

Terms of Reference (ToR)
for

**Remediation works at KiK UCEP Technical
Schools for the concerns from Structural,
Electrical and Fire Safety Assessment**

October, 2022

PART A

TERMS OF REFERENCE OF THE CONSULTANCY SERVICES

CHAPTER 1: INTRODUCTION

1.1 Project Background

UCEP Bangladesh is widely known as a non-profit and non-governmental organization, established in 1972 with the motto 'Help to learn, Skills to earn', UCEP Bangladesh is one such institution, which provides Second Chance Education to children and youth who are unable to attend school and facilitates the employment of youth in decent jobs through Technical and Vocational Education and Training (TVET) and Skills Development (SD). UCEP mainly serves children and youth who live below the poverty line in urban and peri-urban areas. At present it provides education and training to about 35,000 children and youth annually.

Under the partnership agreement with KiK Textilien und Non-Food GmbH, UCEP Bangladesh has been implementing a project named "For supporting second chance education of underprivileged children through sponsoring School" since 2017. It operates in 5 Technical Schools under UCEP Bangladesh's four operational areas (Dhaka, Rangpur, Chattogram and Sylhet). The aim of the project is to provide education to the disadvantaged group to have a better livelihood. The specific objective of the project is to provide education and skills training in total 16,350 (from 2017 to 2024) underprivileged children in the Kik supported UCEP Schools.

As per the need of the project, ELEVATE conducted BEFS (Building, Electrical and Fire Safety Assessment) at KIK UCEP Technical Schools. The list of the schools is given below:

School Name	Address	City
KiK UCEP Robertsongonj Technical School	Kutirpara, Alamnagar, Sadar, Rangpur	Rangpur
KiK UCEP City Corporation Technical School	New Jummapara, Sadar, Rangpur.	Rangpur
KiK UCEP Hesamuddin Technical School	Plot#7, Road#5, Block# B, Sat Masjid Housing, Mohammadpur, Dhaka-1207	Dhaka
KiK UCEP Mabia Rashidia Technical School	Char Rangamatia, Chandgaon, Chattogram	Chattogram
Kik UCEP Sulaiman Chowdhury Technical School	189 Al-Islah (old) North Baluchar, Sylhet	Sylhet

1.2 Objectives of the Consultancy Service

Initially the objective of the consultancy service is to review the CARs (Corrective Action Reports) based on the BEFS that has already been accepted by the project and prepare a plan to accomplish the remediation work. However, later under the consultancy service, all the remediation works needed to be accomplished as per agreement including necessary customization.

1.3 Scope of the ToR

Design Component

Consultant Engineer's scope for the following components:

1. Detail Engineering Assessment (DEA) including field tests, laboratory test, as built drawing, structural modeling and Report
2. Assessment of existing Electrical and Fire Fighting system design.
3. Design and Estimation (if required)

CHAPTER 2: PREPARATION OF TOR

2.1 ToR Preparation Process

A detailed Terms of Reference (ToR) is essential to ensure of Remediation works at KIK UCEP Technical Schools for the concerns from Structural, Electrical and Fire Safety Assessment work properly. The ToR sets the objectives, scopes, and activities of the plan preparation project.

It should be mentioned that Consultant has received feedback from UCEP regarding the requirements. Based on the feedback and discussion, the ToR is prepared and finalized. Part B of this report includes the ToR. The project is very important and special, considering the safety and environment of educational institute under this ToR.

CHAPTER 3: ACTIVITIES TO BE PERFORMED

Assessment of School Buildings involves a list of activities to be performed. Major activities for the assessment are discussed in this section under following four phases. These are-

- Activity phase 1: Project Initiation Phase
- Activity phase 2: Data Collection and Data Preparation Phase
- Activity phase 3: Data Analysis and Plan Preparation Phase
- Activity phase 4: Plan Validation Phase

3.1 Project Initiation Phase

- a) Mobilize the consulting team.
- b) Communicating with the concern authority
- c) Collecting available documents of the school related with the assignment.
- d) Team formation
- e) Submit the inception report.

3.2 Data Collection and Data Preparation Phase

- a) Core cutting, scanning, foundation checking
- b) As built drawing data collection
- c) Soil test if required
- d) Survey
- e) Physical load calculation

3.3. Data Analysis and Plan Preparation Phase

- a) As built Architectural drawing preparation
- b) As built Structural drawing preparation
- c) As built Electrical drawing preparation
- d) As built Fire drawing preparation
- e) Structural modeling
- f) Structural stability analysis
- g) Foundation Checking
- h) All type of design according to the BNBC 2020

3.4 Plan Validation Phase

- a) Preparation of final drawing for architectural, structural, electrical and fire
- b) Cost estimate
- c) Preparation of report
- d) Submission

3.5 Reports

Contents of reports and working papers.

Inception Report

- Status of mobilization of the consulting team.
- Introduction of the planning area.
- Map of the planning area in an appropriate scale.
- Findings from reconnaissance survey.

Interim Report

- As built drawings
- Field test data
- Comments on ground condition

Draft Report

- Engineering Assessment
- Draft design
- Recommendation for discussion

Final Report

- All types of design
- Estimation
- Recommendation

CHAPTER 4: BUDGET FOR THE PROJECT

3.1 Budget for Consulting Firms

On an average, the budget for consultancy service varies, depending on locations of the schools. The budget of major components are as follows:

- Cost for geotechnical investigation
- Cost for Architectural as built drawing
- Cost for Field Tests
- Cost for Detail Engineering Analysis (DEA)
- Cost for Electrical analysis and Design
- Cost for Fire Fighting System Design
- Cost for Reporting
- Workshop Cost

CHAPTER 5: THE CONSULTING TEAM

5.1 Composition of the Consulting Team

Sl.	Name of Position	Group A (Minimum Requirement Bachelor in) *	Group A (experience in Year)		Specific Experience	Other
			General	Specific		
1	Team leader/Sr. Consultant (Survey)	B. Sc in Civil Engineering or Surveying	10	8	In digital geo-referenced physical feature and topographic survey and 3-D surveying.	
2	Sr. Consultant (Architecture)	Architecture	10	08	Must have extensive experience in building design process	
3	Consultant (Civil Engineering)	B. Sc in Civil Engineering	12	10	Must have extensive experience in Structural Design	
4	Consultant (Geo-technical Engineering)	B. Sc in Civil Engineering	10	7	In field work such as subsurface investigations, in-situ testing, surveying, materials testing, hydro-geological survey and analysis. etc.	
5	Consultant (Electrical)	B. Sc in Electrical Engineering	10	7	In Electrical Design	
6	Consultant (Fire)	B. Sc in Mechanical Engineering	10	7	In Fire Fighting System design	
Non-Key Personnel						
7	Estimator	Dip in Civil Engineering	8	6	In quantity surveying or estimating for civil structure.	
8	CAD Operator	Dip in Civil Engineering	8	6	In engineering drawing	

PART B

REMEDIATION WORK

According to the Corrective Action Reports (CARs based on the BEFS) that has already been accepted by the project and plan to accomplish the remediation work. However, under the consultancy service, all the remediation works needed to be accomplished as per agreement including necessary customization. Under the project BEFS (Building, Electrical and Fire Safety) Assessment, UCEP is going to engage consultant to accomplish the remediation works in the following schools:

1. KiK UCEP Robertsongonj Technical School, Kutirpara, Alamnagar, Sadar, Rangpur
2. KiK UCEP City Corporation Technical School, New Jummapara, Sadar, Rangpur
3. KiK UCEP Hesamuddin Technical School, Plot#7, Road#5, Block# B, Sat Masjid Housing, Mohammadpur, Dhaka-1207
4. KiK UCEP Mabia Rashidia Technical School, Char Rangamatia, Chandgaon, Chattogram
5. KiK UCEP Sulaiman Chowdhury Technical School, 189 Al-Islah(old) North Baluchar, Sylhet

Bill of Quantities (BoQ)

Name of School/Facility:

Address:

Type of Structure:,

Floor Area (Approx.):,

Number of Structure:.....

Structural Safety Facility Assessment and work							
<i>SL No/Item code</i>	<i>Description of Item</i>	<i>Action</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Rate (Taka)</i>	<i>Amount (Taka)</i>	<i>Remarks</i>
1	Geotechnical investigation at close vicinity of the structure and make the report accordingly.	Qualified structural engineer	set	1			BNBC-2020 (Applicable Version).
2	Develop Floor Loading Plans of the three or four storied school building.	Qualified structural engineer	set	1			BNBC-2020 (Applicable Version).
2	Certificate of Occupancy	Qualified structural engineer	set	1			BNBC-2020 (Applicable Version).
3	Credible as-built documents and drawings (Architectural, Structural) based on the requirements of BNBC (Applicable Version).	Qualified structural engineer	set	1			BNBC-2020 (Applicable Version).
4	Structural DEA Reports will need to prepare and confirm/check of presence of those concentrated loads on structural members. The load capacity needs to be analytically confirmed and certified by a qualified structural engineering firm.	Qualified structural engineer	set	1			BNBC-2020 (Applicable Version).
		Sub-Total Amount A					
		Add VAT & AIT as per Govt. rules					
		Sub-Total Amount A (including VAT & AIT)					

Electrical Safety Assessment and work							
SL No/Item code	Description of Item	Action	Unit	Quantity	Unit Rate (Taka)	Amount (Taka)	Remarks
1	<p>Prepare as-built electrical drawings providing detailing key components of the electrical system. (While preparing SLD please follow the below points: a) Information about the facility (name, location, ID etc.), type (proposed/as built) of drawing. Index and Legend (all symbols used should comply with the relevant standard); b) A brief description of electrical power source (main, standby/emergency, solar power etc.) with basic parameters (voltage, KVA rating etc.); c) All incoming main fuses, isolating switches, and main breakers (HT side) should be identified. In the case of interlocking between/synchronization with different power sources, relevant detailed notes should be provided; d) Any Drawings must be arranged sequentially identifying all components comprising the complete circuit from source to load; e) All outgoing circuits should be identified phase wise (R/Y/B) (3-phase system) in the drawing. BBT design comprising riser, TOB (with inside device), sub-BBT, final load (with required wattage rating); f) Each BBT must be mentioned with current rating, total arrangement of inside busbar (e.g. TP+N+E) and must include all necessary parameters; g) All cable details must be included. If cables are imported from outside, cable data sheet should be attached; h) The dimension and capacity of the Busbar must be included; i) The connected load must be mentioned, and the cable and circuit breaker must match; j) Regarding cable selection, the derating factor must be considered; k) The 'feed from' and the 'feed to' must be mentioned correctly and match the design set out in the proposed or as built drawing.</p>	Qualified electrical engineer	set	1			BNBC-2020 (Applicable Version), NFPA (Update Version) and Other Code

2	<p>Develop grounding (earthing) drawings. (While preparing electrical grounding (earthing) drawings please follow the instruction: a) Information about the facility (name, location, ID etc.); b) The drawing state if it is proposed/as built; c) Index and Legend symbol used must comply with the relevant standards; d) Transformer and generator type and load capacity; e) Type of earthing (e.g. TT, TN-S, TN-C, TN-C-S, IT); f) Details of pit and earth electrode arrangement. i. Pit location, ii. Earthing layout, iii. Pit to pit distance. (Minimum distance should be twice the length of the earth electrode, for solid earthing the pit distance should be 3 meters); g) Single Line Diagram of earthing (Boring/pit to earth busbar to electrical panel/equipment or boring/pit to electrical panel earth busbar/equipment).</p>	Qualified electrical engineer	set	1		BNBC-2020 (Applicable Version), NFPA (Update Version) and Other Code
3	<p>Electrical layout drawing of the facility. (While preparing Electrical layout design please follow the instruction: a) Information about facility (name, location, ID etc.); b) Drawing type (proposed/as built); c) Index & Legend (symbols used should comply with the relevant standards); d) All buildings covered in the inspection should be incorporated in the drawing (all building names should be identified on the drawing); e) If any structure is multistoried, elevation plan drawing will be required; f) Any areas that do not have any electrical connection, should be clearly identified; g) The following information should be clearly labelled and included in the drawing- All electrical outlets, switches, circuitry, and the pathway of the electrical wiring; h) All services and equipment and fixtures should also be labelled and clearly identified).</p>	Qualified electrical engineer	set	1		BNBC-2020 (Applicable Version), NFPA (Update Version) and Other Code

4	A qualified electrical engineer develop lightning protection system design including risk index. Install lightning protection system following reviewed drawing where required.	Qualified electrical engineer	lot	1			BNBC-2020 (Applicable Version), NFPA (Update Version) and Other Code
5	Provide an emergency power generator for the building where is required.	Qualified electrical engineer	set	1			BNBC-2020 (Applicable Version), NFPA (Update Version) and Other Code
6	a. Provide electrical insulation mats in front of substation, switchboards and/or distribution boards. Ensure that power and telecommunication or antenna cables are led in separately. Provide earthing of equipment at required locations and connect to required number of earth electrodes. b. Ensure that meters and other electrical devices installed on the main electrical equipment are operational. c. Distribution boards should concealed properly using fire resistant and non-combustible material. d. Ensure that switchboards and/or distribution boards are properly earthed. e. Provide capacity information labels for Switchboards and/or distribution boards. f. Relocate and rearrange distribution boards to non-hazardous locations so that they are readily accessible for operation and maintenance. Remove all dirt, debris and improperly stored materials from switchboards and/or distribution boards. g. Ensure that switchboards and distribution boards are provided with physical means to prevent the installation of more over current devices than that number for which the panel board was designed, rated, and listed. h. Appropriate overcurrent protection device shall be provided at switchboards and distribution boards for all circuits and sub-circuits. Lighting and socket circuits must be separated. All electrical wiring/ cables should be identified properly. i. Ensure that the means of identification is obtained by color coding, marking tape, tagging, or other approved means. Ensure that electrical cables are sized	Qualified electrical engineer	lot	1			BNBC-2020 (Applicable Version), NFPA (Update Version) and Other Code

	<p>according to capacity of circuit breakers. j.Remove multi looping of cables at circuit breakers or terminals within switchboards and distribution boards. k. Install phase separators between terminal connections at the circuit breakers. l.Ensure that cable joints are through porcelain/PVC connectors with PIB tape wound around joint.Connect all metal in the building to the building earthing/grounding system such as metal rebar in concrete, metal frame of building, metal water pipe.Ensure that electrical connections at equipment, fixtures, etc. are properly secured.Ensure that all electrical cables are properly terminated at its point of termination.Provide grounding (earthing) at electrical equipment.</p>						
					Sub-Total Amount B		
					Add VAT & AIT as per Govt. rules		
					Sub-Total Amount B (including VAT & AIT)		

Fire and Safety Assessment and work							
SL No/Item code	Description of Item	Action	Unit	Quantity	Unit Rate (Taka)	Amount (Taka)	Remarks
1	Certificate of occupancy for building and structure shall be obtained from the FS & CD in an expeditious manner, and that shall be filed accordingly in accordance with the Standards.	Qualified fire and safety engineer	set	1			BNBC-2020, NFPA and International Building Code (IBC)
2	Provide fire-resistive rated construction barriers between floors.	Qualified fire protection engineer to design the rated construction barriers.	set	1			BNBC-2020, NFPA 5000 and International Building Code (IBC), International Fire Code (IFC)
3	Provide fire-resistive rated construction barriers and fire-resistive rated opening assemblies at exit enclosures.	Qualified fire and safety engineer	set	1			BNBC-2020, NFPA 5000 and International Building Code (IBC), International Fire Code (IFC)
4	Install standpipe system at required locations designed by a qualified fire protection engineer. The system must match as built condition & comply NFPA 14.	Qualified fire and safety engineer	set	1			BNBC-2020, NFPA 5000 and International Building Code (IBC), International Fire Code (IFC)

5	Install fire pump which conforms to NFPA 20,NFPA 22 & NFPA 25 requirements. The following need to be considered but not limited to while installing: i) Locations of hose connections. ii) Number of hydrant risers with minimum pressure requirement iii) Capacity of fire pump and credible listed products iv) the capacity of water reservoir v) Details hydraulic calculations etc.	Qualified fire and safety engineer	lot	1			BNBC-2020, NFPA 5000 and International Building Code (IBC), International Fire Code (IFC)
6	Prepare a centralized automatic fire alarm & detection system design by a qualified fire protection engineer. Design of centralized detection system shall conform to as per NFPA 72 requirements. The following need to be considered but not limited to while designing: 1.Types & Locations of detectors following the potential class and height of detectors. 2.Credible and listed products with manufacturer guideline and capacity of detectors. 3.Battery back-up calculations, Voltage drop calculations, conduit fill calculations, input/output matrix. 4. Details design and drawings of fire detection systems 5.Testing and commissioning of the installed system conducted in accordance with NFPA 72 acceptance testing requirements. Documentation of all testing shall be submitted for review by the authority.	Qualified fire and safety engineer	lot	1			BNBC-2020, NFPA 5000 and International Building Code (IBC), International Fire Code (IFC)
7	Prepare and establish the documents for inspection, testing, and maintenance of the fire extinguishers as per NFPA 10.	Qualified fire and safety engineer	lot	1			BNBC-2020, NFPA 5000 and International Building Code (IBC), International Fire Code (IFC)
8	Develop an emergency evacuation plan which includes all components required by the relevant Standards and communicate the plan to all employees.	Qualified fire and safety engineer	lot	1			BNBC-2020, NFPA 5000 and International Building Code

SL No/ Item code	Description of Item	Action	Unit	Quantity	Unit Rate (Taka)	Amount (Taka)	Remarks
1	Structural Safety Facility Assessment and work, Sub-total Amount: A	Qualified structural engineer					
2	Electrical Safety Assessment and work, Sub-total Amount: B	Qualified electrical engineer					
3	Fire and Safety Assessment and work, Sub-total Amount: C	Qualified fire and safety engineer					
	Add VAT & AIT as per Govt. rules						
	Grand Total Amount (Including VAT & AIT)						

Nota

Bene:

01. The qualified engineering firm will submit actual work schedule along with their rate quotation to accomplish the whole work

02. The qualified engineering firm may set a meeting with UCEP Bangladesh and also visit at School in Dhaka/ Out side of Dhaka city before commencing their work.

03. If the engineering firms may wish to study the Corrective Action Plan (CAP) for structural, electrical and fire safety work then they can follow an **Annexure:1**

04. The engineering firm must have valid professional licence or authorization documents from concern Authority to accomplish the above work.