Government of the People's Republic of Bangladesh

Technical and Madrasah Education Division (TMED)

Ministry of Education

Climate and disaster resilient and GESI friendly facility development and O&M plan for TVET teacher training

Under

TVET Teachers for the Future (TTF) Program

Directorate of Technical Education

Dhaka, Bangladesh

March-2025

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Assistant Director-07
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1. Description of Physical Infrastructure under TTF project

The objective of this component is to improve the quality of physical teaching & learning and working environments through the construction of 2 (Two) new TVET Teachers Training Institution at Chattogram and Khulna and modernization of TTTC Dhaka, VTTI Bogura and extension of selected polytechnic institutes with modern physical facilities, such as classroom, laboratories other infrastructure, and the provision of associated furniture.

The new Technical Teachers Training Colleges will operate under the executive direction of the Technical and Madrasah Education Division (TMED), Government of the People's Republic of Bangladesh acting through Directorate of Technical Education (DTE). The academic programs will be supervised and academically controlled by BTEB for Diploma in Technical Education (Dip in Tech.) program and by the local universities for Degree and Master's program as per their rules and regulations.

The curriculum should be accepted by the respective affiliating bodies. The existing Dhaka TTTC is already affiliated to University of Dhaka for B.Sc. Program and with BTEB for Diploma program. M.Sc. Technical Education of Dhaka TTTC will have to be approved by University of Dhaka. The Existing VTTTI is already affiliated to BTEB. TTF program will also introduce of two emerging technologies including physical facilities (a) Robotics & Mechatronics in Dhaka polytechnic Institute and (b) Cyber security & Digital forensic in Khulna Polytechnic Institute and Establishment of 4IR center in Dhaka Polytechnic Institute.

The proposed draft 'Facility Development Plan' has been prepared based on the DPP of the TTF project where certain elements namely Gender Equality and Social Inclusion (GESI), Integration of Environmental Sustainability, Stakeholder Engagement and Risk Mitigation Framework have been focused. A brief discussion on these are presented below:

2. GRSI Implementation

The plan put emphasis on gender responsiveness and social inclusion (GRSI) while considering the design and operational aspects of the project.

The Government gives priority on gender equality and women's empowerment in line with SDGs. TTF proposes to provide equal opportunity to education and access to appropriate teaching and quality learning for all TVET teachers training and the grants program. Gender-based barriers limit women's access to resources and decision-making opportunities. The DPP focused on various barriers that women faces like social, economic, physical and cognitive barriers. ***Physical Barriers*** include poor accessibility to women dormitory and TVET centers for differently abled persons (DAP), secure transportation, safe sanitation facilities etc. ***Cognitive Barriers*** covers invalid Gender stereotypes, such as women not suitable for STEM, discourage participation in TVET. The proposed TTF project has the potential to contribute to the promotion of gender equity and empowerment of women through efforts to reduce gender-based violence (GBV), women empowerment initiatives such as women friendly recruitment and disable friendly physical infrastructure.

3. Environmental Sustainability

The plan emphasizes compliance with the Bangladesh National Building Code (BNBC) and environmental sustainability by integrating energy efficiency, waste management, and green practices into training programs and infrastructure. Proposed infrastructures face geophysical

hazards, such as cyclone-induced high winds in Khulna, Barisal, and Chattogram, landslides and earthquake in Chattogram and Sylhet, and groundwater issues in Bogura and Rangpur, necessitating resilient and sustainable development strategies.

To tackle projected climate change risks and future disasters, the TTTCs will adopt several coping mechanisms and mitigation strategies. The adaptation measures include increased plinth height, improved drainage system, rooftop rainwater harvesting systems, climate proof coaling on wall etc. The mitigation measures include incorporating energy-efficient designs, such as the use of natural lighting, energy-efficient HVAC systems, and green building materials, attempts to reduce carbon emission by saving energy as much as possible, use solar energy, tree plantation programme in barren lands, reuse of waste water, rainwater harvesting etc.

4. Stakeholder Engagement in Facilities Development for TVET Teacher Training

The successful development of TVET teacher training facilities under the TTF Project depends on the active engagement of key stakeholders, including TVET teachers, students, and community members. Their involvement ensures that the infrastructure is not only technically advanced but also aligned with the practical needs of users, fostering an inclusive and effective learning environment.

4.1 Roles of Key Stakeholders

4.1.1 TVET Teachers:

- Provide expert input on the design and layout of training spaces, ensuring they support modern pedagogical methods and industry-aligned training.
- Identify specific facility requirements such as workshops, smart classrooms, and simulation labs to enhance hands-on learning.
- Advocate for the integration of advanced teaching technologies, digital learning tools, and flexible learning spaces to accommodate evolving training methodologies.

4.1.2 TVET Students:

- Offer feedback on the usability, accessibility, and comfort of learning spaces to optimize the learning experience.
- Highlight specific training needs, including hands-on practice areas, interactive learning zones, and access to updated training equipment.
- Participate in pilot programs to test facility functionality, helping refine the design based on real-world student experiences.

4.1.3 Community Members and Industry Representatives:

- Ensure that training facilities align with local cultural norms, workforce demands, and economic opportunities.
- Advocate for equitable access to training resources, particularly for underrepresented groups such as women and disadvantaged learners.
- Provide insights on industry trends, ensuring facilities are equipped to train future professionals in line with labor market demands.

4.2 Stakeholder Engagement Mechanisms

To ensure meaningful participation, a structured and transparent stakeholder engagement process is established. This includes:

- **Advisory Committees:** Dedicated committees comprising teachers, students, and industry representatives provide continuous oversight and guidance on facility development.

- **Joint Planning Workshops:** Collaborative sessions bring together stakeholders to discuss facility requirements, design plans, and training needs.
- **Surveys and Feedback Mechanisms:** Periodic surveys and open feedback portals allow stakeholders to share their perspectives on infrastructure improvements.
- **Quarterly Review Meetings:** Regular progress reviews ensure that stakeholder input is systematically incorporated into decision-making at every phase of development.
- **Public Consultations and Awareness Campaigns:** Community engagement sessions create awareness about facility development and gather input from local stakeholders.

By adopting this participatory approach, the TTF Project ensures that TVET teacher training facilities are **inclusive, functional, and responsive to evolving educational and labor market needs**. This structured engagement model fosters a sense of ownership among stakeholders, leading to sustainable and impactful infrastructure development.

5. Risk Mitigation Framework

The risk assessment identifies key challenges during construction and operation phases, such as delays, cost overruns, environmental hazards, and staffing issues. To address these, mitigation measures include contingency budgeting, milestone-based payment terms, environmental impact assessments, and robust communication protocols. For operational risks, strategies like scheduled maintenance, technology refresh cycles, and professional development programs are crucial.

General risks such as supply chain disruptions and health and safety concerns are managed through diversified suppliers, regular safety audits, and stakeholder consultations. This comprehensive approach ensures the project remains resilient and responsive to unforeseen challenges, safeguarding its long-term success.

The concerned experts (e.g. Architect, Structural Engineer etc.) will ensure to consider these while preparing the detailed designs and works implementation plan. After approval of DPP the said consultants will be hired/engaged by the DG, DTE. He will prepare ToR for the consultant with the guidance of DPP. The proposed physical facility development plan can be enhanced more with detailed segmentation at the stage of finalization of design, BOQ and engagement of contractor. More detail work plan will be added later on as per requirement.

With a view to achieve 'DLI 3: Prior result a Climate- and disaster-resilient and GRSI facility development plan for TVET teacher training approved and disseminated' a facility development plan has to be developed. This include new construction, renovation, and vertical extensions following Bangladesh National Building Code (BNBC), ACI Building code for climate and disaster resilient infrastructure design which will be approved by TMED and disseminated by DTE entailing (i) a time-bound work plan for detailed design, engagement of contractor, and construction for facilities development; (ii) agencies responsible for each milestone; (iii) process of certifying completion of facilities constructed by EED; and (iv) SOP for O&M of facilities by EED.

6. Time-bound Work Plan for Detailed Design

PSU of DTE for TTF Program will engage a Consulting firm with consultation of EED. So after consultation with DTE authority relevant timing can be determined for prior result subject to approval of DPP.

4 (Four) sites namely Dhaka TTTC, Chattogram TTTC, Khulna TTTC and Bogura VTTI are proposed for facilities development in Phase-1 during the DPP period (2024-25 – 2028-29). A

total of 11 Nos. high-rise Academic, Administrative and Residential buildings (10 – 15 storied) will be constructed under this program. It will need a technical support related to designs for the implementing agency i.e. EED.

For this purpose provision of engagement of consulting firms have been kept in DPP. After approval of DPP by the Government all actions related to implementation can be officially started. After splitting the designs for proposed buildings in two phases it can be done (calculated plan enclosed).

Overall, in my assessment it may require 12 (Twelve) months i.e. January '25 to December '25 to get all the designs finished and invitation of tenders for procurement by EED, subject to approval of DPP.

Time-bound Work Plan for TTF Project (Infrastructure, EED)

Description of works	DPP Cost (TK in Lac)	Program										Remarks
		Y-1		Y-2		Y-3		Y-4		Y-5		
		2025-26		2026-27		2027-28		2028-29		2029-30		
VTTI, Bogura												
New Construction:												
1. Construction of proposed 10-Storied Academic Building	13,327.19											
2. Construction of 11-Storied Male Trainee Teachers' Dorm Building	5,172.35											
3. Construction of 10-Storied Master Trainers' and Staff Dorm Building	2330.05											
4. Construction of 2-storied Principals Quarter	261.53											
Other External Works:												
External Water Supply	195.50											
External Electrification	362.25											
Site Improvement and Landscaping	170.00											
Boundary Wall & Gate, Internal Road & Drain	500.00											
Extension Works:												
Vertical extension works of Computer Building at 3rd and 4th floor.	275.78											
Repair Works:												
Four (4) nos. Workshop Buildings	100.00											
Existing Auditorium	650.00											
Supply of Furniture:												
Supply furniture for various new buildings	1,054.56											
Supply furniture for various existing buildings	180.00											
	24,579.21											

Design & Tendering Phase

Implementation Phase

Note:

After completion of the construction works, the building will be handed over to the user authority by the Implementing Agency (EED) within one month and DTE will select the academic calendar of the institutes in consultation with TMED and EED.

* Activities include Soil test, Architectural final design, Structural and other designs, estimate, BOQ preparation for Tender invitation. Time- 6 months

Agencies involved: TMED/DTE/EED/Architect/Structural Engineer/ADB local team.

Time-bound Work Plan for TTF Project (Infrastructure, EED)

Description of works	DPP Cost (TK in Lac)	Program										Remarks
		Y-1		Y-2		Y-3		Y-4		Y-5		
		2025-26		2026-27		2027-28		2028-29		2029-30		
TTTC, Chattogram												
New Construction:												
1. Construction of proposed 15-Storied Academic Building	15,907.33											
2. Construction of 11-Storied Male Trainee Teachers' Dorm Building	5,233.21											
3. Construction of 12-Storied Female Trainee Teachers' Dorm, Master Trainers' and Staff Dorm Building	4,511.96											
4. Construction of 2-storied Principals Quarter	263.73											
Other External Works:												
External Water Supply	195.50											
External Electrification	362.25											
Site Improvement and Landscaping	140.00											
Boundary Wall & Gate, Internal Road & Drain	500.00											
Extension Works:												
Chattogram Polytechnic Institute- Computer Building	371.52											
Supply of Furniture:												
Supply furniture for various new buildings	1,295.81											
Supply furniture for various existing buildings- Chattogram Polytechnic Institute- Power Workshop Building	275.00											
Desalination Plant:												
Saline Water Desalination Plant	250.00											
	29,306.31											

Note:

Design & Tendering Phase *

Implementation Phase

After completion of the construction works, the building will be handed over to the user authority by the Implementing Agency (EED) within one month and DTE will select the academic calendar of the institutes in consultation with TMED and EED.
* Activities include Soil test, Architectural final design, Structural and other designs, estimate, BOQ preparation for Tender invitation. Time- 6 months
Agencies involved: TMED/DTE/EED/Architect/Structural Engineer/ADB local team.

Time-bound Work Plan for TTF Project (Infrastructure, EED)

Description of works	DPP Cost (TK in Lac)	Program										Remarks
		Y-1		Y-2		Y-3		Y-4		Y-5		
		2025-26		2026-27		2027-28		2028-29		2029-30		
TTTC, Dhaka												
New Construction:												
1. Construction of 11-Storied Academic Building	17686.23											
Other External Works:												
External Water Supply	195.50											
External Electrification	362.25											
Site Improvement and Landscaping	80.00											
Boundary Wall & Gate, Internal Road & Drain	500.00											
Extension Works:												
Vertical extension works of Workshop Building- Dhaka Polytechnic Institute.	1772.87											
Repair Works:												
i. New Building: 6 (Six) storied workshop cum Academic Building	230.00											
ii. 3-storied Old Building	200.00											
iii. Renovation of 3 rooms for E-Learning Center	50.00											
Supply of Furniture:												
Supply furniture for various new buildings	1,202.07											
Supply furniture for various existing buildings	40.00											
Supply furniture for various existing buildings- Dhaka Polytechnic Institute- Workshop Building	200.00											
	22518.92											

Note:

Design & Tendering Phase *

Implementation Phase

After completion of the construction works, the building will be handed over to the user authority by the Implementing Agency (EED) within one month and DTE will select the academic calendar of the institutes in consultation with TMED and EED.
* Activities include Soil test, Architectural final design, Structural and other designs, estimate, BOQ preparation for Tender invitation. Time- 6 months.
Agencies involved: TMED/DTE/EED/Architect/Structural Engineer/ADB local team.

Time-bound Work Plan for TTF Project (Infrastructure, EED)

Description of works	DPP Cost (TK in Lac)	Program										Remarks
		Y-1		Y-2		Y-3		Y-4		Y-5		
		2025-26		2026-27		2027-28		2028-29		2029-30		
TTTC, Khulna												
New Construction:												
1. Construction of 15-Storied Academic Building	15,270.99											
2. Construction of 12-Storied Male Trainee Teachers Dorm Building	5,502.07											
3. Construction of 11-Storied Female Trainee Teachers' Dorm, Master Trainers' and Staff Dorm Building	4,294.46											
4. Construction of 2-storied Principals Quarter	263.73											
Other External Works:												
External Water Supply	195.50											
External Electrification	327.75											
Site Improvement and Landscaping	170.00											
Boundary Wall & Gate, Internal Road & Drain	500.00											
Extension Works:												
Khulna Polytechnic Institute	400.00											
Supply of Furniture:												
Supply furniture for various new buildings	1,266.57											
Supply furniture for various existing buildings- Khulna Polytechnic Institute	200.00											
Desalination Plant:												
Saline Water Desalination Plant	250.00											
	28,641.07											

Note:

Design & Tendering Phase *

Implementation Phase

After completion of the construction works, the building will be handed over to the user authority by the Implementing Agency (EED) within one month and DTE will select the academic calendar of the institutes in consultation with TMED and EED.

* Activities include Soil test, Architectural final design, Structural and other designs, estimate, BOQ preparation for Tender invitation. Time- 6 months.

Agencies involved: TMED/DTE/EED/Architect/Structural Engineer/ADB local team.

Time-bound Work Plan for TTF Project (Infrastructure, EED)

Description of works	DPP Cost (TK in Lac)	Program										Remarks
		Y-1		Y-2		Y-3		Y-4		Y-5		
		2025-26		2026-27		2027-28		2028-29		2029-30		
Other Polytechnic Institutes												
Extension Works:												
Mymensingh Polytechnic Institute- Vertical extension works of Computer Building (2nd and 3rd floor)	521.27											
Barishal Polytechnic Institute- Existing Computer Building 2nd and 3rd floor	402.37											
Sylhet Polytechnic Institute- existing computer building	371.00											
Rangpur Polytechnic Institute- existing computer building	371.00											
Supply of Furniture:												
Mymensingh Polytechnic Institute	40.00											
Barishal Polytechnic Institute	30.00											
Sylhet Polytechnic Institute	200.00											
Rangpur Polytechnic Institute	200.00											
	2,135.64											

7. Engagement of Contractor

Engagement of contractor for civil work will be done by EED after getting approval of tender by the authority i.e. DTE, TMED, MoE, CCGP (The Cabinet Committee on Government Purchase) as the case may be. According to the present financial approval limit.

The Tender Approving Authority according to the value of estimated cost are as follows:

- HOPE ≤ BDT 30 Crore
- MOE ≤ More than BDT 30 Crore and up to BDT 50 Crore
- CCGP ≥ BDT 50 Crore

Engagement of Contractor Flow process:

>> DPP approval
>> Appointment of Architect
+ Structural Consultant/firm
>> Finalization of detail designs
>> Estimate
>> Tender invitation
>> Tender opening & evaluation
>> Issuance of NOA

Minimum 6 months, it'll be executed by EED & DTE

>> Contract agreement signing
>> Work implementation

Finally, it will need around 6 (Six) month to award a contract to the contractor.

8. Construction for facilities development

After signing of contract the contractor will start implementation of the works within 7 (Seven) days. In the meantime relevant all sorts of designs will be issued to the contractor. EED field level engineers XEN, AE, SAE will supervise the work. A Local Supervision Committee (LSC) will be formed with 5-7 members from the concerned institute, implementing agency (EED) and Local Administration etc.

Example of such Committee:

1.	Members from TTTC/VTTI	3 Nos.
2.	Members from EED	2 Nos.
3.	Local Administration	2 Nos.
	Total	**7 Nos.**

The Committee will supervise the work in accordance to the design, specification of contract. They will ensure the quality and will conduct at least 1 (one) general meeting once in a month and will report the status of the work to the concerned higher authority.

9. Agencies responsible for each milestone:

Milestone	Agencies responsible
Making of detailed design	DTE
Engagement of contractor	EED with the help of DTE
Construction for facilities development	Contractor EED

10. Process of certifying completion of facilities constructed by EED

A government approved format is followed to certify the completion of facilities/work by EED. Normally after completing/finishing the facilities/work in accordance to the Technical Specification of contract document, drawing, design etc. and following the instruction of the Engineer-in-Charge (E/C). The procuring entity (PE) will issue certificate declaring the completion of facilities/work in a government approved format attached to STD (Standard Tender Document) PW3 (copy enclosed: **Annex 1**. The form is supplied by BPPA (Bangladesh Public Procurement Authority) formerly known as CPTU (Central Procurement Technical Unit).

SOP for O&M of facilities by EED

Standard Operating Procedure for Operation & Maintenance of facilities by EED (proposed) has been provided in the **Annex-3**.

Annex 1

FORMAT (Form PW3)

LOGO

[Insert Full Contact Details of Issuing Authority]

Office Memo no: _____ Date: _____

COMPLETION CERTIFICATE

01	Procuring Entity Details		
	(a) Division	:	
	(b) Circle/Directorate	:	
	(c) Zone/Region	:	
	(d) Others (*specify*)	:	
02	Name of Works	:	
03	Contract No	:	
04	Contractor's Legal Title	:	
05	Contractor's Contact Details	:	
06	Contractor's Trade License/Enlistment/Registration Details	:	
07	Reference to NOA with Date	:	
08	Original Contract Price as in NOA	:	
09	Final Contract Price as Executed	:	
10	Original Contract Period		
	(a) Date of Commencement	:	
	(b) Date of Completion	:	
11	Actual Implementation Period		
	(a) Date of Actual Commencement	:	
	(b) Date of Actual Completion	:	
12	Days/Months Contract Period Extended	:	
13	Amount of Bonus for Early Completion	:	
14	Amount of LD for Delayed Completion	:	
15	Physical Progress in Percent (*in terms of value*)	:	
16	Financial Progress in Amount (*in terms of payment*)	:	
17	Special Note (*if any*)	:	

Certified that the Works under the Contract has been executed and completed in all respects in strict compliance with the provisions of the Contract including all plans, designs, drawings, specifications and all modifications thereof as per direction and satisfaction of the Project Manager/Engineer-in Charge/Other (*specify*). All defects in workmanship and materials reported during construction have been duly corrected.

_____

Name and Signature of the Issuing Authority with Designation

please turn over

Annex 2

Details of Works Completed

Contractor: [insert legal title]		
No	**Major Components of Works**	**Total Value (in Contract Currency)**

Joint Venture
[Delete, if not applicable]

Leading Partner: [insert legal title]		
No	**Components/Activities [reference drawn to JV Partner Information]**	**Value (in Contract Currency)**

Co-partner: [insert legal title]		
No	**Components/Activities [reference drawn to JV Partner Information]**	**Value (in Contract Currency)**

Co-partner: [insert legal title]		
No	**Components/Activities [reference drawn to JV Partner Information]**	**Value (in Contract Currency)**

Note: Figures shown must correspond to Total Value

Sub-contractor
[delete, if not appropriate]

Named Sub-contractor: [insert legal title] [delete, if not appropriate]		
No	**Components/Activities [reference drawn to Sub-contractor Information]**	**Value (in Contract Currency)**
Nominated Sub-contractor: [insert legal title] [delete, if not appropriate]		
No	**Components/Activities [reference drawn to PCC of Contract Document]**	**Value (in Contract Currency)**

Name and Signature of the Issuing Authority with Designation

Rezwanul Haque
Assistant Director-07
Directorate of Technical Education

ANNEX – 3

DRAFT

Government of The People's Republic of Bangladesh
Education Engineering Department (EED)
Ministry of Education (MOE), Bangladesh.

Proposed Standard Operating Procedure (SOP) for Operations and Maintenance (O&M) of Construction Facilities under TTF Project by Education Engineering Department (EED) under Ministry of Education (MOE), Bangladesh.

December, 2024

Proposed Standard Operating Procedure (SOP) for Operations and Maintenance (O&M) of Construction Facilities under TTF Project by Education Engineering Department (EED) under Ministry of Education (MOE), Bangladesh.

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1. Introduction

The purpose of this Standard Operating Procedure (SOP) is to outline the operational and maintenance procedures for construction facilities under the TVET Teachers for the Future Program (TTF) project assumed to be managed by the Education Engineering Department (EED) in Bangladesh under TMED funded by Asian Development Bank (ADB). This SOP is developed in alignment with the Bangladesh National Building Code (BNBC), as well as practices from the Public Works Department (PWD) and the Local Government Engineering Department (LGED). The goal is to ensure that the facilities are maintained in optimal condition, providing a safe, secure, and conducive environment for educational activities which will prolong safe and long-life span of the buildings developed under TTF Project under DTE of TMED.

2. Scope

This SOP applies to all TTF project facilities managed by EED across Bangladesh. It covers the following:

- Building structure
- Electrical systems
- Plumbing systems
- Sanitation and waste management
- Heating, ventilation, and air conditioning (HVAC) systems
- Fire safety systems
- Landscaping and external infrastructure
- Energy and water efficiency

3. Responsibilities

3.1. EED Maintenance Team

- Conduct routine inspections, repairs, and servicing.
- Keep records of maintenance activities.
- Ensure adherence to safety standards and regulations.
- Coordinate with third-party contractors for specialized maintenance.

3.2. Site Supervisor

- Perform daily and weekly inspections.
- Report any issues or repairs needed to the EED Maintenance Team.
- Maintain logs of maintenance activities.

3.3. Third-Party Contractors

- Perform specialized maintenance services (e.g., HVAC, plumbing, electrical systems).
- Comply with BNBC and EED safety standards.
- Submit service reports after each visit.

3.4. Facility Users

- Report any visible damage, malfunction, or potential hazards to the Site Supervisor.
- Follow established safety protocols and usage guidelines.

4. Maintenance Categories

4.1. Routine Maintenance

These activities are regularly scheduled and include tasks such as:

- Daily cleaning of the building and premises.
- Weekly inspections of electrical systems, plumbing, and lighting.
- Monthly servicing of HVAC systems.
- Quarterly checks for fire safety equipment (extinguishers, alarms, sprinklers).

4.2. Preventive Maintenance

This involves systematic inspections and repairs to prevent equipment failures and prolong the lifespan of the facility. Tasks include:

- Annual roof inspection and repairs.
- Bi-annual testing of backup generators.
- Annual electrical load testing.

4.3. Corrective Maintenance

This is unscheduled maintenance triggered by equipment failure or safety hazards. Examples:

- Immediate repair of electrical faults or plumbing leaks.
- Replacement of broken windows or damaged doors.

4.4. Emergency Maintenance

Emergency maintenance involves swift action to resolve critical issues that pose immediate risk, such as:

- Flooding due to plumbing failure.
- Electrical short circuits causing a fire hazard.

5. Safety and Compliance

All O&M activities must be carried out in compliance with BNBC, EED, and other relevant guidelines and codes of practice. The following aspects must be prioritized:

- Use of Personal Protective Equipment (PPE) by maintenance staff.
- Adherence to electrical safety standards.
- Regular fire drills and evacuation procedures.

6. Reporting and Record Keeping

All maintenance activities must be documented to ensure accountability and continuous improvement. The following forms/checklists will be used:

- **Form 1: Daily Inspection Log**
- **Form 2: Maintenance Request Form**
- **Form 3: Preventive Maintenance Checklist**
- **Form 4: Corrective Maintenance Report**
- **Form 5: Emergency Maintenance Report**

7. Operational Procedures

7.1. Daily Operations Checklist

1. Ensure that all lights, fans, and electrical appliances are turned off when not in use.
2. Inspect exterior and interior areas for cleanliness and sanitation.
3. Check HVAC system functionality.
4. Verify security systems are operational.

7.2. Monthly Maintenance Checklist

1. Inspect all plumbing fixtures for leaks and ensure proper drainage.
2. Service HVAC systems, including filter replacement and duct cleaning.
3. Inspect and test fire alarms and smoke detectors.
4. Check for signs of structural damage (cracks in walls, water damage).

7.3. Annual Maintenance Checklist

1. Inspect and service electrical panels, wiring, and connections.
2. Perform a detailed structural integrity assessment of the building.
3. Inspect roof, gutters, and drainage systems for damage or clogging.
4. Test fire suppression systems.

8. Forms and Checklists

Form 1: Daily Inspection Log

Date	Area Inspected	Condition (Good/ Fair/Poor)	Issues Found	Action Taken	Remarks

Form 2: Maintenance Request Form

Date	Requested By	Issue Description	Priority Level (High/Medium/Low)	Action Required	Remarks

Form 3: Preventive Maintenance Checklist

Date	Area	Task	Frequency	Completed (Y/N)	Remarks
Electrical Systems	Test backup generator	Bi-Annual			
HVAC	Replace filters	Monthly			

Form 4: Corrective Maintenance Report

Date	Issue	Assigned Technician	Action Taken	Completion Date	Remarks

Form 5: Emergency Maintenance Report

Date	Issue	Time Reported	Time Resolved	Action Taken	Remarks

9. Communication Protocols

- **Emergency Issues:** Site Supervisor to notify the EED Maintenance Team immediately. If the issue involves fire, flooding, or electrical hazard, local emergency services must be contacted.
- **Routine Issues:** Use the Maintenance Request Form (Form 2) to notify the EED Maintenance Team.
- **Third-Party Contractors:** Should be notified through official EED communication channels and supervised during their work on-site.

10. Performance Evaluation

Regular audits of O&M activities will be carried out to ensure compliance with this SOP. Performance indicators include:

- Percentage of preventive maintenance tasks completed on time.
- Number of emergency incidents.
- Average response time for corrective maintenance.
- Condition ratings from periodic facility inspections.

11. Conclusion

The Operations and Maintenance (O&M) procedures outlined in this SOP are designed to ensure the sustainability, safety, and functionality of the construction facilities under the TTF project by EED. Proper implementation and adherence to these procedures will result in the efficient management of facilities, minimizing downtime, and extending the life of the assets.

This SOP is to be reviewed annually and updated as necessary to comply with evolving guidelines and standards from EED, BNBC, PWD, and other relevant authorities.

03.12.2024

মোঃ রফিকুল ইসলাম
নির্বাহী প্রকৌশলী
শিক্ষা প্রকৌশল অধিদপ্তর
শিক্ষা ভবন, ঢাকা।

03.12.2024

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তত্ত্বাবধায়ক প্রকৌশলী
শিক্ষা প্রকৌশল অধিদপ্তর
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03-12-24

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A summary of relevant guidelines from the **Bangladesh National Building Code (BNBC)** that align with the Operations and Maintenance (O&M) procedures of construction facilities under the Teacher Training Facilities (TTF) project. These guidelines can be included as **Annexures** to the SOP.

Annexure 1.1: Structural Integrity and Safety

BNBC Chapter 6 - Structural Design Requirements:

- **6.1.1 General Provisions:** Regular inspections are required to identify signs of structural damage, such as cracks in walls, foundations, columns, slabs or beams. Maintenance procedures should ensure that these signs are addressed promptly to prevent accidents.
- **6.1.2 Load Bearing Capacity:** Facilities must be periodically evaluated for their ability to withstand the structural loads as defined during the design phase. Any changes to the structure (such as renovations) should be analysed for their impact on load distribution.
- **6.1.5 Maintenance of Structural Components:** Critical components like columns, beams, and load-bearing walls must be inspected at least once a year, especially in areas with heavy exposure to environmental stress (wind, moisture, etc.).

Annexure 1.2: Fire Safety Guidelines

BNBC Chapter 3 - Fire Protection and Fire Safety Requirements:

- **3.3.5 Maintenance of Fire Safety Systems:** All fire safety equipment, including fire extinguishers, alarms, sprinklers, and smoke detectors, should be inspected and tested monthly. This is in line with the O&M's monthly checklist for fire safety.
- **3.4.3 Fire Exits and Escape Routes:** These should be clearly marked, regularly checked for blockages, and maintained. Ensure that all exits are operational, and evacuation drills should be conducted every six months.
- **3.4.6 Fire Doors and Assembly:** Ensure that fire doors are functioning, are not blocked, and close properly. These doors should be part of the routine inspection process.
- **3.5.2 Emergency Evacuation Plans:** Facilities must have a well-maintained and easily accessible emergency evacuation plan that is clearly visible to all occupants. Fire drills should be conducted twice a year.

Annexure 1.3: Electrical Systems

BNBC Chapter 8 - Electrical and Mechanical Requirements:

- **8.1.5 Maintenance of Electrical Systems:** Routine inspections should be performed every six months for electrical installations, including wiring, circuit breakers, and electrical panels. Immediate corrective action should be taken if any issues are found.
- **8.2.3 Electrical Load Testing:** Periodic load tests should be conducted annually to ensure that the electrical system can handle peak loads without overheating or causing a fire hazard.
- **8.5.2 Protection Against Short Circuits:** Ensure that all electrical installations have proper insulation and that fuse or breaker panels are functioning as required.
- **8.7.1 Use of Licensed Electrical Contractors:** Electrical system inspections and repairs should only be conducted by certified and licensed electricians.

Annexure 1.4: Plumbing and Sanitation Systems

BNBC Chapter 9 - Plumbing Systems:

- **9.1.3 Maintenance of Plumbing Fixtures:** Regular inspections should be done for leaks in pipes, faucets, and drainage systems. The O&M's monthly maintenance checklist should include these inspections.
- **9.3.4 Wastewater Drainage:** All drainage systems should be cleaned and checked quarterly to prevent blockages. Special attention must be given to areas prone to flooding or waterlogging.
- **9.5.1 Water Supply:** Routine checks are required to ensure an uninterrupted supply of potable water. This includes the inspection of water tanks, pumps, and piping for contamination or leaks.

Annexure 1.5: HVAC and Ventilation Systems

BNBC Chapter 13 - Mechanical Ventilation:

- **13.2.1 Maintenance of HVAC Systems:** Monthly checks are required for HVAC systems, including cleaning of filters, inspection of ducts, and servicing of air conditioning units. All mechanical ventilation systems should be tested to ensure adequate indoor air quality.
- **13.5.3 Air Quality Control:** Ensure that HVAC systems are designed and maintained to meet the minimum air quality standards as outlined in the BNBC, with regular filter changes and duct cleaning.

Annexure 1.6: Safety During Maintenance Work

BNBC Chapter 12 - Safety in Construction and Demolition:

- **12.2.3 Personal Protective Equipment (PPE):** Maintenance staff should always wear appropriate PPE, such as helmets, gloves, safety boots, and harnesses (for work at heights). These guidelines align with safety procedures in the O&M SOP.
- **12.4.2 Work at Heights:** Special precautions must be taken when working on roofs, ceilings, or elevated structures. This includes the use of proper scaffolding and fall prevention systems.
- **12.6.5 Electrical Safety Measures:** Maintenance personnel working on electrical systems should de-energize equipment before starting work and use insulated tools.

Annexure 1.7: Waste Management and Environmental Considerations

BNBC Chapter 10 - Environmental Control:

- **10.3.1 Waste Management Systems:** Facilities must have a systematic approach to waste collection and disposal, ensuring compliance with local waste management regulations. Ensure that bins are placed in strategic areas and are regularly emptied to avoid overflow.
- **10.4.5 Wastewater Treatment and Disposal:** Ensure that wastewater treatment facilities, such as septic tanks or sewer connections, are operational and well-maintained to prevent environmental contamination.
- **10.7.3 Hazardous Waste Management:** Special provisions must be made for the disposal of hazardous materials such as chemicals, batteries, and electronic waste. Such items should be collected and disposed of according to the BNBC's hazardous waste guidelines.

Annexure 1.8: Energy Efficiency

BNBC Chapter 11 - Energy Efficiency:

- **11.2.4 Energy Audits:** Perform an energy audit annually to identify opportunities for reducing energy consumption. This includes evaluating lighting, HVAC, and electrical systems.
- **11.4.1 Use of Energy-Efficient Lighting:** Facilities should be equipped with energy-efficient lighting systems (such as LED) to reduce energy usage and operational costs.
- **11.5.3 Solar Panels and Renewable Energy Sources:** Wherever possible, the installation of solar panels should be encouraged to reduce dependency on non-renewable energy sources. Regular maintenance of renewable energy installations is also recommended.

Annexure 1.9: Accessibility Requirements

BNBC Chapter 7 - Accessibility in Buildings:

- **7.2.1 Access Routes:** Ensure that all pathways, entrances, and exits are accessible to persons with disabilities. Ramps and handrails should be installed and maintained to provide safe access.
- **7.3.5 Maintenance of Lifts and Elevators:** Elevators and lifts should undergo routine checks and servicing to ensure continuous operation, particularly for individuals with mobility challenges.

Annexure 1.10: Landscaping and External Infrastructure

BNBC Chapter 14 - Site Development and Landscaping:

- **14.3.2 Maintenance of Outdoor Spaces:** Ensure that external areas like parking lots, gardens, and walkways are maintained to prevent accidents. This includes regular trimming of trees, repair of sidewalks, and adequate drainage to prevent waterlogging.
- **14.5.4 Stormwater Drainage Systems:** Regularly inspect and maintain stormwater drainage systems to prevent flooding during the rainy season.

Conclusion:

These annexures provide the necessary BNBC guidelines relevant to the Operations and Maintenance (O&M) of the construction facilities under the TTF project. By adhering to these standards, EED can ensure the safety, efficiency, and sustainability of the facilities under its management.

*The full text of the **Bangladesh National Building Code (BNBC)** can be referred to for more detailed guidance and should be kept accessible for the EED Maintenance Team and any third-party contractors involved in maintenance activities.*

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