

**Request for Proposal (RFP)**  
**5 MW or 2X3150 KVA Electrical Substation, Diesel Generator and Related MEP & Civil Works of**  
**Service Building**  
**Asian University for Women (AUW), Arefin Nagar Campus**  
**Summary Sheet**

<b>Name of the company</b>	Asian University for Women
<b>Procurement Reference Number</b>	Package/Substation_5MW /25_26
<b>Date of issue of the RFP</b>	14 December 2025
<b>Date and Closing Time for RFP submission</b>	13 January 2026 (12:01 pm) (GMT +6)
<b>Quotation submission mail address</b>	<a href="mailto:tender147@auw.edu.bd">tender147@auw.edu.bd</a>
<b>Address for Communication</b>	<b>Asian University for Women</b> 20/A M. M. Ali Road Chattogram 4000, Bangladesh Tel: +880-31-285-4980 Fax: +880-31-285-4988

Bidders are invited to submit their proposals in accordance with the terms outlined in the enclosed Request for Proposal (RFP).

AUW reserves the right to reject any or all offers without providing any reason.

Confidentiality must be strictly maintained. The information provided here should only be used for its intended purpose and scope. By retaining this RFP, you agree to treat all information as confidential.

All communications regarding this Request for Proposal should be directed to AUW, with copies sent to the email addresses listed in the RFP email.

For any further queries, please contact:

- **Primary Point of Contact for RFP Process and Technical Queries:**

Mohammed Ishrat Bin Mahbub

Director of Supply Chain Management

Email: [mohammed.mahbub@auw.edu.bd](mailto:mohammed.mahbub@auw.edu.bd)

Contact Number: +8801926673027; Whatsapp: +8801671470348

Proposals should be submitted only to the following email: [tender147@auw.edu.bd](mailto:tender147@auw.edu.bd)

No other AUW email address should be used in the "To," "CC," or "BCC" fields. Any proposal that violates this instruction may be disqualified.



ASIAN UNIVERSITY  
FOR WOMEN

Sl. No.	Section Title	Page No.
1	<b>Summary Sheet</b>	1
2	<b>Proposal Summary</b>	3
3	<b>Scope of Work</b>	4-6
3	<b>Summary of Qualification of Tenderers</b>	7
4	<b>Section 1 – Instructions to Applicants (ITA)</b>	8
5	Interpretation	8
6	Corrupt, Fraudulent, Collusive or Coercive Practices	8
7	Source of Funds	9
8	Eligible Applicants	9
9	Eligible Materials, Equipment and Associated Services	10
10	Site Visit	10
11	Qualification: General	10
12	Clarification of Qualification Document	10
13	Litigation History	11
14	Joint Venture, Consortium or Association (JVCA)	11
15	Contents of Application	12
16	Documents Establishing Applicant’s Qualification	13
17	Bank Guarantee	14
18	Liquidated Damages	14
19	Termination	15
20	Descope and Backcharge	16
21	<b>Section 2 – Application Data Sheet (ADS)</b>	18
22	A. General	19-22
23	<b>Section 3 – Application Forms</b>	23-29
24	Technical Specifications	30-123
25	<b>Annexures</b>	124
27	Annexure I – Drawings / Layouts	

### **Executive Summary**

This Request for Proposal (RFP) seeks qualified and experienced firms to design, supply, install, test, and commission a complete Substation, Generator, MEP & Civil System of Service Building for the Asian University for Women (AUW) Main Academic Building. The project aims to ensure the facility is equipped with a comprehensive and compliant fire protection, detection, and alarm system in accordance with national and international fire safety standards.

### **Project Implementation Schedule**

The successful bidder shall complete the works within the stipulated time frame stated in the Letter of Award. The indicative timeline for implementation is as follows:

- Design submission and approval: within 14 working days from award.
- Material delivery and installation: within 145 working days from design approval.
- Testing and commissioning: within 21 working days after installation.
- Total completion period: 180 working days from the date of contract signing.

### **Proposal Evaluation Methodology**

All proposals will be evaluated in accordance with AUW procurement procedures and applicable regulations. Evaluation will be conducted based on the following criteria:

- Technical compliance with specifications (60%)
- Relevant experience and qualifications (20%)
- Financial proposal and competitiveness (20%)

The contract will be awarded to the bidder offering the most advantageous proposal, technically compliant and commercially competitive.

### **Warranty and Post-Installation Support**

The contractor shall provide a minimum one (1) year warranty according to the section 4 ITA 2.7 covering all materials, equipment, and workmanship. During this period, the contractor shall perform preventive and corrective maintenance at no additional cost. The contractor shall also ensure availability of spare parts and service personnel as required.

### **Training and Handover**

Upon completion, the contractor shall conduct a comprehensive training session for AUW's designated staff on system operation, troubleshooting, and maintenance. The contractor shall submit the following documents prior to handover:

- As-built drawings
- Operation and Maintenance (O&M) manuals
- Test reports and commissioning certificates
- Warranty certificates

### **Confidentiality and Compliance**

The contractor shall maintain strict confidentiality of all information and documents provided by AUW. All works shall comply with Bangladesh National Building Code (BNBC), NFPA standards, and local fire safety regulations, ASHRAE, IEC. The contractor shall be responsible for obtaining necessary clearances and ensuring safety during execution.

The scope of work should be updated to focus on the Electrical Substation, Generator, MEP & Civil system. The CONTRACTOR shall be responsible for the complete execution design, supply, installation, testing, commissioning, and handover of the Electrical Substation, Generator, MEP & Civil system in accordance with international codes and standards. The scope includes, but is not limited to, the following:

### **1. Site Assessment and Mobilization**

- Conduct site visits and assessments as required.
- Mobilize resources and set up utility service connections for the site office (if required).

### **2. Design and Documentation**

- Prepare design drawings and obtain approval from relevant authorities.
- Prepare any necessary evacuation plan drawings.
- Develop shop drawings based on the GFC layout and obtain approval from the Client and Consultant before execution.
- Submit an execution schedule that accounts for both imported and local materials.
- Submit material samples (from the approved BOQ brand list) for approval.
- Prepare all required documentation, including as-built drawings, calculations, and handover documents, in compliance with relevant codes.

### **3. Supply and Installation**

- Provision and installation of equipment and accessories as per drawings and specifications.
- Include any necessary electrical, mechanical, civil, or other items not explicitly covered in the supporting BOQ or technical specifications.
- Manage on-site storage of both imported and local materials, with proper records maintained by the storekeeper.
- Execute work strictly in accordance with approved shop drawings.

### **4. Testing, Commissioning, and Balancing**

- Perform testing, commissioning, and balancing of all installed Substation, Generator, MEP & Civil systems.
- Ensure quality and compliance with all relevant codes and standards.
- Provide valid calibration certificates for all testing equipment used, attached with the test report.

### **5. Technical Team Assignment**

- Assign a dedicated technical team (Project Manager, Project Engineer, Safety Officer, etc.) to be continuously available throughout execution.

## 6. Reporting and Progress Monitoring

- Prepare and submit supporting documents, including:
  - Daily field reports
  - Monthly progress reports
  - Material inspection reports
  - Requests for inspection throughout execution

## 7. Post-Handover Documentation and Training

- Prepare and submit all post-handover documentation for the Substation, Generator, MEP & Civil system, including:
  - Operation & Maintenance (O&M) Manuals
  - As-built drawings
  - Warranties
  - Commissioning reports and test certificates
  - Training manuals
  - Spare parts lists
- Conduct training for client personnel on all installed systems.

## 8. General & Additional

- Prepare shop drawings based on the GFC layout, and need to be approved by the client and consultant prior to commencement of execution.
- Submit the actual execution schedule, taking into account both imported and local materials.
- Prepare documentation works including as-built drawings and handover documents, testing, pre-commissioning, post commissioning and all types of calculation in compliance with relevant codes upon completion of execution.
- Submit material samples based on the brand list for approval by the client's technical team and consultant.
- Manage on-site storage for imported and local materials with proper record by the store keeper.
- Include any necessary items (i.e, electrical, mechanical, civil, ICT etc.) which is not included in the supporting BOQ and technical specifications should be considered in the shop drawings before execution.
- Execution works must be carried out in accordance with the approved shop drawings & related GFC drawings.
- Assign a dedicated technical team/engineers (i.e, Project Manager, Project Engineer, Safety Officer etc.) to be continuously available during execution.
- Ensure the quality of execution meets all compliance and code requirements.
- The complete fire system shall be integrated with the academic building through the service building.
- Prepare and submit all necessary supporting documents such as daily field reports, monthly progress reports, material inspection reports, and requests for inspection throughout the execution period.



ASIAN UNIVERSITY  
FOR WOMEN

- Prepare post-handover documents for Substation, Generator, MEP & Civil systems include Operation & Maintenance (O&M) Manuals, as-built drawings, warranties, commissioning reports, test certificates, training manuals, and spare parts lists for all installed systems.
- The contractor will perform the temporary generator installation and termination to facilitate the ant testing and commissioning of the overall working scope with their own cost.
- If any item brands are missing from the BOQ the contractor shall follow the country of origin in the technical specifications when selecting product brands.
- All foreign and local items must undergo factory inspection with necessary test either locally or abroad by the engineers, consultant, and client prior to shipment or delivery.
- The contractor shall be responsible for obtaining approval and the required inspections from BPDB for load sanction & related works, as well as ensuring all necessary communication with the Engineer's Representative and BPDB.
- All testing equipment's must have a valid calibration certificate.
- The contractor shall carry out all required internal tests, including Megger testing of power cables before connecting and terminating electrical distribution boards. Insulation Resistance tests for earthing and distribution boards, as well as Thermography tests for distribution boards, shall be conducted after system connectivity and completion of the works. The contractor must submit complete and proper test reports for all activities.
- The attic stock should be calculated as 2% of the total quantity of materials installed, to be provided after project handover.
- During execution, if any core cutting/punches is required, the contractor shall be responsible for any leakage that occurs after the work is completed. The contractor must ensure that all core cutting is properly sealed and leak-proof.
- Any **substandard work**, use of **unapproved materials**, or **non-compliance with QC policies** will attract a **hefty penalty**, deducted from the R/A bill against the issued NCR.
- The contractor shall ensure the service building is fully operational after completing all works, tests, commissioning activities, and required certifications.
- The contractor must comply with all **EHS (Environment, Health & Safety)** policies and standards.
- If any technical personnel are deemed unsuitable by the Client/Consultant, they must be replaced immediately.
- The contractor shall submit an **RFI** (Request for Information) for drawings/decisions with at least **two weeks' lead time** for consultant feedback.
- The contractor must maintain the site in a **neat and clean condition**. Debris shall be disposed of at designated areas, and a **separate team** must be deployed for curing works.
- The contractor shall submit a detailed **Work Method Statement (WMS)**.
- The contractor shall provide 2 sets of shop drawings (A1), 2 sets of as-built drawings (A1 and A2), and 2 sets in A3 size. All documents, calculations, operation manuals, maintenance checklists, and color images of approved samples shall be submitted in one A3 set and one A4 set.

## Summary of Qualification of Tenderers

The Applicant must meet the following qualification criteria:

1. A minimum of Ten (10) years of experience in Substation, Generator, MEP & Civil System installations and operations.
2. Specific experience as a Prime Contractor in Substation, Generator, MEP & Civil system installations and operations, with at least one (01) contract of similar nature, complexity, and construction methods/technology successfully completed within the last five (05) years, having a minimum value of Tk. 15 (Fifteen) crore.
3. Experience in completing Substation, Generator, MEP & Civil System installations and operations for a building with a total built-up area of at least 9,000 square meters.
4. The average annual turnover shall be greater than Tk. 10 (Ten) crore, calculated over the best three (3) years within the last five (5) years.
5. The minimum amount of liquid assets, i.e., working capital or credit line(s), of the Tenderer shall be Tk. 10.50 (Ten Point Five Zero) crore.
6. Proven reputation as a constructor in both the public and private sectors, supported by a detailed company profile, client list, and work accomplishment certificates.
7. The applicant must not have any record of contract non-performance in the **last 5 years** from the RFP publication date.
8. All pending litigation must not exceed **15% of the applicant's net worth**.
9. At least **1 contract** of similar nature and complexity in Substation, Generator, MEP & Civil System, completed within the last **3 years**.
10. Applicants must demonstrate: Relevant **professional and technical qualifications, Managerial capability, A reliable reputation** for contract performance, Adequate and **skilled personnel**
11. The successful Applicant, who later becomes the Tenderer, is required to perform the works and services as described in the subsequent Tender.
12. Applicants must have access to the **necessary equipment and physical facilities** to perform the work, either by: **Owning** the equipment; having **proven access** through a **contractual arrangement** (e.g., lease or hire); or having **assured access** to such equipment for the required duration. All required equipment must be in **full working condition**



## Section 1. Instructions to Applicants

### 1. Interpretation 1.1 Throughout this qualification Document:

- (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) **“Qualification Document”** means the Document provided by the Employer to an Applicant as a basis for preparation of the Application; and
- (e) **“Application”** depending on the context, means an application submitted by an Applicant for Qualification to participate in the subsequent Tenders and to perform the Contract, in response to an Invitation for Qualification.

### 2. Corrupt, Fraudulent, Collusive or Coercive Practices

2.1 It is the Employer’s policy to require that Employer’s staff, as well as Applicants/Tenderers, suppliers, and contractors and their subcontractors observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the Authority-

- (a) defines, for the purposes of this provision, the terms set forth below as follows:
  - (i) **“corrupt practice”** is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
  - (ii) **“fraudulent practice”** is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
  - (iii) **“collusive practice”** is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
  - (iv) **“coercive practice”** is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
  - (v) **“obstructive practice”** is (aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or (bb) acts intended to materially impede the exercise of the Authority’s inspection and audit rights provided.
- (b) will reject a proposal for award if it determines that the Tenderer recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for the contract in question;

(c) will sanction a firm or individual, including declaring ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for, or in executing, a contract.

### 3. Source of Funds

The Employer will arrange fund towards the cost of the project named in the ADS. The Employer intends to apply a portion of that funds to eligible payments under the contract(s) resulting from the Tendering for which this prequalification is conducted.

#### 4. Eligible Applicants

- 4.1 This Invitation for Qualification is open to all potential Applicants from all countries, except Israel. An Applicant will be eligible if it is a citizen, or is constituted, registered and operates in conformity with the provisions of the laws of that country.
- 4.2 Applicants 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, Consortium or Association (JVCA) invited to take part in public procurement or seeking to be so invited or submitting an Applicant in response to an Invitation for Qualification.
- 4.3 Applicants shall have the legal capacity to enter into the Contract under the Applicable Law.
- 4.4 Applicants and all parties constituting the Applicant shall not have a Conflict of Interest. Applicants 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 for corrupt, fraudulent, collusive or coercive practices.
- 4.5 Applicants with a poor performance, consistent history of litigation or arbitration awards against it shall not be eligible for Qualification.
- 4.6 Applicants 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.
- 4.7 Applicants shall have fulfilled its obligations to pay taxes and social security contributions under the provisions of laws and regulations of the country of its origin.
- 4.8 Applicants shall provide such evidence of their continued eligibility satisfactory to the Employer, as the Employer will reasonably request.
- 4.9 Applicants' requirements for eligibility will extend, as applicable, to each JV partner and Specialist Subcontractor proposed by the Applicant.



## 5. Eligible Materials, Equipment and Associated Services

4.1 All materials, equipment and associated services to be supplied under the Contract are from eligible sources, unless their origin is from Israel.

4.2 For the purposes of this Clause, “**origin**” means the place where the Materials and Equipment’s are mined, grown, cultivated, produced or manufactured or processed, or through manufacturing, processing, or assembly, another commercially recognized new product results that differs substantially in its basic characteristics from its components or the place from which the associated services are supplied.

## 6. Site Visit

- 6.1 Applicants are advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the Application, submission of subsequent Tender and entering into a contract.
- 6.2 Applicants and any of its personnel or agents will be granted permission by the Employer to enter into its premises and lands for the purpose of such visit, but only upon the express condition that the Applicant, its personnel, and agents will release and indemnify the Employer 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.
- 5.3 The costs of visiting the Site shall be at the Applicants’ own expense.

## 7 Qualification: General

### Qualification Document

6.1 The Sections comprising the Qualification Document are listed below, and should be read in conjunction with any Addendum issued under ITA Clause 11.

- Section 1 Instructions to Applicants (ITA)
- Section 2 Application Data Sheet (ADS)
- Section 3 Application Forms
- Section 4 Scope of Works

6.2 Applicants are expected to examine all instructions, forms, terms, and specifications in the Qualification Document as well as in Addendum to Qualification, if any.

## 8 Clarification of Qualification Document

- 7.1 Applicants requiring any clarification of the qualifications Document shall contact the Employer in writing at the Employer’s address indicated in the RFP before **two-third** of the time allowed for preparation and submission of Application elapses.
- 7.2 Non-performance of a contract shall not occur within the last years, prior to the deadline for Application submission based on all information on fully settled disputes or litigation.

## 9 Litigation History

- For the purpose, a fully settled dispute or litigation is one that has been resolved in accordance with the Dispute Resolution Mechanism under the respective contract and where all appeal instances have been exhausted.
- For a Joint Venture under ITA Sub Clause 18.1, the precise minimum requirements of Leading Partner and other partners shall be as specified in the ADS.

## 10 Joint Venture, Consortium or Association (JVCA)

- 10.1 Applicants may participate in the qualification process and subsequent procurement proceedings by forming a Joint Venture, Consortium or Associations (JVCA) or alternately with the intent to enter into such an agreement supported by a Letter of Intent.
- 10.2 The JV agreement, indicating at least the parts of the Works to be executed by the respective partners, shall be legally entered into case-by-case in the Applicant's Leading Partner's country of origin, as specified in the ADS, duly signed by all legally authorized representatives of the Persons who are parties to such agreement.
- 10.3 Applicants, as an alternate to ITA Sub Clause 9.2, may intend to enter into a JV agreement case-by-case in the form of a Letter of Intent along with the proposed agreement, indicating at least the parts of the Works to be executed by the respective partners, duly signed by all partners of the intended JV and authenticated by an authority of the Applicant's Leading Partner's country of origin, as stated in the ADS, with the declaration that the partners will execute the Joint Venture agreement in the event the Applicant, in the first place pre-qualified and then successful in the subsequent Tender.
- 10.4 Applicants shall submit the Letter of Intent and the proposed JV agreement along with the Application.
- 10.5 For a Joint Venture under ITA Sub Clause 9.1, the precise minimum qualification requirements of Leading Partner and other partners shall be as specified in the ADS.
- 10.6 In cases where a JV partner's, personnel capacity, equipment capacity and financial capacity individually fulfils the precise minimum qualifying requirement of that particular component as specified, capacities of such partner(s) in the JV will be combined together for summation to determine the total precise minimum qualifying requirements criterion of that JV as stated under ITA Sub Clause 9.5.
- 10.7 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.
- 10.8 The JV shall nominate a Representative (partner-in-charge) 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.
- 10.9 The composition or the constitution of a JV once formed shall not be allowed to be altered prior to signing of the Contract.
- 10.10 Alteration of partners to the composition or constitution at a date later than the signing of the Contract during execution shall be allowed by the Employer only when any of such partners is found to be incompetent or has serious difficulties which may impact the overall implementation of the proposed Works, where the incoming partner shall require to have qualifications higher than that of the outgoing partner.

10.11 Each partner of the JV shall complete the JV Partner Information (Form F3) for submission with the Application.

## 11 Contents of Application

11.1 The Application prepared by the Applicants shall comprise the following:

- 11.1.1 Application Submission Letter (Form F-1);
- 11.1.2 Applicant Information (Form F-2);
- 11.1.3 documents demonstrating that they are enrolled in the relevant professional or trade organizations registered in their country of origin;
- 11.1.4 written confirmation authorizing the signatory of the Application to commit the Applicant;
- 11.1.5 documents confirming the legal capacity stating that there are no existing orders of any judicial court that prevents either the Applicant or employees of that Applicant subsequently entering into or signing a Contract with the Employer;
- 11.1.6 documents confirming that the Applicant is not insolvent, in receivership, bankrupt or in the process of bankruptcy, temporarily barred from undertaking business and shall not be the subject of legal proceedings for any of the foregoing;
- 11.1.7 documents confirming that all claims, arbitration or other litigation cases have been satisfactorily resolved, and if not, they shall have no serious negative impact on the financial capacity of the Applicant;
- 11.1.8 documents confirming that the Applicant has fulfilled its obligations to pay taxes and social security contributions under the provisions of laws and regulations of its country of origin as a proof of fulfilment of taxation obligations;
- 11.1.9 documents establishing the Applicant's eligibility to perform the contract;
- 11.1.10 documents establishing the origin of all Materials, Equipment and services to be supplied under the Contract, as stated under ITA Clause 26;
- 11.1.11 documents establishing the minimum qualifications of the Applicant required to be met for due performance of the Works and physical services under the contract;
- 11.1.12 any other document as specified in the ADS.

11.2 In addition to the requirements stated under ITA Sub Clause 9.1, Applications submitted by a JV or proposing a Specialized Subcontractor shall include:

- 11.2.1 Joint Venture Agreement legally entered into in the Applicant's Leading Partner's country of origin, by all partners, as stated under ITA Sub Clause 18.2;

Or,

- 11.2.2 Letter of Intent along with the proposed agreement duly signed by all partners of the intended JV and authenticated by an authority of the Applicant's Leading Partner's country of origin with the declaration that it will execute the Joint Venture Agreement in the event the Applicant and the Tenderer is successful in the subsequent Tender, as stated under ITA Sub Clause 18.3;



**ASIAN UNIVERSITY  
FOR WOMEN**

- 11.2.3 the JV Partner Information (**Form F-3**), as stated under ITA Sub Clause 18.11;
- 11.2.4 the Specialist Subcontractor Information (**Form F-4**), as stated under ITA Sub Clause 19.6.

## **12 Documents Establishing the Applicant's Qualification**

12.1 Applicants shall complete and submit the Applicant Information (**Form F-2**) and shall include documentary evidence, as applicable to satisfy the following:

- 12.1.1 details on the financial standing of the Tenderer, such as profit and loss statements and corresponding auditor's report establishing the liabilities and assets;
- 12.1.2 details of general experience in Fire management works on case-by-case procurement proceedings performed for each of the last years along with the sums, dates and recipients;
- 12.1.3 details of specific experience in construction works of similar nature and size on case-by-case procurement proceedings performed for each of the last years along with the sums, dates and recipients;
- 12.1.4 details of average annual turnover for a period;
- 12.1.5 details of existing commitments and works to assess the minimum Tender Capacity;
- 12.1.6 details of adequacy of working capital for the subsequent Tender i.e., access to line(s) of credit and availability of other financial resources;
- 12.1.7 details of numbers of technical and administrative personnel along with their qualification and experience proposed for the subsequent Tender;
- 12.1.8 details of Applicant's technical facilities, available major construction equipment's, measures for ensuring quality such as, ISO certification and design, research and development facilities proposed to carry out the Contract;
- 12.1.9 details of Procuring Entities who may be contacted, if necessary, by the Employer; and authority to seek references from the Applicant's bankers or any other sources.

12.2 Applicants, if applying as an existing or intended JV, shall submit documentary evidence to establish its qualifications as stated under ITT and, in particular, it shall submit an affidavit nominating one of the JV partners as the REPRESENTATIVE (partner-in-charge) 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.

## **13 Bank Guarantees**

### **13.1 Performance Bank Guarantee Clause**

- 13.1.1 The successful bidder, upon receiving the Notification of Award (NoA), shall furnish an unconditional and irrevocable **Performance Bank Guarantee** in favor of *Asian University for Women (AUW)*.



- 13.1.2 The amount of the Performance Bank Guarantee shall be **ten percent (10%) of the total Contract Price**, issued from any scheduled bank operating in Bangladesh and acceptable to AUW.
- 13.1.3 The Performance Bank Guarantee shall remain **valid until twenty-eight (28) days after the completion of the Defects Liability Period** or final acceptance of the works, whichever is later.
- 13.1.4 Failure to submit the Performance Bank Guarantee within the stipulated time may result in the cancellation of the award and forfeiture of any right to the contract.
- 13.1.5 The Performance Bank Guarantee shall be returned to the Contractor upon satisfactory completion of all contractual obligations and submission of all completion documents as per AUW's satisfaction.
- 13.1.6 AUW reserves the right to **invoke the Performance Bank Guarantee**, in whole or in part, in the event of the Contractor's default, non-performance, or breach of any contractual terms.

#### 13.2 Advance Payment Bank Guarantee (if applicable)

- 13.2.1 If the Employer provides any **advance payment** to the Contractor, the Contractor shall furnish an **unconditional and irrevocable bank guarantee** for the full amount of the advance, valid until the advance is fully recovered.
- 13.2.2 The Employer may encash the bank guarantee in the event the Contractor **fails to utilize the advance for the purpose of contract execution**.

#### 13.3 Invocation of Bank Guarantee

- 13.3.1 The Bank Guarantee shall be **payable on demand and irrevocable**, and the Employer's written statement regarding Contractor's default shall be **conclusive** for the purpose of encashment.
- 13.3.2 The Bank Guarantee shall remain valid regardless of any disputes under the Contract, until it is **released in writing by the Employer**.

### 14 Liquidated Damages

- 14.1 If the Contractor fails to complete the Works or any part thereof within the time specified in the Contract, the Contractor shall be liable to pay **liquidated damages** at the rate of **1% (one percent) of the Contract Price per week** of delay, unless otherwise specified in the Contract.
- 14.2 The total amount of liquidated damages shall not exceed **10% (ten percent) of the Contract Price**.
- 14.3 Liquidated damages shall be **deducted from any payments due to the Contractor**, including the Performance Security, without prejudice to any other rights of the Employer under this Contract.

### 14 Termination

#### 14.1 Termination for Default

##### 14.1.1 If the Contractor:

- a. Fails to commence, continue, or complete the Works in accordance with the Contract; or

b. Fails to remedy any breach, delay, or defect within the period specified in a written notice from the Employer; the Employer may, at its sole discretion, **terminate the Contract for default**, in whole or in part.

14.1.2 Upon termination for default, the Employer shall have the right to:

- a. **Cancel the Contract** immediately;
- b. **Engage another Contractor** to complete the Works at the risk and cost of the defaulting Contractor;
- c. **Recover from the Contractor all additional costs, losses, and damages** incurred as a result of the Contractor's failure, including legal and administrative expenses;
- d. **Forfeit any Performance Security or other guarantees** provided by the Contractor;
- e. **Restrict or debar the Contractor** from future contracts with the Employer for a period as deemed appropriate.

14.1.3 Termination under this Clause shall be **without prejudice to any other remedies** available to the Employer under the Contract or applicable law, including claims for additional damages or specific performance.

#### 14.2 Termination for Convenience

14.2.1 The Employer may, at any time, **terminate the Contract, in whole or in part, for convenience**, without assigning any reason.

14.2.2 In such cases, the Contractor shall be entitled to payment for:

- a. Work executed up to the date of termination; and
- b. Reasonable costs incurred for materials or commitments directly related to the terminated portion, but **shall not be entitled to any loss of profit or unperformed work**.

#### 14.3 Termination for Insolvency or Bankruptcy

14.3.1 If the Contractor becomes **insolvent, bankrupt, or enters into receivership or liquidation**, the Employer may **terminate the Contract immediately**.

14.3.2 The Employer shall have the right to **recover costs incurred to complete the Works** from any outstanding payments or Performance Security.

#### 14.4 Termination for Force Majeure

14.4.1 If a **Force Majeure event** persists for a period exceeding [insert period, e.g., 90 days], the Employer or Contractor may terminate the Contract by giving written notice.

14.4.2 Upon termination due to Force Majeure:

- a. Neither party shall be liable for damages resulting directly from the termination;
- b. The Contractor shall be paid for all work executed up to the date of termination.

#### 14.5 Acceleration and Material Breach

14.5.1 In case of delays or partial non-performance, the Employer may issue a **directive for accelerated performance**.

14.5.2 Failure to comply with the acceleration directive shall constitute a **material breach**, justifying immediate termination under Clause 14.1

#### 14.6 Effect of Termination

14.6.1 Termination of the Contract under any of the above clauses shall be **without prejudice to any other rights or remedies** of the Employer under the Contract or applicable law.

14.6.2 All obligations of the Contractor regarding **confidentiality, indemnity, and warranty** shall survive termination.

#### 14.7 Acceleration of Completion

14.7.1 In the event of any delay or failure to accomplish the task, the Employer may issue a **written directive for accelerated performance**, specifying the revised timeline and milestones.

14.7.2 Failure to comply with the acceleration directive shall be treated as a **material breach**, justifying immediate termination and enforcement of ITA 14.2.

### 15. Descope and Backcharge

#### 15.1 Descope of Work

15.1.1 The Employer reserves the right to **descope, reduce, or modify the scope of work** under the Contract, in whole or in part, by giving written notice to the Contractor.

15.1.2 Upon receiving a descope notice, the Contractor shall:

- a. Immediately **stop work on the descope items**;
- b. Submit a **revised work plan, cost estimate, and schedule** within 7 working days; and
- c. **Deliver any completed work, materials, or documentation** related to the descope items.

15.1.3 The Employer shall **adjust the Contract Price** proportionally to reflect the descope work. Such adjustment shall include:

- a. Reduction of contract payment corresponding to the value of descope items; and
- b. Recovery of any **unapproved costs incurred by the Contractor** on the descope items.

#### 15.2 Back charge

15.2.1 The Employer may **back charge the Contractor** for costs or damages incurred due to:

- a. Non-performance, defective work, or delay caused by the Contractor;
- b. Failure to comply with specifications, drawings, or contractual obligations; or
- c. Additional work or remedial work carried out by the Employer or third parties to complete the Contractor's scope.

15.2.2 Back charge amounts shall be:

- a. **Deducted from any payment due** to the Contractor, including Performance Bank Guarantee; or
- b. **Payable by the Contractor directly** within 15 days of written notice.

15.2.3 The Contractor shall **not be entitled to any extension of time, additional payment, or claim** for costs related to the back charged items.

### 15.3 Procedure for Issuing Descope or Backcharge Notices

15.3.1 The Employer shall issue **written notice specifying:**

- a. The descope work or backcharged items;
- b. The reason for descope or backcharge;
- c. The monetary amount, if applicable; and
- d. The time for compliance or payment.

15.3.2 The Contractor shall **acknowledge receipt of the notice** and comply with all instructions without delay.

### 15.4 Survival of Rights

All rights of the Employer to descope, backcharge, recover costs, or enforce compliance under this Clause shall **survive the termination or completion of the Contract.**

### 16 Employer's Entitlement to Remedy Default

If the Contractor fails to execute any part of the Works, to remedy a defect, or to complete outstanding work within a reasonable time following notice from the Employer, the Employer shall be entitled to carry out all necessary work at the Contractor's cost by employing other persons. All necessary costs so incurred shall constitute a debt due from the Contractor to the Employer, recoverable by deduction from payments due or otherwise; provided always that the Contractor's liability and obligations under the Contract shall not be affected or diminished by the exercise of this right by the Employer.

### 17 DISPUTES

In no event shall AUW be liable to the Contractor for payments for any extra work the Contractor performs in addition to that required under the Statement of Work above unless the Contractor performs such work by written directive of AUW and unless the contract is amended accordingly. No officer, director, employee, or agent of AUW is authorized to direct any extra work by oral order. In the event of any claims or disputes arising from or relating to this Purchase Order, the parties shall use their best efforts to settle the claims or disputes. To this effect, they shall consult and negotiate with each other in good faith and, recognizing their mutual interests, attempt to reach a just and equitable solution satisfactory to both parties. If they fail to reach such a solution within THIRTY (30) days, either Party may refer the matter to arbitration, as per the law of Bangladesh, which shall be the exclusive method of resolving such disputes. The arbitration shall be conducted in Chattogram, Bangladesh. The results of arbitration shall be final and binding on the Parties and shall be in lieu of any other remedy.

### 17 Alternatives due to failure of completion by the contractor

If the contractor fails to complete specific items of work within the time schedule, the client reserves the right to assign to the completion of works those specific items to another contractor. The cost incurred for completing those items will be deducted from the original contractor's total bill. Additionally, the Defects Liability Period (DLP) for the reassigned work will still be the responsibility of the original (general) contractor.



ASIAN UNIVERSITY  
FOR WOMEN

Section 2. Application Data Sheet

ITA Clause	Amendments of, and Supplements to, Clauses in the Instructions to Applicants
	RFP IDENTIFICATION NO: _____
<b>A. General</b>	
ITA 1.1	The Employer is <i>Asian University for Women represented by Deputy Project Director, Asian University for women, 20/A, M.M Ali Road, Chattogram-4000, Bangladesh.</i>
	<p>The Name of the Subsequent Tender is: <i>Substation for three storied with a semi- basement Academic Building for Asian University for women.</i></p> <p>Application Ref:.....</p> <p>Package No:.....</p> <p><i>[if there is more than one(1) lot, individual lots are to be identified]</i></p>
ITA3.1	The source of public funds is: <i>AUW own fund.</i>
ITA3.3	The name of the Development Partner is: <i>None</i>
ITA6.1	Materials, Equipment's and associated services from the following countries are not eligible: <i>Israel</i>

<b>B. Qualification Criteria</b>	
<b>ITA13.1</b>	Non-performance of a contract shall not occur within the last <i>5 (five)</i> years. <i>[years counting backward from the date of publication of RFP]</i>
<b>ITA13.2</b>	All pending litigation shall in total not represent more than <i>15 (fifteen)</i> percent of the Applicant's net worth.
<b>ITA 14.1 (a)</b>	The minimum number of years of general experience of the Applicant in public or private Substation as Prime Contractor shall be <i>10 (ten)</i> years.  <i>[years counting backward from the date of publication of RFP]</i>
<b>ITA14.1 (b)</b>	The minimum specific experience as a Substation works of at least <i>1 (one)</i> contract(s) of similar nature, complexity and methods/technology completed over a period of <i>5 (five)</i> years shall be required.  <i>[years counting backward from the date of publication of RFP.]</i>
<b>ITA 14.1(c)</b>	A satisfactory completion of similar works of at least BDT <i>15 (Fifteen) crore</i> under a single contract over a period of <i>3 (three)</i> years shall be required.  <i>[years counting backward from the date of publication of RFP.]</i>

<b>ITA 15.1</b>	The required average annual turnover of Substation works shall be greater than <i>BDT 10 (Ten)</i> crore over the last 5 ( <i>five</i> )years ( <i>best three years</i> ). <i>[years counting backward from the date of publication of RFP.]</i>																								
<b>ITA 15.1(c)</b>	The minimum amount of liquid assets or working capital or credit facilities of the Applicant shall be greater than <i>BDT 10.50 (Ten point five zero) crore</i> on a day after publication of RFP.																								
<b>ITA 16.1(a)</b>	A Project Manager shall have the following qualifications and experience: <table border="1" data-bbox="352 461 1442 595"> <thead> <tr> <th data-bbox="352 461 461 539">No</th> <th data-bbox="461 461 788 539">Position</th> <th data-bbox="788 461 1134 539">Total Works Experience (years)</th> <th data-bbox="1134 461 1442 539">In Similar Works Experience(years)</th> </tr> </thead> <tbody> <tr> <td data-bbox="352 539 461 595">1.</td> <td data-bbox="461 539 788 595">Project Manager</td> <td data-bbox="788 539 1134 595">12 yrs</td> <td data-bbox="1134 539 1442 595">10 yrs</td> </tr> </tbody> </table>	No	Position	Total Works Experience (years)	In Similar Works Experience(years)	1.	Project Manager	12 yrs	10 yrs																
No	Position	Total Works Experience (years)	In Similar Works Experience(years)																						
1.	Project Manager	12 yrs	10 yrs																						
<b>ITA 16.1(b)</b>	The minimum number of Engineers with qualifications and experience shall be as follows: <table border="1" data-bbox="352 663 1442 864"> <thead> <tr> <th data-bbox="352 663 432 786">No.</th> <th data-bbox="432 663 919 786">Position</th> <th data-bbox="919 663 1158 786">Total Works Experience (years)</th> <th data-bbox="1158 663 1442 786">In Similar Works Experience (years)</th> </tr> </thead> <tbody> <tr> <td data-bbox="352 786 432 819">1.</td> <td data-bbox="432 786 919 819">Project Engineer., B.Sc. Engr. (Civil)</td> <td data-bbox="919 786 1158 819">Min. 8 yrs</td> <td data-bbox="1158 786 1442 819">Min. 6 yrs</td> </tr> <tr> <td data-bbox="352 819 432 864">2.</td> <td data-bbox="432 819 919 864">Project Engineer., B.Sc. Engr. (MEP)</td> <td data-bbox="919 819 1158 864">Min. 8 yrs</td> <td data-bbox="1158 819 1442 864">Min. 6 yrs</td> </tr> </tbody> </table>	No.	Position	Total Works Experience (years)	In Similar Works Experience (years)	1.	Project Engineer., B.Sc. Engr. (Civil)	Min. 8 yrs	Min. 6 yrs	2.	Project Engineer., B.Sc. Engr. (MEP)	Min. 8 yrs	Min. 6 yrs												
No.	Position	Total Works Experience (years)	In Similar Works Experience (years)																						
1.	Project Engineer., B.Sc. Engr. (Civil)	Min. 8 yrs	Min. 6 yrs																						
2.	Project Engineer., B.Sc. Engr. (MEP)	Min. 8 yrs	Min. 6 yrs																						
<b>ITA 16.1(c)</b>	Other key staff with qualifications and experience shall be as follows[ <i>state requirements</i> ]: <table border="1" data-bbox="352 999 1442 1155"> <thead> <tr> <th data-bbox="352 999 432 1111">No.</th> <th data-bbox="432 999 919 1111">Position</th> <th data-bbox="919 999 1110 1111">Total Works Experience (years)</th> <th data-bbox="1110 999 1442 1111">In Similar Works Experience (years)</th> </tr> </thead> <tbody> <tr> <td data-bbox="352 1111 432 1155">1.</td> <td data-bbox="432 1111 919 1155">Materials Engineer, Dip-in Engr. (Civil)</td> <td data-bbox="919 1111 1110 1155">Min. 7 yrs.</td> <td data-bbox="1110 1111 1442 1155">Min. 05 yrs</td> </tr> </tbody> </table>	No.	Position	Total Works Experience (years)	In Similar Works Experience (years)	1.	Materials Engineer, Dip-in Engr. (Civil)	Min. 7 yrs.	Min. 05 yrs																
No.	Position	Total Works Experience (years)	In Similar Works Experience (years)																						
1.	Materials Engineer, Dip-in Engr. (Civil)	Min. 7 yrs.	Min. 05 yrs																						
<b>ITA 17.1</b>	The Applicant shall own or have proven access to hire or lease of the major equipments to accomplish the tasks, Mention the equipment lists to accomplish the tasks as below: <table border="1" data-bbox="352 1357 1442 1805"> <thead> <tr> <th data-bbox="352 1357 432 1435">No</th> <th data-bbox="432 1357 1142 1435">Equipment Type and Characteristics</th> <th data-bbox="1142 1357 1442 1435">Minimum Number Required</th> </tr> </thead> <tbody> <tr> <td data-bbox="352 1435 432 1491">1.</td> <td data-bbox="432 1435 1142 1491">Essential tools &amp; equipment</td> <td data-bbox="1142 1435 1442 1491"></td> </tr> <tr> <td data-bbox="352 1491 432 1536">2.</td> <td data-bbox="432 1491 1142 1536">Essential tools &amp; equipment for small scale metal works</td> <td data-bbox="1142 1491 1442 1536"></td> </tr> <tr> <td data-bbox="352 1536 432 1603">3.</td> <td data-bbox="432 1536 1142 1603"></td> <td data-bbox="1142 1536 1442 1603"></td> </tr> <tr> <td data-bbox="352 1603 432 1659">4.</td> <td data-bbox="432 1603 1142 1659"></td> <td data-bbox="1142 1603 1442 1659"></td> </tr> <tr> <td data-bbox="352 1659 432 1715">5.</td> <td data-bbox="432 1659 1142 1715"></td> <td data-bbox="1142 1659 1442 1715"></td> </tr> <tr> <td data-bbox="352 1715 432 1760">6.</td> <td data-bbox="432 1715 1142 1760"></td> <td data-bbox="1142 1715 1442 1760"></td> </tr> <tr> <td data-bbox="352 1760 432 1805">7.</td> <td data-bbox="432 1760 1142 1805"></td> <td data-bbox="1142 1760 1442 1805"></td> </tr> </tbody> </table>	No	Equipment Type and Characteristics	Minimum Number Required	1.	Essential tools & equipment		2.	Essential tools & equipment for small scale metal works		3.			4.			5.			6.			7.		
No	Equipment Type and Characteristics	Minimum Number Required																							
1.	Essential tools & equipment																								
2.	Essential tools & equipment for small scale metal works																								
3.																									
4.																									
5.																									
6.																									
7.																									
<b>ITA 18.2</b>	In the case the Applicant's Leading Partner's country of origin is Bangladesh, the value of non-judicial stamp for execution of the Joint Venture agreement shall be BDT <i>BDT 300 (three hundred) only</i>																								
<b>ITA 18.3</b>	In the case the Applicant's Leading Partner's country of origin is Bangladesh, the Letter of Intent along with the proposed agreement shall be authenticated by a Notary Public.																								

<b>ITA 18.5</b>	The <b>minimum qualification</b> requirements of Leading Partner and other Partner(s) of a JV shall be as follows:			
	<b>ADS Clauses References</b>	<b>Requirements by summation</b>	<b>Requirements for Leading Partner</b>	<b>Requirements for another Partner(s)</b>
	ITA-14.1(a)	Summation not applicable	Same as stated in ADS	Same as for Leading Partner
	ITA-14.1(b)	100%	At least one characteristic	Not applicable
	ITA-14.1(c)	100%	At least one characteristic	Not applicable
	ITA-15.1(a)	100%	40%	25%
	ITA-15.1(b)	100%	40%	25%
	ITA-15.1(c)	100%	40%	25%
	ITA-16.1(a)	Summation not applicable	To be appointed by lead partner	Not applicable
	ITA-16.1(b)	100%	At least one characteristic	Not applicable
	ITA-16.1(c)	100%	At least one characteristic	Not applicable
ITA-17.1	100%	At least one characteristic	Not applicable	
<b>ITA 19.4</b>	The Employer intends to execute the following specific components of the proposed Works by the Nominated Subcontractor(s): <i>None</i>			
<b>ITA 20.1</b>	Domestic Preference <i>shall not</i> be applicable for eligible National Tenderers			
<b>D. Application Preparation</b>				
<b>ITA 23.4</b>	Use of Qualification Document posted in the website <i>is not</i> permitted for preparation of Applications.			
<b>ITA 25.1</b>	The Applicant shall provide with its Application the following additional documents: <i>None</i>			

### E. Application Submission

**ITA31.1**

For *Application submission purposes* only, the Employer's address is:

For *Tender submission purposes* only, the Procuring Entity's address is:

TO AUW PROCURMENT COMMITTEE

Email address: [tender147@auw.edu.bd](mailto:tender147@auw.edu.bd)

The deadline for the submission of Applications is:

*Time & Date: 12:01pm. 13/01/2026*

### Section 3. Application Forms

Form Title

**Application Forms**

- F – 1 Application Submission Letter
- F – 2 Applicant Information
- F – 3 JV Partner Information (*if applicable*)
- F – 4 Subcontractor Information (*if applicable*)
- F – 5 Historical Contract Non-Performance
- F – 6 Personnel Information

## Application Submission Letter (Form F-1)

*[This letter should be completed and signed by the Authorized Signatory preferably on the Letter-Head Pad of the Applicant]*

To:

Date:[dd/mm/yy]

***[Contact Person]***

***[Name of Employer]***

***[Address of Employer]***

**Invitation for Qualification No:**

***[indicate RFP No]***

**Tender Package No:**

***[indicate Package No]***

**This Package is divided into the following Number of Lots** ***[indicate number of Lot(s)]***

We, the undersigned, apply to be qualified for the referenced Works and Physical Services and declare that:

- (a) We have examined and have no reservations to the Qualification Document, issued by you on *[insert date]*; including *[state numbers]*.
- (b) We, including as applicable, any JVCA partner or Specialist Subcontractor for any part of the contract resulting from this Qualification process, have nationalities from eligible countries according to the ITA. *[insert the nationality of the Applicant, including that of all partners in case of a Joint Venture, and the nationality of each already identified subcontractor, if applicable];*
- (c) we are submitting this Application as a sole Applicant;  
or  
we are submitting this Application as the partners of a JVCA, comprising the following other partners;

Sl. No	Name of Partner	Address of Partner
1		
2		
3		

or

- (e) we, including as applicable any JVCA 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 ITA;
- (f) we intend to subcontract an activity or part of the Works, to the following Specialist Subcontractor(s);

Activity or part of the Works	Name of Specialist Subcontractor with Address

- (g) we, including as applicable any JVCA partner, confirm that we do not have a record of poor performance, such as abandoning the works, not properly completing contracts, inordinate delays, or financial failure as stated in ITA, and that we do not have, or have had, any litigation against us, other than that stated in the Applicant Information (**Form -2**);
- (h) we, including as applicable any JVCA 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 ITA;
- (i) we, including as applicable any JVCA partner, confirm that we have fulfilled our obligations to pay taxes and social security contributions applicable under the relevant national laws and regulations of our country(s) of origin in accordance with;
- (j) we, including as applicable any JVCA partner or Specialist Subcontractor for any part of the contract resulting from this Qualification process, have not been declared ineligible by any International Development Agency or the Government of Bangladesh on charges of engaging in corrupt, fraudulent, collusive or coercive practices in accordance with ITA; or by an act of compliance with a decision of the United Nations Security Council.
- (k) furthermore, we are aware of ITA concerning such practices and pledge not to indulge in such practices in competing for or in executing the Contract;
- (l) we are not participating as Applicants in more than one Application in this pre-qualification process;
- (m) we understand that you may cancel the prequalification process at any time and that you are neither bound to accept any Application that you may receive nor to invite the pre-qualified Applicants to tender for the contract subject of this prequalification, without incurring any liability to the Applicants.

Signature:	<i>[insert signature of authorised signatory of the Applicant]</i>
Name:	<i>[insert full name of signatory with National ID Number]</i>
In the capacity of:	<i>[insert capacity of signatory]</i>

Duly authorized to sign the Application for and on behalf of the Applicant

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

**Attachment 1:**

Written confirmation authorizing the above signatory to commit the Applicant and the subsequent Tenderer  
*[and, if applicable]*

**Attachment 2:**

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



**ASIAN UNIVERSITY  
FOR WOMEN**

**Applicant Information (Form -2)**

*[This Form should be completed only by the Applicant, preferably on its Letter-Head Pad]*

Invitation for Qualification No: *[indicate IFP No]*  
 Tender Package No: *[indicate Package No]*  
 This Package is divided into the following Number of Lots: *[indicate number of Lot(s)]*

1. Eligibility Information of the Applicant [According to ITT]	
1.1	Nationality of individual or country of registration
1.2	Applicant's legal title
1.3	Applicant's registered address
1.4	Applicant's legal status <i>[complete the relevant box]</i>
	Proprietorship
	Partnership
	Limited Liability Concern
	Government-owned Enterprise
	Others <i>[please describe, if applicable]</i>
1.5	Applicant's year of registration
1.6	Applicant's authorised representative details
	Name
	National ID number, if any
	Address
	Telephone / Fax numbers
	e-mail address
1.7	Litigation ITT
	Information on non-performance of contract and pending litigation furnished in Form <b>F-5</b>
1.8	Applicant to attach photocopies of the original documents mentioned aside
	<i>[All documents required under ITT Clauses]</i>
The following two information are applicable for national Applicants	

1.9	Applicant's Value Added Tax Registration (VAT) Number				
1.10	Applicant's Tax Identification Number(TIN)				
[The foreign Applicants, in accordance with ITT Clause 5, shall provide evidence by a written declaration to that effect to demonstrate that it meets the criterion]					
<b>2. Qualification Information of the Applicant [According to ITT Clause]</b>					
<b>2.1 General Experience in HVAC Works of Applicant</b>					
	<b>Start Month Year</b>	<b>End Month Year</b>	<b>Years</b>	<b>Contract No and Name of Contract Name and Address of Employer Brief description of Works</b>	<b>Role of Applicant [Prime/Sub/Management]</b>
<b>2.2 Specific Experience in HVAC Works of Applicant Completed Contracts of similar nature, complexity and methods/ technology</b>					
	<b>Contract No</b>		[ insert reference no] of [ insert year]		
	<b>Name of Contract</b>		[insert name]		
	<b>Role in Contract</b> <i>[tick relevant box].</i>		Prime Contractor	Subcontractor	Management Contractor
	<b>Award date</b>		[insert date]		
	<b>Completion date</b>		[insert date]		
	<b>Total Contract Value</b>		[insert amount]		
	<b>Employer's Name Address Tel / Fax <u>e-mail</u></b>				
	<b>Brief description with justifications of the similarity compared to this Employer's requirements</b>		[state justification in support of its similarity compared to the proposed works]		
<b>2.3 Average annual turnover</b> <i>[total certified payments received for contracts in progress or completed for each year of works in progress or completed; using selling exchange rate quoted by the source being Bangladesh Bank on the date reported, if applicable]</i>					
	<b>Year</b>	<b>Amount &amp; Currency</b>			

2.4	<b>Existing commitments and works</b> [targeted to be completed by the Intended Completion Date of the proposed works]		
	<b>Name of Contract</b> <b>Contract No [reference] of [year]</b> <b>Name of Employer</b> <b>Contact Address</b> <b>Tel/fax</b> <b>e-mail</b>	<b>Target Completion Date</b>	<b>Value of Existing Commitments and Works</b>
			<b>Amount &amp; Currency</b>
2.5	<b>Financial Resources available to meet the Substation cash flow</b>		
	<b>No</b>	<b>Source of Financing</b>	<b>Amount Available</b>
			<b>Amount &amp; Currency</b>
In order to confirm the above statements the Applicant shall submit, as applicable, the documents			
2.6	<b>Contact Details [According to ITT]</b>		
	Name, address, and other contact details of Applicant's Bankers and other Employer(s) that may provide references, if contacted by this Employer		
2.7	<b>Qualifications and experience of key technical and administrative personnel proposed for Contract administration and management [According to ITT]</b>		
	<b>Position</b> <b>Name</b> <b>Years of General Experience</b>	<b>Years of Specific Experience</b>	
<i>[Tenderer to complete details of as many personnel as are applicable .Each personnel listed above should complete the Personnel Information (Form-6)]</i>			
2.8	<b>Major Construction Equipment's proposed to carry out the Contract [According to ITT]</b>		
	<b>Item of Equipment</b>	<b>Condition</b> (new, good, average, poor)	<b>Owned, leased or to be purchased</b> (state owner, lessor or seller)
<i>[Applicant to list details of each item of major construction equipment, as applicable]</i>			

## JVCA Partner Information (Form -3)

*[This Form should be completed by each JVCA partner].*

Invitation for Qualification No:

*[indicate IFP No]*

Tender Package No

*[indicate Package No]*

This Package is divided into the following Number of Lots

1. Eligibility Information of the JVCA Partner <i>[According to ITT]</i>		
1.1	Nationality of Individual or country of Registration	
1.2	JVCA Partner's legal title	
1.3	JVCA Partner's registered address	
1.4	JVCA Partner's legal status <i>[complete the relevant box]</i>	
	Proprietorship	
	Partnership	
	Limited Liability Concern	
	Government-owned Enterprise	
	Other (please describe, if applicable)	
1.5	JVCA Partner's year of registration	
1.6	JVCA Partner's authorised representative details	
	Name	
	National ID number, if any	
	Address	
	Telephone / Fax numbers	
	e-mail address	
1.7	Litigation	
	Information on non-performance of contract and pending litigation furnished in <b>Form-5</b>	
1.8	JVCA Partner to attach copies of the original documents mentioned aside	[All documents required under ITT Clauses]
The following two information are applicable for national JVCA Partners only		
1.9	JVCA Partner's Value Added Tax Registration (VAT) Number	

1.10	JVCA Partner's Tax Identification Number(TIN)				
[The foreign JVCA Partners, in accordance with ITT, shall provide evidence by a written declaration to that effect to demonstrate that it meets the criterion]					
<b>2. Key Activity(ies) for which it is intended to be joint ventured [According to ITT ]</b>					
	<b>Elements of Activity</b>	<b>Brief description of Activity</b>			
<b>3. Qualification Information of the JVCA Partner [ITT]</b>					
3.1	<b>General Experience in Construction Works of JVCA Partner</b>				
	<b>Start Month Year</b>	<b>End Month Year</b>	<b>Years</b>	<b>Contract No and &amp; Name of Contract Name and Address of Procuring Entity Brief description of Works</b>	<b>Role of JVCA Partner [Prime/Sub/Management]</b>
3.2	<b>Specific Experience in Construction Works of JVCA Partner Completed Contracts of similar nature, complexity and methods/construction technology</b>				
	<b>Contract No</b>		[ insert reference no] of [ insert year]		
	<b>Name of Contract</b>		[insert name]		
	<b>Role in Contract [tick relevant box]</b>		Prime Contractor	Subcontractor	Management Contractor
	<b>Award date</b>		[insert date]		
	<b>Completion date</b>		[insert date]		
	<b>Total Contract Amount</b>		[insert amount]		
	<b>If partner in a JV, specify participation of the total Contract Amount</b>		_____ %	Amount & Currency [insert amount] USD/GBP/EUR/JPY Equivalent [insert amount] delete not appropriate	
	<b>Employer's Name Address Tel / Fax e-mail</b>		[state justification in support of its similarity compared to the proposed works]		
	<b>Brief description with justifications of the similarity compared to this Employer's requirements</b>				
3.3	<b>Average annual construction turnover</b> <i>[total certified payments received for contracts in progress or completed for each year of works in progress or completed; using selling exchange rate quoted by the source being Bangladesh Bank on the date reported, if applicable]</i>				
	<b>Year</b>	<b>Amount &amp; Currency</b>			

3.4	<b>Existing commitments and works</b> [targeted to be completed by the Intended Completion Date of the proposed works;]								
	<b>Name of Contract</b> <b>Contract no [reference] of [year]</b> <b>Name of Employer</b> <b>Contact Address</b> <b>Tel/fax</b> <b>e-mail</b>	<b>Target Completion Date</b>	<b>Value of Existing Commitments and Works</b>  <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;"><b>Amount &amp; Currency</b></td> <td></td> </tr> <tr> <td> </td> <td> </td> </tr> </table>	<b>Amount &amp; Currency</b>					
<b>Amount &amp; Currency</b>									
3.5	<b>Financial Resources available to meet the construction cash flow</b>								
	<b>No</b>	<b>Source of financing</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;"><b>Amount Available</b></td> </tr> <tr> <td style="width: 30%;"><b>Amount &amp; Currency</b></td> <td></td> </tr> <tr> <td> </td> <td> </td> </tr> </table>	<b>Amount Available</b>		<b>Amount &amp; Currency</b>			
<b>Amount Available</b>									
<b>Amount &amp; Currency</b>									
	In order to confirm the above statements the JVCA Partner shall submit, as applicable, the documents mentioned in ITT Clause 28.								
3.6	<b>Contact Details</b>								
	Name, address, and contact details of Tenderer's Bankers and other Employer(s) that may provide references if contacted by this Employer								
3.7	<b>Qualifications and experience of key technical and administrative personnel proposed for Contract administration and management</b>								
	<b>Position</b> <b>Name</b> <b>Years of General Experience</b>	<b>Years of Specific Experience</b>							
	<i>[Tenderer to complete details of as many personnel as are applicable. Each personnel listed above should complete the Personnel Information (Form -6)]</i>								
3.8	<b>Major items of Construction Equipment proposed for carrying out the works [ITT Clause 28]</b>								
	<b>Item of Equipment</b>	<b>Condition</b> (new, good, average, poor)	<b>Owned, leased or to be purchased</b> (state owner, leaser or seller)						
	<i>[Tenderer to list details of each item of Major equipment, as applicable]</i>								

\_\_\_\_\_  
 Signatur  
 e (Name of Authorized Signatory of the JVCA  
 Partner)

## Specialist Subcontractor Information (Form F-4)

*[This Form should be completed by each Subcontractor, preferably on its Letter-Head Pad]*

Invitation for Qualification No:

*[indicate IFP No]*

Tender Package No

*[indicate Package No]*

This Package is divided into the following Number of Lots

1. Eligibility Information of the Subcontractor [ITT]		
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	
	Partnership	
	Limited Liability Concern	
	Government-owned Enterprise	
	Other (please describe)	
1.5	Subcontractor's year of registration	
1.6	Subcontractor's authorized representative details	
	Name	
	Address	
	Telephone / Fax numbers	
	e-mail address	
1.7	Subcontractor to attach copies of the following original documents	All documents to the extent relevant to ITT Clause 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, 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**

2.1	Elements of Activity	Brief description of Activity
2.2	<b>List of Similar Contracts in which the proposed Subcontractor had been engaged</b>	
	<b>Name of Contract and Year of Execution</b> <b>Value of Contract</b> <b>Name of Employer</b> <b>Contact Person and Contact details</b> <b>Type of Work Performed</b>	

\_\_\_\_\_

Signature (Name of Authorized Signatory of the Proposed Sub-Contractor)



**ASIAN UNIVERSITY  
FOR WOMEN**

**Historical Contract Non-Performance (Form F-5)**

*[The following table shall be filled in for the Applicant and for each partner of a Joint Venture]*

Applicant's Legal Name: *[insert full name]*

Date: *[dd/mm/yy]*

Joint Venture Party Legal Name: *[insert full name]* IFP No. and title: *[insert RFP number and title]*

Page *[insert page number]* of *[insert total number]* pages

Non-Performing Contracts in accordance with Qualification Criteria and Requirements			
<input type="checkbox"/> Contract non-performance did not occur during the <i>[number]</i> years specified in Qualification Criteria and Requirements, <input type="checkbox"/> Contract(s) not performed during the <i>[number]</i> years specified in Qualification Criteria and Requirements,			
Year	Non performed portion of contract	Contract Identification	Total Contract Amount (Current value)
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for non performance: <i>[indicate main reason(s)]</i>	
Pending Litigation, in accordance with Qualification Criteria and Requirements			
<input type="checkbox"/> No pending litigation in accordance with Qualification Criteria and Requirements, <input type="checkbox"/> Pending litigation in accordance with Qualification Criteria and Requirements, as indicated below.			
Year	Outcome as Percentage of Total Assets	Contract Identification	Total Contract Amount (current value)
<i>[insert year]</i>	<i>[insert percentage]</i>	Contract Identification: <i>[indicate complete contract name, number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Matter in dispute: <i>[indicate main issues in dispute]</i>	<b>Total Contract Amount (current value)</b>



**ASIAN UNIVERSITY  
FOR WOMEN**  
Personnel Information (Form -6)

***[This Form should be completed for each person proposed by the Tenderer on Form PW5-2& PW5-3, where applicable]***

Name of the Applicant:	<i>[insert Title]</i>
Invitation for Tender No:	<i>[indicate RFP 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>

<b>A. Proposed Position</b> (tick the relevant box)		
<input type="checkbox"/> Electrical/Mechanical Engineer	<input type="checkbox"/> Prime Candidate	<input type="checkbox"/> Alternative Candidate
<input type="checkbox"/> Key Personnel	<input type="checkbox"/> Prime Candidate	<input type="checkbox"/> Alternative Candidate
<b>B. Personal Data</b>		
Name:		
Date of Birth:		
Years overall experience:		
National ID Number:		
Years of employment with the Tenderer:		
Professional Qualifications: 1.		
2.		
3.		
4.		
<b>C. Present Employment</b> <i>[to be completed only if not employed by the Applicant]</i>		
Name of the Employer:		
Address of the Employer:		
Present Job Title:		
Years with the present Employer:		
Tel No:	Fax No:	e-mail address:

---

Contact *[manager/personnel officer]*:

**D. Professional Experience**

Summaries professional experience over the last twenty **(20)** 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			
3			
4			
5			

\_\_\_\_\_  
(Name and Signature of the Proposed Personnel)

---

## SECTION 2

SN	INDEX
1	METHOD STATEMENT
2	TENTATIVE BOQ OF SUBSTATION & BBT OF SERVICE BUILDING
3	TENTATIVE BOQ OF DIESEL GENERATORS OF SERVICE BUILDING
4	TENTATIVE BOQ OF CABLES OF SERVICE BUILDING
5	TENTATIVE BOQ OF SYSTEM EARTHING OF SERVICE BUILDING
6	TENTATIVE BOQ OF INTERNAL ELECTRIFICATION OF SERVICE BUILDING
7	TENTATIVE BOQ OF FIRE DETECTION & PROTECTION SYSTEM OF SERVICE BUILDING
8	TENTATIVE BOQ OF HVAC SYSTEM OF SERVICE BUILDING
9	TENTATIVE BOQ OF CIVIL WORKS OF SERVICE BUILDING

## BRIEF REPORT ON METHOD STATEMENT REVIEW

Project: Asian University for Women, Campus Project, Chattogram, Bangladesh

Equipment covered: 5MW or 2 × Dry-type off-load transformers (2×3150 kVA), HT AVR / excitation system, HT Switchgear (VCB), LT Switchgear, Diesel Generator set (5 MW)

**Standards basis: BNBC (local statutory), IEC series**

The submitted Method Statement outlines the procedure for installation, testing, and commissioning of electrical equipment including 11/0.415 kV transformers, LT switchgear, bus coupler, diesel generator, and synchronizing panel. This review ensures that the proposed methodology meets project quality, safety, and technical standards.

### 1. Standards to be used (key references)

Dry-type power transformers: IEC 60076 series — specifically IEC 60076-11 (dry-type transformer requirements, tests, markings).

Power transformer general tests & ratings: IEC 60076 (general).

High-voltage circuit-breakers / VCB: IEC 62271-100 (specification and testing for three-phase AC circuit-breakers for voltages >1 kV).

Low-voltage switchgear & control gear (LT): IEC 60947 series (60947-1 general rules; 60947-2 circuit-breakers; etc.).

Rotating machines / alternators / excitation & AVR: IEC 60034 series.

Generator set application & ratings: ISO 8528.

Environmental & type testing: IEC 60068 series.

Application Local code/ International Code: Bangladesh National Building Code (BNBC-2006 & amendment 2020).

### 2. Method statement — handling, storage & installation (As Per Industrial Best practice)

#### 3. Method statement — protection, control, interlocking & synchronization

Transformer protection: Overcurrent and temperature protection (IEC 60076).

HT Switchgear (VCB): Interlocks, protection coordination (IEC 62271-100).

LT Switchgear & ATS: Coordination and interlock verification (IEC 60947).

Generator synchronizing & AVR: Follow ISO 8528 and IEC 60034 standards.

#### 4. Method statement — testing & commissioning (SAT)

Pre-commissioning: Visual inspection, IR tests, relay setting verification.

— Commissioning tests: As per IEC standards for each equipment type.

Protection coordination & system studies: Complete and approve before energization.

#### **5. Quality, safety & environmental (site) items**

Use calibrated instruments, comply with BNBC safety and IEC 60068 environmental standards.

#### **6. Deliverables for client approval**

- Supplier declaration of conformity
- Factory test reports
- Site installation drawings and earthing plan
- Protection coordination study
- FAT & SAT certificates

Scope: Supply, Installation, Testing and commissioning of Substation & BBT of Service Building							
SL.	Item Description	Rating/ Country of origin	Unit	Qty	Unit price (BDT)	Total price (BDT)	Rem arks
	<b>SUBSTATION &amp; BBT</b>						
	Supply, installation of Drop out fuse & Lightning arrester according to IEC standards and shall meet latest requirements of BPDB/REB/DESCO /DPDC. as per relevant IEC standards and as per accepted / approved by the Engineer.						
1.00	DROP OUT FUSE ( 1 SET= 3 NOS)		Set	1			
	11kV Drop Out Fuse of Following						
	Rated voltage (Nominal) : 11 Kv						
	Rated max. voltage: 15 kV						
	Rated current (conti.) RMS: 400A						
	Interrupt current RMS: 10 kA						
	Rated frequency: 50 Hz						
	BIL: 75 KV						
	Withstand test voltage :						
	>Dry 1 Min.: 33 kV: 35 KV						
	>Wet, 10 sec: 30 KV						
	Number of Phase: 3						
2.00	Lightning Arrester ( 1 SET= 3 NOS)		Set	1			
	11 KV Outdoor Lightning Arrester of Following						
	Rated voltage (Nominal) : 11 kV						
	Rated system voltage: 12 kV						
	Frequency: 50Hz						
	Manimum spark over (rms): 14kV						
	Maximum spark over (rms): 40 kV						
	Max. impulse spark (crest) : 45 kV						
	Withstand Voltage:						
	> Power frequency 1 Min. dry: 24 kV						
	> Power frequency 10 sec. wet: 28 kV						
	Normal discharge current: 5 kA						
	Impulse current withstand: 55 kA						
	Number of Phase: 3						
3.00	11 KV HT AVR (400A) : ( 1 Set= 3 Nos) ( Imported)		Set	1			

Supply, installation, testing & commissioning of type tested 11KV Automatic Voltage Regulators according to NEMA & ANSI C57. 12.31 or equivalent standards. The auto Voltage Regulators i/c controller & all others shall be from reputed manufacturers of USA / UK / JAPAN / EU/ASEAN countries and shall meet latest requirements of BPDB/REB/DESCO /DPDC. as per relevant IEC standards and as per accepted / approved by the Engineer.						
Automatic Voltage Regulators shall be Type Tested (ASTA) , 75A, 11KV, 3-phase/ 6.35KV, Single Phase in sealed tank design with digital control panel, Ground clamps & standard accessories and as per following technical data/ specification.						
Rated frequency Hz: 50						
Own power. kV :11	254					
Tension system						
Rated current A						
Rated voltage regulator	6.35					
Lighting impulse 1.2 / 50ms (BIL)	95					
1 min power withstand voltage kV	30					
Connection type.	WYE					
Cooling method	ONAN					
Temperature continuous load for maximum ambient temperature of 40C						
=- Oil °C	<50					
- Winding °C	<65					
Range of regulation %	+/- 10%, 32 Steps					
Regulation accuracy %	0.625					
Rated current regime to power ONAN, and voltage of 10V	400					
Mounting	Outdoors, pad mounted					
Transmission mechanism switch taps, duly established.	Direct gear (without chain)					
Number of operations according to IEEE standard	300000					
Dielectric oil						

	- Type	Mineral oil					
	- Standard	IEC 60296					
	Overload capacity						
	Permissible continuous overload, based on the highest winding temperature, exceeding by 5 ° C guaranteed limit %	12					
	Performance guaranteed						
	=-No load current %	<1.5					
	=-Short circuit Impedance %	<1.5					
	Control unit						
	- Manufacturer	SEL					
	- Model	Digital					
	- Type	Microprocessor					
	- Communication port						
	RS - 232	YES					
	- Communication Protocol	DPN 3.0					
	Mass, dimensions and layouts						
	Total mass regulator kg						
	Mass of:						
	Dimension						
	Length mm						
	Width mm						
	Height mm						
4.00	11KV BY PASS PANEL FOR HT AVR (1 SET= 3 NOS)		Set	1			
	11KV BY PASS PANEL (LBS) of following specification :						
	Supply, installation, testing & commissioning of sheet steel clad, dust & vermin proof, free standing, floor mounting, indoor type 11KV By-pass Switch panel boards having self-quenching, single phase, two position device 3-sets LBS type with 25KA (3-sec) and isolating or de-energizing of Auto Voltage Regulator as per following technical data/ specification :						

Supply of 11 KV, 3-phase, 50 Hz, indoor type, high tension switchgear complete with Load Break Switch (LBS), 800 A hard-drawn electrolytic copper bus-bars, 1 No. 0-15 KV range voltmeter & 1 no. ammeter of adequate ranges both with selector switch, 1 no. of panel heater with auto thermostat control switch, manual ON & OFF push button switch and indicators including following components (components such as LBS, HRC fuse, CT, PT shall be manufactured & tested as per NEMA / VDE / IEC / JIS / BS Standards ) assembled locally in 14 SWG sheet steel clad, dust & vermin proof, free standing, floor mounting, epoxy resin powder coat painted cabinet as per relevant IEC standards and as per accepted / approved by the Engineer.						
Panel Details :						
Power System	: 415V TPN + E, 50 Hz (±10%)					
Panel type	: Floor Mounted					
Door type	: Single Door					
MS Sheet Thickness	: 1.6 mm (Metric)					
MS Supporter Thickness	: 2.0 mm (Metric)					
Form of separation	: Compartmentalized (Form 1)					
Dust & vermin	: Protected					
Exhaust Fan	: as per requirement					
Exhaust Louver	: as per requirement					
Cable Entry & Out	: Bottom Side					
CT & Control Wiring	: 2.5 mm <sup>2</sup> & 1.5/1.0m m <sup>2</sup>					

Cable Lugs, Gland & Lock	: as per Required					
Door ECC	: as per Required					
Panel Base	: (75-100) mm (Height)					
Paint	: Powder coated					
Color	: Gray					
Technical Data :						
Service voltage	: 11KV					
Rated voltage	: 12KV					
The equipment proposed under this offer has been designed, manufactured & tested in accordance with the following applicable IEC standards :						
- common clause for high voltage switchgear standards	: IEC 694					
- high voltage switchgear in metallic enclosure	: IEC 298					
- high voltage ac circuit breakers	: IEC 56					
- ac switches and earthing switches	: IEC 129					
- high voltage switches	: IEC 265					
- high voltage combined switch/fuse for ac current	: IEC 420					
- current transformers	: IEC 185					
- voltage transformers	: IEC 186					
- high voltage fuses	: IEC 282					
- control monitoring	: IEC 801					
Load Break Switch with isolator (LBS) :						
1 nos 11KV manually operated off load isolator interlocked with earth switch (for HT Panel)						
1 nos 1KV load break switch (LBS) with suitable 11KV HRC fuse						
3 nos Cast resin insulated dry type 11KV double core (10VA/15VA) current transformer with ratio : 400/5/5A						
3 nos Dry type cast resin insulated potential transformer for open delta connection. Ratio : 11000/110V, class : 0.5, 50VA						
1 nos 6A, TP 10KA, MCB for PT secondary protection.						
1 nos 11 kV meter ( Multifunction)						

	3 nos Indicating Lamp (for phase indicating)						
	1 nos Panel heater with control accessories.						
	Assembled by the valid ISO-9001 certified company having test certificate (within at least 5 years) according to relevant IEC standards from BUET / CUET / DUET / KUET / RUET.						
5.00	INCOMING 11 KV HT SWITCHGEAR PANEL (1250A VCB - WITHDRAWABLE TYPE): [ I/C ]		Set	1			
	Supply, installation, testing & commissioning of 11 KV, 3-phase, 50 Hz, indoor type, high tension switchgear complete with Vacuum Circuit Breaker, 1250 A hard-drawn electrolytic copper bus-bars, 1 No 0-15 KV range voltmeter & 1 no. ammeter of adequate range both with selector switch, 1 no. of panel heater with auto thermostat control switch, manual ON & OFF push button switch and ON-OFF-TRIP indicators including following components (Global origin) such as VCB, CT, PT, microprocessor controlled IDMT relay shall be manufactured as per NEMA / VDE / IEC / JIS / BS standards along with BDS IEC 60076, PART 1 : 2016 according to relevant IEC standard assembled locally in 14 SWG sheet steel metal clad, dust & vermin proof, free standing, floor mounting, epoxy resin powder coat painted cabinet as per relevant IEC standards and as per accepted / approved by the Engineer-in-charge. Panel board is provided with capacitive information level and all types of danger sign. All doors of panel board are connected by ECC with earthing bus bar.						
	11 KV HT SWITCHGEAR (VCB) of following specification :						
	Panel Details :						
	Panel type	: Metal Clad					
	Panel construction material	: MS (Mild steel)					
	Panel structure	: 14 SWG (2.0mm)					
	Panel body (Doors & Covers)	: 16 SWG (1.6mm)					
	Mounting	: Floor Mounted, Indoor					

Degree of protection	: IP4X					
Power System	: 11KV, AC, 50Hz					
Door type	: Single Door					
Dust & vermin	: Protected					
Exhaust Fan	: as per requireme nt					
Exhaust Louver	: as per requireme nt					
Cable Entry & Out	: Bottom Side					
Additional Busbar Chamber for HT Cable Connection	: N/A					
CT & Control Wiring	: 2.5 mm <sup>2</sup> & 1.5/1.0m m <sup>2</sup>					
Cable Lugs, Gland & Lock	: as per Required					
Door ECC	: as per Required					
Panel Base	: (75-100) mm (Height)					
Paint	: Powder coated					
Color	: Gray					
Busbar Details :						
Busbar material	: Copper (Cu)					
Current caring capacity / mm sq	: 1.55 / mm sq					
Busbar size	: as required.					
Technical Data :						
Service voltage	: 11KV					
Rated voltage	: 12KV					
Insulation level :						
Impulse withstand voltage 1.2/50 micro-sec.	: 75KV (Peak)					
Power frequency withstand voltage/1 min.	: 28KV rms.					

The equipment proposed under this offer has been designed, manufactured & tested in accordance with the following applicable IEC standards :						
- common clause for high voltage switchgear standards	: IEC 694					
- high voltage switchgear in metallic enclosure	: IEC 298					
- high voltage ac circuit breakers	: IEC 56					
- ac switches and earthing switches	: IEC 129					
- high voltage switches	: IEC 265					
- high voltage combined switch/fuse for ac current	: IEC 420					
- current transformers	: IEC 185					
- voltage transformers	: IEC 186					
- high voltage fuses	: IEC 282					
- control monitoring	: IEC 801					
Main equipment's :						
1 nos Vacuum circuit breaker (VCB)						
Current rating	: 1250A					
Rated voltage	: 12KV					
Rated breaking capacity (for 3 sec)	:31.5KA					
Mounting position	: WITHDRAWABLE type					
1x Earth switch interlocked with VCB						
Current rating	: 1250A					
1nos Microprocessor based IDMT Relay for Non-directional overcurrent & non - directional earth fault protection (ANSI : 50, 50N, 51 & 51N).	:					
3 nos Current transformer (CT)						
11KV cast resin insulated double core CT ratio	: 400/5/5A, 10VA/15VA					
Class	: 0.5 M5/5 P10					
Burden	: 10VA/15VA					
3 nos Potential transformer (PT)						
11KV cast resin insulated PT ratio	: 11KV/V3 : 110V/V3					
Class	: 0.5					
Burden	: 100VA					

	1 nos Annunciator (8 windows) For Accept/Reset/Op. Test/Silence Alarm Cont. For Trip/Non-Trip/Op. Manual Reset.						
	1 nos MFM (A, V, Hz) RS 485 enabled						
	3 nos On/ Off/ Trip push switch (Illuminated)						
	8 nos Indicating Lamp (for On, Off, Trip, Charge, phase indicating)						
	1 nos SP MCB, 10KA [as per adequate for controlling]						
	1 nos TP MCB, 10KA [as per adequate for controlling]						
	1 nos Trip circuit supervision relay						
	1 nos Master trip relay						
	1 nos Buzzer for Alarm						
	1 nos Phase failure relay						
	1 nos Panel heater with control accessories.						
6.00	24 DC Power supply system		Sets	1			
	Supply, installation, testing & commissioning of 110VDC, auxiliary power system consisting of following :						
	a) Battery with stand (400mm x600mm): ( Lx W):						
	1set 24V, 100AH, @10hour rated capacity Ni- Cd battery, tubular plate, lead acid, industrial battery 1.2Volt DC per Cell, indoor type with transparent SAN container according to relevant IEC standard, with design life of minimum 10years including Battery, racks as per specification.						
	b) Battery Charger :						
	1set constant voltage, static, indoor type, self-supporting type, automatic/manual battery charger, with static full wave rectifier using silicon controlled rectifier complete with required metering on the control panel according to relevant IEC standard.						
	Assembled by the valid ISO-9001 certified company having test certificate (within 5 years) according to relevant IEC standards from BUET / CUET / DUET / KUET / RUET.						
7.00	OUTGOING 11 KV HT SWITCHGEAR (630A VCB - WITHDRAWABLE TYPE): [ O/G ]		Sets	2			

8.00	Supply, installation, testing & commissioning of 11 KV, 3-phase, 50 Hz, indoor type, high tension switchgear complete with Vacuum Circuit Breaker, 1250 A hard-drawn electrolytic copper bus-bars, 1 No 0-15 KV range voltmeter & 1 no. ammeter of adequate range both with selector switch, 1 no. of panel heater with auto thermostat control switch, manual ON & OFF push button switch and ON-OFF-TRIP indicators including following components (Global origin) such as VCB, CT, PT, microprocessor controlled IDMT relay shall be manufactured as per NEMA / VDE / IEC / JIS / BS standards along with BDS IEC 60076, PART 1 : 2016 according to relevant IEC standard assembled locally in 14 SWG sheet steel metal clad, dust & vermin proof, free standing, floor mounting, epoxy resin powder coat painted cabinet as per relevant IEC standards and as per accepted / approved by the Engineer-in-charge. Panel board is provided with capacitive information level and all types of danger sign. All doors of panel board are connected by ECC with earthing bus bar.					
	11 KV HT SWITCHGEAR (VCB) of following specification :					
	Panel Details :					
	Panel type	: Metal Clad				
	Panel construction material	: MS (Mild steel)				
	Panel structure	: 14 SWG (2.0mm)				
	Panel body (Doors & Covers)	: 16 SWG (1.6mm)				
	Mounting	: Floor Mounted, Indoor				
	Degree of protection	: IP4X				
	Power System	: 11KV, AC, 50Hz				
	Door type	: Single Door				
	Dust & vermin	: Protected				

Exhaust Fan	: as per requirement					
Exhaust Louver	: as per requirement					
Cable Entry & Out	: Bottom Side					
Additional Busbar Chamber for HT Cable Connection	: N/A					
CT & Control Wiring	: 2.5 mm <sup>2</sup> & 1.5/1.0m m <sup>2</sup>					
Cable Lugs, Gland & Lock	: as per Required					
Door ECC	: as per Required					
Panel Base	: (75-100) mm (Height)					
Paint	: Powder coated					
Color	: Gray					
Busbar Details :						
Busbar material	: Copper (Cu)					
Current carrying capacity / mm sq	: 1.55 / mm sq					
Busbar size	: as required.					
Technical Data :						
Service voltage	: 11KV					
Rated voltage	: 12KV					
Insulation level :						
Impulse withstand voltage 1.2/50 micro-sec.	: 75KV (Peak)					
Power frequency withstand voltage/1 min.	: 28KV rms.					
The equipment proposed under this offer has been designed, manufactured & tested in accordance with the following applicable IEC standards :						
- common clause for high voltage switchgear standards	: IEC 694					
- high voltage switchgear in metallic enclosure	: IEC 298					

- high voltage ac circuit breakers	: IEC 56				
- ac switches and earthing switches	: IEC 129				
- high voltage switches	: IEC 265				
- high voltage combined switch/fuse for ac current	: IEC 420				
- current transformers	: IEC 185				
- voltage transformers	: IEC 186				
- high voltage fuses	: IEC 282				
- control monitoring	: IEC 801				
Main equipment's :					
1 nos Vacuum circuit breaker (VCB)	:				
Current rating	: 630A or 800A				
Rated voltage	: 12KV				
Rated breaking capacity (for 3 sec)	: 25KA				
Mounting position	: WITHDRAWABLE type				
1 nos Earth switch interlocked with VCB					
Current rating	: 630A or 800A				
1 nos Microprocessor based IDMT Relay for Non-directional overcurrent & non-directional earth fault protection (ANSI : 50, 50N, 51 & 51N).	:				
3 nos Current transformer (CT)					
11KV cast resin insulated double core CT ratio	: 200/5/5A, 10VA/15VA				
Class	: 0.5 M5/5 P10				
Burden	: 10VA/15VA				
3 nos Potential transformer (PT)					
11KV cast resin insulated PT ratio	: 11KV/V3 : 110V/V3				
Class	: 0.5				
Burden	: 100VA				
1 nos Annunciator (8 windows) For Accept/Reset/Op. Test/Silence Alarm Cont. For Trip/Non-Trip/Op. Manual Reset.					
1 nos MFM (A, V, Hz) with RS 485 enabled					
3 nos On/ Off/ Trip push switch (Illuminated)					

	8 nos Indicating Lamp (for On, Off, Trip, Charge, phase indicating)						
	1 nos SP MCB, 10KA [as per adequate for controlling]						
	1 nos TP MCB, 10KA [as per adequate for controlling]						
	1 nos Trip circuit supervision relay						
	1 nos Master trip relay						
	1 nos Buzzer for Alarm						
	1 nos Phase failure relay						
	1 nos Panel heater with control accessories.						
9.00	24 DC Power supply system		Sets	2			
	Supply, installation, testing & commissioning of 24VDC, auxiliary power system consisting of following :						
	a) Battery with stand (800mm x600mm): ( Lx W):						
	1set 24V, 100AH, @10hour rated capacity Ni-Cd battery, tubular plate, lead acid, industrial battery 1.2Volt DC per Cell, indoor type with transparent SAN container according to relevant IEC standard, with design life of minimum 10years including Battery, racks as per specification.						
	b) Battery Charger :						
	1set constant voltage, static, indoor type, self-supporting type, automatic/manual battery charger, with static full wave rectifier using silicon controlled rectifier complete with required metering on the control panel according to relevant IEC standard.						
	Assembled by the valid ISO-9001 certified company having test certificate (within 5 years) according to relevant IEC standards from BUET / CUET / DUET / KUET / RUET.						
10.00	3150 KVA, 11/0.415kV CAST RESIN TRANSFORMER (OFF LOAD TAP CHANGING): (IMPORTED)		Sets	2			

Supply, installation, testing & commissioning of following dry type cast resin, natural air cooled, 3-phase, 50Hz, 11KV/ 0.415 KV & 0.24 KV indoor type distribution transformer of DYN11 vector group having basic impulse insulation level 75 KV, HV & LV bushings, manual 5 position standard tap changer, complete with two windings of high conductivity aluminum foil with insulation material in class H, earthing terminals, temperature sensor with thermometer, thermostat controlled blower fan , lifting lugs, data plate etc. complete as required with maximum 155°C temperature rise and suitable for operation at 40°C ambient temperature, at 75°C full load loss & impedance condition manufactured as per NEMA / IEC / VDE / BS / JIS standard along with BDS IEC 60076, PART 1: 2016 standards & shall have type test (ASTA) certificate , shall be from reputed manufacturers of USA / UK / JAPAN / EU/ASEAN countries according to relevant IEC Standard) as per approval/ acceptance by the Engineer-in-charge. <b>(If management will carry out the inspection by third party bidder should arrange it) :</b>						
Standard :	IEC 60076					
Environment Climate Fire class :	E2 C2 F1					
Installation :	Indoor					
Type of Colling	AN/AF					
Insulation class :	F					
Type of duty :	Continuou s operation					
Winding material ( HV / LV ) :	Aluminum / Aluminum					
Phase / Frequency :	3P , 50Hz					
Rated power :	3150kVA					
Rated voltage HV / LV ( V ) :	11000 / 415Y-240					
Current HV / LV ( A ) :	165.3 / 4382					
Vector group :	Dyn11					
HV tapping :	±2×2.5%					
Separate-source AC withstand voltage ( kV ) :	28 / 3					
Lightning impulse withstand voltage ( kV ) :	75 / -					

	No-load loss ( W ) :	5060(+15 %)					
	Load loss 120°C ( W ) :	27750(+15 %)					
	Total loss ( W ) :	32810(+10 %)					
	Efficiency @ 100% load ( % ):	98.87					
	Efficiency @ 50% load ( % ) :	99.13					
	Impedance voltage ( % ) :	≥ 7.0					
	Partial discharge ( pC ) :	≤ 10					
	Dimension :	2080L × 1500W × 1990H					
	Transformer weight ( kg ) :						
	Accessories: Wheels (4 set) Temperature indicator						
11.00	6300A LT SWITCHGEAR PANEL-L CUM ATS-1	1	Set	1			
	Supply, installation, testing & commissioning of 415 V, 3-phase, 50 Hz, indoor type low tension switch-gear of following specification complete with digital voltmeter (0-500V) & ammeter of adequate rating both with selector switch, indicating lamps for ON-OFF and following components (Global origin) such as TP MCCBs shall be manufactured according to NEMA / VDE / IEC / JIS / BS standards along with relevant BDS standard according to relevant IEC Standard) assembled locally in 14 SWG sheet steel metal clad, dust & vermin proof, free standing, floor mounting, epoxy resin powder coat painted cabinet as per relevant IEC standards and as per accepted/ approved by the Engineer-in-charge. Panel board is provided with capacitive information level and all types of danger sign. All doors of panel board are connected by ECC with earthing bus bar.						
	Panel Details :						
	Panel type	: Metal Clad					
	Panel construction material	: MS (Mild steel)					
	Panel structure	: 14 SWG (2.0mm)					
	Panel body (Doors & Covers)	: 16 SWG (1.6mm)					

Mounting	: Floor Mounted, Indoor					
Panel size (HXWXD)	: As Per Required					
Panel structure type	: Form 1					
Degree of protection [for enclose]	: IP4X					
Power System	: 415V, AC, 50Hz					
Door type	: Double					
Front Door	: Transparent					
Dust & vermin	: Protected					
Exhaust Fan	: APR					
Exhaust Louver	: APR					
Cable Entry & Out	: TOP/BOTTOM					
CT & Control Wiring	: 2.5 mm <sup>2</sup> & 1.5/1.0m m <sup>2</sup>					
Cable Lugs, Gland & Lock	: APR					
Door ECC	: APR					
Panel Base	: (75-100) mm (Height)					
Paint	: Powder coated					
Color	: Gray					
Busbar material & Brand						
Busbar insulation	: Heat shrink tube					
Busbar current caring	: 1.55A/m m <sup>2</sup>					
TPN Copper bar	: (120X10X 5)=9300A					
E Copper bar	: (100X10X 3)=4650A					
Incoming Feed From Transformer						

1 x 6300A, 100kA 4P, 415V, 50Hz, Withdrawable Type (Adj.) ACB with Shunt open close, Under voltage coil, charging motor & Micro logic						
4 nos 6300/5A CT						
1 nos MFM (A, V, Hz) with RS 485 enabled						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
2 nos Indicating lamp (Trip/Charge)						
2 nos Push Switch (On/Off)						
1 lot MCB [For Controlling]						
Incoming Feed From Generator						
1x 6300A, 100kA 4P, 415V, 50Hz, Withdrawable Type (adj.) ACB with Shunt open close, Under voltage coil, charging motor & Micro logic						
3 nos 6300/5A CT						
1 nos MFM (A, V, Hz, Kw) with RS 485 enabled						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
2 nos Indicating lamp (Trip/Charge)						
2 nos Push Switch (On/Off)						
1 lot MCB [For Controlling]						
1 nos Timer relay with base						
1 nos Auto manual selector switch						
1 nos Phase failure relay						
(BOTH INCOMING CIRCUIT BREAKER WILL BE ELECTRICALLY INTERLOCKED)						
Outgoing For PFI-01 (LT- L)						
1x 3200A, 65kA TP, 415V, 50Hz, Fixed chesis ( Adj.) ACB with Shunt open close, charging motor & Micro logic						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing For SOLAR DB						
1x 320A TP, 36KA MCCB With Adjustable Thermal Magnetic Trip Unit						
3 nos 320/5A CT						
1 nos MFM (A, V, Hz, KwH) with RS 485 enabled						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing For Fire Hydrant DB (1000GPM)						
1x 400A 4P, 36KA MCCB With Adjustable Thermal Magnetic Trip Unit						
3 nos 400/5A CT						

1 nos MFM (A, V, Hz) with RS 485 enabled						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing For UFDB						
1x 500A TP, 36KA MCCB With Adjustable Thermal Magnetic Trip Unit						
3 nos 500/5A CT						
1 nos MFM (A, V, Hz) with RS 485 enabled						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing For FDB						
1x 1250A , 4P, 50KA MCCB With Adjustable Thermal Magnetic Trip Unit						
3 nos 1250/5A CT						
1 nos MFM (A, V, Hz) with RS 485 enabled						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing For ACADEMIC & CHILLER						
1x 3200A, 65kA 4P, 415V, 50Hz, withdrawable type ( Adj.) ACB with Shunt open close, charging motor & Micro logic						
3 nos 3200/5A CT						
1 nos MFM (A, V, Hz) with RS 485 enabled						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing For CHILLER DB						
1x 1600A, 65kA 4P, 415V, 50Hz, Fixed chesis ( Adj.) ACB with Shunt open close, charging motor & Micro logic						
3 nos 3200/5A CT						
1 nos MFM (A, V, Hz) with RS 485 enabled						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing- SPARE						
1x 200A TP, 25KA MCCB With Adjustable Thermal Magnetic Trip Unit						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing- UTILITY						
1x 160A TP, 25KA MCCB With Adjustable Thermal Magnetic Trip Unit						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing-FOR SPD-1						
1x 125A TP, 25KA MCCB With Adjustable Thermal Magnetic Trip Unit						

	Outgoing- SPD-1					
	1x 40KA SPD					
	Assembled by the valid ISO-9001 certified company having test certificate (within 5 years) according to relevant IEC standards from BUET / CUET / DUET / KUET / RUET.					
12.00	6300A BUSCOUPLER PANEL		Set	1		
	Supply, installation, testing & commissioning of 415 V, 3-phase, 50 Hz, indoor type low tension switch-gear of following specification complete with digital voltmeter (0-500V) & ammeter of adequate rating both with selector switch, indicating lamps for ON-OFF and following components (Global origin) such as TP MCCBs shall be manufactured according to NEMA / VDE / IEC / JIS / BS standards along with relevant BDS standard according to relevant IEC Standard) assembled locally in 14 SWG sheet steel metal clad, dust & vermin proof, free standing, floor mounting, epoxy resin powder coat painted cabinet as per relevant IEC standards and as per accepted/ approved by the Engineer-in-charge. Panel board is provided with capacitive information level and all types of danger sign. All doors of panel board are connected by ECC with earthing bus bar.					
	Panel Details :					
	Panel type	: Metal Clad				
	Panel construction material	: MS (Mild steel)				
	Panel structure	: 14 SWG (2.0mm)				
	Panel body (Doors & Covers)	: 16 SWG (1.6mm)				
	Mounting	: Floor Mounted, Indoor				
	Panel size (HXWXD)	: As Per Required				
	Panel structure type	: Form 1				
	Degree of protection [for enclose]	: IP4X				
	Power System	: 415V, AC, 50Hz				
	Door type	: Double				

	Front Door	: Transparent					
	Dust & vermin	: Protected					
	Exhaust Fan	: APR					
	Exhaust Louver	: APR					
	Cable Entry & Out	: Top & Bottom					
	CT & Control Wiring	: 2.5 mm <sup>2</sup> & 1.5/1.0m m <sup>2</sup>					
	Cable Lugs, Gland & Lock	: APR					
	Door ECC	: APR					
	Panel Base	: (75-100) mm (Height)					
	Paint	: Powder coated					
	Color	: Gray					
	Busbar material & Brand						
	Busbar insulation	: Heat shrink tube					
	BUSCOUPLER CB						
	1 x 6300A, 100kA TP, 415V, 50Hz, Withdrawable Type (Adj.) ACB with Shunt open close, Under voltage coil, charging motor & Micro logic						
	3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
	2 nos Indicating lamp (Trip/Charge)						
	2 nos Push Switch (On/Off)						
	1 lot MCB [For Controlling						
	1 Nos Additional panel (500mm) with TPN+E busbar (1 set)						
	Assembled by the valid ISO-9001 certified company having test certificate (within 5 years) according to relevant IEC standards from BUET / CUET / DUET / KUET / RUET.						
13.00	6300A LT SWITCHGEAR PANEL-R CUM ATS-2		Set	1			

Supply, installation, testing & commissioning of 415 V, 3-phase, 50 Hz, indoor type low tension switch-gear of following specification complete with digital voltmeter (0-500V) & ammeter of adequate rating both with selector switch, indicating lamps for ON-OFF and following components components (Global origin) such as TP MCCBs shall be manufactured according to NEMA / VDE / IEC / JIS / BS standards along with relevant BDS standard according to relevant IEC Standard) assembled locally in 14 SWG sheet steel metal clad, dust & vermin proof, free standing, floor mounting, epoxy resin powder coat painted cabinet as per relevant IEC standards and as per accepted/ approved by the Engineer-in-charge. Panel board is provided with capacitive information level and all types of danger sign. All doors of panel board are connected by ECC with earthing bus bar.						
Panel Details :						
Panel Details :						
Panel type	: Metal Clad					
Panel construction material	: MS (Mild steel)					
Panel structure	: 14 SWG (2.0mm)					
Panel body (Doors & Covers)	: 16 SWG (1.6mm)					
Mounting	: Floor Mounted, Indoor					
Panel size (HXWXD)	: As Per Required					
Panel structure type	: Form 1					
Degree of protection [for enclose]	: IP4X					
Power System	: 415V, AC, 50Hz					
Door type	: Double					
Front Door	: Transparent					
Dust & vermin	: Protected					
Exhaust Fan	: APR					

Exhaust Louver	: APR					
Cable Entry & Out	: Top & Bottom					
CT & Control Wiring	: 2.5 mm <sup>2</sup> & 1.5/1.0m m <sup>2</sup>					
Cable Lugs, Gland & Lock	: APR					
Door ECC	: APR					
Panel Base	: (75-100) mm (Height)					
Paint	: Powder coated					
Color	: Gray					
Busbar material & Brand						
Busbar insulation	: Heat shrink tube					
Busbar current rating	:1.55A/m m <sup>2</sup>					
TPN Copper bar	: (120X10X 5)=9300A					
E Copper bar	: (100X10X 3)=4650A					
Incoming Feed From Transformer						
1x 6300A, 100kA 4P, 415V, 50Hz, Withdrawable Type (Adj.) ACB with Shunt open close, Under voltage coil, charging motor & Micro logic						
4 nos 6300/5A CT						
1 nos MFM (A, V, Hz) with RS 485 enabled						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
2 nos Indicating lamp (Trip/Charge)						
2 nos Push Switch (On/Off)						
1 lot MCB [For Controlling]						
1 nos Phase failure relay						
Incoming Feed From Generator						
1x 6300A, 100kA 4P, 415V, 50Hz, Withdrawable Type (Adj.) ACB with Shunt open close, Under voltage coil, charging motor & Micro logic						
3 nos 6300/5A CT						
1 nos MFM (A, V, Hz) with RS 485 enabled						

3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
2 nos Indicating lamp (Trip/Charge)						
2 nos Push Switch (On/Off)						
1 lot MCB For Controlling]						
1 nos Timer relay with base						
1 nos Auto manual selector switch						
(BOTH INCOMING CIRCUIT BREAKER WILL BE ELECTRICALLY INTERLOCKED)						
Outgoing For PFI-02 (LT- R)						
1x 3200A, 65kA TP, 415V, 50Hz, Fixed Chesis (Adj.) ACB with Shunt open close, charging motor & Micro logic						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing For LOAD						
1x 200A TP, 25KA MCCB With Adjustable Thermal Magnetic Trip Unit						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing For LOAD-3400 KW						Future provision & not included in the current stage
1x 200A TP, 25KA MCCB With Adjustable Thermal Magnetic Trip Unit						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing For LOAD-200KW						
1x 400A TP, 36KA MCCB With Adjustable Thermal Magnetic Trip Unit						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing For LOAD- 300KW						
1x 630A TP, 36KA MCCB With Adjustable Thermal Magnetic Trip Unit						
3 nos 630/5A CT						
1 nos MFM (A, V, Hz) with RS 485 enabled						

3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing For LOAD- 500KW						
1x 1000A TP, 50KA MCCB With Adjustable Thermal Magnetic Trip Unit						
3 nos 1000/5A CT						
1 nos MFM (A, V, Hz) with RS 485 enabled						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing For LOAD- 800KW						
1x 1600A, 65KA TP, 415V, 50Hz, Fixed Chesis (Adj.) ACB with Shunt open close, charging motor & Micro logic						
3 nos 1600/5A CT						
1 nos MFM (A, V, Hz) with RS 485 enabled						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing For LOAD- 1000KW						
1x 2000A, 65KA TP, 415V, 50Hz, Fixed Chesis (Adj.) ACB with Shunt open close, charging motor & Micro logic						
3 nos 2000/5A CT						
1 nos MFM (A, V, Hz) with RS 485 enabled						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing For LOAD- 200KW						
1x 400A TP, 25KA MCCB With Adjustable Thermal Magnetic Trip Unit						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing For LOAD- 300KW						
1x 630A TP, 25KA MCCB With Adjustable Thermal Magnetic Trip Unit						
3 nos 630/5A CT						
1 nos MFM (A, V, Hz) with RS 485 enabled						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing- SPARE						
1x 200A TP, 25KA MCCB With Adjustable Thermal Magnetic Trip Unit						
3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
Outgoing- SPARE						
1x 200A TP, 25KA MCCB With Adjustable Thermal Magnetic Trip Unit						

	3 nos Phase indicating lamp (RED/YELLOW/BLUE)						
	Outgoing-FOR SPD-1						
	1x 125A TP, 25KA MCCB With Adjustable Thermal Magnetic Trip Unit						
	Outgoing- SPD-1						
	1x 40KA SPD						
	Assembled by the valid ISO-9001 certified company having test certificate (within 5 years) according to relevant IEC standards from BUET / CUET / DUET / KUET / RUET.						
14.00	1890KVAR AUTO/MAN PFI PLANT-01		Set	1			
	Supply, installation, testing & commissioning of following 415 volt, 3 phase, 50 Hz power factor improvement panel complete with TP bus bars and earth block, microprocessor controlled auto power factor correction relay with digital PF reading display, capacitor bank, contactor, fuse, ON indicators for every stage of capacitor bank (except directly connected one) etc. Components (Global origin) shall be manufactured & tested as per NEMA / VDE / IEC / JIS / BS standards along with relevant BDS standard assembled locally in 14/16 SWG sheet steel clad dust & vermin proof, free standing, floor mounting, epoxy resin powder coat painted cabinet as per relevant IEC standards and as per accepted / approved by the Engineer-in-charge.						
	Panel Details :						
	Panel type	: Metal Clad					
	Panel construction material	: MS (Mild steel)					
	Panel structure	: 14 SWG (2.0mm)					
	Panel body (Doors & Covers)	: 16 SWG (1.6mm)					
	Mounting	: Floor Mounted, Indoor					
	Panel size (HXWXD)	: APR					
	Panel structure type	: Form 1					
	Degree of protection [for enclose]	: IP4X					
	Door type	: Double					

Front Door	: Transparent					
Power System	: 415V, AC, 50Hz					
Dust & vermin	: Protected					
Exhaust Fan	: As per requirement					
Exhaust Louver	: As per requirement					
Cable Entry & Out	: Both side					
CT & Contro Wiring	: 2.5 mm <sup>2</sup> & 1.5/1.0m m <sup>2</sup>					
Cable Lugs, Gland & Lock	: As per requirement					
Door ECC	: As per requirement					
Panel Base	: (75-100) mm (Height)					
Paint	: Powder coated					
Color	: Gray					
Busbar material	: Copper (Cu)					
Busbar insulation	: Heat shrink tube					
Busbar current caring	: 1.55A/m m <sup>2</sup>					
TPN Copper bar	: APR					
E Copper bar	: APR					
Main equipment's :						
1 nos 12 stage PFC Relay						
3 nos Phase Indicating lamp (RED/YELLOW/BLUE)						
3 nos Stage Indicating lamp						
24 nos On Off push switch						
1 nos Auto manual selector switch						
3 nos Auxiliary Relay 4NO+4NC						
1x 25 KVAR TP, 415V, 50Hz Capacitor (FIXED)						

	1x 15 KVAR TP, 415V, 50Hz Capacitor						
	74x 25 KVAR TP, 415V, 50Hz Capacitor						
	74x 25 KVAR TP Capacitor Contactor Duty type						
	76x 63A, TP, 10KA, 50Hz, MCCB						
	Assembled by the valid ISO-9001 certified company having test certificate (within 5 years) according to relevant IEC standards from BUET / CUET / DUET / KUET / RUET.						
15.00	1890KVAR AUTO/MAN PFI PLANT-02		Set	1			
	Supply, installation, testing & commissioning of following 415 volt, 3 phase, 50 Hz power factor improvement panel complete with TP bus bars and earth block, microprocessor controlled auto power factor correction relay with digital PF reading display, capacitor bank, contactor, fuse, ON indicators for every stage of capacitor bank (except directly connected one) etc. Components (Global origin) shall be manufactured & tested as per NEMA / VDE / IEC / JIS / BS standards along with relevant BDS standard assembled locally in 14/16 SWG sheet steel clad dust & vermin proof, free standing, floor mounting, epoxy resin powder coat painted cabinet as per relevant IEC standards and as per accepted / approved by the Engineer-in-charge.						
	Panel Details :						
	Panel type	: Metal Clad					
	Panel construction material	: MS (Mild steel)					
	Panel structure	: 14 SWG (2.0mm)					
	Panel body (Doors & Covers)	: 16 SWG (1.6mm)					
	Door type	: Double					
	Front Door	: Transparent					
	Mounting	: Floor Mounted, Indoor					
	Panel size (HXWXD)	: APR					
	Panel structure type	: Form 1					

Degree of protection [for enclose]	: IP4X					
Power System	: 415V, AC, 50Hz					
Dust & vermin	: Protected					
Exhaust Fan	: As per requireme nt					
Exhaust Louver	: As per requireme nt					
Cable Entry & Out	: Both side					
CT & Control Wiring	: 2.5 mm <sup>2</sup> & 1.5/1.0m m <sup>2</sup>					
Cable Lugs, Gland & Lock	: As per requireme nt					
Door ECC	: As per requireme nt					
Panel Base	: (75-100) mm (Height)					
Paint	: Powder coated					
Color	: Gray					
Busbar material	: Copper (Cu)					
Busbar insulation	: Heat shrink tube					
Busbar current caring	:1.55A/m m <sup>2</sup>					
TPN Copper bar	: APR					
E Copper bar	: APR					
Main equipment's :						
1 nos 12 stage PFC Relay						
3 nos Phase Indicating lamp (RED/YELLOW/BLUE)						
3 nos Stage Indicating lamp						
24 nos On Off push switch						
1 nos Auto manual selector switch						
3 nos Auxiliary Relay 4NO+4NC						
1x 25 KVAR TP, 415V, 50Hz Capacitor (FIXED)						
1x 15 KVAR TP, 415V, 50Hz Capacitor						
74x 25 KVAR TP, 415V, 50Hz Capacitor						

	74x 25 KVAR TP Capacitor Contactor Duty type						
	76x 63A, TP, 10KA, 50Hz, MCCB						
	Assembled by the valid ISO-9001 certified company having test certificate (within 5 years) according to relevant IEC standards from BUET / CUET / DUET / KUET / RUET.						
16.00	HEAT SHRINK TERMINATION KIT						
	Supply & fixing of heat shrink termination kit out-door / in-door use complete with DIN lugs earth connection hardware & cable preparation kit (In-door & outdoor) at the point of cable termination for 11 KV 3-core PVC insulated & PVC sheathed & armored / non-armored cable of the following sizes approved by the Engineer-in-charge.						
	3 x 300 mm <sup>2</sup> ( 1 Set outdoor)		Set	10			
	3 x 240 mm <sup>2</sup>		Set	8			
17.00	INSTALLATION MATERIALS		lot	1			
	Supply and fixing of Installation materials including cable lux, PIB tape, PVC tape etc.						
18.00	RUBBER MAT ( Thickness-5 mm)		sqm	180			
19.00	GALVANIZED CABLE TRAY ( If required)		mtr	30			
	Supply, fitting and fixing galvanized cable tray made of 18 SWG (1.2 mm) MS Sheet evenly perforated with 7 mm width Capsule hole punch with self-Hanging Facility at top, joint clamp, including fabricating cost of electricity, tools and plants, workshop charges, carriage of the same, cutting groves in the RCC or brick work, mending good the damages with CC (1:2:4), etc. complete for all floors accepted by the engineer.						
	300x100 mm without cover						
20.00	CABLE LADDERS (MS with red oxide)		Lot	1			
	Supply, fitting and fixing of Galvanized cable ladders made of 14 SWG (2 mm) MS Sheet with rungs spaced of 300 mm centers, 100x25mm side rail with multiple formation to protect from torsion and bending with full loading capacity with self-Hanging Facility at top and bottom, joint clamp, including fabricating cost of electricity, tools and plants, workshop charges, carriage of the same, cutting groves in the RCC or brick work, mending good the damages with CC (1:2:4),						

	etc. complete for all floors accepted by the engineer.						
21.00	The contractor shall ensure supply/ Provide Following Services :						
	A) Estimating cost for installation, termination, connection, testing & commissioning 11 kV Express feeder		Job	1			
	B) Miscellaneous charges for obtaining Load sanction ( 5 MW) & HT power connection from BPDB, CT PT Meter Allocation, complete wiring , HT, meter box supply, Cable laying , Energy audit & connection formalities		Job	1			
	C) Electrical licensing Board Permission Works.						
	The security money(BPDB) & Licensing Board fee, The contractor will include in this item the amount of security deposit.						
	BBT ( Imported)						

22.00	<p>Supplying, installation, testing and commission of sandwich type BBT suitable for 6300Amp. 3 phase 4 wire system 50 Hz, 415 Volts Tin Plated Aluminum conductor enclosed in Extruded Aluminum/ steel housing with IP 65 protection suitable for Temperature Rise of 155 degree over and above ambient of 45 deg. for 35KA fault level with 2 nos. of external earthing strips of copper conductor suitable as per the rating mentioned above. BBT is designed as per IEC60439-1 &amp; IEC 61439-6:2012 with minimum Class F insulation shall have type test (ASTA) certificate, shall be from reputed manufacturers of USA / UK / JAPAN / EU/ASEAN countries as per relevant IEC standards and as per accepted/ approved by the Engineer-in-charge. . The Enclosure of BBT should be capable of working as 50% earth; Thermal stickers at joints for detection of temperature rise of 60/70/80 degree Celsius. The rising main should have the provision of of end cover and spring hangers.</p>					
	Standards and regulations	IEC 61439-1 IEC 61439-6				
	Resistance to climate	Damp heat, constant, acc. to IEC 60068-2-78 Damp heat, cyclic, acc. to IEC 60068-2-30				
	Ambient temperature Min./Max./mean level over 24hours °C	– 5/+40/+35				
	Degree of protection	IP65 for power transmission				
	Torque for joint block (re-use) Nm	80 ± 5				

	Busbar surface treatment	Aluminum conductor with nickel + tinned Tap-off point with silver plated					
	Housing material & surface	Extrude Aluminum & Powder-coated					
	Color of Housing, Tap-off Unit	RAL 7035 (light gray)					
	Rated insulation voltage Ui of the trunking units acc. to DIN EN 61439-1 V~ V-	1000 1000					
	Overvoltage category/pollution degree	III/3 acc. to EN 60947					
	Rated operating voltage Use of the trunking units / Tap-off boxes V~	1000 / 400					
	Rated frequency Hz	50 ... 60					
	Conductor	Aluminum					
	Conductor configuration	N + L1 + L2 + L3 (4 bars, PE as housing 50%)					
	Rated current A	6300A					
22.10	(From Transformer 1 to Main LT-Panel-L)		Lot	1			
	Transformer Connection - 6300A: 1 nos						
	Straight Length Without Tap-Off Point: 8.5 mtr						
	Elbow Left: 1nos						
	Knee Up:1 nos						
	Elbow Left: 1nos						
	Panel Connection Flange End: 1 nos						
	Elbow Right: 1 nos						
22.20	(From Transformer 2 to Main LT-Panel-R)		Lot	1			
	Transformer Connection - 6300A:1 nos						
	Straight Length Without Tap-Off Point: 9.5 mtr						
	Knee Down: 2 nos						
	Elbow Offset, Right Front:2 nos						
	Panel Connection Flange End:1 nos						

	Elbow Right:1 nos						
22.30	(Main LT-Panel-L to DG-Synch Panel)		Lot	1			
	Straight Length Without Tap-Off Point: 18.6 mtr						
	Panel Connection Flange End: 2 nos						
	Elbow Right: 1 nos						
	Knee Down: 1 nos						
	Z Down: 2 nos						
	Elbow Right: 1 nos						
	Plug in type TPN Tap off boxes complete with TPN MCCB (63A): 3 nos						
22.40	(From Main LT-Panel-R to DG-Synch Panel)- Future scope ( may be reduced from present scope)		Lot	1			Future provision & not included in the current stage
	Straight Length Without Tap-Off Point: 15 mtr						
	Panel Connection Flange End: 2 nos						
	Elbow Right: 1 nos						
	Knee Down: 1 nos						
	Knee Up:1 nos						
	Knee Down: 1 nos						
	Elbow Right: 1 nos						
22.50	Installation materials with hanging accessories & connecting link bus		Lot	1			
22.60	Complete installation, testing and commissioning including hand over documentation, as built drawings etc.		Job	1			

	FAT (Factory Acceptance Test): Factory testing at the plants. The nominated representatives / Experts of the Client shall jointly conduct necessary tests at the factory of the manufacturers. The nominated experts shall conduct the tests including checking of materials at the manufacturers place/s wherever necessary depending on the type of tests. The suppliers shall finalize the program in consultation with the Deputy Project Director, technical representative of the Client. This testing will be considered a technology transfer and may take place in multiple countries and on different occasions.					
<b>23</b>	Miscellaneous & Others		Lot	1		
<b>TOTAL AMOUNT (BDT)</b>						

Scope: Supply of electric cables of Service Building						
Item No.	Description of Items	Unit	Qty	Unit price (BDT)	Total price (BDT)	Remark
1	HT CABLE (XLPE)					
	Providing & laying of following sizes HT (11KV) PVC insulated, sheathed, screened & armored cable (NYSEYFGbY) / HT (11KV) armored XLPE Cable: All electrical contacts shall be of brass / copper connected through connector or soldering (no twisting shall be allowed) and cables shall be manufactured and tested according to IEC / BS / VDE along with relevant BDS standard as per detailed specification mentioned in Annexure-1. The work shall be carried out as per direction / approval / acceptance of the Engineer In Charge.					
	Cable manufacturer(s) must have valid type test certificate (within last seven years) from internationally accredited laboratory (like CPRI, KEMA etc.) accepted / approved by the Engineer In Charge.					
1.1	3C x 300 (61 W) sqmm XLPE cable	mtr	180			Subject to increase or decrease according to site measurements.
1.2	3C x 240 (37 W/61 W) sqmm XLPE cable	mtr	50			Subject to increase or decrease according to site measurements.
2	LT CABLE (NYY & BYA)					

	Cable manufacturer(s) must have valid type test certificate (within last seven years) from internationally accredited laboratory (like CPRI, KEMA etc.) accepted / approved by the Engineer In Charge.					
	CABLES FOR DG (SUBSTATION)					
2.1	3x (3x 1C x400mm <sup>2</sup> ) (NYY) (From LT switchgear-L to PFI-1)	mtr	90			
2.1	3x (3x 1C x400mm <sup>2</sup> ) (NYY) (From LT switchgear-R to PFI-1)	mtr	300			
2.3	6x 1Cx 400mm <sup>2</sup> (NYY) (ECC-Transformer-1: Neutral to earth busbar)	mtr	250			
2.4	6x 1Cx 400mm <sup>2</sup> (NYY) (ECC-Transformer-2: Neutral to earth busbar)	mtr	250			
2.5	3x 1Cx 400mm <sup>2</sup> (NYY) (ECC- LT switchgear-L to PFI-1)	mtr	30			
2.6	3x 1Cx 400mm <sup>2</sup> (NYY) (ECC- LT switchgear-R to PFI-2)	mtr	95			
2.8	1x 1Cx 120mm <sup>2</sup> ) (NYY) (ECC-Earth pit to All equipment body); 2 nos for each Transformer	mtr	600			
	CABLES FOR DG (PRESENT USES)					
2.9	4 X 1C X150 mm <sup>2</sup> NYY (TPN) ( DG1-200: to sync panel -L)	mtr	70			
2.1	4 X (4 X 1C X 300 mm <sup>2</sup> NYY-TPN) (NYY)( DG2-800: to sync panel -L)	mtr	70			
2.11	4 X (4 X 1C X 300 mm <sup>2</sup> NYY-TPN) ( DG3-800: to sync panel -L)	mtr	65			
2.12	2 X (4 X 1C X 240mm <sup>2</sup> NYY-TPN) ( DG4-500: to sync panel -L)	mtr	45			
2.13	1x 1Cx 95mm <sup>2</sup> (NYY) (ECC-DG1-200: Neutral to busbar)	mtr	55			
2.14	2x 1Cx 300mm <sup>2</sup> (NYY) (ECC-DG2-800: Neutral to busbar)	mtr	160			
2.15	2x 1Cx 300mm <sup>2</sup> (NYY) (ECC-DG3-800: Neutral to busbar)	mtr	160			

2.16	1x 1Cx 240mm2 (NYY) (ECC-DG4-500: Neutral to busbar)	mtr	55			
2.17	1x 1Cx 120mm2) (NYA) (ECC-Earth pit to All equipment body); 2 nos for each DG (Alternator & body)	mtr	400			
	CABLES FOR DG (FUTURE USES)					Future Provision & not included in the current stage
2.18	3 X (4 X 1C X 400 mm2 NYY-TPN) (NYY)( DG5-1000: to sync panel -R)	mtr				
2.19	3 X (4 X 1C X 400 mm2 NYY-TPN) (NYY)( DG6-1000: to sync panel -R)	mtr				
2.2	3 X (4 X 1C X 400 mm2 NYY-TPN) ( DG7-1000: to sync panel -R)	mtr				
2.21	3 X (4 X 1C X 300 mm2 NYY-TPN) ( DG8-800: to sync panel -R)	mtr				
2.22	2 X (4 X 1C X 240mm2 NYY-TPN) ( DG9-500: to sync panel -R)	mtr				
2.23	1 x 2x 1Cx 400mm2 (NYY) (ECC-DG5-1000: Neutral to busbar)	mtr				
2.24	1 x 2x 1Cx 400mm2 (NYY) (ECC-DG6-1000: Neutral to busbar)	mtr				
2.25	1 x 2x 1Cx 400mm2 (NYY) (ECC-DG7-1000: Neutral to busbar)	mtr				
2.26	2x 1Cx 300mm2 (NYY) (ECC-DG8-800: Neutral to busbar)	mtr				
2.27	1x 2x 1Cx 240mm2 (ECC- DG9-500: Neutral to busbar)	mtr				
2.28	1x 1Cx 120mm2) (BYA) (ECC-Earth pit to All equipment body); 2 nos for each DG (Alternator & body)	mtr				
3	Miscellaneous & others	Lot	1			
TOTAL AMOUNT (BDT)						

Scope: Supply, Installation, Testing and commissioning of Diesel Generators of Service Building

SL.	Item Description	Rating/ Country of origin	Unit	Qty	Unit price (BDT)	Total price (BDT)
1.0	<b><u>THREE PHASE GENERATOR WITH BUILT-IN CANOPY &amp; SYNCHRONIZRD OPERATION: (IMPORTED)</u></b>	-				
	Supply, installation, testing & commissioning of 400V-415V, 3-phase, 4-wire, 50 Hz. air / water cooled, floor mounted, indoor type following continuous capacity ( <b>prime power</b> ) electric generating set with built-in canopy & synchronized operation suitable for tropicalized country complete with four stroke,1500 rpm, diesel engine with all standard accessories viz. 12/24 volt DC battery & auto battery charger with ammeter, radiator assembly, oil & fuel pump, auto speed governor, air cleaner, fuel & oil tank, level & oil pressure gauge, RPM & hour meter, start & stop switch, exhaust silencer (to keep standard emission level), mounting spring and vibration isolator (to keep very minimum vibration in the room), mounting steel base frame etc. including safety & protection device viz. auto shut off with indicators for overload, over & under voltage, high temperature, low oil pressure, over speed, low fuel level etc. coupled with brush less, self excited alternator having control panel with auto voltage regulator, voltmeter & ammeter with selector switch, frequency meter, compatible with standard building management system. TPACB/MCCB of required rating for overload & instantaneous short circuit release, auto start and auto charge over to load within 10 sec during normal power failure and stop & auto change over to normal supply within 5 minutes after resolution of normal power supply, indicator for 3 phase indicator for ON-OFF-TRIP etc. as per accepted / approved by the Engineer.					
	<b><u>ORIGIN:</u></b>	-	-	-		
	The generating set shall be assembled & tested in USA, UK, Turkey, EU countries. The major components like ENGINE shall be of Perkins/ Cummins and ALTERNATOR shall be					

	of Stamford / Mecc Alte / Leroy Somer . The engine, alternator, Canopy shall also be manufactured and tested as per relevant standards in USA, UK, Turkey, EU countries & accepted / approved by the Engineer-in-charge.				
	<b><u>GENSET RATINGS:</u></b>				
2	800 KVA Prime/ 880 KVA Standby		Sets	2.00	
3	500 KVA Prime/ 550 KVA Standby		Sets	1.00	
4	200 KVA Prime/ 220 KVA Standby ( It was added based on load requirement)		Sets	1.00	
5	WITH SYNC CONTROLLING DEVICE				
6	<b><u>SUPPLY, INSTALLATION, TESTING &amp; COMMISSIONING OF DIESEL GENERATOR ( TOTAL: 4 SET)</u></b>		Job	1.00	
7	Supply, Installation, testing & commissioning of following electric generator on prepared CC pad with the help of necessary T & P, skilled labour, technician, Engineer-in-charge including 2 hrs./ 5 day trial run operation by skilled operator with supply of necessary fuel & lubricant as per manufacturers instruction manual and in accordance with relevant IEC / NEMA / VDE / JIS standards so that vibration transfer rate to foundation shall be almost zero.				
8	800 KVA manual/auto/auto with soundproof acoustically treated canopy generating set.		Sets	2.00	
9	500 KVA manual/auto/auto with soundproof acoustically treated canopy generating set.		Sets	1.00	
10	200 KVA manual/auto/auto with soundproof acoustically treated canopy generating set.		Sets	1.00	
11	<b>Installation materials for total 4 nos Genset:</b>				
	4 mm Thickness Seam MS Pipe for Silencer Extension Work (16'/Genset)		Feet	70.00	
	SS Expansion Joint (4 Nos/Genset)		Nos	4.00	
	Flange (4 Nos/Genset)		Nos	16.00	
	4"/2" & 3"/1.5" Channel(As per req.) for Vertical & Horizontal Support		Lot	1.00	
	2/2 Angle (As per req.) ffor Vertical & Horizontal Support		Lot	1.00	
	GI Nut Bolt, Royal Bolts, Washer, Roofing Screw, Pop-Revit etc.		Lot	1.00	
	Heatproof Klinger Gasket & Others etc.		Nos	8.00	
	Jacketing Work with Glass wool, Alluminium Sheet & Other Required Items		Lot	1.00	
	Welding Rod, Cutting & Tools Etc.		Set	4.00	
	Delivery Charge, Tools-Tackles & Other Logistics		Jon	1.00	

	Silencer Installation Charge		Job	1.00		
	Ducting from Radiator to the Louver Including Canvas Work (120 sft/Genset)		SFT	500.00		
	<b><u>GENERATOR FUEL RESERVOIR TANK 1 &amp; 2 (Fuel Tank (5mm) 5'x5'x4')</u></b>	-	Sets	2.00		
	Capacity: 2264.605 Ltr, L=1524mm, W=1219, H=1219, Filled height: 1119mm, Filled Volume: 91.797%, Rectangular type					
	Capacity: 2943.689 Ltr, L=1981mm, W=1219, H=1219, Filled height: 1119mm, Filled Volume: 91.797%, Rectangular type					
	<b>Generator Synchronizing Panel ( WITH HMI CONTROLLER )</b>		Set	1.00		
	Supply, installation, testing & commissioning of 415 V, 3-phase, 50 Hz, indoor type low tension Generator synchronizing panel of following specification complete with digital voltmeter (0-500V) & ammeter of adequate rating both with selector switch, indicating lamps for ON-OFF and following components (components such as TP MCCBs shall be manufactured according to NEMA / VDE / IEC / JIS / BS standards along with relevant BDS standard & relevant IEC Standard assembled locally in 14 SWG sheet steel metal clad, dust & vermin proof, free standing, floor mounting, epoxy resin powder coat painted cabinet as per relevant IEC standards and as per accepted/ approved by the Engineer-in-charge. Panel board is provided with capacitive information level and all types of danger sign. All doors of panel board are connected by ECC with earthing bus bar.					
	<b>Panel Details :</b>					
	Panel type	: Metal Clad				
	Panel construction material	: MS (Mild steel)				
	Panel structure	: 14 SWG (2.0mm)				
	Panel body (Doors & Covers)	: 16 SWG (1.6mm)				
	Mounting	: Floor Mounted , Indoor				
	Panel size (HXWXD)	: As Per Required				

	Panel structure type	: Form 1			
	Degree of protection [for enclose]	: IP4X			
	Power System	: 415V, AC, 50Hz			
	Door type	: Double			
	Dust & vermin	: Protecte d			
	Exhaust Fan	: APR			
	Exhaust Louver	: APR			
	Cable Entry & Out	: TOP & BOTTOM			
	CT & Control Wiring	: 2.5 mm <sup>2</sup> & 1.5/1.0m m <sup>2</sup>			
	Cable Lugs, Gland & Lock	: APR			
	Door ECC	: APR			
	Panel Base	: (75-100) mm (Height)			
	Color	: Gray			
	Busbar material & Brand				
	Busbar insulation	: Heat shrink tube			
	Busbar current carring	:1.55A/m m <sup>2</sup>			
	TPN Copper bar	: (120X10X 5)=9300A			
	E Copper bar	: (100X10X 3)=4650A			
	<b>Incoming (Feed From 200KVA Generator-DG-1)</b>				
	1x 320A TP, 25KA MCCB With Adjustable Thermal Magnetic Trip Unit (Motorized)				
	3 nos 320/5 CT ratio.				
	1 nos MFM (A, V, Hz) with RS 485 enabled				
	3 nos Phase indicating lamp (RED/YELLOW/BLUE)				
	2 nos Indicating Lamp (Trip, Charge)				
	1 lot MCB [for controlling]				
	<b>Incoming (Feed From 800KVA Generator-DG-2)</b>				

	1x 1250A, 65KA, TP ACB, Fixed Chesis (Adj.), with Shunt open & close coil, Under voltage coil, charging motor & Micro logic			
	3 nos 1250/5 CT ratio.			
	1 nos MFM (A, V, Hz) with RS 485 enabled			
	3 nos Phase indicating lamp (RED/YELLOW/BLUE)			
	2 nos Indicating Lamp (Trip, Charge)			
	2 nos On Off Push Switch			
	1 lot MCB [for controlling]			
	<b>Incoming (Feed From 800KVA Generator-DG - 3)</b>			
	1x 1250A, 65KA, TP ACB, Fixed Chesis (Adj.), with Shunt open & close coil, Under voltage coil, charging motor & Micro logic			
	3 nos 1250/5 CT ratio.			
	1 nos MFM (A, V, Hz) with RS 485 enabled			
	3 nos Phase indicating lamp (RED/YELLOW/BLUE)			
	2 nos Indicating Lamp (Trip, Charge)			
	2 nos On Off Push Switch			
	1 lot MCB [for controlling]			
	<b>Incoming (Feed From 500KVA Generator-DG - 4)</b>			
	1x 800A TP, 50KA MCCB With Adjustable Thermal Magnetic Trip Unit (Motorized)			
	3 nos 800/5 CT ratio.			
	1 nos MFM (A, V, Hz) with RS 485 enabled			
	3 nos Phase indicating lamp (RED/YELLOW/BLUE)			
	1 lot MCB [for controlling]			
	<b>Outgoing-01</b>			
	1x 6300A, 100kA 4P, 415V, 50Hz, Withdrawable Type (Adj.) ACB with Shunt open close, Under voltage coil, charging motor & Micro logic			
	3 nos 6300/5A CT			
	1 nos MFM (A, V, Hz) with RS 485 enabled			
	3 nos Phase indicating lamp (RED/YELLOW/BLUE)			
	2 nos Indicating Lamp (Trip, Charge)			
	2 nos On Off Push Switch			
	1 lot MCB [for controlling]			
	<b>Assembled by the valid ISO-9001 certified company having test certificate (within 5 years) according to relevant IEC standards from BUET / CUET / DUET / KUET / RUET.</b>			

12.0	<b>6300A BUSCOUPLER PANEL</b>		Set	1.00		
	Supply, installation, testing & commissioning of 415 V, 3-phase, 50 Hz, indoor type low tension switch-gear of following specification complete with digital voltmeter (0-500V) & ammeter of adequate rating both with selector switch, indicating lamps for ON-OFF and following components (components such as TP MCCBs shall be manufactured according to NEMA / VDE / IEC / JIS / BS standards along with relevant BDS standard shall have type test certificate (within 5 years) according to relevant IEC Standard) assembled locally in 14 SWG sheet steel metal clad, dust & vermin proof, free standing, floor mounting, epoxy resin powder coat painted cabinet as per relevant IEC standards and as per accepted/ approved by the Engineer-in-charge. Panel board is provided with capacitive information level and all types of danger sign. All doors of panel board are connected by ECC with earthing bus bar.					
	<b>Panel Details :</b>					
	Panel type	: Metal Clad				
	Panel construction material	: MS (Mild steel)				
	Panel structure	: 14 SWG (2.0mm)				
	Panel body (Doors & Covers)	: 16 SWG (1.6mm)				
	Mounting	: Floor Mounted , Indoor				
	Panel size (HXWXD)	: As Per Required				
	Panel structure type	: Form 1				
	Degree of protection [for enclose]	: IP4X				
	Power System	: 415V, AC, 50Hz				
	Door type	: Double				
	Dust & vermin	: Protected				
	Exhaust Fan	: APR				
	Exhaust Louver	: APR				
	Cable Entry & Out	: Top & Bottom				

	CT & Control Wiring	: 2.5 mm <sup>2</sup> & 1.5/1.0m m <sup>2</sup>				
	Cable Lugs, Gland & Lock	: APR				
	Door ECC	: APR				
	Panel Base	: (75-100) mm (Height)				
	Color	: Gray				
	Busbar material & Brand					
	Busbar insulation	: Heat shrink tube				
	<b>BUSCOUPLER CB</b>					
	1x 6300A, 100kA TP, 415V, 50Hz, Withdrawable Type (Adj.) ACB with Shunt open close, Under voltage coil, charging motor & Micro logic					
	3 nos 6300/5A CT					
	1 nos MFM (A, V, Hz) with RS 485 enabled					
	3 nos Phase indicating lamp (RED/YELLOW/BLUE)					
	2 nos Indicating Lamp (Trip, Charge)					
	2 nos On Off Push Switch					
	1 lot MCB [for controlling]					
	1 Nos Additional panel (500mm) with TPN+E busbar (1 set)					
	<b>Assembled by the valid ISO-9001 certified company having test certificate (within 5 years) according to relevant IEC standards from BUET / CUET / DUET / KUET / RUET.</b>					
13.0	<b>Generator Synchronizing Panel (Future Scope &amp; not included in this current stage)</b>		Set	1.00		
	Supply, installation, testing & commissioning of 415 V, 3-phase, 50 Hz, indoor type low tension switch-gear of following specification complete with digital voltmeter (0-500V) & ammeter of adequate rating both with selector switch, indicating lamps for ON-OFF and following components (components such as TP MCCBs shall be manufactured according to NEMA / VDE / IEC / JIS / BS standards along with relevant BDS standard according to relevant IEC Standard) assembled locally in 14 SWG sheet steel metal clad, dust & vermin proof, free standing, floor mounting, epoxy resin powder coat painted cabinet as per relevant IEC standards and as per accepted/					

	approved by the Engineer-in-charge. Panel board is provided with capacitive information level and all types of danger sign. All doors of panel board are connected by ECC with earthing bus bar.				
	<b>Panel Details :</b>				
	<b>Panel Details :</b>				
	Panel type	: Metal Clad			
	Panel construction material	: MS (Mild steel)			
	Panel structure	: 14 SWG (2.0mm)			
	Panel body (Doors & Covers)	: 16 SWG (1.6mm)			
	Mounting	: Floor Mounted , Indoor			
	Panel size (HXWXD)	: As Per Required			
	Panel structure type	: Form 1			
	Degree of protection [for enclose]	: IP4X			
	Power System	: 415V, AC, 50Hz			
	Door type	: Double			
	Dust & vermin	: Protected			
	Exhaust Fan	: APR			
	Exhaust Louver	: APR			
	Cable Entry & Out	: TOP & BOTTOM			
	CT & Control Wiring	: 2.5 mm <sup>2</sup> & 1.5/1.0m m <sup>2</sup>			
	Cable Lugs, Gland & Lock	: APR			
	Door ECC	: APR			
	Panel Base	: (75-100) mm (Height)			
	Color	: Gray			
	Busbar material & Brand				

	Busbar insulation	: Heat shrink tube				
	Busbar current carrying	:1.55A/m <sup>2</sup>				
	TPN Copper bar	: (120X10X5)=9300A				
	E Copper bar	: (100X10X3)=4650A				
	<b>Incoming (Feed From 1000KVA Generator-DG-5)</b>					
	1x 1600A, 65KA, TP ACB, Fixed Chesis (Adj.), with Shunt open & close coil, Under voltage coill, charging motor & Micro logic					
	3 nos 1600/5 CT ratio.					
	1 nos MFM (A, V, Hz) with RS 485 enabled					
	3 nos Phase indicating lamp (RED/YELLOW/BLUE)					
	2 nos Indicating Lamp (Trip, Charge)					
	2 nos On Off Push Switch					
	1 lot MCB [for controlling]					
	<b>Incoming (Feed From 1000KVA Generator-DG-6)</b>					
	1x 1600A, 65KA, TP ACB, Fixed Chesis (Adj.), with Shunt open & close coil, Under voltage coil, charging motor & Micro logic					
	3 nos 1600/5 CT ratio.					
	1 nos MFM (A, V, Hz) with RS 485 enabled					
	3 nos Phase indicating lamp (RED/YELLOW/BLUE)					
	2 nos Indicating Lamp (Trip, Charge)					
	2 nos On Off Push Switch					
	1 lot MCB [for controlling]					
	<b>Incoming (Feed From 1000KVA Generator - DG-7)</b>					
	1x 1600A, 65KA, TP ACB, Fixed Chesis (Adj.), with Shunt open & close coil, Under voltage coill, charging motor & Micro logic					
	3 nos 1600/5 CT ratio.					
	1 nos MFM (A, V, Hz) with RS 485 enabled					
	3 nos Phase indicating lamp (RED/YELLOW/BLUE)					
	2 nos Indicating Lamp (Trip, Charge)					
	2 nos On Off Push Switch					
	1 lot MCB [for controlling]					

	<b>Incoming (Feed From 800KVA Generator-DG-8)</b>				
	1x 1250A, 65KA, TP ACB, Fixed Type, with Shunt open & close coil, Under voltage coil, charging motor & Micro logic				
	3 nos 1250/5 CT ratio.				
	1 nos MFM (A, V, Hz) with RS 485 enabled				
	3 nos Phase indicating lamp (RED/YELLOW/BLUE)				
	2 nos Indicating Lamp (Trip, Charge)				
	2 nos On Off Push Switch				
	1 lot MCB [for controlling]				
	<b>Incoming (Feed From 500KVA Generator-DG-9)</b>				
	1x 800A TP, 50KA MCCB With Adjustable Thermal Magnetic Trip Unit (Motorized)				
	3 nos 800/5 CT ratio.				
	1 nos MFM (A, V, Hz) with RS 485 enabled				
	3 nos Phase indicating lamp (RED/YELLOW/BLUE)				
	2 nos Indicating Lamp (Trip, Charge)				
	2 nos On Off Push Switch				
	1 lot MCB [for controlling]				
	<b>Outgoing-02</b>				
	1x 6300A, 100kA 4P, 415V, 50Hz, Withdrawable Type (Adj.) ACB with Shunt open close, Under voltage coil, charging motor & Micro logic				
	3 nos 6300/5A CT				
	1 nos MFM (A, V, Hz) with RS 485 enabled				
	3 nos Phase indicating lamp (RED/YELLOW/BLUE)				
	2 nos Indicating Lamp (Trip, Charge)				
	2 nos On Off Push Switch				
	1 lot MCB [for controlling]				
	<b>Assembled by the valid ISO-9001 certified company having test certificate (within 5 years) according to relevant IEC standards from BUET / CUET / DUET / KUET / RUET.</b>				
	<b>FAT (Factory Acceptance Test):</b> Factory testing at the plants. The nominated representatives / Experts of the Client shall jointly conduct necessary tests at the factory of the manufacturers. The nominated experts shall conduct the tests including checking of materials at the manufacturers place/s wherever necessary depending on the type of tests. The suppliers shall finalize the program		Job	1.00	

	in consultation with the Deputy Project Director, technical representative of the Client. This testing will be considered a technology transfer and may take place in multiple countries and on different occasions.				
	<b>Miscellaneous &amp; Others</b>		Job	1.00	
		<b>TOTAL AMOUNT (BDT)</b>			

Scope: Supply, Installation, Testing and commissioning of system earthing of Service Building						
Item No.	Description of Items	Unit	Qty	Unit price (BDT)	Total price (BDT)	Remark
1	<b><u>EARTHING ( PRESENT SCOPE) (Earthing Pit, Metal Cover With Boring)</u></b>	Sets	33			
	Earthing the electrical installation with 12.7 mm Cu wire (Earth electrode) with its protection by 40 mm (1.5") dia G.I. pipe (Top 10' & bottom 10') having 6.35 mm. dia hole across the pipe at 305 mm. interval up-to GL to be earthed including necessary connecting copper sockets, bolts, nuts, etc. complete for maintaining earth resistance within 1 ohm as per accepted / approved by the Engineer.					
	Depth of earth boring at 36576 mm. (120 ft) to 45720 mm (150ft) ( from GL & length of electrode 38100 mm. (125 ft) to 47244 mm (155ft)					
	Construction of earthing inspection pit inside measurement 600 mm x 600 mm x 600mm with 250 mm thick brick in cement mortar (1:4) with 100mm thick RCC top slab (1:2:4) with 1% re-enforcement 450 mm dia water sealed CI man-hole cover with locking arrangement including necessary earth works, site filling and one brick flat soling 75 mm thick (1:3:6) base concrete for making inlet channel & 12mm thick (1:2) cement plaster with neat finishing etc. all complete up to a depth of .75 meter.					
	Earth pit bus bar (150mm X 10mm X 300mm) with all other facilities for cable connection.					

	Earth pit bus bar (38mm X 6mm X 300mm) with all other facilities for cable connection.					
	Earth pit bus bar (40mm X 10mm X 300mm) with all other facilities for cable connection.					
	Earth pit bus bar (60mm X 10mm X 300mm) with all other facilities for cable connection.					
2	<b><u>EARTHING (FUTURE SCOPE &amp; NOT INCLUDED IN THIS CURRENT STAGE)</u></b>	set	15			Future provision & not included in this current stage
	Earthing the electrical installation with 12.7 mm Cu wire ( Earth electrode) with its protection by 40 mm (1.5") dia G.I. pipe ( Top 10' & bottom 10') having 6.35 mm. dia hole across the pipe at 305 mm. interval up-to GL to be earthed including necessary connecting copper sockets, bolts, nuts, etc. complete for maintaining earth resistance within 1 ohm.					
	Depth of earth boring at 36576 mm. (120 ft) to 45720 mm (150ft) ( from GL & length of electrode 38100 mm. (125 ft) to 47244 mm (155ft)					
	Construction of earthing inspection pit inside measurement 600 mm x 600 mm x 600mm with 250 mm thick brick in cement mortar (1:4) with 100mm thick RCC top slab (1:2:4) with 1% re-enforcement 450 mm dia water sealed CI man-hole cover with locking arrangement including necessary earth works, site filling and one brick flat soling 75 mm thick (1:3:6) base concrete for making inlet channel & 12mm thick (1:2) cement plaster with neat finishing etc. all complete up to a depth of .75 meter.	set	15			
3	<b>Miscellaneous &amp; Others</b>	Lot	1.00			
		<b>TOTAL AMOUNT (BDT)</b>				

Scope: Supply, Installation, Testing and commissioning of internal electrification of Service Building

Item No.	Description of Items	Unit	Qty	Unit price (BDT)	Total price (BDT)	Remark
1	CONDUIT WORK:					
1	Supply , Fitting, fixing and laying conduit pipe on slab, floor as per drawing and instruction of the Engineer-in-charge:					
1.1.1	3/4" dia pvc pipe.(HQ-Thickness-2mm, RQ-Thickness-1.5mm)	ft	300			
1.1.2	25 mm dia PVC pipe(HQ-Thickness-2mm, RQ-Thickness-1.5mm)	ft	320			
1.1.3	3/4" dia PVC pipe (HQ-Thickness-2mm, RQ-Thickness-1.5mm) (For AC)	ft	200			
1.1.4	25 mm dia PVC pipe(HQ-Thickness-2mm, RQ-Thickness-1.5mm) (For AC Outdoor & Others)	ft	200			
1.1.5	25 mm dia PVC pipe(HQ-Thickness-2mm, RQ-Thickness-1.5mm) (For PABX)	ft	100			
1.1.6	3/4" dia PVC pipe(HQ-Thickness-2mm, RQ-Thickness-1.5mm) (For WiFi)	ft	100			
1.1.7	25 mm dia PVC pipe(HQ-Thickness-2mm, RQ-Thickness-1.5mm) (For Future Use)	ft	100			
1.1.8	37.5mm dia Metal pipe(HQ-Thickness-2mm, RQ-Thickness-2mm) (Ex. Fan Cable)	ft	100			
2	CABLE WORK: (LF- FR Rated)					
	Fittings & fixing of PVC insulated single core cable/PVC insulated & PVC sheathed single/multi core cables of the following sizes in pre laid conduits/trench /tray and making good all damages, inclusive of locally available best/approved quality PIB insulating tape, ceiling rose (if necessary), cable sockets, solderless connector, cutting/cleaning the pre laid PVC pipe, connection etc. and termination of connection at both ends as per drawing, and instruction of the Engineer-in-charge.					
2.1.1	1C-1.5mm <sup>2</sup> B YA	mtr	200			

2.1.2	1C-2.5mm2 B YA	mtr	300			
2.1.3	1C-2.5mm2 NYY/XLPE	mtr	400			
2.1.4	1C-4mm2 NYY/XLPE	mtr	200			
2.1.7	1C-16mm2 NYY/XLPE	mtr	100			
2.1.9	1C-50mm2 NYY/XLPE	mtr	30			
2.1.14	2pairs tele phone cable	mtr	100			
2.1.16	TV RG6 cable	mtr	30			
3	EARTH CONTINUITY CONDUCTORS:					
	Fittings & fixing of insulated/ electrolytic annealed copper earth continuity conductor of BRB/Evana / POLy/Supersign or its equivalent its equivalent manufacturers having ISO9001 certified co. of following sizes in pre laid conduit along with cable including connection to various metallic parts as per drawing and instruction of the Engineer-in-charge:					
3.1.2	1C-4mm2 re BYA(Green)	mtr	200			
3.1.5	1C-16 mm2 re BYA(Green)	mtr	100			
4	LIGHT FITTINGS:					
4.1.1	Fittings & fixing of ceiling recessed /surface mounted imported 4'-0" tube light fixture of Energy + complete with 2x28w T8 (INDUSTRIAL) tube lamp HOSAF/EQ etc .And all other necessary accessories as per drawing and direction of Engineer in charge .	Sets	35			
5.0	SWITCH BOARD					
5.1	Supply & Installation of imported grey color gang switches & socket from Legrand(France) /M.K(singapore)/Schneider and wall boxes complete with all other necessary accessories & connections everything complete as per drawing and instruction of the Engineer-in-charge. The wall boxes may be PVC MK including earthing block.					

5.1.1	1 Gang (10A)	Sets	5			
5.1.2	2 Gang (10A)	Sets	5			
5.1.3	3 Gang (10A)	Sets	5			
5.1.4	Single fan Dimmer	Sets	2			
6	SOCKET OUTLET	Sets	10			
6.1.1	Supply, Fittings & fixing of imported 5A 2/3-pin, 250V, combined switched universal socket outlet from Legrand(France/UK) /M.K(UK) / Crabtree (UK) /Schneider suitable for 2/3 pin plug including the box, cover plate with necessary galvanized machine screws, earthing block complete with necessary connections and direction of the Engineer-in-charge. The box may be locally made of 18 SWG galvanized sheet steel as per drawing and direction of Engineer in charge .					
7.0	DISTRIBUTION BOARD:					
7.1	Installation, testing & commissioning of following Distribution Boards of components from ABB/PRISMA /SCHNEIDER /UK)having ISO9001 certificate housing the following rated MCB/ MCCB & busbars and all other accessories as per drawing, specifications and direction of the Engineer-in-charge.					
8	MDB (Sub-Station)- Type Tested	Set	1			
	Supply, installation of Enclosed, dust & vermin proof, free standing, floor / Wall mounting size PRISMA 16 , '415V, 50 Hz, indoor type Distribution Board complete with hard drawn electrolytic copper busbars of adequate rating, TPN & E and equipped with all other necessary works complete.					
8.1	I N C O M I N G :1X 100 A TP MCCB					
8.2	O U T G O I N G: 4X40 A TP MCB					
8.3	4X10A TP MCB					

8.4	1X63A TP MCB					
8.5	4X10A SP MCB					
8.6	250A TP +N+E Busbar with FDB steel box(A meter/ volt meter)					
8.7	35 kA, 3-pole, Molded Case Circuit Breaker with built-in' adjustable overload and adjustable short-circuit releases;					
9	Consumer Box ( Maintenance Room )- Havel/Schneider	Set	1			
	Supply, Fittings & fixing of Enclosed, dust & vermin proof, free standing, floor / Wall mounting, PRISMA 16,'415V, 50 Hz, indoor type Distribution Board complete with hard drawn electrolytic copper busbars of adequate rating,TPN & E and equipped all complete.					
9.1	I N C O M I N G :1X 63A TP MCCB					
9.2	O U T G O I N G : 1X40A TP MCCB					
9.3	1X10ATP MCB					
9.4	2X20 A SP MCB					
9.5	600A TP +N+E Copper Busbar with FDB steel box(A meter/ volt meter)					
9.6	35 kA, 3-pole, Molded Case Circuit Breaker with built-in 'adjustable overload and adjustable short-circuit releases;					
10	Supply & Installation of On/Off DOL switch	Set	5			
11	Ceiling Mounted Fan:					
11.1	Supply, fittings & fixing of concealed type fan hook box (size: 4.5" dia & depth 2") made of 16SWG sheet steel box of approved quality everything complete as per specifications, drawing and direction of the Engineer-in-charge.	Sets	2			
11.2	Supply, fittings & fixing of 36" sweep ceiling mounted fan SFC/Jumuna or approved quality of reputed company everything complete with fixing accessories, hard wares etc. as per drawing, specifications and direction of the Engineer-in-charge.	Sets	2			

12	Supply & Installation of Industrial Exhaust Fan :					
	Providing and fixing of following axial flow A.C capacitor type wall mounted exhaust fan complete with blade, steel frame standard wall louver shutter, PVC insulated connecting wire etc complete as required including cutting wall and mending good the damages as per direction of the Engineer.					
12.2	24" industrial exhaust fan galvanized with shutter type, including push button ON/OFF switch rated power 0.55-0.75 kW, 440 V AC (foreign made accepted / approved by the Engineer).	Nos	6			
12.3	Electrical Related Others Goods :	Lot	1			
13	ICT (Information and Communication Technology)	Lot	1			
	CCTV ( Night vision), PABX, PA, Networking & WIFI , 9U/12U Server rack, accessories including required cables like cat 6 cable, OM4 fiber optic cable etc.					
14	Tagging, Identification & Signage Indication	Lot	1			
	As per standard with compliance					
15	Miscellaneous & others	Lot	1			
	TOTAL AMOUNT (BDT)					

**Scope: Supply, Installation, Testing and commissioning of Fire Protection and Detection System of Service Building**

SI NO	DESCRIPTION OF ITEMS	DESCRIPTION OF WORKS	UNIT	QTY	UNIT PRICE (BDT)	TOTAL PRICE(BDT)	REMARKS
		Protection System					
1	Suppression System Gas Cylinder with Clean Agent Gas	Supply, Installation, Testing and commissioning of GAS SUPPRESSION SYSTEM GAS CYLINDER WITH CLEAN AGENT GAS Supply & fixing UL/FM approved seamless cylinder with FK-5-1-12/ HFC-227ea clean agent gas for gas suppression system, complete with pressure gauge, valve assembly and necessary accessories with a safety burst disc and a safety cap etc. in conformity with NFPA 2001. Cylinder shall be seamless steel type manufactured from billets & tested. The cylinder/valve assembly shall have suitable metallic protection for the valve enabling transportation cylinders safely. The cylinder shall be super-pressurized with dry Nitrogen to 25 bar. The cylinder shall be capable of withstanding any temperature between -30° C & 70°C. All cylinders shall be distinctly & permanently marked with the quantity of agent contained, the empty cylinder weight, the pressurization pressure & the zones they are protecting. Storage pressure: 25 bar; Test pressure: From 150 bar to 300 bar. Cylinder should include Syphon tube and Support base/ Strap, complete with Valve Assembly and pressure gauge. The valve assembly shall be mounted directly on the cylinder & should NOT have any adapter provision between the cylinder & valve as per requirements. Each cylinder					

		<p>valve shall have a provision for fixing a supervisory pressure switch &amp; a safety burst disc to protect the cylinder from over pressure. The cylinder valve shall have a disabling plug to prevent accidental discharge of the valve during transportation &amp; installation. Each Valve is to be fitted with a pressure gauge for monitoring loss of pressure. The master cylinder valve is to be released electrically which is performed by means of a solenoid valve arrangement. Pilot cylinder actuation &amp; pneumatic devices shall be used only for Slave Cylinder. The Clean agent gas is stored in seamless steel cylinders &amp; dry nitrogen is added to provide additional energy to give the required rapid discharge. Purity (%) of Clean Agent: 99.99, Applicable Fire Class: Class A, B &amp; C fires. Pressure range :25 bar; Clean agent gas should be UL Listed/ FM Approved. NB: Procuring entity shall mention only one type of clean agent gas (either FK-5-1-12 or HFC-227ea) based on design consideration. 30 Liter capacity. (PWD E/M 14.33.2). Country of Origin: Japan / Italy / UK / UAE/USA Or their Licensed manufacturing units located Globally.</p>					
1.1	Generator Room Mechanical Part	Fire Suppression System with UL Listed Cylinder & UL/FM Clean Agent for Room -550 Cubic Meter.	Each	1			
1.2	LT Panel Room Mechanical Part	Fire Suppression System with UL Listed Cylinder & UL/FM Clean Agent for Room -576 Cubic Meter.	Each	1			
1.3	AVR & Meter Room Mechanical Part	Fire Suppression System with UL Listed Cylinder & UL/FM Clean Agent for Room -170 Cubic Meter.	Each	1			

1.4	Nozzle	NOZZLE Supply & fixing the discharge nozzles are designed to provide the proper flow rate and distribution of clean agent Gas to total floor of hazardous area. It should be UL Listed/ FM Approved. 40 mm dia (1 1/2 Inch)360o.	Each	3			
1.5	Nozzle	NOZZLE Supply & fixing the discharge nozzles are designed to provide the proper flow rate and distribution of clean agent Gas to total floor of hazardous area. It should be UL Listed/ FM Approved. 50 mm dia (2 Inch)360o.	Each	3			
1.6	Abort Switch	ABORT SWITCH Supply and installation of Abort Switch used to momentarily interrupt the release circuit signal when the control unit is in the alarm condition. As long as the abort pushbutton is held in, the fire suppression system will not release. It should be UL Listed/ FM Approved.	Each	3			
1.7	Manual Release Switch	MANUAL RELEASE SWITCH Supply & installation of manual release switch with all necessary accessories. It should be UL Listed/ FM Approved.	Each	4			
1.8	Pipe	Ms Pipe ASTM A-53 seamless SCHD-40 With All support & fitting.					
		80mm	Rft	100			
		50mm	Rft	100			
		40mm	Rft	40			
2	Detection System For Gas Suppression System	Detection System For Gas Suppression System					

2.1	Fire Alarm Control Panel	The control panel shall be of modular design and microprocessor based and shall be able to control operations of multiple/ single zone. The control unit shall activate different devices of clean agent fire suppression system on receiving signals from the fire detection system and other similar devices. The panel shall have push buttons & LED indicators for user friendly access to different functions. It shall be able to initiate audio-visual alarms (1st stage & 2nd stage) and remote manual release/ abort commands. It shall be equipped with built-in power supply unit, standby battery and battery charger unit. The standby battery shall be able to deliver power for at least 24 hrs. The supply power shall be 220V-1Ph-50Hz. Listed: UL/ULC/EN/VDS/JIS	Each	1			
2.2	Release Control Panel	RELEASE CONTROL PANEL Providing & fixing Release control panel for gas suppression system complete with battery and all other necessary accessories. Each unit shall be UL Listed/ FM Approved. 2 Zone. Listed: UL/ULC/EN/VDS/JIS	Each	3			
2.3	Smoke Detector	Smoke Detector (Photoelectric Type), (C/W base if required)					
		Microprocessor based addressable Smoke Detector. Detector sensitivity must be programmed in the control panel software. Sensitivity must be continuously monitored and reported to the panel. Listed: UL/ULC/EN/VDS/JIS	Each	10			
2.4	Fixed Temperature Heat Detector	Fixed Temperature Heat Detector (C/W base if required)					

		Microprocessor based addressable Fixed temperature heat detector. It shall have electronic dual thermistor and a fixed alarm temperature of 68 deg C. The unit shall have LED indicator. Detector sensitivity must be programmed in the control panel software. Listed: UL/ULC/EN/VDS/JIS	Each	10			
2.5	Manual Pull Station	Manual Pull Station (C/W base if required)					
		Intelligent dual-action Manual Pull Station including an addressable interface mounted inside, Key/lock reset, double action pull station complete with back box with all other accessories and consumables. Built-in multi-color LED complete as required. Listed: UL/ULC/EN/VDS/JIS	Each	5			
2.6	Strobe with Horn	Strobe with Horn					
		Conventional type Horn with Strobe for Audible & Visible application, combination of Audible & Visible (A/V) Notification Appliances. The strobe light shall consist of a xenon flash tube and associated lens / reflector system. Provide a label inside the strobe lens to indicate the listed candela rating of the specific strobe. 1.FM Approved, UL 464, UL 1971& BFP Listed 2.Nominal voltage 24VDC 3.Units have feld selectable candela options of 15, 30, 60, 75, and 110 candela 4.Switch selection for high or low dBA 5.Switch for chime, whoop, mechanical and 2400Hztone.Listed: UL/ULC/EN/VDS/JIS	Each	5			
2.7	Fire Cable	Fire Cable					
	2Cx1.5mm2 Fire Resistant Cable	Core Diameter1.5 sq.mm with PVC Conduit, Maximum allowable Resistance 12.1 Ohms/km/Core	Rm	300			

		Maximum loop length: 1850 m. Listed: UL Listed					
	2C×2.5mm2 Fire Resistant Cable	Core Diameter 2.5 sq.mm with PVC Conduit, Maximum allowable Resistance 7.41 Ohms/km/Core Maximum loop length: 3000 m. Listed: UL Listed	Rm	300			
3	Exit Light	Supply and installation of "Exit light" complete with rechargeable battery and charge light and other necessary accessories suitable for AC / DC power supply (220V single phase)	Each	3			
4	Emergency Light	Supply and installation of "Emergency light" complete with rechargeable battery and charge light and other necessary accessories suitable for AC / DC power supply (220V single phase)	Each	16			
5	Emergency Fog Light	Supply and installation of "Emergency fog light" complete with rechargeable battery and charge light and other necessary accessories suitable for AC / DC power supply (220V single phase)	Each	3			
6	Fire Rated Door UL/ FM APPROVED.	Fire Rated Door UL/ FM APPROVED.					
	Fire Rated Door UL/ FM APPROVED.	Standard(s) for safety: UL Certified, NFPA 80 standard ANSI / UL 10C: Positive pressure of fire tests of door assemblies. ANSI / UL 10B: Fire tests of door assemblies. UL Subject 63: Outline of investigation for fire frames. Shutter materials: Mild steel. Fire resistivity (Door & frame): Two hours. Fire resistivity (accessories): Three hours (panic bar, pull handle, ceramic fiber tape for sealing smoke, hinge, bolt and screw, mortice lock, door closer Door frame: 2 vertical fire resisting jamb and 1 fire resisting					

		<p>horizontal jamb made with single rabbet hollow steel channel frame made of 2.3 mm imported cold rolled mild steel sheet. Four SS hinges (size: 112 mm x 100 mm x 3.4mm) are used on each leaf screwed with frame Door leaf: Door leaf faces consists of 1.6 mm thick imported cold rolled MS sheet attached together using interlocking mechanism and tack welding which is filled with imported 100kg/m<sup>3</sup> rock wool cake. Stiffeners should be used inside to strengthen structure. Vision Panel: Made of UL certified 5 mm glass. It has clear vision area of 150 mm x 100 mm. Its frame is made of 1.6 mm imported cold rolled MS sheet and SS pop rivet used for fixing. Ceramic fiber tape is used for sealing smoke. Internal insulation: Rock wool. Surface treatment: All MS sheets are chemically treated coated with zinc phosphate before assembly in highly equipped chemical treatment plant. All chemicals are imported. Paint Finish: Epoxy powder coated paint finish and curing in temperature controlled gas oven.</p>					
6.1		Single Fire Leaf Door With vision glass (1200mm x 2100mm) clear opening	Each	3			
6.2		Single Leaf Door With vision glass (1200mm x 2100mm) clear opening	Each	1			
7	Portable Fire Extinguisher	Portable Fire Extinguisher					

	ABC dry chemical powder	Supply & fixing the following capacities multipurpose <b>ABC dry chemical powder</b> stored pressure type with manometer system fire extinguisher suitable for repeated use complete with wall bracket etc. as per sample accepted & approved by the Engineer. Mono Ammonium Phosphate based 40% ABC dry chemical agent & has a moisture-proof, anti-caking properties. Working pressure: 12 BAR minimum & Test pressure: 25 BAR minimum. Proper fire rating (as per NFPA 10) according to the capacity of the extinguisher. Manufacturer certificate shall have to be submitted if needed. Also sample of the dry chemical powder will be tested by the proper authority in Bangladesh if needed. Country of origin: MALAYSIA / UAE or equivalent product.					
7.1		5 Kg. capacity.	Each	11			
	Carbon dioxide (CO2)	Supply & fixing the following capacities <b>Carbon dioxide (CO2)</b> fire extinguisher suitable for repeated use complete with wall bracket, discharge nozzle etc. as per sample accepted & approved by the Engineer. Country of origin : UAE / MALAYSIA or equivalent product.					
7.2		5 Kg. capacity	Each	11			
8	Fire Barrier (Hole Filler)	Fire Barrier (Hole Filler)					
	Fire Barrier (Hole Filler)	Supply & Installation of Fire Barrier with necessary Sealant, Filler, Chemical, accessories. Origin: China					
8.1		Rectangular Shape (Upto 500 X 500 mm)	Nos	1			
8.2		Rectangular Shape (501 X 800 mm)	Nos	1			
8.3		Rectangular Shape (801 X 1000 mm)	Nos	1			

8.4		Rectangular Shape (1001 X 1200 mm)	Nos	1			
8.5		Rectangular Shape (1201 X 1500 mm)	Nos	1			
8.6		Rectangular Shape (1501 X 2000 mm)	Nos	1			
8.7		Round Shape (Φ 100 mm)	Nos	12			
8.8		Round Shape (Φ 200 mm)	Nos	4			
8.9		Round Shape (Φ 300 mm)	Nos	1			
8.1		Round Shape (Φ 400 mm)	Nos	1			
		Rectangular Shape (Upto 900 X 900 mm)	Nos	2			
9	Shop Drawing and Documentation	Shop Drawing and Documentation	Job	1			
	Shop Drawing and Documentation	Preparation of detail Shop drawing including, layout drawing, section details, schematic drawing, etc. Get approval of shop drawing before any fabrication or installation works. Shop drawing must be coordinated with other services likely Electrical cabling, Light Fixtures, False Ceiling, HVAC Ducting, Fire drawing, Interior design etc. The work also includes:					
		<b>a)</b> Show actual dimension of Equipment <b>b)</b> Submit actual Wattage rating of all equipment. <b>c)</b> Reconfirm Electrical cable sizing <b>.d)</b> Submit Electrical connection diagram of Electric Panels. <b>e)</b> Submit General arrangement of Electric Panels. <b>f)</b> Submit advance copy of Installation, Operation and maintenance manuals.					
10	As-Built Drawing	As-Built Drawing					
	As-Built Drawing	Preparation and submission of As-built drawing in following forms: One set in tracing paper, size A1.Two sets print out in A1 Paper. Soft Copy in CD in AutoCAD Version 2016.Soft Copy in PDF Version	Job	1			

11	Testing, Commissioning and Balancing	Testing, Commissioning and Balancing					
	Testing, Commissioning and Balancing	After proper installation and certification, the system shall be tested, commissioned and balanced as per NFPA Codes as well Manufacturer/consultant's recommendation. After proper testing, commissioning and balancing the system shall run for seven days up to the satisfaction of the Owner. Submit advance copy of Installation, Operation and maintenance manuals. The work includes training to the Owner's representative at site.	Job	1			
12	Tagging, Identification & Signage Indication	Tagging, Identification & Signage Indication					
	Tagging, Identification & Signage Indication	As per Relevant NFPA Code.	Job	1			
13	Miscellaneous & others		Lot	1			
TOTAL AMOUNT (BDT)							

GENERAL NOTES	
1	WORKS COVER SUPPLY, INSTALLATION SERVICE INCLUDES CHECKING, CARRYING FROM STORE, LIFTING, INSTALLATION AND COMMISSIONING OF IMPORTED ITEMS WITH SUPPLY OF CONSUMABLE MATERIALS.
2	X DENOTES ITEM TO BE QUOTED UNDER OTHER COLUMN INCLUDING SUPPLY OF MAIN AND CONSUMABLE MATERIALS WITH ANYTHING REQUIRES.
3	CONTRACTOR IS TO VERIFY QUANTITY OF MATERIAL BEFORE PLACEMENT OF ORDER.
4	FOR ALL INSTALLATION RELEVANT CODES BNBC & NFPA TO BE FOLLOWED.
5	NO ITEM OR FORMAT OF THIS BOQ CAN BE CHANGED. ANY SUCH DEVIATION WILL BE TREATED THE BID "DISQUALIFIED". BIDDER MAY USE SEPARATE SHEET FOR ANY MINOR DEVIATION.

6	BIDDER MUST HAVE TO QUOTE PRICE FOR ALL ITEMS MENTIONED. ANY FAILURE OF THIS WILL BE TREATED THAT HE WILL DO THAT ITEM(S) AT AND COST FOR THAT ITEM IS INCLUDED IN THE COSTS OF OTHER ITEMS.
7	IN CASE OF ANY CONFLICT BETWEEN SPECIFICATION MENTIONED IN THESE BOQ AND MAIN CONSULTANT'S SPECIFICATION/DRAWING, PRIORITY SHALL BE GIVEN TO MAIN CONSULTANTS SPECIFICATIONS / DRAWINGS.
9	ALL KINDS OF CIVIL & ELECTRICAL SUPPLY & WORKS CLIENT SCOPE

Scope: Supply, Installation, Testing and commissioning of HVAC System of Service Building						
S/L	DESCRIPTION OF WORK	UNIT	QTY	UNIT PRICE (BDT)	TOTAL PRICE(BDT)	REMARKS
1	Split Type Air Conditioner					
	Supply, Installation, Testing & Commissioning of Split Ceiling Type Air Conditioner. Air Conditioner must be inverter type with all kinds of accessories (Indoor, Outdoor, Drain line, Copper Pipe, Insulation, Networking cable, Outdoor Angle base and fittings). Indoor-Outdoor distance (30 ft). Origin: Malaysia/USA/UK/BD.					
1.1	Cooling Capacity: 4.0 Ton (14.0Kw), 48000 Btu/Hr, Rated Power: 2.5 kw	Set	3			
1.2	Cooling Capacity: 3.0 Ton (11.2Kw), 36000 Btu/Hr, Rated Power: 1.5 kw	Set	1			
2	Copper Tube with Insulation					
	Supply & Installation of Copper tube with 13 mm thickness rubber insulation with necessary fitting, support, hanger etc. Origin: BD/Malaysia					
2.1	Size: $\Phi$ 15.88 mm	Rft	100			
2.2	Size: $\Phi$ 9.53 mm	Rft	100			
3	Support & fitting Items	Lot	1			
13	Miscellaneous & others	Lot	1			
TOTAL AMOUNT (BDT)						

Scope: Supply, Installation, Testing and commissioning of civil work of Service Building						
S/L	DESCRIPTION OF WORK	UNIT	QTY	UNIT PRICE (BDT)	TOTAL PRICE(BDT)	REMARKS
A	CIVIL WORKS					
1	<p><b>Reinforced cement concrete works using steel shutter with minimum cement content relates to mix ratio (1:1.5:3) having minimum f'cr = 30 Mpa, and satisfying a specified compressive strength f'c = 25 Mpa at 28 days on standard cylinders as per standard practice of Code ACI/BNBC/ASTM &amp; Cement conforming to BDS EN-197-1-CEM1, 52.5N (52.5MPa) / ASTM-C 150 Type – I, best quality Sylhet sand or coarse sand of equivalent F.M. 2.2 and 20 mm down well graded stone chips conforming to ASTM C-33, making, placing shutter in position and maintaining true to plumb, making shutter water-tight properly, placing reinforcement in position; mixing with standard mixer machine with hopper, fed by standard measuring boxes, casting in forms, compacting by vibrator machine and curing at least for 28 days, removing centering-shuttering after specified time approved; including cost of water, electricity, additional testing charges of materials and cylinders required by engineer, other charges etc. all complete approved and accepted by the Engineer.</b></p>	7.64	cum			
2	<p>10" (250 mm) brick works with first class bricks in cement sand (F.M. 1.2) mortar (1:4) and making bond with connected walls including necessary scaffolding, raking out joints, cleaning and soaking the bricks for at least 24 hours before use and washing of sand curing at least for 7 days in all floors including cost of water, electricity and other charges etc. all complete and accepted by the Engineer. (Cement: CEM-II/A-M)</p>	64.8	cum			
3	<p>Supplying, fitting and fixing of MS louver including labour charge for fitting of accessories, carriage, and electricity complete in all respect as per drawing and accepted by the Engineer.</p>	30	sq.m			

4	Painting to louver frames and shutters in two coats with <b>(Berger or equivalent Brand)</b> of approved color of <b>Premium synthetic enamel paint</b> delivered from authorized local agent of the manufacturer in a sealed container, having highly water resistant, high bendability, flexible, using specific brand thinner applied by brass/roller/spray over a coat of priming elapsing time for drying including surface cleaning from dust, oil or dirt, smoothening, finishing and polishing with sand paper and necessary tools, scaffolding, testing charges etc. All complete in all floors accepted and approved by the Consultant	77	sq.m			
5	Installation and fitting fire door made of approx. as per drawing approved and accepted by the Engineer.	3	nos			
6	Minimum <b>12 mm thick cement sand (F.M. 1.2) plaster (1:4)</b> with fresh cement to wall both inner-and outer surface, finishing the corner and edges including washing of sand cleaning the surface, scaffolding and curing at least for 7 days, cost of water, electricity and other charges etc. all complete in all respect as per drawing and accepted by the Engineer.	1231	sq.m			
7	In construction work, demolition is a careful, planned process, according to an engineer's plan, by which a building or structure is dismantled so that the components can be recovered for reuse, recycling, or destruction.	1	lot			
8	Grade 500 (RB 500 / 500W: complying BDS ISO 6935-2:2006) ribbed or deformed bar produced and marked according to Bangladesh Standard, with minimum yield strength, $f_y$ (ReH)= 500 Mpa but $f_y$ not exceeding 418MPa and whatever is the yield strength within allowable limit as per BNBC sec 8.3.3.5 /ACI 318-11 sec 21.1.5.2, the ratio ultimate tensile strength $f_u$ to yield strength $f_y$ , shall be at least 1.25 and minimum elongation after fracture and minimum total elongation at maximum force is 16% and 8% respectively	1500	kg			

9	Net Finishing (1:3): 50% local sand (F.M. 1.2)	319	sq.m			
10	Were mesh complete in all respect as per drawing and accepted by the Engineer.	70	sq.m			
11	Interior premium acrylic emulsion paint:(Berger or equivalent Brand) of approved colour applying to wall and ceiling in two coats over a coat of primer or sealer elapsing specified time for drying or recoating including cleaning drying, making free from dirt, grease, wax, removing all chalked and scaled materials, fungus, mending good the surface defects, sand papering the surface and necessary scaffolding, spreading by brush/ roller/spray etc. All complete in all floors accepted and approved by the Consultant.	1053	sq.m			
12	Exterior premium acrylic emulsion paint applying as per manufacturer instructions 3 coat of weather coat of (Berger or equivalent Brand) and approved color delivered from authorized local agent of the manufacturer in a sealed container. All complete in all floors accepted and approved by the Consultant.	840	sq.m			
13	Fencing (Outside Angle Bar 40mm X 40mm With wire Net)	80	sq.m			
14	Water Proofing for wall (Best Quality Chemical)	1805	sq.m			
15	Operating Platform(80X40mm MS Channel & MS Sheet)	6	Nos			
16	Miscellaneous & others	1	L/S			
	TOTAL AMOUNT (BDT)					

## BRIEF REPORT ON METHOD STATEMENT REVIEW

Subject: Method Statement for Consultancy Services in Developing Bill of Quantities & Drawings with related MEP system (BOQ) for 5 MW Sub-station.

Project: Asian University for Women

Date: 27-Oct-2025

Equipment covered: 2 × Dry-type off-load transformers (2×3150 kVA), HT AVR / excitation system, HT Switchgear (VCB), LT Switchgear, Diesel Generator set (5 MW)

**Standards basis: BNBC (local statutory), IEC series**

The submitted Method Statement outlines the procedure for installation, testing, and commissioning of electrical equipment including 11/0.415 kV transformers, LT switchgear, bus coupler, diesel generator, and synchronizing panel. This review ensures that the proposed methodology meets project quality, safety, and technical standards.

### 1. Standards to be used (key references)

Dry-type power transformers: IEC 60076 series — specifically IEC 60076-11 (dry-type transformer requirements, tests, markings).

Power transformer general tests & ratings: IEC 60076 (general).

High-voltage circuit-breakers / VCB: IEC 62271-100 (specification and testing for three-phase AC circuit-breakers for voltages >1 kV).

Low-voltage switchgear & control gear (LT): IEC 60947 series (60947-1 general rules; 60947-2 circuit-breakers; etc.).

Rotating machines / alternators / excitation & AVR: IEC 60034 series.

Generator set application & ratings: ISO 8528.

Environmental & type testing: IEC 60068 series.

Application Local code/ International Code: Bangladesh National Building Code (BNBC-2006 & amendment 2020).

### 2. Method statement — handling, storage & installation (As Per Industrial Best practice)

#### 3. Method statement — protection, control, interlocking & synchronization

Transformer protection: Overcurrent and temperature protection (IEC 60076).

HT Switchgear (VCB): Interlocks, protection coordination (IEC 62271-100).

LT Switchgear & ATS: Coordination and interlock verification (IEC 60947).

Generator synchronizing & AVR: Follow ISO 8528 and IEC 60034 standards.

#### 4. Method statement — testing & commissioning (SAT)

Pre-commissioning: Visual inspection, IR tests, relay setting verification.

Commissioning tests: As per IEC standards for each equipment type.

Protection coordination & system studies: Complete and approve before energization.

### 5. Quality, safety & environmental (site) items

Use calibrated instruments, comply with BNBC safety and IEC 60068 environmental standards.

### 6. Deliverables for client approval

- Supplier declaration of conformity
- Factory test reports
- Site installation drawings and earthing plan
- Protection coordination study
- FAT & SAT certificates

## RISK ASSESSMENT & MITIGATION.

### A. PRICE VARIATION RISKS

Risk Factor	Probability	Impact	Mitigation Strategy
<b>Material Price Fluctuation</b>	High	High	Long-term supplier contracts with price caps; quarterly price review clauses
<b>Currency Exchange Volatility</b>	High	High	Lock the price in ample time, Source materials locally where possible
<b>Supplier Shortage</b>	Medium	High	Identify multiple suppliers; place early orders; maintain buffer stock as possible
<b>Labor Cost Escalation</b>	Medium	High	Fixed-price contracts; performance bonds; skill-based wage agreements
<b>Import Duty Changes</b>	Medium	High	Bulk importing; tariff agreements; alternative sourcing

### B. QUANTITY VARIATION RISKS

Risk Factor	Probability	Impact	Mitigation Strategy
<b>Design Modifications</b>	Low	High	Change order process; freeze design before procurement; management approvals
<b>Site Conditions</b>	Medium	High	Detailed site surveys; geological assessment; alternative designs
<b>Material Wastage</b>	Medium	Medium	Quality control; skilled workforce; proper storage; waste management plan
<b>Over-specification</b>	Low	Medium	Value engineering; cost-benefit analysis; standardized components

<b>Risk Factor</b>	<b>Probability</b>	<b>Impact</b>	<b>Mitigation Strategy</b>
<b>Quantity Underestimation</b>	Medium	High	Detailed BoQ review; expert review; 10% buffer allow

**C. EQUIPMENT & TECHNICAL RISKS**

<b>Risk Factor</b>	<b>Probability</b>	<b>Impact</b>	<b>Mitigation Strategy</b>
<b>Equipment Availability Delays</b>	Medium	High	Pre-order critical items; maintain vendor relationships; dual sourcing
<b>Quality Issues</b>	Low	High	Third-party inspections; factory acceptance tests; warranty clauses
<b>Compatibility Issues</b>	Low	High	System integration testing; pre-commission reviews; technical audit
<b>Performance Degradation</b>	Low	Medium	Redundancy in critical systems; regular maintenance; performance monitoring
<b>Technology Obsolescence</b>	Low	Medium	Choose established technology; modular design; upgrade provisions

#### D. PROJECT EXECUTION RISKS

Risk Factor	Probability	Impact	Mitigation Strategy
<b>Schedule Delays</b>	Medium	High	Detailed project plan; critical path analysis; resource allocation; contingency time (15%)
<b>Labor Shortage</b>	Medium	High	Early recruitment; training programs; subcontractor agreements
<b>Safety Incidents</b>	Medium	Medium	Safety protocols; insurance coverage; regular audits; worker training
<b>Environmental Compliance</b>	Low	Medium	Environmental impact assessment; regulatory approvals; monitoring systems
<b>Permit &amp; Approval Delays</b>	Medium	Medium	Early engagement with authorities; pre-applications; dedicated liaison officer

#### E. EXTERNAL RISKS

Risk Factor	Probability	Impact	Mitigation Strategy
<b>Market Volatility</b>	Medium	Medium	Fixed contracts; price adjustment clauses; financial hedging
<b>Regulatory Changes</b>	Low	High	Compliance audit; regulatory monitoring; flexible design approach
<b>Natural Disasters</b>	Low	High	Disaster recovery plan; insurance; backup systems; site selection

<b>Risk Factor</b>	<b>Probability</b>	<b>Impact</b>	<b>Mitigation Strategy</b>
<b>Supply Chain Disruption</b>	Medium	High	Inventory buffer; alternative suppliers; local sourcing

DESIGN REVIEW REPORT.

PROJECT: ASIAN UNIVERSITY FOR WOMEN

Date: 20-Nov-2025

## 1. Introduction

This design review report summarizes the assessment of electrical design documents submitted for the Asian University for Women project. The purpose of the review is to evaluate the adequacy of the proposed power system design in meeting project requirements, safety standards, and future expansion provisions.

The client requires a total of 5 MW power from the Power Distribution Company. Based on the load assessment and future expansion plan, the consultant has reviewed the electrical design, drawings, and single line diagrams accordingly.

## 2. Project Overview

- Total Initial Connected Load: 1,525.81 kW
- Future Provision Load: 3,400 kW
- Total Required Capacity:  $\approx$  4,925.81 kW (~5 MW)
- Proposed Substation Design:
  - 2  $\times$  3150 kVA, 11/0.415 kV Transformers
  - Bus Coupler arrangement for redundancy and load sharing
  - Synchronizing & electrically interlocked with 5 MW Diesel Generator
  - Common ATS cum LT Panel for smooth source transfer

Site Visit Observation:

The proposed substation and generator room locations were inspected. The substation and generator building are planned adjacent to the utility block, approximately 200 meters from the main academic building. Cable routing and layout coordination with civil and architectural disciplines were reviewed during the site visit.

## 3. Electrical Load Data Summary

Load Category	Description	Connected Load (kW)
Part A	Lighting Load	111.77
Part B	Power Socket Load	451.00
Part C	HVAC Load	652.00
Part D	Fire & Pump Load	106.00

Part E	Others (Area Light, Lift, PABX, CCTV, PA, Fire Detection, Kitchen, Washing, Service Building)	205.00
<b>Total</b>		<b>1,525.81</b>

#### **4. Design Review Observations**

1. The proposed 2 × 3150 kVA substation configuration is technically justified considering redundancy, future expansion, and load growth.
2. Transformer and LT panel rating are adequate for handling the total connected and future load with margin.
3. SLDs comply with standard design practices but require clarifications:
  - Cable size selection to be confirmed for 200m cable run.
4. Coordination among civil, mechanical, and electrical services needed for space and ventilation adequacy.

SL.NO	DESCRIPTION
1	COVER PAGE
2	INDEX
3	GENERAL NOTE
4	GROUND FLOOR [PROPOSED MECHANICAL DRAWING LAYOUT PLAN]
5	SECTION VIEW PLAN
6	GROUND FLOOR [PROPOSED BASE LAYOUT PLAN]
7	GROUND FLOOR [PROPOSED RUBBER MAT LAYOUT PLAN]
8	Schematic Diagram For FM-200 Gas Suppression System Installation
9	GROUND FLOOR [PROPOSED FM-200 GAS SUPPRESSION SYSTEM LAYOUT PLAN]
10	GROUND FLOOR [PROPOSED FM-200 FIRE DETECTION SYSTEM LAYOUT PLAN]
11	GROUND FLOOR [PROPOSED FIRE SAFETY LAYOUT PLAN]
	GROUND FLOOR [PROPOSED ELECTRICAL LAYOUT DIAGRAM & Single Line Diagram (ELD,SLD Switthc, Socket, C.Fan, Tube Light)]

# GENERAL NOTE

## PROJECT

Asian University for Women (AUW)

Arefin Nagar, Chattagram, Bangladesh.

## SYSTEM

**Proposed FM 200 Gas Suppression System & Mechanical Drawing Layout Plan**

## STANDARD

NFPA 2001, Standard On Clean Agent Fire Extinguishing System, 2018 edition  
NFPA®170, Standard for fire safety and emergency symbols 2009 edition

### DESIGN CALCULATION

#### AVR ROOM:

Area = 40 m<sup>2</sup>  
Height = 4.26 m  
Total Room Volume = 170.4 m<sup>3</sup>  
**As per NFPA 2001: Table A.5.4.2.2 (b):**  
Required design concentration for class C fire, C = 7%  
Room design Temperature, T = 21°C  
So, Required weight of agent, W = 93.33 kg  
**As per NFPA 2001: Table 5.5.3.3:**  
Atmospheric correction factor = 1.0  
Weight of agent, W = 93.33 x 1.0 kg = 93.33 kg  
Safety Factor = 1.2  
So, Weight of agent, W = 93.33 x 1.2 = 112 kg  
Agent per Cylinder = 112kg / 112 L  
Selected Cylinder Capacity = 113 L / 250 LB  
Number of Main Cylinder = 1

### DESIGN CALCULATION

#### HT SWITCHGEAR ROOM:

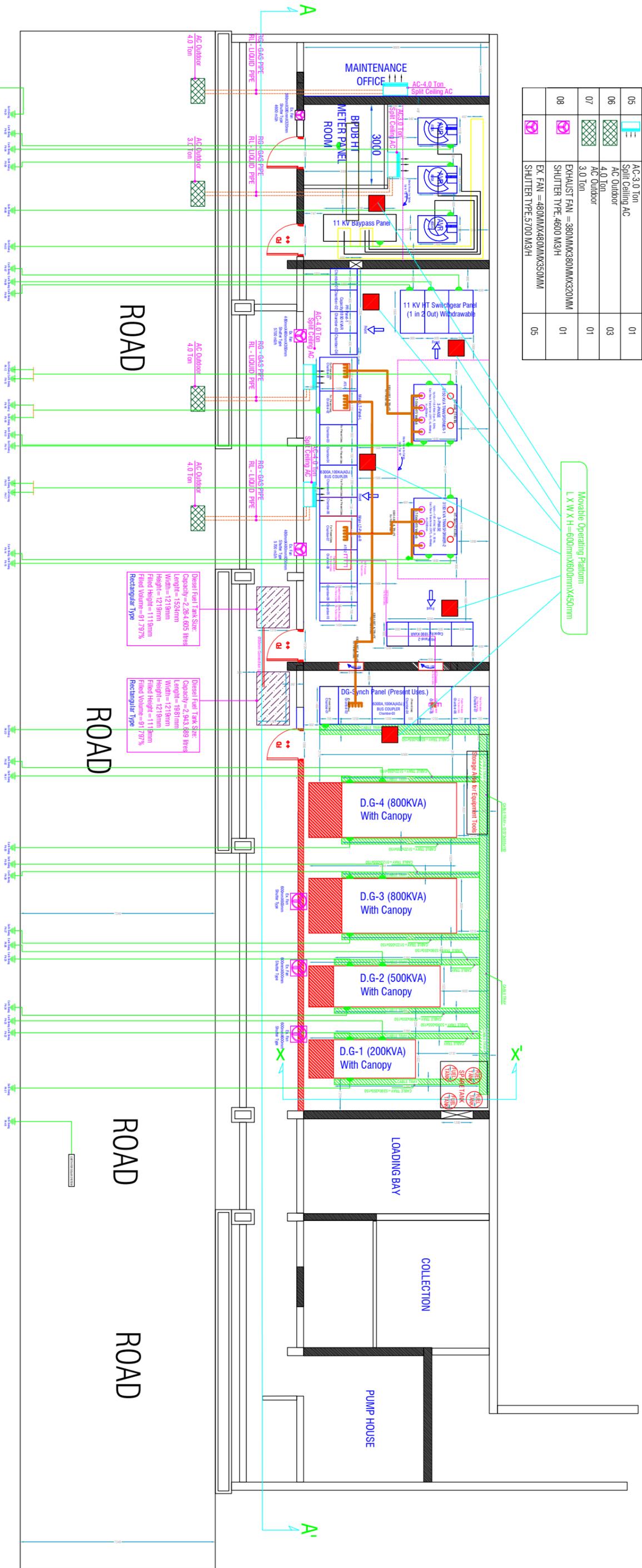
Area = 126.2 m<sup>2</sup>  
Height = 4.57 m  
Total Room Volume = 576.734 m<sup>3</sup>  
**As per NFPA 2001: Table A.5.4.2.2 (b):**  
Required design concentration for class C fire, C = 7%  
Room design Temperature, T = 21°C  
So, Required weight of agent, W = 315.9 kg  
**As per NFPA 2001: Table 5.5.3.3:**  
Atmospheric correction factor = 1.0  
Weight of agent, W = 315.9 x 1.0 kg = 315.9 kg  
Safety Factor = 1.2  
So, Weight of agent, W = 315.9 x 1.2 = 379.08 kg  
Agent per Cylinder = 379.08 kg / 379.08 L  
Selected Cylinder Capacity = 453.5 L / 1000 LB  
Number of Main Cylinder = 1

### DESIGN CALCULATION

#### TRANSFORMER ROOM:

Area = 112.97 m<sup>2</sup>  
Height = 4.87 m  
Total Room Volume = 550.16 m<sup>3</sup>  
**As per NFPA 2001: Table A.5.4.2.2 (b):**  
Required design concentration for class C fire, C = 7%  
Room design Temperature, T = 21°C  
So, Required weight of agent, W = 301.3 kg  
**As per NFPA 2001: Table 5.5.3.3:**  
Atmospheric correction factor = 1.0  
Weight of agent, W = 301.3 x 1.0 kg = 301.3 kg  
Safety Factor = 1.2  
So, Weight of agent, W = 301.3 x 1.2 = 361.56 kg  
Agent per Cylinder = 361.56 kg / 361.56 L  
Selected Cylinder Capacity = 362.87 L / 800 LB  
Number of Main Cylinder = 1

LEGEND			
SL	SYM	DESCRIPTION	QTY
01		8FT 2-HOUR FIRE RATED DOOR (WITH 2-HOUR FIRE RATED VISION GLASS)	---
02		4FT 2-HOUR FIRE RATED DOOR (WITH 2-HOUR FIRE RATED VISION GLASS)	03
03		DOOR WITH VISION GLASS	01
04		AC-4.0 Ton Split Ceiling AC	03
05		AC-3.0 Ton Split Ceiling AC	01
06		AC Outdoor 4.0 Ton	03
07		AC Outdoor 3.0 Ton	01
08		EXHAUST FAN = 380MMX380MMX320MM SHUTTER TYPE 4600 M3/H	01
		EX FAN = 480MMX480MMX350MM SHUTTER TYPE 5700 M3/H	05



Diesel Fuel Tank Size  
Capacity = 2,864,805 litres  
Length = 1524mm  
Width = 1219mm  
Height = 1119mm  
Filled Volume = 917.97%  
Rectangular Type

Diesel Fuel Tank Size  
Capacity = 2,943,889 litres  
Length = 1524mm  
Width = 1219mm  
Height = 1119mm  
Filled Volume = 917.97%  
Rectangular Type

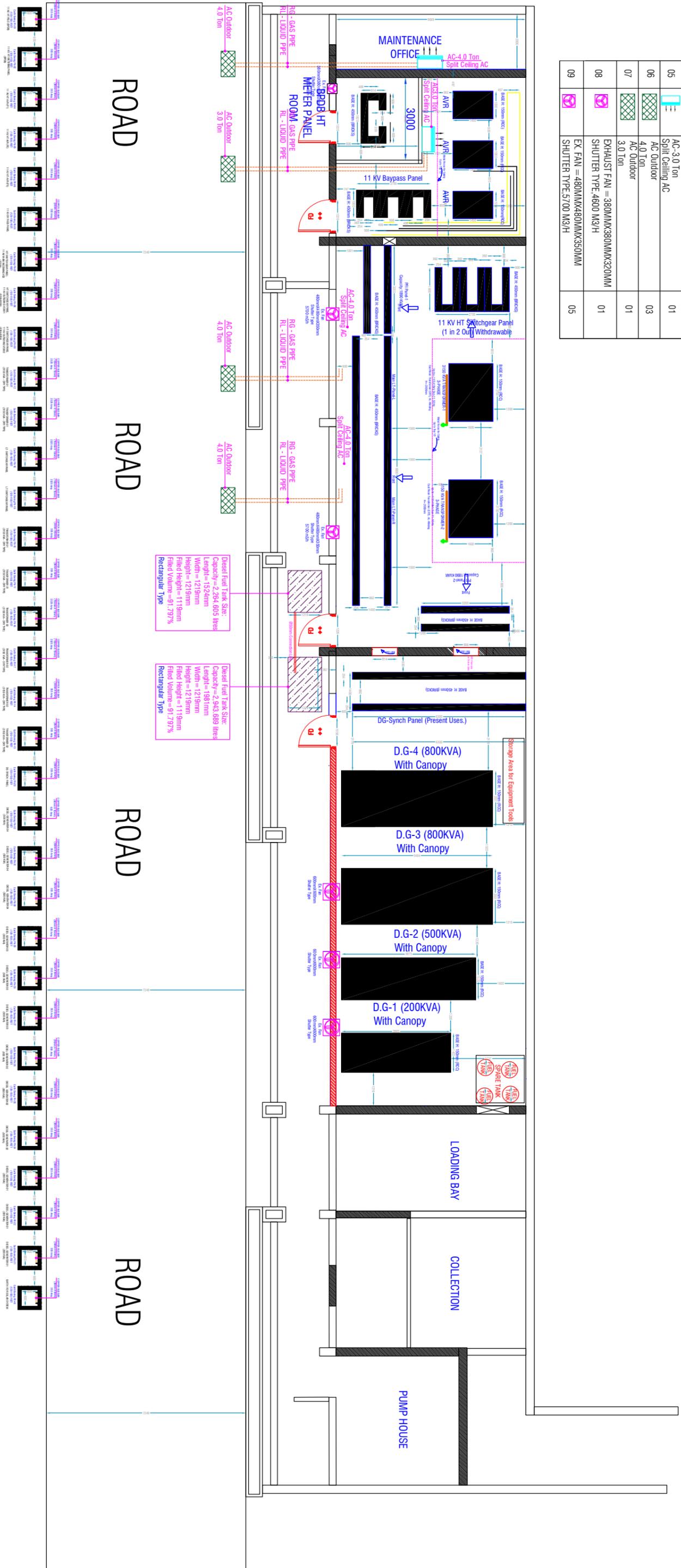
Movable Operating Platform  
L X W X H = 600mm X 600mm X 450mm

# GROUND FLOOR

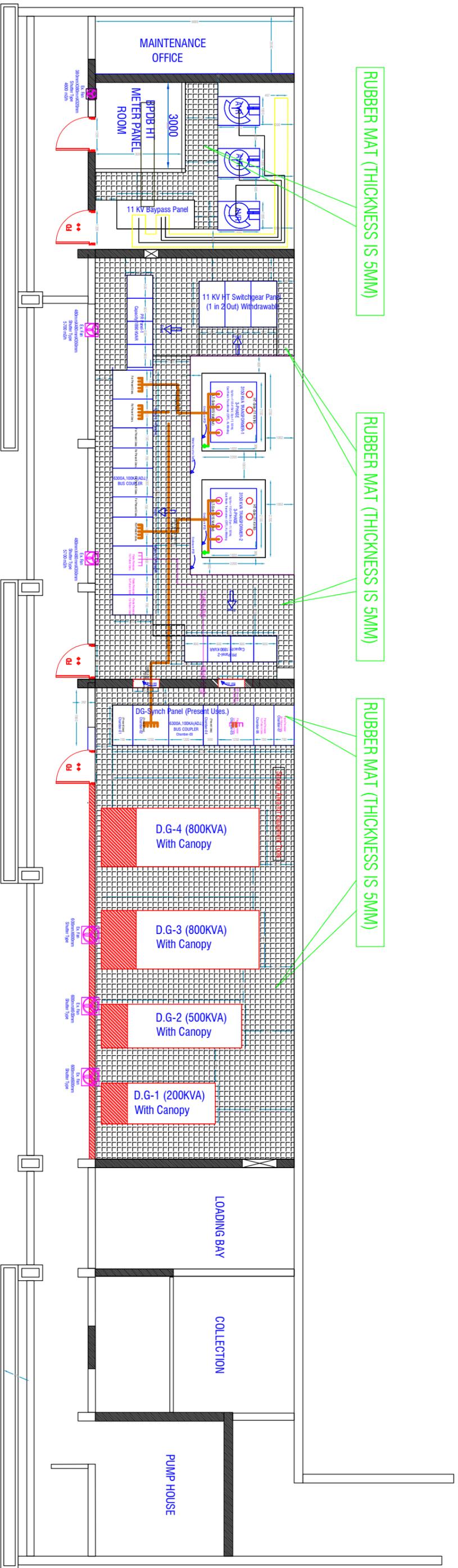
## PROPOSED MECHANICAL SYSTEM DRAWING LAYOUT PLAN



LEGEND			
SL	SYM	DESCRIPTION	QTY
01		8FT 2-HOUR FIRE RATED DOOR (WITH 2-HOUR FIRE RATED VISION GLASS)	01
02		4FT 2-HOUR FIRE RATED DOOR (WITH 2-HOUR FIRE RATED VISION GLASS)	02
03		DOOR WITH VISION GLASS	01
04		AC-4.0 Ton Split Ceiling AC	03
05		AC-3.0 Ton Split Ceiling AC	01
06		AC Outdoor	03
07		AC Outdoor	01
08		EXHAUST FAN = 380MMX380MMX320MM SHUTTER TYPE 4800 M <sup>3</sup> /H	01
09		EX_FAN = 480MMX480MMX350MM SHUTTER TYPE 5700 M <sup>3</sup> /H	05



GROUND FLOOR  
**PROPOSED BASE DRAWING LAYOUT PLAN**

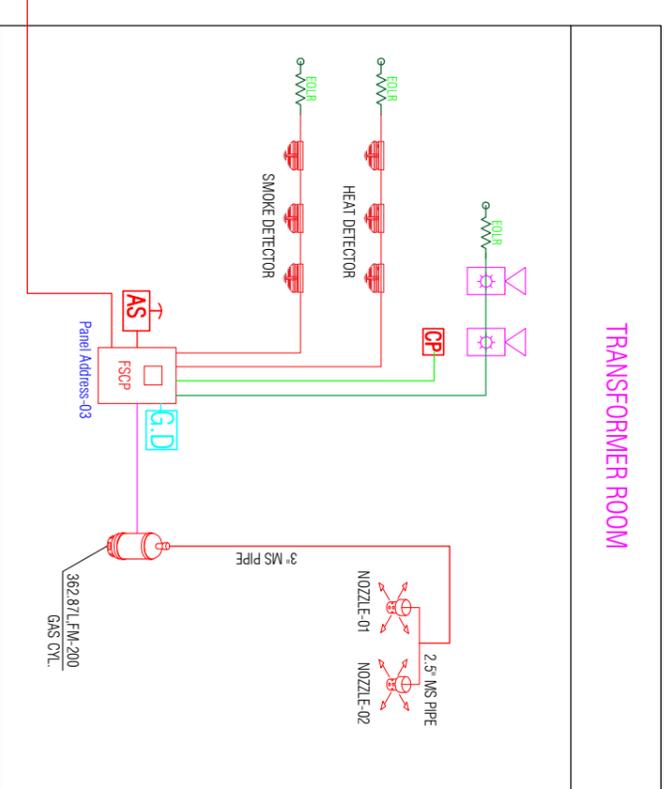
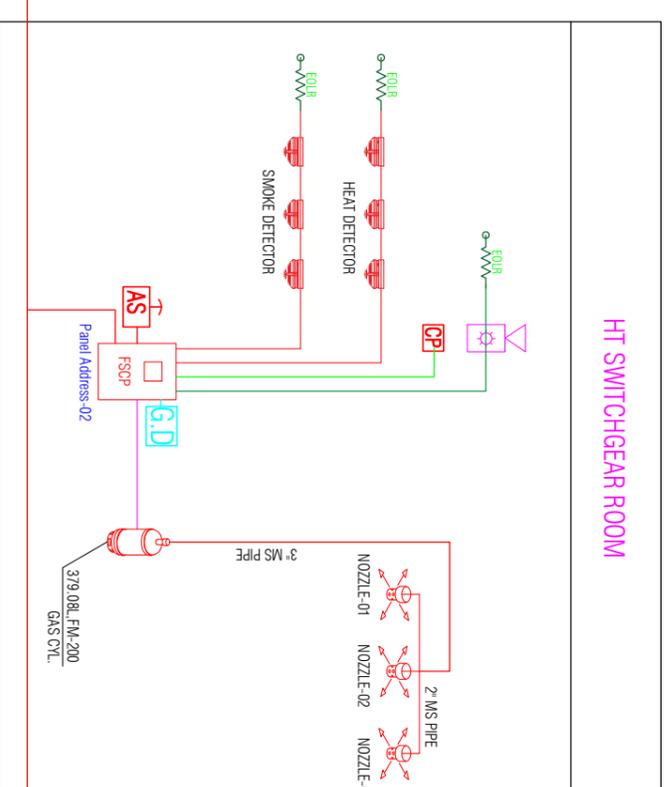
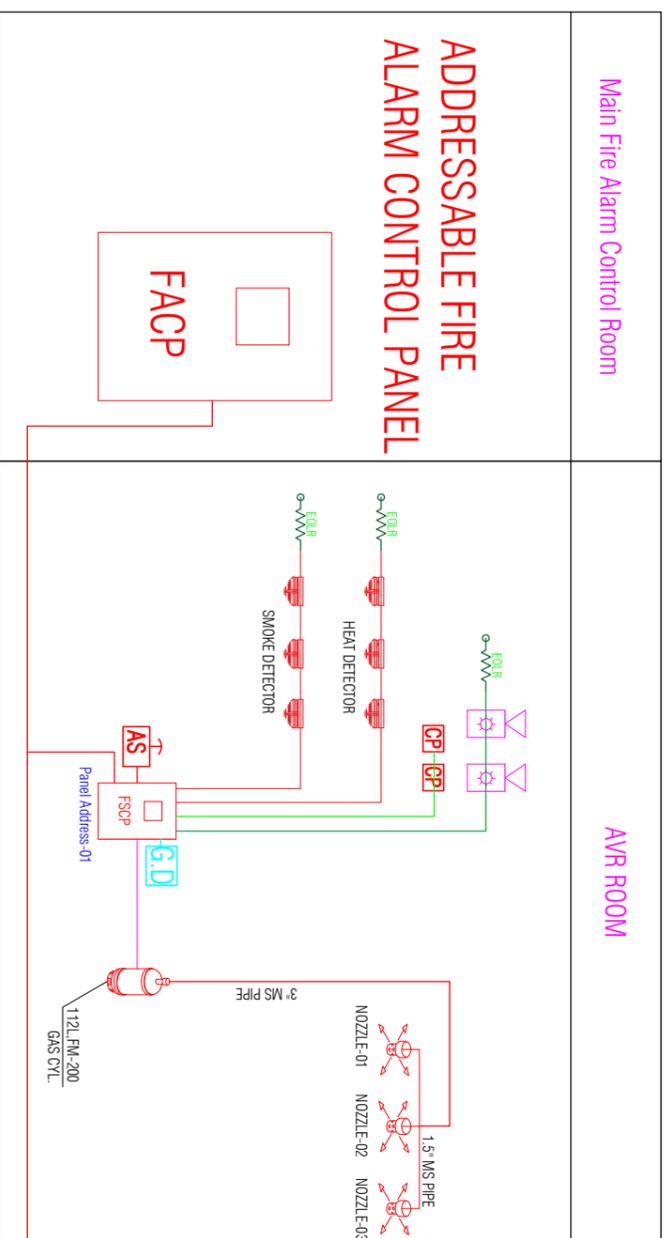


GROUND FLOOR

PROPOSED RUBBER MAT LAYOUT PLAN

LEGEND			
SL	SYM	DESCRIPTION	QTY
01	FAOP	ADDRESSABLE FIRE ALARM CONTROL PANEL	01
02	FSCP <sub>ca</sub>	FIRE SUPPRESSION CONTROL PANEL	03
03	2P	SMOKE DETECTOR	09
04	F	HEAT DETECTOR	09
05	⚡	HORN/STROBE	05
06	CP	CALL POINT	04
07	AS	ABORT STATION	03
08	G.D	WARNING: GAS DISCHARGE	03

LEGEND			
SL	SYM	DESCRIPTION	QTY
01	⚡	360°, 1.5" DISCHARGE NOZZLE	03
02	⚡	360°, 2" DISCHARGE NOZZLE	03
02	⓪ <sub>ca</sub>	112L, FM-200 GAS CYL.	01
02	⓪ <sub>ca</sub>	379.08 L, FM-200 GAS CYL.	01
02	⓪ <sub>ca</sub>	362.87 L, FM-200 GAS CYL.	01
03	FSCP <sub>ca</sub>	FIRE SUPPRESSION CONTROL PANEL	03
04	---	MS PIPE (SCH-40)	---



SCHEMATIC DIAGRAM FOR FM-200 GAS SUPPRESSION SYSTEM INSTALLATION

LEGEND		
SL	SYM	DESCRIPTION
01		360° 1.5" DISCHARGE NOZZLE
02		370.08 LTM-200 GAS CYL.
03		FIRE SUPPRESSION CONTROL PANEL
04		MS PIPE (SCH-40)

**DESIGN CALCULATION**

**AIR ROOM:**  
 Area = 40 m<sup>2</sup>  
 Height = 4.26 m  
 Total Room Volume = 170.4 m<sup>3</sup>  
 As per NFPA 2001: Table A.5.4.2.2 (b):  
 Required design concentration for class C fire, C = 7%  
 Room design Temperature, T = 21°C  
 So, Required weight of agent, W = 93.33 kg  
 As per NFPA 2001: Table 5.5.3.3  
 Atmospheric correction factor = 1.0  
 Weight of agent, W = 93.33 x 1.0 kg = 93.33 kg  
 Safety Factor = 1.2  
 So, Weight of agent, W = 93.33 x 1.2 = 112 kg  
 Agent per Cylinder = 112 kg / 112 L  
 Selected Cylinder Capacity = 113 L / 250 LB  
 Number of Main Cylinder = 1

**DESIGN CALCULATION**

**HT SWITCHGEAR ROOM:**  
 Area = 126.2 m<sup>2</sup>  
 Height = 4.57 m  
 Total Room Volume = 576.734 m<sup>3</sup>  
 As per NFPA 2001: Table A.5.4.2.2 (b):  
 Required design concentration for class C fire, C = 7%  
 Room design Temperature, T = 21°C  
 So, Required weight of agent, W = 315.9 kg  
 As per NFPA 2001: Table 5.5.3.3  
 Atmospheric correction factor = 1.0  
 Weight of agent, W = 315.9 x 1.0 kg = 315.9 kg  
 Safety Factor = 1.2  
 So, Weight of agent, W = 315.9 x 1.2 = 379.08 kg  
 Agent per Cylinder = 379.08 kg / 379.08 L  
 Selected Cylinder Capacity = 453.5 L / 1000 LB  
 Number of Main Cylinder = 1

LEGEND		
SL	SYM	DESCRIPTION
01		360° 2" DISCHARGE NOZZLE
02		370.08 LTM-200 GAS CYL.
03		FIRE SUPPRESSION CONTROL PANEL
04		MS PIPE (SCH-40)

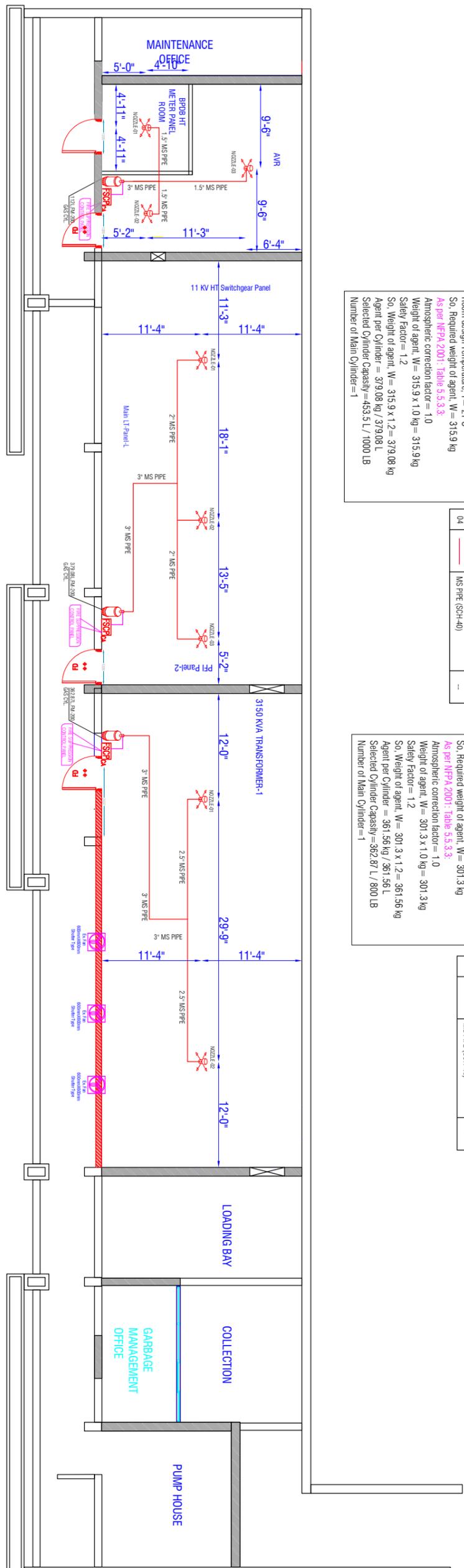
**DESIGN CALCULATION**

**TRANSFORMER ROOM:**  
 Area = 112.97 m<sup>2</sup>  
 Height = 4.67 m  
 Total Room Volume = 550.16 m<sup>3</sup>  
 As per NFPA 2001: Table A.5.4.2.2 (b):  
 Required design concentration for class C fire, C = 7%  
 Room design Temperature, T = 21°C  
 So, Required weight of agent, W = 301.3 kg  
 As per NFPA 2001: Table 5.5.3.3  
 Atmospheric correction factor = 1.0  
 Weight of agent, W = 301.3 x 1.0 kg = 301.3 kg  
 Safety Factor = 1.2  
 So, Weight of agent, W = 301.3 x 1.2 = 361.56 kg  
 Agent per Cylinder = 361.56 kg / 361.56 L  
 Selected Cylinder Capacity = 382.87 L / 800 LB  
 Number of Main Cylinder = 1

LEGEND		
SL	SYM	DESCRIPTION
01		360° 2" DISCHARGE NOZZLE
02		382.87 LTM-200 GAS CYL.
03		FIRE SUPPRESSION CONTROL PANEL
04		MS PIPE (SCH-40)

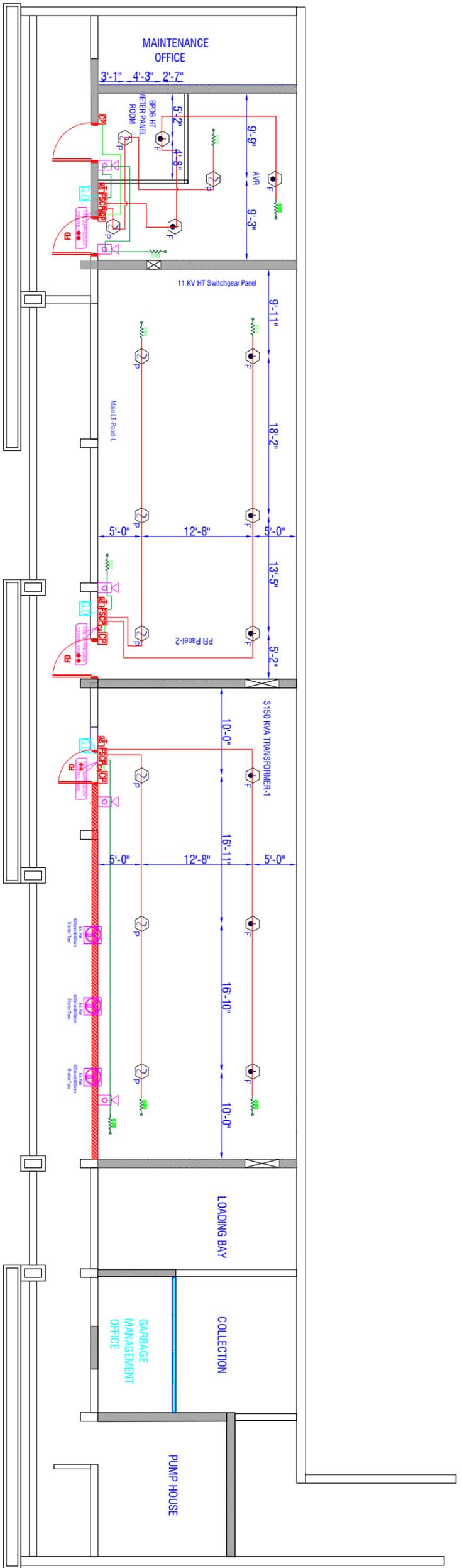
**DESIGN CALCULATION**

**TRANSFORMER ROOM:**  
 Area = 112.97 m<sup>2</sup>  
 Height = 4.67 m  
 Total Room Volume = 550.16 m<sup>3</sup>  
 As per NFPA 2001: Table A.5.4.2.2 (b):  
 Required design concentration for class C fire, C = 7%  
 Room design Temperature, T = 21°C  
 So, Required weight of agent, W = 301.3 kg  
 As per NFPA 2001: Table 5.5.3.3  
 Atmospheric correction factor = 1.0  
 Weight of agent, W = 301.3 x 1.0 kg = 301.3 kg  
 Safety Factor = 1.2  
 So, Weight of agent, W = 301.3 x 1.2 = 361.56 kg  
 Agent per Cylinder = 361.56 kg / 361.56 L  
 Selected Cylinder Capacity = 382.87 L / 800 LB  
 Number of Main Cylinder = 1



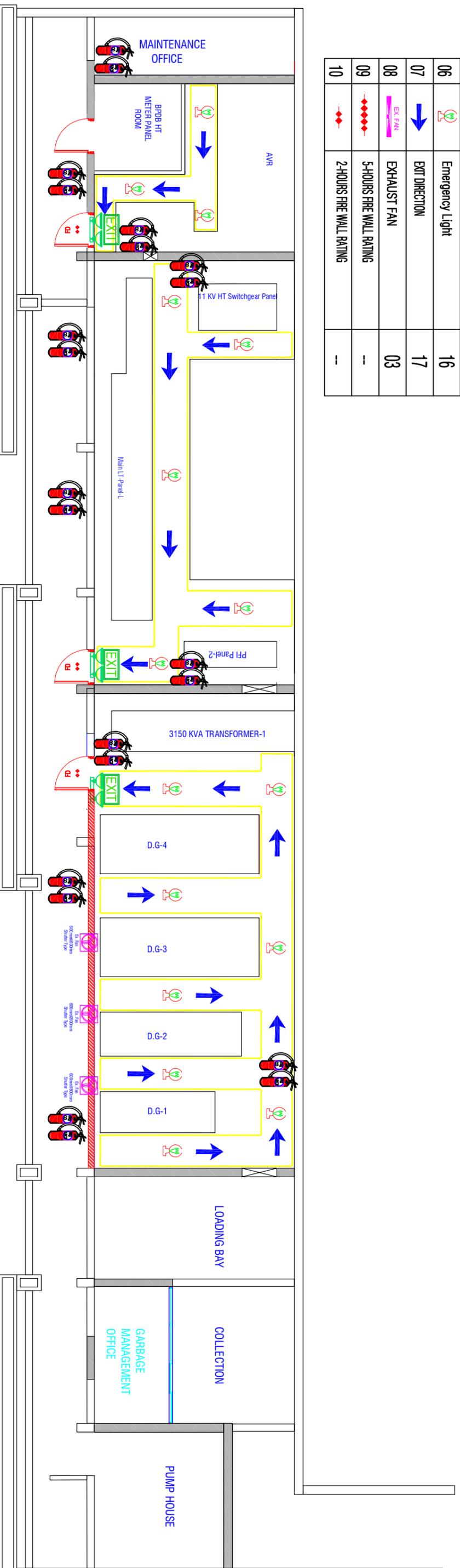
**GROUND FLOOR**  
**PROPOSED FM-200 GAS SUPPRESSION SYSTEM LAYOUT PLAN**

LEGEND			
SL	SYM	DESCRIPTION	QTY
01		FIRE SUPPRESSION CONTROL PANEL	03
01		SMOKE DETECTOR	09
01		HEAT DETECTOR	09
02		HORN/STROBE	05
03		CALL POINT	04
04		ABORT STATION	03
05		WARNING GAS DISCHARGE	03



**GROUND FLOOR**  
**PROPOSED FM-200 FIRE DETECTION SYSTEM LAYOUT PLAN**

LEGEND			
Sl. NO.	MODULE NO & SYMBOL	DESCRIPTION	QUANTITY
01		EXTINGUISHER ABC-5kg	11
02		EXTINGUISHER CO2-5kg	11
03		FOG LIGHT	03
04		2-HOURS RATED FIRE DOOR(SINGLE)	03
05		EMERGENCY EXIT SIGN	04
06		Emergency Light	16
07		EXIT DIRECTION	17
08		EXHAUST FAN	03
09		5-HOURS FIRE WALL RATING	--
10		2-HOURS FIRE WALL RATING	--



## GROUND FLOOR

### Proposed Fire safety Management Plan



<b>SL. NO.</b>	<b>DESCRIPTION</b>	<b>PAGE NO.</b>
<b>01.</b>	COVER PAGE	<b>01.</b>
<b>02.</b>	INDEX	<b>02.</b>
<b>03.</b>	LEGEND	<b>03.</b>
<b>04.</b>	5 MW or 2 x 3150 KVA Dry Type Substation including HT BPPDP Meter, 400A HT AVR with Bypass Panel, 11 KV HT Switchgear (1 IN-2OUT), LT, PFI, DG Sync. Panel & 6300A BBT.	<b>04.</b>
<b>05.</b>	SPECIFICATION OF EARTH INSPECTION PIT	<b>05.</b>
<b>06.</b>	SPECIFICATION OF COPPER BUSBAR OF EARTH PIT BOX	<b>06.</b>
<b>07.</b>	SYSTEM EARTHING DIAGRAM FOR SUBSTATION	<b>07.</b>
<b>08.</b>	SYSTEM EARTHING DIAGRAM FOR GENERATOR	<b>08.</b>

## LEGEND.

Sl. NO.	SYMBOL	CODE	
01.		MDB	Main Distribution Board
02.		DB/SDB	Distribution Board/Sub-Distribution Board
03.		X-For	Transformer
04.		DOF	Drop Out Fuse
05.		ECC	Earthing
06.		ATS	Automatic Transfer Switch
07.		PFI	Power Factor Improvement
08.		LA	Lightning Arrester
09.		CB	Circuit Breaker
10.		HT.M	HT Metering Panel
11.		TP	Three Phase
12.		SP	Single Phase
13.		DG	Diesel Generator
14.		AVR	HT AVR

### GENERAL NOTES:

- 1) ALL ACB SHALL BE WITH MICROPROCESSOR RELEASE FOR OVERLOAD AND SHORT CIRCUIT PROTECTION.
- 2) ALL MCCBS TO BE PROVIDED WITH ADJUSTABLE THERMAL AND ADJUSTABLE MAGNETIC RELEASE FOR OVERCURRENT & SHORT CIRCUIT PROTECTION.
- 3) ALL MCCB & ACB TO BE PROVIDED WITHOUT ROTARY OPERATING HANDLE
- 4) ALL ENERGY METERS, MFM & LOAD MANAGERS SHALL BE DIGITAL TYPE & BMS COMPATIBLE WITH RS 485 PORT.
- 5) ALL MAIN LT PANEL INCOMING & OUTGOING FEEDERS SHOULD HAVE O/C, S/C & INBUILT.
- 6) ALL AMMETERS & VOLTMETER SHALL BE DIGITAL TYPE.
- 7) PROVISION SHALL BE MADE FOR TAKING ON,OFF & TRIP STATUS OF MAIN LT ALL ACB & PANEL ON BMS AND RS485 PORT FOR COMMUNICATION FOR MAIN LT PANEL.
- 8) ALL PANELS WHERE AUTOCHANGEOVER OR ELECTRICAL INTERLOCK IS ASKED FOR, MOTORISED BREAKERS SHOULD BE PROVIDED.
- 9) ALL PANELS INCOMER FEEDERS SHALL HAVE DIGITAL VOLTMETER & ANMETER AND R, Y, B INDICATION & ON, TRIP LAMP.
- 10) ALL PANELS OUTGOING FEEDERS SHALL HAVE ON INDICATION LAMP.



**PIT SPECIFICATION**

Size: L: 450mm, W: 450mm, Depth: 450mm.  
With Metal Manhole Cover 450mmX10mm Size.

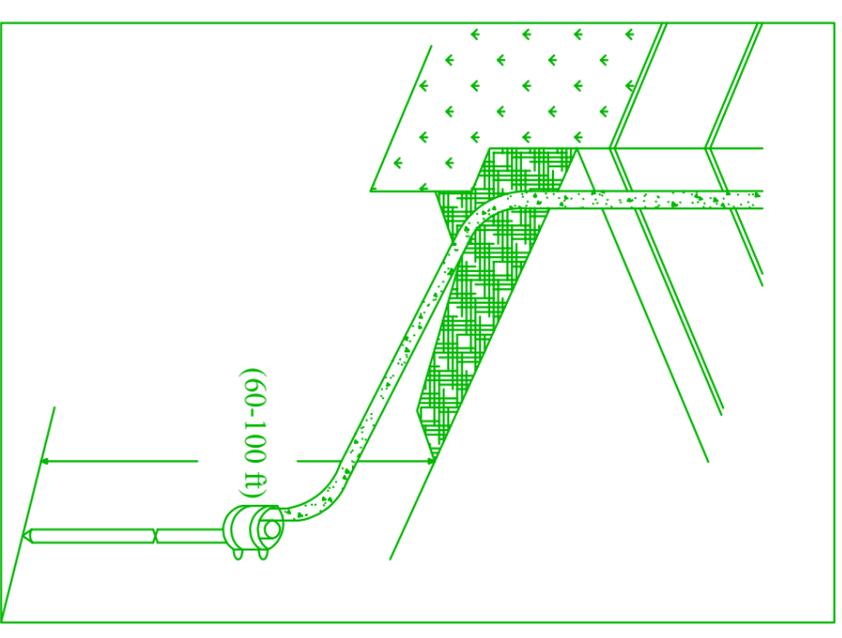
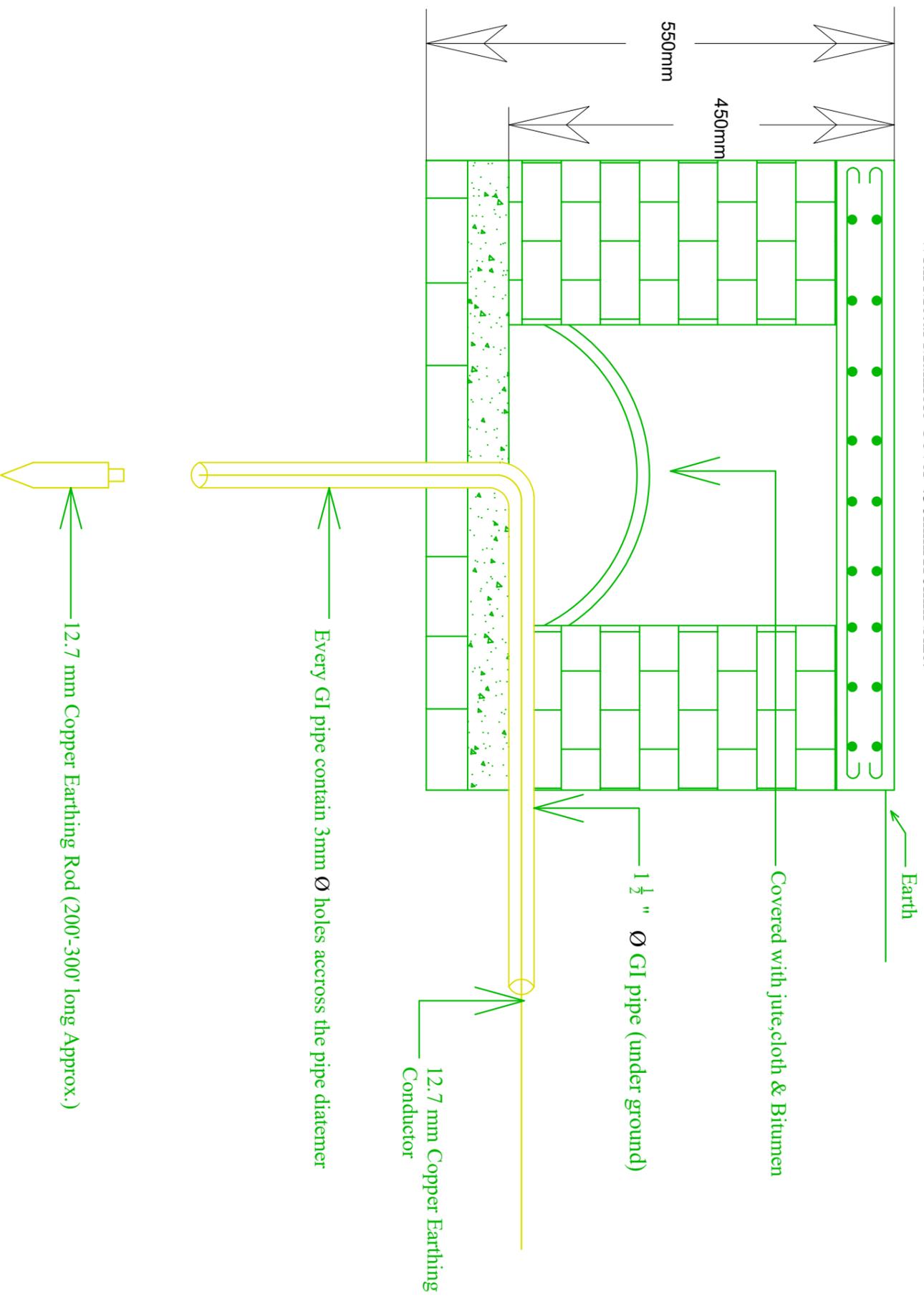


Fig. -1: Typical Single Ground Rod Installation.

**Note :**

**Section -2.8.3.5 :** The resistance of an electrode for power distribution shall not be more than 1 ohms .



**SPECIFICATION OF COPPER BUS BAR OF EARTH PIT BOX**

**EARTH PIT BOX (01 - 12, 14 - 15, 17 - 18, 20 - 25, 27 - 28, 30 - 31):**

**(38mm x 6mm) - 353 Amp.**

**EARTH PIT BOX (13, 16 & 19):**

**(150mm x 10mm) - 2325 Amp.**

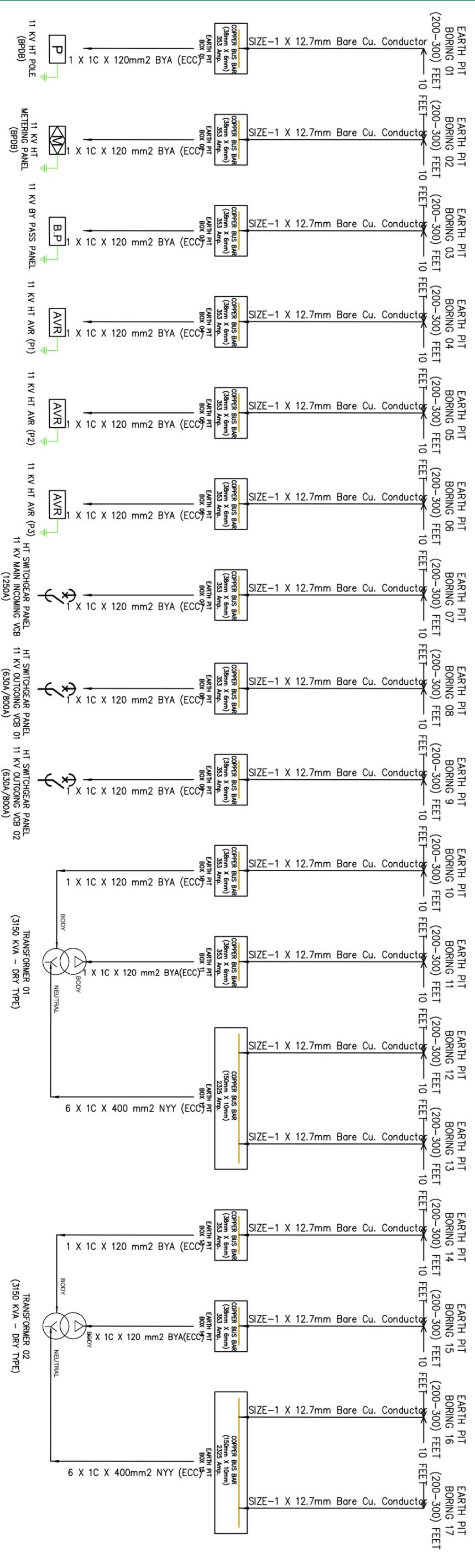
**EARTH PIT BOX (26 & 29):**

**(60mm x 10mm) - 930 Amp.**

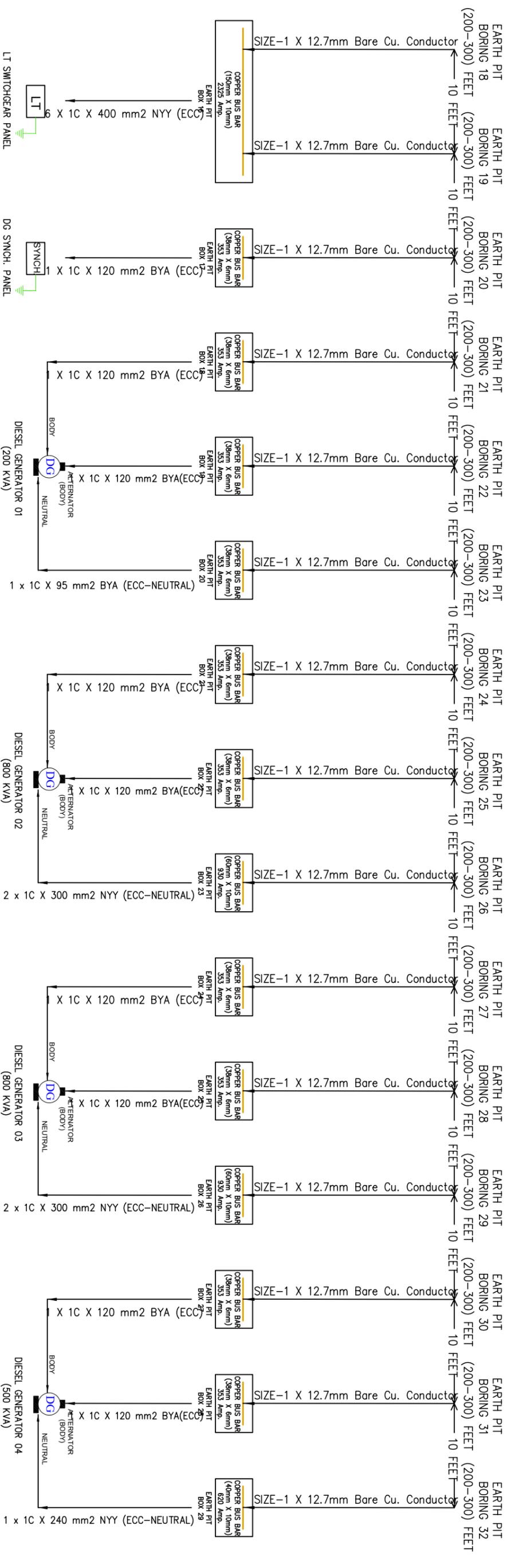
**EARTH PIT BOX (32):**

**(40mm x 10mm) - 620 Amp.**

# AS PER BNBC 2020 (ELECTRICAL SECTION), VALUE OF EARTH RESISTANCE MUST BE LESS THAN 01 OHM.



# AS PER BNBC 2020 (ELECTRICAL SECTION), VALUE OF EARTH RESISTANCE MUST BE LESS THAN 01 OHM.



# AS PER BNBC 2020 (ELECTRICAL SECTION), VALUE OF EARTH RESISTANCE MUST BE LESS THAN 01 OHM.

