	1 x 4				
16	Any other Miscellaneous requirements						
16.1	Any other items(s) considered necessary to comply with the scope of Works for completing the works.	L/S	1 x 4				
	Sub-Total Schedule No. 2 =						
TOTAL Column 5 to be carried forward to Schedule No. 5. 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. 3 - Design Services

Item	Description of Item	Unit	Quantity	Unit Price		Total Price	
				Local Currency Portion (BDT)	Foreign Currency Portion (USD)	Local Currency Portion (BDT)	Foreign Currency Portion (USD)
1	2	3	4	5	6	7 = 4 x 5	8 = 4 x 6
1.0	All design, drawings and documentation works related to this assignment including 5 (Five) sets of As-Built drawings showing locations (with soft copy of as-built drawing i.e AutoCAD, GIS, PDF format etc.) and operation & maintenance manual.	set	1 x 4				
TOTAL of Column 7 and 8 to be carried forward to Schedule No. 5. 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- Installation and Other Services

Item	Description	Unit	Quantity	Unit Price	Total Price
				Local Currency Portion	Local Currency Portion
1	2	3	4	5	6 = 4 x 5
1	Electrical				
1.1	Installation, Testing and Commissioning of BESS (not including civil works) along with inside available switchyards space of existing 33/11kV substation on RCC Civil PAD.	lot	1 x 4		
1.2	Installation, Testing and Commissioning of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable including all associated electrical/mechanical equipment with necessary wiring/cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear Bus panels for integration	lot	1 x 4		
1.3	Installation, Testing and Commissioning of new 11kV Air Insulated Switchgear (AIS) Outgoing feeder panel, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables, OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear Bus panels for integration	lot	1 x 4		

Item	Description	Unit	Quantity	Unit Price	Total Price
				Local Currency Portion	Local Currency Portion
1	2	3	4	5	6 = 4 x 5
1.4	Shifting/Rearrangement/demolition/Transposition, Installation, Testing and Commissioning of existing 11kV Air Insulated Switchgear (AIS) panels, including 11kV incoming switchgear panel wherever required, complete with all associated electrical equipment and cabling, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/ Relays/ RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable and any other equipment as required to complete the works inside the existing control room with necessary modification/retrofit /demolition/reconstruction etc. with civil works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration. (Extra One incomer rearrangement in Trishal)	lot	2x4 +1x1 (Trishal)		
1.5	Installation, Testing and Commissioning of 11kV cable terminations and jointing kits complete with all associated electrical equipment in new and existing switchgear Panels and wherever required. (Extra One incomer rearrangement in Trishal)	set	2x4 +1x1 (Trishal)		
1.6	Installation, Testing and Commissioning of 11kV Bus bar which shall be extended either side of existing panels to accommodate new bus section switchgear panel with/or without bus raiser, new BESS switchgear panel and 2 nos outgoing feeder panels, incoming panel wherever required after rearrangements of busbar components, similar/compatible with existing switchgear panel as per SLD. Should be Similar/Compatible with existing 11kV switchgear panels for integration	lot	1 x 4		
1.7	Installation, Testing and Commissioning of LV AC and DC Cables, Battery and Battery Chargers, Light and Lighting Protection equipment, Earthing system, ACDB, DCDB, SCADA, Equipment, RTUs, Control Cables etc. as per requirement to complete the work in new and existing switchgear panels and continuation with existing control wiring and wherever required. Should be Similar/Compatible with existing switchgear panels for integration.	lot	1 x 4		
1.8	Installation, Testing and Commissioning of Earthing system including grounding cables and accessories based on IEEE 80-2013. Chemical/plate/rod earthing for battery and encloser, PCS, transformers, lightning protection etc. wherever and whatever required to get earthing resistance less than 0.5 ohm.	lot	1 x 4		

Item	Description	Unit	Quantity	Unit Price	Total Price
				Local Currency Portion	Local Currency Portion
1	2	3	4	5	6 = 4 x 5
1.9	Installation, Testing and Commissioning of Real time monitoring and control. The proposed SCADA system shall incorporate the existing substation's components for complete monitoring and control of the entire Substation & BESS system and Integration with power grid system	set	1 x 4		
1.10	Installation, Testing and Commissioning of a complete auxiliary power system to ensure uninterrupted and reliable operation of the BESS under all operating conditions, including normal grid-connected operation and Critical Load Backup (CLB) to designated feeders during grid outages. This shall include, but not be limited to, suitable transformers and all associated equipment required to power auxiliary loads such as PCS units, battery enclosures, control systems, HVAC, lighting, safety, and protection systems. All components necessary to meet the functional, safety, and performance requirements of the PSA and applicable standards shall be provided, regardless of whether explicitly mentioned. No omission of any essential auxiliary provision will be accepted.	Nos	1 x 4		
1.11	Installation, Testing and Commissioning of Fire Fighting system. Should comply with NFPA-855 requirements or any other relevant requirements.	lot	1 x 4		
1.12	Installation, Testing and Commissioning of all BESS yard electrical installations including installation of Sub-station Earthing System and installation of Sub-station Lighting (as required),, installation all equipment, steel structure, cable and others as required	lot	1 x 4		
1.13	Installation, Testing and Commissioning of 11kV 3-phase 185 mm ² , XLPE Cu AC cable and OFC cable laying (Open cut and Backfilling) including their joints, earthing system, bonding etc. with all accessories required to complete the work (BESS output to Switchgear Panel inside the control room) and wherever required.	lot	1 x 4		
2	Civil Works				

Item	Description	Unit	Quantity	Unit Price	Total Price
				Local Currency Portion	Local Currency Portion
1	2	3	4	5	6 = 4 x 5
2.1	Site Development/Improvement for whole BESS area including approach road if required by carted earth or dredged sand, sandy silt carried by head or truck or any other means including cost of cutting or by dredging of sand, sandy silt, all; including local carrying, placing the earth/sand, sandy silt in the designated area, maintain slopes, breaking lumps, levelling and dressing in layers up to finish level etc. all complete as per direction and accepted by the Engineer in charge.	Lot	1x4		
	Necessary dismantling, floor cut/ hole and modifications as per requirement for new and existing switchgear panels inside the control room to retrofit/accommodate/install BESS new panel, new bus section panel with/or without bus raiser, incoming panel wherever required, Rearranged feeder panels and Terminations of 11kV cables from bottom of the floor slab without any adverse effects on column and beam of existing control room building following BNBC. Should be Similar/ Compatible with existing 11kV switchgear panels for integration.				
	Mechanical compaction of above carted earth or dredged sand, sandy silt required for pre-approved specific engineering purpose in 150 mm layers including levelling, watering and consolidation each layer all complete as per direction and accepted by the Engineer -in charge.				
2.2	Supply materials and Construction of Foundation of all Equipment and structures as per approved design & drawing including necessary tests and instruction of Engineer-in-charge /Employer	Lot	1 x 4		
2.3	Supply materials and construction of surface drain if required, RCC Box or Pipe Culvert (As required) as per approved design and drawing and direction of the Engineer in charge.	Lot	1 x 4		
3	Technical Training, Support Services (O & M) & others				
3.1	Technical Training for 7 days for 20 Nos. of BREB/PBS Personnel per BESS on operation, maintenance, protection & control of 5MW,10MWh BESS (5 officials/Batch). Professional O&M team are required to do daily/regular/ special situation operation, maintenance and inspection of all equipment in the station and all training offered to client's staff to adequate/accentuate with BESS system for competency in operation and maintenance	Batch	1 x 4		

Item	Description	Unit	Quantity	Unit Price	Total Price
				Local Currency Portion	Local Currency Portion
1	2	3	4	5	6 = 4 x 5
3.2	(a) Foreign Technical Training for 7 days for BREB/PBS /Nominated official 12 officials on operation, maintenance, protection & control of 4 Nos. of 5MW,10MWh BESS. (3 officials/Batch).	Batch	1 x 4		
	(b) Factory Acceptance Test (FAT)/Pre Shipment Inspection (PSI) for 7 days for BREB/PBS /Nominated official of 12 officials for the requirement of the equipment of 4 Nos. of 5MW,10MWh BESS.as per instruction of the employers/ engineering - in – charge. (3 officials/Batch).	Batch	1 x 4		
3.3	Environmental (ESMF Related) Works				
	Provide and maintain standard First Aid Boxes and personal protective equipment (PPE) for all workers, ensuring proper use. Supply safe drinking water and, where required, labor accommodation with adequate sanitation, hygiene, and cleanliness. Conduct regular site cleaning, dust control, and proper management of solid and organic waste, prohibiting open burning and unauthorized dumping, with disposal only at approved locations. Install temporary fencing, warning signs, and safety notices, and maintain site leveling to prevent waterlogging, erosion, and environmental nuisance, while storing construction materials safely to avoid spillage or contamination. Implement dust and air pollution control measures, including covering materials and water spraying, and conduct ambient air and dust testing at least every six months, submitting reports to the Engineer/Client. Determine groundwater depth at a minimum of two locations before major construction, and ensure drinking water quality through six-monthly testing with submitted reports. Store fuel, oil, chemicals, and hazardous materials on hard, non-absorbent surfaces with containment, immediately control spills, and carry out soil or water contamination tests every six months or after any spill, reporting results to the Engineer/Client. Maintain emergency response procedures for fire, chemical spills, or other accidents, and promptly inform the Engineer/Client with details of corrective actions taken.	lot	1 x 4		
3.4	Operation & Maintenance (O & M) support services for 5 years during warranty period. The contractor shall provide transportation facility (motorized vehicle) including driver, fuel, maintenance etc. for this support service for 24 hours during this plant DLP period.	Lot	1 x 4		
4	Miscellaneous				

Item	Description	Unit	Quantity	Unit Price	Total Price
				Local Currency Portion	Local Currency Portion
1	2	3	4	5	6 = 4 x 5
4.1	Completion of Power Supply Works of Electrification Acceptance Test, Integrated Tests (IT) for whole system and commissioning of complete Power Supply System and BESS as per International IEC/IEEE requirements, National Power Supply Authority (PSA) guidelines, Licensing Authority requirements, Safety Certification, Attendance and Manning during integrated Testing and Commissioning along with any materials, equipment and consumables.	Lot	1 x 4		
4.2	Installation of Air Conditioning System, Water Pump Motor Set, Overhead Water Tank, Fire Detection & Protection Facilities with all accessories/components required for fitting & fixing up to commissioning for Control Room and also installation of CCTV system with necessary accessories as required up to commissioning.	Lot	1 x 4		
TOTAL Columns 6 to be carried forward to Schedule No. 5. 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. 5 - 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
3. Inclusive of all taxes

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 - Recommended Spare Parts

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 = 4 x 5	8 = 4 x 6
	TOTAL						

(must be filled)

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 authorized to sign the Tender for and on behalf of the Tenderer		

Phase 2: O&M Contract: (Awardable at the Employer's Discretion)

Operation & Maintenance (O&M) Service for the Battery Energy Storage System (BESS) Covering Years 6–12 for Dhaka-1, Mymensingh-2, Kishoreganj, and Narsingdi-1 PBS, Each with a Usable Energy Capacity of 5 MW / 10 MWh.

Schedule No. 7 Operation & Maintenance Service (including mandatory Spare Parts)

Item	Description	Unit	Quantity	Unit Price (Local Currency) BDT	Total Price
1.0	Operation & Maintenance (For years 6-12)				
1.1	Year 6: Operation & Maintenance of the Battery Energy Storage System (BESS) for the Year ,including 24/7 operation support and SCADA/EMS monitoring; routine, preventive, predictive, and corrective maintenance, including battery checks such as State of Health (SoH), Depth of Discharge (DoD), and other system inspections; system performance monitoring and degradation tracking to ensure $\geq 98\%$ availability; troubleshooting; software and firmware updates for BMS, PCS, and EMS; supply, storage, and replacement of consumables and specified spare parts; inspection and compliance of fire protection systems; adherence to national grid codes, safety, and environmental regulations; training of BREB/PBS personnel; preparation and submission of monthly and ad-hoc operational, maintenance, performance, and incident reports; and provision of documentation and audit support to the Employer; all in accordance with OEM recommendations, Technical Specifications, and Contract Documents.	lot	4		
1.2	Year 7: Operation & Maintenance of the Battery Energy Storage System (BESS) for the Year , including 24/7 operation support and SCADA/EMS monitoring; routine, preventive, predictive, and corrective maintenance, including battery checks such as State of Health (SoH), Depth of Discharge (DoD), and other system inspections; system performance monitoring and degradation tracking to ensure $\geq 98\%$ availability; troubleshooting; software and firmware updates for BMS, PCS, and EMS; supply, storage, and replacement of consumables and specified spare parts; inspection and compliance of fire protection systems; adherence to national grid codes, safety, and environmental regulations; training of BREB/PBS personnel; preparation and submission of monthly and ad-hoc operational, maintenance, performance, and incident reports; and provision of documentation and audit support to the Employer; all in accordance with OEM	lot	4		

Item	Description	Unit	Quantity	Unit Price (Local Currency) BDT	Total Price
	recommendations, Technical Specifications, and Contract Documents.				
1.3	Year 8:	lot	4		
					
					
	Schedule 7: Grand Total for Year 6-12				

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

Safety Plan

Personnel

Equipment

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. (<i>when applicable</i>)	[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.			
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:

Date:

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

Tender Lot No:

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

Item No.	Name of Goods or Related Service	Country of Origin	Make and Model (<i>when applicable</i>)	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

Letter of Commitment for Bank's Undertaking 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

Table of Contents		
6.1 Scope of Supply of Plant and Installation Services by the Contractor		inset page #]
6.2 Specification		[inset page #]
6.3 Form of Completion Certificate		[inset page #]
6.4 Form of Operational Acceptance Certificate		[inset page #]
6.5 Change Order Procedure and Forms		[inset page #]
	Annex 1. Request for Change Proposal	[inset page #]
	Annex 2. Estimate or Change Proposal	[inset page #]
	Annex 3. Acceptance of Estimate	[inset page #]
	Annex 4. Change Proposal	[inset page #]
	Annex 5. Change Order	[inset page #]
	Annex 6. Pending Agreement Change Order	[inset page #]
	Annex 7. Application for Change Proposal	[inset page #]
6.6 Supplementary Information		?

6.1 Scope of Supply of Plant and Installation Services by the Contractor

[Outlines of Procuring Entity's requirement should be provided below:]

Scope of works

Design, Supply, Installation, Testing, And Commissioning etc. All Complete as Required for Establishment of Energy Storage System in Four Substations Each With 10 MWh capacity (Dhaka-1, Mymensingh-2, Kishoreganj and Narsingdi-1 PBS) on A Turn-Key Basis.

Site Location:

Table 01

Package No. MCEP/BREB/DMD-W-392

Total BESS: 04 Nos.

Name of PBS Substation of BREB for BESS	Usable Power and Capacity of each BESS
1. Kaliakoir-06 substation under Dhaka PBS-1. 2.Trishal -2 substation under Mymensingh PBS-2. 3.Pakundia-2 substation under Kishoreganj PBS 4.Algi under substation Narsingdi PBS-1	5 MW,10 MWh

6.1.1 General

Design, Supply, Installation, Testing, And Commissioning etc. All Complete as Required for Establishment of Energy Storage System in Four Substations Each With 10 MWh capacity (Dhaka-1, Mymensingh-2, Kishoreganj and Narsingdi-1 PBS) on A Turn-Key Basis.

SL No.	Basic Requirement of the BESS
1.	Battery Chemistry: Lithium Iron Phosphate /NMC rechargeable battery or better
2.	Housing: Container based
3.	Capacity: 10MWh, Power: 5MW (for each substation)
4.	PCS Power: 5MW at AC side and adjustable [PCS] and must have grid-forming function
5.	Output Frequency: 50Hz, should support up to ± 2 Hz deviation [PCS]
6.	Power Factor: Both leading and lagging $>90\%$ for voltage support.
7.	Total Harmonic Distortion: $< 2\%$ to maintain grid code [PCS]
8.	AC Line Connection (POC): 11kV dedicated bus of 33kV/11kV substation bus should support up to $\pm 10\%$ voltage deviation, 3 phase connection, both 3 and 4-wire connections options.
9.	Source Connections: Grid connection.
10.	Operating ambient: 0–50°C, Storage Temperature up to 65°C Systems must maintain full rated output at $\leq 45^\circ\text{C}$ without thermal derating
11.	The manufacturer shall specify derating curves vs temperature
12.	Data Sheet: Provide complete data sheet for charging/discharging curve, temperature effect and performance degradation over time of the BESS
13.	Dimension: Standard 40 feet container for PCS along with the Bi-directional Transformer -1 no and 20 feet Container for Battery-2 Nos. (Or any available standard sized container to meet the client's requirement as well as to meet each of the site area and condition) Plug- and- Play.
14.	Warranty: 5 years for all parts.
15.	BMS/EMS shall monitor and control battery cells, HVAC, Fire System and hazardous chemical release, Circuit breaker actions. It will be able to connect to SCADA system or any other system which is available on the four sites.
16.	System can enable the extraction of individual cell voltages, temperatures and support cell level monitoring.
17.	Applicable standards on chemical spill or leak hazardous materials shall be met for battery systems.
18.	Vibrations and shocks associated with transportation of the system shall be taken into account, and cell and module design shall be able to resist deterioration due to vibrations resulting during transportation.

SL No.	Basic Requirement of the BESS
19.	In order to detect failures during transportation or operation, external connections among cells and cell monitoring equipment shall be designed.
20.	To avoid accidental contact, all external cell's power and monitoring connections shall be properly insulated.
21.	Cell terminals and interconnects shall meet the current carrying capacity constraint.
22.	Manufacturer's name, nameplate rating, cell type, marking polarities of cell, date and place of manufacturer shall be labeled for cells or unit batteries for tracking.
23.	A full capacity of 100 percent shall be met on the first discharge cycle at the factory during the Factory Acceptance Test (FAT).
24.	The battery system shall include an approved means of sectionalizing the cell string(s) into segments of not more than 600 volts (open circuit) for maintenance activities for systems with an open-circuit series cell string voltage above 600 volts DC nominal, and these switches need not be load-break switches. Provisions shall be included in non-load-break switches to ensure that the string disconnect device(s) is (are) open before the sectionalizing switches can be opened or closed.
25.	More than 60 VDC open-circuit voltage cannot be exposed in the BESS to avoid accidentally contacted by service personnel.
26.	A means of disconnecting the string from the rest of the system and shall include resettable (not fused) over current protection shall be included in each electrically series connected string of unit batteries.
27.	The means of disconnect shall provide for physical isolation of the string electrical circuit. They shall be visible to anyone servicing the individual unit batteries in the string, and also shall be capable of being locked or secured in open position.
28.	The storage system shall be designed to allow maintenance personnel to determine that there is no current flowing in the string and provisions (e.g., key interlock) to ensure that the PCS is off before any disconnect device can be opened or closed if the disconnect device is non-load-break, or if the disconnect means consists in removal of a unit battery
29.	Currents from other strings shall not contribute to a fault in any unit battery string by sizing and coordinating over current protection among paralleled unit battery strings.
30.	Maximum expected voltages plus a suitable factor of safety shall be obtained by insulating cells, wiring, switch gear and all DC electrical components. Please consider loading factor and thermal limit of load carrying cables within the storage subsystem.
31.	The battery system may be ungrounded or grounded, and options for grounded configurations include but not limited to center- or one pole-grounded, and/or solid or high resistance grounded. Nonetheless, the battery system shall include a system to detect and alarm excessive ground leakage current levels. Ground fault detection shall be enabled for each series string. The detection/trip level shall be field adjustable.
32.	All racks and metallic conductive members of stackable modules shall be earthed. Racks shall meet the seismic zone and road vibration requirements as specified herein and shall include means to restrain cell movement during seismic events and during

SL No.	Basic Requirement of the BESS
	transport.
33.	The seismic requirements in Bangladesh shall be taken into consideration when designing the structural components of all modules and racks, including self-contained, combination battery and power conversion system modules.
34.	The means of disconnect shall provide for a physical isolation of the string electrical circuit, which shall be visible to anyone servicing the individual unit batteries in the string, and shall be capable of being locked or secured in open position.
35.	If the disconnect device is non-load-break, or if the disconnect means consists in removal of a unit battery, then the storage system shall be designed so as to allow maintenance personnel to determine that there is no current flowing in the string and provisions (e.g., key interlock) to ensure that the PCS is off before any disconnect device can be opened or closed.
36.	Over current protection (whether on the ac or dc side) in paralleled unit battery strings shall be sized and coordinated so that currents from other strings do not contribute to a fault in any unit battery string.
37.	All cells, wiring, switchgear, and DC electrical components shall be insulated to withstand the maximum expected voltages with an appropriate safety margin. DC bus work and load-carrying cables within the storage subsystem shall be designed to operate well below their maximum rated capacity, ensuring a substantial safety buffer to prevent overheating or stress. All other electrical components shall be operated within conservative capacity limits to maintain reliability and longevity under normal operating conditions.
38.	All racks and metallic conductive members of stackable modules shall be grounded to earth. Racks shall meet the seismic zone and road vibration requirements as specified herein and shall include means to restrain cell movement during seismic events and during transport.
39.	The structural components of all modules and racks, including self-contained, combination battery and power conversion system modules, shall be designed to meet the seismic requirements in Bangladesh.
40.	BMS system shall be able to integrate SCADA via Modbus TCP, RS485, etc.
41.	Noise: < 80 dB
42.	Certifications/Standard: IEC, UL, IEEE 1547 2018, UN 38.3, ISO.
43.	The Black start process time will not be more than 1 minute
44.	No effect on the battery life cycle if any abnormalities happen during charging and discharging
45.	Application: Grid charging with CLB Mode (Critical Load Backup) for designated feeders during grid outages.

6.1.2 Particular:

6.1.2.1

Kaliakoir-6 33/11kV Substation (Dhaka PBS-1)

Item	Description	Unit	Quantity
Equipment & Materials			
1	Battery Prefabricated Cabin. 5MWh Per container	No	2
1.1	Supply of Battery cell 280Ah or more, Battery Module (Liquid cooling) 104S1P or equivalent and Battery Cluster (Liquid cooling) 416S1P or equivalent	Set	2
1.2	Supply of Battery Management System (BMS) including BMU, BCU, BAU	Set	2
1.3	Supply of High voltage control box including connectors, circuit breakers, relays, fuses, pre chargers, switching power supplies, etc. and boxes	Set	2
1.4	Supply of Battery rack, including frame body, door panel, side panel, installation accessories and packaging.	Set	2
1.5	Supply of Control and Current combining cabinet, including low-voltage power distribution unit, UPS, DC circuit breaker, bus bar, wiring, cabinet, etc. and packaging.	Set	2
1.6	Supply of DC cables and accessories, including inner cluster and cluster to bus cabinet cable and accessories.	Set	2
1.7	Supply of Battery Container, Standard 20 feet Container, IP 65 or higher, RAL7035, outdoor type or available size as per the site condition	Set	2
1.8	Supply of Temperature control system, liquid cooling units, pipes and coolants.	Set	2
1.9	Supply of Fire protection system, Perfluorohexanone and Water spray system	Set	2
1.1	Supply of Video surveillance system, including infrared camera, switch etc.	Set	2
2	Power Conversion System (PCS) Container, integrated with Medium Voltage (11kV) System		
2.1	Supply of Containerized solution with PCS and bi-directional transformers, outdoor type, IP65 or better, Color RAL7035, Standard 40 feet container or available size as per the site condition.	Set	1
2.2	Supply of Power Conversion System (PCS)-Bidirectional Power Conversion System. Grid-forming mode.	Set	1
2.3	Supply of Bi-directional Transformer: MV Transformer- Step Up/Step Down Transformer, 6.25 MVA, 11kV/ 0.69KV AC and vice versa, DYn11, Tap changer +/- 5 %.	Set	1
3	Supply of Energy Management System (EMS) with complete solution for integration with existing substation and BESS.	Set	1
4	Supply of 1500V DC, 690V AC & Communication cable as per requirements to complete the Installation work.	Set	1
5	11KV Cables and OFC Cables		

Item	Description	Unit	Quantity
5.1	Supply of 11kV 3-phase 185 mm ² , XLPE, Cu AC cable and OFC (Optic Fiber Cable) including their joints, earthing system, bonding etc. with all accessors required to complete the work (BESS output to Switchgear Panel inside the control room) and wherever required.	Lot	1
5.2	Supply of Termination of 11kV 3-phase 185mm ² , XLPE Cu AC cable and OFC cable from BESS output to new switchgear panel inside control room with all accessories to complete the work and wherever required.	Lot	1
6	Extension of existing 11kV Busbar		
6.1	Supply of 11kV Bus bar which shall be extended either side of existing panels to accommodate new bus section switchgear panel with/or without bus raiser, new BESS switchgear panel and 2 nos outgoing feeder panels, incoming panel wherever required after rearrangements of busbar components, similar/compatible with existing switchgear panel as per SLD. Should be Similar/Compatible with existing 11kV switchgear panels for integration	Lot	1
7	Supply of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser		
7.1	Supply of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration	No	1
8	Supply of new 11kV Air Insulated Switchgear (AIS) Outgoing Panel for BESS Connection		
8.1	Supply of new 11kV Air Insulated Switchgear (AIS) Outgoing Panel for BESS connection, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables, OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration.	No	1
9	LV AC cables/ DC Cables/ Control Wiring		
9.1	Supply of LV AC and DC Cables, Battery and Battery Chargers, Light and Lighting Protection equipment, Earthing system, ACDB, DCDB, SCADA, Equipment, RTUs, Control Cables etc. as per requirement to complete the work in new and existing switchgear panels and continuation with existing control wiring and wherever required Should be Similar/Compatible with existing switchgear panels for integration.	Lot	1
10	11kV Cable Terminations		

Item	Description	Unit	Quantity
10.1	Supply of 11kV cable terminations and jointing kits complete with all associated electrical equipment in new and existing switchgear Panels (2 feeder breaker) and wherever required.	Set	2x1
11	Auxiliary Supply for BESS System		
11.1	Supply of a complete auxiliary power system to ensure uninterrupted and reliable operation of the BESS under all operating conditions, including normal grid-connected operation and Critical Load Backup (CLB) to designated feeders during grid outages. This shall include, but not be limited to, suitable transformers and all associated equipment required to power auxiliary loads such as PCS units, battery enclosures, control systems, HVAC, lighting, safety, and protection systems. All components necessary to meet the functional, safety, and performance requirements of the PSA and applicable standards shall be provided, regardless of whether explicitly mentioned. No omission of any essential auxiliary provision will be accepted.	No	1
12	SCADA Workstation & Software and modification		
12.1	Supply of SCADA system for Real time monitoring and control Which shall incorporate the existing substation's components for complete monitoring and control of the entire Substation & BESS system and Integration with power grid system	Set	1
13	Earthing System		
13.1	Supply of Earthing system including grounding cables and accessories based on IEEE 80-2013. Chemical/plate/rod earthing for battery and enclosure, PCS, transformers, lightning protection etc. wherever and whatever required to get earthing resistance less than 0.5 ohm.	Lot	1
14	Fire Fighting System		
14.1	Supply of Fire Fighting system. Should comply with NFPA-855 requirements or any other relevant requirements.	Lot	1
15	Miscellaneous Requirement		
15.1	Office Rooms, (1 nos. executive table, 1 nos. Revolving chair, 4 nos. visiting chair, 1 nos. file cabinet, 1 set computer table and as required) as per approved design & drawing and instruction of Engineer-in charge /Employer.	Lot	1
15.2	Supply of Air Conditioning System (each 2.5 Ton) for Control Room including all accessories/ components required for fitting & fixing up to commissioning as per approved design & drawing and instruction of Engineer-in-charge /Employer.	Lot	1
15.3	CCTV System with 06 IP Cameras suitable for place and necessary accessories required for fitting & fixing up to commissioning.	Lot	1
15.4	Desktop Computer including all accessories/components (Monitor, CPU, Printer, UPS and etc.) as per approved design & drawing and instruction of Engineer-in-charge /Employer.	No	1
15.5	Laptop Computer including all accessories/components	No	1
16	Any other Miscellaneous requirements		
16.1	Any other items(s) considered necessary to comply with the scope of Works for completing the works.	L/S	1
Design Services			

Item	Description	Unit	Quantity
Item	Description of Item	Unit	Quantity
17	All design, drawings and documentation works related to this assignment including 5 (Five) sets of As-Built drawings showing locations (with soft copy of as-built drawing i.e AutoCAD, GIS, PDF format etc.) and operation & maintenance manual.	set	1
Installation and other Services			
Item	Description	Unit	Quantity
1	Electrical		
1.1	Installation, Testing and Commissioning of BESS (not including civil works) along with inside available switchyards space of existing 33/11kV substation on RCC Civil PAD.	lot	1
1.2	Installation, Testing and Commissioning of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable including all associated electrical/mechanical equipment with necessary wiring/cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear Bus panels for integration	lot	1
1.3	Installation, Testing and Commissioning of new 11kV Air Insulated Switchgear (AIS) Outgoing feeder panel, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables, OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear Bus panels for integration	lot	1
1.4	Shifting/Rearrangement/demolition/Transposition, Installation, Testing and Commissioning of existing 11kV Air Insulated Switchgear (AIS) panels, including 11kV incoming switchgear panel wherever required, complete with all associated electrical equipment and cabling, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/ Relays/ RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable and any other equipment as required to complete the works inside the existing control room with necessary modification/retrofit /demolition/reconstruction etc. with civil works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration.	lot	2x1
1.5	Installation, Testing and Commissioning of 11kV cable terminations and jointing kits complete with all associated electrical equipment in new and existing switchgear Panels and wherever required.	set	2x1

Item	Description	Unit	Quantity
1.6	Installation, Testing and Commissioning of 11kV Bus bar which shall be extended either side of existing panels to accommodate new bus section switchgear panel with/or without bus raiser, new BESS switchgear panel and 2 nos outgoing feeder panels, incoming panel wherever required after rearrangements of busbar components, similar/compatible with existing switchgear panel as per SLD. Should be Similar/Compatible with existing 11kV switchgear panels for integration	lot	1
1.7	Installation, Testing and Commissioning of LV AC and DC Cables, Battery and Battery Chargers, Light and Lighting Protection equipment, Earthing system, ACDB, DCDB, SCADA, Equipment, RTUs, Control Cables etc. as per requirement to complete the work in new and existing switchgear panels and continuation with existing control wiring and wherever required. Should be Similar/Compatible with existing switchgear panels for integration.	lot	1
1.8	Installation, Testing and Commissioning of Earthing system including grounding cables and accessories based on IEEE 80-2013. Chemical/plate/rod earthing for battery and enclosure, PCS, transformers, lightning protection etc. wherever and whatever required to get earthing resistance less than 0.5 ohm.	lot	1
1.9	Installation, Testing and Commissioning of Real time monitoring and control. The proposed SCADA system shall incorporate the existing substation's components for complete monitoring and control of the entire Substation & BESS system and Integration with power grid system	set	1
1.10	Installation, Testing and Commissioning of a complete auxiliary power system to ensure uninterrupted and reliable operation of the BESS under all operating conditions, including normal grid-connected operation and Critical Load Backup (CLB) to designated feeders during grid outages. This shall include, but not be limited to, suitable transformers and all associated equipment required to power auxiliary loads such as PCS units, battery enclosures, control systems, HVAC, lighting, safety, and protection systems. All components necessary to meet the functional, safety, and performance requirements of the PSA and applicable standards shall be provided, regardless of whether explicitly mentioned. No omission of any essential auxiliary provision will be accepted.	Nos	1
1.11	Installation, Testing and Commissioning of Fire Fighting system. Should comply with NFPA-855 requirements or any other relevant requirements.	lot	1
1.12	Installation, Testing and Commissioning of all BESS yard electrical installations including installation of Sub-station Earthing System and installation of Sub-station Lighting (as required)., installation all equipment, steel structure, cable and others as required	lot	1
1.13	Installation, Testing and Commissioning of 11kV 3-phase 185 mm ² , XLPE Cu AC cable and OFC cable laying (Open cut and Backfilling) including their joints, earthing system, bonding etc. with all accessories required to complete the work (BESS output to Switchgear Panel inside the control room) and wherever required	lot	1

Item	Description	Unit	Quantity
2	Civil Works		
2.1	Site Development/Improvement for whole BESS area including approach road if required by carted earth or dredged sand, sandy silt carried by head or truck or any other means including cost of cutting or by dredging of sand, sandy silt, all; including local carrying, placing the earth/sand, sandy silt in the designated area, maintain slopes, breaking lumps, levelling and dressing in layers up to finish level etc. all complete as per direction and accepted by the Engineer in charge. Necessary dismantling, floor cut/ hole and modifications as per requirement for new and existing switchgear panels inside the control room to retrofit/accommodate/install BESS new panel, new bus section panel with/or without bus raiser, incoming panel wherever required, Rearranged feeder panels and Terminations of 11kV cables from bottom of the floor slab without any adverse effects on column and beam of existing control room building following BNBC. Should be Similar/ Compatible with existing 11kV switchgear panels for integration. Mechanical compaction of above carted earth or dredged sand, sandy silt required for pre-approved specific engineering purpose in 150 mm layers including levelling, watering and consolidation each layer all complete as per direction and accepted by the Engineer -in charge.	Lot	1x1
2.2	Supply materials and Construction of Foundation of all Equipment and structures as per approved design & drawing including necessary tests and instruction of Engineer-in-charge /Employer	Lot	1
2.3	Supply materials and construction of surface drain if required, RCC Box or Pipe Culvert (As required) as per approved design and drawing and direction of the Engineer in charge.	Lot	1
3	Technical (O & M) Training Services & others		
3.1	Technical Training for 7 days for 20 Nos. of BREB/PBS Personnel per BESS on operation, maintenance, protection & control of 5MW,10MWh BESS (5 officials/Batch). Professional O&M team are required to do daily/regular/ special situation operation, maintenance and inspection of all equipment in the station and all training offered to client's staff to adequate/accentuate with BESS system for competency in operation and maintenance	Batch	1
	(a) Foreign Technical Training for 7 days for BREB/PBS /Nominated official 12 officials on operation, maintenance, protection & control of 4 Nos. of 5MW,10MWh BESS. (3 officials/Batch).	Batch	1
3.2	(b) Factory Acceptance Test (FAT)/Pre Shipment Inspection (PSI) for 7 days for BREB/PBS /Nominated official of 12 officials for the requirement of the equipment of 4 Nos. of 5MW,10MWh BESS.as per instruction of the employers/ engineering - in - charge. (3 officials/Batch).	Batch	1

Item	Description	Unit	Quantity
3.3	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
3.4	Operation & Maintenance (O & M) services for 7 years after warranty period. After completion of the 5 (Five) years comprehensive warranty period, the Contractor shall undertake Operation & Maintenance (O&M) services for a period of 7 (Seven) years for the Battery Energy Storage System (BESS) installed at the substation. Each BESS installation shall be rated 5 MW / 10 MWh, complete with battery system, PCS, EMS/SCADA, fire protection, HVAC, protection, and all associated balance of plant. The O&M services shall be provided on a turnkey basis, ensuring continuous, safe, and reliable operation of the BESS in compliance with BREB, Bangladesh Grid Code, IEC, IEEE, and NFPA-855 standards. In supplement to this tender document, the contractor should submit year wise scope of works, cost breakdown and manpower, spare parts & consumable cost.	Lot	1
4	Miscellaneous		
4.1	Completion of Power Supply Works of Electrification Acceptance Test, Integrated Tests (IT) for whole system and commissioning of complete Power Supply System and BESS as per International IEC/IEEE requirements, National Power Supply Authority (PSA) guidelines, Licensing Authority requirements, Safety Certification, Attendance and Manning during integrated Testing and Commissioning along with any materials, equipment and consumables.	Lot	1
4.2	Installation of Air Conditioning System, Water Pump Motor Set, Overhead Water Tank, Fire Detection & Protection Facilities with all accessories/components required for fitting & fixing up to commissioning for Control Room and also installation of CCTV system with necessary accessories as required up to commissioning.	Lot	1

6.1.2.2

Algi 33/11kV Substation (Narsingdi PBS-1)

Item	Description	Unit	Quantity
Equipment & Materials			
1	Battery Prefabricated Cabin. 5MWh Per container	No	2
1.1	Supply of Battery cell 280Ah or more, Battery Module (Liquid cooling) 104S1P or equivalent and Battery Cluster (Liquid cooling) 416S1P or equivalent	Set	2
1.2	Supply of Battery Management System (BMS) including BMU, BCU, BAU	Set	2
1.3	Supply of High voltage control box including connectors, circuit breakers, relays, fuses, pre chargers, switching power supplies, etc. and boxes	Set	2
1.4	Supply of Battery rack, including frame body, door panel, side panel, installation accessories and packaging.	Set	2
1.5	Supply of Control and Current combining cabinet, including low-voltage power distribution unit, UPS, DC circuit breaker, bus bar, wiring, cabinet, etc. and packaging.	Set	2
1.6	Supply of DC cables and accessories, including inner cluster and cluster to bus cabinet cable and accessories.	Set	2
1.7	Supply of Battery Container, Standard 20 feet Container, IP 65 or higher, RAL7035, outdoor type or available size as per the site condition	Set	2
1.8	Supply of Temperature control system, liquid cooling units, pipes and coolants.	Set	2
1.9	Supply of Fire protection system, Perfluorohexanone and Water spray system	Set	2
1.1	Supply of Video surveillance system, including infrared camera, switch etc.	Set	2
2	Power Conversion System (PCS) Container, integrated with Medium Voltage (11kV) System		
2.1	Supply of Containerized solution with PCS and bi-directional transformers, outdoor type, IP65 or better, Color RAL7035, Standard 40 feet container or available size as per the site condition.	Set	1
2.2	Supply of Power Conversion System (PCS)-Bidirectional Power Conversion System. Grid-forming mode.	Set	1
2.3	Supply of Bi-directional Transformer: MV Transformer- Step Up/Step Down Transformer, 6.25 MVA, 11kV/ 0.69KV AC and vice versa, DYn11, Tap changer +/- 5 %.	Set	1
3	Supply of Energy Management System (EMS) with complete solution for integration with existing substation and BESS.	Set	1
4	Supply of 1500V DC, 690V AC & Communication cable as per requirements to complete the Installation work.	Set	1
5	11KV Cables and OFC Cables		
5.1	Supply of 11kV 3-phase 185 mm ² , XLPE, Cu AC cable and OFC (Optic Fiber Cable) including their joints, earthing system, bonding etc. with all accessors required to complete the work (BESS output to Switchgear Panel inside the control room) and wherever	Lot	1

Item	Description	Unit	Quantity
	required.		
5.2	Supply of Termination of 11kV 3-phase 185mm ² , XLPE Cu AC cable and OFC cable from BESS output to new switchgear panel inside control room with all accessories to complete the work and wherever required.	Lot	1
6	Extension of existing 11kV Busbar		
6.1	Supply of 11kV Bus bar which shall be extended either side of existing panels to accommodate new bus section switchgear panel with/or without bus raiser, new BESS switchgear panel and 2 nos outgoing feeder panels, incoming panel wherever required after rearrangements of busbar components, similar/compatible with existing switchgear panel as per SLD. Should be Similar/Compatible with existing 11kV switchgear panels for integration	Lot	1
7	Supply of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser		
7.1	Supply of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration	No	1
8	Supply of new 11kV Air Insulated Switchgear (AIS) Outgoing Panel for BESS Connection		
8.1	Supply of new 11kV Air Insulated Switchgear (AIS) Outgoing Panel for BESS connection, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables, OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration.	No	1
9	LV AC cables/ DC Cables/ Control Wiring		
9.1	Supply of LV AC and DC Cables, Battery and Battery Chargers, Light and Lighting Protection equipment, Earthing system, ACDB, DCDB, SCADA, Equipment, RTUs, Control Cables etc. as per requirement to complete the work in new and existing switchgear panels and continuation with existing control wiring and wherever required Should be Similar/Compatible with existing switchgear panels for integration.	Lot	1
10	11kV Cable Terminations		
10.1	Supply of 11kV cable terminations and jointing kits complete with all associated electrical equipment in new and existing switchgear Panels (2 feeder breaker) and wherever required.	Set	2x1

Item	Description	Unit	Quantity
11	Auxiliary Supply for BESS System		
11.1	Supply of a complete auxiliary power system to ensure uninterrupted and reliable operation of the BESS under all operating conditions, including normal grid-connected operation and Critical Load Backup (CLB) to designated feeders during grid outages. This shall include, but not be limited to, suitable transformers and all associated equipment required to power auxiliary loads such as PCS units, battery enclosures, control systems, HVAC, lighting, safety, and protection systems. All components necessary to meet the functional, safety, and performance requirements of the PSA and applicable standards shall be provided, regardless of whether explicitly mentioned. No omission of any essential auxiliary provision will be accepted.	No	1
12	SCADA Workstation & Software and modification		
12.1	Supply of SCADA system for Real time monitoring and control Which shall incorporate the existing substation's components for complete monitoring and control of the entire Substation & BESS system and Integration with power grid system	Set	1
13	Earthing System		
13.1	Supply of Earthing system including grounding cables and accessories based on IEEE 80-2013. Chemical/plate/rod earthing for battery and encloser, PCS, transformers, lightning protection etc. wherever and whatever required to get earthing resistance less than 0.5 ohm.	Lot	1
14	Fire Fighting System		
14.1	Supply of Fire Fighting system. Should comply with NFPA-855 requirements or any other relevant requirements.	Lot	1
15	Miscellaneous Requirement		
15.1	Office Rooms, (1 nos. executive table, 1 nos. Revolving chair, 4 nos. visiting chair, 1 nos. file cabinet, 1 set computer table and as required) as per approved design & drawing and instruction of Engineer-in charge /Employer.	Lot	1
15.2	Supply of Air Conditioning System (each 2.5 Ton) for Control Room including all accessories/ components required for fitting & fixing up to commissioning as per approved design & drawing and instruction of Engineer-in-charge /Employer.	Lot	1
15.3	CCTV System with 06 IP Cameras suitable for place and necessary accessories required for fitting & fixing up to commissioning.	Lot	1
15.4	Desktop Computer including all accessories/components (Monitor, CPU, Printer, UPS and etc.) as per approved design & drawing and instruction of Engineer-in-charge /Employer.	No	1
15.5	Laptop Computer including all accessories/components	No	1
16	Any other Miscellaneous requirements		
16.1	Any other items(s) considered necessary to comply with the scope of Works for completing the works.	L/S	1
Design Services			
Item	Description of Item	Unit	Quantity

Item	Description	Unit	Quantity
17	All design, drawings and documentation works related to this assignment including 5 (Five) sets of As-Built drawings showing locations (with soft copy of as-built drawing i.e AutoCAD, GIS, PDF format etc.) and operation & maintenance manual.	set	1
Installation and other Services			
Item	Description	Unit	Quantity
1	Electrical		
1.1	Installation, Testing and Commissioning of BESS (not including civil works) along with inside available switchyards space of existing 33/11kV substation on RCC Civil PAD.	lot	1
1.2	Installation, Testing and Commissioning of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable including all associated electrical/mechanical equipment with necessary wiring/cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear Bus panels for integration	lot	1
1.3	Installation, Testing and Commissioning of new 11kV Air Insulated Switchgear (AIS) Outgoing feeder panel, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables, OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear Bus panels for integration	lot	1
1.4	Shifting/Rearrangement/demolition/Transposition, Installation, Testing and Commissioning of existing 11kV Air Insulated Switchgear (AIS) panels, including 11kV incoming switchgear panel wherever required, complete with all associated electrical equipment and cabling, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/ Relays/ RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable and any other equipment as required to complete the works inside the existing control room with necessary modification/retrofit /demolition/reconstruction etc. with civil works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration.	lot	2x1
1.5	Installation, Testing and Commissioning of 11kV cable terminations and jointing kits complete with all associated electrical equipment in new and existing switchgear Panels and wherever required.	set	2x1

Item	Description	Unit	Quantity
++1.6	Installation, Testing and Commissioning of 11kV Bus bar which shall be extended either side of existing panels to accommodate new bus section switchgear panel with/or without bus raiser, new BESS switchgear panel and 2 nos outgoing feeder panels, incoming panel wherever required after rearrangements of busbar components, similar/compatible with existing switchgear panel as per SLD. Should be Similar/Compatible with existing 11kV switchgear panels for integration	lot	1
1.7	Installation, Testing and Commissioning of LV AC and DC Cables, Battery and Battery Chargers, Light and Lighting Protection equipment, Earthing system, ACDB, DCDB, SCADA, Equipment, RTUs, Control Cables etc. as per requirement to complete the work in new and existing switchgear panels and continuation with existing control wiring and wherever required. Should be Similar/Compatible with existing switchgear panels for integration.	lot	1
1.8	Installation, Testing and Commissioning of Earthing system including grounding cables and accessories based on IEEE 80-2013. Chemical/plate/rod earthing for battery and enclosure, PCS, transformers, lightning protection etc. wherever and whatever required to get earthing resistance less than 0.5 ohm.	lot	1
1.9	Installation, Testing and Commissioning of Real time monitoring and control. The proposed SCADA system shall incorporate the existing substation's components for complete monitoring and control of the entire Substation & BESS system and Integration with power grid system	set	1
1.10	Installation, Testing and Commissioning of a complete auxiliary power system to ensure uninterrupted and reliable operation of the BESS under all operating conditions, including normal grid-connected operation and Critical Load Backup (CLB) to designated feeders during grid outages. This shall include, but not be limited to, suitable transformers and all associated equipment required to power auxiliary loads such as PCS units, battery enclosures, control systems, HVAC, lighting, safety, and protection systems. All components necessary to meet the functional, safety, and performance requirements of the PSA and applicable standards shall be provided, regardless of whether explicitly mentioned. No omission of any essential auxiliary provision will be accepted.	Nos	1
1.11	Installation, Testing and Commissioning of Fire Fighting system. Should comply with NFPA-855 requirements or any other relevant requirements.	lot	1
1.12	Installation, Testing and Commissioning of all BESS yard electrical installations including installation of Sub-station Earthing System and installation of Sub-station Lighting (as required), installation all equipment, steel structure, cable and others as required	lot	1
1.13	Installation, Testing and Commissioning of 11kV 3-phase 185 mm ² , XLPE Cu AC cable and OFC cable laying (Open cut and Backfilling) including their joints, earthing system, bonding etc. with all accessories required to complete the work (BESS output to Switchgear Panel inside the control room) and wherever required	lot	1

Item	Description	Unit	Quantity
2	Civil Works		
2.1	Site Development/Improvement for whole BESS area including approach road if required by carted earth or dredged sand, sandy silt carried by head or truck or any other means including cost of cutting or by dredging of sand, sandy silt, all; including local carrying, placing the earth/sand, sandy silt in the designated area, maintain slopes, breaking lumps, levelling and dressing in layers up to finish level etc. all complete as per direction and accepted by the Engineer in charge. Necessary dismantling, floor cut/ hole and modifications as per requirement for new and existing switchgear panels inside the control room to retrofit/accommodate/install BESS new panel, new bus section panel with/or without bus raiser, incoming panel wherever required, Rearranged feeder panels and Terminations of 11kV cables from bottom of the floor slab without any adverse effects on column and beam of existing control room building following BNBC. Should be Similar/ Compatible with existing 11kV switchgear panels for integration. Mechanical compaction of above carted earth or dredged sand, sandy silt required for pre-approved specific engineering purpose in 150 mm layers including levelling, watering and consolidation each layer all complete as per direction and accepted by the Engineer -in charge.	Lot	1x1
2.2	Supply materials and Construction of Foundation of all Equipment and structures as per approved design & drawing including necessary tests and instruction of Engineer-in-charge /Employer	Lot	1
2.3	Supply materials and construction of surface drain if required, RCC Box or Pipe Culvert (As required) as per approved design and drawing and direction of the Engineer in charge.	Lot	1
3	Technical (O & M) Training Services & others		
3.1	Technical Training for 7 days for 20 Nos. of BREB/PBS Personnel per BESS on operation, maintenance, protection & control of 5MW,10MWh BESS (5 officials/Batch). Professional O&M team are required to do daily/regular/ special situation operation, maintenance and inspection of all equipment in the station and all training offered to client's staff to adequate/accentuate with BESS system for competency in operation and maintenance	Batch	1
3.2	(a) Foreign Technical Training for 7 days for BREB/PBS /Nominated official 12 officials on operation, maintenance, protection & control of 4 Nos. of 5MW,10MWh BESS.(3 officials/Batch).	Batch	1
	(b) Factory Acceptance Test (FAT)/Pre Shipment Inspection(PSI) for 7 days for BREB/PBS /Nominated official of 12 officials for the requirement of the equipment of 4 Nos. of 5MW,10MWh BESS.as per instruction of the employers/ engineering - in - charge.(3 officials/Batch).	Batch	1
3.3	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	lot	1

Item	Description	Unit	Quantity
	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.		
3.4	Operation & Maintenance (O & M) services for 7 years after warranty period. After completion of the 5 (Five) years comprehensive warranty period, the Contractor shall undertake Operation & Maintenance (O&M) services for a period of 7 (Seven) years for the Battery Energy Storage System (BESS) installed at the substation. Each BESS installation shall be rated 5 MW / 10 MWh, complete with battery system, PCS, EMS/SCADA, fire protection, HVAC, protection, and all associated balance of plant. The O&M services shall be provided on a turnkey basis, ensuring continuous, safe, and reliable operation of the BESS in compliance with BREB, Bangladesh Grid Code, IEC, IEEE, and NFPA-855 standards. In supplement to this tender document, the contractor should submit year wise scope of works, cost breakdown and manpower, spare parts & consumable cost.	Lot	1
4	Miscellaneous		
4.1	Completion of Power Supply Works of Electrification Acceptance Test, Integrated Tests (IT) for whole system and commissioning of complete Power Supply System and BESS as per International IEC/IEEE requirements, National Power Supply Authority (PSA) guidelines, Licensing Authority requirements, Safety Certification, Attendance and Manning during integrated Testing and Commissioning along with any materials, equipment and consumables.	Lot	1
4.2	Installation of Air Conditioning System, Water Pump Motor Set, Overhead Water Tank, Fire Detection & Protection Facilities with all accessories/components required for fitting & fixing up to commissioning for Control Room and also installation of CCTV system with necessary accessories as required up to commissioning.	Lot	1

6.1.2.3

Pakundia-2 33/11kV Substation (Kishoreganj PBS)

Item	Description	Unit	Quantity
Equipment & Materials			
1	Battery Prefabricated Cabin. 5MWh Per container	No	2
1.1	Supply of Battery cell 280Ah or more, Battery Module (Liquid cooling) 104S1P or equivalent and Battery Cluster (Liquid cooling) 416S1P or equivalent	Set	2
1.2	Supply of Battery Management System (BMS) including BMU, BCU, BAU	Set	2
1.3	Supply of High voltage control box including connectors, circuit breakers, relays, fuses, pre chargers, switching power supplies, etc. and boxes	Set	2
1.4	Supply of Battery rack, including frame body, door panel, side panel, installation accessories and packaging.	Set	2
1.5	Supply of Control and Current combining cabinet, including low-voltage power distribution unit, UPS, DC circuit breaker, bus bar, wiring, cabinet, etc. and packaging.	Set	2
1.6	Supply of DC cables and accessories, including inner cluster and cluster to bus cabinet cable and accessories.	Set	2
1.7	Supply of Battery Container, Standard 20 feet Container, IP 65 or higher, RAL7035, outdoor type or available size as per the site condition	Set	2
1.8	Supply of Temperature control system, liquid cooling units, pipes and coolants.	Set	2
1.9	Supply of Fire protection system, Perfluorohexanone and Water spray system	Set	2
1.1	Supply of Video surveillance system, including infrared camera, switch etc.	Set	2
2	Power Conversion System (PCS) Container, integrated with Medium Voltage (11kV) System		
2.1	Supply of Containerized solution with PCS and bi-directional transformers, outdoor type, IP65 or better, Color RAL7035, Standard 40 feet container or available size as per the site condition.	Set	1
2.2	Supply of Power Conversion System (PCS)-Bidirectional Power Conversion System. Grid-forming mode.	Set	1
2.3	Supply of Bi-directional Transformer: MV Transformer- Step Up/Step Down Transformer, 6.25 MVA, 11kV/ 0.69KV AC and vice versa, DYn11, Tap changer +/- 5 %.	Set	1
3	Supply of Energy Management System (EMS) with complete solution for integration with existing substation and BESS.	Set	1
4	Supply of 1500V DC, 690V AC & Communication cable as per requirements to complete the Installation work.	Set	1
5	11KV Cables and OFC Cables		
5.1	Supply of 11kV 3-phase 185 mm ² , XLPE, Cu AC cable and OFC (Optic Fiber Cable) including their joints, earthing system, bonding etc. with all accessors required to complete the work (BESS output to Switchgear Panel inside the control room) and wherever	Lot	1

Item	Description	Unit	Quantity
	required.		
5.2	Supply of Termination of 11kV 3-phase 185mm ² , XLPE Cu AC cable and OFC cable from BESS output to new switchgear panel inside control room with all accessories to complete the work and wherever required.	Lot	1
6	Extension of existing 11kV Busbar		
6.1	Supply of 11kV Bus bar which shall be extended either side of existing panels to accommodate new bus section switchgear panel with/or without bus raiser, new BESS switchgear panel and 2 nos outgoing feeder panels, incoming panel wherever required after rearrangements of busbar components, similar/compatible with existing switchgear panel as per SLD. Should be Similar/Compatible with existing 11kV switchgear panels for integration	Lot	1
7	Supply of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser		
7.1	Supply of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration	No	1
8	Supply of new 11kV Air Insulated Switchgear (AIS) Outgoing Panel for BESS Connection		
8.1	Supply of new 11kV Air Insulated Switchgear (AIS) Outgoing Panel for BESS connection, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables, OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration.	No	1
9	LV AC cables/ DC Cables/ Control Wiring		
9.1	Supply of LV AC and DC Cables, Battery and Battery Chargers, Light and Lighting Protection equipment, Earthing system, ACDB, DCDB, SCADA, Equipment, RTUs, Control Cables etc. as per requirement to complete the work in new and existing switchgear panels and continuation with existing control wiring and wherever required Should be Similar/Compatible with existing switchgear panels for integration.	Lot	1
10	11kV Cable Terminations		
10.1	Supply of 11kV cable terminations and jointing kits complete with all associated electrical equipment in new and existing switchgear Panels (2 feeder breaker) and wherever required.	Set	2x1

Item	Description	Unit	Quantity
11	Auxiliary Supply for BESS System		
11.1	Supply of a complete auxiliary power system to ensure uninterrupted and reliable operation of the BESS under all operating conditions, including normal grid-connected operation and Critical Load Backup (CLB) to designated feeders during grid outages. This shall include, but not be limited to, suitable transformers and all associated equipment required to power auxiliary loads such as PCS units, battery enclosures, control systems, HVAC, lighting, safety, and protection systems. All components necessary to meet the functional, safety, and performance requirements of the PSA and applicable standards shall be provided, regardless of whether explicitly mentioned. No omission of any essential auxiliary provision will be accepted.	No	1
12	SCADA Workstation & Software and modification		
12.1	Supply of SCADA system for Real time monitoring and control Which shall incorporate the existing substation's components for complete monitoring and control of the entire Substation & BESS system and Integration with power grid system	Set	1
13	Earthing System		
13.1	Supply of Earthing system including grounding cables and accessories based on IEEE 80-2013. Chemical/plate/rod earthing for battery and encloser, PCS, transformers, lightning protection etc. wherever and whatever required to get earthing resistance less than 0.5 ohm.	Lot	1
14	Fire Fighting System		
14.1	Supply of Fire Fighting system. Should comply with NFPA-855 requirements or any other relevant requirements.	Lot	1
15	Miscellaneous Requirement		
15.1	Office Rooms, (1 nos. executive table, 1 nos. Revolving chair, 4 nos. visiting chair, 1 nos. file cabinet, 1 set computer table and as required) as per approved design & drawing and instruction of Engineer-in charge /Employer.	Lot	1
15.2	Supply of Air Conditioning System (each 2.5 Ton) for Control Room including all accessories/ components required for fitting & fixing up to commissioning as per approved design & drawing and instruction of Engineer-in-charge /Employer.	Lot	1
15.3	CCTV System with 06 IP Cameras suitable for place and necessary accessories required for fitting & fixing up to commissioning.	Lot	1
15.4	Desktop Computer including all accessories/components (Monitor, CPU, Printer, UPS and etc.) as per approved design & drawing and instruction of Engineer-in-charge /Employer.	No	1
15.5	Laptop Computer including all accessories/components	No	1
16	Any other Miscellaneous requirements		
16.1	Any other items(s) considered necessary to comply with the scope of Works for completing the works.	L/S	1
Design Services			
Item	Description of Item	Unit	Quantity

Item	Description	Unit	Quantity
17	All design, drawings and documentation works related to this assignment including 5 (Five) sets of As-Built drawings showing locations (with soft copy of as-built drawing i.e AutoCAD, GIS, PDF format etc.) and operation & maintenance manual.	set	1
Installation and other Services			
Item	Description	Unit	Quantity
1	Electrical		
1.1	Installation, Testing and Commissioning of BESS (not including civil works) along with inside available switchyards space of existing 33/11kV substation on RCC Civil PAD.	lot	1
1.2	Installation, Testing and Commissioning of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable including all associated electrical/mechanical equipment with necessary wiring/cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear Bus panels for integration	lot	1
1.3	Installation, Testing and Commissioning of new 11kV Air Insulated Switchgear (AIS) Outgoing feeder panel, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables, OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear Bus panels for integration	lot	1
1.4	Shifting/Rearrangement/demolition/Transposition, Installation, Testing and Commissioning of existing 11kV Air Insulated Switchgear (AIS) panels, including 11kV incoming switchgear panel wherever required, complete with all associated electrical equipment and cabling, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/ Relays/ RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable and any other equipment as required to complete the works inside the existing control room with necessary modification/retrofit /demolition/reconstruction etc. with civil works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration.	lot	2x1
1.5	Installation, Testing and Commissioning of 11kV cable terminations and jointing kits complete with all associated electrical equipment in new and existing switchgear Panels and wherever required.	set	2x1

Item	Description	Unit	Quantity
1.6	Installation, Testing and Commissioning of 11kV Bus bar which shall be extended either side of existing panels to accommodate new bus section switchgear panel with/or without bus raiser, new BESS switchgear panel and 2 nos outgoing feeder panels, incoming panel wherever required after rearrangements of busbar components, similar/compatible with existing switchgear panel as per SLD. Should be Similar/Compatible with existing 11kV switchgear panels for integration	lot	1
1.7	Installation, Testing and Commissioning of LV AC and DC Cables, Battery and Battery Chargers, Light and Lighting Protection equipment, Earthing system, ACDB, DCDB, SCADA, Equipment, RTUs, Control Cables etc. as per requirement to complete the work in new and existing switchgear panels and continuation with existing control wiring and wherever required. Should be Similar/Compatible with existing switchgear panels for integration.	lot	1
1.8	Installation, Testing and Commissioning of Earthing system including grounding cables and accessories based on IEEE 80-2013. Chemical/plate/rod earthing for battery and enclosure, PCS, transformers, lightning protection etc. wherever and whatever required to get earthing resistance less than 0.5 ohm.	lot	1
1.9	Installation, Testing and Commissioning of Real time monitoring and control. The proposed SCADA system shall incorporate the existing substation's components for complete monitoring and control of the entire Substation & BESS system and Integration with power grid system	set	1
1.10	Installation, Testing and Commissioning of a complete auxiliary power system to ensure uninterrupted and reliable operation of the BESS under all operating conditions, including normal grid-connected operation and Critical Load Backup (CLB) to designated feeders during grid outages. This shall include, but not be limited to, suitable transformers and all associated equipment required to power auxiliary loads such as PCS units, battery enclosures, control systems, HVAC, lighting, safety, and protection systems. All components necessary to meet the functional, safety, and performance requirements of the PSA and applicable standards shall be provided, regardless of whether explicitly mentioned. No omission of any essential auxiliary provision will be accepted.	Nos	1
1.11	Installation, Testing and Commissioning of Fire Fighting system. Should comply with NFPA-855 requirements or any other relevant requirements.	lot	1
1.12	Installation, Testing and Commissioning of all BESS yard electrical installations including installation of Sub-station Earthing System and installation of Sub-station Lighting (as required)., installation all equipment, steel structure, cable and others as required	lot	1
1.13	Installation, Testing and Commissioning of 11kV 3-phase 185 mm ² , XLPE Cu AC cable and OFC cable laying (Open cut and Backfilling) including their joints, earthing system, bonding etc. with all accessories required to complete the work (BESS output to Switchgear Panel inside the control room) and wherever required	lot	1

Item	Description	Unit	Quantity
2	Civil Works		
2.1	Site Development/Improvement for whole BESS area including approach road if required by carted earth or dredged sand, sandy silt carried by head or truck or any other means including cost of cutting or by dredging of sand, sandy silt, all; including local carrying, placing the earth/sand, sandy silt in the designated area, maintain slopes, breaking lumps, levelling and dressing in layers up to finish level etc. all complete as per direction and accepted by the Engineer in charge. Necessary dismantling, floor cut/ hole and modifications as per requirement for new and existing switchgear panels inside the control room to retrofit/accommodate/install BESS new panel, new bus section panel with/or without bus raiser, incoming panel wherever required, Rearranged feeder panels and Terminations of 11kV cables from bottom of the floor slab without any adverse effects on column and beam of existing control room building following BNBC. Should be Similar/ Compatible with existing 11kV switchgear panels for integration. Mechanical compaction of above carted earth or dredged sand, sandy silt required for pre-approved specific engineering purpose in 150 mm layers including levelling, watering and consolidation each layer all complete as per direction and accepted by the Engineer -in charge.	Lot	1x1
2.2	Supply materials and Construction of Foundation of all Equipment and structures as per approved design & drawing including necessary tests and instruction of Engineer-in-charge /Employer	Lot	1
2.3	Supply materials and construction of surface drain if required, RCC Box or Pipe Culvert (As required) as per approved design and drawing and direction of the Engineer in charge.	Lot	1
3	Technical (O & M) Training Services & others		
3.1	Technical Training for 7 days for 20 Nos. of BREB/PBS Personnel per BESS on operation, maintenance, protection & control of 5MW,10MWh BESS (5 officials/Batch). Professional O&M team are required to do daily/regular/ special situation operation, maintenance and inspection of all equipment in the station and all training offered to client's staff to adequate/accentuate with BESS system for competency in operation and maintenance	Batch	1
	(a) Foreign Technical Training for 7 days for BREB/PBS /Nominated official 12 officials on operation, maintenance, protection & control of 4 Nos. of 5MW,10MWh BESS.(3 officials/Batch).	Batch	1
3.2	(b) Factory Acceptance Test (FAT)/Pre Shipment Inspection(PSI) for 7 days for BREB/PBS /Nominated official of 12 officials for the requirement of the equipment of 4 Nos. of 5MW,10MWh BESS.as per instruction of the employers/ engineering - in - charge.(3 officials/Batch).	Batch	1

Item	Description	Unit	Quantity
3.3	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
3.4	Operation & Maintenance (O & M) services for 7 years after warranty period. After completion of the 5 (Five) years comprehensive warranty period, the Contractor shall undertake Operation & Maintenance (O&M) services for a period of 7 (Seven) years for the Battery Energy Storage System (BESS) installed at the substation. Each BESS installation shall be rated 5 MW / 10 MWh, complete with battery system, PCS, EMS/SCADA, fire protection, HVAC, protection, and all associated balance of plant. The O&M services shall be provided on a turnkey basis, ensuring continuous, safe, and reliable operation of the BESS in compliance with BREB, Bangladesh Grid Code, IEC, IEEE, and NFPA-855 standards. In supplement to this tender document, the contractor should submit year wise scope of works, cost breakdown and manpower, spare parts & consumable cost.	Lot	1
4	Miscellaneous		
4.1	Completion of Power Supply Works of Electrification Acceptance Test, Integrated Tests (IT) for whole system and commissioning of complete Power Supply System and BESS as per International IEC/IEEE requirements, National Power Supply Authority (PSA) guidelines, Licensing Authority requirements, Safety Certification, Attendance and Manning during integrated Testing and Commissioning along with any materials, equipment and consumables.	Lot	1
4.2	Installation of Air Conditioning System, Water Pump Motor Set, Overhead Water Tank, Fire Detection & Protection Facilities with all accessories/components required for fitting & fixing up to commissioning for Control Room and also installation of CCTV system with necessary accessories as required up to commissioning.	Lot	1

6.1.2.4

Trishal-2 33/11kV Substation (Mymensingh PBS-2)

Item	Description	Unit	Quantity
Equipment & Materials			
1	Battery Prefabricated Cabin. 5MWh Per container	No	2
1.1	Supply of Battery cell 280Ah or more, Battery Module (Liquid cooling) 104S1P or equivalent and Battery Cluster (Liquid cooling) 416S1P or equivalent	Set	2
1.2	Supply of Battery Management System (BMS) including BMU, BCU, BAU	Set	2
1.3	Supply of High voltage control box including connectors, circuit breakers, relays, fuses, pre chargers, switching power supplies, etc. and boxes	Set	2
1.4	Supply of Battery rack, including frame body, door panel, side panel, installation accessories and packaging.	Set	2
1.5	Supply of Control and Current combining cabinet, including low-voltage power distribution unit, UPS, DC circuit breaker, bus bar, wiring, cabinet, etc. and packaging.	Set	2
1.6	Supply of DC cables and accessories, including inner cluster and cluster to bus cabinet cable and accessories.	Set	2
1.7	Supply of Battery Container, Standard 20 feet Container, IP 65 or higher, RAL7035, outdoor type or available size as per the site condition	Set	2
1.8	Supply of Temperature control system, liquid cooling units, pipes and coolants.	Set	2
1.9	Supply of Fire protection system, Perfluorohexanone and Water spray system	Set	2
1.1	Supply of Video surveillance system, including infrared camera, switch etc.	Set	2
2	Power Conversion System (PCS) Container, integrated with Medium Voltage (11kV) System		
2.1	Supply of Containerized solution with PCS and bi-directional transformers, outdoor type, IP65 or better, Color RAL7035, Standard 40 feet container or available size as per the site condition.	Set	1
2.2	Supply of Power Conversion System (PCS)-Bidirectional Power Conversion System. Grid-forming mode.	Set	1
2.3	Supply of Bi-directional Transformer: MV Transformer- Step Up/Step Down Transformer, 6.25 MVA, 11kV/ 0.69KV AC and vice versa, DYn11, Tap changer +/- 5 %.	Set	1
3	Supply of Energy Management System (EMS) with complete solution for integration with existing substation and BESS.	Set	1
4	Supply of 1500V DC, 690V AC & Communication cable as per requirements to complete the Installation work.	Set	1
5	11KV Cables and OFC Cables		
5.1	Supply of 11kV 3-phase 185 mm ² , XLPE, Cu AC cable and OFC (Optic Fiber Cable) including their joints, earthing system, bonding etc. with all accessors required to complete the work (BESS output to Switchgear Panel inside the control room) and wherever	Lot	1

Item	Description	Unit	Quantity
	required.		
5.2	Supply of Termination of 11kV 3-phase 185mm ² , XLPE Cu AC cable and OFC cable from BESS output to new switchgear panel inside control room with all accessories to complete the work and wherever required.	Lot	1
6	Extension of existing 11kV Busbar		
6.1	Supply of 11kV Bus bar which shall be extended either side of existing panels to accommodate new bus section switchgear panel with/or without bus raiser, new BESS switchgear panel and 2 nos outgoing feeder panels, incoming panel wherever required after rearrangements of busbar components, similar/compatible with existing switchgear panel as per SLD. Should be Similar/Compatible with existing 11kV switchgear panels for integration	Lot	1
7	Supply of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser		
7.1	Supply of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration	No	1
8	Supply of new 11kV Air Insulated Switchgear (AIS) Outgoing Panel for BESS Connection		
8.1	Supply of new 11kV Air Insulated Switchgear (AIS) Outgoing Panel for BESS connection, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables, OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration.	No	1
9	LV AC cables/ DC Cables/ Control Wiring		
9.1	Supply of LV AC and DC Cables, Battery and Battery Chargers, Light and Lighting Protection equipment, Earthing system, ACDB, DCDB, SCADA, Equipment, RTUs, Control Cables etc. as per requirement to complete the work in new and existing switchgear panels and continuation with existing control wiring and wherever required Should be Similar/Compatible with existing switchgear panels for integration.	Lot	1
10	11kV Cable Terminations		
10.1	Supply of 11kV cable terminations and jointing kits complete with all associated electrical equipment in new and existing switchgear Panels (2 feeder breaker) and wherever required. (Extra One	Set	2x1 +1x1

Item	Description	Unit	Quantity
	incomer rearrangement in Trishal)		
11	Auxiliary Supply for BESS System		
11.1	Supply of a complete auxiliary power system to ensure uninterrupted and reliable operation of the BESS under all operating conditions, including normal grid-connected operation and Critical Load Backup (CLB) to designated feeders during grid outages. This shall include, but not be limited to, suitable transformers and all associated equipment required to power auxiliary loads such as PCS units, battery enclosures, control systems, HVAC, lighting, safety, and protection systems. All components necessary to meet the functional, safety, and performance requirements of the PSA and applicable standards shall be provided, regardless of whether explicitly mentioned. No omission of any essential auxiliary provision will be accepted.	No	1
12	SCADA Workstation & Software and modification		
12.1	Supply of SCADA system for Real time monitoring and control Which shall incorporate the existing substation's components for complete monitoring and control of the entire Substation & BESS system and Integration with power grid system	Set	1
13	Earthing System		
13.1	Supply of Earthing system including grounding cables and accessories based on IEEE 80-2013. Chemical/plate/rod earthing for battery and encloser, PCS, transformers, lightning protection etc. wherever and whatever required to get earthing resistance less than 0.5 ohm.	Lot	1
14	Fire Fighting System		
14.1	Supply of Fire Fighting system. Should comply with NFPA-855 requirements or any other relevant requirements.	Lot	1
15	Miscellaneous Requirement		
15.1	Office Rooms, (1 nos. executive table, 1 nos. Revolving chair, 4 nos. visiting chair, 1 nos. file cabinet, 1 set computer table and as required) as per approved design & drawing and instruction of Engineer-in charge /Employer.	Lot	1
15.2	Supply of Air Conditioning System (each 2.5 Ton) for Control Room including all accessories/ components required for fitting & fixing up to commissioning as per approved design & drawing and instruction of Engineer-in-charge /Employer.	Lot	1
15.3	CCTV System with 06 IP Cameras suitable for place and necessary accessories required for fitting & fixing up to commissioning.	Lot	1
15.4	Desktop Computer including all accessories/components (Monitor, CPU, Printer, UPS and etc.) as per approved design & drawing and instruction of Engineer-in-charge /Employer.	No	1
15.5	Laptop Computer including all accessories/components	No	1
16	Any other Miscellaneous requirements		
16.1	Any other items(s) considered necessary to comply with the scope of Works for completing the works.	L/S	1
Design Services			

Item	Description	Unit	Quantity
Item	Description of Item	Unit	Quantity
17	All design, drawings and documentation works related to this assignment including 5 (Five) sets of As-Built drawings showing locations (with soft copy of as-built drawing i.e AutoCAD, GIS, PDF format etc.) and operation & maintenance manual.	set	1
Installation and other Services			
Item	Description	Unit	Quantity
1	Electrical		
1.1	Installation, Testing and Commissioning of BESS (not including civil works) along with inside available switchyards space of existing 33/11kV substation on RCC Civil PAD.	lot	1
1.2	Installation, Testing and Commissioning of new 11kV Air Insulated Switchgear (AIS) Bus Section panel with/or without bus raiser, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable including all associated electrical/mechanical equipment with necessary wiring/cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear Bus panels for integration	lot	1
1.3	Installation, Testing and Commissioning of new 11kV Air Insulated Switchgear (AIS) Outgoing feeder panel, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/Relays/RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables, OFC cable including all associated electrical/mechanical equipment with necessary wiring/ cabling etc. as required to complete the works. Should be Similar/ Compatible with existing 11kV switchgear Bus panels for integration	lot	1
1.4	Shifting/Rearrangement/demolition/Transposition, Installation, Testing and Commissioning of existing 11kV Air Insulated Switchgear (AIS) panels, including 11kV incoming switchgear panel wherever required, complete with all associated electrical equipment and cabling, CT, PT, Protection and Measuring equipment, SCADA equipment including IED/ Relays/ RTU, Battery and Battery Chargers, Lighting and Lighting Protection equipment, Earthing system, Ventilation, DC Cables, Control cables, Low Voltage AC cables , OFC cable and any other equipment as required to complete the works inside the existing control room with necessary modification/retrofit /demolition/reconstruction etc. with civil works. Should be Similar/ Compatible with existing 11kV switchgear panels for integration. (Extra One incomer rearrangement in Trishal)	lot	2x1 +1x1
1.5	Installation, Testing and Commissioning of 11kV cable terminations and jointing kits complete with all associated electrical equipment in new and existing switchgear Panels and wherever required. (Extra One incomer rearrangement in Trishal)	set	2x1 +1x1

Item	Description	Unit	Quantity
1.6	Installation, Testing and Commissioning of 11kV Bus bar which shall be extended either side of existing panels to accommodate new bus section switchgear panel with/or without bus raiser, new BESS switchgear panel and 2 nos outgoing feeder panels, incoming panel wherever required after rearrangements of busbar components, similar/compatible with existing switchgear panel as per SLD. Should be Similar/Compatible with existing 11kV switchgear panels for integration	lot	1
1.7	Installation, Testing and Commissioning of LV AC and DC Cables, Battery and Battery Chargers, Light and Lighting Protection equipment, Earthing system, ACDB, DCDB, SCADA, Equipment, RTUs, Control Cables etc. as per requirement to complete the work in new and existing switchgear panels and continuation with existing control wiring and wherever required. Should be Similar/Compatible with existing switchgear panels for integration.	lot	1
1.8	Installation, Testing and Commissioning of Earthing system including grounding cables and accessories based on IEEE 80-2013. Chemical/plate/rod earthing for battery and enclosure, PCS, transformers, lightning protection etc. wherever and whatever required to get earthing resistance less than 0.5 ohm.	lot	1
1.9	Installation, Testing and Commissioning of Real time monitoring and control. The proposed SCADA system shall incorporate the existing substation's components for complete monitoring and control of the entire Substation & BESS system and Integration with power grid system	set	1
1.10	Installation, Testing and Commissioning of a complete auxiliary power system to ensure uninterrupted and reliable operation of the BESS under all operating conditions, including normal grid-connected operation and Critical Load Backup (CLB) to designated feeders during grid outages. This shall include, but not be limited to, suitable transformers and all associated equipment required to power auxiliary loads such as PCS units, battery enclosures, control systems, HVAC, lighting, safety, and protection systems. All components necessary to meet the functional, safety, and performance requirements of the PSA and applicable standards shall be provided, regardless of whether explicitly mentioned. No omission of any essential auxiliary provision will be accepted.	Nos	1
1.11	Installation, Testing and Commissioning of Fire Fighting system. Should comply with NFPA-855 requirements or any other relevant requirements.	lot	1
1.12	Installation, Testing and Commissioning of all BESS yard electrical installations including installation of Sub-station Earthing System and installation of Sub-station Lighting (as required)., installation all equipment, steel structure, cable and others as required	lot	1
1.13	Installation, Testing and Commissioning of 11kV 3-phase 185 mm ² , XLPE Cu AC cable and OFC cable laying (Open cut and Backfilling) including their joints, earthing system, bonding etc. with all accessories required to complete the work (BESS output to Switchgear Panel inside the control room) and wherever required	lot	1

Item	Description	Unit	Quantity
2	Civil Works		
2.1	Site Development/Improvement for whole BESS area including approach road if required by carted earth or dredged sand, sandy silt carried by head or truck or any other means including cost of cutting or by dredging of sand, sandy silt, all; including local carrying, placing the earth/sand, sandy silt in the designated area, maintain slopes, breaking lumps, levelling and dressing in layers up to finish level etc. all complete as per direction and accepted by the Engineer in charge. Necessary dismantling, floor cut/ hole and modifications as per requirement for new and existing switchgear panels inside the control room to retrofit/accommodate/install BESS new panel, new bus section panel with/without bus raiser, incoming panel wherever required, Rearranged feeder panels and Terminations of 11kV cables from bottom of the floor slab without any adverse effects on column and beam of existing control room building following BNBC. Should be Similar/ Compatible with existing 11kV switchgear panels for integration. Mechanical compaction of above carted earth or dredged sand, sandy silt required for pre-approved specific engineering purpose in 150 mm layers including levelling, watering and consolidation each layer all complete as per direction and accepted by the Engineer -in charge.	Lot	1x1
2.2	Supply materials and Construction of Foundation of all Equipment and structures as per approved design & drawing including necessary tests and instruction of Engineer-in-charge /Employer	Lot	1
2.3	Supply materials and construction of surface drain if required, RCC Box or Pipe Culvert (As required) as per approved design and drawing and direction of the Engineer in charge.	Lot	1
3	Technical (O & M) Training Services & others		
3.1	Technical Training for 7 days for 20 Nos. of BREB/PBS Personnel per BESS on operation, maintenance, protection & control of 5MW,10MWh BESS (5 officials/Batch). Professional O&M team are required to do daily/regular/ special situation operation, maintenance and inspection of all equipment in the station and all training offered to client's staff to adequate/accentuate with BESS system for competency in operation and maintenance	Batch	1
3.2	(a) Foreign Technical Training for 7 days for BREB/PBS /Nominated official 12 officials on operation, maintenance, protection & control of 4 Nos. of 5MW,10MWh BESS. (3 officials/Batch).	Batch	1
	(b) Factory Acceptance Test (FAT)/Pre Shipment Inspection (PSI) for 7 days for BREB/PBS /Nominated official of 12 officials for the requirement of the equipment of 4 Nos. of 5MW,10MWh BESS.as per instruction of the employers/ engineering - in - charge. (3 officials/Batch).	Batch	1
3.3	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	lot	1

Item	Description	Unit	Quantity
	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.		
3.4	Operation & Maintenance (O & M) services for 7 years after warranty period. After completion of the 5 (Five) years comprehensive warranty period, the Contractor shall undertake Operation & Maintenance (O&M) services for a period of 7 (Seven) years for the Battery Energy Storage System (BESS) installed at the substation. Each BESS installation shall be rated 5 MW / 10 MWh, complete with battery system, PCS, EMS/SCADA, fire protection, HVAC, protection, and all associated balance of plant. The O&M services shall be provided on a turnkey basis, ensuring continuous, safe, and reliable operation of the BESS in compliance with BREB, Bangladesh Grid Code, IEC, IEEE, and NFPA-855 standards. In supplement to this tender document, the contractor should submit year wise scope of works, cost breakdown and manpower, spare parts & consumable cost.	Lot	1
4	Miscellaneous		
4.1	Completion of Power Supply Works of Electrification Acceptance Test, Integrated Tests (IT) for whole system and commissioning of complete Power Supply System and BESS as per International IEC/IEEE requirements, National Power Supply Authority (PSA) guidelines, Licensing Authority requirements, Safety Certification, Attendance and Manning during integrated Testing and Commissioning along with any materials, equipment and consumables.	Lot	1
4.2	Installation of Air Conditioning System, Water Pump Motor Set, Overhead Water Tank, Fire Detection & Protection Facilities with all accessories/components required for fitting & fixing up to commissioning for Control Room and also installation of CCTV system with necessary accessories as required up to commissioning.	Lot	1

6.2 Technical Specification

6.2.1 Containerized Battery Energy Storage System (BESS) Design

6.2.1.1 General

The Battery Energy Storage System (BESS) for this project shall be provided as a containerized modular solution, distributed across three containers. Two 20-HC containers shall house the battery racks and Battery Management System (BMS). One 40-HC container shall house the Power Conversion System (PCS) and a bi-directional transformer. The Energy Management System (EMS) shall be installed in the existing control room of the substation, interfacing with all containers for monitoring, control, and optimization.

The BMS, PCS, and EMS shall communicate through open, standard protocols (e.g., IEC 61850, Modbus TCP/IP) to ensure seamless integration with supervisory systems. Each subsystem shall provide comprehensive indication and annunciation signals for battery status, PCS operation, alarms, and EMS coordination. The containers shall also include internal power distribution for critical and non-critical loads, emergency lighting, UPS supply for essential systems, and fire and safety systems.

The system shall connect to the existing 11 kV substation bus, complying with all Power Supply Authority (PSA) requirements. The BESS shall operate in grid-connected mode with four-quadrant control, providing voltage regulation and power factor correction, and shall supply designated feeders through Critical Load Backup (CLB) during grid outages.

The BESS shall also provide grid-forming capability, enabling autonomous voltage and frequency regulation during islanded operation (grid forming) and seamless transition between grid-connected and island modes.

Internal Power Distribution

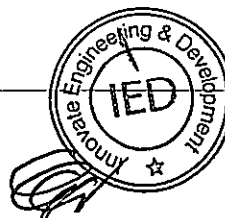
- Critical loads (BMS, EMS control, fire protection, cooling) supplied via UPS.
- Non-critical loads: lighting, outlets, auxiliary systems.
- Emergency and explosion-proof lighting included.
- Main incoming breaker with shunt trip, coordinated with fire protection.

Electrical Grid Connection

- Connection to existing 11 kV / 50 Hz substation feeder.
- PCS to perform voltage regulation, PF correction, four-quadrant control.
- Support Critical Load Backup (CLB) to designated feeders during grid outages.

Control Relay Panels (CRP)

- Floor-mounted, IP54, corrosion-resistant, with flame-retardant wiring.
- Relays: IEC 60255 compliant – overcurrent, earth fault, differential, breaker fail.
- Meters and instrumentation for operational and commercial monitoring.
- SCADA/EMS communication interface included.
- DC Breakers: 1500 V, 1000–1250 A, 36 kA (4-pole).
- AC Breakers: 11 kV, 1250–1600 A, 31.5 kA rms, $\geq 30,000$ cycles.
- Electrical Protection & Insulation Coordination
- Surge, lightning, and insulation coordinated per IEC 62305, IEC 60071-1/2, IEC 60364-5-54.
- Earthing: All metal parts connected to site grid.
- SPDs at all AC/DC terminals.



- Protection relays integrated with EMS/SCADA for remote alarm and trip signaling.

Submission Requirements & Notes

- Power distribution schematics, UPS sizing, critical/non-critical load diagram.
- CRP drawings, breaker specifications, relay configuration files.
- Protection coordination, insulation coordination, lightning and earthing layouts.
- Deliver a 5-year warranty including spares, software/firmware updates, and maintenance support.
- Provide post-warranty maintenance recommendations and critical spares list.
- Compliance certificates of the equipment shall be submitted, along with ISO 140001 and ISO 9001 compliance;

6.2.1.2 Container

The containers shall be designed for weather resistance, structural integrity, and maintainability, ensuring reliable operation under outdoor environmental conditions. The battery containers shall provide controlled thermal environments with active thermal management and include passive pressure balance and safe escape provisions. The PCS/transformer container shall include all necessary power equipment, protection, and monitoring devices, designed for safe operation and easy maintenance.

Technical Requirements & Features

Battery Containers (2 × 20 HC):

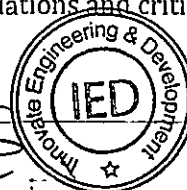
- Material: Corten steel, flat roof, stackable.
- Protection: Minimum IP54, compliant with IEC 60529 / GB4208.
- Insulation: Double-layer steel with Class A fire-retardant rock wool.
- Coating: Primer (zinc-rich) + Epoxy + Acrylic; Base frame: Asphalt.
- Pressure Balance: Passive vents opening at >1.2 MPa.
- Safe Escape: Walk-in design with emergency doors or quick-release panels.

PCS/Transformer Container (1 × 40 HC):

- Houses PCS, bi-directional transformer, auxiliary systems.
- Floor-mounted, corrosion-resistant materials (≥ 2 mm powder-coated steel).
- Sufficient space for maintenance and future upgrades

Submission Requirements & Notes

- Container drawings, material and paint specs.
- Signal mapping lists (BMS/PCS/EMS) with communication protocols.
- Power distribution schematics, UPS sizing, critical/non-critical load diagram.
- Protection coordination, insulation coordination, lightning and earthing layouts.
- The BESS and all associated systems shall comply with applicable international and local standards, including but not limited to- IEC: 60529 (IP rating), 60255 (protection relays), 62109-1/2 (PCS safety), 62933-2-1 (stationary ESS), 61850 (communication), 62305 (lightning), 60071-1/2 (insulation), 60364-5-54 (earthing), 62619 (battery safety); IEEE: 1547 (interconnection), 1679.1 (BESS fire protection), 2030.11 (DER control), C37.04 (switchgear ratings); UL / NFPA: UL 9540 / 9540A (ESS safety), UL 1973 (batteries), NFPA 72 (fire alarms), NFPA 855 (ESS installation).
- Deliver a 5-year warranty including spares and maintenance support.
- Provide post-warranty maintenance recommendations and critical spares list.



6.2.1.3 Battery System

Description

The Battery System shall be designed as a modular, multi-level architecture comprising battery cells, modules, clusters, and systems. Each level shall have clearly defined electrical, mechanical, and functional boundaries, ensuring safe operation, easy scalability, and simplified maintenance.

The system shall include a complete battery rack assembly integrated with the following subsystems:

- Battery Management System (BMS) for intelligent control and protection,
- Temperature control system for precise thermal regulation,
- Lighting and emergency systems,
- Fire detection and automatic extinguishing systems,
- Security and access systems ensuring personnel and equipment safety.

The system shall adopt a three-tier control structure—module level (BMU), cluster level (BCM), and system level (BMS)—for coordinated monitoring, data collection, and protection across all operating states. This ensures full control over battery performance, reliable safety response under abnormal conditions, and long-term operational stability.

The design and manufacturing of all components shall comply with relevant international standards including IEC 62619, IEC 62620, UL 1973, UL 9540A, and UN38.3, or other internationally recognized equivalents.

Technical Requirements and Features

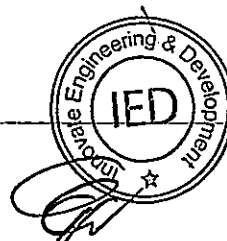
- Cell Type: Lithium Iron Phosphate (LFP) or Nickel Manganese Cobalt (NMC) prismatic aluminum shell cells.
- Capacity: 280 Ah or higher.
- Rated Voltage: ≥ 3.2 V; operating range: 3.0 V – 3.65 V.
- Cycle Life: $\geq 8,000$ cycles (at 85 % energy retention).
- Temperature Range:
 - Charging: 0 °C – 65 °C
 - Discharging: -20 °C – 55 °C
- Certifications: IEC 62619, UL 1973, UL 9540A, UN 38.3.

Cell Features

- Cells shall be Grade A, with excellent consistency and proven performance.
- Passive balancing capability shall meet operational requirements.
- Cells shall comply with IEC 62619:2017 test requirements and provide certified test reports.
- Each cell must be designed to withstand fire, impact, short circuit, overcharge, and over-discharge without fire or explosion.
- Cell housings shall be robust and resistant to leakage, deformation, or melting over their service life.
- Assembly methods shall ensure mechanical stability against vibration and environmental stress using secure fastening and anti-loosening techniques.

Battery Box (Module) Technology

Each battery box (plug-in module) shall contain:



- Battery modules and interconnection harnesses,
- BMU module for cell voltage and temperature monitoring,
- Explosion-proof valve, fuse, liquid cooling plate, manual service disconnect (MSD), and associated structural components.

Design Features

- Cells connected in series with laser-welded aluminum busbars for high conductivity and reliability.
- Temperature sensors distributed throughout each module for accurate thermal monitoring.
- Front-facing connection design for easy inspection and maintenance.
- Integrated BMU for data collection and communication with BCMU.
- The box structure shall ensure dimensional accuracy, liquid cooling integration, and long-term durability.
- Cooling channels manufactured using precision joining to eliminate leakage risk under thermal cycling.
- Lightweight construction with external cooling interfaces and no internal coolant leakage risk.

Battery Cluster Technology

Each battery cluster shall comprise multiple plug-in battery modules connected in series to a high-voltage box. The BMUs transmit monitoring data to the BCMU located within the high-voltage box, which in turn communicates with the system-level BAMS.

High Voltage Box Composition:

- Positive and negative main contactors
- Pre-charge contactor circuit
- High-speed fuse
- Cooling fan circuit

Cluster Features:

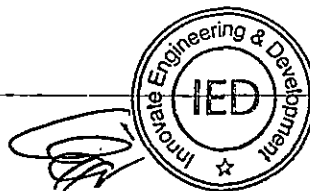
- Bottom-in and bottom-out cable layout with independent switch for isolation.
- Integrated temperature sampling and liquid cooling for efficient heat exchange.
- Structural frame designed for easy maintenance, coated with anti-corrosive finish.
- Separation of power and control wiring to prevent interference.
- Each cluster shall be capable of independent SOC and capacity calibration via PCS control as directed by BAMS.

DC Combiner Cabinet

The DC Combiner Cabinet shall collect outputs from multiple battery clusters and deliver combined DC power to the PCS DC input. It shall serve as the interface for control, monitoring, and protection of the entire battery subsystem.

Functions and Features:

- Power Confluence: Parallel connection of multiple clusters to reduce DC cabling and simplify installation.



- Integrated Control: Incorporates the BMS master control, HMI display, UPS backup power, and main DC circuit breaker.
- Protection: Overcurrent, overvoltage, insulation fault, and emergency cutoff protection for abnormal events (e.g., fire, HVAC failure).
- Metering (optional): Energy metering capability for charge/discharge measurement and efficiency tracking.
- Ease of Maintenance: Clear labeling, accessible layout, and provision for safe isolation during servicing.

Battery Characteristics and Performance Curves

The EPC contractor shall provide representative performance curves based on standard test methods, demonstrating charge/discharge profiles, temperature influence, and long-term cycle behavior.

Test and validation shall comply with the following standards:

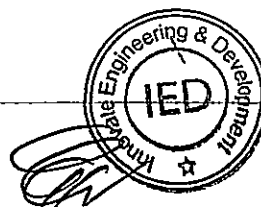
- IEC 62619 -Safety and performance of secondary lithium cells and batteries for industrial use.
- IEC 62620 -Performance requirements for large-format secondary lithium cells and batteries.

The manufacturer shall validate and document actual cell chemistry, ratings, and performance during design, FAT, and commissioning phases.

Submission Requirements and Notes

Documents and Drawings to be Submitted:

- System-level single-line and layout drawings showing battery hierarchy (cell-module-cluster-system).
- Detailed specifications for cells, modules, and clusters.
- Cooling system schematic, including flow rate, inlet/outlet temperature, and safety controls.
- Structural drawings of racks, boxes, and combiner cabinets with mechanical load analysis.
- Compliance certificates (IEC 62619, IEC 62620, UL 1973, UL 9540A, UN 38.3).
- Thermal management design documentation and leak prevention test reports.
- Fire suppression and safety integration plan compliant with local and international fire standards.
- The complete battery system, including BMS, shall ensure safe isolation, precise control, and full SCADA/EMS interoperability using Modbus TCP/IP or IEC 60870-5-104.
- The system shall be factory-preassembled and pretested before shipment to minimize on-site work.
- Each subsystem shall be designed for modular replacement without full system shutdown.
- All components shall be designed for outdoor or containerized installation, meeting IEC 60529 (IP rating) and IEC 60068 (environmental test) standards.
- The contractor shall provide detailed O&M manuals, including calibration and troubleshooting procedures.



6.2.1.4 BMS

Description

The Battery Management System (BMS) shall function as the intelligent control and protection system of the Battery Energy Storage System (BESS). It shall ensure the safe, stable, and efficient operation of the entire battery system during both charging and discharging cycles.

The BMS shall continuously monitor and record all key electrical and thermal parameters, including cell voltage, current, temperature, insulation resistance, State of Charge (SOC), and State of Health (SOH). It shall provide real-time supervision and automatic protection to maintain batteries within safe operating limits, ensuring optimal performance and long-term reliability.

The complete BMS architecture shall consist of a Battery Module Management Unit (BMU) and a Battery Cluster Management Unit (BCMU), integrated with current, voltage, and temperature detection devices. The system shall be capable of performing precise signal measurement, data storage, protection actions, passive balancing, SOC calibration, and seamless communication with other supervisory systems (PCS and EMS).

The BMS shall accurately estimate the SOC through current integration combined with periodic full/empty correction, ensuring long-term precision. Capacity calibration and SOC calibration shall be automatically managed to prevent cumulative errors.

When abnormal conditions such as overvoltage, undervoltage, overcurrent, overtemperature, or insulation faults occur, the BMS shall isolate the affected cells or clusters, initiate protection, and issue alarms both locally and remotely. During normal operation, the system shall automatically manage charge/discharge control, cutting off relays when voltage limits are reached to protect the battery.

The BMS shall also support passive balancing between cells to maintain voltage uniformity and extend overall battery life. For maintenance, faulty battery modules can be isolated safely without stopping the entire system. The BMS shall automatically conduct self-checks during restart and operate in a controlled mode if partial faults persist.

When significant voltage imbalance is detected between battery groups, the system shall automatically initiate controlled charging or discharging to gradually equalize voltage levels.

Local and remote monitoring interfaces shall display real-time operational data including:

- Cell voltage and temperature
- Battery pack voltage and temperature
- Battery cluster current, SOC, and SOH
- Alarm and warning notifications
- Fault logs and abnormal event records
- Battery capacity and SOC calibration status

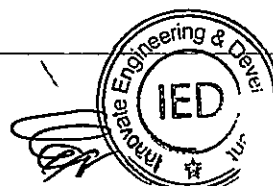
All BMS components shall be designed for high precision, reliable communication, and long-term operational stability, compliant with IEC 62619, IEC 61000, IEC 61557, and IEEE 1184 standards for electrical safety, performance, and EMC compliance.

Submission Requirements

The bidder shall provide the following documents, drawings, and technical evidence along with the bid:

- Detailed BMS architecture diagram showing BMU, BCMU, and communication layout.

PG5A



- Functional description covering monitoring, control, and protection features.
- Technical data sheets specifying rated voltage, current, measurement accuracy, sampling rate, and communication protocols.
- Software function overview, including SOC and SOH calculation logic, capacity calibration method, and data logging capability.
- Safety and protection schemes, including overvoltage, undervoltage, overcurrent, overtemperature, and insulation fault responses.
- Display and monitoring interface screenshots showing parameter visibility and alarm functions.
- Graphical representation or plots (SOC curve, temperature vs. performance curve, and balancing efficiency graphs) demonstrating expected system behavior under different operating conditions.
- List of compliance certificates (IEC 62619, IEC 61000, IEEE 1184, etc.) and relevant factory test reports.

Additional Notes

The bidder shall ensure full functional compatibility between the BMS, PCS, and EMS systems for smooth system integration.

- The BMS software and hardware shall allow for future expansion or firmware upgrades without major system downtime.
- The system shall have the ability to communicate with SCADA or higher-level control systems using open standard protocols (Modbus TCP/IP or IEC 60870-5-104).
- During commissioning, the contractor shall conduct full SOC calibration and verification, ensuring that battery capacity and performance match design expectations.
- Any additional components, accessories, or software tools required for reliable operation and alignment with project objectives shall be included by the contractor, even if not explicitly mentioned in this specification.
- The system shall support secure data logging and event recording for fault tracing and operational analysis throughout the project life.

6.2.1.5 PCS

Description

The 40HC container of the 5 MW/10 MWh BESS shall house a bidirectional Power Conversion System (PCS) along with a bi-directional transformer, capable of charging and discharging the battery system under various operating conditions. The PCS shall support automatic operation, provide high visibility of operational status, and enable seamless Critical Load Backup (CLB) operation to designated feeders during grid outages, while maintaining normal grid-connected functions such as voltage regulation and power factor correction.

A local human-machine interface (HMI) with touchscreen or keypad shall allow operators to access real-time operational data, fault logs, system history, and manual control functions. The PCS shall seamlessly integrate with the Battery Management System (BMS) and Energy Management System (EMS) for coordinated system control.

The PCS shall be capable of fast response, including:

- Quick switching between charging and discharging modes (<50 ms),

- Black start operation to supply power during mains failure,
- Maintaining stable voltage and frequency in off-grid operation via VF mode.

Technical Requirements and Features

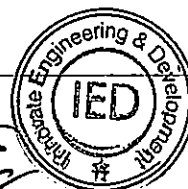
Protection Functions

- Internal short circuit protection: Fast isolation via protection fuses and AC contactors.
- Communication fault protection:
 - ✓ Detects loss of communication with BMS/EMS; supports redundant operation using emergency stop signal.
 - ✓ PCS shuts down automatically on communication failure when needed.
- Overheat and humidity protection: Detects internal overheating or condensation; activates shutdown to prevent damage.
- Flame retardancy & environmental adaptability: All cables rated for temperature and load; PCS enclosure with temperature/humidity control and protective relays.
- Derating mode: PCS reduces output under high temperature instead of shutting down; local display shows warnings.
- Additional protections: AC phase sequence error, grid voltage imbalance, AC/DC overcurrent, over/under voltage, over/under frequency, DC reverse polarity, cooling system faults, low/high voltage ride-through, anti-islanding, IGBT/module protection, and DC component exceeding standards.

Other Features

- DC/AC Disconnects & Circuit Breakers:
 - ✓ DC and AC disconnect switches and emergency shutdown switches; AC side circuit breaker ensures safe isolation from transformer.
- DC Busbar & Pre-Charging:
 - ✓ Multi-cluster DC input busbar with insulation; pre-charging circuit limits inrush current <10 A.
- HMI Display:
 - ✓ Real-time DC/AC voltage, current, power, output frequency, power factor, and operational status.
 - ✓ Fault signals include over/under voltage, over/under frequency, imbalance, DC component errors, overload, overheating, short circuits, cooling system faults, and communication failures.
- Data Logging & EMS Integration:
 - ✓ PCS sends operational and fault data to EMS for storage, monitoring, and historical analysis.
- Grid-Forming Operation
 - ✓ PCS shall support grid-forming functionality to enable autonomous voltage and frequency regulation in critical load backup mode.
 - ✓ PCS shall seamlessly transition between grid-connected and island operation without interruption to the load.

PG5A



- ✓ PCS shall maintain stable voltage, frequency, and power quality under varying load conditions in off-grid operation.
- Fast Mode Switching:
 - ✓ Fast and stable transition between grid-connected charging and discharging.
- Bidirectional Four-Quadrant Operation:
 - ✓ Supports simultaneous AC and DC power flow with independent control for all quadrants.

Submission Requirements

Documents & Drawings:

- Single-line diagrams and layouts showing PCS, DC busbar, and AC connection to transformer.
- Technical specifications of the PCS including protection functions, HMI interface and control modes.
- Thermal and environmental performance validation reports.
- Standards compliance certificates (IEC 62109, IEC 61439, GB/T34120, or applicable IEC standards).
- Pre-charging circuit, DC/AC disconnects, and circuit breaker schematics.
- Operational and protection logic flow diagrams for verification.

Additional Notes

- PCS shall be factory-tested and preassembled.
- All components designed for containerized installation, ensuring compliance with IP ratings and environmental standards.
- PCS shall allow modular maintenance without full system shutdown.
- Compliance with BMS, EMS, and SCADA interfaces via Modbus TCP/IP or IEC 60870-5-104 is mandatory.

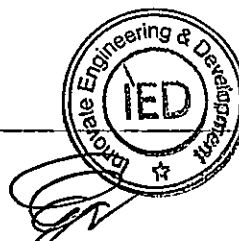
6.2.1.6 Bi-directional Transformer

Description

The 11 kV step-up/step-down bi-directional transformer, installed inside the 40HC PCS container, is designed for Battery Energy Storage Systems (BESS) to handle bidirectional power flow during both charging and discharging. It is a three-phase, double-winding transformer with a voltage regulation range of $11 \text{ kV} \pm 2 \times 2.5\%$, providing stable and reliable operation under dynamic and transient loads.

The low-voltage side is connected to the PCS through a robust, fully insulated busbar system, ensuring safe operation, easy maintenance, and high reliability. The transformer supports immediate energization and seamless restart and is capable of handling sudden load surges up to 100% of rated capacity.

Integration with the Energy Management System (EMS) allows real-time monitoring of voltage, current, and temperature, and automatic reactive power control to maintain voltage stability. Safety features include interlocked enclosure doors, grounded metal parts and cores, and protective covers for all low-voltage terminals, ensuring personnel and equipment safety.



Technical Requirements and Features

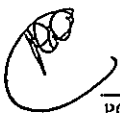
- Voltage Regulation: $11 \text{ kV} \pm 2 \times 2.5\%$ with precise control under dynamic loads
- Tap Changer: Manual or motorized with clear markings, mechanical/electromagnetic locks, optional remote operation
- Short-Circuit Withstand: Minimum 4 seconds at any tap position; factory test reports required
- Insulation: Class F or H; high humidity, dust, and pollution resistant
- Core and Windings:
 - ✓ Grain-oriented silicon steel laminations
 - ✓ 45° mitered joints with high-quality insulating coatings
 - ✓ Low eddy-current losses and high mechanical robustness
- Cooling System: Forced air or hybrid cooling with automatic fan control, overload protection, and fault diagnostics
- Mechanical Durability: Shock and vibration resistant per IEC 60068; withstands frequent load reversals
- Electrical Performance:
 - ✓ Lightning impulse withstand $\geq 75 \text{ kV}$ (project-specific)
 - ✓ Short-circuit forces per IEC 60076-5
- Fire Safety: Dry-type $\geq \text{F1}$ flame-retardant; oil-immersed must meet IEC 60826 / IEC 60076-14
- Standards Compliance: IEC 60076 series, IEC 60364, IEEE C57 series, EN 50588 (energy efficiency), local grid codes
- Service Life: ≥ 15 years, verified through thermal, mechanical, and electrical endurance tests

Optional Premium Requirements:

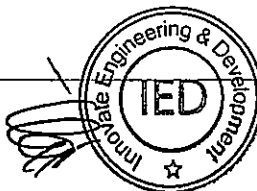
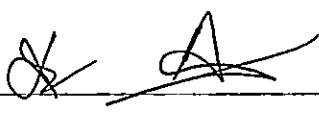
- Load losses $\leq 0.5\%$ at rated load
- Noise $\leq 65 \text{ dB}$ at 1 m
- Partial discharge testing per IEC 60270
- Seismic and transport shock resistance
- Remote monitoring and diagnostics

Submission Requirements and Notes

- Datasheets & Drawings: Full technical drawings including tap changer, busbar system, and core assembly
- Factory Acceptance Test (FAT) Reports:
 - ✓ Voltage regulation and tap changer operation
 - ✓ Short-circuit withstand and overload tests
 - ✓ Temperature rise and thermal performance (IEC 60076-2)
 - ✓ Insulation resistance and partial discharge
- Performance Details: Efficiency, losses, and noise levels
- Safety & Protection: Confirm mechanical/electrical interlocks, grounding, and cooling system
- EMC & Surge Protection: Provide details of filters, circuit breakers (CB), and surge protection devices (SPD) installed between PCS and transformer
- Manuals: Operational, maintenance procedures, and recommended spares list



PG5A



- Type and Routine Test Reports: Include certified test results for no-load and load losses, percentage impedance, temperature rise (heat run), and other tests in accordance with IEC 60076-1.
- Warranty & Performance Guarantees:
 - ✓ Minimum 12-year service life
 - ✓ $\leq 2\%$ voltage deviation under rated load
 - ✓ $\geq 95\%$ efficiency at 75% load

6.2.2 Energy Management System (EMS)

Description

The Energy Management System (EMS) is the central control and coordination hub of the Battery Energy Storage System (BESS). It provides real-time monitoring, automatic supervision, control, and optimization of all energy storage components, including the Power Conversion System (PCS) and associated power management subsystems. The EMS ensures optimal BESS utilization by executing operation plans, managing battery performance, coordinating grid interactions, and supporting safe and efficient system operation.

The EMS features an open, hierarchical, and distributed architecture, consisting of station-level controllers, monitoring servers, battery servers, operator workstations, and local controllers positioned near energy storage converters. This modular design ensures scalability, high reliability, and simplified maintenance. Integrated software continuously monitors battery and PCS parameters, detects faults, and provides real-time status updates.

Main Functions:

- Energy Management: Enables flexible operation schedules in remote or local control modes. Supports active/reactive power coordination, emergency discharge, SOC maintenance, abnormality detection, and remote/local switching.
- Power Control: Incorporates AGC (Automatic Generation Control) and AVC (Automatic Voltage Control) modules to maintain grid stability by rapidly responding to dispatch commands or local plans.
- Peak Load Regulation: Implements battery discharge during peak demand periods and scheduled charging during off-peak times to optimize grid performance and battery longevity.
- SOC Maintenance: Monitors battery State of Charge (SOC) in real time and triggers-controlled charge/discharge cycles to maintain optimal SOC ranges.
- Monitoring:
 - Battery Monitoring: Tracks voltage, current, temperature, SOC, SOH, cell-level anomalies, and BMS health.
 - PCS/Converter Monitoring: Tracks topology, power flow, electrical measurements, status, and protection events.
 - Auxiliary Systems Monitoring: Oversees environmental systems such as HVAC, fire detection, and safety equipment.
- Database Management: Provides high-availability storage with fault tolerance, concurrent access, real-time mirroring, and interactive querying.
- Operational Flexibility: Standard configuration enables full BESS charging within 5 hours during off-peak hours, with configurable charging and discharging schedules.

Technical Requirements and Features

System Architecture:

- Multi-layer design: Data Acquisition, Control, Application, Communication.
- Modular and scalable, supporting expansion beyond 5 MW without system overhaul.

Protocols & Communication:

- Supports Modbus TCP/RTU, IEC 61850, IEC 60870-5-104/103, DNP3, OPC UA, SNMP.
- Seamless integration with PCS, BMS, SCADA/DCS, PMS, and grid systems.

Performance:

- Data sampling rate ≥ 1 Hz.
- Control response time < 50 ms.
- Event logging accuracy ≤ 2 ms (SOE).
- System uptime $\geq 99.99\%$.
- Data retention ≥ 5 years, with local and cloud backup.

Cybersecurity:

- Compliance with IEC 62443 and ISO/IEC 27001.
- Secure communication using TLS, with complete audit trail.

Hardware & Environmental Requirements:

- Standard industrial cabinets (approx. 600×1200×2200 mm, IP20+).
- Dual high-speed controllers, redundant servers, UPS-backed power supply.
- Operating temperature: -10°C to $+50^{\circ}\text{C}$.
- Multiple communication ports and expansion options.

User Interface:

- Local touchscreen HMI $\geq 10"$ (capacitive, IP65).
- Web-based secure interface (HTTPS), optional mobile apps.
- Visualization tools: single-line diagrams, trend charts, alarm/event lists.

Alarms & Reporting:

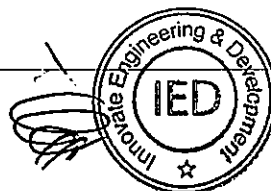
- Multi-level alarm handling with escalation.
- Notifications via email, SMS, or other channels.
- Accurate event logging and automated reporting (PDF/Excel).

Advanced Features (Optional but Recommended):

- Predictive maintenance and AI-based battery life estimation.
- Tariff-based dispatch optimization.
- Black start and Critical Load Backup (CLB) operation.
- Mobile real-time control.

Submission Requirements and Notes

- Complete functional description, system architecture diagrams, and communication diagrams.
- Proof of compliance with performance, reliability, and cybersecurity standards.
- Details of EMS integration with PCS, BMS, SCADA/DCS, and grid interfaces.
- Reference to tested charging/discharging schedule management, SOC maintenance, and peak load regulation capabilities.
- Redundancy, fault-tolerance, and database management procedures.



- Certificates of compliance with:
 - Cybersecurity: IEC 62443, ISO/IEC 27001
 - Communication: IEC 61850, IEC 60870-5-104, DNP3
 - Quality & Safety: ISO 9001, ISO 14001, ISO 45001, IEC 61000 series, IEC 60204
- Detailed HMI and visualization interface screenshots and description.
- Optional feature descriptions (predictive maintenance, mobile control).

6.2.3 Thermal Management System (TMS)

Description

The Thermal Management System (TMS) is responsible for maintaining optimal operating temperatures for the Battery Energy Storage System (BESS) across all battery containers. It ensures reliable, safe, and long-life operation of the batteries by actively controlling cooling and heating based on the battery system's operating conditions.

Each battery container is equipped with an integrated liquid cooling unit and a supporting pipeline network. The control system continuously monitors temperature and humidity inside and outside the container and automatically adjusts the cooling/heating processes. This system ensures that battery cells operate within the optimal temperature range of 0°C to 50°C, extending battery lifespan and maintaining system safety.

The TMS uses a liquid cooling strategy for precise temperature regulation, leveraging efficient pipeline design and container-integrated cooling units. This approach maintains uniform thermal distribution across all battery modules, ensuring consistent performance during both charging and discharging cycles.

Technical Requirements and Features

Cooling & Heating Functions:

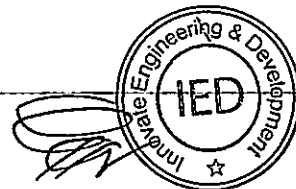
- Cooling Mode: Compressor and water pump are activated. Refrigerant circulates through the condenser and plate heat exchanger, transferring heat from the battery cold plates to the environment. PTC heater remains off.
- Heating Mode: Compressor is off; water pump and PTC heater are on. Coolant is heated by the PTC heater and circulated through the battery cold plates.
- Self-Circulation Mode: Compressor, fan, and PTC are off; water pump circulates coolant for low-load conditions to remove heat efficiently.
- Standby Mode: All devices off; operation controlled by BMS signals.
- Fault Mode: Fault signals are reported to BMS. TMS executes predefined fault mitigation strategies based on fault severity.
- Dehumidification Mode: Activated when container humidity exceeds the dew point. Can operate simultaneously with cooling mode to prevent condensation.

System Performance:

- Precise temperature control to maintain battery cells within 0°C–50°C.
- Uniform thermal distribution across all battery modules and containers.
- Automatic control of compressor, PTC heater, water pump, and fans.
- Fault detection and alarm integration with the BMS.
- Energy-efficient operation using intelligent cycling of cooling/heating devices.

Design & Integration:

- Liquid cooling network integrated into each battery container for compact, maintainable design.



- High-reliability components rated for continuous operation in BESS environments.
- Redundancy for water pumps and cooling units to ensure continuous operation during partial failures.
- Compatible with BMS for automated start/stop, fault handling, and operational monitoring.

Submission Requirements and Notes

- Detailed TMS system layout, including cooling unit specifications, pipeline design, and container integration diagrams.
- Functional description of all six operation modes (cooling, heating, self-circulation, standby, fault, dehumidification).
- Proof of temperature regulation performance across the full battery temperature range (0°C–50°C).
- Fault detection and alarm reporting logic, integrated with BMS.
- Energy efficiency data and expected power consumption under typical operating conditions.
- Component datasheets and certificates for compressors, PTC heaters, water pumps, fans, and heat exchangers.
- Maintenance and operational manuals including startup, shutdown, and fault handling procedures.
- The TMS shall comply with the following international standards and guidelines including IEC 62619: Safety requirements for secondary lithium-ion cells and batteries for industrial applications. IEC 62933-2-1: Performance requirements for stationary energy storage systems. UL 1973: Standard for batteries for use in stationary and motive power applications. NFPA 855 / IEEE 1679.1: Recommended practices for safe installation and operation of energy storage systems (fire protection and thermal safety).

6.2.4 Switchgear, Interconnected System and Overall Protection

11 kV Indoor Switchgear

The 11kV switchgear shall consist of a single bus-bar metal clad, indoor type, floor mounted, single tier integrated unit, incorporating enclosures for the circuit breaker units, bus-bars, current transformers and auxiliary wiring. Each 11kV CB shall be provided with a combined relay & control panel forming an integral part of the circuit breaker equipment. All indoor 11 kV feeders/ bus CTs and bus PTs shall be dry/ cast resin type.

The panels shall be equipped with the necessary protection control devices, indicating instruments and alarming devices, MCBs, etc. All the relays should be numerical relays compliant with IEC standards and HS-11.1250 for automation network of the new 11 kV bus section and BESS interface.

The switchgear shall be of robust construction designed for maximum reliability of service in the tropical climate specified.

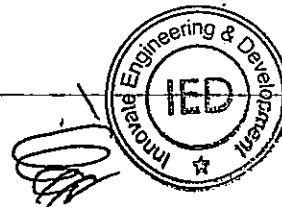
Cable boxes shall be supplied complete with glands and terminal lugs.

Clearances

Maximum insulator lengths and clearances in air shall be not less than those specified for 11 kV switchgear having 75 kV basic Impulse Level.

Current Ratings

PG5A



All parts of the switchgear, including current transformers, shall be capable of withstanding, without thermal or mechanical damage, the instantaneous peak and the three second short time current corresponding to the rated making and breaking capacity of the circuit breakers.

All normal current specified are the minimum continuous values required under the service conditions appertaining to Bangladesh.

Circuit Breaker making and Breaking capacities

Each circuit breaker shall be capable of making and breaking short circuit faults in accordance with the requirements of IEC 62271-100, at 3 phase symmetrical circuit ratings at 11kV service voltages as stated in the schedules.

Circuit Breakers

Type

The 11 kV circuit breakers shall be vacuum type in accordance with IEC 62271-100 as appropriate.

All types shall incorporate horizontal isolation facilities and be mounted on horizontal draw-out type.

Interchangeability of Circuit Breakers

Circuit breaker of the same type and current rating shall be interchangeable, both electrically and mechanically, but it must be impossible to interchange equipment of different current ratings.

Circuit Breaker Operation Mechanism

Circuit breaker closing mechanisms shall be spring-charged, motor operated mechanism with manual back up (180–240V AC motor voltage) such that the closing speed is independent of the operator. 11kV switchgear tripping shall be affected by means of DC 110V control voltage (with shunt trip coils)

Each equipment shall be provided with a visual, mechanized, indicating device, which shall be positively driven in both directions to show whether the circuit breaker is "Open" or "Closed". It shall be operative when the circuit breaker is in the "Service" and "Test" locations. Lamp indication in place of a mechanical indicator will not be accepted. Operation counters shall be provided on each mechanism.

Means shall be provided for coupling the secondary circuits on the fixed portion to those on the movable portion when the circuit breaker is isolated in order to permit closing, tripping and interlock circuits to be checked for operation test purposes.

Means shall be provided for local manual mechanical tripping of circuit breakers, preferably by push buttons, shrouded to prevent inadvertent operation.

Locking facilities shall be provided so that with the circuit breaker in any location it can be prevented from being closed when it is open and from being mechanically tripped when it is closed. This requirement shall be met by the fitting of a single padlock and shall not entail the fitting of any loose components prior to the insertion of the padlock.

It shall not be possible, without the use of tools, to gain access to the tripping toggle or any part of the mechanism which would permit defeat of the locking of the mechanical tripping feature.

It shall not be possible to render the electrical tripping feature inoperative by any mechanical locking device.

Circuit Breaker Isolating Features

Irrespective of the operating type of unit the following shall apply.

Each circuit breaker shall be connected to the bus bars and feeder circuit through plug and socket type isolating devices. The devices shall be of the "Off Load Type" but shall be suitable for operation whilst the bus bars and/or feeder circuits are alive.

Isolating devices shall be interlocked with their respective circuit breakers to prevent their making or breaking load, but arrangements whereby attempted isolation of a closed-circuit breaker trips the circuit breaker are not permitted.

The main circuit isolating devices and also all secondary circuit isolating contacts shall be of the self-aligning type, mounted in accessible positions to permit maintenance.

The number of auxiliary circuit isolating switches shall be sufficient to meet the facilities.

Interlocks

All mechanical interlocks shall be of the preventive type and shall be arranged to prevent mal operation as close as possible to the point at which mechanical force is applied, in order to prevent defeat of the interlocks by distortion of linkages. Electrical interlocks shall also function so as to prevent the closing of the circuit breaker.

Clearly labeled mechanical interlocks shall be provided which are designed to prevent: a. A closed-circuit breaker from being withdrawn or inserted into the isolating contacts. b. Tripping by attempted isolation. c. The closing of a circuit breaker except when correctly located in Service or Test positions. d. A circuit breaker from being plugged into the isolation contacts if the tank is not in position. e. A circuit breaker being closed in the service position when the secondary circuits between the fixed and moving portions are not completed.

In addition, electrical interlocks may be utilized to ensure safe operation of the plant; i.e. on 11 kV transformer incoming circuits the circuit earth position shall not be operative unless the 33 kV circuit is de-energized and isolated etc.

Safety Shutter Devices

A set metal shutters shall be provided to cover each 3-phase group of stationary isolating contacts.

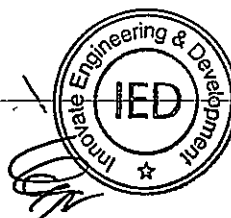
The shutters shall open automatically by a positive drive initiated by the movement of the circuit breaker. The closing operation shall also be automatic by positive drive. When padlocked closed, the shutters shall completely shroud the stationary contacts and it shall not be possible to force the shutters or part of the shutters to gain access to the stationary contacts.

To facilitate testing, means other than locking shall be provided for securing the shutters in the open position. However, such means shall be automatically cancelled when the automatic operation of the shutters restored upon reconnection of the circuit breaker.

Bus-bar shutters shall be painted signal red, color 537 in BS 381 C, and shall be clearly and indelibly labeled "BUSBARS" in large white letter in English. The Contractor may offer works which comply with different standards or codes only if, and when requested by the Project Manager Circuit shutters shall be painted yellow, color 355 in BS 381 C, but shall not be lettered,


PG5A





except that on incoming feeders the circuit shutters shall be clearly and indelibly labeled "DANGER LIVE CABLES" in large red letters.

Voltage transformer spout shutters shall be painted yellow, color 355 in BS 381 C. Durable phase color identification shall be provided in a prominent position. Provision or access shall be made for lubricating the mechanical linkages.

All shutters shall be effectively earthed.

Shutters shall not operate towards the fixed isolating contacts.

Bus-bars and Connections

The equipment shall be of single bus-bar type. Bus-bars and connection shall comply with applicable clauses of IEC 62271-200 and shall be fully insulated.

The equipment shall be of single bus-bar type. The bus-bar assemblies shall be of a type which shall not rely only on air for insulation purpose.

Any earthed screen applied to the exterior of the insulation shall be securely earthed in each bus-bar compartment.

The insulation of the bus-bars and their connections shall be capable of withstanding, without damage, the thermal and mechanical effect of a through fault current equivalent to the short-time rating of the switchgear.

Access to bus-bars and the connections directly thereto shall be gained only by the removal of covers secured by bolts or screws. Such covers shall be marked clearly and indelibly "BUSBARS"

Bus-bars shall be extendible at both ends; such extension shall entail the minimum possible disturbance to the bus-bar chambers. Compound filled bus-bar chambers are not acceptable.

Rated current for main bus: 2000 A-2500 A, Rated short-time current: 31.5 kA for 3 sec, Material: Copper.

Earthing of Metal Parts of Switchgear

All metal parts, other than those forming part of an electrical circuit, shall be connected to a hard-drawn, high conductivity, copper earth conductor on each unit, of adequate sectional area.

The frame of draw-out circuit breakers shall be connected to the earth bar through a substantial plug type contact and the plug shall be long enough to allow the bus-bar and feeder shutters to close before breaking contact. Interlocking (both mechanical & electrical) must be provided to avoid accidental earthing circuit breaker in "service position".

Earthing of Insulations

Earthing of the switchgear and ancillary panels and auxiliary equipment shall be carried out in accordance with IEEE 80-2013, where applicable.

Insulators

Porcelain insulators shall be best quality electrical porcelain. The clamping surfaces of all porcelain insulators shall be accurately ground and shall be free of glaze.

Insulators of molded or resin bonded material shall have a durable, non-hygroscopic surface finish having a high anti-tracking index.

Auxiliary switch

Each circuit breaker shall be provided with adequate no. auxiliary switches to interrupt the supply to the closing mechanism and to complete the trip circuit, when the circuit breaker is in the "Closed" position and to cover all the necessary indication, interlocking and control facilities with spare contacts.

Each circuit breaker shall be provided with clean auxiliary contacts for the purpose of providing remote switch and alarm indication at the remote grid supervisory center. In addition, each circuit breaker shall be provided with the necessary 110V DC interposing relays required to achieve remote control of the circuit breaker via a future remote grid supervisory system. All auxiliary switches shall be wired down whether in use or not to the appropriate marshaling kiosk.

Special Tools

One complete set, of all special tools that are necessary for the overhauling maintenance and adjustment of the whole equipment shall be provided with each switchboard. The tools provided shall be in a new condition and shall not be used for the erection of the equipment on Site.

Indoor Breaker Specification

The 11 kV switchgear unit indoor vacuum CB will be draw out type along with CT, 11 kV bus, 11 kV PT (3 × single phase unit – draw out type). The C.B shall have spring operating mechanism suitable for charging by motor (180-240V AC) with provision of hand charging. Sufficient auxiliary contacts shall be provided for position indication, interlocks and other purposes. Two sets of independently operative trip coils shall be there. Provision for signaling of low gas pressure and ultimate lock out for very low pressure shall be provided. Anti pumping features should be introduced with the Breaker. All the current carrying parts should be copper.

Technical Particulars of 11 kV Circuit Breakers: Phase: 3-phase Service (Rated) Voltage: 11 kV Maximum system Voltage: 12 kV. Continuous rating current of Bus-bar: 2000 A-2500 A. Continuous rating current: 800/630 A (feeders).

Basic Impulse Level (BIL): 75 kV Power frequency withstand voltage: 28 kV

Bus Shall be 3 phase, 50Hz, 2000 A-2500 A, air insulated capable of withstanding 31.5 kA for 3 sec.

Vacuum Interrupter The vacuum interrupter, consisting of fixed contact and moving contact, shall be interchangeable among the same type interrupter. Short circuit capacity of vacuum bottle should be 31.5 kA and design life should be 100 nos. Operation at rated short circuit level. The operation of the interrupter will be 30000 nos. at rated current.

Vacuum Bottle shall be from Siemens/ABB or/ALSTOM and of reputed indigenous make. Offered bottle shall be identical with Type tested one. Brochures/leaflet on technical data sheet for vacuum bottle shall be enclosed with technical bid.

Current Transformers (CTs)

The current transformer rated current ratio shall match the connected load circuit and secondary circuit requirements.

Current transformers shall be capable of withstanding without damage the full load, peak and rated short time currents of their associated equipment.

Where space within a current transformer chamber permits dedicated current transformers shall be used for protection, instrumentation and metering. All the indoor 11 kV CTs shall be dry/ cast resin type.

Rated current ratio: 600-300/1-1-1. A Accuracy class, Metering: 0.2S Accuracy class, Protection: 5P20 Accuracy class, Tertiary: 3 Burden Secondary: Metering 15 VA, Protection 15 VA Burden Tertiary (Indication, SCADA): 5 VA Insulation Level: 12/28/75 kV (IEC 60044, IEC 61869-2) Compliance: IEC-60044-1, IEC-61869-2.

Current transformers used for energizing indicating instruments and metering shall be of Class 0.2s accuracy in accordance with IEC 185 Current transformers for protective and protective/indication purposes shall be designed to suit the particular requirements of the associated protection, which in general shall be in accordance with the recommendations given in BS 3938 or approved equivalent.

Class 5p current transformers shall be used for inverse time over-current and/or earth fault protection. The rated accuracy limit current shall be equivalent to the maximum symmetrical three phase fault current or earth fault current of the protected circuit or equivalent to the switchgear breaking capacity unless otherwise approved by the Project Manager.

The current transformers shall be capable of meeting the 5p error classification at rated accuracy limit current over the full range of relay settings, unless otherwise approved by the Project Manager.

Current transformers used for indication/metering purposes shall be designed to saturate at a value of primary current sufficiently low to protect the secondary circuit from damage at all possible values of primary fault current up to the associated primary short time thermal rating.

Current transformers for combined purposes (e.g. protection relays and indicating meters) shall have a dual Class 5p/Class 0.2 performance, and the secondary circuit shall have an approved means (saturating reactor or saturating interposing C.T.) of protecting the meters and reducing their burden under system fault conditions.

The rated volt-amp output of each current transformer shall not be less than 110% of the connected burden as installed in service, the burden of cable connections being taken into account.

The secondary windings of each set of current transformers shall be earthed at one point only via an accessible bolted disconnecting link, preferably located within the relay cubicle. Where double-ratio secondary windings are specified provided a label shall be provided at the secondary terminals of the current transformer indicating clearly the connections required for either tap. The connections and the ratio in use shall be indicated on all connection diagrams.

Design magnetization curves and dc resistance values shall be submitted before manufacture for each current transformer used for protective purposes and shall be subsequently verified by works routine tests and also by site commissioning tests.

Where current transformers have to operate or be mounted on apparatus provided under other contracts, the Contractor shall be responsible for ensuring design and installation compatibility with other Contractors and for keeping the Project Manager informed.

Metal clad switchgear current transformers shall be located on the non-bus-bar side of the circuit breaker except where current transformers are provided on both sides of the circuit breaker for

protection zone overlap. The primary conductors shall be accessible for primary current injection testing on site.

Voltage Transformers (VTs)

Voltage transformers shall comply with the requirements of IEC 61869 with amendments and supplements and shall be of: - Class 0.2 accuracy for metering, Class 3P accuracy for protection.

The VA output shall be Metering: 50 VA, Protection: 100 VA (secondary), Tertiary (Indication, SCADA, Sync-check): 25 VA, Accuracy class, Tertiary: 3, Rated primary voltage: $11\text{kV}/\sqrt{3}$ Rated secondary voltage: $110/\sqrt{3}$ V Rated tertiary voltage: $110/\sqrt{3}$ V Number of phases: 3

All the indoor 11 kV VTs shall be dry/cast resin type.

All voltage transformers in the system at a given voltage level shall be earthed in the same manner.

Where it is required to earth the primary neutral of a metal clad three-phase voltage transformer, the neutral earthing connection shall be insulated and brought out separately from the tan earthing connection. Means shall be provided to maintain the tank earthing connection while the voltage transformer is being withdrawn.

Where three single-phase voltage transformers are supplied for protection purposes, star connected secondary windings shall have the star point formed by insulated connections and shall be earthed at a common point.

Where necessary for earth fault protection, voltage transformers shall be of five-limbed core construction.

Where possible primary windings shall be connected through fuses with current limiting features.

Secondary MCB's shall be provided as close as possible to each voltage transformer and labeled to show their function and phase color. The secondary circuits shall be monitored individually to detect and alarm individual fuse failure or MCB trip and to block protection operation if required.

Voltage transformers shall be designed that saturation of their cores does not occur when 1.732 times normal voltage is applied to each winding.

Magnetization curves shall be submitted for approval for each type of voltage transformer.

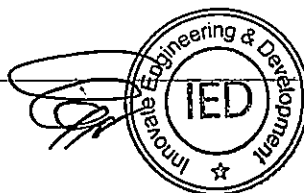
The standard secondary voltage between phases shall be 110 volts unless special circumstances dictate otherwise, and are approved by the Project Manager.

Secondary circuits from different voltage transformers, or separate windings of the same transformer, shall not be connected in parallel.

Voltage transformers shall be connected on the non-bus-bar side of circuit breakers unless otherwise approved by the Project Manager.

TEST CERTIFICATE OF 11 KV INDOOR TYPE CIRCUIT BREAKER

Instructions to Bidders: Bidders shall submit with their offer the test certificates along with the test results of 11 KV Panel board including Circuit Breaker for the following tests carried out in accordance with IEC 62271-100 and other international standard or latest revision thereof from an internationally recognized independent and reputable testing authority like KEMA-Holland/CESI Italy/UL-USA etc.



Type Tests: For Breaker: a) Short time withstand and peak withstand current test b) Lightning impulse voltage withstand test c) Temperature rise Test d) Mechanical Endurance Test e) Measurement of the resistance of the main circuit f) Short circuit current making and breaking tests

For CT: a) Lightning impulse voltage (Chopped impulse and full impulse); b) Power frequency wet withstand voltage; c) Temperature rise; d) Short circuit withstand capability test; e) Current error and phase displacement f) Switching impulse.

For PT: a) Lightning impulse voltage test; b) High voltage power frequency wet withstand voltage; c) Temperature rise test; d) Short circuit withstand capability test; e) Switching impulse; f) Determinations of error;

For Control Panel & Relays: Required tests as per relevant IEC standards Standard.

Routine test For Breaker: a) Dielectric test on main, auxiliary and control circuit b) Measurement of the resistance of the main circuit c) Tightness test d) Mechanical operation tests e) Design and visual checks

For CT: a) Verification of terminal marking and polarity; b) Power frequency dry withstand test on both windings; c) Power frequency dry withstand test between sections; d) Over voltage inter-turn test; e) Turn ratio; f) Instrument security factor test; g) Determinations of error; h) Secondary winding resistance and Accuracy test; i) Current error and phase displacement; j) Knee point voltage and magnetizing current test; k) Insulation Resistance Test;

For PT: a) Verification of terminal marking and polarity; b) Power frequency dry withstand tests on both winding; c) Power frequency withstand tests between sections; d) Determination of limits of voltage errors and phase displacement; e) Partial discharge measurement; f) Insulating Resistance measurement;

Note: The test certificate for 3 phases, 50 Hz, 11 KV circuit breaker of rated current offered for the type (Manufacturer's designed type) shall be submitted. However, the test certificates for circuit breakers of the offered manufacturer's designated type and voltage class as per requirement of the bidding document but having higher rated current shall also be accepted. All the aforesaid tests shall be carried out in one random selected circuit breaker. Parts of the tests carried out on different circuit breakers shall not be accepted. The bid will be considered non responsive in absence of test certificates and the supply records.

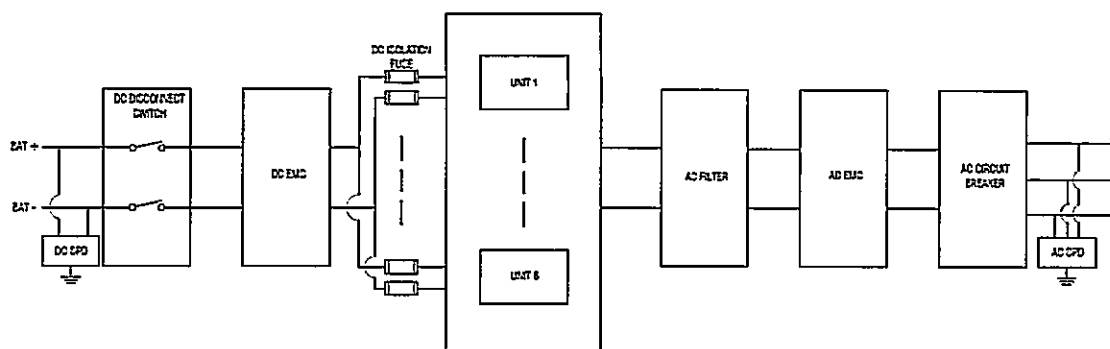
Interconnected System

The interconnected system of the Battery Energy Storage System (BESS) ensures safe, reliable, and optimized operation of all DC and AC components, including the battery, PCS, step-up transformer, and grid interface. Comprehensive protection is required at both DC and AC sides to prevent equipment damage from overvoltages, overcurrents, surges, and electromagnetic disturbances, while ensuring personnel safety.

Key protective elements include: surge protective devices, DC disconnect switches, EMC filters, fuses, inverters, AC filters, AC circuit breakers, and other low-voltage (690 V) and high-voltage (11 kV) protection devices. The system architecture must allow seamless integration with the Energy Management System (EMS) for remote monitoring, control, and event logging.

The protection scheme must accommodate bidirectional power flow, black start capability, and compliance with international standards, while enabling scalable future expansion. The system

shall ensure minimal downtime during battery charge/discharge cycles without degrading battery performance or life.



SCHEMATIC DIAGRAM OF ENERGY STORAGE CONVERTER TOPOLOGY

Technical Requirements and Features

DC Side Protection:

- DC Surge Protective Device (SPD): Compliant with IEC 61643-31; rapid response to lightning and switching surges.
- DC Disconnect Switch: Manually operated; IEC 60947-3 and UL 98B certified; safe isolation during maintenance or emergencies.
- DC EMC Filter: IEC 61000-6-4 compliant; suppresses conducted and radiated electromagnetic interference.
- DC Fuse: IEC 60269-4 compliant; interrupts overcurrent events to protect equipment.

Inverter and AC Side Protection:

- Inverter Units: DC-AC conversion; compliant with IEC 62477-1 and IEEE 1547; ensures high efficiency and safe grid integration.
- AC Filter: Reduces harmonics; complies with IEEE 519 and IEC 61000-3-2.
- AC EMC Filter: IEC 61000-6-2; protects against external electromagnetic disturbances.
- AC Circuit Breaker: IEC 60947-2 and UL 489 compliant; reliable disconnection for faults or maintenance.
- AC Surge Protective Device (SPD): IEC 61643-11 compliant; protects against grid-side transient overvoltages.

Low-Voltage Protection (690 V) and Transformer Interface:

- Comprehensive protection between PCS and 0.69/11 kV bidirectional transformer.
- Use MCCBs/ACBs for manual and remote operation.
- Phase overcurrent and earth fault protections: ANSI 50/51 and 50N/51N via programmable digital relays.
- Transformer differential protection: ANSI 87T relays with harmonic restraint for bidirectional fault detection.
- Voltage protections: Overvoltage and undervoltage monitoring on both low- and high-voltage sides.
- Breaker failure protection: Redundant tripping logic coordinated via EMS or relay logic.
- SPDs installed at 690 V and 11 kV terminals according to expected surge levels.

[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

System Integration and Communication:

- Protective relays must support remote alarms and trip signaling via IEC 61850 or Modbus.
- Event logging synchronized to GPS/NTP time server for precise sequence-of-events analysis.
- Black start process to complete within 1 minute.

Submission Requirements and Notes

- Detailed datasheets and certificates for all DC/AC protective devices, inverters, SPDs, fuses, and breakers.
- Relay coordination study reports and protection logic diagrams.
- Integration and communication plan with EMS/SCADA.
- Test reports confirming compliance with IEC 62109-1 / IEC 62109-2: Safety requirements for power conversion systems. IEC 62933-2-1: Performance and safety requirements for stationary energy storage systems. IEEE 1547: Standard for interconnection and interoperability of distributed resources with electric power systems. UL 9540 / UL 9540A: Energy storage system safety and thermal runaway testing. IEC 61850: Communication and protection interoperability for substation automation. IEC 60255 series: Protection relays and system testing.
- Confirmation that the BESS can autonomously energize the connected bus section and resume controlled operation within 1 minute of a local shutdown or fault event.
- Documentation demonstrating surge withstand capacity, EMC compliance, and fault-handling procedures.
- Any assumptions, limitations, or dependencies related to bidirectional operation must be clearly stated.

6.2.5 Battery Energy Storage System (BESS) Safety, Ventilation, and Fire Protection Design

Description

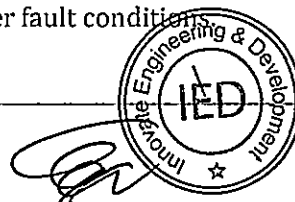
The Battery Energy Storage System (BESS) shall be equipped with comprehensive safety, ventilation, and fire protection systems to ensure safe operation, prevent fire propagation, and protect personnel, equipment, and the environment. The design shall cover all aspects of thermal management, gas detection, fire prevention, and fire suppression.

Each containerized BESS unit must maintain safe operating conditions through an integrated system of ventilation, cooling, and gas monitoring. The system shall automatically detect early signs of overheating, smoke, or gas buildup and take corrective actions such as forced ventilation, power isolation, or activation of the fire suppression system.

The fire protection system shall include both automatic and manual control modes, ensuring protection during unattended operation and maintenance periods. Fire detection devices—such as smoke detectors, temperature sensors, and multi-gas analyzers—shall be installed throughout the battery container, combiner cabinets, and power conversion rooms.

Fire suppression shall be achieved using clean-agent gas systems such as perfluorohexanone or equivalent, supplemented by aerosol or sprinkler systems as required by the risk level and local fire codes. The suppression system shall integrate with the Energy Management System (EMS) to automatically disconnect ventilation, DC supply, and air conditioning systems before gas discharge.

The ventilation and gas management system shall maintain the container's internal temperature and humidity within the manufacturer's recommended limits and prevent accumulation of hazardous gases. Overpressure vents, corrosion-resistant internal materials, and dedicated exhaust paths shall ensure container integrity under fault conditions.



All systems must comply with international fire safety and battery standards including UL 9540 / UL 9540A, IEC 62619, NFPA 855, NFPA 69, NFPA 68, and ISO 10121-2. The design shall ensure complete coordination among safety systems, EMS, and protection relays for rapid fault isolation, event logging, and post-incident recovery.

Technical Requirements and Features

System Safety and Standards

- Comply with UL 9540 / UL 9540A, IEC 62619, IEC 61439, IEC 60068-2, NFPA 855, NFPA 68/69, IEC 61508, ISO 10121-2.
- System design shall prioritize personnel safety, fire containment, explosion prevention, and equipment protection.
- Fire partitions and non-combustible materials shall be used for battery containers and enclosures.
- Alarms (audible and visual) shall be installed both inside and outside each container.
- All interlocks and emergency sequences shall be integrated with EMS and local controllers.

Ventilation and Gas Management

- Forced ventilation and HVAC systems shall maintain safe temperature and humidity levels under all load conditions.
- Optional rack-level cooling allowed where high-density battery installation demands enhanced thermal control.
- Ventilation and HVAC shall operate automatically via temperature, gas, and humidity sensors.
- Multi-gas detectors shall continuously monitor HF, CO, and VOCs.
- When gas concentrations exceed thresholds:
 - ✓ Alarms are triggered locally and reported to the EMS.
 - ✓ Forced ventilation starts automatically.
 - ✓ PCS is commanded to shut down.
- Overpressure relief vents and fire smoke exhaust ducts shall prevent pressure buildup and release combustion gases safely.
- Gas detection sensors shall be installed at strategic locations and be redundant, self-tested, and calibrated.
- Exhaust and air intake pathways must remain unobstructed for free gas flow and cell venting.

Fire Detection and Alarm System

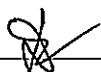
All fire protection installations shall comply with the requirements of the codes of practice of the National Fire Protection Association, Boston, Massachusetts, U.S.A. as appropriate for the respective systems, subject to the approval of the Project Manager.

The Codes and practice of the Japanese Fire Protection may also be considered.

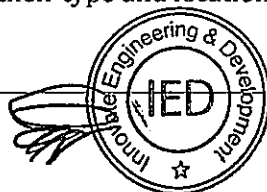
Fire Detection and Alarm system

Fire detection shall be by means of smoke detectors/heat detectors with a backup system utilizing rate-of-rise temperature detectors along with alarm system. The system and its components must conform to the applicable appropriate standards. The use of these detectors shall be subject to specific approval by the Project Manager as regards their type and location.


PGSA







(a) Fire Alarm Panel: 16 Zone Capacity:

Supply and Installation of 16 Zone Conventional Fire alarm control panel with power supply unit, batteries and other accessories. The panel shall be complete with zone indicating LED, Fault Indication and optional telephone Jack etc. The panel shall be input 220V AC and output 24V DC. Panel shall be confirmed UL Listed or EN54.

Country of Origin: Japan / Italy / UK / USA or equivalent approved by the Project Manager.

(b) Fire Alarm Bell:

Supply and installation of Conventional type Fire Alarm Bell of 150mm dia, red color, shall be UL / ULC / CSFM / FM / MEA / BFP / EN54 approved. Power supply shall be 24VDC. Sound level shall be not less than 92 dBA @ 3meter. Color of the Bell shall be red.

Country of Origin: Japan / Italy / UK / USA or equivalent approved by the Project Manager.

(c) Optical / Photoelectric Smoke Detector:

Supply and installation of Smoke Detector complete with base. Shall be UL / ULC / CSFM / FM / MEA / BFP / EN54 approved. Integrated alarm LED. Remote LED connection. Power supply shall be 24VDC.

Country of Origin: Japan / Italy / UK / USA or equivalent approved by the Project Manager.

(d) Heat Detector:

Supply and installation of Heat Detector complete with base. Shall be UL / ULC / CSFM / FM / MEA / BFP / EN54 approved. Integrated alarm LED. Remote LED connection. Power supply shall be 24VDC.

Country of Origin: Japan / Italy / UK / USA or equivalent approved by the Project Manager.

Fire Extinguisher

(a) Dry Chemical Powder Type:

Supply & fixing the multipurpose ABCE dry chemical powder stored pressure type with manometer system.

Fire Extinguisher suitable for repeated use complete with wall bracket, discharge valve, hose pipe, easy refilling system etc. as per sample approved by the Project Manager.

Country of Origin: China / Malaysia or equivalent approved by the Project Manager.

Quantity: Two (2) portable 6 kg dry powder fire extinguishers shall be located adjacent to each power transformers.

(b) Carbon-Di-Oxide Type:

Supply & fixing the Carbon-di-Oxide type Fire Extinguisher suitable for repeated use complete with wall bracket, manometer etc. as per sample approved by the Project Manager.

Country of Origin: China / Malaysia or equivalent approved by the Project Manager.

Quantity: Two (2) portable 5 kg stored pressure carbon dioxide types shall be located inside the control room and one (1) portable 5 kg stored pressure carbon dioxide types shall be located inside the Customer Services room.

Sand Buckets

The Bucket should be wall mounted made from at least 24 SWG sheet with bracket fixing on wall conforming to NFPA Codes and Standard.

Fire Control Program

- Automatic Mode: Default setting during operation. On fire detection, the controller activates alarms, shuts down air conditioning and fans, and discharges clean agent after delay.
- Manual Mode: Used during maintenance. Operator may trigger suppression manually after confirming evacuation.
- Emergency Stop: Can abort discharge during delay period to prevent false activation.

Submission Requirements and Notes

- Submit detailed safety, ventilation, and fire protection design documents, including drawings, schematics, and control logic diagrams.
- Provide thermal, airflow, and gas dispersion simulation reports demonstrating system adequacy.
- Include calibration and testing certificates for gas and fire sensors, compliant with: UL 2075: Gas and vapor detectors and sensors. UL 268: Smoke detectors for fire alarm systems.
- Provide component certification per relevant standards: UL 9540 / 9540A: Energy storage system safety and thermal runaway testing. NFPA 72: National Fire Alarm and Signaling Code for fire detection and alarm. NFPA 855: Standard for the installation of stationary energy storage systems. IEC 60335-1 / IEC 60529: Electrical safety and ingress protection for enclosures.
- Ensure integration plan for EMS communication and alarm interfaces.
- Submit fire suppression agent data sheet confirming environmental safety and residue-free characteristics.
- Provide operation and maintenance manuals, including safety checklists and testing intervals.
- Guarantee that any system interruption does not reduce battery cycle life.

6.2.6 Communication, Monitoring, and Control Architecture

Description

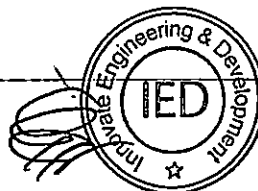
The Battery Energy Storage System (BESS) shall incorporate a robust, secure, and standardized communication and control architecture to ensure seamless integration with the existing substation infrastructure, grid operator systems, and supervisory platforms. The architecture is designed for real-time monitoring, control, and protection of all BESS components, including battery modules, Battery Management System (BMS), Power Conversion System (PCS), DC and AC breakers, and other auxiliary equipment.

The system shall enable safe and coordinated operation, including emergency tripping, scheduled charging/discharging, and interlocking logic for both AC and DC circuits. Proper sequence control ensures DC breakers open before AC breakers during emergency shutdown and close before AC


PG5A







breakers during startup and grid synchronization. Local Human-Machine Interfaces (HMIs) provide graphical visualization, onsite diagnostics, and maintenance access while ensuring operational safety. Communication: IEC 61850 / Modbus TCP/IP, compatible with SCADA.

Communication interfaces shall support integration with SCADA, Energy Management System (EMS), Microgrid Controller (MGC), and Advanced Distribution Dispatch Centre (ADDC), delivering continuous real-time data on voltage, current, temperature, State of Charge (SOC), and State of Health (SOH). The system is modular, scalable, and future-proof, supporting interoperability with cloud EMS, Virtual Power Plant (VPP) platforms, and remote firmware upgrades. Cybersecurity and redundancy measures shall ensure uninterrupted, secure operations and protect against unauthorized access.

Indication & Annunciation Signals:

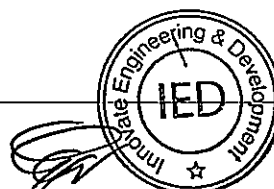
- BMS (Battery Containers): 40–70 signals for voltage, temperature, SOC, SOH, alarms.
- PCS (PCS Container): 30–60 signals for operation, cooling, power quality, faults.
- EMS (Control Room): 20–50 system-level signals for grid integration, energy management, alarms.

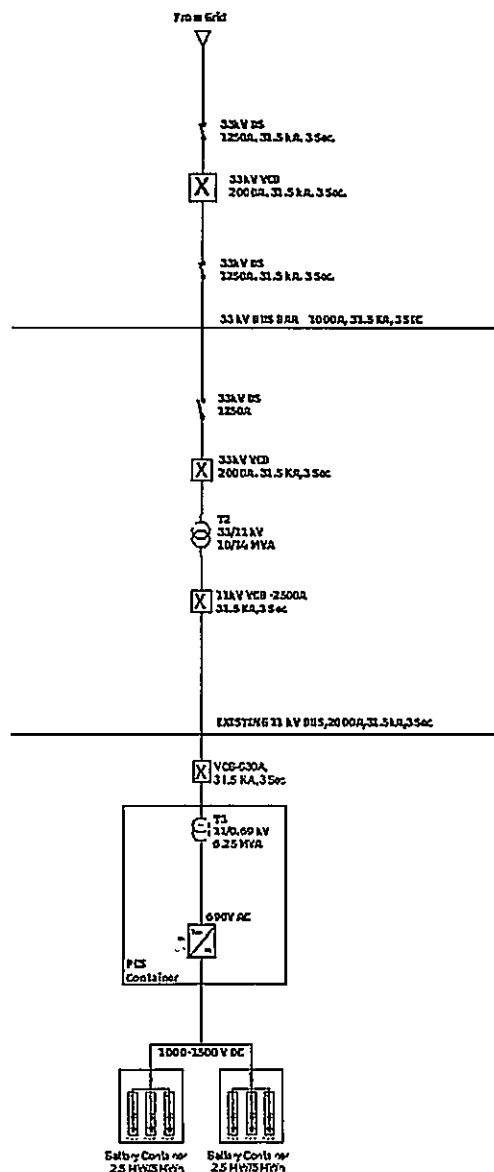
Technical Requirements & Features

- Protocols & Interoperability: Support for IEC 61850, IEC 60870-5-101/104, DNP3, Modbus TCP/IP, Modbus RTU, OPC UA, Profibus, Profinet, CANbus, RS485, MQTT; mandatory SCADA interoperability.
- Signal Integration: Full data mapping for all BMS, PCS, EMS, and breaker signals; bidder to submit detailed signal list for approval.
- Breaker Control & Protection:
 - Automatic tripping on overcurrent, ground faults, or DC bus voltage anomalies.
 - Sequence control: DC breakers open/close first during emergency/startup.
 - Integration with PCS protection relays for automated response.
- Monitoring: Real-time data acquisition for AC/DC voltage and current, battery temperature, SOC, SOH, breaker status, and PCS operation.
- HMI & Visualization: Local HMI for graphical visualization, manual and automatic control, diagnostics, and maintenance.
- Physical Interfaces & Redundancy: Ethernet, serial, USB, and optional fiber optics with redundancy and failover provisions.
- Operational Modes: Charging/discharging control via PCS, EMS, or cloud platforms; support autonomous, SCADA-directed, or hybrid schemes.
- Cybersecurity & Access Control: Secure communication protocols, authentication, and encryption to prevent unauthorized access.
- Future-Proof Design: Modular architecture supporting integration with future EMS, VPP, or regulatory requirements.

Submission Requirements & Notes

- Submit detailed communication and control architecture diagrams including signal flow, breaker interlocking logic, and protocol mapping.
- Provide complete list of BMS, PCS, EMS, and breaker signals with priority levels, data types, and expected update rates.
- Demonstrate SCADA interoperability via simulation or Factory Acceptance Testing (FAT).





Layout plan

Overall layout design requirements

The on-site layout of energy storage equipment mainly considers the following principles:

- (1) The distance between DC system equipment for transportation and maintenance channels should have adequate safe space.
- (2) The opening and closing of the side doors of DC system equipment and AC system equipment do not interfere with each other, ensuring that the distance between equipment transportation and maintenance channels is more than 3 meters.
- (3) The specific layout plan of the station should take into account the local design standards, station layout, fire passages, road spacing requirement.

6.2.7 Environmental Requirement

6.2.7.1 Climatic Conditions

Instructions to Tenderers: The information in this clause is given solely for the general assistance of tenderers and no responsibility for it will be accepted nor will any claims based on this clause be considered.

All plant and equipment supplied under the Contract shall be entirely suitable for the climatic conditions prevailing at site. Atmospheric pollution is mid-level and special insulator design or washing is not required. The area is subject to high winds of typhoon strength.

Topographical and Meteorological Site Conditions

Site Location	Kaliakoir Substation: 24° 3' 43.38" N, 90° 12' 19.55" E Algi Substation: 23° 50' 9.11" N, 90° 40' 22.97" E Pakundia Substation: 24° 18' 3.57" N, 90° 41' 14.08" E Trishal Substation: 24° 28' 18.0" N, 90° 22' 57.2" E
Max design Altitude for all equipment operating characteristics as per IEC above sea level (meter)	500
Air Temperatures	
Maximum Peak (°C)	45
Maximum daily average (°C)	35
Maximum yearly average (°C)	30
Minimum (°C)	4
Sun temperature in direct sunlight (°C)	9 - 45.1
Maximum ground temp at depth of 1000mm (°C)	30
Humidity	
Maximum relative humidity at 40 degrees (%)	100
Minimum relative humidity (%)	50
Yearly average (%)	80
Pollution level	
Outdoor	Medium

Site Location	Kaliakoir Substation: 24° 3' 43.38" N, 90° 12' 19.55" E Algi Substation: 23° 50' 9.11" N, 90° 40' 22.97" E Pakundia Substation: 24° 18' 3.57" N, 90° 41' 14.08" E Trishal Substation: 24°28'18.0"N 90°22'57.2"E
Indoor	Medium
Dust Storms (days/annum)	30
Average number of days per year of thunder storms	80
Maximum wind velocity (for design purposes) (m/sec)	200 km/hr (3 sec gust)
Solar radiation	100 mW/sq. cm
Total rainfall	1.5 m/Annum
Seismic factor (The area is designated a zone of moderate intensity for earthquakes.)	1.5 g
Soil Type	alluvial
Soil temperature (at 1.1m) (°C)	30
Soil thermal resistivity	1.5 °C m/w

Supplier must provide sufficient information specific to their particular product to facilitate utility personnel training and communications with emergency response and environmental agencies. Material Safety DataSheets (MSDS) shall be provided as applicable.

6.2.7.2 Disposal & Exit Plan for BESS

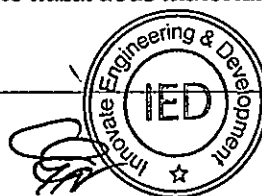
The Tenderer shall submit, as part of the bid, a comprehensive Disposal & Exit Plan for BESS batteries at end of service life. The plan shall clearly describe:

- Full recycling commitment
- Safe handling and storage measures
- Use of only authorized recycling or permitted hazardous waste facilities
- Documentation and traceability procedures
- Environmental and emergency response measures
- Roles and responsibilities for all parties
- End-of-life forecasting and replacement schedule
- Transport safety compliance according to hazardous material regulations


PGSA







The plan must demonstrate compliance with international standards and guidance (IEC, EPA or Equivalent) and any applicable transport and hazardous materials regulations.

The submitted plan is a mandatory bid evaluation criterion; incomplete, unsafe, or non-compliant plans may be rejected.

Warranty-Period Obligations

During the warranty period, the Tenderer shall be fully responsible for the safe collection, handling, transport, and recycling or disposal of defective, damaged, or end-of-life batteries. All activities must follow applicable hazardous waste regulations, international standards and guidance (IEC, EPA or Equivalent), safety measures to prevent fire, chemical exposure, or environmental contamination.

- Mandatory documentation during warranty period:
- Battery type, chemistry, serial number, and quantity
- Proof of collection, transport, and delivery to authorized recycler
- Recycling certificates or final disposal proof
- Detailed report for each defective or damaged battery, including:
 - ✓ Date and location of incident
 - ✓ Description of damage or failure
 - ✓ Root cause analysis (e.g., manufacturing defect, operational cause, or transport damage)
 - ✓ Corrective and preventive actions taken

End-of-Life Planning

The Tenderer is required to submit the Disposal & Exit Plan to provide a clear, feasible, and safe approach for eventual battery end-of-life management.

The Employer reserves the right to:

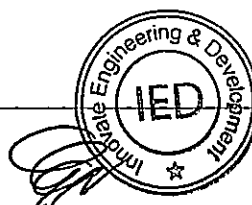
- Reject plans that are incomplete, unsafe, or impractical
- Require revisions to align with international standards or best practices
- Use the submitted plan to guide future disposal contractors

Cost Responsibility

- All costs for battery removal, transport, recycling, or disposal during the warranty period is on the tenderer.

Enforceability and Client Leverage

- Submission of a compliant Disposal & Exit Plan is mandatory for bid acceptance.
- The Employer may audit, verify, and approve all handling, transport, and recycling activities during the warranty period.
- Any deviation from approved procedures, insufficient documentation, or failure to meet international standards will be treated as non-compliance, giving the Employer full contractual remedies.



6.2.8 Civil Works

Where items of mechanical plant are mounted on foundations that are part of the civil engineering works, the Contractor shall carry out proper leveling and adjustment of the BESS on these foundations before securing the equipment in place. The Contractor shall ensure accurate alignment, leveling, and positioning of the BESS both before and after grooving or fixing operations. Detailed records of all alignment, leveling, and positional measurements shall be maintained throughout the installation period and retained until the Contractor's site activities are completed.

The civil works shall be adequately designed and constructed to support the structural loads and mechanical forces exerted by the installed plant, including but not limited to pipes, cable trays, ducts, and associated mechanical and electrical fittings. All necessary supports, fixings, and anchoring arrangements shall be clearly indicated in the approved design drawings and implemented on-site accordingly.

The Contractor shall be fully responsible for the execution of all earthworks and structural foundation works related to the BESS at each of the four project sites. This shall include, but not be limited to, the following activities:

- i. Conducting site topographical and geotechnical surveys
- ii. Testing and approval of water, soil, and construction materials used
- iii. Execution of general earthworks and landscaping as per approved drawings
- iv. Construction of cable trenches, ducts, and sump pits
- v. Installation of internal roads, walkways, and footpaths per site layout
- vi. Development of wastewater and surface water drainage infrastructure
- vii. Installation of outdoor lighting systems
- viii. Construction of water tanks and associated water supply systems as per site needs
- ix. Provision of tube wells and pumps to supply the water tank system
- x. Installation of all required indoor and outdoor lighting systems
- xi. Provision and placement of fire extinguishers at specified locations
- xii. Execution of all necessary laboratory and field testing for civil works and materials as per the instructions of the Engineer-in-Charge (E/C)
- xiii. Any temporary works required for construction and installation support

Any other civil works necessary for the successful completion and operational readiness of the BESS, even if not explicitly listed above.

In addition to the above, if during the implementation of the project it is found that any of the four sites require modifications, extension, or rearrangement of the existing control room building to accommodate new electrical panels or rearranged components related to the BESS, the Contractor shall be responsible for carrying out all such civil works. This may include the extension of floor area, adjustment of wall or door layouts, foundation reinforcement, reconfiguration of HVAC or lighting systems, and any associated structural, architectural, or finishing work necessary to ensure full integration of the BESS control and protection systems within the control building. All such work shall be executed in coordination with the Engineer-in-Charge and according to approved designs and site conditions







6.2.9 Detailed Technical Specifications

SL	Description	Unit	REB requirement	Tenderers. Guaranteed Values
Battery and Battery Container:				
1.Cell				
1.1	Battery Type		LiFePO4/NMC	
1.2	Nominal capacity	Ah	≥ 280 Ah	
1.3	Manufacturer		To be mentioned	
1.4	Model No		To be mentioned	
1.5	Maximum Charge Voltage/ Cut-off charge Voltage per cell	V	≤3.65	
1.6	Nominal/Rated Voltage per cell	V	≥ 3.2	
1.7	End-of-Discharge Voltage/ Cut-off Discharge Voltage	V	≥3.0	
1.8	Working Voltage Range (per cell)	V	Operating range: 3 – 3.65 V (per OEM confirmation). Absolute cut-off: 2.0 – 3.65 V.	
1.9	Charge / Discharge Current (C-rate based)	A	Continuous: ≥ 0.5 C (~140 A for 280 Ah cell) Peak (10 s): ≥ 1.0 C (~280 A) or per OEM specification. Note: C-rate expresses current relative to cell capacity. Continuous current is safe long-term current; peak current allowed for short bursts only. BMS shall ensure currents remain within limits.	
1.1	Self-Discharge Rate	% / month	Self-discharge or standby energy loss rate shall not exceed 0.4% per month during construction or long-term storage, verified by factory test data.	
1.11	Total No. of Cell		≥ 11,520	
1.12	Dimensions of the Cells	mm	To be mentioned	
1.13	Weight of cell complete with electrolyte	kg	To be mentioned	
1.14	Internal resistance per cell when fully charged	Ohms	To be mentioned	

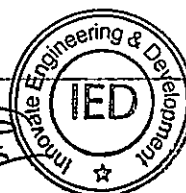
SL	Description	Unit	REB requirement	Tenderers Guaranteed Values
1.15	Material of battery case		Aluminum Alloy /Stainless Steel	
1.16	Nominal energy (Watt-hour (Wh))	Wh	> 896 Wh	
1.17	Working voltage range (per Cell)	V	Operating range: 2.5 – 3.65 V (per OEM confirmation). Absolute cut-off: 2.0 – 3.65 V.	
1.18	Operating temperature	°C	0 °C~50°C	
1.19	Cycle Time		The Battery System shall guarantee $\geq 70\%$ capacity retention after 12 years of operation OR ≥ 8760 equivalent full cycles at 80% DoD (2 cycles per day for 12 years), whichever comes first	
1.2	DOD		> 90%	
1.21	Round Trip Energy Efficiency		$\geq 90\%$ (BOL), $\geq 82\%$ (EOL) Bidder shall provide round-trip efficiency degradation schedule over system life.	
1.22	Marking		Cell type, date of manufacture, rated capacity, name of manufacturer, nominal voltage, appropriate caution statement	
1.23	Protection		Cell blocks to include protective devices (fuse/PTC) and monitoring circuitry. For thermal management under the intended duty cycle, active or passive cooling should be built into the system. This can consist of metal fins to conduct heat away from cells, convective cooling vents, phase-change materials, fans and other design components as necessary. The system shall comply with IEC 62619 and successfully pass the UL 9540A thermal runaway test. The supplier shall provide third-party test reports proving that, in case	

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values
			of cell failure, the event is safely contained and does not spread to other cells or modules	
1.24	Tolerances		$\pm 0.5\%$ for voltage, $\pm 1\%$ for current, $\pm 2\%$ for temperature, $\pm 1\%$ for Dimensions	
1.25	Standard		UL 1642, UL 1973, IEC 62620, UN 38.3, ISO 9001, ISO 14001	
1.26	Disposal Instruction		To be mentioned	
1.27	Recommend Charge Instruction		CC-CV charging per OEM; float/boost not applicable. BMS shall ensure safe voltage, current, and temperature limits.	
1.28	Cell Designation		To be mentioned	
1.29	Cell Endurance		Capacity $\geq 85\%$ of rated value after 90 days	
1.3	Safety / Abuse Tolerance		Cells to meet IEC 62619: overcharge, short-circuit, thermal abuse tests	
1.31	End of life Capacity		To be mentioned	
1.32	Cell Venting and Gas Management		To be mentioned	
2.Module				
2.1	Battery module/capacity	Ah	> 280 Ah	
2.2	Battery box composition		1P16S or equivalent (To be mentioned by the tenderer)	
2.3	Dimensions (L x W x H) mm		493x772x229 (± 2 mm) or equivalent (To be mentioned by the tenderer)	
2.4	Rated voltage	V	> 51.2 V	
2.5	Nominal Capacity	Ah	> 280 Ah	
2.6	Nominal Energy	kWh	> 14.336 kWh	
2.7	Allowable maximum operating temperature range	$^{\circ}\text{C}$	Charging: $0^{\circ}\text{C} \sim 65^{\circ}\text{C}$	

SL	Description	Unit	REB requirement	Tenderers Guarante ed Values
			Discharging: -20~55°C	
2.8	Protection		Modules will be connected with protective devices (e.g. fuse or PTC) and monitoring circuitry	
3.Cluster				
3.1	Nominal voltage	V	> 1000V	
3.2	Voltage range	V	1000V~1500V	
3.3	Pack		1P384S or equivalent (To be mentioned by the tenderer.)	
3.4	C-rate	C	0.5C	
3.5	Rated Capacity		> 344 kWh or as required (To be mentioned by the tenderer.)	
3.6	Communication method		CAN/Ethernet/RS485/Equivalent	
3.7	Protection		Clusters will be connected with protective devices (e.g. fuse or PTC) and monitoring circuitry	
3.8	Cluster Structure Formulation (up to cell level)		To be mentioned	
3.9	Redundant Cluster		To be provided for emergency	
4.Battery Container				
4.1	Rated Voltage	V	1000V - 1500V	
4.2	Rated Capacity	MWh	2x5 MWh (End of life must be ≥2x5 MWh)	
4.3	Rated Power	MW	2x2.5 MW (End of life must be ≥2x2.5 MW)	
4.4	Max Current	A	(To be mentioned by the tenderer.)	
4.5	Weight	kg	(To be mentioned by the tenderer.)	

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values
4.6	Dimension (L-B-W) of Battery Racks & Enclosures		20HC (6058x2438x2896mm) or equivalent, Standard 20 feet container. Containerized Solution with Battery Racks & Modules, Internal General Arrangement (GA). RAL 7035 or Off-white colored or better and with customized logo, IP65 or better, Shock proof, Rust proof, Anti-corrosion. (Standard Specification and Drawings to be submitted)	
4.7	Outdoor rated (IP Degree)		IP65 or better	
4.8	Anti- corrosion Degree		C3/C4/C5	
4.9	C-Rate	C	0.5C	
4.1	Storage Temperature		0 °C~65 °C	
4.11	Battery Cooling System		Each Battery Container have internal Air / Liquid Cooling Systems. Cooling System to be designed as per the proposed locations' climate, to keep the batteries within their optimum operating temperature to extend battery life. The design should emphasize efficient power consumption of the cooling system. (Detail calculations to be submitted)	
4.12	DC Power Distribution System		All cables and protective equipment required to be included. (Detail Specifications & Design to be provided)	
4.13	DC Output		To be mentioned by the tenderer	
4.14	Temp Control		Liquid Cooling	
4.15	Fire Fighting		FK5112 and Reserve water and spraying	
4.16	Altitude	m	Less or equal to 500m	
4.17	Operating Temperature	°C	0°C - 50° C	

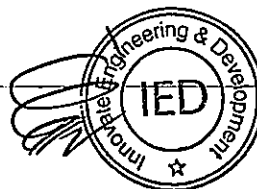
SL	Description	Unit	REB requirement	Tenderers Guarante ed Values
4.18	Auxiliary Power	kW	≤ 60 kW	
4.19	Efficiency		≥ 93%	
4.2	Communication		CAN/Ethernet/Dry Contact	
4.21	Color		RAL7035 or better	
4.22	Noise	dB	≤80 dB	
4.23	Seismic Fortification (Earthquake)		8 level	
4.24	Maintenance		To be mentioned (Periodic maintenance with specified maintenance interval, cleaning or replacement of air filters in cabinets and checks of fire-suppression systems)	
4.25	Component Replacement		To be mentioned (User replaceable or not, if yes then proper guideline book)	
5.Compliance				
5.1	UL		UL1973 (for safety and qualification of battery modules/packs and some system-level requirements used in BESS), UL9540 (for complete energy storage system (ESS) certification, covering safety, performance, and construction requirements of integrated battery + PCS + control systems), UL9540A (for testing the thermal runaway and fire propagation characteristics of BESS)	



SL	Description	Unit	REB requirement	Tenderers Guarante ed Values
5.2	IEC		IEC62619 (for safety requirements and testing of secondary lithium cells and batteries used in BESS applications), IEC63056 (for safety requirements of lithium cells and batteries specifically used in electrical energy storage systems), IEC61000 series (for Electromagnetic Compatibility (EMC): includes emission, immunity, and harmonic distortion tests for PCS, BMS, and auxiliary control systems.), IEC 62477-1 (for safety requirements of power electronic converter systems (PCS) connected to the grid or batteries.), IEC 62933-5-2 (for safety requirements of grid-integrated electrochemical energy storage systems)	
5.3	UN		UN38.3 (for transport safety testing of lithium cells and batteries), UN3536 (for classification and transport regulations of lithium batteries installed in BESS containers)	
6.Fire Protection System				
6.1	Power supply	V	AC 230V	
6.2	Communication		CAN, RS485, dry contact	
6.3	Operating temperature	°C	0°C - 50°C	
6.4	Fire detection method		Temperature, Smoke detectors	
6.5	Fire extinguishing method		Fully automatic	
6.6	Fire extinguishing agent type		Perfluorohexanone	
6.7	Startup method		Automatic, manual and emergency start/stop	

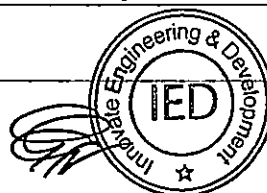
[Handwritten signature]

[Handwritten signature]



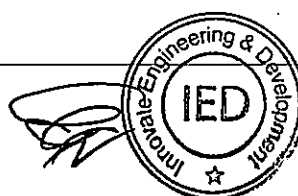
[Handwritten signature]

SL	Description	Unit	REB requirement	Tenderers Guarante ed Values
6.8	Product Certification		UL and FM (USA), CE and EN 54 (Europe), Other regionally or internationally recognized certifications relevant to fire protection, safety, and performance. Note: Tenderers shall specify equivalent certifications for proposed components to ensure safety and regulatory compliance.	
7. Battery management system				
7.1	Battery Management System (BMS)		Smart BMS Features: Cell Level Monitoring & Management. Current Rating should match the peak charge-discharge current of Cell, Pack & Cluster. Active cell Balancing. Over & Under Voltage Protection; Over Current, Short Circuit & Reverse Polarity Protection; Temperature Monitoring & Compensation; Deep Discharge Protection, Alarm, sleep mode, three type of indications- Permanent shutdown (non-recoverable without service/replacement), Self-resetting shutdown (automatically restarts when conditions return to normal), Manual reset shutdown (requires operator intervention to restore operation); Communication: UART / CANBUS /Equivalent. There may be one Master BMS	



SL	Description	Unit	REB requirement	Tenderers Guaranteed Values
			and several Slave BMS to ensure efficient and safe operation. (Detailed specification and configuration drawings to be submitted)	
B. Power Conversion System (PCS)				
1. Power Conversion System (PCS): Bidirectional Power Conversion System. Grid-forming mode. High-Efficiency along with bi-directional transformer				
1.1	Communication access method		Three-phase three-wire	
1.2	Rated Power at 50°C	MW	≥5 MW	
1.3	Overload capacity		110%: Long-term operation 120%: no less than 1 minute	
1.4	Rated AC voltage	V _{ac}	400 V to 800 V _{ac}	
1.5	Rated current	A	1045 A or as required (To be mentioned by the tenderer)	
1.6	Rated Capacity	MVA	6.25 MVA	
1.7	Rated Grid and PCS frequency	Hz	50±1% Hz (The frequency is consistent with the grid frequency.)	
1.8	Total current waveform distortion (THDi)		≤2% (rated power) to maintain grid code	
1.9	Power Factor		The PCS can adjust its power factor from 0.9 lagging to 0.9 leading to help regulate grid voltage and improve power quality.	
1.1	DC voltage range	V	1000 V - 1500 V	
1.11	Low Voltage Ride Through		Should Comply	
1.12	High Voltage Ride Through		Should Comply	
1.13	Anti-islanding protection		Should Comply	

SL	Description	Unit	REB requirement	Tenderers Guarante ed Values
1.14	Protection features		AC Side: AC Filter, EMC, AC CB, AC SPD and anything that is needed for smooth operation and high-level safety. DC Side: DC SPD, Disconnect switch, EMC, Isolation Fuse and anything that is needed for smooth operation and high-level safety Component Fault Recordings and Alarms.	
1.15	Maximum efficiency		≥ 98 %	
1.16	Dimensions	mm	40 HC (12192x2438x2896 mm), Standard 40 feet container or equivalent	
1.17	Enclosure protection grade		IP65 or better	
1.18	Cooling method		Air Cooling/Liquid cooling	
1.19	Communication interface		CAN, RS485, Ethernet port, expandable	
1.2	Operating temperature	°C	0 °C- 50 °C (> 45 °C derating)	
1.21	Storage temperature	°C	-0 °C - 65 °C	
1.22	Allowable relative humidity		5% ~ 95%, no condensation	
1.23	Altitude	m	500m (> 300m derating)	
1.24	Certifications of Standards		All battery cells, PCS, and ESS components shall comply with internationally recognized safety and performance standards relevant to their function and region of supply, including but not limited to IEC 62909-1, IEC 62477-1, IEEE 1547-2018, UL 1741, IEC 61000 series, IEC 61850, Modbus TCP, DNP3, IEC 60529, IEC 60068, UL 1642, IEC 62619, UN38.3, or their equivalents.	



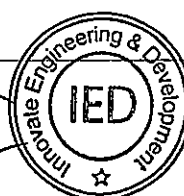
SL	Description	Unit	REB requirement	Tenderers Guaranteed Values
			Tenderers must provide valid compliance documentation.	
1.25	Modes of operation		The PCS shall have a continuous active power rating equal to the BESS nominal power (5 MW) and shall support grid-following operation. The BESS system shall provide voltage support and frequency response in grid-connected mode, and Critical Load Backup (CLB) to designated feeders during grid outages.	
1.26	Warranty		5 Years warranty.	
Power Conversion System (PCS): AC Side				
1.27	Nominal Power	MW	5 MW	
1.28	Nominal Capacity	MVA	6.25 MVA	
1.29	Nominal MV Voltage	kV	11kV	
1.3	Nominal LV Voltage	V	690 V	
1.31	Nominal Current	A	4184 A or as required	
1.32	Rated Grid frequency	Hz	50 Hz	
1.33	Overload Capacity		110% Pn Long term, 120% Pn (less than 1min)	
Power Conversion System (PCS): DC Side				
1.34	Full Power DC Voltage Range	V	1000-1500V	
1.35	No of DC input channels		To be mentioned by the tenderer	
Environmental and Thermal Performance of the PCS				
1.36	Temperature Derating		Manufacturer shall specify derating curves vs. temperature. PCS shall maintain full rated power output at ambient temperature $\leq 45^{\circ}\text{C}$ without thermal derating.	
MV bi-directional transformer				

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values
1.37	11 KV Transformer		Step-up/step down transformers and vice versa, 11/0.69kV AC, 6.25MVA, Dy _n 11, tap changer $\pm 5\%$ (Detailed design and specification to be provided)	
1.38	Performance		The PCS bi-directional Transformer efficiency $\geq 99\%$ at rated load, no-load losses $\leq 10\text{kW}$, and load losses $\leq 57\text{kW}$ Percentage impedance minimum 7% (according to IEC60076-5)	
1.39	Enclosure		Containerized Solution with PCS and Transformers, Outdoor Rated, IP65 or better, Color RAL 7035. Size: Standard 40 feet or available standard sized Container as per the area and condition of each site, Internal General Arrangement (GA) and Drawings to be submitted.	
2. Energy Management System (EMS)				
2.1	Energy Management System (EMS)-Real-Time Monitoring & Control of the parameters of PCS, BMS, and Grid. Customizable modes of automatic operation of BESS.		EMS should be capable of operating the system with pre-set strategies in automatic mode. For Manual Mode HMI interface to be provided for easy operation. The EMS should offer comprehensive visual monitoring & operation interface, displaying all data through topology diagrams, list data, curves, bar charts, distribution maps and other formats. The interface should be intuitive, user-friendly and efficient. Multi-Level Alarm & Fault notification through SCADA, Email, or other methods. Historical Data of Equipment, Power flow, Alarms, Fault records, Operation & Control Log. Statistical & Performance analysis report of the BESS to be generated from EMS. Control	

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values
			Modes: SOC control, Power control, Grid services, Time-of-Use. Supported Protocols: Modbus TCP /RTU, IEC 60870-5-104, DNP3, IEC 61850, OPC UA, SNMP Data Sampling Rate: 1 second or faster for real-time data streams User Interface: Web-based HMI, local touchscreen HMI ($\geq 10''$), mobile interface (optional). Data Logging Capacity: ≥ 5 years historical data (local + cloud-based backup). Time Synchronization: NTP or GPS-based for synchronized event logging Redundancy: Dual power supply (24V DC), optional hot standby controller. Remote Access: TLS encryption, secure boot, audit logs, firewall. SCADA Interface: Integrated or external SCADA support. Communication Ports: Ethernet (x4), Serial (x4), USB (x2), Fiber (optional). Power Supply: 24V or 48V DC or 230V AC, UPS-backed for uninterrupted operation. It should charge the BESS in 5 hours on off-peak hour, and time can be reconfigurable manually.	

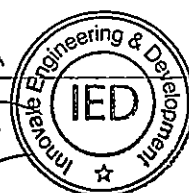
3. Remote Terminal Unit (RTU) / PLC

SL	Description	Unit	REB requirement	Tenderers Guarante ed Values
3.1	Remote Terminal Unit (RTU) / PLC-Communication with BESS system components and existing substation components.		The Remote Terminal Unit (RTU) acts as the field-level data acquisition and control interface between the BESS and the utility SCADA or central Energy Management System (EMS). It provides real-time telemetry, control command execution, event logging, and protocol conversion. The RTU collects and transmits operational data and executes control logic as per supervisory commands, contributing to grid stability, visibility, and effective dispatch of BESS resources.	
4	ATS		The Automatic Transfer Switch (ATS) or equivalent motorized switchgear shall provide fast, safe, and reliable physical switching between the grid and the Battery Energy Storage System (BESS) at the 11 kV level. The ATS is responsible for ensuring seamless transfer of power sources within a specified maximum transfer time (typically ≤ 100 ms) to maintain continuous power supply and system protection. The Energy Management System (EMS) shall perform high-level monitoring, control, and optimization of energy flows between the grid, BESS, and loads. While the EMS manages operational logic and sends control commands, it does not perform physical switching; this is the role of the ATS or other switching devices. Both ATS and EMS shall be integrated to ensure coordinated operation, safety, and compliance	



SL	Description	Unit	REB requirement	Tenderers Guarante ed Values
			with relevant standards and project requirements. The contractor shall provide detailed technical specifications, integration diagrams, and operation procedures demonstrating the interface between the ATS and EMS.	
5	Communication Infrastructure		Fiber/copper, modems, switches, etc., for uninterrupted communication. Detailed Design & Specifications to be submitted.	
6	Data Logger & Backup Systems		Data Logger: Each BESS container (2 x 20-foot, 2.5 MW/5 MWh, liquid-cooled) shall be equipped with an industrial-grade data logger to collect, timestamp, and archive real-time and historical data from: - BMS: Cell voltage, temperature, SoC, SoH, fault status, alarms. - PCS: AC/DC voltages, currents, frequency, harmonics. - EMS: Charge/discharge setpoints, power profiles, grid interaction, schedules. - HVAC Cooling System: Pump status, coolant temperature, fan RPM. - Fire Detection & Suppression System: Smoke/gas alarm events, suppression status. - Environmental Monitoring: Room temperature, humidity. Data Logger Features: - Logging interval: Configurable, ≤1 second. - Protocols: Modbus (RTU/TCP), TCP/IP, RS-485, OPC-UA. - Local buffering: ≥32 GB to ensure data retention during communication disruptions. - Communication: Dual Ethernet ports, USB, serial interfaces. - Web-based interface for	

SL	Description	Unit	REB requirement	Tenderers Guarante ed Values
			diagnostics and configuration. Server: 1. Processor Requirement Recommended Type: - Intel Xeon E3, Silver Series, or higher - Alternatives: Intel Core i7 or i9 (latest generation) Core Requirements: - Minimum 8 cores or more - Support for Hyper-Threading (HT) and Virtualization Technology Purpose: - Efficient multi-threaded data handling - Reliable support for database and SCADA applications 2. RAM Requirement Recommended Type: - Min. 32 GB DDR4 RAM - ECC (Error-Correcting Code) memory is preferred for server-grade reliability Purpose: - Smooth operation of SCADA, database, and HMI systems - Stability under 24/7 logging and analysis load 3. Storage Requirement Recommended Type: - Minimum 1 TB SSD (preferably enterprise-grade) - RAID 1 configuration for redundancy and data integrity	



SL	Description	Unit	REB requirement	Tenderers Guarante ed Values
			- 2 TB SSD preferred for large-scale data storage Buffering Requirements: - Minimum Local Buffering: ≥ 32 GB for temporary data caching Network Attached Storage (NAS): - Optional but recommended for backup and archival purposes - NAS should support SMB/NFS with redundancy 4. Network and Communication Required Ports and Features: - 2x Ethernet ports (1 Gbps or higher) - USB ports for local data retrieval - RS-485 port for Modbus RTU communication (optional) Protocol Support: - Modbus TCP/IP, OPC-UA, TCP/IP - Optional: DNP3, IEC 61850 Internet Connectivity: - Required for cloud sync, remote access via VPN, firmware updates, and SCADA/EMS integration - Secure VPN connection for remote diagnostics and control 5. Operating System Recommended OS: - Linux Ubuntu LTS (preferred for flexibility, cost, and reliability) - Windows Server 2019 (for legacy SCADA/HMI support)	

SL	Description	Unit	REB requirement	Tenderers Guarante ed Values
			6. HMI/SCADA Software Compatibility Recommended Platforms: - Wonderware - Ignition - Siemens WinCC - Web-based HMI Functionality: - Real-time data visualization - Alarm/event tracking - Historical trend plotting - Remote access via VPN or LAN 7. In consideration of diverse client and regulatory preferences, the data storage system shall prioritize secure and reliable local physical storage as the primary repository. However, to enhance data availability, redundancy, and disaster recovery capabilities, optional integration with secure cloud storage platforms is encouraged. All data transmission must utilize encrypted protocols (e.g., REST APIs, MQTT) to ensure confidentiality and integrity both in transit and at rest. This flexible approach balances security, operational resilience, and compliance with varying regional requirements, without mandating cloud storage as a compulsory component. Physical Storage Integration: - RAID 1 or RAID 5 for redundancy - NAS devices for automated backup (via rsync/NFS/SMB) - Use of firewall and network	

SL	Description	Unit	REB requirement	Tenderers Guarante ed Values
			segmentation to protect local storage	
C. Grid Integration at 11kV:				
1. Extended 11kV Bus bar specifications				
1.1	Manufacturer's Name & Address		To be mentioned by tenderer	
1.2	Type		Single busbar	
1.3	Material		Copper	
1.4	Technical Specification		11 kV 2000A-2500A, Same or similar with existing Bus bar with Bus PT. PT Ratio: $11000/\sqrt{3}:110/\sqrt{3}:110/\sqrt{3}V$, Short Circuit current capacity: 31.5kA for 3 sec. Control, Relay, Protection with SAS/ SCADA facilities including 0.2S class programmable energy meter	
1.5	Dimension (Height x Width x Depth)		Same or similar or compatible with the existing 11kV Busbars in existing substations.	
2. 11kV Bus Sectionalize Switchgear panel with or without Bus Raiser				
2.1	Manufacturer's Name & Address		To be mentioned by tenderer	
2.2	Bus Circuit Breaker Type		Indoor; Horizontal draw-out type VCB. Spring-charged, motor operated mechanism with manual back up. Mechanical and electrical interlocking for safety. (Same or similar or compatible with the existing 11kV bus section circuit breaker in existing substation).	
2.3	Rated Frequency	Hz	50 Hz	
2.4	Rated nominal voltage	kV	11 kV	

Sl.	Description	Unit	REB requirement	Tenderers Guarante ed Values
2.5	Rated voltage	kV	12 kV	
2.6	Rated Current for main bus	A	2000 A-2500 A	
2.7	Rated short-time current for the main bus	kA	31.5 kA	
2.8	Short time current rated duration	sec	3 sec	
3. 11kV Switchgear panels				
3.1	Manufacturer's Name & Address		To be mentioned	
3.2	Circuit Breaker Type		Indoor, Horizontal draw-out type VCB. Spring-charged, motor operated mechanism with manual back up. Mechanical and electrical interlocking for safety (Same or similar or compatible with the existing 11kV circuit breakers in existing substation)	
3.3	Protection & Metering Panels		CTs, PTs, Multifunction meters, numerical relays. Must comply with IEC standards and technical specs given in HS-11.1250.	
3.4	Rated Voltage	kV	12	
3.5	Rated Current	A	800/630 A	
3.6	Rated short circuit breaking current	kA	31.5 kA	
3.7	Rated short circuit making current	kA	80 kA	
3.8	Rated breaking time		3 cycles	
3.9	Opening time	ms	60 ms (Reference standard to be mentioned)	
3.10	Closing time	ms	60 ms (Reference standard to be mentioned.)	

Sl	Description	Unit	REB requirement	Tenderers Guaranteed Values
3.11	Rated Operating Sequence		0-0.3 sec-CO-3 min-CO	
3.12	AC withstand voltage 1 min. dry	kV	28 kV	
3.13	Impulse withstands, full wave	kV	75 kV	
3.14	DC Control voltage V	V	DC 110V	
3.15	Motor voltage for spring charge, V	V	180-240V AC	
4. Current Transformer				
4.1	Manufacturer's Name & Address		To be mentioned	
4.2	Rated Voltage	kV	12 kV	
4.3	Accuracy class, Metering		0.2S	
4.4	Accuracy class, Protection		5P20	
4.5	Accuracy class, Tertiary		3	
4.6	Rated current ratio		600-300/1-1-1 A	
4.7	Burden Secondary	VA	Metering 15 VA, Protection 15 VA	
4.8	Burden Tertiary (Indication, SCADA)	VA	5	
4.9	Rated Frequency	Hz	50 Hz	
4.1	Insulation Level		12/ 28/ 75 kV (IEC 60044, IEC 61869-2)	
4.11	Compliance		IEC-60044-1, IEC- 61869-2	
5. Voltage Transformer				
5.1	Manufacturer's Name & Address		To be mentioned	
5.2	Number of phases		3	
5.3	Rated primary voltage	kV	11kV/ $\sqrt{3}$ kV	
5.4	Rated secondary voltage	V	110/ $\sqrt{3}$ V	
5.5	Rated tertiary voltage	V	110/ $\sqrt{3}$ V	
5.6	Rated burden, Secondary	VA	Metering: 50 VA. Protection: 100 VA	
5.7	Rated burden, Tertiary (Indication, SCADA, Sync-check)	VA	25 VA	

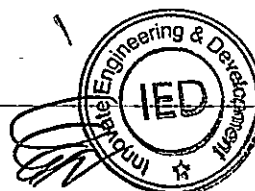
SL	Description	Unit	REB requirement	Tenderers Guaranteed Values
5.8	Accuracy class, Secondary		Metering: 0.2 Protection: 3P	
5.9	Accuracy class, Tertiary		3	
6. 11 kV Cables with Termination				
6.1	Cable Termination at 11kV AIS with PCS Transformer of the BESS		3x185 mm ² 11 kV, XLPE CU cable with required termination for connecting 11 KV AIS with the BESS output and wherever required.	
7. LV AC- DC cable, Fiber Optic Cable, LV AC - DC Distribution Board and Control Cable				
7.1	LV AC Power cables		415V, insulated with ferrule and protective equipment wherever required. (As per standard requirements)	
7.2	LV DC Control cable		110V, insulated with ferrule and protective equipment (As per standard requirements)	
7.3	DC Distribution Board (DCDB)		1500 DC Cables (Battery to PCS and wherever required), MCB/MCCB protected, insulated with ferrules and other equipment wherever required. (As per standard requirements)	
7.4	LV AC Distribution Panel (ACDB)		415V, MCB/MCCB protected, HVAC, Lighting, control power, etc (As per standard requirements)	
7.5	Fiber Optic Cable		Multiplexer Cable for Protection and Communication. (As per standard requirements)	
8. Earthing System				

SL	Description	Unit	REB requirement	Tenderers Guarante ed Values
8.1	Earthing System includes grounding cables and accessories.		Supply, installation, testing and commissioning of Earthing system including grounding cables and accessories based on IEEE 80-2013. Chemical/plate/rod earthing for battery and encloser, PCS, transformers, lightning protection etc. wherever and whatever required to get earthing resistance less than 0.5 ohm.	
9. SCADA Integration for BESS and Substation Interface, Cybersecurity, Data Ownership & Maintenance				
9.1	Data Ownership		All operational data remains the property of the Employer (BREB). Any cloud-based storage must be located in-country or fully accessible to the Employer at anytime from anywhere.	
9.2	Cybersecurity		The system shall follow ISO/IEC 27001 and IEC 62443-4-2 cybersecurity standards, with yearly checks for vulnerabilities and regular software updates to fix any security or performance issues.	

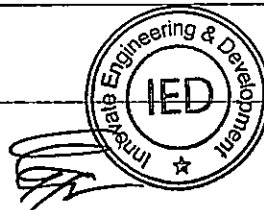
Handwritten signature

Handwritten signature

Handwritten signature



SL	Description	Unit	REB requirement	Tenderers Guarante ed Values
9.3	SCADA Integration for BESS and Substation Interface		A dedicated SCADA system shall be implemented for the Battery Energy Storage System (BESS) and the newly created 11 kV bus section, which will serve two selected feeders of the substation. Although the existing substation does not currently have a SCADA interface, the contractor shall ensure that the new bus section and all connected equipment are fully SCADA-controlled. The system shall provide comprehensive real-time monitoring, control, and data logging for all BESS components and all devices connected to the dedicated bus section, ensuring full operational visibility and seamless integration with the 11 kV grid. The SCADA system shall monitor battery containers, capturing cell voltage, temperature, state of charge (SoC), state of health (SoH), fault status, alarms, and cooling system operation. It shall also cover the Power Conversion System (PCS), recording AC and DC voltages, currents, frequency, power factor, harmonics, protection status, and other operational parameters. Energy Management System (EMS) functions, including charge and discharge setpoints, SoC management, grid support modes, alarms, and operational events, shall also be integrated. In addition, all devices connected to the dedicated bus section, such as breakers, busbars, transformers, protection relays, and metering equipment, shall be fully monitored. Auxiliary systems,	



SL	Description	Unit	REB requirement	Tenderers Guaranteed Values
			including fire detection and suppression, HVAC, lighting, and control power, shall also be part of the SCADA monitoring and control scope. The SCADA system shall utilize standard communication protocols, specifically IEC 60870-5-104 and Modbus TCP/IP, to ensure interoperability. The contractor shall provide a detailed data point mapping list, specifying all monitored and controlled signals with proper tagging and hierarchy, allowing future integration with a central EMS or the existing substation SCADA. All data shall be securely stored locally, with optional in-country cloud access available to BREB. The system shall support visualization, multi-level alarms, historical trending, and comprehensive reporting, covering every monitored point to ensure efficient, safe, and reliable operation, maintenance, and management of the BESS and the dedicated 11 kV bus section.	

10. Auxiliary Power Supply for BESS

[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

SL	Description	Unit	REB requirement	Tenderers Guarante ed Values
10.1	BESS and any other supply requirements		The Contractor shall design, supply, install, test, and commission a complete auxiliary power system to ensure uninterrupted and reliable operation of the BESS under all operating conditions, including normal grid-connected operation and Critical Load Backup (CLB) to designated feeders during grid outages. This shall include, but not be limited to, suitable transformers and all associated equipment required to power auxiliary loads such as PCS units, battery enclosures, control systems, HVAC, lighting, safety, and protection systems. The auxiliary system shall be integrated with the system AC bus or PCS AC output as needed. All components necessary to meet the functional, safety, and performance requirements of the PSA and applicable standards shall be provided, regardless of whether explicitly mentioned. No omission of any essential auxiliary provision will be accepted	

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values
11	Type Test Reports		The Contractor shall ensure that all main equipment supplied under this project is supported by valid type test reports or equivalent verification documents. This requirement specifically applies to Battery Cells, Battery Modules and Clusters, Battery Containers, Power Conversion System (PCS), BMS, EMS, MV/LV Transformers, Switchgears and Protection Devices, and Fire Detection and Suppression Systems. Where type test reports are not yet available at the time of submission, the Contractor shall provide a formal declaration and commit to submitting the required reports prior to delivery and commissioning.	

Note:

- i. Tenderers are suggested to visit the site before participating in the tender and submitting tender documents to assist the requirements for integration with existing systems.
- ii. Tenderers are suggested to visit the site for the preparation of the detailed design of switchgear panel requirements for integration with existing systems.
- iii. All extensions and rearrangements shall be carried out within the available room space and existing layout limitations, as all substations have area constraints, ensuring proper fitment without requiring any building modification.
- iv. Detailed Battery Recycling and Disposal Procedure to be submitted.
- v. Provide third-party test reports for verification.
- vi. Reference standard to be mentioned.

6.2.10 Safety

General

The BESS shall comply with internationally recognized safety standards such as IEC 62619 and UL 1973, ensuring robust protection against internal system failures and utility grid disturbances. Compliance with relevant grid interconnection standards shall be demonstrated as applicable to the project and regional regulations.

For all BESS equipment, the Supplier shall provide information on specific safety issues related to the equipment, including appropriate responses on how to handle the energy storage system in case of an emergency, such as fires or module ruptures.

Fire Mitigation

Provisions shall be included to extinguish internal container fires without the need to open container doors.

6.2.10 System testing, documentation, training course and warranty

Testing

The following test procedures shall be conducted on the unit prior to shipment.

Battery connection and configuration check

Circuit boards and sub assembly functionality

Mechanical inspection

Wiring continuity

Alarm functionality

Any other required tests to be done

The user shall witness the factory acceptance testing at the manufacturer's production facility.

Quality Assurance

Factory Testing—Prior to shipment, the tenderer shall complete a documented test procedure to test all required functions of the BESS and guarantee compliance with the specifications. These are, but not limited to, the followings:

The ability to perform 4-quadrant control

The ability to perform black start

The ability to deliver zero-voltage ride through

The ability to operate in an critical load backup operation

The ability to perform parallel operation with the grid

The ability to communicate with MGC via DNP 3.0 over IP or IEC61850

The ability to communicate with ADDC via DNP 3.0 over IP or IEC61850

The user shall witness the factory acceptance testing at the manufacturer's production facility.

Assemblies and Materials—All materials and parts shall be new, of current manufacture, and shall not have been used in a prior service, except as required during factory testing. The system manufacturer shall conduct inspections on incoming parts, assemblies and final products.

Documentation

The tenderer shall provide the following documentation for installing and operating the BESS:

Product Data—This documentation includes catalog sheets and technical data sheets indicating physical data and electrical performance, electrical characteristics, and connection requirements.

Operation and Maintenance—This documentation includes a manual for preparing, operating, and maintaining the energy storage unit. This includes equipment wiring connection outlines and written instruction for troubleshooting.

System Electrical Connection Drawings—This documentation includes drawings for properly connecting electrical wiring at the time of installation.

Installation Instructions—This documentation includes step-by-step installation instructions for properly installing the unit. Recommended spare parts (with list) – If applicable, the instruction book will list the required spare parts to be furnished with the energy storage system. Each spare part shall be interchangeable with, and shall be made of the same material and workmanship as the corresponding part included with the product furnished under these Specifications.

Special tools - The contractor shall furnish a complete set of any special tools, lifting devices, templates and jigs, which are specifically necessary for installation and/or maintenance of the energy storage system.

Additionally, special tools for PCS configuration and system parameter setting including link cable and software licenses shall be provided.

Drawings to be submitted:

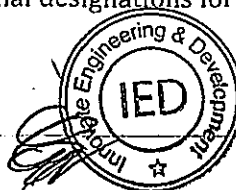
Drawings shall be provided for each energy storage system, which clearly indicate the physical parameters, electrical characteristics, and auxiliary equipment. These drawings shall include, but are not limited to the following:

Nameplate system drawing to be located on the doors of the container or cabinets.

Outline drawing including the following:

- Assembly of principal component, converter, control cabinet, parts and accessories.
- Power requirements for all control and auxiliary equipment.
- Shipping Center of Gravity – shown on two (2) views
- Installed Center of Gravity – shown on two (2) views
- Centerlines for external conduit and grounding cable connections.
- Projected floor space for container systems if applicable, including air conditioning units mounted on the side.
- Weight of the components and container.
- Kilowatt & Kilowatt-Hour rating.

Control Elementary Wiring Diagrams, with cross references for checking and verifying all of the control circuit and wiring diagrams, along with the terminal designations for termination off field wiring of all equipment.



Warranty

The manufacturer shall provide a warranty for the Battery Energy Storage System (BESS) covering a minimum period of five (5) years from the date of commissioning. This warranty shall encompass all defects, and the manufacturer shall be responsible for repairing or replacing any defective components at no cost to the client. Certified warranty documents issued by the battery vendors or manufacturers must be transferred to PEA prior to the issuance of the Final Acceptance Certificate.

Information Security

The supplier shall design the BESS to be resilient against intentional cyber-attacks and human error, in accordance with NISTIR 7628 or other applicable standards. Measures to ensure the security and integrity of the system throughout its operational life shall be implemented, including but not limited to regular vulnerability assessments and compliance with industry best practices.

Exceptions to specifications

Supplier shall submit a redline/tracked changes document to any and all exceptions herein this specification and include an explanation for the same. Supplier shall also submit a written signed letter on company letterhead should they elect to not take any exceptions to this specification.

Safety and security for stores of this Project

The stores of the contractor are to be considered as designated stores of this project. It will be responsibility of the contractor to ensure full proof Safety and security for stores of this Project. Full time security guard of required numbers shall be deployed at each store to ensure the safety and security. Moreover, all stores of this project shall have 24x7 online CCTV surveillance system.

The stores shall be well designed, built and equipped so that no equipment when kept in the stores will be subjected to rough weather, improper loading and unloading etc.

6.2.11 Miscellaneous Works

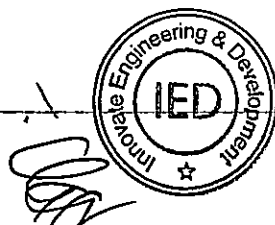
Any additional works not covered above but necessary for the functioning of the system & required as per specification shall be incorporated by the tenderer and cost shall be deemed included in the offer.

Local (In-Country) Training

The Contractor shall arrange comprehensive local training in Bangladesh for Employer personnel to ensure full competency in design, installation, testing, commissioning, operation, maintenance, protection schemes, safety, and troubleshooting of each BESS station.

Training shall be conducted in four batches, each consisting of four personnel, with a minimum of seven working days per batch. The training shall be hands-on and cover system architecture, battery modules, power conversion systems, transformers, auxiliary systems, BMS/EMS overview, communication interfaces, protection and interlocking logic, safety systems, emergency procedures, preventive and corrective maintenance, fault diagnostics, alarm/event handling, and system restoration.

Qualified trainers with in-depth experience in BESS design, installation, commissioning, and operation shall deliver the training. The complete training curriculum, agenda, practical exercises, and trainer profiles shall be submitted to and approved by the Employer prior to commencement.



Hard copies of training materials shall be provided to all participants. An examination or practical assessment shall be conducted at the end of each batch to evaluate knowledge transfer and operational readiness. Daily allowances per trainee, as per GoB rules, shall be borne by the Contractor and deemed included in the Price Schedule.

Overseas / Manufacturer-Based Training during FAT / PSI

The Contractor shall provide overseas training at the manufacturer's facility for four personnel nominated by the Employer during FAT and Pre-Shipment Inspection. The training shall be a minimum of seven working days, excluding travel, and cover manufacturing processes, factory testing, quality control, system integration, BMS/EMS architecture, communication interfaces, safety practices, protection logic, and troubleshooting.

Training shall be delivered by the OEM or an OEM-authorized training center. Detailed agenda, curriculum, and trainer credentials shall be submitted to and approved by the Employer prior to commencement. All costs related to travel, accommodation, training delivery, materials, and daily allowances as per GoB rules shall be borne by the Contractor and deemed included in the Price Schedule. Training completion certificates shall be issued to participating personnel.

On-the-Job Training (OJT) during Commissioning and Initial Operation

The Contractor shall provide structured OJT to Employer personnel during SAT, commissioning, and initial operation. This includes guided system operation, real-time BMS/EMS monitoring, alarm handling, controlled charging/discharging, emergency drills, fault isolation, system recovery, first-level troubleshooting, and supervised preventive and corrective maintenance procedures.

Support service during DLP

Support Service:

During entire Defect Liability/Warranty Period (60 months), minimum two (2) nos. Engineers, having experience in operation & maintenance of BESS System shall be made available at BREB for providing support service on Troubleshooting, Operation & Maintenance, capacity building and any other technical support related with this project.

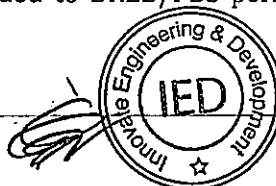
The contractor shall provide transportation facility (motorized vehicle) including driver, fuel, maintenance etc. for this support service for 24 hours during this plant DLP period. The cost of this support service shall be deemed included in Price schedule.

Responsibilities of Support Service Engineer (not limited to):

The Support Service Engineers shall submit reports to BREB/corresponding PBS on a quarterly basis and additionally as and when required by BREB/concerned PBS.

- The report shall include the followings but not limited to these:

- No. of site visited in the particular month along with findings during site visit
- No. of trouble shooting done in the particular month along with description of activities done
- Information of power factor at all tariff points in the particular month
- Information on support service activities done in the particular month
- Information on knowledge sharing/training provided to BREB/PBS personnel done in the particular month.



Operation & Maintenance Service under O&M contract

During the O&M period (Year 6 to Year 12), the Contractor shall provide professional O&M services including daily, routine, and special-situation operation, maintenance, and inspection of all BESS equipment. A minimum of two Engineers with proven BESS experience shall be continuously available at BREB.

O&M services shall include troubleshooting, preventive and corrective maintenance, operational support, capacity building, and other technical assistance to ensure safe and efficient system operation.

The Contractor shall provide a dedicated motorized vehicle with driver, fuel, insurance, and maintenance for 24-hour availability throughout the O&M period. All spare parts required during O&M shall be supplied by the Contractor, and all costs are deemed included in the Price Schedule.

Support Service Engineers shall submit monthly reports and additionally as requested by BREB, covering site visits and findings, troubleshooting activities, power factor records at tariff points, support service activities executed, and knowledge-sharing or training sessions conducted.

BESS Documentation Requirements

The Contractor shall supply original English documentation covering all BESS hardware, software, and auxiliary systems. This includes design and engineering manuals, operation and maintenance manuals, protection philosophies, safety manuals, emergency procedures, test reports, certificates, and as-built drawings.

Mandatory documentation shall include detailed equipment lists, single-line diagrams, system architecture, configuration and communication schematics, alarm/event lists, operational procedures, maintenance schedules, inspection checklists, spare parts lists, and SAT/FAT procedures and results.

The Contractor shall provide original and final versions of BMS/EMS configuration files, system programs, scripts, HMI graphics, and tag databases, as well as backup and restore procedures for controllers and system software. All documentation shall be delivered in hard copy and digital format (USB/DVD) suitable for training, commissioning, operation, and long-term maintenance.

Support Service during DLP/ Warranty period:

During the entire Defect Liability and Warranty Period of sixty (60) months, the Contractor shall provide comprehensive professional support services for the Battery Energy Storage System (BESS). A qualified Operation and Maintenance (O&M) team shall be deployed to carry out daily, regular, and special-situation operation, maintenance, and inspection of all equipment installed at the station. In addition, the Contractor shall provide structured and hands-on training to the Client's staff to ensure adequate knowledge transfer and to build competency in safe and efficient operation and maintenance of the BESS.

For the full duration of the Defect Liability/Warranty Period, a minimum of two (2) Engineers with proven experience in operation and maintenance of grid-connected BESS shall be made continuously available at BREB. These Engineers shall provide on-site and on-call support services, including but not limited to troubleshooting, routine and corrective operation and maintenance, capacity building of BREB personnel, and any other technical support required for successful operation of the project.

The Contractor shall also provide a dedicated transportation facility for these support services throughout the DLP period. This shall include a suitable motorized vehicle with driver, fuel, insurance, maintenance, and all related operational costs, available on a 24-hour basis. The cost



of providing the support service engineers and associated transportation facilities shall be deemed fully included in the Contract Price and no additional payment shall be made for these services.

The Support Service Engineers shall be responsible for regular reporting to BREB. A detailed report shall be submitted on a monthly basis and additionally whenever required by BREB. Each report shall include, at a minimum, information on the number of site visits carried out during the reporting month along with key findings observed during those visits, details of troubleshooting activities performed with a clear description of issues encountered and corrective actions taken, records of power factor performance at all applicable tariff points during the month, a summary of all support service activities executed, and details of knowledge-sharing sessions or training programs conducted for BREB and PBS personnel during the reporting period.

Operation & maintenance service under O&M contract:

Under the Annual Maintenance Contract (O&M), the Contractor shall provide comprehensive operation and maintenance services for the Battery Energy Storage System (BESS) for a period of seven (7) years, covering Year 6 to Year 12 of plant operation, following completion of the Defect Liability/Warranty Period. A professional and experienced O&M team shall be deployed to carry out daily, routine, and special-situation operation, maintenance, and inspection of all equipment installed at the station. The scope shall also include continuous training and knowledge transfer to the Client's staff to ensure sustained competency and confidence in safe, reliable, and efficient operation and maintenance of the BESS.

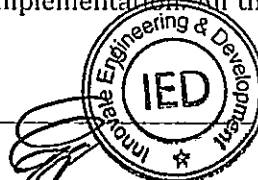
Throughout the O&M period, a sufficient number of Engineers with proven experience in operation and maintenance of grid-connected BESS installations shall be made available to BREB for providing comprehensive technical support. Their responsibilities shall include troubleshooting, preventive and corrective maintenance, operational support, capacity building of BREB personnel, and any other technical assistance required to ensure uninterrupted and optimal performance of the system.

The Contractor shall provide a dedicated transportation facility for the entire O&M duration, including a suitable motorized vehicle, driver, fuel, maintenance, insurance, and all associated operational costs, available on a 24-hour basis. The O&M scope shall be inclusive of all required spare parts for the covered period. The cost of transportation facilities, manpower, spare parts, and all associated services shall be deemed fully included in the O&M price schedule, and no additional payment shall be payable on these accounts.

The Support Service Engineers shall submit detailed reports to BREB on a monthly basis and additionally whenever required by BREB. Each report shall include, at a minimum, the number of site visits conducted during the reporting month with key observations and findings, details of troubleshooting activities performed along with descriptions of issues and corrective actions taken, records of power factor performance at all applicable tariff points for the month, a summary of all support service activities executed during the reporting period, and details of knowledge-sharing sessions or training programs conducted for BREB and PBS personnel.

Site Office:

The contractor shall provide a Site Office near to the work implementation area, which must reserve at least 1 room of minimum 150 sq ft and furnished with at least table, chair, cabinet, 1 computer, wash room facility etc and the room should be fully air-conditioned. Site Engineer and utility Officials will use this Site Office during work implementation. All the arrangements and



expenses of the Site Office will be borne by the Contractor and the cost shall be deemed included in price schedule.

Approval of Drawings

The contractor shall submit five (5) sets of Drawings and Guaranteed Technical Particulars of the offered goods to the office of the Project Director. This drawing will be approved by competent authority provided that the drawings are submitted as per requirement. The contractor may be required to give presentations on their submitted design and drawing before approval.

No work shall be performed in connection with the fabrication and manufacture of the offered goods until the drawings and technical data have been approved. The cost of supplying drawing shall be borne by the Contractor.

Packing

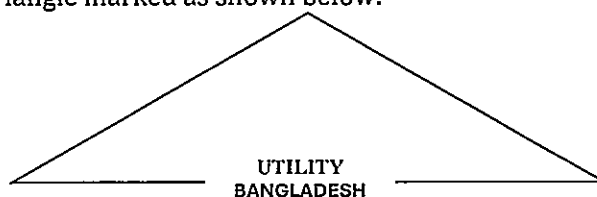
The complete goods/materials are to be export-packed and properly protected for shipment, rough transportation and storage. Specific care shall be taken for protection in store and reference is made to the climatic condition prevailing in Bangladesh.

Each item shall be protected by wrapping of suitable gauge polyethylene and packed in non-returnable wooden carat. It is mentioned here that no damage of wooden cartoon shall be acceptable during transportation, handling, loading, un-loading, carrying, storing. If damaged, it should be repaired by the suppliers' own arrangement without extra charge from the Purchaser. If any item can't be packed in wooden carat, this item shall be properly protected for shipment, rough transportation and storage. No damage to any item shall be acceptable.

The contractor shall be responsible for damages due to inadequate packing. A packing list showing the contents of each packing shall be enclosed in a waterproof envelope secured to the outside of the packing case. A copy of the packing list shall also be enclosed inside the package.

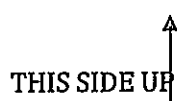
All packages are liable to be opened for Customs examination and packing shall therefore be designed to facilitate opening and re-packing thereafter, if imported

In addition, each package shall be clearly marked or stencilled in red on two sides. The shipping mark is inscribed within a triangle marked as shown below:

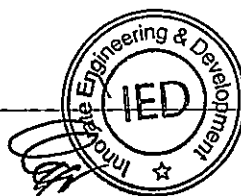


On the other two sides arrow marking with the wording "THIS SIDE UP" and "FRAGILE" shall be clearly marked or stencilled to indicate the face of the package to be kept upward

FRAGILE



Packing and Erection Marks



Each item is to be export packed and properly protected for shipment, transport and storage in the port area and for transport to and storage on site.

All Plant provided under this Contract shall have the packing marked in the following manner:

A green band shall be painted all around each package. The band shall be 8" wide or $\frac{1}{4}$ of the length of the packing whichever is the less. Each package should have the following information printed on it in bold letters:

- (a) Port of Loading
- (b) Name of Consignee
- (c) Purchase Order Number
- (d) Brief description of Stores
- (e) Number of Package
- (f) Gross, tare and net weight
- (g) Measurements
- (h) Contractors Name
- (i) Contract Title
- (j) Contract Number
- (k) Port of Landing

All members comprising multi-part assemblies, e.g. steel frameworks, are to be marked with distinguishing numbers and/or letters corresponding to those of the approved drawings or materials lists.

Color banding to and approved code is to be employed to identify members of similar shape or type but of differing strengths or grades.

Cases containing delicate items such as relays and instruments should carry a separate marking:

Sensitive equipment packages shall be opened in the presence of a representative of the Employer.



6.2.12 Management Systems

General

The Contractor shall carry out the Works in accordance with sound quality and environmental management principles, and in particular shall have management systems which conform to the requirements of the ISO 9000 family of standards for Quality Management and the ISO 14000 family of standards for Environmental Management.

These quality management requirements shall apply to all activities including design, procurement, manufacturing, inspection, testing, packing, shipping, storage, site erection and commissioning.

The Contractor, major sub-contractors and suppliers shall have Quality Systems certified as complying with the requirements of ISO 9001 applicable to sales, design, construction and commissioning of high- and medium-voltage substations. If minor sub-contractors and suppliers do not have such systems then the Contractor's Quality System shall be deemed to apply.

It is preferred that the tenderer be certified as complying with ISO 14001 but this is not a qualifying requirement.

Documents submitted by the tenderer, including those provided by sub-contractors, will not be accepted unless they include evidence that they have been verified by the tenderer.

Quality Documentation and Audit

The Contractor shall submit a copy of its Quality Manual and relevant quality procedures, in the English language, within one (1) month of the Effective Date of the Contract. Quality Manuals from sub-contractor and suppliers shall be submitted within two (2) weeks of the Contractor making a commitment to them.

The Contractor shall clearly identify all quality records that will be used for the Contract.

The Employer may undertake an inspection or quality audit of the Contractor's or sub-contractor's facilities at any time. Full quality records of procurement and manufacture shall be made available at the start of factory inspection and testing of equipment. Full quality records to the completion of installation shall be made available before the start of site testing.

Quality Plan

The Contractor shall ensure that its quality procedures address all requirements of the Specification. The Contractor shall ensure that the quality procedures of sub-contractor, manufacturers and suppliers address all requirements of the Specification, and that the Contractor's quality procedures provide verification of this.

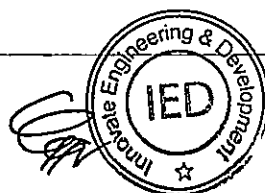
The Contractor shall prepare an overall Quality Plan for the Works, and shall provide detailed quality plans for all major sub-contractors and suppliers. Quality plans shall include:

Organization chart with identification and details of key personnel;

Inspection and Test Plans on which hold points and recommended inspections by the Employer are clearly shown.

Quality Plans shall be subject to the approval of the Employer. An initial Quality Plan shall

100
pg.5A



be submitted with one (1) month of the Effective Date of the Contract. A revised Quality Plan which includes full details of all Inspection and Test Plans shall be submitted within two (2) months of the Effective Date of the Contract.

Not less than two (2) months prior to mobilization to Site, the Contractor shall submit the Quality Plan revised to include a complete list of all site personnel detailing names, positions and responsibilities complete with an organization chart. The Contractor shall provide for approval full details, including curriculum vitae, of all engineering, technical and other key staff to be employed at site. Personnel shall not mobilize to Site prior to approval being given.

Measuring and Testing Equipment

All measuring and testing equipment shall have current calibration certification. Use of measuring and test equipment which is demonstrated to be calibrated against equipment which has such certification may be accepted.

Inspection and Test Records

The Contractor shall compile the reports of all factory and site tests into a volume of the Operation and Maintenance Manuals.

Equipment Identification and Preservation

The Contractor shall establish and maintain a system for the identification, preservation, segregation and handling of all equipment from receipt through manufacturing, dispatch, storage and installation to prevent abuse, misuse, damage, or deterioration by corrosion through exposure to air or moisture.

Standards

In the technical specification references have been made to various clauses of IEC; BS; ISO, BNBC, ASTM and ANSI standards. Where any standard referred to in this specification has been superseded by a new standard the reference shall be deemed to be to such superseding standards. Notwithstanding the standard numbers mentioned in the technical specification the tenderers are directed to apply the latest published editions of these standards.

Deviations from the specified standards referred to above shall be given in a Schedule of Proposed Standards and shall have to be accepted by the Employer before contract placement.

Standards and Code Not Specified:

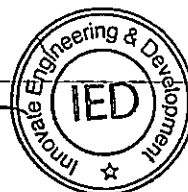
Where not specified, the IEC Standard and the Bangladesh National Building Code (BNBC) shall be applicable.

Units of Measurement

In all correspondence, in all technical schedules, on all drawings and for all instrument scales, S.I. units of measurement are to be employed. Angular measurement shall be in degrees with 90 degrees forming a right angle.

Facilities and Transport to Site

Chittagong & Mongla sea ports and Benapole land port are the principal port of entry for material to Bangladesh. The contractor shall provide his own storage facilities, security,



insurance etc.

The Contractor is responsible for performing all unloading, inland transportation and obtaining all approvals and consents etc. necessary for the movement Contractor's equipment from the port to the site.

All necessary access roads, jetties or off-loading points etc. required for the transport of the equipment etc. to site will be the Contractors responsibility.

Where heavy loads are to be moved, the Contractor shall be responsible for performing surveys of the routes to ensure that all portions have adequate load-bearing capacity.

A comprehensive method statement shall be submitted to the Project Manager detailing the proposed transport route(s) and requirements. Plans indicating all bridges, ducts, culverts, railway crossings, overhead lines, water mains etc. their load bearing capacity or clearances as appropriate shall be given together with proposed means of achieving the transportation requirements. Any reinforcement, strengthening, modifications or temporary works required to obtain the necessary capacity shall be the responsibility of the Contractor. The cost of the above is to be included in the tender price.

No plant/equipment is to be consigned to Bangladesh by airfreight without the prior written approval of the Employer.

Documentation

In order for the Employer to obtain the necessary import permits and satisfy the requirements of the customs authorities the following documentation is required.

Within 60 days of the effective date of Contract, the Contractor shall submit a detailed schedule of BESS that is to be provided under the Contract indicating the type of equipment and the name of the manufacturer. Six copies of the schedule are to be submitted to the Project Manager and the Employer.

Erection and Checking at Site

As each part of the works is erected, the Contractor shall seek the Employer's approval that the works have been constructed in accordance with the specification and approved drawings.

For purposes of progress payments for site work a monthly and cumulative system of joint measurement of work done for each section of work shall be set up by the Contractor in a manner approved by the Employer.

Any works constructed prior to the issue of drawings approved by the Employer for the particular works may not be included in the percentage completion figures.

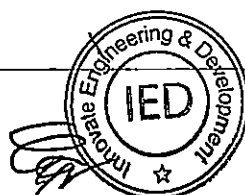
The Contractor is to provide such protection and watchmen as may be considered necessary to safeguard his materials and stores. The Employer will not accept responsibility for any loss or damage, which may occur during the execution of the Contract.

The carrying out of all the work included in the Contract shall be supervised by a sufficient number of qualified representatives of the Contractor, and full facilities and assistance shall be provided to the Employer to check the works. The Contractor shall obtain from the Employer details of the works that he proposes to inspect, but such inspection shall in no way exonerate the Contractor from any of his obligations. The Contractor, if required by the Employer, shall open for inspection before erection any equipment, which has been delivered


PG5A







to the site partly assembled.

On completion of the works the site shall be left clean and tidy to the satisfaction of the Employer. Any damage done to buildings, structures, plant or property belonging to the Employer shall be made good at the Contractor's expense.

The Contractor shall ensure the correctness of electrical and mechanical connections to all equipment supplied under the contract before such equipment is commissioned.

During erection and commissioning the Contractor shall provide all temporary scaffolding, ladders, platforms with toe boards and hand-rails essential for proper access of workmen and inspectors, cover or rail off dangerous opening or holes in floors, and afford adequate protection against materials falling from a higher level on a person below.

The maximum personal safety must be afforded to personnel either directly engaged on this Contract or who in the normal course of their occupations find it necessary to utilize temporary works erected by the Contractor or to frequent the working area.

In each and every case involving a connection between the BESS supplied under this Contract and any other existing plant/substation which may or may not be in service, the Contractor must make suitable arrangements as regards the time and manner in which the connection is made subject to the approval of Employer's Representative who is in charge of the existing plant/substation. Where cases arise involving the operation of the plant/substation or work on plant/substation in operation or whenever required by the Employer's Representative, the Contractor must obtain a written "Permit to Work" signed by a person duly authorized by the Employer.

Contractor's Responsibilities

Planning of Works

Within 30 days after the effective date of Contract, the Contractor shall prepare, in an agreed form, a detailed manufacture, delivery and erection program chart for the complete Contract works, and shall submit the chart to the Employer for approval.

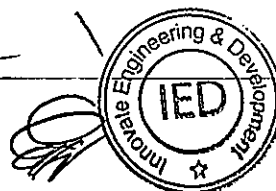
The manufacture, delivery and erection program chart shall indicate for each major item of the Contract the various phases of work from the commencement of the Contract to its completion, e.g., design, ordering of materials, manufacture, delivery, installation and commissioning. The program shall include a fully comprehensive drawings production program which shall demonstrate the Contractors intended issue dates for approval.

These presentations shall be in bar chart and precedence critical path analysis format.

The program shall indicate percentage completion points of the various phases which can form the basis of progress reporting.

A cash-flow forecast of the estimated monthly invoice values shall be included in the program. This forecast shall take into account the terms of payment and indicate down-payments, release of retention's, etc. Figures may be rounded to the nearest thousands of the appropriate currency.

The Contractor shall indicate in the program the number, grade and discipline of supervisory and managerial site staff proposed throughout the site construction periods. If specialist erection and commissioning staff are to be employed by the Contractor details of the number, discipline and duration of visit of these staff are to be indicated in the program. The



provision of this information will not form any contractual limit on the number of staff to be provided by the Contractor to ensure the timely completion of the Contract. Should any incident occur which, in the opinion of the Contractor will result in an over-run of any section of the Works this shall be indicated in the program and brought to the Employer's attention.

If, at any time during the execution of the Contract, it is found necessary to modify the approved manufacture, delivery and erection program chart, the Contractor shall inform the Employer and submit a modified chart for his approval. The submission, and subsequent approval, of a modified manufacture, delivery and erection program chart shall not necessarily obviate or diminish the Contractor's responsibilities and liabilities under the Contract. The chart shall be updated at monthly intervals and submitted to the Employer no later than the middle of each calendar month.

Progress Reports and Meetings

At monthly intervals after approval of the manufacture, delivery and erection program chart, the Contractor shall submit to the Employer updated bar chart programs and precedence critical path analysis networks in triplicate in an approved format indicating the stage reached in the design, ordering of material, manufacture, delivery and erection of all components of BESS. In addition, the Contractor will compile and submit "S-curves" based upon the approved program indicating programmed and actual percentage completion of the various stages of drawing approval, manufacture, shipping, civil works and erection for each section of the works plus the overall Contract.

An updated cash-flow forecast indicating previously forecast and actual, involving levels together with revised future requirements shall be submitted quarterly. A graphical display in the form of an "S-curve" of the actual vs. planned payment certification (on & offshore) shall be provided by the Contractor in triplicate on a quarterly basis to supplement the basic cash flow information.

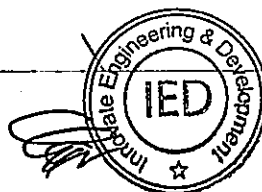
If, during execution of the Contract, the Employer considers the progress position of any section of the work to be unsatisfactory, or for any other reason relating to the Contract, he will be at liberty to call meetings, either in his head office or at site. If required by the Employer, a responsible representative from the Contractor is to attend at the Contractor's expense such meetings with sufficient authority to issue instructions or effect an alteration in the works to the satisfaction of the Employer.

Access to the Contractor's and Sub-contractor's works is to be granted to the Employers representative at all reasonable times for the purpose of ascertaining progress.

Sub-contracts and Orders

As soon as practicable after entering into the Contract the Contractor may, having obtained the Project Manager's consent, enter into the sub-contracts he considers necessary, for the satisfactory completion of the Contract works. Three un-priced copies of the Contractor's sub-orders shall be supplied to the Project Manager.

One copy of any drawings where the sub-order shall refer shall also be submitted. Each sub-order and drawing shall contain the following reference and an instruction that the B is subject to inspection and tests to be witnessed by the Project Manager or his agent with sufficient authority to issue instructions or effect an alternation in the works to the satisfaction



of the Project Manager. Approval by the Project Manager of Contractor's sub-orders shall not relieve the Contractor of his responsibilities in meeting this specification. It is the Contractor's responsibility to ensure that a full specification based on the relevant information in the Contract is passed to the sub-contractor.

The Contractor will be responsible for progressing the Sub-contractor's works including visits to the works to ensure the work as to program, specification, quality and drawings and to witness all necessary routine, sample and type tests. The cost of this Contract control is deemed to be included in the Contract sum.

6.2.13 Technical Requirement and Guarantee Schedule to be filled up by the Tenderer
Guaranteed Technical Particulars

(To be filled up appropriately, then to be signed and sealed by both Tenderer and Manufacturer in
Manufacturer's Letterhead Pad)

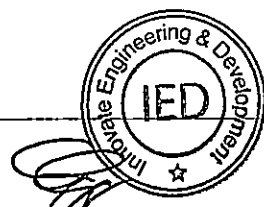
A. Battery and Battery Container:

SL	Description	Technical requirement	Manufacturer's guaranteed specification
A. General Data			
1.	Name of the Manufacturer		To be mentioned by the tenderer
2.	Address of the Manufacturer	-	To be mentioned by the tenderer
3.	Place of Manufacturing	-	To be mentioned by the tenderer

SL	Description	Unit	REB requirement	Tenderer's Guaranteed Values	Deviation (Yes/No)
A. Battery and Battery Container:					
1.Cell					
1.1	Battery Type		LiFePO4/NMC		
1.2	Nominal capacity	Ah	≥ 280 Ah		
1.3	Manufacturer		To be mentioned		
1.4	Model No		To be mentioned		
1.5	Maximum Charge Voltage/ Cut-off charge Voltage per cell	V	≤3.65		
1.6	Nominal/Rated Voltage per cell	V	≥ 3.2		
1.7	End-of-Discharge Voltage/ Cut-off Discharge Voltage	V	≥3.0		
1.8	Working Voltage Range (per cell)	V	Operating range: 3 – 3.65 V (per OEM		


Tenderer


Manufacturer



SL	Description	Unit	REB requirement	Tender's Guaranteed Values	Deviation (Yes/No)
			confirmation). Absolute cut-off: 2.0 – 3.65 V.		
1.9	Charge / Discharge Current (C-rate based)	A	Continuous: ≥ 0.5 C (~140 A for 280 Ah cell) Peak (10 s): ≥ 1.0 C (~280 A) or per OEM specification. Note: C-rate expresses current relative to cell capacity. Continuous current is safe long-term current; peak current allowed for short bursts only. BMS shall ensure currents remain within limits.		
1.10	Self-Discharge Rate	% / month	Self-discharge or standby energy loss rate shall not exceed 0.4% per month during construction or long-term storage, verified by factory test data.		
1.11	Total No. of Cell		$\geq 11,520$		
1.12	Dimensions of the Cells	mm	To be mentioned		
1.13	Weight of cell complete with electrolyte	kg	To be mentioned		
1.14	Internal resistance per cell when fully charged	Ohms	To be mentioned		
1.15	Material of battery case		Aluminum Alloy /Stainless Steel		
1.16	Nominal energy (Watt-hour (Wh))	Wh	> 896 Wh		
1.17	Working voltage range (per Cell)	V	Operating range: 2.5 – 3.65 V (per OEM confirmation). Absolute cut-off: 2.0 – 3.65 V.		
1.18	Operating temperature	°C	0 °C~50°C		
1.19	Cycle Time		The Battery System shall guarantee $\geq 70\%$ capacity		

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
			retention after 12 years of operation OR ≥ 8760 equivalent full cycles at 80% DoD (2 cycles per day for 12 years), whichever comes first		
1.20	DOD		> 90%		
1.21	Round Trip Energy Efficiency		$\geq 90\%$ (BOL), $\geq 82\%$ (EOL) Bidder shall provide round-trip efficiency degradation schedule over system life.		
1.22	Marking		Cell type, date of manufacture, rated capacity, name of manufacturer, nominal voltage, appropriate caution statement		
1.23	Protection		Cell blocks to include protective devices (fuse/PTC) and monitoring circuitry. For thermal management under the intended duty cycle, active or passive cooling should be built into the system. This can consist of metal fins to conduct heat away from cells, convective cooling vents, phase-change materials, fans and other design components as necessary. The system shall comply with IEC 62619 and successfully pass the UL 9540A thermal runaway test. The supplier shall provide third-party test reports		

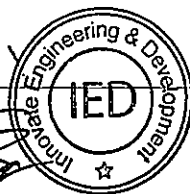


SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
			proving that, in case of cell failure, the event is safely contained and does not spread to other cells or modules		
1.24	Tolerances		$\pm 0.5\%$ for voltage, $\pm 1\%$ for current, $\pm 2\%$ for temperature, $\pm 1\%$ for Dimensions		
1.25	Standard		UL 1642, UL 1973, IEC 62620, UN 38.3, ISO 9001, ISO 14001		
1.26	Disposal Instruction		To be mentioned		
1.27	Recommend Charge Instruction		CC-CV charging per OEM; float/boost not applicable. BMS shall ensure safe voltage, current, and temperature limits.		
1.28	Cell Designation		To be mentioned		
1.29	Cell Endurance		Capacity $\geq 85\%$ of rated value after 90 days		
1.30	Safety / Abuse Tolerance		Cells to meet IEC 62619: overcharge, short-circuit, thermal abuse tests		
1.31	End of life Capacity		To be mentioned		
1.32	Cell Venting and Gas Management		To be mentioned		
2.Module					
2.1	Battery module/capacity	Ah	> 280 Ah		
2.2	Battery box composition		1P16S or equivalent (To be mentioned by the tenderer)		
2.3	Dimensions (LxWxH) mm		493x772x229 (± 2 mm) or equivalent		

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
			(To be mentioned by the tenderer)		
2.4	Rated voltage	V	> 51.2 V		
2.5	Nominal Capacity	Ah	> 280 Ah		
2.6	Nominal Energy	kWh	> 14.336 kWh		
2.7	Allowable maximum operating temperature range	°C	Charging: 0 °C~65 °C Discharging: -20~55°C		
2.8	Protection		Modules will be connected with protective devices (e.g. fuse or PTC) and monitoring circuitry		
3.Cluster					
3.1	Nominal voltage	V	> 1000V		
3.2	Voltage range	V	1000V~1500V		
3.3	Pack		1P384S or equivalent (To be mentioned by the tenderer.)		
3.4	C-rate	C	0.5C		
3.5	Rated Capacity		> 344 kWh or as required (To be mentioned by the tenderer.)		
3.6	Communication method		CAN/Ethernet/RS485/Equivalent		
3.7	Protection		Clusters will be connected with protective devices (e.g. fuse or PTC) and monitoring circuitry		
3.8	Cluster Structure Formulation (up to cell level)		To be mentioned		
3.9	Redundant Cluster		To be provided for emergency		

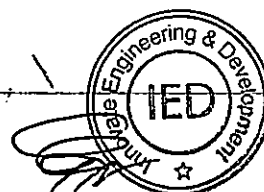
SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
4. Battery Container					
4.1	Rated Voltage	V	1000V - 1500V		
4.2	Rated Capacity	MWh	2x5 MWh (End of life must be $\geq 2x5$ MWh)		
4.3	Rated Power	MW	2x2.5 MW (End of life must be $\geq 2x2.5$ MW)		
4.4	Max Current	A	(To be mentioned by the tenderer.)		
4.5	Weight	kg	(To be mentioned by the tenderer.)		
4.6	Dimension (L-B-W) of Battery Racks & Enclosures		20HC (6058x2438x2896mm) or equivalent, Standard 20 feet container. Containerized Solution with Battery Racks & Modules, Internal General Arrangement (GA). RAL 7035 or Off-white colored or better and with customized logo, IP65 or better, Shock proof, Rust proof, Anti-corrosion. (Standard Specification and Drawings to be submitted)		
4.7	Outdoor rated (IP Degree)		IP65 or better		
4.8	Anti- corrosion Degree		C3/C4/C5		
4.9	C-Rate	C	0.5C		
4.10	Storage Temperature		0 °C ~ 65 °C		
4.11	Battery Cooling System		Each Battery Container have internal Air / Liquid Cooling Systems. Cooling System to be designed as per the proposed locations' climate, to keep the batteries within their		

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
			optimum operating temperature to extend battery life. The design should emphasize efficient power consumption of the cooling system. (Detail calculations to be submitted)		
4.12	DC Power Distribution System		All cables and protective equipment required to be included. (Detail Specifications & Design to be provided)		
4.13	DC Output		To be mentioned by the tenderer		
4.14	Temp Control		Liquid Cooling		
4.15	Fire Fighting		FK5112 and Reserve water and spraying		
4.16	Altitude	m	Less or equal to 500m		
4.17	Operating Temperature	°C	0°C - 50° C		
4.18	Auxiliary Power	kW	≤ 60 kW		
4.19	Efficiency		≥ 93%		
4.20	Communication		CAN/Ethernet/Dry Contact		
4.21	Color		RAL7035 or better		
4.22	Noise	dB	≤80 dB		
4.23	Seismic Fortification (Earthquake)		8 level		
4.24	Maintenance		To be mentioned (Periodic maintenance with specified maintenance interval, cleaning or replacement of air filters in cabinets and checks of fire-suppression systems)		



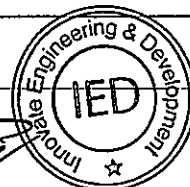
SL	Description	Unit	REB requirement	Tenders Guaranteed Values	Deviation (Yes/No)
4.25	Component Replacement		To be mentioned (User replaceable or not, if yes then proper guideline book)		
5.Compliance					
5.1	UL		UL1973 (for safety and qualification of battery modules/packs and some system-level requirements used in BESS), UL9540 (for complete energy storage system (ESS) certification, covering safety, performance, and construction requirements of integrated battery + PCS + control systems), UL9540A (for testing the thermal runaway and fire propagation characteristics of BESS)		
5.2	IEC		IEC62619 (for safety requirements and testing of secondary lithium cells and batteries used in BESS applications), IEC63056 (for safety requirements of lithium cells and batteries specifically used in electrical energy storage systems), IEC61000 series (for Electromagnetic Compatibility (EMC): includes emission, immunity, and harmonic distortion tests for PCS, BMS, and auxiliary control systems.), IEC 62477-1 (for safety requirements of power electronic		

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
			converter systems (PCS) connected to the grid or batteries.), IEC 62933-5-2 (for safety requirements of grid-integrated electrochemical energy storage systems)		
5.3	UN		UN38.3 (for transport safety testing of lithium cells and batteries), UN3536 (for classification and transport regulations of lithium batteries installed in BESS containers)		
6.Fire Protection System					
6.1	Power supply	V	AC 230V		
6.2	Communication		CAN, RS485, dry contact		
6.3	Operating temperature	°C	0°C - 50°C		
6.4	Fire detection method		Temperature, Smoke detectors		
6.5	Fire extinguishing method		Fully automatic		
6.6	Fire extinguishing agent type		Perfluorohexanone		
6.7	Startup method		Automatic, manual and emergency start/stop		
6.8	Product Certification		UL and FM (USA), CE and EN 54 (Europe), Other regionally or internationally recognized certifications relevant to fire protection, safety, and performance. Note: Tenderers shall specify equivalent certifications for proposed components to ensure		



SL	Description	Unit	REB requirement	Tender's Guaranteed Values	Deviation (Yes/No)
			safety and regulatory compliance.		
7. Battery management system					
7.1	Battery Management System (BMS)		Smart BMS Features: Cell Level Monitoring & Management. Current Rating should match the peak charge-discharge current of Cell, Pack & Cluster. Active cell Balancing. Over & Under Voltage Protection; Over Current, Short Circuit & Reverse Polarity Protection; Temperature Monitoring & Compensation; Deep Discharge Protection, Alarm, sleep mode, three type of indications- Permanent shutdown (non-recoverable without service/replacement), Self-resetting shutdown (automatically restarts when conditions return to normal), Manual reset shutdown (requires operator intervention to restore operation); Communication: UART / CANBUS /Equivalent. There may be one Master BMS and several Slave BMS to ensure efficient and safe operation. (Detailed specification and configuration drawings to be submitted)		

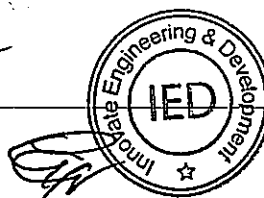
B. Power Conversion System (PCS):



SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)

1. Power Conversion System (PCS): Bidirectional Power Conversion System. Grid-forming mode. High-Efficiency along with bi-directional transformer

1.1	Communication access method		Three-phase three-wire		
1.2	Rated Power at 50°C	MW	≥5 MW		
1.3	Overload capacity		110%: Long-term operation 120%: no less than 1 minute		
1.4	Rated AC voltage	V _{ac}	400 V to 800 V _{ac}		
1.5	Rated current	A	1045 A or as required (To be mentioned by the tenderer)		
1.6	Rated Capacity	MVA	6.25 MVA		
1.7	Rated Grid and PCS frequency	Hz	50±1% Hz (The frequency is consistent with the grid frequency.)		
1.8	Total current waveform distortion (THDi)		≤2% (rated power) to maintain grid code		
1.9	Power Factor		The PCS can adjust its power factor from 0.9 lagging to 0.9 leading to help regulate grid voltage and improve power quality.		
1.10	DC voltage range	V	1000 V - 1500 V		
1.11	Low Voltage Ride Through		Should Comply		
1.12	High Voltage Ride Through		Should Comply		
1.13	Anti-islanding protection		Should Comply		
1.14	Protection features		AC Side: AC Filter, EMC, AC CB, AC SPD and anything that is needed for smooth		



SL	Description	Unit	REB requirement	Tender's Guaranteed Values	Deviation (Yes/No)
			operation and high-level safety DC Side: DC SPD, Disconnect switch, EMC, Isolation Fuse and anything that is needed for smooth operation and high-level safety Component Fault Recordings and Alarms.		
1.15	Maximum efficiency		≥ 98 %		
1.16	Dimensions	mm	40 HC (12192x2438x2896 mm), Standard 40 feet container or equivalent		
1.17	Enclosure protection grade		IP65 or better		
1.18	Cooling method		Air Cooling/Liquid cooling		
1.19	Communication interface		CAN, RS485, Ethernet port, expandable		
1.20	Operating temperature	°C	0 °C- 50 °C (> 45 °C derating)		
1.21	Storage temperature	°C	-0 °C - 65 °C		
1.22	Allowable relative humidity		5% ~ 95%, no condensation		
1.23	Altitude	m	500m (> 300m derating)		
1.24	Certifications of Standards		All battery cells, PCS, and ESS components shall comply with internationally recognized safety and performance standards relevant to their function and region of supply, including but not limited to IEC 62909-1, IEC 62477-1, IEEE 1547-2018, UL 1741, IEC 61000 series, IEC 61850, Modbus		

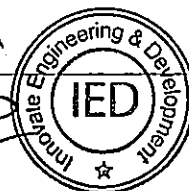
SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
			TCP, DNP3, IEC 60529, IEC 60068, UL 1642, IEC 62619, UN38.3, or their equivalents. Tenderers must provide valid compliance documentation.		
1.25	Modes of operation		The PCS shall have a continuous active power rating equal to the BESS nominal power (5 MW) and shall support grid-following operation. The BESS system shall provide voltage support and frequency response in grid-connected mode, and Critical Load Backup (CLB) to designated feeders during grid outages		
1.26	Warranty		5 Years warranty.		
Power Conversion System (PCS): AC Side					
1.27	Nominal Power	MW	5 MW		
1.28	Nominal Capacity	MVA	6.25 MVA		
1.29	Nominal MV Voltage	kV	11kV		
1.30	Nominal LV Voltage	V	690 V		
1.31	Nominal Current	A	4184 A or as required		
1.32	Rated Grid frequency	Hz	50 Hz		
1.33	Overload Capacity		110% Pn Long term, 120% Pn (less than 1min)		
Power Conversion System (PCS): DC Side					
1.34	Full Power DC Voltage Range	V	1000-1500V		

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
1.35	No of DC input channels		To be mentioned by the tenderer		
Environmental and Thermal Performance of the PCS					
1.36	Temperature Derating		Manufacturer shall specify derating curves vs. temperature. PCS shall maintain full rated power output at ambient temperature $\leq 45^{\circ}\text{C}$ without thermal derating.		
MV bi-directional transformer					
1.37	11 KV Transformer		Step-up/step down transformers and vice versa, 11/0.69kV AC, 6.25MVA, Dyn11, tap changer $\pm 5\%$ (Detailed design and specification to be provided)		
1.38	Performance		The PCS bi-directional Transformer efficiency $\geq 99\%$ at rated load, no-load losses $\leq 10\text{kW}$, and load losses $\leq 57\text{kW}$ Percentage impedance minimum 7% (according to IEC60076-5)		
1.39	Enclosure		Containerized Solution with PCS and Transformers, Outdoor Rated, IP65 or better; Color RAL 7035. Size: Standard 40 feet or available standard sized Container as per the area and condition of each site, Internal General Arrangement (GA) and Drawings to be submitted.		

SL	Description	Unit	REB requirement	Tenders Guaranteed Values	Deviation (Yes/No)
2. Energy Management System (EMS)					
2.1	Energy Management System (EMS)-Real-Time Monitoring & Control of the parameters of PCS, BMS, and Grid. Customizable modes of automatic operation of BESS.		EMS should be capable of operating the system with pre-set strategies in automatic mode. For Manual Mode HMI interface to be provided for easy operation. The EMS should offer comprehensive visual monitoring & operation interface, displaying all data through topology diagrams, list data, curves, bar charts, distribution maps and other formats. The interface should be intuitive, user-friendly and efficient. Multi-Level Alarm & Fault notification through SCADA, Email, or other methods. Historical Data of Equipment, Power flow, Alarms, Fault records, Operation & Control Log. Statistical & Performance analysis report of the BESS to be generated from EMS. Control Modes: SOC control, Power control, Grid services, Time-of-Use. Supported Protocols: Modbus TCP /RTU, IEC 60870-5-104, DNP3, IEC 61850, OPC UA, SNMP Data Sampling Rate: 1 second or faster for real-time data streams User Interface: Web-based HMI, local touchscreen HMI ($\geq 10''$), mobile		

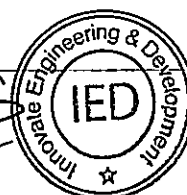
SL	Description	Unit	REB requirement	Tenderer's Guaranteed Values	Deviation (Yes/No)
			interface (optional). Data Logging Capacity: ≥ 5 years historical data (local + cloud-based backup). Time Synchronization: NTP or GPS-based for synchronized event logging Redundancy: Dual power supply (24V DC), optional hot standby controller. Remote Access: TLS encryption, secure boot, audit logs, firewall. SCADA Interface: Integrated or external SCADA support. Communication Ports: Ethernet (x4), Serial (x4), USB (x2), Fiber (optional). Power Supply: 24V or 48V DC or 230V AC, UPS-backed for uninterrupted operation. It should charge the BESS in 5 hour on off-peak hour, and time can be reconfigurable manually.		
C. Remote Terminal Unit (RTU) / PLC					
3.1	Remote Terminal Unit (RTU) / PLC-Communication with BESS system components and existing substation components.		The Remote Terminal Unit (RTU) acts as the field-level data acquisition and control interface between the BESS and the utility SCADA or central Energy Management System (EMS). It provides real-time telemetry, control command execution, event logging, and protocol conversion.		

SL	Description	Unit	REB requirement	Tenders Guaranteed Values	Deviation (Yes/No)
			The RTU collects and transmits operational data and executes control logic as per supervisory commands, contributing to grid stability, visibility, and effective dispatch of BESS resources.		
4	ATS		The Automatic Transfer Switch (ATS) or equivalent motorized switchgear shall provide fast, safe, and reliable physical switching between the grid and the Battery Energy Storage System (BESS) at the 11 kV level. The ATS is responsible for ensuring seamless transfer of power sources within a specified maximum transfer time (typically ≤ 100 ms) to maintain continuous power supply and system protection. The Energy Management System (EMS) shall perform high-level monitoring, control, and optimization of energy flows between the grid, BESS, and loads. While the EMS manages operational logic and sends control commands, it does not perform physical switching; this is the role of the ATS or other switching devices. Both ATS and EMS shall be integrated to ensure coordinated operation,		



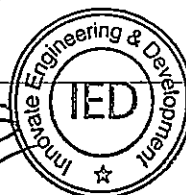
SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
			safety, and compliance with relevant standards and project requirements. The contractor shall provide detailed technical specifications, integration diagrams, and operation procedures demonstrating the interface between the ATS and EMS.		
5	Communication Infrastructure		Fiber/copper, modems, switches, etc., for uninterrupted communication. Detailed Design & Specifications to be submitted.		
6	Data Logger & Backup Systems		Data Logger: Each BESS container (2 x 20-foot, 2.5 MW/5 MWh, liquid-cooled) shall be equipped with an industrial-grade data logger to collect, timestamp, and archive real-time and historical data from: - BMS: Cell voltage, temperature, SoC, SoH, fault status, alarms. - PCS: AC/DC voltages, currents, frequency, harmonics. - EMS: Charge/discharge setpoints, power profiles, grid interaction, schedules. - HVAC Cooling System: Pump status, coolant temperature, fan RPM. - Fire Detection & Suppression System: Smoke/gas alarm events, suppression status. - Environmental		

SL	Description	Unit	REB requirement	Tender's Guaranteed Values	Deviation (Yes/No)
			Monitoring: Room temperature, humidity. Data Logger Features: - Logging interval: Configurable, ≤ 1 second. - Protocols: Modbus (RTU/TCP), TCP/IP, RS-485, OPC-UA. - Local buffering: ≥ 32 GB to ensure data retention during communication disruptions. - Communication: Dual Ethernet ports, USB, serial interfaces. - Web-based interface for diagnostics and configuration. Server: 1. Processor Requirement Recommended Type: - Intel Xeon E3, Silver Series, or higher - Alternatives: Intel Core i7 or i9 (latest generation) Core Requirements: - Minimum 8 cores or more - Support for Hyper-Threading (HT) and Virtualization Technology Purpose: - Efficient multi-threaded data handling - Reliable support for database and SCADA applications		



SL	Description	Unit	REB requirement	Tenderer's Guaranteed Values	Deviation (Yes/No)
			2. RAM Requirement Recommended Type: - Min. 32 GB DDR4 RAM - ECC (Error-Correcting Code) memory is preferred for server-grade reliability Purpose: - Smooth operation of SCADA, database, and HMI systems - Stability under 24/7 logging and analysis load 3. Storage Requirement Recommended Type: - Minimum 1 TB SSD (preferably enterprise-grade) - RAID 1 configuration for redundancy and data integrity - 2 TB SSD preferred for large-scale data storage Buffering Requirements: - Minimum Local Buffering: ≥ 32 GB for temporary data caching Network Attached Storage (NAS): - Optional but recommended for backup and archival purposes - NAS should support SMB/NFS with redundancy		

SL	Description	Unit	REB requirement	Tender's Guaranteed Values	Deviation (Yes/No)
			4. Network and Communication Required Ports and Features: - 2× Ethernet ports (1 Gbps or higher) - USB ports for local data retrieval - RS-485 port for Modbus RTU communication (optional) Protocol Support: - Modbus TCP/IP, OPC-UA, TCP/IP - Optional: DNP3, IEC 61850 Internet Connectivity: - Required for cloud sync, remote access via VPN, firmware updates, and SCADA/EMS integration - Secure VPN connection for remote diagnostics and control 5. Operating System Recommended OS: - Linux Ubuntu LTS (preferred for flexibility, cost, and reliability) - Windows Server 2019 (for legacy SCADA/HMI support) 6. HMI/SCADA Software Compatibility Recommended Platforms:		



SL	Description	Unit	REB requirement	Tender's Guaranteed Values	Deviation (Yes/No)
			- Wonderware - Ignition - Siemens WinCC - Web-based HMI Functionality: - Real-time data visualization - Alarm/event tracking - Historical trend plotting - Remote access via VPN or LAN 7. In consideration of diverse client and regulatory preferences, the data storage system shall prioritize secure and reliable local physical storage as the primary repository. However, to enhance data availability, redundancy, and disaster recovery capabilities, optional integration with secure cloud storage platforms is encouraged. All data transmission must utilize encrypted protocols (e.g., REST APIs, MQTT) to ensure confidentiality and integrity both in transit and at rest. This flexible approach balances security, operational resilience, and compliance with varying regional requirements, without mandating cloud storage as a compulsory component.		

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
			Physical Storage Integration: - RAID 1 or RAID 5 for redundancy - NAS devices for automated backup (via rsync/NFS/SMB) - Use of firewall and network segmentation to protect local storage		

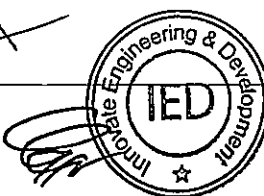
D. Grid Integration at 11kV:

1. Extended 11kV Bus bar specifications

1.1	Manufacturer's Name & Address		To be mentioned by tenderer		
1.2	Type		Single busbar		
1.3	Material		Copper		
1.4	Technical Specification		11 kV 2000A-2500A, Same or similar with existing Bus bar with Bus PT. Ratio: $11000/\sqrt{3}:110/\sqrt{3}:110/\sqrt{3}$ V, Short Circuit current capacity: 31.5kA for 3 sec. Control, Relay, Protection with SAS/ SCADA facilities including 0.2S class programmable energy meter		
1.5	Dimension (Height x Width x Depth)		Same or similar or compatible with the existing 11kV Busbars in existing substations.		

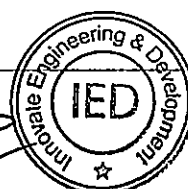
2. 11kV Bus Sectionalize Switchgear panel with or without Bus Raiser

2.1	Manufacturer's Name & Address		To be mentioned by tenderer		



SL	Description	Unit	REB requirement	Tenderer's Guaranteed Values	Deviation (Yes/No)
2.2	Bus Circuit Breaker Type		Indoor, Horizontal draw-out type VCB. Spring-charged, motor operated mechanism with manual back up. Mechanical and electrical interlocking for safety. (Same or similar or compatible with the existing 11kV bus section circuit breaker in existing substation).		
2.3	Rated Frequency	Hz	50 Hz		
2.4	Rated nominal voltage	kV	11 kV		
2.5	Rated voltage	kV	12 kV		
2.6	Rated Current for main bus	A	2000 A-2500 A		
2.7	Rated short-time current for the main bus	kA	31.5 kA		
2.8	Short time current rated duration	sec	3 sec		
3. 11kV Switchgear panels					
3.1	Manufacturer's Name & Address		To be mentioned		
3.2	Circuit Breaker Type		Indoor, Horizontal draw-out type VCB. Spring-charged, motor operated mechanism with manual back up. Mechanical and electrical interlocking for safety (Same or similar or compatible with the existing 11kV circuit breakers in existing substation)		
3.3	Protection & Metering Panels		CTs, PTs, Multifunction meters, numerical relays. Must comply with IEC		

SL	Description	Unit	REB requirement	Tender's Guaranteed Values	Deviation (Yes/No)
			standards and technical specs given in HS-11.1250.		
3.4	Rated Voltage	kV	12		
3.5	Rated Current	A	800/630 A		
3.6	Rated short circuit breaking current	kA	31.5 kA		
3.7	Rated short circuit making current	kA	80 kA		
3.8	Rated breaking time		3 cycles		
3.9	Opening time	ms	60 ms (Reference standard to be mentioned)		
3.10	Closing time	ms	60 ms (Reference standard to be mentioned.)		
3.11	Rated Operating Sequence		0-0.3 sec-CO-3 min-CO		
3.12	AC withstand voltage 1 min. dry	kV	28 kV		
3.13	Impulse withstands, full wave	kV	75 kV		
3.14	DC Control voltage V	V	DC 110V		
3.15	Motor voltage for spring charge, V	V	180-240V AC		
4. Current Transformer					
4.1	Manufacturer's Name & Address		To be mentioned		
4.2	Rated Voltage	kV	12 kV		
4.3	Accuracy class, Metering		0.2S		
4.4	Accuracy class, Protection		5P20		
4.5	Accuracy class, Tertiary		3		
4.6	Rated current ratio		600-300/1-1-1 A		

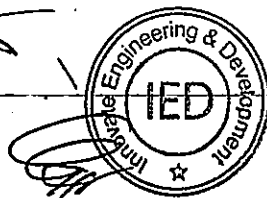


SL	Description	Unit	REB requirement	Tenderer's Guaranteed Values	Deviation (Yes/No)
4.7	Burden Secondary	VA	Metering 15 VA, Protection 15 VA		
4.8	Burden Tertiary (Indication, SCADA)	VA	5		
4.9	Rated Frequency	Hz	50 Hz		
4.10	Insulation Level		12/ 28/ 75 kV (IEC 60044, IEC 61869-2)		
4.11	Compliance		IEC-60044-1, IEC- 61869-2		
5. Voltage Transformer					
5.1	Manufacturer's Name & Address		To be mentioned		
5.2	Number of phases		3		
5.3	Rated primary voltage	kV	11kV/ $\sqrt{3}$ kV		
5.4	Rated secondary voltage	V	110/ $\sqrt{3}$ V		
5.5	Rated tertiary voltage	V	110/ $\sqrt{3}$ V		
5.6	Rated burden, Secondary	VA	Metering: 50 VA. Protection: 100 VA		
5.7	Rated burden, Tertiary (Indication, SCADA, Sync-check)	VA	25 VA		
5.8	Accuracy class, Secondary		Metering: 0.2 Protection: 3P		
5.9	Accuracy class, Tertiary		3		
6. 11 kV Cables with Termination					
6.1	Cable Termination at 11kV AIS with PCS Transformer of the BESS		3x185 mm ² 11 kV, XLPE CU cable with required termination for connecting 11 KV AIS with the BESS output and wherever required.		
7. LV AC- DC cable, Fiber Optic Cable, LV AC - DC Distribution Board and Control Cable					

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
7.1	LV AC Power cables		415V, insulated with ferrule and protective equipment wherever required. (As per standard requirements)		
7.2	LV DC Control cable		110V, insulated with ferrule and protective equipment (As per standard requirements)		
7.3	DC Distribution Board (DCDB)		1500 DC Cables (Battery to PCS and wherever required), MCB/MCCB protected, insulated with ferrules and other equipment wherever required. (As per standard requirements)		
7.4	LV AC Distribution Panel (ACDB)		415V, MCB/MCCB protected, HVAC, Lighting, control power, etc (As per standard requirements.)		
7.5	Fiber Optic Cable		Multiplexer Cable for Protection and Communication. (As per standard requirements)		
8. Earthing System					
8.1	Earthing System includes grounding cables and accessories.		Supply, installation, testing and commissioning of Earthing system including grounding cables and accessories based on IEEE 80-2013. Chemical/plate/rod earthing for battery and		

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
			encloser, PCS, transformers, lightning protection etc. wherever and whatever required to get earthing resistance less than 0.5 ohm.		
9. SCADA Integration for BESS and Substation Interface, Cybersecurity, Data Ownership & Maintenance					
9.1	Data Ownership		All operational data remains the property of the Employer (BREB). Any cloud-based storage must be located in-country or fully accessible to the Employer at anytime from anywhere.		
9.2	Cybersecurity		The system shall follow ISO/IEC 27001 and IEC 62443-4-2 cybersecurity standards, with yearly checks for vulnerabilities and regular software updates to fix any security or performance issues.		
9.3	SCADA Integration for BESS and Substation Interface		A dedicated SCADA system shall be implemented for the Battery Energy Storage System (BESS) and the newly created 11 kV bus section, which will serve two selected feeders of the substation. Although the existing substation does not currently have a SCADA interface, the contractor shall ensure that the new bus section and all connected equipment are fully SCADA-controlled. The system shall provide comprehensive real-time monitoring, control and		

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
			data logging for all BESS components and all devices connected to the dedicated bus section, ensuring full operational visibility and seamless integration with the 11 kV grid. The SCADA system shall monitor battery containers, capturing cell voltage, temperature, state of charge (SoC), state of health (SoH), fault status, alarms, and cooling system operation. It shall also cover the Power Conversion System (PCS), recording AC and DC voltages, currents, frequency, power factor, harmonics, protection status, and other operational parameters. Energy Management System (EMS) functions, including charge and discharge setpoints, SoC management, grid support modes, alarms, and operational events, shall also be integrated. In addition, all devices connected to the dedicated bus section, such as breakers, busbars, transformers, protection relays, and metering equipment, shall be fully monitored. Auxiliary systems, including fire detection and suppression, HVAC, lighting, and control power, shall also be part of		



SL	Description	Unit	REB requirement	Tenders Guaranteed Values	Deviation (Yes/No)
			the SCADA monitoring and control scope. The SCADA system shall utilize standard communication protocols, specifically IEC 60870-5-104 and Modbus TCP/IP, to ensure interoperability. The contractor shall provide a detailed data point mapping list, specifying all monitored and controlled signals with proper tagging and hierarchy, allowing future integration with a central EMS or the existing substation SCADA. All data shall be securely stored locally, with optional in-country cloud access available to BREB. The system shall support visualization, multi-level alarms, historical trending, and comprehensive reporting, covering every monitored point to ensure efficient, safe, and reliable operation, maintenance, and management of the BESS and the dedicated 11 kV bus section.		
10. Auxiliary Power Supply for BESS					
10.1	BESS and any other supply requirements		The Contractor shall design, supply, install, test, and commission a complete auxiliary power system to ensure uninterrupted and reliable operation of the BESS under all operating conditions, including normal grid-connected		

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
			operation and Critical Load Backup (CLB) to designated feeders during grid outages. This shall include, but not be limited to, suitable transformers and all associated equipment required to power auxiliary loads such as PCS units, battery enclosures, control systems, HVAC, lighting, safety, and protection systems. The auxiliary system shall be integrated with the system AC bus or PCS AC output as needed. All components necessary to meet the functional, safety, and performance requirements of the PSA and applicable standards shall be provided, regardless of whether explicitly mentioned. No omission of any essential auxiliary provision will be accepted		
11	Type Test Reports		The Contractor shall ensure that all main equipment supplied under this project is supported by valid type test reports or equivalent verification documents. This requirement specifically applies to Battery Cells, Battery Modules and Clusters, Battery Containers, Power Conversion System (PCS),		

SL	Description	Unit	REB requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
			MV/LV Transformers, Switchgears and Protection Devices, and Fire Detection and Suppression Systems.		

Seal & Signature of the Manufacturer

Seal & Signature of the Tenderer

Note:

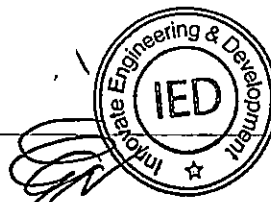
- i. Tenderers are suggested to visit the site before participating in the tender and submitting tender documents to assist the requirements for integration with existing systems.
- ii. Tenderers are suggested to visit the site for the preparation of the detailed design of switchgear panel requirements for integration with existing systems.
- iii. All extensions and rearrangements shall be carried out within the available room space and existing layout limitations, as all substations have area constraints, ensuring proper fitment without requiring any building modification.
- iv. Detailed Battery Recycling and Disposal Procedure to be submitted.
- v. Provide third-party test reports for verification
- vi. Reference standard to be mentioned.

[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

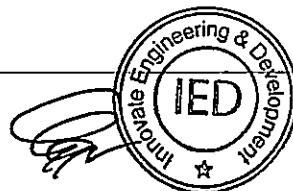


6.2.14: Miscellaneous

DESKTOP/LAPTOP COMPUTERS & ACCESSORIES
TECHNICAL REQUIREMENT AND GUARANTEE SCHEDULE
For Desktop/Laptop Computers & Accessories

(To be filled up by the Tenderer with appropriate data, otherwise the Tender will be rejected)

SL	Technical Particular's	Unit	REB Requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
1	Desktop Computer (Brand)				
2	Brand		Internationally Reputed Brand		
3	Model		To be Mentioned by Tenderer		
4	Country of Origin		USA/UK/JAPAN/ Other eligible countries may be accepted where equivalent quality can be demonstrated (Acceptance of equivalency will depend on Employer)		
5	Processor		Intel core i5 11 th Generation or Higher		
6	Speed	GHz	Minimum 2.9 GHz to 4.00Ghz, 6 Cores) or Higher		
7	Cache	MB	Minimum 9MB or Higher		
8	Chipset		Intel Express Chipset B400 Series or Equivalent or Higher		
9	RAM	GB	Minimum 8GB 2666MHz DDR4L Memory, 2 DIMM slots or Higher.		
10	HDD	TB	Minimum 1TB 7200 RPM SATA or Higher		
11	SSD	GB	Minimum 120GB or Higher		
12	LAN Card		Integrated Gigabit LAN-On-Motherboard or Higher		
13	Expansion Slots	nos	Minimum (2) PCIe x 1, PCIe x 16		



SL	Technical Particular's	Unit	REB Requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
14	Ports	nos	Minimum (2) USB 3.0, (4) USB 2.0, RJ-45, HDMI, VGA/Display		
15	Wireless		Built-in Wireless 802.11/b/g/n (2.4 GHZ)		
16	Graphics (AGP)		Built-in		
17	Audio (Sound Card)		Built-in		
18	DVD-RW Drive	nos	DVD+/-RW Drive		
19	Monitor	nos	18.5" LED Backlit Color, Same Brand		
20	Key-Board	nos	USB enhanced, Same Brand		
21	Mouse	nos	USB Optical Mouse, Same Brand		
22	Power Supply	W	Minimum 240 W PSU (APFC Full Charge)		
23	OS Support		Windows 10 or User Friendly.		
24	Software		Windows 10, Office & Other Software as per site requirements.		
25	Power Strip	nos	Brand: Reputed Brand Port: Minimum 5 Port Cable Length: 3 meters Number of pins: Minimum 3 Others: Rated voltage: 220 V, Rated current: Minimum 10 A, Individual switch, Single fuse.		
26	Antivirus	nos	Brand: To be Mentioned By the tenderer Internet Security Antivirus, license for 1 year		
27	Warranty	Years	2 Years.		
28	Laptop (Note Book) Computer				
29	Brand		Internationally Reputed Brand		
30	Model		To be Mentioned by tenderer		
31	Country of Origin		USA/UK/JAPAN/Other eligible countries may be accepted where equivalent quality can be		

SL	Technical Particular's	Unit	REB Requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
			demonstrated (Acceptance of equivalency will depend on Employer)		
32	Processor		Intel Core i5 (11 th Generation) or Higher		
33	Speed	GHz	Minimum 1.6 GHz or Higher		
34	Cache	MB	12 MB L3 Cache.		
35	RAM	GB	Min. 8GB DDR4, 2666 MHz or Higher		
36	Display		Min. 14"HD LED		
37	Graphics		Intel HD Graphics		
38	SSD	GB	Minimum 512 GB SSD or Higher		
39	Sound System		To be mentioned by the tenderer		
40	Keyboard		Full-size 85 Keys US Keyboard.		
41	Mouse		Integrated pointing device with touch pad.		
42	Wireless		Integrated		
43	NIC		In-built with 10/100/1000		
44	Web cam		Integrated		
45	Slots		1 Multi-Format Digital Media Card Reader for Secure Digital cards, Multimedia Cards.		
46	Expansion Ports/Interface	nos	Min. 3 USB 3.1, 1 HDMI, 1 Microphone/ Head -phone combo, 1 RJ-45		
47	Battery	Wh	Min. 6 Hours Back-up time, 3 Cell 41Whr.		
48	Antivirus	nos	Brand: To be Mentioned by tenderer Internet Security Antivirus, license for 1 year		
49	Power Supply		Universal 100 – 240V AC Adaptor for worldwide usage.		

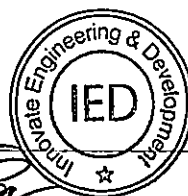
SL	Technical Particular's	Unit	REB Requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
50	Operating System		Free Dos		
51	Carrying Case		Including Original Carrying case		
52	Standard		ISO, CE & FCC Class-B.		
53	Warranty	Years	2 Years.		
54	UPS (Un-interruptible Power Supply)				
55	Brand		Internationally/Nationally Reputed Brand		
56	Model		To be Mentioned by tenderer		
57	Country of Origin		To be Mentioned by tenderer		
58	Capacity	VA	Min.1000VA or Higher		
59	Backup time	hr	Minimum 1 Hour for One CPU and Monitor.		
60	Input voltage range	VAC	Minimum 145-280VAC.		
61	Frequency	Hz	50 Hz + 1%.		
62	Protection		Fuse. Over load, discharge and overcharge protection.		
63	Output voltage	V	220V, 50Hz, + 10% AC		
64	Transfer time	ms	< 2 ms Typically.		
65	Battery type		Lead acid Maintenance Free.		
66	Recharge time	hr	Min 8 hrs. to 90% after fully discharge.		
67	Exhaust System		Cooling fan on back		
68	DC start up		Yes.		
69	Protection		Built-in Automatic voltage Regulator with lightning surge protection, Spike burnouts, over voltage & under Voltage cut- off, Battery low & over charge protection & Surge protection.		
70	Standard		ISO 9001, CE for manufacture.		

SL	Technical Particular's	Unit	REB Requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
71	Warranty	Year	1 Year.		
72	Laser Printer (Medium Duty: Type-1				
73	Brand		Internationally Reputed Brand		
74	Model		To be Mentioned by tenderer		
75	Country of Origin		To be Mentioned by tenderer		
76	Processor Speed		Min. 1200 MHz		
77	Resolution		1200 X 1200 DPI		
78	Printing Speed		Min. 40 ppm for Letter		
79	Memory		Min. 256 MB or Higher		
80	Network Print		Yes		
81	Duplex Print		Yes (Automatic)		
82	Control Panel		2 Line Backlit LCD Graphic display		
83	Fuser Unit		Instant on fuser technology with ceramic heating elements.		
84	Printing Pages/Month		Min. 75,000 Pages		
85	Interface		1 Hi Speed USB 2.0 Port; 1 Ethernet port 10/100/1000 Gigabit network		
86	Combability		PCL6, PS 3 & PPDS		
87	Paper Size		A4 & Legal		
88	Paper Drawer		Up to 250 Sheet		
89	Warranty	Year	1 Year (Full).		

Note: In Support of offered Specification, Printed Catalog must be Submitted by tenderer.

Seal & Signature of the Manufacturer

Seal & Signature of the Tenderer



AIR CONDITIONER

TECHNICAL REQUIREMENTS FOR AIR CONDITIONER

Eight Split Type air conditioners of capacity 2.5 Tons each shall be provided for each control room. Each unit shall conform to the following specifications:

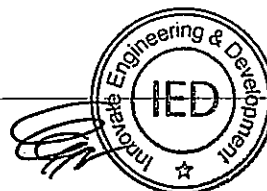
SL	Technical Particular's	Unit	REB Requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
1	Brand		Internationally Reputed Brand		
2	Model		To be Mentioned by tenderer		
3	Country of origin		To be Mentioned by tenderer		
4	Cooling Capacity	(BTU / HR) / Ton	30000/2.5		
5	Power Supply	V, Hz	230V+/-5%, 50 HZ		
6	Power Input	W	2850W (Max.)		
7	Current	A	13.0 A (Max.)		
8	Indoor Air Circulation	(CBM / H)	1380 (Min.)		
9	Outdoor Air Circulation	(CBM / H)	4300 (Min.)		
10	Temperature Control		Thermistor		
11	Auto Air Swing		2-way to be provided		
12	Minimum Noise Level	db	Indoor Unit: less than 45 db. Outdoor Unit: less than 55 db.		
13	Remote		More than 10 meters remote control distance. Remote handset: LCD display with night glow.		
14	Installation		Tenderer will complete the first-time installation.		
15	Refrigerant		Environment-Friendly		

SL	Technical Particular's	Unit	REB Requirement	Tenderers Guaranteed Values	Deviation (Yes/No)
16	Type of Compressor		High quality and approved brand with rotary type compressor		
17	Condenser Material		Copper		
18	Other		# Elegant panel design, with LED/ LCD central Display. # Galvanized outdoor unit or plastic outdoor unit for anti-corrosion. # Flat panel for easy cleaning, washable plastic filter and horizontal auto louver.		
19	Warranty	Year	One year replacement of all components free of cost and next two years' Service free.		
20	Supporting documents	nos	Must be supported by printed Catalogue/ Manual.		

Seal & Signature of the Manufacturer

Seal & Signature of the Ten

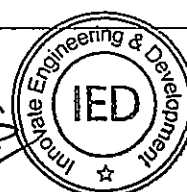


CCTV system

(To be filled up by the tenderer /manufacturer in concern Letterhead Pad with appropriate data and provide all of the information requested, then to be sealed & signed by both tenderer & manufacturer, otherwise the tender will be treated as non-responsive)

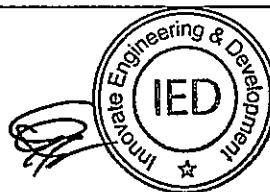
Contractor shall supply and install CCTV system with 06 IP cameras and necessary accessories required for fitting & fixing up to commissioning. CCTV must be in suitable place. Contractor shall fulfill the requirement of following technical specifications of CCTV and instruction of Engineer in charge / Employer.

SL	Equipment	Unit	REB Requirement	Tenderer Guaranteed Value	Deviation (Yes/No)
1	16-Channel NVR	Pcs	16 IP camera input, H.265 compression, 4K HDMI output, ONVIF compliant, RAID1 support, 2 SATA HDD slots		
2	4MP IP IR Dome/Bullet Camera	Pcs	4MP, 1/3" CMOS, Min. 0.003 Lux B/W, IR range 30-40 m, PoE, IP67, H.265, ONVIF		
3	Surveillance HDD	Pcs	4TB, 24/7 surveillance-grade, 7200 rpm, SATA		
4	PoE Switch 16-Port, Gigabit	Pcs	IEEE 802.3af/at, 16 PoE ports, surge protection, industrial grade		
5	Video & Power Cable	Meter	Cat-6 Cable, supports PoE and 4MP streaming		
6	32" Monitor	Pcs	Full HD 1080p, HDMI input, IPS panel, with wall mount and HDMI cable		
7	Rack / Housing Unit	Pcs	Metal rack, proper ventilation, lockable, cable management		
8	RJ45 Connectors Cat-6	Pcs	Compatible with Cat-6 cable		
9	Accessories		As per requirement (to complete the whole setup perfectly workable)		
10	Warranty		03 (Three) Years		



Seal & Signature of the tenderer

Seal & Signature of the manufacturer



EXISTING CONTROL ROOM FURNITURE

TECHNICAL REQUIREMENTS FOR EXISTING CONTROL ROOM FURNITURE

Item	Quantity (Minimum, but not limited to)
Table with Side Rack, TSR-2 Size: Table: 1800×800×750H mm, Side Rack: 1050×400×750H mm Made of stretch proof pesticide treated MFC/Melamine coated laminated Board of Beech-graphite color. Table top of 30 mm and other panels are 18 mm thickness. Edges of panels and top are to be sealed by 2 mm PVC edging by Automatic edge bending machine. Top and panels should be joined by using housing, dowel, bolt, jibe screw, T.nut & pneumatic nailing where necessary \. PVC stopper to be used at the bottom of Table. Knockdown facility with fixing manual is a mandatory with drawer unit and side rack.	1 Nos. for each sub-station
Revolving Chair RC-1 Size: 500×570×1140H mm Foam cushioning with foreign leather upholstery upon a contoured high back, tilt & locking system. Chemically de-rusted, Zinc phosphate coated oven baked (150°-200°C). Electro-static powder paint finished mild steel structure. Gas lift system. Design as per photo image. Color of leather to be approved by the authority.	1 Nos. for each sub-station
Visiting Chair VC-1 Size: 560×600×900H mm Made of Foam cushioning with foreign rexene upholstery. Arm with foam cushioning with leather. Structure made of cold rolled mild steel round tube which is chemically de-rusted with Zinc phosphate coated oven baked (150°-200°C). Electro-static powder paint finished. The tube structure should be V-shaped, cantilever type and the diameter for tube must be 1.25" & with PVC stoppers. Design as per photo image. Color of rexene to be approved by the authority.	4 Nos. for each sub-station

Item	Quantity (Minimum, but not limited to)
File cabinet (3 Drawer) FC-1 Size: 476×610×1069 mm. Made of high-grade cold rolled steel of .7mm (22 SWG) thickness reinforced with stiffeners equipped. High strength drawer channels, nylon drawer grip with three drawers high quality central locking system. All sheets chemically de-rusted, zinc phosphate coated with oven baked (150°-200°C), electrostatic paint finished. Design as per photo image. Color of cabinet to be approved by the authority.	1 Nos. for each sub-station
Computer Table CT-1 Size: 620×530×1020H mm Made of scratchproof pesticide treated MFC/Melamine coated laminated Board of Beech color. Table top of 18 mm and other panels are of 16 mm thickness. strong PVC Edging done by Automatic bending machine. Sliding Key-board tray and drawer with locking system. Half shelf for UPS/Stabilizer. Top and panels should be joined by using housing, dowel, bolt, jibe screw, T.nut & Pneumatic nailing where necessary. PVC stoppers & knock down facility is mandatory. Provision for Monitor on the top, CPU inside the table and cable passing hole is necessary. Design as per photo image.	1 Nos. for each sub-station

Note: In Support of offered Specification, Printed Catalog must be submitted by tenderer.

Seal & Signature of the tenderer

Seal & Signature of the manufacturer

SCHEDULE – A

TIMES FOR DELIVERY AND COMPLETION

Description of tender	Date Required
Design, Supply installation, testing and commissioning of Battery Energy management System (BESS) in different sub-Station on Turnkey Basis.	----- months from the effective date.

SCHEDULE B

MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION

(To be filled in by the supplier)

1. PCS and its Components

Item	Description	Manufacturer	Place of Manufacture	Place of Testing and Inspection
1.				
2.				
3				
4				
5				
6				
7				

2. Battery Lithium Ion

Item	Description	Manufacturer	Place of Manufacture	Place of Testing and Inspection
1				
2				
3				
4				
5				
6				
7				

3. Others

Item	Description	Manufacturer	Place of Manufacture	Place of Testing and Inspection
1.				
2.				
3				
4				
5				
6				

7				

SCHEDULE – C

DEPARTURES FROM THE SPECIFICATION

Tenderers are to list all discrepancy from the requirements of the specification in this schedule.

All discrepancy whether they be commercial, financial, technical or of a contractual nature are to be included and shall be submitted with the technical proposal.

Any item that does not have departure listed in this schedule will be deemed to be in full accordance with the requirements of the specification.

No other document or detail accompanying the tender will be considered in evaluating departures.

Tenderers are not permitted to offer any alternative to this schedule.

Item	Volume	Clause	Detail of Departure from Specification	Advantages of departure

SCHEDULE – D

PROPOSED ALTERNATIVE STANDARDS TO WHICH EQUIPMENT SHALL BE PROVIDED

The Tenderer shall list below all the alternative Project Managing and design Standards which he proposes to use in his design, manufacture and testing of equipment to be supplied. Should these standards differ from the specified standard in any respect, the Tenderer shall detail the differences between the proposed and specified standard.

Compliance with any standard equal or superior to those specified will be considered acceptable.

In the absence of any listed alternative standard, it is deemed that the standards specified in the Tender documents are fully complied with.

SCHEDULE – E

Drawings and documents to be submitted with tender

The following drawings / documents shall be submitted with the tender:

1. Typical single line, layout & sectional diagram of Battery Energy Storage System.
2. Quality Assurance Certificate ISO9001/9002 Certification (or equivalent) and Quality Assurance Program & Typical Quality plan for the work from the manufacturers of the following equipment:
 1. Battery
 2. BMS
 3. PCS
 4. EMS
 5. Bi-directional Transformer

SCHEDULE – F

Proposed Subcontractors

The Tenderer shall propose list of the sub-contractors in the following table Subcontractors

Sl. No.	Name and Address of the Subcontractor

SCHEDULE – G

O&M services (O&M)

The O&M services shall be provided on a turnkey basis, ensuring continuous, safe, and reliable operation of the BESS in compliance with BREB, Bangladesh Grid Code, IEC, IEEE, and NFPA-855 standards.

1. SCOPE OF O&M SERVICES

Contractor Responsibilities

The Contractor shall be fully responsible for the BESS, including:

- 24/7 operation support and SCADA/EMS monitoring
- Preventive, predictive, and corrective maintenance
- Supply, storage, and replacement of spare parts and consumables
- Performance monitoring, degradation tracking, and maintaining $\geq 99\%$ availability
- Software and firmware updates for BMS, PCS, and EMS
- Inspection and compliance of fire protection systems
- Compliance with BREB grid codes, safety, and environmental regulations
- Training of BREB/PBS personnel
- Preparation and submission of operational, maintenance, performance, and incident reports
- Provision of documentation and audit support to the Employer

2. OPERATION PROCEDURES

a. The Contractor shall ensure:

- Continuous availability of BESS
- Real-time monitoring of SOC, SOH, temperature, alarms, and events
- Peak shaving, load shifting, voltage, and frequency support operation

b. Response Time:

- Critical alarms: within 30 minutes (remote)
- Site attendance for major faults: within 2 hours

c. Coordination:

- Contractor shall coordinate with PBS substation operators and BREB Load Dispatch as required.

3. MAINTENANCE REQUIREMENTS

4.1 Preventive Maintenance (PM)

- Maintenance shall be carried out strictly as per OEM manuals.

4.2 Predictive Maintenance (PdM)

- Trend analysis of battery degradation
- Thermal imaging
- Early fault detection through EMS

4.3 Corrective Maintenance (CM)

- Immediate rectification of faults
- Replacement of defective components at Contractor's cost

4. PERFORMANCE GUARANTEES & KPIs

Parameter	Requirement
Annual System Availability	$\geq 98\%$
Mean Time to Repair (MTTR)	≤ 24 hours
Emergency Response Time	≤ 2 hours
Safety Incidents	Zero
Battery SOH	As per OEM curve

Failure to meet KPIs may result in penalties (Liquidated Damages) as per BREB contract conditions. Detailed penalties are as follows:

a. System Availability Penalty

Annual Availability Achieved	Penalty
$\geq 98\%$	No penalty
$\geq 97\%$ and $< 98\%$	1% of the annual O&M price for the affected site
$\geq 95\%$ and $< 97\%$	3% of the annual O&M price for the affected site
$< 95\%$	5% of the annual O&M price for the affected site

Availability shall be calculated per site on an annual basis, excluding BREB-approved outages

Maximum Penalties shall be capped at **2% of the annual O&M price per site**.

b. Battery Health (SOH) Non-Compliance

Condition	Penalty
SOH below OEM curve by $>3\%$	1% of the annual O&M price
SOH below OEM curve by $>5\%$	Mandatory module replacement + 2% penalty

This shall not apply if degradation is due to BREB-approved abnormal operation.

c. Reporting & Documentation Penalty

- Delay in submission of monthly O&M report: BDT 20,000 per week
- Delay in annual performance report: BDT 100,000 per month

d. Maximum Penalty Capacity

- Total penalties in any contract year shall be limited to 10% of the annual O&M contract price.
- Penalties shall be deducted from O&M payments or performance security.

Year-wise Scope of Work, Cost, Manpower, and Spare/Consumable Requirements

Year	Scope of Work	Cost Breakdown (BDT)	Manpower Requirement (No. of Personnel)	Spare Parts Cost (BDT)	Consumables Cost (BDT)	Remarks
1						
2						

3						
4						
5						
...						
n						

Notes for the contractor:

1. **Scope of Work:** Include all O&M activities, inspections, preventive and corrective maintenance, and any special tasks for the year.
2. **Cost Breakdown:** Provide year wise detailed cost for labor, materials, services, and other applicable items.
3. **Manpower Requirement:** Indicate the number of personnel required for each type of activity.
4. **Spare Parts & Consumables:** Provide estimated yearly cost separately for spare parts and consumables.
5. **Remarks:** Include any assumptions or clarifications related to the year's scope or cost.

6.3 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*]

6.4 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*]

6.5 Form of Change Order Procedure and Forms

Contract No:

Date:

To:

[Name of Contractor]

CONTENTS

1. General
2. Change Order Log
3. References for Changes

ANNEXES

- Annex 1 Request for Change Proposal
- Annex 2 Estimate for Change Proposal
- Annex 3 Acceptance of Estimate
- Annex 4 Change Proposal
- Annex 5 Change Order
- 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:

<u>Drawing No./Document No.</u>	<u>Description</u>
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

³ Costs shall be in the currencies of the Contract.

(g) Head office technical staff salaries

Process engineer	_____ hrs @ _____ rate/hr
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: _____
(Procuring Entity)

Date:

Accepted by: _____
(Contractor)

Date:

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

6.6 Supplementary Information

The following information is provided to support and clarify the Tender Submission. All details are based on the Employer's requirements, the tender documents, and the site conditions understood at the time of submission, and will be complied with during execution.

i. Project Country:

The works will be performed in Bangladesh.

ii. Contract Site:

The sites are located in the Dhaka, Mymensingh, Kishoreganj, and Narsingdi district of Bangladesh

iii. Drawings:

All drawings included in Section-7 are provided as indicative samples for bid preparation. The Contractor shall prepare the final detailed drawings and obtain the Employer's approval prior to execution

iv. Port Facilities and Transport to Site

Chittagong, Dhaka, Narayanganj, Benapole and Mongla are the ports of entry for material to Bangladesh by sea and road. Inland transport from Chittagong, Narayanganj, Benapole and Mongla to the site can be by barge or road.

The contractor is responsible for performing all dispatch, shipment, delivery, unloading, inland transportation and obtaining all approvals and consents etc. necessary for the movement of plant and contractors' equipment from the port to the site.

All necessary access roads, jetties or off-loading points etc. required for the transport of the plant etc. to site will be the Contractor's responsibility.

Where heavy loads are to be moved the Contractor shall be responsible for performing surveys of the routes to ensure that all portions have adequate load bearing capacity.

The Contractor shall submit a comprehensive method statement to the Employer/Engineer detailing proposed transport route(s) and requirements, including bridges, ducts, culverts, railway crossings, overhead lines, water mains, and their load capacities or clearances, along with proposed measures to meet transportation needs. Any reinforcement, strengthening, modifications, or temporary works required shall be the Contractor's responsibility, with all costs included in the Bid price.

The Contractor shall take all necessary precautions and safety measures during transportation to prevent damage, loss, or accidents, and shall be fully responsible for any such occurrences at no additional cost to the Employer.

No plant is to be consigned to Bangladesh by air freight without the prior written approval of the Employer.

v. Disruption of Local Communities

The Contractor shall take all measures necessary to avoid nuisance and disruption to local communities, local authorities through the project implementation works including the transportation of equipment, tools and materials. In particular the Contractor shall ensure no damage is done to existing road, culverts, nearby property, standing crops, pasture or woodland, Trees etc. and that the Contractor's operations do not cause water logging or pollution hazards.

vi. Notice of Operation

a. The Contractor shall give full and complete written notice of all important operations, including setting out, to the Engineer sufficiently in advance to enable the Engineer to make such arrangements as the Engineer may consider necessary for inspection and for any other purpose.

b. The Contractor shall not start any important operation without any formal approval of the Engineer/Director of the Project.

vii. Delay and Increased Costs

Notwithstanding of GCC Clause of the General Conditions of Contract no extension of time or increase in the Contract rates shall be granted to the Contractor if he is delayed or impeded in the completion of the Works or involved in additional costs by flood, cyclone, high water levels, wash-out of roads or tracks or impassable roads.

viii. Safety Measures and Public Convenience

The Contractor shall provide all necessary protection for persons and property at all times. The Contractor shall implement safe construction methodologies that comply with applicable laws and regulations of Bangladesh. The Contractor shall take every required measure to protect the Works and prevent accidents throughout the construction period.

The Contractor shall provide and maintain adequate night lighting, barricades, guards, temporary walkways, safety canopies, safety nets, danger signals, watchmen, and all other necessary facilities and safeguards to ensure the protection of life and property. The Contractor shall also secure all excavations, equipment, and materials to ensure that no individual or member of the community is exposed to danger.

ix. Precautions

The Contractor is to execute the plant in such a manner that he does not damage or interfere with existing services which are located in proximity to the Site. The Contractor shall be responsible for any damage or interference which may be caused to these services due to execution of the Works and shall carry out all necessary repairs at his own expense and to the satisfaction of the Engineer.

No excavating machines shall be used in the immediate surroundings of cables, utility lines and/or pipe-lines, unless approved by the Engineer.

Temporary Works which have to be made in the surroundings of the system during the execution of works, shall be maintained by the Contractor and shall be removed as soon as practicable.

x. Site Cleaning and Housekeeping.

The Contractor shall maintain proper housekeeping and ensure organized storage of all materials to keep the construction site clean, orderly, and safe. All debris shall be removed regularly, work areas shall remain free from obstructions, and materials shall be stored in designated locations to prevent hazards and maintain efficient site operations

xi. Signboard / Safety Notice

Where required or directed by the Engineer, the Contractor may provide project signboards at appropriate locations within the work site. Such signboards, if installed, shall be placed prior to commencement of the Works, maintained in good condition throughout the Contract Period, and written in both English and Bengali. The signboard may include, as applicable:

- a. Name of the Project
- b. Name of the Plant / Facility or Work Area
- c. Name of the Employer
- d. Other relevant contract details as directed by the Engineer

Notwithstanding the above, the Contractor shall mandatorily provide and maintain clear, visible, and adequate safety notices at all site entry points and critical locations within the plant installation area. These safety notices shall include, but not be limited to, mandatory safety instructions, hazard and warning signs, restricted access information, and emergency contact details. All safety notices shall be displayed in both English and Bengali and maintained in legible condition throughout the Contract Period.

The Contractor shall ensure that all personnel, including workers and visitors, are informed of and comply with the safety requirements indicated by the displayed safety notices.

xii. Clean up the Site

Prior to the issue of the latest Defect Liability Certificate by the Employer the Contractor shall remove from the Site all plant and equipment, tools, rubbish, concrete forms, boulders, bricks and other materials not incorporated in the permanent works.

- No separate payment shall be made to the Contractor for complying with the provisions mentions upon the Sub-Clauses.

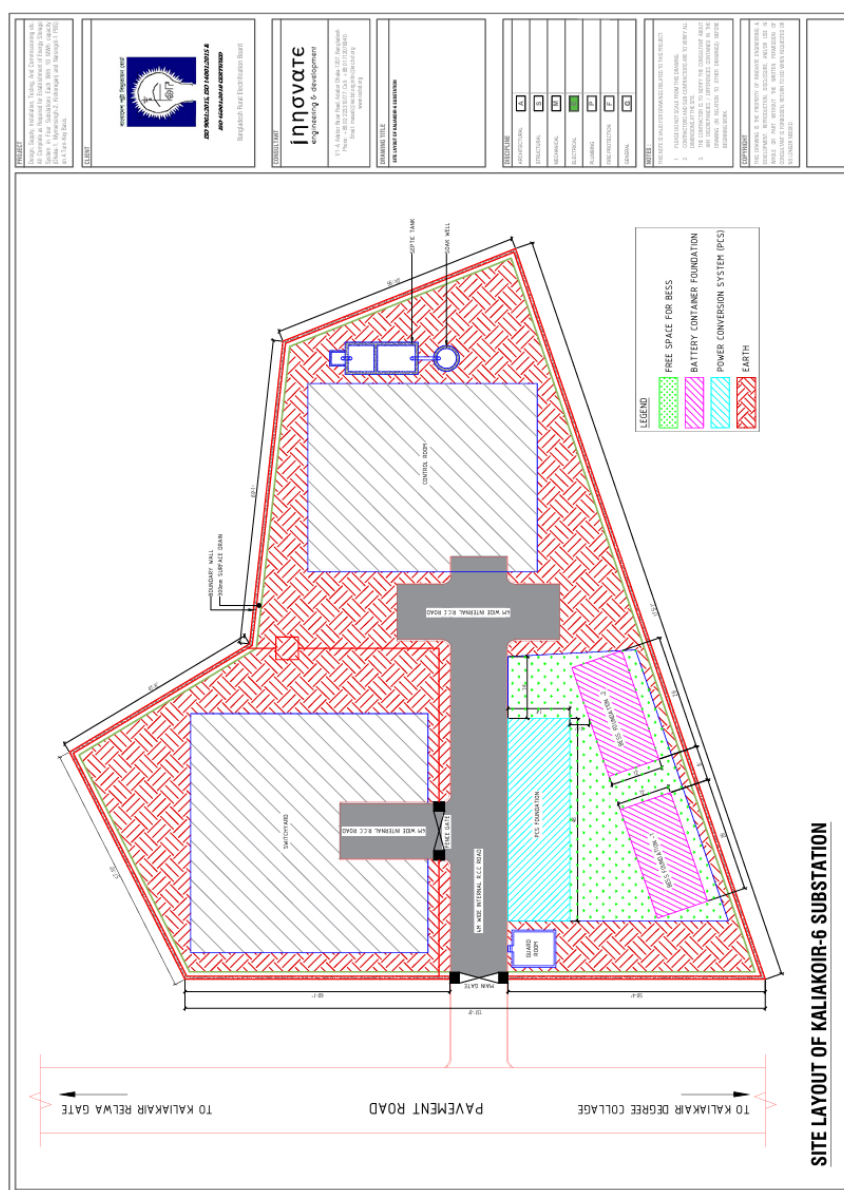
Section 7. Drawings

Followings drawings/documents are provided herewith as **Attachment-1** for tender purpose only. Tenderers are required to verify all the data given therein and accordingly to quote the prices. The Contractor shall be required to carry out all the works under the Contract as per actual requirement at prevailing site conditions at their quoted unit prices.

Design, Supply, Installation, Testing, And Commissioning etc. All Complete as Required for Establishment of Energy Storage System in Four Substations Each With 10 MWh capacity (Dhaka-1, Mymensingh-2, Kishoreganj and Narsingdi-1 PBS) on A Turn-Key Basis.

Attachment-1:

7.1 Site Layout of the Kaliakoir-6 substation



PG5A

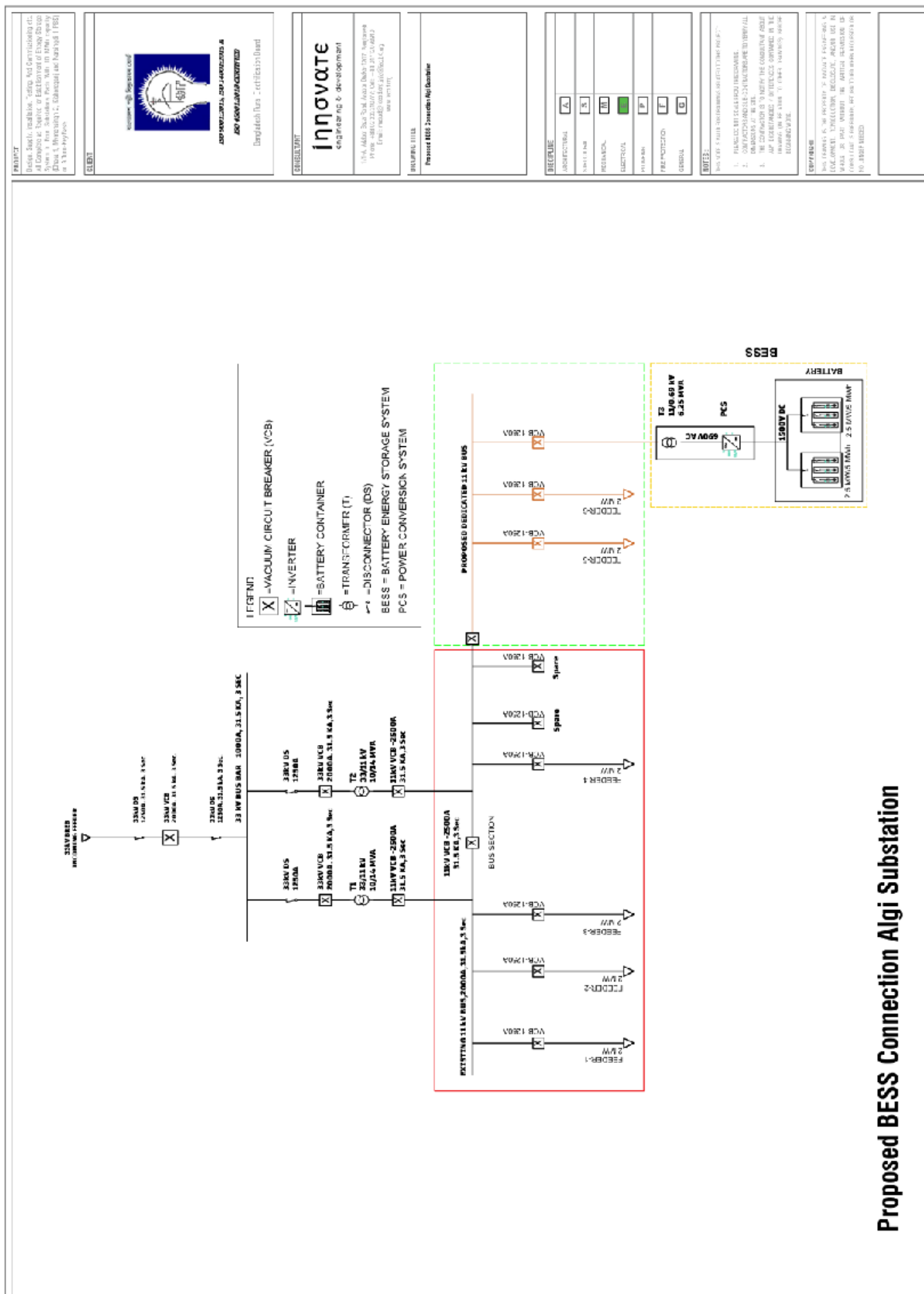
PG5A

PG5A

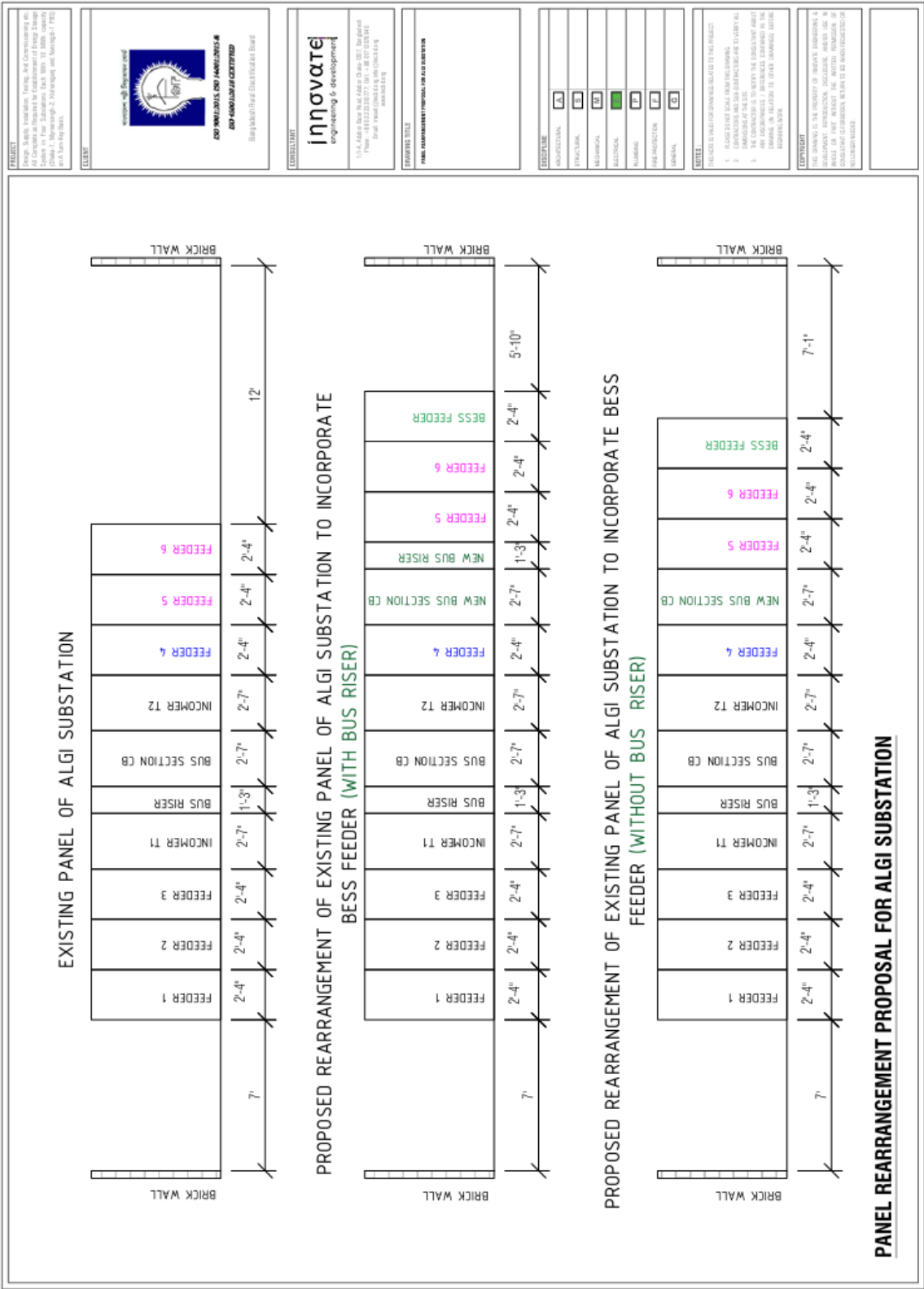
PG5A

PG5A

7.7 BESS connection proposal of the Algi substation



7.8 Panel rearrangement proposal of the Algi substation

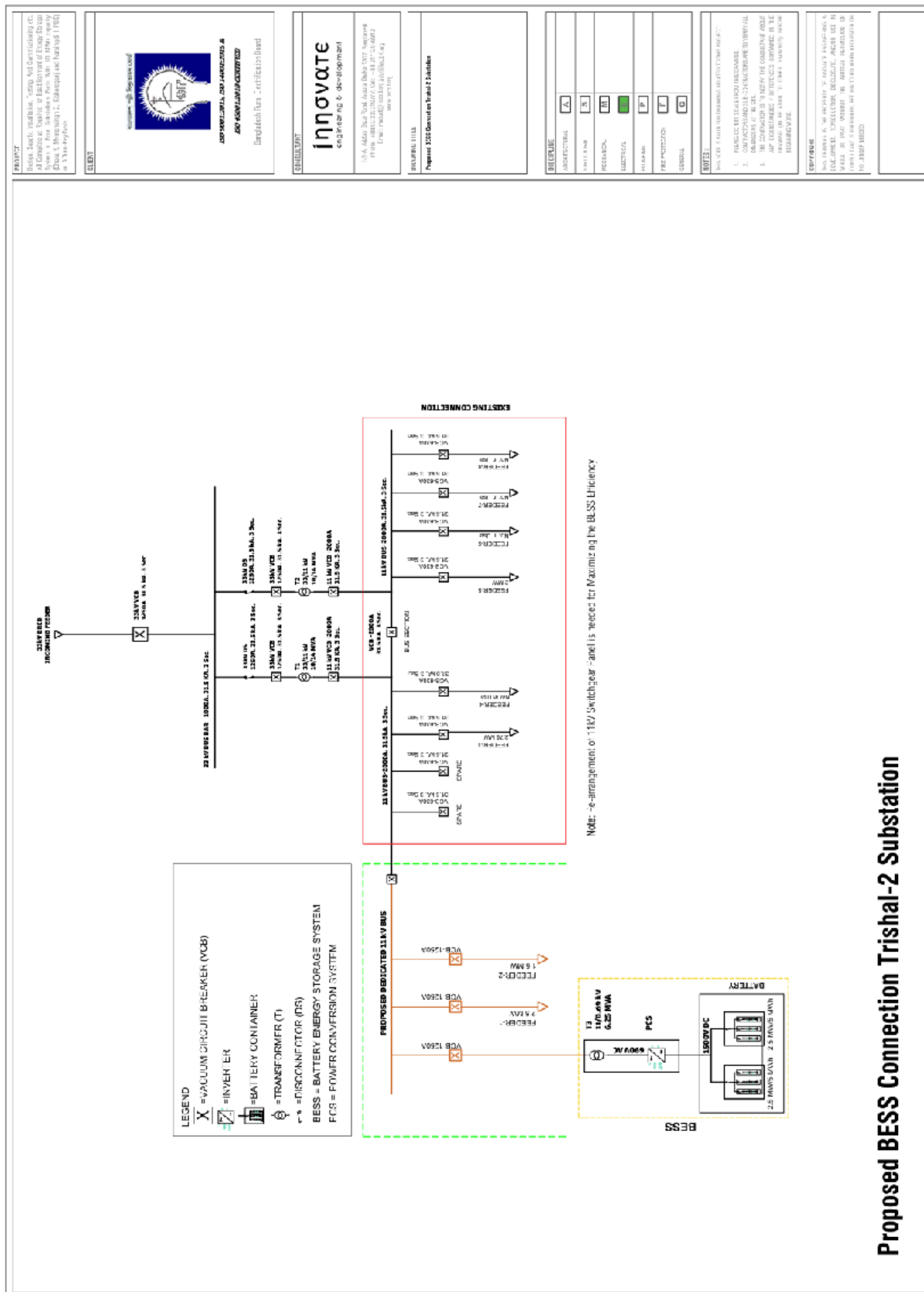


7.9 Site Layout of the Trishal-2 substation

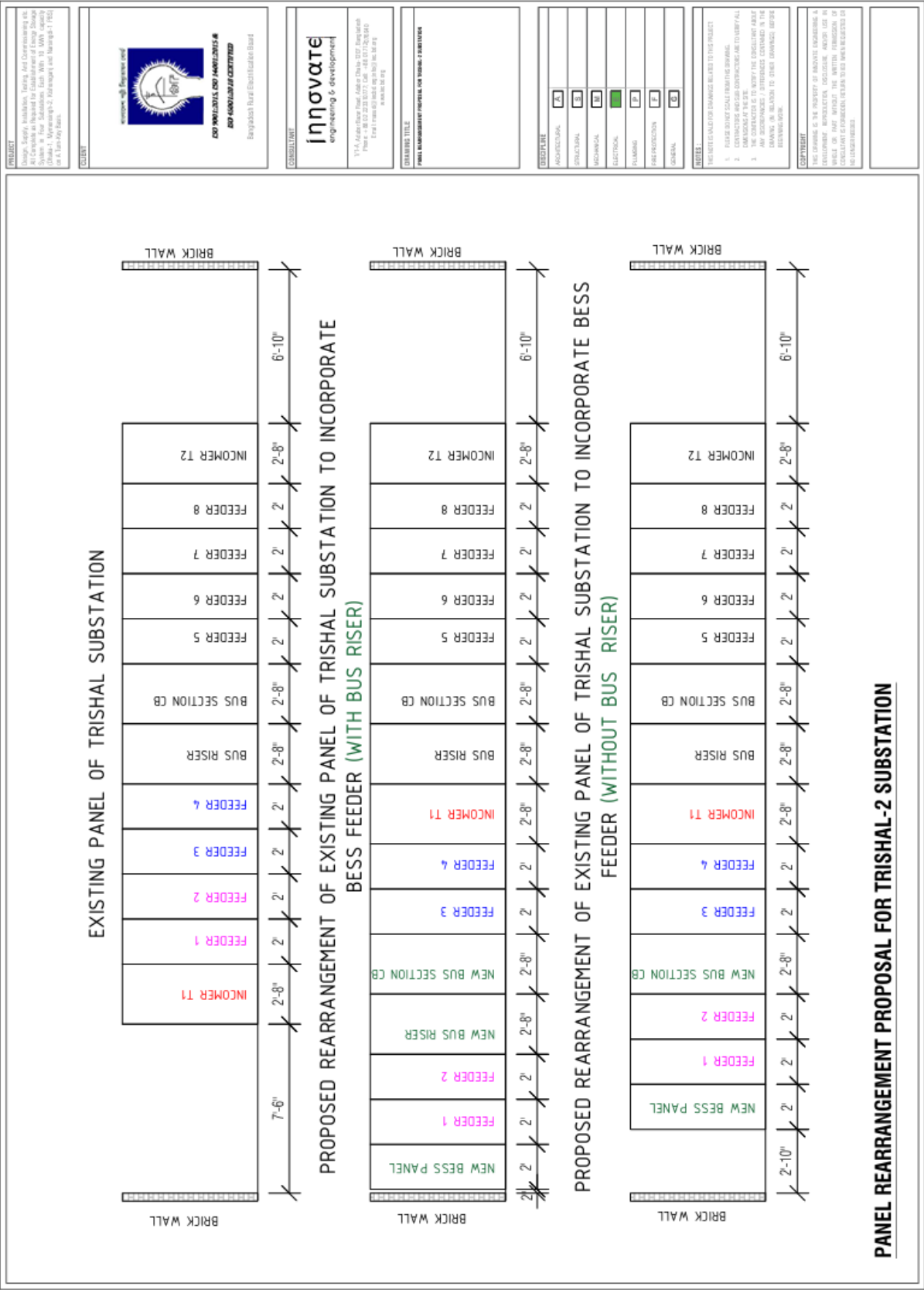


PG5A

7.11 BESS connection proposal of the Trishal-2 substation



7.12 Panel rearrangement proposal of the Trishal-2 substation



7.14 Existing Single Line Diagram of the Pakundia-2 Substation





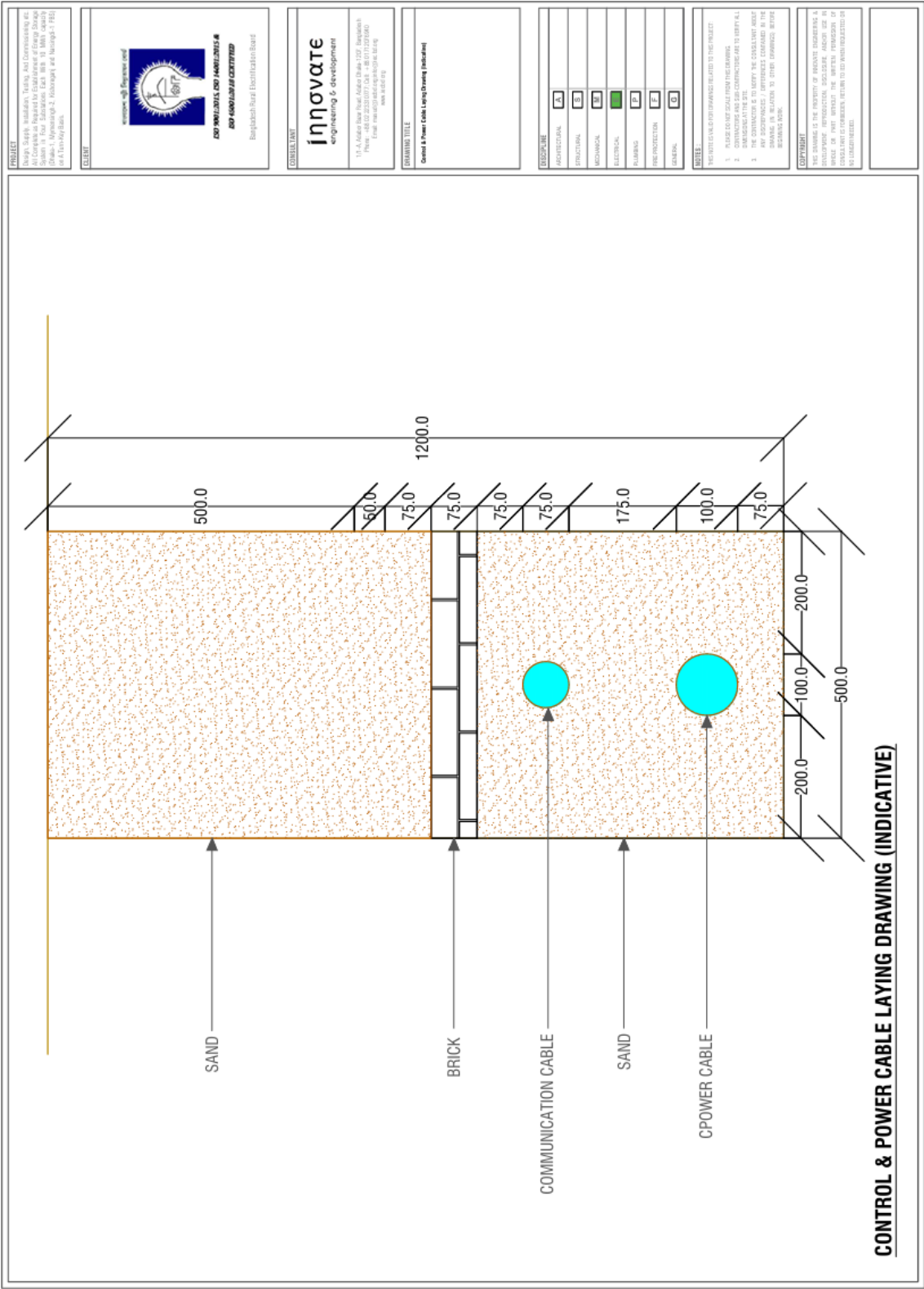
PG5A

PG5A

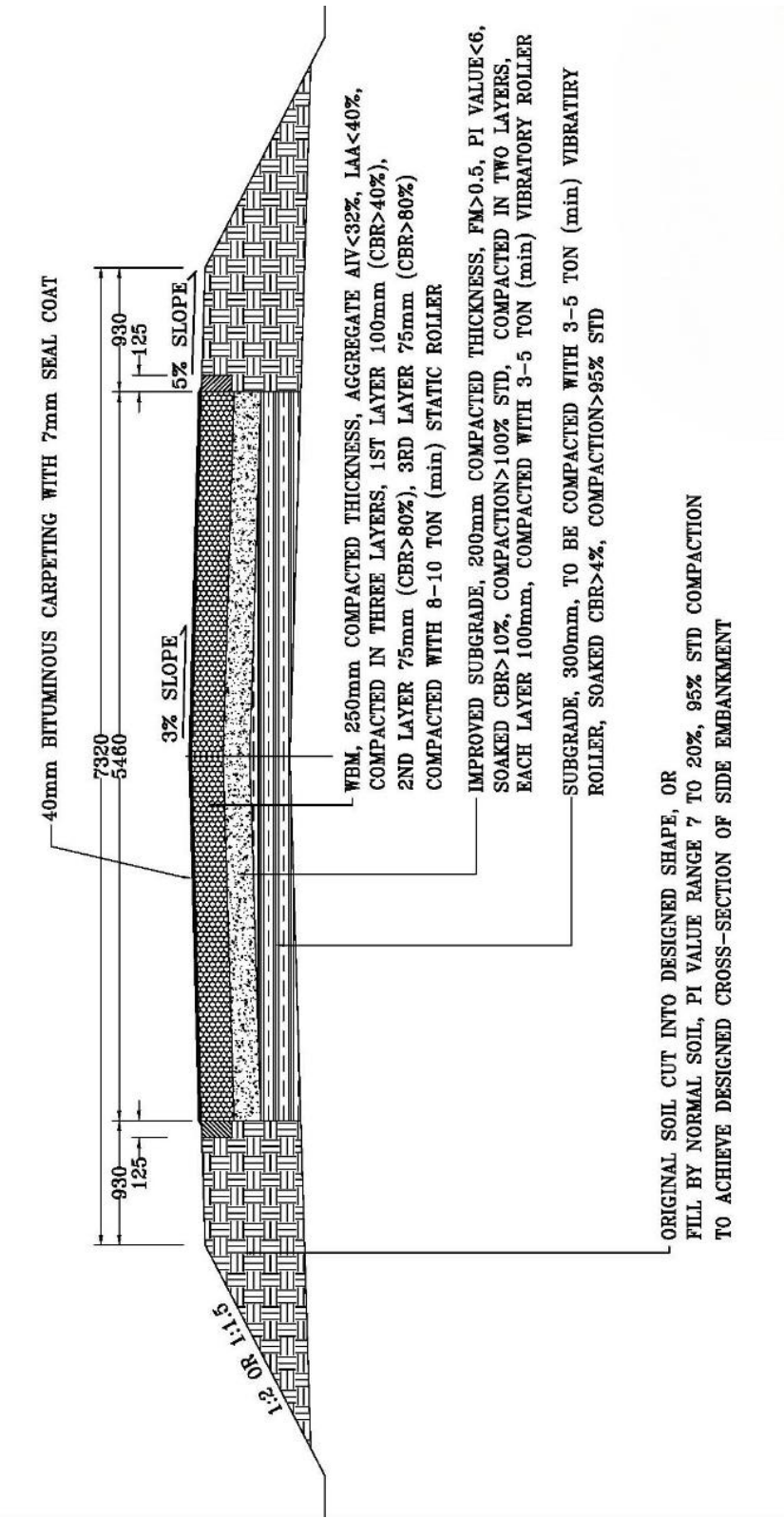
PG5A

PG5A

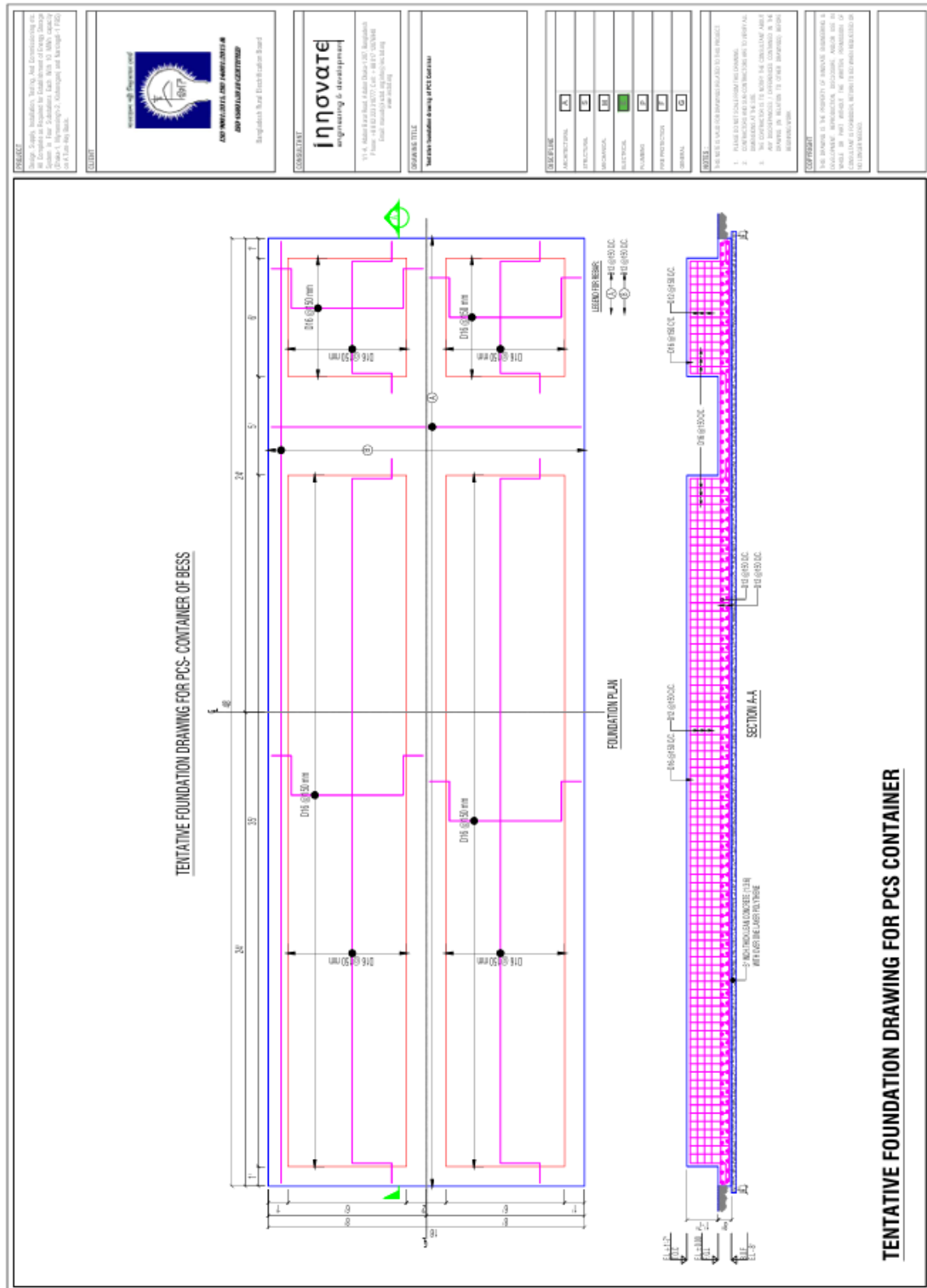
Control & Power Cable Laying Drawing (Indicative)



Typical Road Cross-Section and Pavement Composition



Typical Civil Drawing of the basement of the PCS Container



PG5A

Annexures: Formats

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
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	< select >			V
17	Tender Last Selling Date [up to the day prior to the day of Deadline for Submission]	< select >			V
18	Tender Closing Date and Time	< select >			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 < type in name > < type in name >			
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 < select >			V
		Time < 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 NEGRMATION	
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

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